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Aquatic Resources Delineation Report

# **Prairie Pass Energy Storage System Project**

## **Adams County, Colorado**

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**JULY 2024**

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# Acronyms and Abbreviations

Acronym/Abbreviation	Definition
APT	Antecedent Precipitation Tool
ARC	antecedent runoff condition
ARDR	aquatic resources delineation report
CDPHE	Colorado Department of Public Health and Environment
NHD	National Hydrography Dataset
NWI	National Wetlands Inventory
OHW	ordinary high water mark
project	Prairie Pass Energy Storage System Project
PDSI	Palmer Drought Severity Index
PSA	project study area
USACE	U.S. Army Corps of Engineers
UPL	upland

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# 1 Executive Summary

This aquatic resources delineation report (ARDR) for the Prairie Pass Energy Storage System Project (project) was prepared in accordance with the U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (USACE 1987), the USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE 2010), and Regulatory Guidance Letter No. 16-01, Jurisdictional Determinations (USACE 2016a). Dudek conducted a field delineation in June 2024 to identify aquatic resources in the approximately 36-acre project study area (PSA) that may be potentially subject to agency jurisdiction pursuant to regulations in Sections 401 and 404 of the Clean Water Act. No aquatic resources subject to federal or state jurisdiction were recorded within the PSA.

## Disclaimer Statement

This ARDR presents Dudek's best effort to quantify the extent of aquatic resources potentially regulated by USACE within the identified review area using the current regulations, written policies, and guidance from current standards. The potential jurisdictional boundaries described in this ARDR are subject to verification by the USACE Omaha District and the Colorado Department of Public Health and Environment. Only the regulatory agencies can make a final determination on whether the features present are subject to regulation.

## Contact Information

Jupiter Power LLC is the Prairie Pass Energy Storage System Project owner and will act as the primary point of contact for site access.

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## 2 Introduction

This aquatic resources delineation report (ARDR) documents the methods and results of the aquatic resources delineation conducted for the Prairie Pass Energy Storage System Project (project) within the 36-acre project study area (PSA). This ARDR was produced in accordance with the U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (USACE 1987), USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE 2010), and Regulatory Guidance Letter No. 16-01, Jurisdictional Determinations (USACE 2016a). The results of this aquatic resources delineation are preliminary until verified by the USACE Omaha District and the Colorado Department of Public Health and Environment (CDPHE).

### 2.1 Project Description

The project is the proposed development of an energy storage system facility within one privately owned parcel of land (parcel ID: 0156534200004) in unincorporated Adams County, Colorado.

### 2.2 Project Location

The PSA is located approximately 5 miles northeast of Denver International Airport, at the intersection of County Road 27 and East 124th Avenue (Figure 1, Project Location). The PSA is primarily used as grazing lands with dirt roads and a single-family residence in the northern section. Transmission lines run along the southern project boundary, and there is one plugged and abandoned oil and gas well on the PSA's western boundary.

- County: Adams
- U.S. Geological Survey 7.5-Minute Quadrangle: Horse Creek
- Latitude, Longitude (decimal degrees): 39.92195479°N, -104.5433934°W (Centroid)
- Elevation Range: 5,235 to 5,287 feet above mean sea level
- PSA: 36 acres

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# 3 Methodology

## 3.1 Desktop Analysis

Prior to conducting fieldwork for the project, Dudek performed a desktop analysis to review the following available resources to identify portions of the PSA with a probability for containing potential jurisdictional aquatic resources:

- Antecedent Precipitation Tool (APT) (USACE 2024)
- Google Earth current and historical aerial imagery (Google Earth 2024)
- Natural Resources Conservation Services Web Soil Survey (USDA 2024a)
- U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) Mapper (USFWS 2024)
- U.S. Geological Survey National Hydrography Dataset (NHD) and Watershed Boundary Dataset (USGS 2023)
- Federal Emergency Management Agency National Flood Hazard Layer Viewer (FEMA 2024)

## 3.2 Aquatic Resources Delineation

Dudek biologist Michelle Leis conducted an aquatic resources field delineation of the approximately 36-acre PSA on June 13, 2024 (Table 1). Potential aquatic resources were delineated based on methodology described in the USACE Wetlands Delineation Manual (USACE 1987) and the USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE 2010). Non-wetland waters of the United States were delineated based on the presence of an ordinary high water mark (OHWM). Potential aquatic resources were recorded using Esri Field Maps on a mobile device and a Trimble R1 Global Navigation Satellite System Receiver with submeter accuracy. Following the fieldwork, aquatic resources were digitized using ArcGIS. All figures generated for this ARDR follow the recommendations in the USACE Updated Map and Drawing Standards for the South Pacific Division Regulatory Program (USACE 2016b), which are anticipated to be sufficient for the USACE Omaha District.

**Table 1. Survey Details and Conditions**

Date	Personnel	Survey Time	Survey Conditions (Temperature, Skies, Wind)
06/13/24	Michelle Leis	2:30 p.m.–3:30 p.m.	95 °F; 30% to 40% cloud cover; 8 mph to 15 mph winds

All plant species encountered were identified to the lowest taxonomic level needed to determine wetland plant indicator status. Latin names follow conventions within the PLANTS Database (USDA 2024b). These resources were further referenced to identify plant taxonomic level appropriate to determine species and regulatory status if needed. Wetland plant indicator status for each plant was determined using the National Wetland Plant List for the Great Plains Region (USACE 2020). Appendix A, Observed Plant Species Compendium, contains a complete list of plant species and their indicator status.

Dudek took sample points (i.e., upland and wetland) on standardized wetland delineation datasheets in a representative location to assess the potential for hydric soils, hydrophytic vegetation, and hydrology when applicable (see details in Section 4.6, Aquatic Resources Delineation Results). The sample point datasheets are included in this report as Appendix B, Datasheets.

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# 4 Results

## 4.1 Existing Conditions

The PSA lies near the center of unincorporated Adams County in northeastern Colorado. The PSA is approximately 5 miles northeast of the Denver International Airport. The PSA predominantly consists of land currently used for grazing with a single-family residence present in the northern portion. Lands adjacent to the PSA are used for a combination of grazing and agricultural operations with rural homes scattered throughout. The Green Valley Substation is located directly south of the PSA. Representative photos of the PSA can be found in Appendix C, Photo Log.

## 4.2 Climate and Precipitation

### 4.2.1 Climate

The project region has a cold semi-arid climate with steppe precipitation and is prone to drought (Kottek et al. 2006). July is the average warmest month, with an average high temperature of 88 °F, and January is the coolest month on average, with an average low temperature of 17 °F. Rainfall occurs primarily between April and August, with the maximum average precipitation occurring in May. The mean annual precipitation for the region is approximately 15.48 inches per year (WRCC 2024).

### 4.2.2 Precipitation Data and Analysis

The USACE-developed APT was used to assess whether the delineation date occurred in a drier, average, or wetter than normal period (USACE 2024). The APT is also utilized to determine what constitutes a “typical year.” The information generated from the APT can help to determine whether normal hydrologic and/or climatic conditions were present during the site visit and assist with completing the Wetland Determination Data Form.

The APT provides three climatological parameters: Palmer Drought Severity Index (PDSI), season, and antecedent precipitation condition. The PDSI is a standardized index calculated monthly with PDSI value outputs ranging from -4 (extreme drought) to +4 (very wet) to assess long-term drought conditions (i.e., PDSI Class) based on a simplified soil-water balance and estimate of relative soil moisture conditions (NOAA 2023). The APT determines wet versus dry season based on related procedures provided in the applicable regional supplement for the review area (in this case, the Great Plains Regional Supplement). The APT calculates an antecedent precipitation score for a given observation point and date using historic precipitation data. The antecedent precipitation score serves as a measurement of precipitation normalcy that translates into a description of precipitation condition (e.g., normal, wet, or dry conditions) for the observation point and date. If the antecedent runoff condition (ARC) score is less than 10, then the antecedent precipitation condition is classified as drier than normal; normal conditions are present with an ARC score of 10 to 14; conditions are wetter than normal when an ARC score is greater than 14 (USACE 2024).

Table 2 summarizes the key data extrapolated from the APT output: estimated drought conditions (PDSI Class), wet or dry season determination, ARC score, and antecedent precipitation condition. Based on the APT output provided

in Appendix D and summarized in Table 2, the precipitation and climatic conditions for the PSA were normal during the time of the June 2024 delineation.

**Table 2. Antecedent Precipitation Tool Data for the PSA**

Last Date of Field Survey	PDSI Class	Season	ARC Score	Antecedent Precipitation Condition
06/13/2024	Moderate wetness	Dry season	10	Normal

**Notes:** PSA = project study area; PDSI = Palmer Drought Severity Index; ARC = antecedent runoff condition.

### 4.3 Soil and Terrain

The PSA generally slopes from northeast to southwest. Elevation across the PSA ranges from approximately 5,235 to 5,287 feet above mean sea level.

According to the U.S. Department of Agriculture’s Natural Resources Conservation Service Web Soil Survey, two soil types and associations occur within the PSA (see Figure 2, Soils, and Table 3): (1) Wiley-Adena-Renohill complex, 3% to 20% slopes and (2) Adena-Colby association, gently sloping. Neither of these soil types are classified as hydric, which is defined by the U.S. Department of Agriculture as soils formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA 2024a). Following are descriptions of the soil types (USDA 2024a).

- **Adena Series** consists of very deep, well-drained, slow or medium permeable soils formed in eolian materials. These slopes are nearly level to very gently sloping. Slopes range from 0% to 3%.
- **Colby Series** consists of very deep, well-drained and somewhat excessively drained, moderately permeable soils that formed in loess. Colby soils are on plains and hillslopes on tableland in the Central High Tableland. Slopes are gentle and moderate.
- **Renohill Series** consists of well-drained soils that are moderately deep to soft bedrock. These soils formed in alluvium, colluvium, and residuum. Renohill soils are on bedrock-controlled plateaus, alluvial fans, hills, and ridges. Slopes range from 2% to 20%.
- **Wiley Series** consists of very deep, well-drained, moderately slowly permeable soils formed in thick, calcareous loess. Wiley soils are on hills, plains, ridges, terraces, and valley side slopes. These soils are on nearly level to very gently sloping eolian plains. Slopes range from 0% to 2%.

**Table 3. Summary of Soil Units in the PSA**

Soil Map Unit Name	Landform	Drainage Class	Acres	Hydric
Adena-Colby association, gently sloping	Found in eolian materials and plains and hillslopes on tableland	Well drained	13	No
Wiley-Adena-Renohill complex, 3% to 20% slopes	Nearly level to very gently sloping eolian plains	Well drained	23	No

**Source:** USDA 2024a.

**Note:** PSA = project study area.

## 4.4 Vegetation Communities and Land Cover Types

One vegetation community, non-native grassland (33.17 acres), and one land cover type, disturbed (3.19 acres), were mapped by Dudek within the PSA. Figure 3, Vegetation and Land Cover Types, illustrates the distribution of vegetation communities and land covers, and Table 4 provides a summary of each within the PSA. Descriptions of the vegetation community and land cover types are provided in detail below.

**Table 4. Vegetation Communities and Land Cover Types within the PSA**

Vegetation Community/Land Cover Type	Total Acreage
Non-native Grassland	33.17
Disturbed	3.19
<b>Total*</b>	<b>36.36</b>

**Notes:** PSA = project study area.

\* Acreage may not sum precisely due to rounding.

### 4.4.1 Vegetation Communities

#### Non-native Grassland

Non-native grassland is present in the northwestern corner, as well as the entire southern portion, of the PSA. This vegetation type is predominantly composed of non-native annual grasses such as *Avena*, *Bromus*, *Erodium*, *Brassica*, and other annual species. Within the PSA, this community is dominated by cheatgrass (*Bromus tectorum*), riggut brome (*Bromus diandrus*), smooth brome (*Bromus inermis*), and cereal rye (*Secale cereale*), which was introduced by the landowner for grazing purposes.

### 4.4.2 Land Cover Types

#### Disturbed

Within the PSA, disturbed land takes the form of a single-family residence and a paved road leading from Cavanaugh Road to the residence. Various livestock enclosures are located to the east of the residence with various non-native ornamental species, such as lilacbush (*Aubrieta deltoidea*) and Nanking cherry (*Prunus tomentosa*), planted throughout. A variety of tree species were also planted around the residence to provide privacy. These species included American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoides*), and bur oak (*Quercus macrocarpa*).

## 4.5 Hydrology and Watershed

The PSA occurs within the Horse Creek Reservoir–Horse Creek subwatershed (USGS Hydrologic Unit Code 12; 101900030802) of the Middle South Platte–Cherry Creek subbasin (see Figure 4, Hydrology). The NWI maps a freshwater emergent wetland and a riverine feature within the southwest corner of PSA (USFWS 2024) (Figure 4). The NHD maps a stream/river flowlines that follow the riverine feature that is mapped as part of the NWI (USGS 2023). The NWI/NHD features were field-verified, and results are discussed in Section 4.8, National Wetlands Inventory.

## 4.6 Aquatic Resources Delineation Results

During the field delineation, areas potentially supporting aquatic features identified during the desktop analysis were investigated. The aquatic resources delineation did not identify any aquatic resources within the PSA. A summary of the wetland sample point data collected in the field (Table 5) is discussed below in Section 4.7, Sample Point Summary.

## 4.7 Sample Point Summary

Results from observable field indicators from one sample point indicate that no aquatic resources occur within the PSA (Figure 5, Aquatic Resources Delineation). The sample point data are summarized in Table 5. Additionally, the wetland datasheet can be found in Appendix B.

**Table 5. Wetland Sample Point Summary**

Sample Point	Wetland Determination Field Indicators			Location (decimal degrees)		Determination
	Vegetation	Soils	Hydrology	Latitude	Longitude	
SP-01	No	No	No	39.9208742	-104.5451894	UPL

**Notes:** SP = sample point; UPL= upland.

## 4.8 National Wetlands Inventory

All NWI and NHD features were visited during the field delineation. Sample point SP-01 was taken within the lowest depressional point of the PSA within the NWI/NHD feature that crosses the southwestern corner of the PSA. This was the only location within the PSA that showed potential wetland indicators. Although surface soil cracks, a secondary hydrological indicator, were noted at this sample point, dominant vegetation included Mexican-fireweed (*Bassia scoparia*; facultative upland) and cereal rye (upland [UPL]). Additionally, hydric soil indicators were not observed, ruling out this area of the PSA as a wetland (see Appendix B). Due to the lack of wetland indicators and an OHWM, this NWI/NHD feature was confirmed to be a swale where water from the surrounding upland areas collects due to natural topographical changes before flowing west out of the PSA (see Photo 4 in Appendix C).

The freshwater emergent wetland mapped by NWI was also field-verified during the delineation. This feature occurs in an upland area and is completely dominated by cheatgrass (UPL) and cereal rye (UPL) with no hydrological indicators present (see Photo 5 in Appendix C). Therefore, both NWI and NHD features were determined to not be present due to a lack of wetland indicators and an absence of an OHWM.

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## 5 Conclusion

Based on the data collected during the field delineation, Dudek staff determined that no aquatic resources are present within the PSA. This jurisdictional determination is preliminary until verified by the USACE Omaha District.

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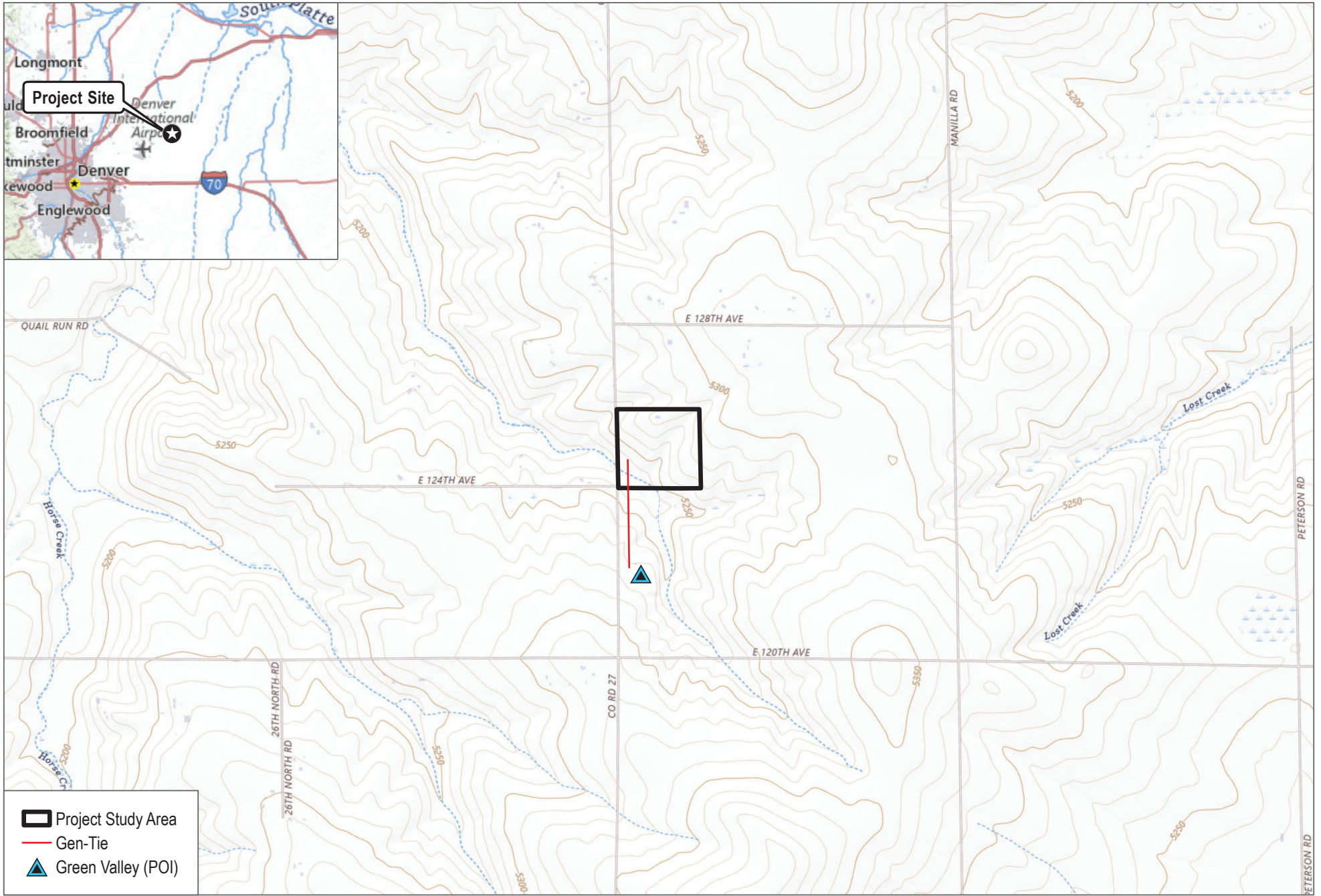
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SOURCE: USGS National Map 2024  
 Horse Creek Quadrangle - Township 1S Range 64W Section 34



**FIGURE 1**  
 Project Location

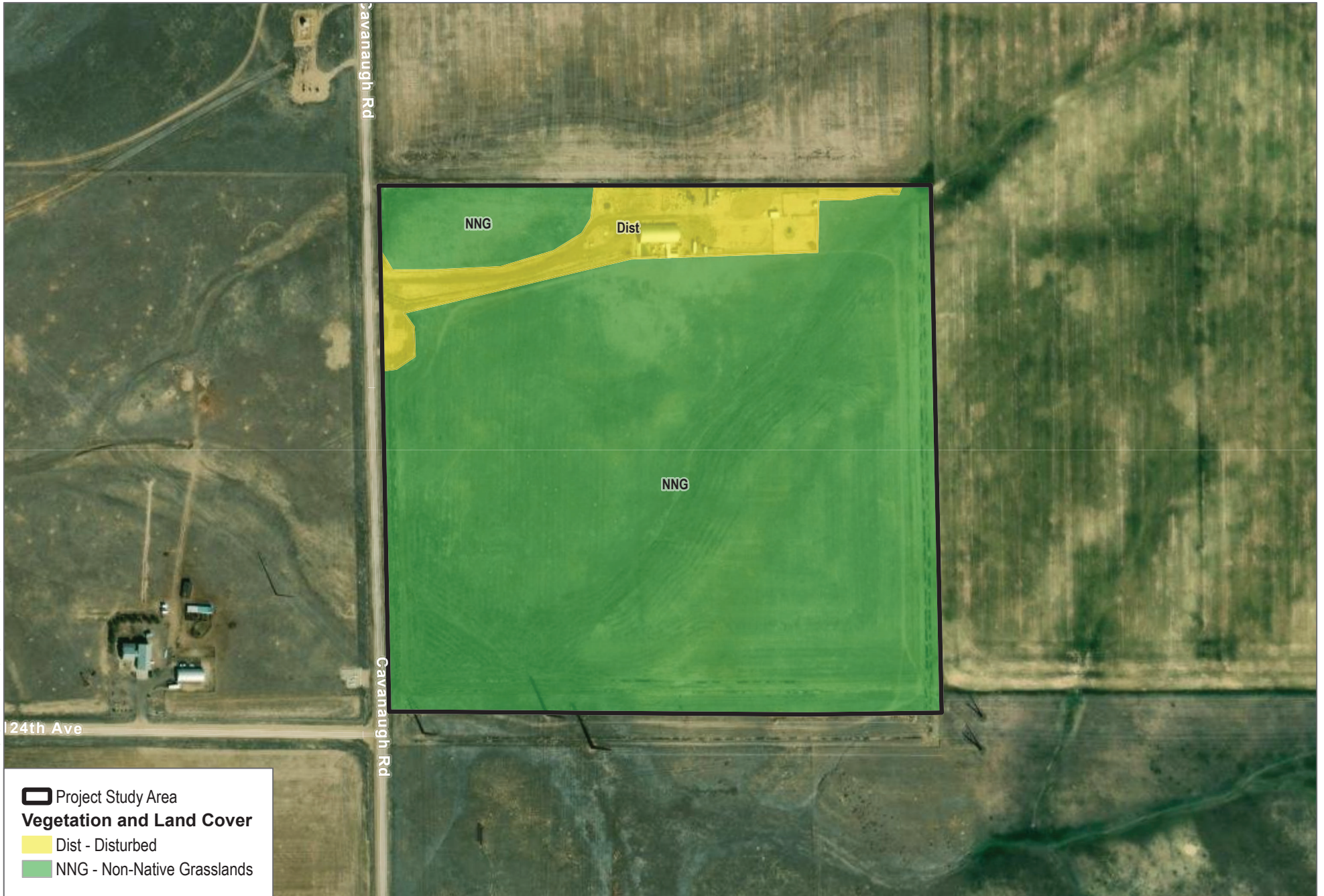
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SOURCE: Maxar 2023; USGS SSURGO

**FIGURE 2**  
Soils

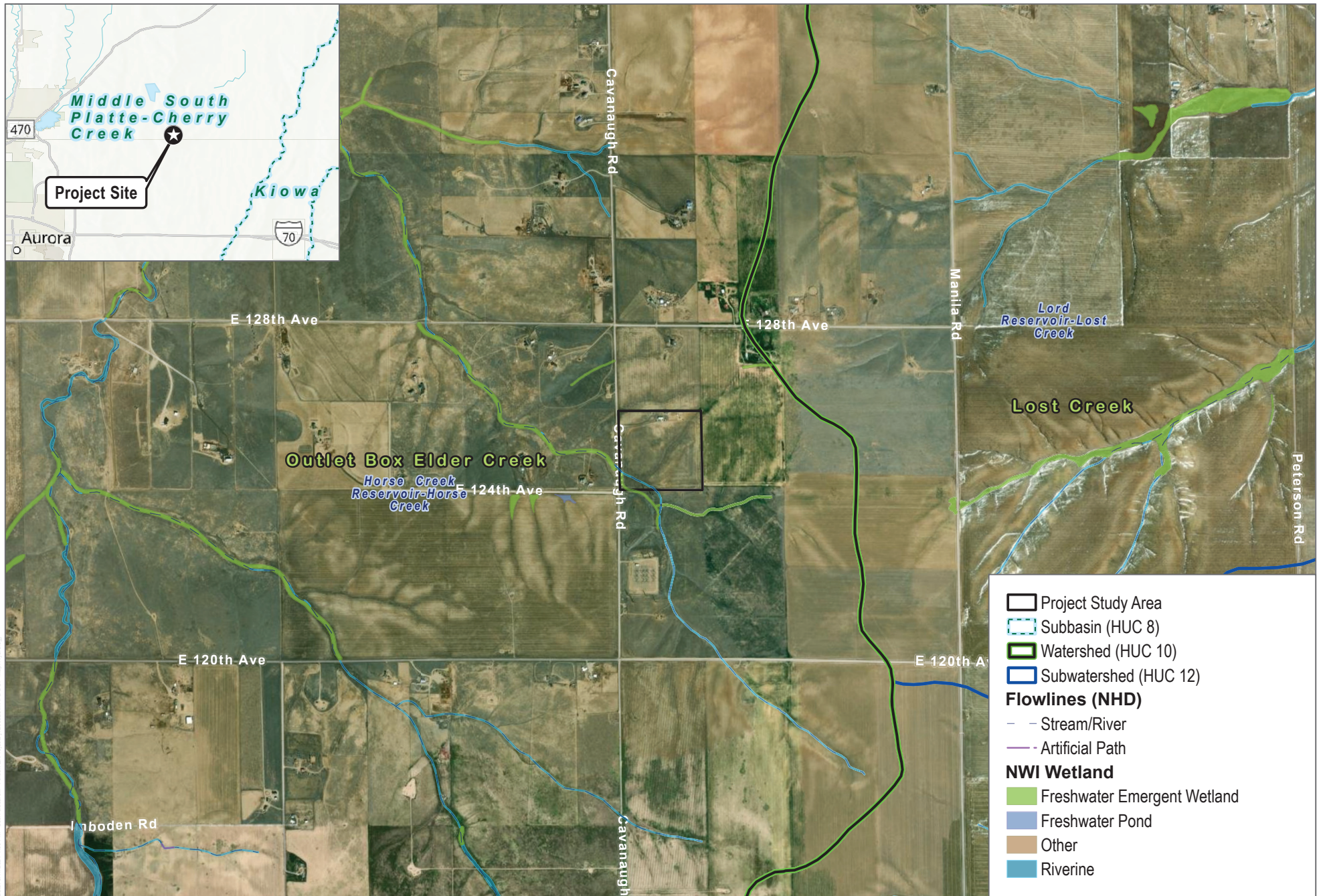
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SOURCE: Maxar 2023

**FIGURE 3**  
 Vegetation and Land Cover Types  
 ARDR - Prairie Pass Energy Storage System

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SOURCE: Maxar 2023; FEMA; USGS NWI



**FIGURE 4**

Hydrology

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- Project Study Area
- Sampling Point (SP-01)

Cavanaugh Rd

SOURCE: Maxar 2023

**FIGURE 5**  
Aquatic Resource Delineation  
ARDR - Prairie Pass Energy Storage System

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# Appendix A

## Observed Plant Species Compendium



# Vascular Species

## Eudicots

### ASTERACEAE – SUNFLOWER FAMILY

*Helianthus annuus* – common sunflower (FACU)

### BRASSICACEAE – MUSTARD FAMILY

\* *Sisymbrium irio* – London rocket (UPL)

\* *Aubrieta deltoidea* – lilacbush (UPL)

### CHENOPODIACEAE – GOOSEFOOT FAMILY

\* *Bassia hyssopifolia* – fivehorn smotherweed (FACU)

*Salsola tragus* – prickly Russian thistle (FACU)

### CONVOLVULACEAE – MORNING GLORY FAMILY

\* *Convolvulus arvensis* – field bindweed (UPL)

### FABACEAE – LEGUME FAMILY

\* *Gleditsia triacanthos* – honeylocust (UPL)

### FAGACEAE – OAK FAMILY

\* *Quercus macrocarpa* – bur oak (UPL)

### MALVACEAE – MALLOW FAMILY

*Sphaeralcea coccinea* – scarlet globemallow (UPL)

### POLYGONACEAE – BUCKWHEAT FAMILY

\* *Rumex crispus* – curly dock (FAC)

### ROSACEAE – ROSE FAMILY

\* *Prunus tomentosa* – Nanking cherry (UPL)

### SALICACEAE – WILLOW FAMILY

*Populus deltoides* – eastern cottonwood (FAC)

### ULMACEAE – ELM FAMILY

*Ulmus americana* – American elm (FAC)

### VERBENACEAE – VERVAIN FAMILY

*Verbena bracteata* – bigbract verbena (UPL)

## Gymnosperms and Gnetophytes

### PINACEAE – PINE FAMILY

- \* *Pinus nigra* – Austrian pine (UPL)

## Monocots

### POACEAE – GRASS FAMILY

- \* *Bromus diandrus* – ripgut brome (UPL)
- \* *Bromus inermis* – smooth brome (UPL)
- \* *Bromus tectorum* – cheatgrass (UPL)
- \* *Secale cereale* – cereal rye (UPL)

- \* signifies introduced (non-native) species

### Indicator status:

- FACU = Facultative Upland
- FAC = Facultative
- UPL = Upland

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# Appendix B

## Datasheets



## WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Prairie Pass City/County: Adams County Sampling Date: 06/13/2024  
 Applicant/Owner: \_\_\_\_\_ State: Colorado Sampling Point: SP-01  
 Investigator(s): Michelle Leis Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc): depression Local relief (concave, convex, none): concave Slope (%): 10  
 Subregion (LRR): Central Great Plains Winter Wheat and Range I Lat: 39.92087426519857 Long: -104.5451894595421 Datum: \_\_\_\_\_  
 Soil Map Unit Name: Wiley-Adena-Renohill complex, 3 to 20 percent slopes NWI classification: riverine  
 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"/>	<b>Is the Sampled Area within a Wetland?</b>	Yes _____	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes _____	No <input checked="" type="checkbox"/>			
Remarks: Sampling point was taken in the lowest point of the project site within the NWI riverine feature. None of the wetland indicators were present.					

**VEGETATION - Use scientific names of plants.**

Tree Stratum (Plot size: <u>30-ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15-ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0 = Total Cover				
Herb Stratum (Plot size: <u>5-ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Bassia scoparia / Mexican-fireweed</u>	40	Yes	FACU	
2. <u>Secale cereale / Rye</u>	30	Yes	UPL	
3. <u>Bromus inermis / Smooth brome, Smooth brome, Hungarian</u>	10	No	UPL	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
80 = Total Cover				
Woody Vine Stratum (Plot size: <u>30-ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum <u>20</u>				

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)  
 Total Number of Dominant Species Across All Strata: 2 (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:		Multiply by:		
OBL species	<u>0</u>	x 1 =	<u>0</u>	
FACW species	<u>0</u>	x 2 =	<u>0</u>	
FAC species	<u>0</u>	x 3 =	<u>0</u>	
FACU species	<u>40</u>	x 4 =	<u>160</u>	
UPL species	<u>40</u>	x 5 =	<u>200</u>	
Column Totals:	<u>80</u> (A)		<u>360</u> (B)	

Prevalence Index = B/A = 4.5

**Hydrophytic Vegetation Indicators:**  
 1 - Rapid Test for Hydrophytic Vegetation  
 2 - Dominance Test is >50%  
 3 - Prevalence Index ≤3.0'  
 4 - Morphological Adaptations<sup>1</sup> (Provide supporting Problematic Hydrophytic Vegetation<sup>1</sup> (Explain )

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes \_\_\_\_\_ No

Remarks:

**SOIL**

Sampling Point: SP-01

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-14	7.5YR 5/4	100					Loam	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) <b>(LRR I, J)</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) <b>(LRR F, G, H)</b>
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) <b>(LRR G)</b>
<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) <b>(LRR F)</b>	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> <b>(LRR H outside of MLRA 72 &amp; 73)</b>
<input type="checkbox"/> 1 cm Muck (A9) <b>(LRR F, G, H)</b>	<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) <b>(LRR G, H)</b>	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) <b>(LRR F)</b>	<input type="checkbox"/> <b>(MLRA 72 &amp; 73 of LRR H)</b>	

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes _____ No <u>X</u>
--	---

Remarks:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one required; check all that apply)</b>	<b>Secondary Indicators (minimum of two required)</b>
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <b>(where tilled)</b>
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Frost-Heave Hummocks (D7) <b>(LRR F)</b>
<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 along Living Roots (C3) <b>(where not tilled)</b>	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Surface Water Present?    Yes _____ No <u>X</u> Depth (inches): _____	
Water Table Present?    Yes _____ No <u>X</u> Depth (inches): _____	
Saturation Present?    Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	

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

Remarks:

---

# Appendix C

## Photo Log





**Photo 1.** Representative photo of non-native grassland within the PSA.



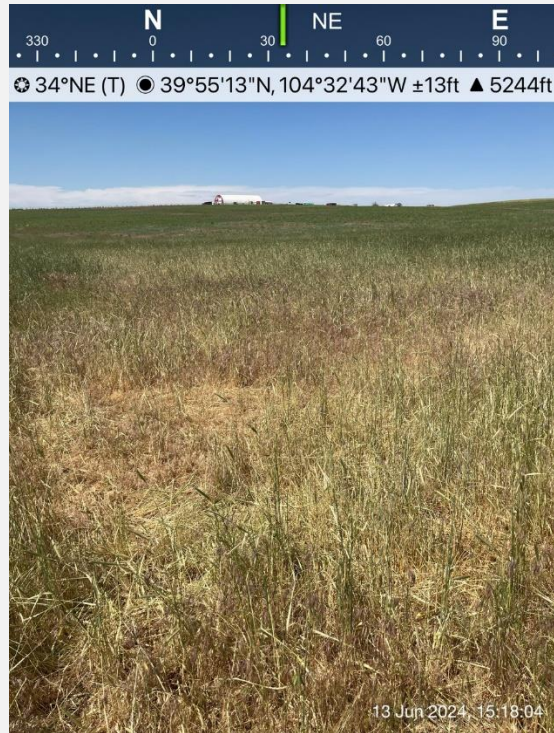
**Photo 2.** Northern side of single-family residence within the disturbed portion of the PSA. Various equipment and children's toys were observed throughout this area.



**Photo 3.** Photo of sample point SP-01.



**Photo 4.** NWI/NHD feature was determined to be a swale due to lack of wetland indicators and OHWM.



**Photo 5.** Mapped freshwater emergent wetland was dominated by upland species and showed no hydrological indicators.

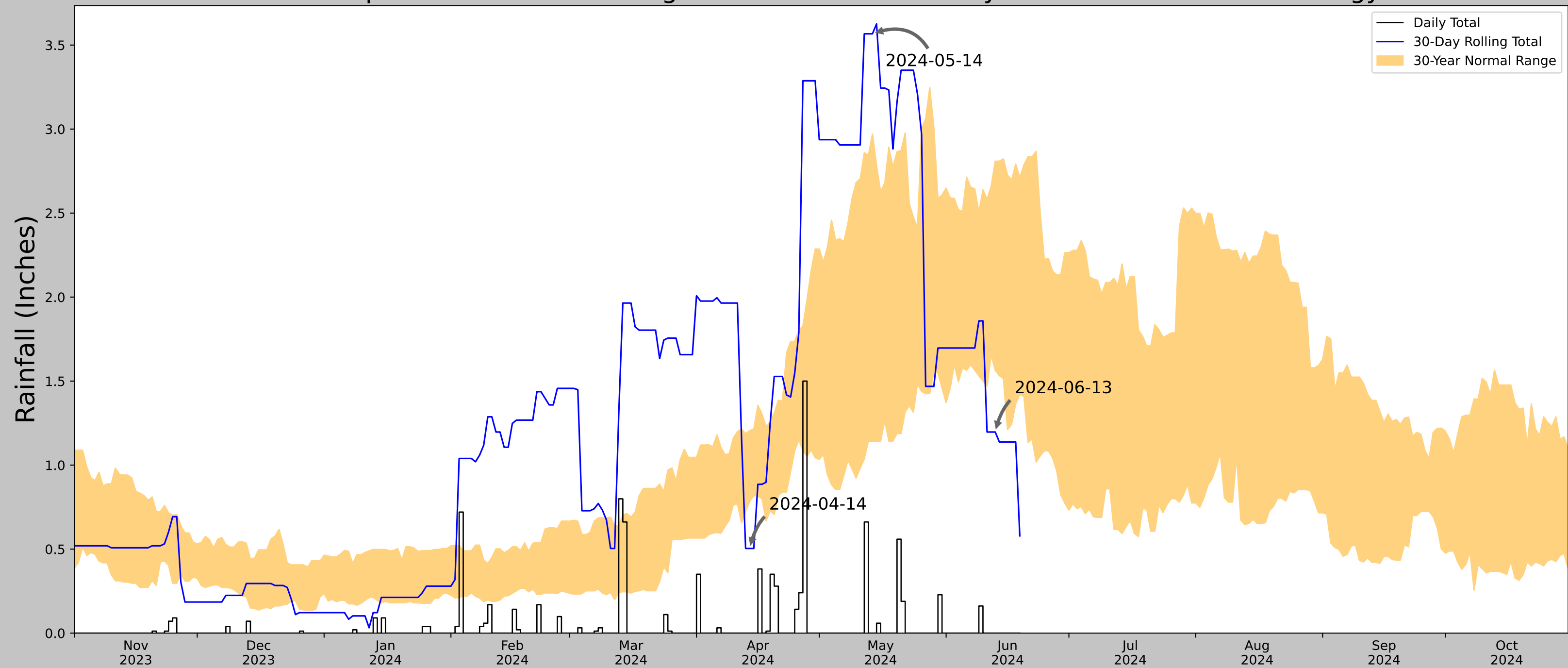
---

# **Appendix D**

## Antecedent Precipitation Tool Outputs




# Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	39.92195479, -104.5433934
Observation Date	2024-06-13
Elevation (ft)	5257.842
Drought Index (PDSI)	Moderate wetness (2024-05)
WebWIMP H <sub>2</sub> O Balance	Dry Season


30 Days Ending	30 <sup>th</sup> %ile (in)	70 <sup>th</sup> %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-06-13	1.564173	2.809055	1.19685	Dry	1	3	3
2024-05-14	1.14252	2.970866	3.566929	Wet	3	2	6
2024-04-14	0.782677	1.205906	0.503937	Dry	1	1	1
Result							Normal Conditions - 10

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
DENVER INTL AP	39.8467, -104.6561	5403.872	7.921	146.03	4.721	10235	90
DENVER 13.4 ENE	39.7971, -104.7452	5422.9	5.84	19.028	2.739	116	0
WATKINS 0.7 E	39.7515, -104.587	5534.121	7.531	130.249	4.37	3	0
AURORA 4.0 N	39.756, -104.8208	5376.969	10.757	26.903	5.13	114	0
BENNETT 4.3 WNW	39.782, -104.4972	5521.982	9.545	118.11	5.423	11	0
BENNETT	39.75, -104.4167	5482.94	14.358	79.068	7.596	140	0
NORTHGLENN	39.8989, -105.0133	5407.152	19.282	3.28	8.74	728	0
BRIGHTON 3 SE	39.9436, -104.8361	5016.076	11.656	387.796	9.765	5	0



Figures and tables made by the  
Antecedent Precipitation Tool  
Version 2.0

Developed by:  
U.S. Army Corps of Engineers and  
U.S. Army Engineer Research and  
Development Center







DEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS, OMAHA DISTRICT  
COLORADO REGULATORY OFFICE  
9307 SOUTH WADSWORTH BLVD  
LITTLETON, CO 80128-6901

March 27, 2025

**SUBJECT: NWO-2025-00443-DEN, Prairie Pass Energy Storage Project – Approved Jurisdictional Determination**

Kurt Nelson  
Jupiter Power  
1003 Rio Grande Street  
Austin, TX 78701

Dear Kurt Nelson:

This letter is in response to your request received on March 20, 2025, submitted on your behalf by Dudek, for an approved jurisdictional determination for 36 acres located at approximate latitude 39.92195479, longitude -104.5433934, Adams County, Colorado. Your request has been assigned the Corps Regulatory File Number referenced above. Please reference this file number on any correspondence to us or to other interested parties when referencing this project or concerning this request.

The U.S. Army Corps of Engineers (Corps) regulates the discharge of dredged and fill material into waters of the United States under Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344) and structures or work in, over, and under navigable waters of the United States under Section 10 of the Rivers and Harbors Act (RHA) (33 U.S.C. 403). The implementing regulations for these Acts are published in the Code of Federal Regulations at 33 CFR parts 330-332.

Based on our evaluation of the information provided and other available information, we have determined that review area is comprised of entirely dry land. Based on this determination, a Department of the Army permit is not required. This determination does not eliminate requirements to obtain any other applicable federal, state, tribal, or local permits.

Attached to this letter is the approved jurisdictional determination for your project site. This jurisdictional determination is valid for a 5-year period from the date of this letter, until **March 27, 2030**, unless new information warrants revision of the determination before the expiration date. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR part 331. Enclosed you will find a *Notification of Administrative Appeal Options and Process and Request for Appeal* (NAO-RFA) form. If you request to appeal this determination, you must submit a completed NAO-RFA form to the address listed on the form.

For an NAO-RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR 331.5, and that it has been received by the Division Office within 60 days of the date of the NAO-RFA. Should you decide to submit an NAO-RFA form, it must be received at the Division Office by **May 26, 2025**. It is not necessary to submit an NAO-RFA form to the Division Office if you do not object to the determination in this letter.

In the event that you disagree with this approved jurisdictional determination and you have **new information** not considered in the original determination, you may request reconsideration of this determination by contacting this office prior to initiating an appeal. To request this reconsideration based upon new information, you must submit the new information to this office so that it is received within 60 days of the date of the NAO-RFA.

The Corps' Omaha District, Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to complete our Customer Service Survey found on our website at <https://regulatory.ops.usace.army.mil/customer-service-survey/>. If you do not have Internet access, you may call and request a paper copy of the survey that you can complete and return by mail. Additionally, further information regarding the Omaha District Regulatory Program can be obtained by visiting our website at <https://www.nwo.usace.army.mil/Missions/Regulatory-Program/>.

If you have any questions concerning this jurisdictional determination, please contact Daniel Ishmael at the above address, by phone at 720-948-3266, or by email at [Daniel.c.ishmael@usace.army.mil](mailto:Daniel.c.ishmael@usace.army.mil) and reference the above file number.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kiel Downing', with a stylized flourish at the end.

Kiel Downing  
Chief, Denver Regulatory Office

Enclosures



DEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS, OMAHA DISTRICT  
9307 S. WADSWORTH BLVD  
LITTLETON, CO 80128

CENWO-ODR-C

March 27, 2025

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Approved Jurisdictional Determination in accordance with the "Revised Definition of 'Waters of the United States'"; (88 FR 3004 (January 18, 2023) as amended by the "Revised Definition of 'Waters of the United States'; Conforming" (8 September 2023) ,<sup>1</sup> [NWO-2025-00443-DEN](#), [MFR 1 of 1](#).<sup>2</sup>

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.<sup>3</sup> AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.<sup>4</sup>

On January 18, 2023, the Environmental Protection Agency (EPA) and the Department of the Army ("the agencies") published the "Revised Definition of 'Waters of the United States,'" 88 FR 3004 (January 18, 2023) ("2023 Rule"). On September 8, 2023, the agencies published the "Revised Definition of 'Waters of the United States'; Conforming", which amended the 2023 Rule to conform to the 2023 Supreme Court decision in *Sackett v. EPA*, 598 U.S., 143 S. Ct. 1322 (2023) ("*Sackett*").

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. For the purposes of this AJD, we have relied on Section 10 of the Rivers and Harbors Act of 1899 (RHA),<sup>5</sup> the 2023 Rule as amended,

---

<sup>1</sup> While the Revised Definition of "Waters of the United States"; Conforming had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.

<sup>2</sup> When documenting aquatic resources within the review area that are jurisdictional under the Clean Water Act (CWA), use an additional MFR and group the aquatic resources on each MFR based on the TNW, the territorial seas, or interstate water that they are connected to. Be sure to provide an identifier to indicate when there are multiple MFRs associated with a single AJD request (i.e., number them 1, 2, 3, etc.).

<sup>3</sup> 33 CFR 331.2.

<sup>4</sup> Regulatory Guidance Letter 05-02.

<sup>5</sup> USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

## CENWO-ODR-C

SUBJECT: 2023 Rule, as amended, Approved Jurisdictional Determination in Light of *Sackett v. EPA*, 143 S. Ct. 1322 (2023), [NWO-2025-00443-DEN](#)

as well as other applicable guidance, relevant case law, and longstanding practice in evaluating jurisdiction.

### 1. SUMMARY OF CONCLUSIONS.

- a. The review area is comprised entirely of dry land (i.e., there are no waters such as streams, rivers, wetlands, lakes, ponds, tidal waters, ditches, and the like in the entire review area and there are no areas that have previously been determined to be jurisdictional under the Rivers and Harbors Act of 1899 in the review area). [National Wetlands Inventory mapping shows a PEM1A polygon in the southwest corner of the review area. Additionally, there is a National Hydrography Dataset polyline in the southwest corner of the review area. A review of Google Earth aerial imagery and Google Street View indicate that the review area, including the southwest corner, does not contain a feature with a defined bed, bank, or ordinary high water mark. Additionally, the wetland determination data form provided in the aquatic resource delineation report, authored by DUDEK, dated July 2024, shows the southwest corner of the review area to be dominated by upland species and lacking hydric soils. As such, the Corps has determined that the review area is comprised entirely of dry land.](#)

### 2. REFERENCES.

- a. "Revised Definition of 'Waters of the United States,'" 88 FR 3004 (January 18, 2023) ("2023 Rule")
- b. "Revised Definition of 'Waters of the United States'; Conforming" 88 FR 61964 (September 8, 2023)
- c. *Sackett v. EPA*, 598 U.S. 651, 143 S. Ct. 1322 (2023)

### 3. REVIEW AREA. [The 36-acre review area is located at approximate latitude 39.92195479, longitude -104.5433934, Adams County, Colorado.](#)

### 4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), THE TERRITORIAL SEAS, OR INTERSTATE WATER TO WHICH THE AQUATIC RESOURCE IS CONNECTED. [N/A](#)<sup>6</sup>

---

<sup>6</sup> This MFR should not be used to complete a new stand-alone TNW determination. A stand-alone TNW determination for a water that is not subject to Section 9 or 10 of the Rivers and Harbors Act of 1899 (RHA) is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established.

CENWO-ODR-C

SUBJECT: 2023 Rule, as amended, Approved Jurisdictional Determination in Light of *Sackett v. EPA*, 143 S. Ct. 1322 (2023), [NWO-2025-00443-DEN](#)

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, THE TERRITORIAL SEAS, OR INTERSTATE WATER. [N/A](#)
6. SECTION 10 JURISDICTIONAL WATERS<sup>7</sup>: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10.<sup>8</sup> [N/A](#)
7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the 2023 Rule as amended, consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the 2023 Rule as amended. The rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.
  - a. Traditional Navigable Waters (TNWs) (a)(1)(i): [N/A](#)
  - b. The Territorial Seas (a)(1)(ii): [N/A](#)
  - c. Interstate Waters (a)(1)(iii): [N/A](#)
  - d. Impoundments (a)(2): [N/A](#)
  - e. Tributaries (a)(3): [N/A](#)
  - f. Adjacent Wetlands (a)(4): [N/A](#)

---

<sup>7</sup> 33 CFR 329.9(a) A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) of this part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions.

<sup>8</sup> This MFR is not to be used to make a report of findings to support a determination that the water is a navigable water of the United States. The district must follow the procedures outlined in 33 CFR part 329.14 to make a determination that water is a navigable water of the United States subject to Section 10 of the RHA.

## CENWO-ODR-C

SUBJECT: 2023 Rule, as amended, Approved Jurisdictional Determination in Light of *Sackett v. EPA*, 143 S. Ct. 1322 (2023), [NWO-2025-00443-DEN](#)

g. Additional Waters (a)(5): [N/A](#)

### 8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

a. Describe aquatic resources and other features within the review area identified in the 2023 Rule as amended as not “waters of the United States” even where they otherwise meet the terms of paragraphs (a)(2) through (5). Include the type of excluded aquatic resource or feature, the size of the aquatic resource or feature within the review area and describe how it was determined to meet one of the exclusions listed in 33 CFR 328.3(b).<sup>9</sup> [N/A](#)

b. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the 2023 Rule as amended (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water). [N/A](#)

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

a. [Aquatic Resources Delineation Report, prepared by DUDEK, dated July 2024.](#)

b. [Google Earth Aerial Imagery \(1993-2024\)](#)

c. [Google Street View \(Accessed March 25, 2025\)](#)

d. [National Hydrography Dataset \(Accessed March 25, 2025\)](#)

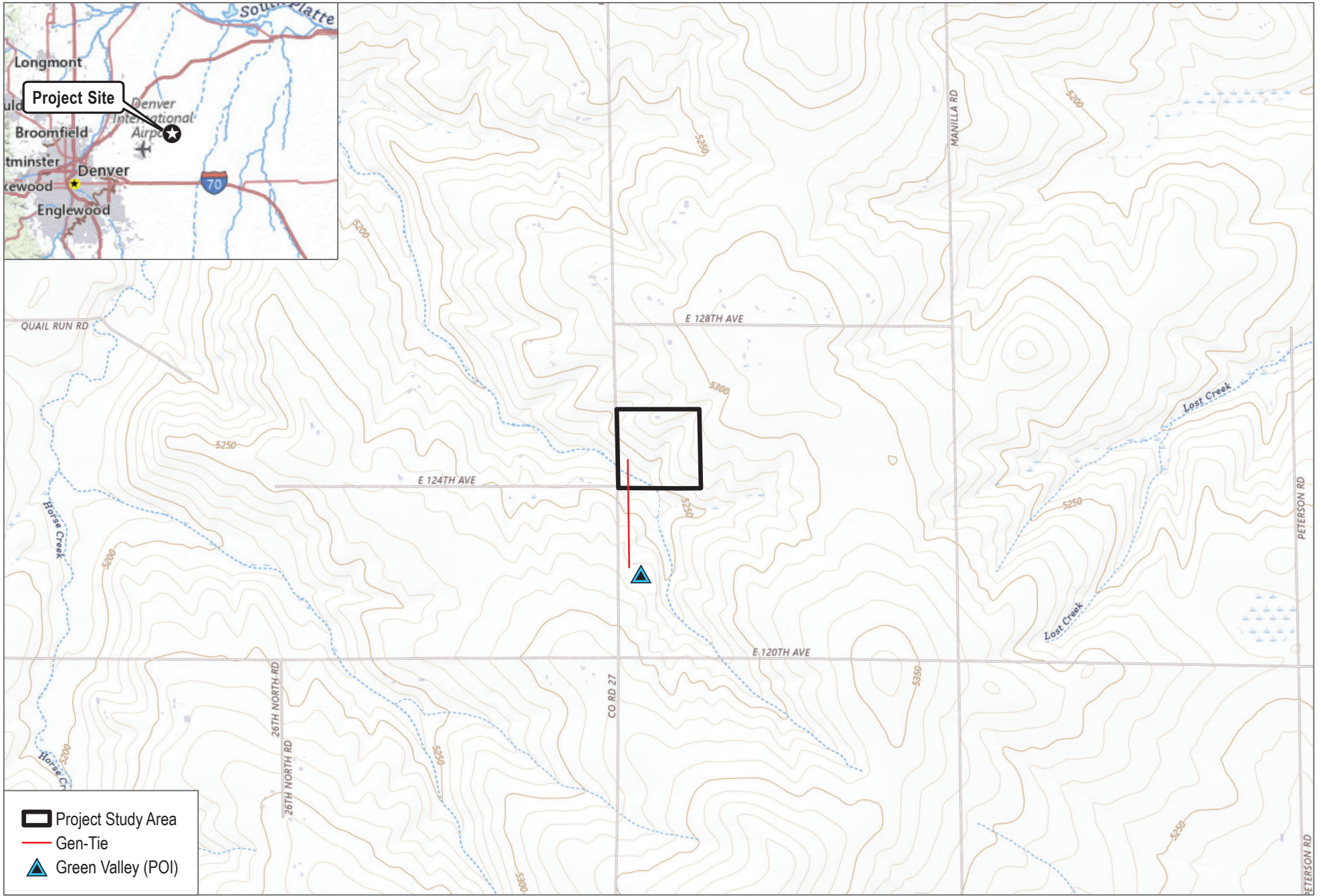
e. [National Wetland Inventory \(Accessed March 25, 2025\)](#)

10. OTHER SUPPORTING INFORMATION. [N/A](#)

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR’s structure and format may be subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

---

<sup>9</sup> 88 FR 3004 (January 18, 2023)





SOURCE: USGS National Map 2024  
 Horse Creek Quadrangle - Township 1S Range 64W Section 34



**FIGURE 1**  
 Project Location



-  Project Study Area
-  Sampling Point (SP-01)

Cavanaugh Rd

SOURCE: Maxar 2023

**FIGURE 5**  
Aquatic Resource Delineation  
ARDR - Prairie Pass Energy Storage System

---

Biological Assessment Report

# **Prairie Pass Energy Storage System Project Adams County, Colorado**

---

**JUNE 2024**

*Prepared for:*

**JUPITER POWER LLC**  
1003 Rio Grande Street  
Austin, Texas 78701  
*Contact: Kurt Nelson*

*Prepared by:*

**DUDEK**

1001 Bannock Street, Suite 227  
Denver, Colorado 80204  
*Contact: Michelle Leis*



---

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# Acronyms and Abbreviations

Acronym/Abbreviation	Definition
CPW	Colorado Parks and Wildlife
project	Prairie Pass Energy Storage System Project
PSA	project study area
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

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# 1 Introduction

This report presents the findings of a biological assessment conducted by Dudek for the Prairie Pass Energy Storage System Project (project). The purpose of this assessment is to evaluate existing biological conditions and potential impacts associated with the project to sensitive biological resources within the project study area (PSA). This report was prepared at a level of detail sufficient to provide recommendations for further surveys that may or may not be needed for each plant or wildlife species that has the potential to occur within the PSA pending consultation with the wildlife agencies (U.S. Fish and Wildlife Service [USFWS] and Colorado Parks and Wildlife [CPW]).

## 1.1 Project Description

The project is the proposed development of an energy storage system facility within one privately owned parcel of land (parcel ID: 0156534200004) in unincorporated Adams County, Colorado.

## 1.2 Project Location

The PSA is located approximately 5 miles northeast of the Denver International Airport, at the intersection of Cavanaugh Road and East 124th Avenue (Figure 1, Project Location). The PSA is primarily used as grazing lands with dirt roads and a single-family residence in the northern section. Transmission lines run along the southern project boundary, and there is one plugged and abandoned oil and gas well on the PSA's western boundary.

- County: Adams
- U.S. Geological Survey 7.5-Minute Quadrangle: Horse Creek
- Latitude, Longitude: 39.92195479°N, -104.5433934°W (Centroid)
- Elevation Range: 5,235 to 5,287 feet above mean sea level
- PSA: 36 acres

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## 2 Methods

### 2.1 Literature Review

The following data sources were reviewed to assist with the assessment of biological and aquatic resources:

- Aerial photographs (Google Earth 2024)
- Federal Emergency Management Agency’s National Flood Hazard Layer (FEMA 2024)
- Colorado Natural Heritage Program Tracking List for Adams County (CNHP 2024a)
- Colorado Conservation Data Explorer (CNHP 2024b)
- U.S. Department of Agriculture’s Natural Resources Conservation Service Web Soil Survey (USDA 2024a)
- U.S. Geological Survey National Hydrography Dataset and Watershed Boundary Dataset (USGS 2024)
- USFWS Critical Habitat and Species Occurrence Data (USFWS 2021)
- USFWS Information for Planning and Consultation (USFWS 2024a)
- USFWS National Wetlands Inventory (USFWS 2024b)

### 2.2 Field Reconnaissance

Dudek biologists conducted a general biological reconnaissance field survey (reconnaissance survey) of the PSA on June 13, 2024 (see Table 1). Meandering transects were walked throughout the PSA, and representative sample points were used for the habitat assessment. The purpose of the reconnaissance survey was to verify previously mapped existing vegetation communities and land covers, identify commonly occurring plant and wildlife species, identify plant and wildlife species protected under the federal Endangered Species Act, and determine the likelihood of occurrence of any special-status plant or wildlife species. Representative field photos are provided as Appendix A, Representative Photos.

**Table 1. Survey Details and Conditions**

Date	Personnel	Survey Type	Survey Conditions (Temperature, Skies, Wind)
06/13/24	Michelle Leis	Reconnaissance Survey and Jurisdictional Delineation	95 °F–95 °F; 30% to 40% cloud cover; 8 to 15 mph winds

**Note:** mph = miles per hour.

#### 2.2.1 Vegetation Community and Land Cover Mapping

Vegetation communities and land uses within the PSA were verified in the field using Esri Collector, a mobile data collection application, on a digital aerial-based background (Esri 2024). Following completion of the fieldwork, all vegetation linework was finalized using Esri ArcGIS software and a GIS coverage was created. Once in ArcGIS, the acreage of each vegetation community and land cover type within the PSA was determined. Vegetation communities were classified based on site factors, descriptions, distribution, and characteristic species present within an area.

## 2.2.2 Plants

All plant species encountered during the reconnaissance survey were identified and recorded. Potential for special-status plant species to occur within the PSA was assessed based on known geographic and elevation ranges, as well as habitat and soil conditions that are known to support species occurring in the region. All plant species encountered were identified to the taxonomic level appropriate to determine species and regulatory status, if needed. The list of plant species observed in the PSA is provided as Appendix B, Plant Species Compendium.

## 2.2.3 Wildlife

All wildlife species as detected during the reconnaissance survey by sight, calls, tracks, scat, or other signs were identified and recorded. Binoculars (10 magnification × 48 millimeters) were used to aid in the identification of observed wildlife. No trapping or focused surveys for special-status species or nocturnal species were conducted. In addition to species observed in the field, expected wildlife usage of the PSA was determined according to known habitat preferences of regional wildlife species and knowledge of their relative distributions in the area. Latin and common names for wildlife species referred to in this report follow Crother (2017) for reptiles and amphibians, the American Ornithological Society's Checklist for birds (AOS 2023), and Wilson and Reeder (2005) for mammals. Potential for special-status wildlife species to occur within the PSA was assessed based on known geographic ranges, the presence/absence of suitable habitat, and other natural history elements that might predict their occurrence. The list of wildlife species observed in the PSA is provided as Appendix C, Wildlife Species Compendium.

## 2.2.4 Special-Status Plant and Wildlife Species Assessment

Endangered, rare, or threatened plant and wildlife species are referred to as “special-status species” and, as used in this report, include plant and animal species listed, proposed for listing, or candidates for listing as endangered or threatened recognized in the context of the federal Endangered Species Act (Appendix D, USFWS Information for Planning and Consultation Results) and species listed as critically imperiled, imperiled, vulnerable to extirpation, Colorado State endangered, Colorado State threatened, or Colorado State special concern for Adams County (Appendices E, Species Tracking List for Adams County, and F, Colorado Conservation Data Explorer Results).

## 2.2.5 Aquatic Resources Delineation

An aquatic resources delineation per U.S. Army Corps of Engineers (USACE) guidelines was conducted in conjunction with the reconnaissance survey. The field component of the aquatic resources delineation used methodology described in the USACE Wetlands Delineation Manual (USACE 1987) and the USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE 2010). Non-wetland waters of the United States were delineated based on the presence of an ordinary high-water mark, as determined using the methodology in the National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams (USACE 2022). Potential aquatic resources were recorded using Esri Field Maps on a mobile device and a Trimble R1 Global Navigation Satellite System Receiver with submeter accuracy. Following the field work, aquatic resources were digitized using ArcGIS. A detailed discussion of these methods is included in the separate Aquatic Resources Delineation Report for the Prairie Pass Energy Storage System Project (Dudek 2024).

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# 3 Results

## 3.1 Environmental Setting

### 3.1.1 Land Use

The PSA lies near the center of unincorporated Adams County in northeastern Colorado. The PSA is approximately 5 miles northeast of the Denver International Airport. The PSA predominantly consists of land currently used for grazing with a single-family residence present in the northern portion. Lands adjacent to the PSA are used for a combination of grazing and agricultural operations with rural homes scattered throughout. The Green Valley Substation is located directly south of the PSA.

### 3.1.2 Climate

The project region has a cold semiarid climate with steppe precipitation, and it is prone to drought (Kottek et al. 2006). July is the average warmest month, with an average high temperature of 88°F, and January is the coolest month on average, with an average low temperature of 17°F. Rainfall occurs primarily April through August, with the maximum average precipitation occurring in May. The mean annual precipitation for the region is approximately 15.4 inches per year (WRCC 2023).

### 3.1.3 Soil and Terrain

The PSA generally slopes from northeast to southwest. Elevation across the PSA ranges from approximately 5,235 to 5,287 feet above mean sea level.

According to the U.S. Department of Agriculture's Natural Resources Conservation Service Web Soil Survey, two soil types and associations occur within the PSA (see Figure 2, Soils, and Table 2): Wiley–Adena–Renohill complex, 3% to 20% slopes, and Adena–Colby association, gently sloping. Neither of these soil types are classified as hydric, which is defined by the U.S. Department of Agriculture as soils formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA 2024a). Following are descriptions of the soil types (USDA 2024a):

- **Adena Series** consists of very deep, well-drained, slow or medium permeable soils formed in eolian materials. These slopes are nearly level to very gently sloping. Slopes range from 0% to 3%.
- **Colby Series** consists of very deep, well-drained and somewhat excessively drained, moderately permeable soils that formed in loess. Colby soils are on plains and hillslopes on tableland in the Central High Tableland (MLRA 72). Slopes are gentle and moderate.
- **Renohill Series** consists of well-drained soils that are moderately deep to soft bedrock. These soils formed in alluvium, colluvium, and residuum. Renohill soils are on bedrock controlled plateaus, alluvial fans, hills and ridges. Slopes range from 2% to 20%.
- **Wiley Series** consists of very deep, well-drained, moderately slowly permeable soils formed in thick, calcareous loess. Wiley soils are on hills, plains, ridges, terraces, and valley side slopes. These soils are on nearly level to very gently sloping eolian plains. Slopes range from 0% to 2%.

**Table 2. Summary of Soil Units in the Project Study Area**

Soil Map Unit Name	Landform	Drainage Class	Acres
Adena–Colby association, gently sloping	Found in eolian materials and plains and hillslopes on tableland	Well drained	13
Wiley–Adena–Renohill complex, 3% to 20% slopes	Nearly level to very gently sloping eolian plains	Well drained	23

Source: USDA 2024a.

### 3.1.4 Hydrology and Watershed

The PSA occurs within the Horse Creek Reservoir–Horse Creek subwatershed (USGS Hydrologic Unit Code 12; 101900030802) of the Middle South Platte–Cherry Creek subbasin (see Figure 3, Hydrology). The National Wetlands Inventory maps a freshwater emergent wetland and a riverine feature within the southwest corner of PSA (USFWS 2024b; Figure 3). The National Hydrography Dataset maps a stream/river flowline that follow the riverine feature that is mapped as part of the National Wetlands Inventory (USGS 2024). The National Wetlands Inventory/National Hydrography Dataset features were field-verified as part of the jurisdictional delineation for the PSA (Dudek 2024).

## 3.2 Vegetation Communities and Land Covers

One vegetation community, non-native grassland (33.17 acres), and one land cover type, disturbed (3.19 acres), were mapped by Dudek within the PSA. Figure 4, Vegetation and Land Cover Types, illustrates the distribution of vegetation communities and land covers, and Table 3 provides a summary of each within the PSA. Descriptions of the vegetation community and land cover types are provided in detail below.

**Table 3. Vegetation Community and Land Cover Types within the Project Study Area**

Vegetation Community/Land Cover Type	Total Acreage
Non-native Grassland	33.17
Disturbed	3.19
<b>Total</b>	<b>36.36</b>

### 3.2.1 Vegetation Communities

#### Non-native Grassland

Non-native grassland is present in the northwestern corner as well as the entire southern portion of the PSA. This vegetation type is predominantly composed of non-native annual grasses such as *Avena*, *Bromus*, *Erodium*, *Brassica*, and other annual species. Within the PSA, this community is dominated by cheatgrass (*Bromus tectorum*), ripgut brome (*Bromus diandrus*), smooth brome (*Bromus inermis*), and cereal rye (*Secale cereale*), which was introduced by the landowner for grazing purposes.

## 3.2.2 Land Cover Types

### Disturbed

Within the PSA, disturbed land takes the form of a single-family residence and a paved road leading from Cavanaugh Road to the residence. Various livestock enclosures are located to the east of the residence with various non-native ornamental species, such as lilac bush (*Aubrieta deltoidea*) and Nanking cherry (*Prunus tomentosa*), planted throughout. A variety of tree species were also planted around the residence to provide privacy. These species included American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoides*), and bur oak (*Quercus macrocarpa*).

## 3.3 Aquatic Resources Delineation

The aquatic resources delineation did not identify any aquatic resources within the PSA. During the field delineation, potential aquatic features that were identified during the aerial imagery pre-field assessment and literature review were examined in the field. These features, however, were ruled out due to the lack of positive indicators, as defined in the USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE 2010) and the National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams (USACE 2022). Detailed results can be found in the separate Aquatic Resources Delineation Report for the Prairie Pass Energy Storage System Project (Dudek 2024).

## 3.4 Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the migration of animals. Corridors can also be aquatic resources that provide passage for fish. Habitat linkages are small patches that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation; they may be continuous habitat or discrete habitat islands that function as stepping stones for wildlife dispersal.

The PSA is approximately 9 miles east of Barr Lake State Park, which provides habitat for 350 species of migratory and resident birds, including suitable overwintering habitat for bald eagles (*Haliaeetus leucocephalus*), with one known pair that stays year-round to breed. Additionally, mule deer (*Odocoileus hemionus*) and white-tailed deer (*Odocoileus virginianus*) are known to frequent the park (CPW 2024). Development between the park and the PSA is limited, meaning the PSA may be used as a wildlife corridor and for foraging migratory birds and deer species that may be migrating to and from the park. Rocky Mountain Arsenal National Wildlife Refuge is approximately 11.5 miles west of the PSA. Common wildlife observed in the refuge includes migrating birds, black-tailed prairie dog (*Cynomys ludovicianus*), black-footed ferret (*Mustela nigripes*), burrowing owl (*Athene cunicularia*), and American bison (*Bos bison*) (USFWS 2024c). However, access to the PSA for terrestrial wildlife is blocked by the Denver International Airport, making it unlikely that terrestrial species within the refuge would migrate through the PSA. It would be possible for bird species, including burrowing owls, to migrate between the refuge and the PSA. Lands to the north, east, and south of the PSA are largely undeveloped, with agriculture being the predominant use, allowing wildlife to migrate from the east through the PSA without much habitat fragmentation.

The Crucial Habitat Assessment Tool map was developed in 2013 in collaboration with the Western Governors' Association and 18 other states. The purpose was to create a regional spatial data tool to identify crucial wildlife habitat across the western United States. The Colorado State Wildlife Action Plan created a map of Colorado's

Species of Greatest Conservation Need as part of Colorado’s Crucial Habitat Assessment Tool efforts to identify crucial habitats for Species of Greatest Conservation Need throughout the state (CPW 2015). Crucial habitats are places containing the resources, including food, water, cover, shelter, and important wildlife corridors, that are necessary for the survival and reproduction of aquatic and terrestrial wildlife and to prevent unacceptable declines, or facilitate future recovery of wildlife populations, or are important ecological systems with high biological diversity value. The Colorado State Wildlife Action Plan created five categories, with category 1 being the most fragile. The entire PSA is category 5, meaning insufficient data is available to make a determination (see Figure 5, Habitat Priority Level).

Because the PSA is currently undeveloped and surrounded almost entirely by undeveloped/agricultural land, it is likely that terrestrial wildlife will be impacted by project activities. The large wilderness and undeveloped areas surrounding the PSA will remain available for use by terrestrial wildlife during and after project activities, providing nearby refuge for displaced wildlife. Paved roads and dirt roads to access the PSA and the adjacent substation are already present and are expected to be used by wildlife, primarily during twilight hours or at night when vehicle traffic in the area is low. Although there might be an increase in traffic during construction activities, additional traffic during project operation would occur mainly during daylight hours and is anticipated to be minimal and not significant enough to increase impacts to terrestrial wildlife movement in the area. Fencing around the PSA during and after construction may also impede terrestrial wildlife movement, but by referencing the CPW publication *Fencing with Wildlife in Mind* (Hanophy 2009) during fencing design, impacts should be minimal.

## 3.5 Other Areas of Conservation Concern

The PSA is not within any mapped critical habitats, and there are currently no habitat conservation plans for Adams County, Colorado (USFWS 2024a). Also, because the PSA is within unincorporated Adams County, the Parks, Open Space and Trails Master Plan (County of Adams 2022) is not applicable.

## 3.6 Plants

A total of 19 species of vascular plants, including 6 native species, were recorded during the reconnaissance survey (Appendix B). No special-status plant species were observed during the reconnaissance survey.

### 3.6.1 Special-Status Plant Species

According to the USFWS Information for Planning and Consultation report (USFWS 2024a), the Colorado Natural Heritage Program Tracking List for Adams County (CNHP 2024a), and Colorado’s Conservation Data Explorer (CNHP 2024b), there are 12 special-status plant species that have the potential to occur within the PSA (Appendices D, E, and F). Site-specific information gathered during the reconnaissance survey, such as the location of the site, vegetation communities and soils present, current site conditions, species’ known range, habitat preferences, and knowledge of the species’ relative distributions in the area, were used to determine each species’ potential to occur within the PSA. After the reconnaissance survey, three special-status plants were determined to have low potential to occur within the PSA due to the presence of suitable habitat. Table 4 summarizes the regulatory status, habitat, and blooming period for all of the species that have the potential to occur in the PSA. Mitigation measures for special-status plants should follow the measures discussed in Section 4.1.1, Special-Status Plant Species.

**Table 4. Special-Status Plant Species Occurrence Potential in the Project Study Area**

Scientific Name	Common Name	Status (Federal/State)	Habitat/Blooming Period	Potential to Occur
<i>Ammannia robusta</i>	grand redstem	None/S2	Found in drying mud and sand flats, ditches, rice fields, freshwater marshes, margins of pools and lakes. Blooming period is May through November.	<b>No potential to occur.</b> Suitable habitat is not present within the PSA.
<i>Asclepias uncialis</i>	dwarf milkweed	None/S2	Flat to gently sloping terrain lacking micro-topographic features. Often found at the base of mesas or escarpments, but not along rock ledges or outcroppings. Found in soils characterized by dry, warm conditions, and non-restrictive to soil types. Associated with shortgrass prairie species found in open spaces between grass clumps. Blooming period begins in early May in southern Colorado.	<b>Low potential to occur.</b> Suitable habitat is present within the PSA.
<i>Bergia texana</i>	Texas bergia	None/S2	Muddy or sandy shores and flats, emergent shorelines of rivers, lakes, playas, pools, ditches, ponds. Blooming period is June through September.	<b>No potential to occur.</b> Suitable habitat is not present within the PSA.
<i>Dalea cylindriceps</i>	Andean Prairie-clover	None/S2S3	Dunes, sandy prairies, and sand or gravel banks along rivers or intermittent streams. Blooming period is May through September.	<b>No potential to occur.</b> Suitable habitat is not present within the PSA.
<i>Oenothera coloradensis</i>	Colorado butterfly plant	None/S2	Typically found in early- to mid-succession riparian habitat, including streamside, within a floodplain and spring-fed wet meadows. Vegetation is open and not highly dense or overgrown. Flat to sloping floodplains and drainage bottoms. Blooming period is late June to early October.	<b>No potential to occur.</b> Suitable habitat is not present within the PSA.
<i>Platanthera praeclara</i>	western prairie fringed orchid	FT/None	Found in wet tallgrass prairies and sedge meadows; well-adapted to survive fires. Can be found in wetlands and rural, flat rural pastures. Blooming period is mid-June to early July.	<b>No potential to occur.</b> Suitable habitat is not present within the PSA.
<i>Ribes americanum</i>	American currant	None/S2	Open woods, thickets, marshy sites, and stream banks. Blooming period is April through June.	<b>No potential to occur.</b> Suitable habitat is not present within the PSA.

**Table 4. Special-Status Plant Species Occurrence Potential in the Project Study Area**

Scientific Name	Common Name	Status (Federal/State)	Habitat/Blooming Period	Potential to Occur
<i>Salix famelica</i>	starved willow	None/S1	Prairies, meadows, fields, and riparian areas. Blooming period is March through May.	<b>No potential to occur.</b> Suitable habitat is not present within the PSA.
<i>Schoenoplectus saximontanus</i>	Rocky Mountain bulrush	None/S1	Damp soils to emergent, freshwater ponds, ditches, often drying, disturbed and sandy areas. Blooming period is March through November.	<b>No potential to occur.</b> Suitable habitat is not present within the PSA.
<i>Spiranthes diluvialis</i>	Ute ladies' tresses	FT/S2	Associated with wet environments, including alkaline wetlands, meadows, floodplains, spring-fed stream channels and valleys, flooded river terraces, lakeshores, irrigation canals, berms, levees, and irrigated meadows. Blooming period is July through October.	<b>No potential to occur.</b> Suitable habitat is not present within the PSA.
<i>Vernonia baldwinii</i>	Baldwin's ironweed	None/S2	Disturbed sites; open woods; fields. Blooming period is July through November.	<b>Low potential to occur.</b> Suitable habitat is present within the PSA.
<i>Viola pedatifida</i>	prairie violet	None/S2	Prairies and dry openings. Blooming period is March through June.	<b>Low potential to occur.</b> Suitable habitat is present within the PSA.

**Sources:** CNHP 2024a, 2024b; LBJWC 2024; Missouri Department of Conservation 2008; NatureServe Explorer 2024; USFS 2016; USFWS 2018, 2024a, 2024c.

**Note:** PSA = project study area.

**Status Abbreviations**

None: No status

**Federal**

FT: Federally threatened

**State**

S1: Critically imperiled because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation or extinction. Typically 5 or fewer occurrences or less than 1,000 remaining individuals.

S2: Imperiled because of rarity or because of some factor(s) making it very vulnerable to extirpation or extinction. Typically 6 to 20 occurrences or between 1,000 and 3,000 remaining individuals.

S2S3: Used to indicate the range of uncertainty about the exact status of the element. In this case the species status is between imperiled and vulnerable.

### 3.7 Wildlife

A total of 10 wildlife species were recorded in the PSA during the reconnaissance survey (Appendix C). No special-status species were observed during the reconnaissance survey.

### 3.7.1 Special-Status Wildlife Species

Based on database reviews, 21 special-status wildlife species have the potential to occur within the PSA (Appendices D, E, and F). For each species listed, a determination was made regarding potential use within the PSA based initially on desktop (Google Earth 2024) and document review. After initial desktop and document review, site-specific information was gathered during the reconnaissance survey to justify or update special-status species' potential to occur. Data were collected and verified, which included location of the PSA, vegetation communities and land covers, soils present, current site conditions, each species' known range, species' habitat preferences, and knowledge of the species' relative distributions in the area. After the reconnaissance survey, 13 special-status species were determined to have no potential to occur, roost, forage, or nest due to lack of aquatic resources and/or inadequate vegetation communities present.

Eight special-status species have a low potential to occur, nest, or forage, within the PSA. Table 5 summarizes the regulatory status, habitat, and potential for each of the species that has potential to occur in the PSA. Mitigation measures for these species should follow the measures discussed in Section 4.1.2, Special-Status Wildlife Species.

**Table 5. Special-Status Wildlife Species Occurrence Potential in the Project Study Area**

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
<b>Amphibians</b>				
<i>Lithobates pipiens</i>	northern leopard frog	None/S3, SC	Inhabit wet meadows and the banks of marshes, ponds, glacial kettle ponds, lakes, reservoirs, streams, and irrigation ditches that occur at elevations of 3,000 to 12,000 feet. Typically found along water edges, but are capable of extensive roaming in damp meadows or during moderate wet weather.	<b>No potential to occur.</b> Suitable habitat for this species is not present within the PSA.
<b>Birds</b>				
<i>Aquila chrysaetos</i>	golden eagle	FP/None	Occupy a variety of habitats in western United States depending on season, including grasslands, alpine, desert, riparian, and shrub-steppe landscapes. Associated with areas with high topographic relief, except during non-breeding season. Less frequently seen in urban, agricultural, or forested areas. Wintering eagles found in variable	<b>No potential to nest; low potential to forage.</b> Suitable nesting habitat is not present within the PSA. However, the species may use the grasslands within the PSA for foraging.

**Table 5. Special-Status Wildlife Species Occurrence Potential in the Project Study Area**

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
			terrain based on prey and perch availability.	
<i>Athene cunicularia</i>	burrowing owl	None/ST	Inhabit exposed areas that lack overstory and occur within grassland, steppe, and desert habitats during the breeding season. Generally, occupy gently sloping areas that are characterized by low, sparse vegetation; often associated with high presence of burrowing mammals, such as prairie dogs. Can inhabit areas impacted by human development, such as golf courses, agricultural fields, airports, urban lots, and fairgrounds.	<b>Low potential to nest and forage.</b> Proximity to Denver International Airport and disturbed agriculture lands make it likely this species could use the PSA for nesting and foraging. There was an overall lack of small mammal burrows within the PSA that would be suitable for nesting but that could change during construction if current fencing is removed and the presence of domestic animals is no longer deterring small mammals from occupying the PSA.
<i>Buteo regalis</i>	ferruginous hawk	None/SC, S3	Occupy extensive, rolling grasslands; pinyon-juniper habitat edges; or shrub-steppe regions during the breeding season. Will seek sparse riparian forests, canyons that are characterized by cliffs and rock outcrops, and sparse trees or groves in grassland and shrub-steppe habitats for nesting. Winter habitat use in Colorado is positively associated with black-tailed prairie dogs.	<b>No potential to nest; low potential to forage.</b> No nesting habitat is present within the PSA. However, surrounding lands could provide suitable nesting habitat making it possible this species could use the PSA for opportunist foraging.
<i>Charadrius melodus</i>	piping plover	FT/None	Found in wide, lightly vegetated gravel or sand beaches adjacent to alkali lakes in their breeding range. Along rivers, plovers can occupy beaches, sand flats, dredge islands, and drained river floodplains that are characterized by sparse	<b>No potential to nest or forage.</b> Alkali lakes, beaches, sand flats, and other habitat required by this species associated with aquatic resources are not present within or adjacent to the PSA.

**Table 5. Special-Status Wildlife Species Occurrence Potential in the Project Study Area**

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
			vegetation. Overwintering habitat can vary depending on coast lines and available resources, but can include mudflats, lagoons, beaches, bays, and inlets.	
<i>Charadrius montanus</i>	mountain plover	None/SC, S2B	Inhabit flat and open, arid tablelands with short, sparse vegetation. Generally avoid forested or shrubby montane landscapes. Can occupy localized, drier areas, or places characterized by mild disturbance. Also inhabit intensely grazed prairie habitats. In Colorado, nesting habitat occurs in the semideserts west of the shortgrass prairie that can include saltbush, sagebrush, prickly pear, yucca, and cattle and prairie dog activity.	<b>Low potential to nest and forage.</b> Grazed habitats are present within the PSA. Preferred semidesert habitat is not present within the PSA.
<i>Circus hudsonius</i>	northern harrier	None/S3B	Can be found in marsh meadows, open wetlands, grazed pastures and old fields, freshwater and brackish marshes, riparian woodlands, mesic grasslands, drained marshlands, croplands, and cold desert steppe-shrubland. In the west, found primarily in upland, dry habitat.	<b>No potential to nest; low potential to forage.</b> No nesting habitat is present within the PSA. However, surrounding lands could provide suitable nesting habitat, making it possible this species could use the PSA for opportunist foraging.
<i>Egretta thula</i>	snowy egret	None/S2B	Most common along the coast but may breed in inland wetlands. Colonial nesters that tend to concentrate on mudflats, beaches, and wetlands but also forage in wet agricultural fields and along the edges of rivers and lakes.	<b>No potential to nest or forage.</b> Preferred coastal habitat associated with mudflats, beaches, and wetlands are not present within or adjacent to the PSA.
<i>Grus americana</i>	whooping crane	FE/None	Found in wetlands, marshes, riverine systems, flooded	<b>No potential to nest or forage.</b> Preferred

**Table 5. Special-Status Wildlife Species Occurrence Potential in the Project Study Area**

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
			agricultural river bottoms, and harvested corn fields.	nesting habitat associated with marshes and riverine systems are not present within or adjacent to the PSA.
<i>Haliaeetus leucocephalus</i>	bald eagle	FP/SC, S3	Forested areas that are close to riparian corridors or large bodies of water where tree composition for nesting and perches can include deciduous and coniferous species. Some individuals can be found in arid southwest deserts. Can be found in urban environments where there are suitable perching opportunities.	<b>No potential to nest or forage.</b> Preferred nesting and foraging habitat associated with riparian corridors and large bodies of water are not present within or adjacent to the PSA.
<b>Fish</b>				
<i>Scaphirhynchus albus</i>	pallid sturgeon	FE/None	Occur in rivers or streams in large, deep, turbid river channels that are characterized by sand or gravel and have strong currents.	<b>No potential to occur.</b> Aquatic resources required by this species are not present within the PSA.
<b>Mammals</b>				
<i>Cynomys ludovicianus</i>	black-tailed prairie dog	None/SC, S3	In Colorado, reside in grassland regions below 6,000 feet, east of the foothills.	<b>Low potential to occur.</b> Grasslands are present within the PSA. No burrows were observed within the PSA, but that could change during construction if current fencing is removed and the presence of domestic animals is no longer deterring small mammals from occupying the PSA.
<i>Lasiurus borealis</i>	eastern red bat	None/S2S3B	Found in cypress stands, edges of pastures, croplands, or openings characterized with large deciduous trees. Preference for forested regions.	<b>No potential to roost.</b> Croplands with large deciduous trees are not present within the PSA.

**Table 5. Special-Status Wildlife Species Occurrence Potential in the Project Study Area**

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
<i>Mustela nigripes</i>	black-footed ferret	FE/SE, S1	Found in the intermountain prairies and grasslands; occurrence is influenced by large prairie dog colonies.	<b>Low potential to occur.</b> Grasslands are present within the PSA. No burrows were observed within the PSA, but that could change during construction if current fencing is removed and the presence of domestic animals is no longer deterring small mammals from occupying the PSA.
<i>Perimyotis subflavus</i>	tricolored bat	PE/S2	In summer, found in forested habitats for roosting. In winter, can be found in mines and caves; can occur in culverts near roadways in the southern United States.	<b>No potential to roost.</b> Forested habitats, mines, and caves are not found within the PSA.
<i>Perognathus fasciatus</i>	olive-backed pocket mouse	None/S3	Occur in a variety of dry and semiarid upland habitats that are characterized by grasses, sparse vegetation, and sandy to clay soils. Associated with open grasslands, but can also occur in farmlands, grassy rock outcroppings, dry shrublands, and semi-wooded habitat. Entirely fossorial during winter.	<b>Low potential to occur.</b> Grasslands and sparse vegetation are present within the PSA.
<i>Zapus hudsonius preblei</i>	Preble's meadow jumping mouse	FT/ST, S1	Occupy riparian areas and adjacent wet meadows in the winter, and prefer dense shrub, grass, and forb groundcover along creeks, rivers, and associated waterbodies during the summer.	<b>No potential to occur.</b> Riparian areas adjacent to wet meadows and other aquatic resources preferred by this species are not present within the PSA.
<b>Insects</b>				
<i>Celastrina humulus</i>	hops feeding azure	None/S2	Riparian habitat; more prevalent where wild hops exist, along areas where there are willow patches, exposed rock outcrops, and upper floodplain terraces.	<b>No potential to occur.</b> Neither riparian habitat nor wild hops ( <i>Humulus</i> sp.) are not present within the PSA.

**Table 5. Special-Status Wildlife Species Occurrence Potential in the Project Study Area**

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
<i>Danaus plexippus</i>	monarch butterfly	FC/None	Wide range of habitats, including open and roadside areas, wet fields, and urban gardens; highly associated with milkweed and flowering plants.	<b>No potential to occur.</b> Milkweed and flowering plants were not observed within the PSA.
<i>Euphilotes rita coloradensis</i>	Colorado blue	None/S2	Found in transitional grassland prairies, typically undisturbed, with spreading buckwheat ( <i>Eriogonum effusum</i> ) as the host plant.	<b>No potential to occur.</b> Spreading buckwheat is not present within the PSA.
<i>Hesperia ottoe</i>	ottoe skipper	None/S2	Inhabit dry-mesic and dry prairie habitat where the grasses are mid-height and a major component to the vegetation are little bluestem ( <i>Schizachyrium scoparium</i> ), prairie dropseed ( <i>Sporobolus heterolepis</i> ), and sideoats grama ( <i>Bouteloua curtipendula</i> ).	<b>No potential to occur.</b> Dry prairie with grasses that are midweight are not present within the PSA.

**Sources:** CNHP 2024a, 2024b; Cornell University 2024; CPARC 2020; MNDNR 2018; Puntenney and Schorr 2016; USFS 2024; USFWS 2024a; WYGFD 2023.

**Note:** PSA = project study area.

**Status Abbreviations**

None: No status

**Federal**

FC: Federal candidate for listing

FE: Federally endangered

FP: Federally protected

FT: Federally threatened

PE: Proposed endangered

**State**

SC: State species of concern

SE: State listed as endangered

ST: State listed as threatened

S1: Critically imperiled because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation or extinction. Typically 5 or fewer occurrences or less than 1,000 remaining individuals.

S2: Imperiled because of rarity or because of some factor(s) making it very vulnerable to extirpation or extinction. Typically 6 to 20 occurrences or 1,000 to 3,000 remaining individuals.

S2B: Same as S2, but only refers to the breeding population of the species.

S3: Vulnerable either because it is rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation or extinction. Typically 21 to 100 occurrences or 3,000 to 10,000 remaining individuals.

S3B: Same as S3, but only refers to the breeding population of the species.

S2S3B: Used to indicate the range of uncertainty about the exact status of the element. In this case, the rank is between S2 and S3 for the breeding population of the species.

## 3.7.2 Migratory Birds

The PSA supports suitable habitat for nesting bird species. Nesting birds are protected under the Migratory Bird Treaty Act, and compliance with these regulations is required. Removal of vegetation considered suitable for nests has the potential to impact these species. Additionally, indirect impacts to nesting birds from short-term, construction-related noise could result in decreased reproductive success or abandonment of an area used for nesting if conducted during the nesting season (i.e., April through September). Mitigation measures for nesting birds should follow the measures discussed in Section 4.1.2.2, Nesting Bird Surveys.

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# 4 Conclusion and Recommendations

The project has the potential to impact special-status species, including special-status plants, nesting birds, and small mammals. The following further describes potential impacts and potential permitting considerations under state and federal laws.

## 4.1 Special-Status Species

Special-status plant and wildlife species occur or have the potential to occur within the PSA. The following describes the necessary steps to determine the presence of a special-status species and potential permitting implications.

### 4.1.1 Special-Status Plant Species

Three special-status plant species have potential to occur within the PSA (see Table 4). CPW only has jurisdiction over wildlife, so state sensitive plant species have no formal protection. However, it is recommended that floristic surveys of suitable habitat for these species during their respective blooming periods be performed. If a state sensitive plant is observed, CPW should be notified.

### 4.1.2 Special-Status Wildlife Species

Eight special-status wildlife species have a low potential to occur, nest, or forage within the PSA (see Table 5). Additionally, migratory birds have the potential to use the vegetation throughout the PSA for nesting. By implementing the following mitigation measures, impacts to these species should be minimal if unable to be avoided. Coordination with CPW and USFWS should occur early in the development process to ensure no other surveys or best management practices are required.

#### 4.1.2.1 Best Management Practices for Solar Energy Development

CPW has published a list of best management practices for solar energy development that should be followed to avoid, minimize, and/or mitigate for impacts from the development of solar energy facilities (CPW 2021). Although this is an energy storage system as opposed to a solar energy facility, it is still recommended to refer to these best management practices throughout the development process.

- Conduct pre- and post-development surveys that assess and measure wildlife utilization of the site to evaluate how the lost habitat may impact wildlife species.
- Confirm alignment and compliance with Colorado Public Utilities Commission Rule 3668, Environmental Impacts, which requires pre-development wildlife surveys.
- Use previously disturbed lands that are within and adjacent to developed areas to the extent feasible.
- Minimize the project footprint to reduce the impacts to wildlife due to habitat loss and fragmentation.
- Consult with CPW for review and comment on wildlife and habitat survey protocol before the protocol is finalized. The minimum recommended length of study for both pre- and post-construction surveys for utility-scale solar projects is 1 year. It is recommended that pre-construction and construction/post-construction monitoring be conducted using similar methods so that valid comparisons can be made.

- Identify and buffer sensitive wildlife species and high-priority habitat features when considering infrastructure placement and operation, especially during critical nesting periods.
- Limit vehicle speeds to 25 miles per hour on project roads.
- Minimize open trenches and install earthen ramps or cover trenches that need to be open for extended periods.
- Conduct weed control measures in compliance with the Colorado Noxious Weed Act (CRS Section 35-5.5-115) and the current rules pertaining to the administration and enforcement of the Colorado Noxious Weed Act.
- Reference the CPW publication Fencing with Wildlife in Mind when designing project fencing.
- Co-locate new transmission lines with existing transmission lines or infrastructure corridors whenever possible to minimize additional impacts on wildlife and reduce habitat fragmentation.
- Design the site to prevent wildlife access to any artificial water sources associated with the project that could be a risk to wildlife.
- Reclaim areas disturbed by construction and develop long-term decommissioning and reclamation plans in the event that it is decided to decommission any infrastructure of the facility.

#### 4.1.2.2 Nesting Bird Surveys

Vegetation removal and initial ground-disturbing activities should occur outside of the nesting season, which generally takes place April through September, to avoid potential impacts to nesting birds. This would ensure that no active nests would be impacted and allow vegetation removal and project activities to proceed without constraints. If vegetation removal and initial ground-disturbing activities occur during the nesting season, all suitable habitat should be thoroughly surveyed by a qualified avian biologist for the presence of nesting birds before commencement of clearing. If any active nests are detected, a buffer based on species tolerance and agency guidance would be delineated, flagged, and avoided until the nesting cycle is complete, as determined by the qualified avian biologist.

#### 4.1.3 Aquatic Resources

The project does not have the potential to impact state or federally protected waters. However, it is recommended that, prior to project initiation, a meeting with USACE and the Colorado Department of Public Health and Environment be formally set up to confirm the results of the aquatic resources delineation report (Dudek 2024).

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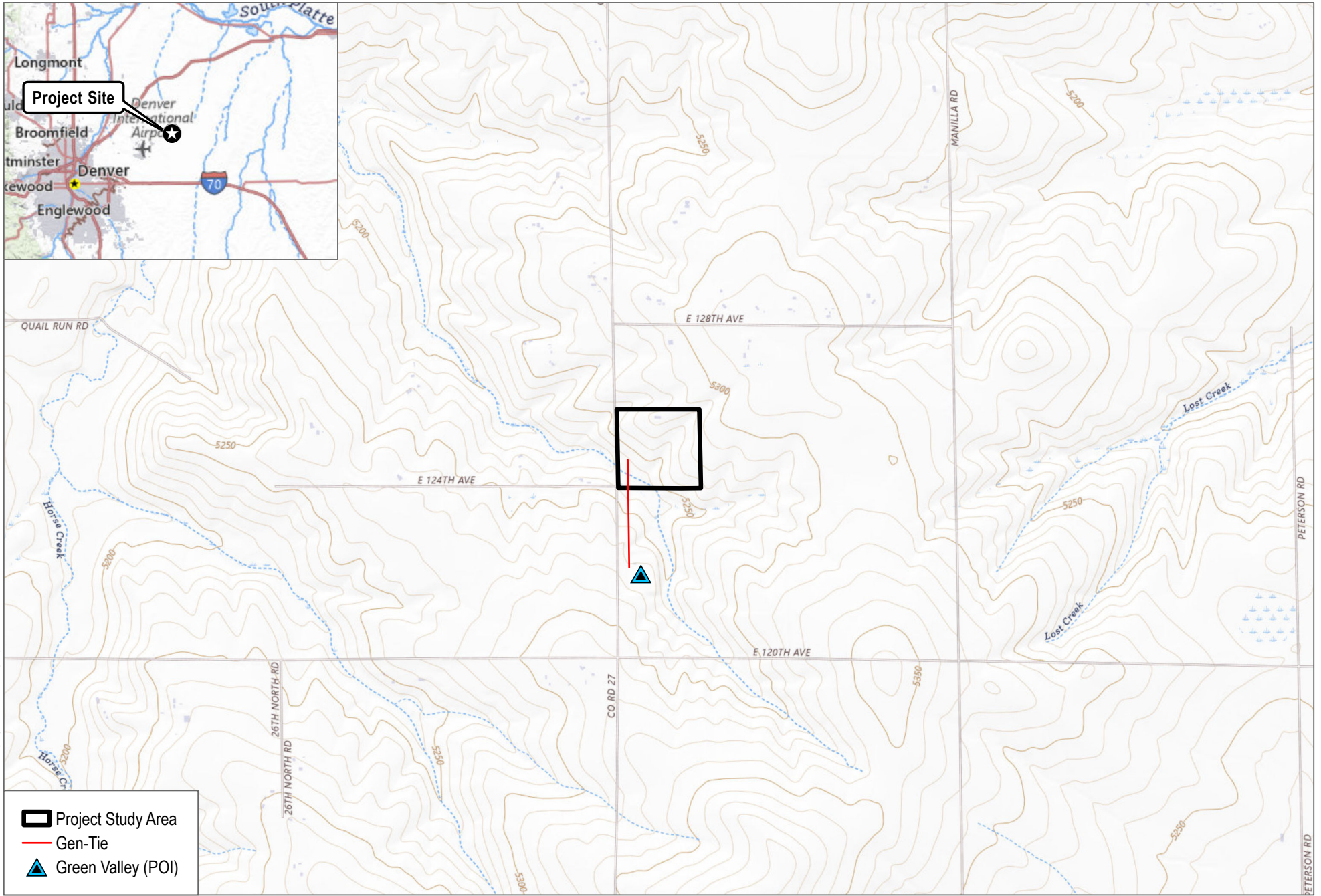
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SOURCE: USGS National Map 2024  
 Horse Creek Quadrangle - Township 1S Range 64W Section 34

**DUDEK**  0 500 1,000 Feet

**FIGURE 1**  
 Project Location

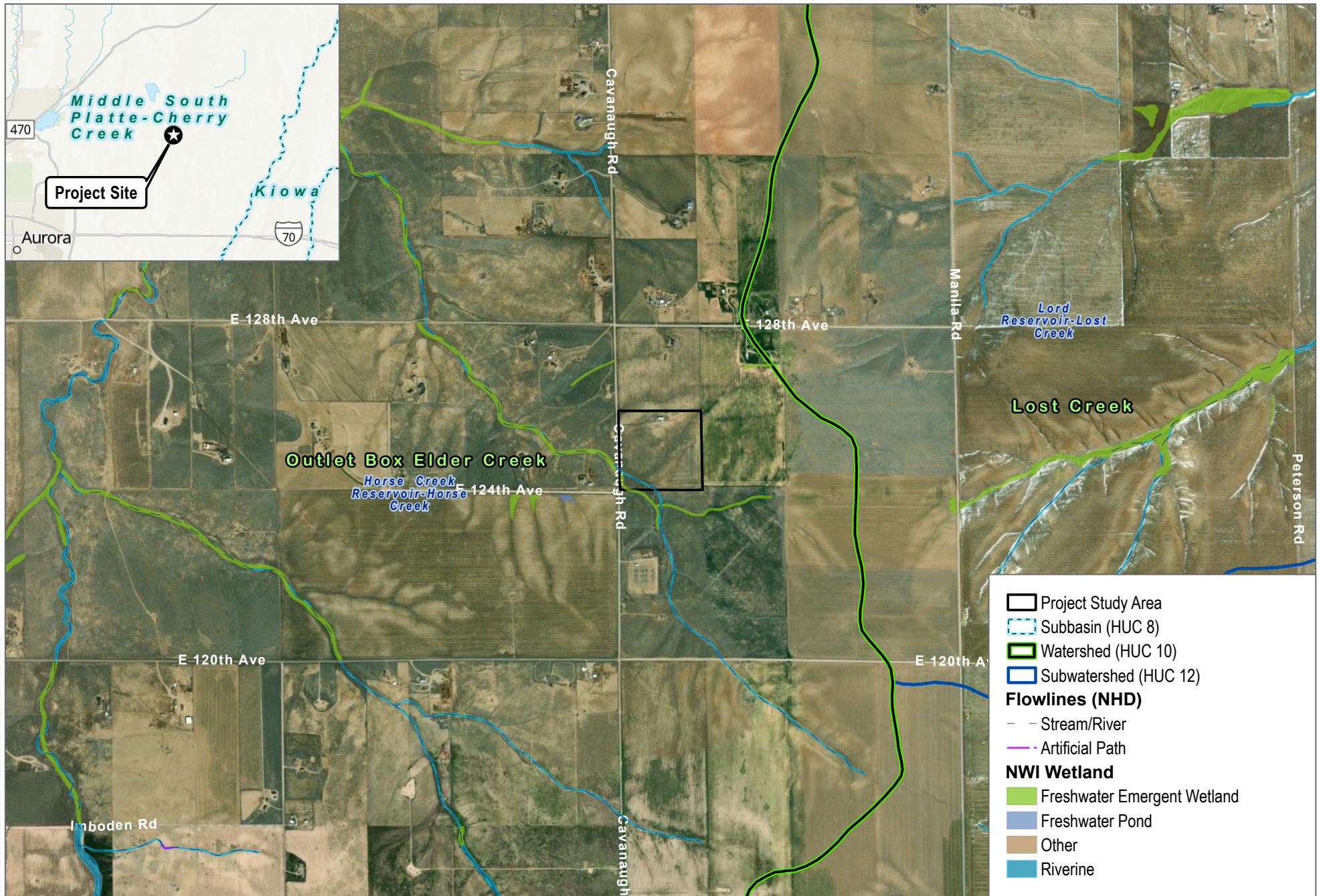
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SOURCE: Maxar 2023; USGS SSURGO

**FIGURE 2**  
Soils

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SOURCE: Maxar 2023; FEMA; USGS NWI



**FIGURE 3**  
Hydrology

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SOURCE: Maxar 2023

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SOURCE: Maxar 2023; CODEX 2015



**FIGURE 5**

**Habitat Priority Level**

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# **Appendix A**

## Representative Photos





**Photo 1.** Representative photo of non-native grassland within the project study area (PSA).



**Photo 2.** Northern side of single-family residence within the disturbed portion of the PSA. Various children toys and equipment were observed throughout this area.



**Photo 3.** Livestock pens were located to the east of the single-family residence.



**Photo 4.** Burrow present within the project site, likely small mammal such as mice or voles, which can be potential prey items for raptors and snakes. Burrow is not large enough to be used by a burrowing owl (*Athene cunicularia*).



**Photo 5.** Mapped National Wetlands Inventory/National Hydrography Dataset riverine feature was determined to not be present within the PSA due to lack of any indicators.



**Photo 6.** Green Valley Substation located south of the PSA. Domestic dog in foreground of picture.

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# **Appendix B**

## Plant Species Compendium



# Vascular Species

## Eudicots

### ASTERACEAE – SUNFLOWER FAMILY

*Helianthus annuus* – common sunflower

### BRASSICACEAE – MUSTARD FAMILY

\* *Sisymbrium irio* – London rocket

\* *Aubrieta deltoidea* – lilac bush

### CHENOPODIACEAE – GOOSEFOOT FAMILY

\* *Bassia hyssopifolia* – fivehorn smotherweed

*Salsola tragus* – prickly Russian thistle

### CONVOLVULACEAE – MORNING GLORY FAMILY

\* *Convolvulus arvensis* – field bindweed

### FABACEAE – LEGUME FAMILY

\* *Gleditsia triacanthos* – honeylocust

### FAGACEAE – OAK FAMILY

\* *Quercus macrocarpa* – bur oak

### MALVACEAE – MALLOW FAMILY

*Sphaeralcea coccinea* – scarlet globemallow

### POLYGONACEAE – BUCKWHEAT FAMILY

\* *Rumex crispus* – curly dock

### ROSACEAE – ROSE FAMILY

\* *Prunus tomentosa* – Nanking cherry

### SALICACEAE – WILLOW FAMILY

*Populus deltoides* – eastern cottonwood

### ULMACEAE – ELM FAMILY

*Ulmus americana* – American elm

### VERBENACEAE – VERVAIN FAMILY

*Verbena bracteata* – bigbract verbena

## Gymnosperms and Gnetophytes

### PINACEAE – PINE FAMILY

- \* *Pinus nigra* – Austrian pine

## Monocots

### POACEAE – GRASS FAMILY

- \* *Bromus diandrus* – ripgut brome
- \* *Bromus inermis* – smooth brome
- \* *Bromus tectorum* – cheatgrass
- \* *Secale cereale* – cereal rye

- \* Signifies introduced (non-native) species

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# **Appendix C**

## Wildlife Species Compendium



# Wildlife Species

## Birds

### **Blackbirds, Orioles, and Allies**

#### ICTERIDAE – BLACKBIRDS

*Euphagus cyanocephalus* – Brewer’s blackbird

*Sturnella neglecta* – western meadowlark

### **Finches**

#### FRINGILLIDAE – FRINGILLINE AND CARDUELINE FINCHES AND ALLIES

*Haemorhous mexicanus* – house finch

### **Pigeons and Doves**

#### PHASIANIDAE – PARTRIDGES, GROUSE, TURKEYS, AND OLD WORLD QUAIL

*Gallus gallus* – red junglefowl

### **Quails, Pheasants and Relatives**

#### COLUMBIDAE – PIGEONS AND DOVES

*Zenaida macroura* – mourning dove

## Mammals

### **Domestic**

#### CANIDAE – WOLVES AND FOXES

\* *Canis familiaris* – domestic dog

#### FELIDAE – CATS

\* *Felis catus* – domestic cat

#### EQUIDAE – HORSES AND BURROS

\* *Equus caballus* – domestic horse

### **Ungulates**

#### BOVIDAE – BISON, GOATS, AND SHEEP

\* *Capra hircus* – domestic goat

## SUIDAE – PIGS

\* *Sus scrofa domesticus* – domestic pig

\* Signifies introduced (non-native) species

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# **Appendix D**

## USFWS Information for Planning and Consultation Results



# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Adams County, Colorado



## Local office

Colorado Ecological Services Field Office

☎ (303) 236-4773

📅 (303) 236-4005

MAILING ADDRESS

Denver Federal Center  
P.O. Box 25486  
Denver, CO 80225-0486

PHYSICAL ADDRESS

1 Denver Federal Center  
Bldg 25 Room W1911}  
Denver, CO 80225-0001

NOT FOR CONSULTATION

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

- 
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

NAME	STATUS
<p>Preble's Meadow Jumping Mouse <i>Zapus hudsonius preblei</i> Wherever found There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. <a href="https://ecos.fws.gov/ecp/species/4090">https://ecos.fws.gov/ecp/species/4090</a></p>	Threatened
<p>Tricolored Bat <i>Perimyotis subflavus</i> Wherever found This species only needs to be considered if the following condition applies:<ul style="list-style-type: none"><li>This species only needs to be considered if the project includes wind turbine operations.</li></ul>No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/10515">https://ecos.fws.gov/ecp/species/10515</a></p>	Proposed Endangered

## Birds

NAME	STATUS
<p>Piping Plover <i>Charadrius melodus</i> This species only needs to be considered if the following condition applies:<ul style="list-style-type: none"><li>Project includes water-related activities and/or use in the N. Platte, S. Platte, and Laramie River Basins which may affect listed species in Nebraska.</li></ul>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. <a href="https://ecos.fws.gov/ecp/species/6039">https://ecos.fws.gov/ecp/species/6039</a></p>	Threatened
<p>Whooping Crane <i>Grus americana</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. <a href="https://ecos.fws.gov/ecp/species/758">https://ecos.fws.gov/ecp/species/758</a></p>	Endangered

## Fishes

NAME	STATUS
<b>Pallid Sturgeon</b> <i>Scaphirhynchus albus</i> Wherever found This species only needs to be considered if the following condition applies: <ul style="list-style-type: none"> <li>Project includes water-related activities and/or use in the N. Platte, S. Platte, and Laramie River Basins which may affect listed species in Nebraska.</li> </ul> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/7162">https://ecos.fws.gov/ecp/species/7162</a>	Endangered

## Insects

NAME	STATUS
<b>Monarch Butterfly</b> <i>Danaus plexippus</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## Flowering Plants

NAME	STATUS
<b>Ute Ladies'-tresses</b> <i>Spiranthes diluvialis</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/2159">https://ecos.fws.gov/ecp/species/2159</a>	Threatened
<b>Western Prairie Fringed Orchid</b> <i>Platanthera praeclara</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/1669">https://ecos.fws.gov/ecp/species/1669</a>	Threatened

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

## Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act<sup>1</sup> and the Migratory Bird Treaty Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats<sup>3</sup>, should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below.

Specifically, please review the "[Supplemental Information on Migratory Birds and Eagles](#)".

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to [Bald Eagle Nesting and Sensitivity to Human Activity](#)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON

**Bald Eagle** *Haliaeetus leucocephalus*

Breeds Oct 15 to Jul 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

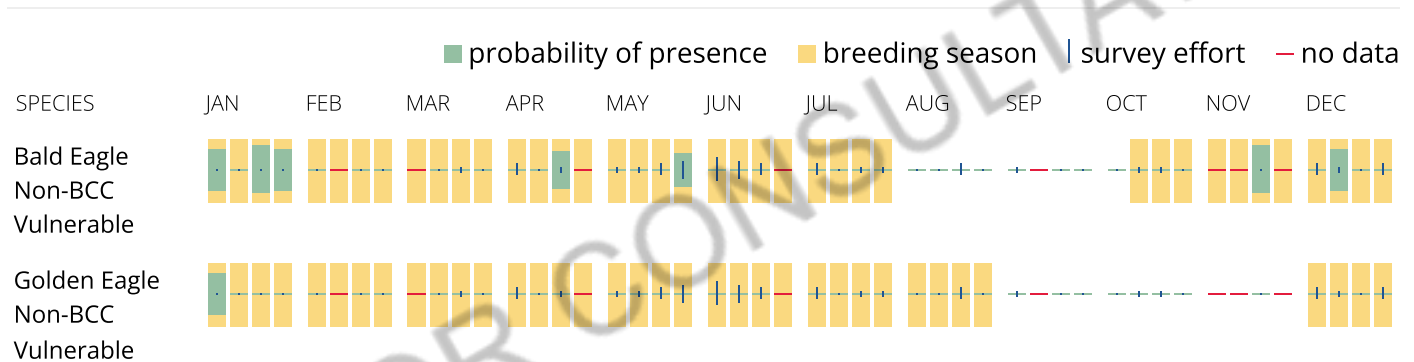
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

### No Data (—)

A week is marked as having no data if there were no survey events for that week.

### Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



### What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply). To see a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

### What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid

cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the [Eagle Act](#) should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats<sup>3</sup> should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "[Supplemental Information on Migratory Birds and Eagles](#)".

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

**The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location.** To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around

your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
<p><b>Bald Eagle</b> <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/1626">https://ecos.fws.gov/ecp/species/1626</a></p>	Breeds Oct 15 to Jul 31
<p><b>Ferruginous Hawk</b> <i>Buteo regalis</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/6038">https://ecos.fws.gov/ecp/species/6038</a></p>	Breeds Mar 15 to Aug 15
<p><b>Golden Eagle</b> <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/1680">https://ecos.fws.gov/ecp/species/1680</a></p>	Breeds Dec 1 to Aug 31
<p><b>Grasshopper Sparrow</b> <i>Ammodramus savannarum</i> <i>perpallidus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/8329">https://ecos.fws.gov/ecp/species/8329</a></p>	Breeds Jun 1 to Aug 20
<p><b>Northern Harrier</b> <i>Circus hudsonius</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/8350">https://ecos.fws.gov/ecp/species/8350</a></p>	Breeds Apr 1 to Sep 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read ["Supplemental Information on Migratory Birds and Eagles"](#), specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.



## What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

## What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

## How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

## What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### **Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### **What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### **Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

# Facilities

## National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

## Fish hatcheries

There are no fish hatcheries at this location.

## Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[PEM1A](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

**NOTE:** This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

### **Data limitations**

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

### **Data exclusions**

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

### **Data precautions**

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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# **Appendix E**

## Species Tracking List for Adams County



MajorGroup	StateScientificName	CommonName	GlobalRanI	StateRank	ESASStatus	COStatus	OtherStatus	CNHPTTrackingStatus
Amphibians	<i>Lithobates pipiens</i>	Northern Leopard Frog	G5	S3	-	SC	BLM, SWAP Tier 1, USFS	Fully Tracked
Birds	<i>Egretta thula</i>	Snowy Egret	G5	S2B	-	-	-	Fully Tracked
Birds	<i>Charadrius montanus</i>	Mountain Plover	G3	S2B	-	SC	BLM, SWAP Tier 1, USFS	Fully Tracked
Birds	<i>Peucaea cassinii</i>	Cassin's Sparrow	G5	S4B	-	-	SWAP Tier 2, USFS	Watchlisted Only
Birds	<i>Buteo regalis</i>	Ferruginous Hawk	G4	S3B, S4N	-	SC	BLM, SWAP Tier 2, USFS	Fully Tracked
Birds	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S3B, S3N	-	SC	BGEPA, BLM, SWAP Tier 2, USFS	Fully Tracked
Birds	<i>Athene cucularia</i>	Burrowing Owl	G4	S4B	-	ST	BLM, SWAP Tier 1, USFS	Watchlisted Only
Insects	<i>Euphilotes rita coloradensis</i>	Colorado Blue	G3G4T3	S2	-	-	SWAP Tier 2	Fully Tracked
Insects	<i>Hesperia ottoe</i>	Ottoe Skipper	G3	S2	-	-	SWAP Tier 2, USFS	Fully Tracked
Insects	<i>Celastrina humulus</i>	Hops Feeding Azure	G2G3	S2	-	-	SWAP Tier 2	Fully Tracked
Mammals	<i>Cynomys ludovicianus</i>	Black- tailed Prairie Dog	G4	S3	-	SC	BLM, SWAP Tier 2, USFS	Fully Tracked
Mammals	<i>Mustela nigripes</i>	Black- footed Ferret	G1	S1	LE, XN	SE	SWAP Tier 1	Fully Tracked
Mammals	<i>Zapus hudsonius preblei</i>	Meadow Jumping Mouse Subsp	G5T2	S1	LT	ST	SWAP Tier 1	Fully Tracked
Mollusks	<i>Anodonta grandis</i>	Giant Floater	G5	S2	-	-	-	Fully Tracked
Reptiles	<i>Plestiodon multivirgatus multivirgatus</i>	Northern Many- lined Skink	G5T5	S4	-	-	-	Fully Tracked
Vascular Plants	<i>Ribes americanum</i>	American Currant	G5	S2	-	-	-	Fully Tracked
Vascular Plants	<i>Schoenoplectus saximontanus</i>	Rocky Mountain Bulrush	G5	S1	-	-	-	Fully Tracked
Vascular Plants	<i>Viola pedatifida</i>	Prairie Violet	G5	S2	-	-	-	Fully Tracked
Vascular Plants	<i>Ammannia robusta</i>	Grand Redstem	G5	S2	-	-	-	Fully Tracked
Vascular Plants	<i>Bergia texana</i>	Texas Bergia	G5	S2	-	-	-	Fully Tracked
Vascular Plants	<i>Oenothera coloradensis</i>	Colorado Butterfly Plant	G3T2	S1S2	-	-	SWAP Tier 1	Fully Tracked
Vascular Plants	<i>Dalea cylindriceps</i>	Andean Prairie- clover	G3	S2S3	-	-	-	Fully Tracked
Vascular Plants	<i>Vernonia baldwinii</i>	Baldwin's Ironweed	G5	S2	-	-	-	Fully Tracked
Vascular Plants	<i>Asclepias uncialis</i>	Dwarf Milkweed	G2	S2	-	-	BLM, SWAP Tier 2, USFS	Fully Tracked
Vascular Plants	<i>Salix famelica</i>	Starved Willow	G5	S1	-	-	-	Fully Tracked

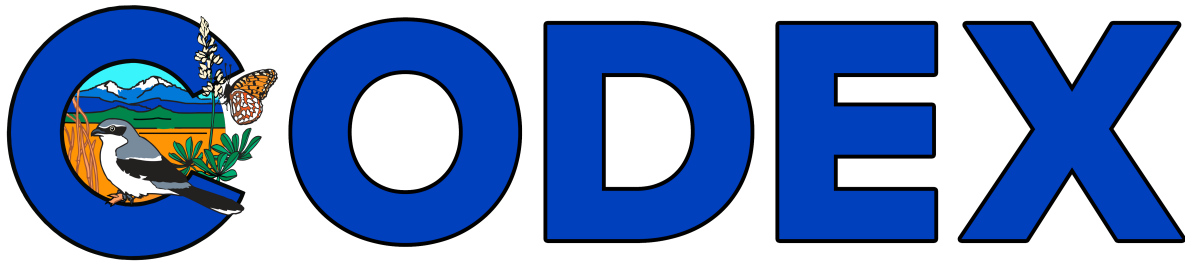


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# Appendix F

## Colorado Conservation Data Explorer Results





## Colorado's Conservation Data Explorer

### Project Review Report

#### Project Description

Adams County Project

#### Project Information

Report Generation Date: 5/14/2024 10:21:48 AM

Project Title: Project

User Project Number(s):

System Generated ID: CODEX-3913

Project Type: Other

Project Size: 36.61 (acres)

Latitude/Longitude: 39.921888 / -104.543411

County(s): ADAMS

Watershed(s) HUC 8: Middle South Platte-Cherry Creek

Township/Range and/or Section(s): 001S064W - 34 - 6P

#### Contact Information

Organization: Dudek

Contact Name: Kristen Amicarelle

Contact Phone: 7192489752

Contact Email: kamicarelle@dudek.com

Contact Address: 1001 Bannock Street Suite #227 , Denver, CO 80204

Submitted On Behalf Of: CONSULTING

Prepared By:

## Project Report:

The information contained herein represents the results of a search of Colorado's Conservation Data Explorer (CODEX) and can be used as notice to anticipate possible impacts or identify areas of interest. This tool queries multiple conservation datasets and includes a synthesis of Colorado Natural Heritage Program (CNHP) and Colorado Parks and Wildlife (CPW) data for sensitive animal and plant species and natural communities. Care should be taken in interpreting these data.

Please note that the absence of data for a particular area, species, or habitat does not necessarily mean that these natural heritage resources do not occur on or adjacent to the project site, rather that our files do not currently contain information to document their presence. CODEX information should not replace field studies necessary for more localized planning efforts, especially if impacts to wildlife habitat are possible. Although every attempt is made to provide the most current and precise information possible, please be aware that some of our sources provide a higher level of accuracy than others, and some interpretation may be required. CODEX data is constantly updated and revised. Please contact CNHP, CPW and our partners for assistance with interpretation of this report or to obtain more information.

## Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. **This review does not constitute environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the review of site-specific projects by CNHP and CPW and our partners.**
2. This Project Report is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
3. The Conservation Data Explorer (CODEX) data is constantly changing and being updated and is not intended to be the final word on the potential distribution of special status species. Colorado is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. CODEX data contains information about species occurrences that have actually been reported to CNHP, CPW and our partners. Not all of Colorado has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.

## Location Accuracy Disclaimer:

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

## Contact for CODEX Support:

### Colorado Natural Heritage Program (CNHP)

CNHP

Colorado State University

1475 Campus Delivery

Fort Collins, CO 80523-1475

**Tel:** (970) 491-7331

**Email:** [CNHP\\_codex\\_support@mail.colostate.edu](mailto:CNHP_codex_support@mail.colostate.edu)

**CNHP Website:** [cnhp.colostate.edu](http://cnhp.colostate.edu)

### Colorado Parks and Wildlife

For support regarding project review of land use impacts to wildlife, please contact the regional office in which your project resides and visit <https://cpw.state.co.us/conservation/Pages/CON-Energy-Land.aspx>

**CPW Website :** [cpw.state.co.us](http://cpw.state.co.us)

#### Northeast Region

##### Denver Office

6060 Broadway

Denver, CO 80216

**Tel:** (303) 291-7227

#### Northwest Region

##### Grand Junction Office

711 Independent Avenue

Grand Junction, CO 81505

**Tel:** (970) 255-6100

#### Southeast Region

##### Colorado Springs Office

4255 Sinton Road

Colorado Springs, CO 80907

**Tel:** (719) 227-5200

#### Southwest Region

##### Durango Office

151 East 16th Street

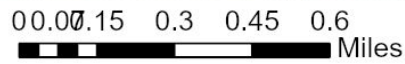
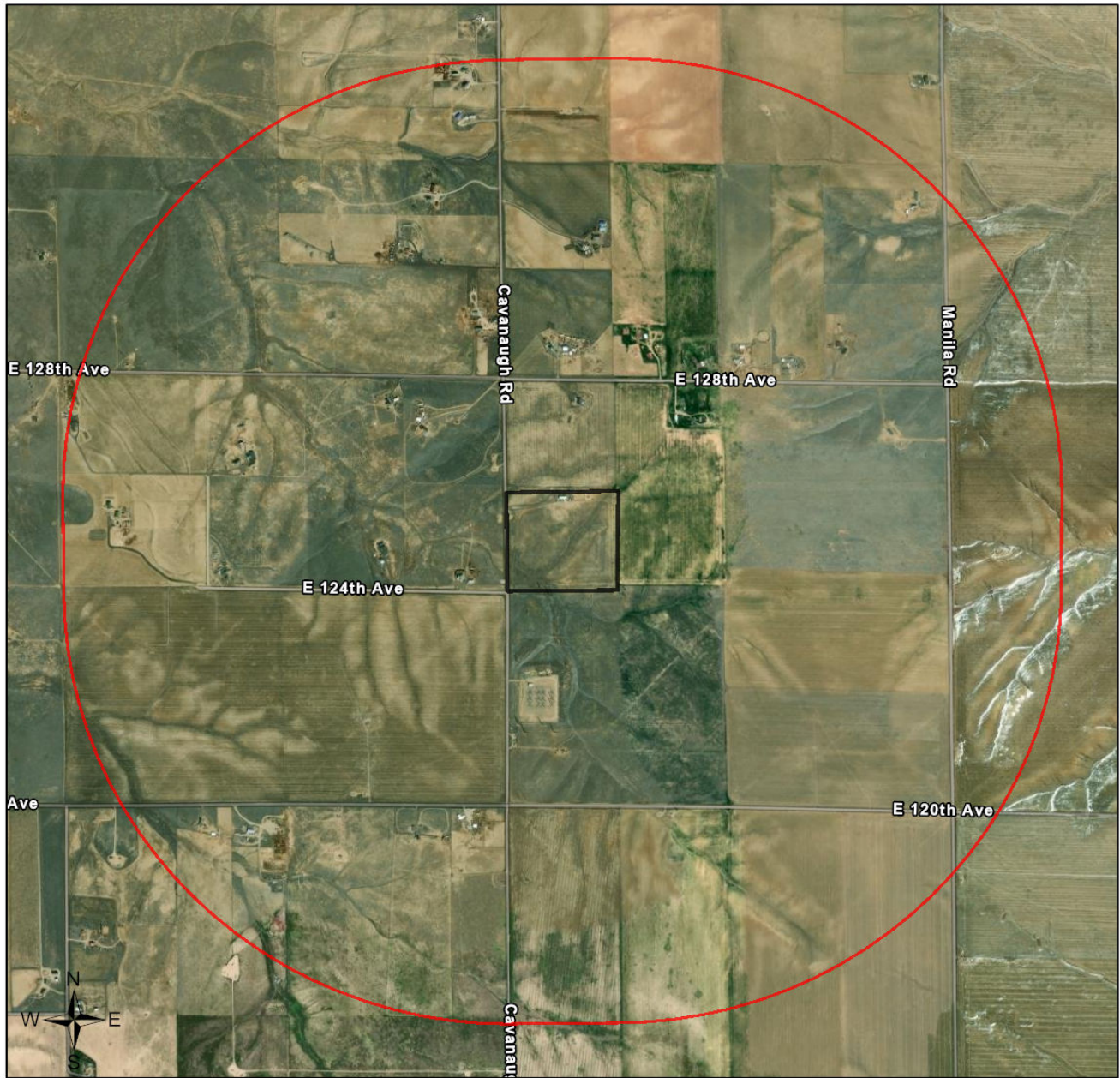
Durango, CO 81301



**Tel:** (970) 247-0855

For questions regarding CPW data in CODEX please contact 303-291-7152 or [matt.schulz@state.co.us](mailto:matt.schulz@state.co.us)

# Project

## Aerial Image with Locator Map

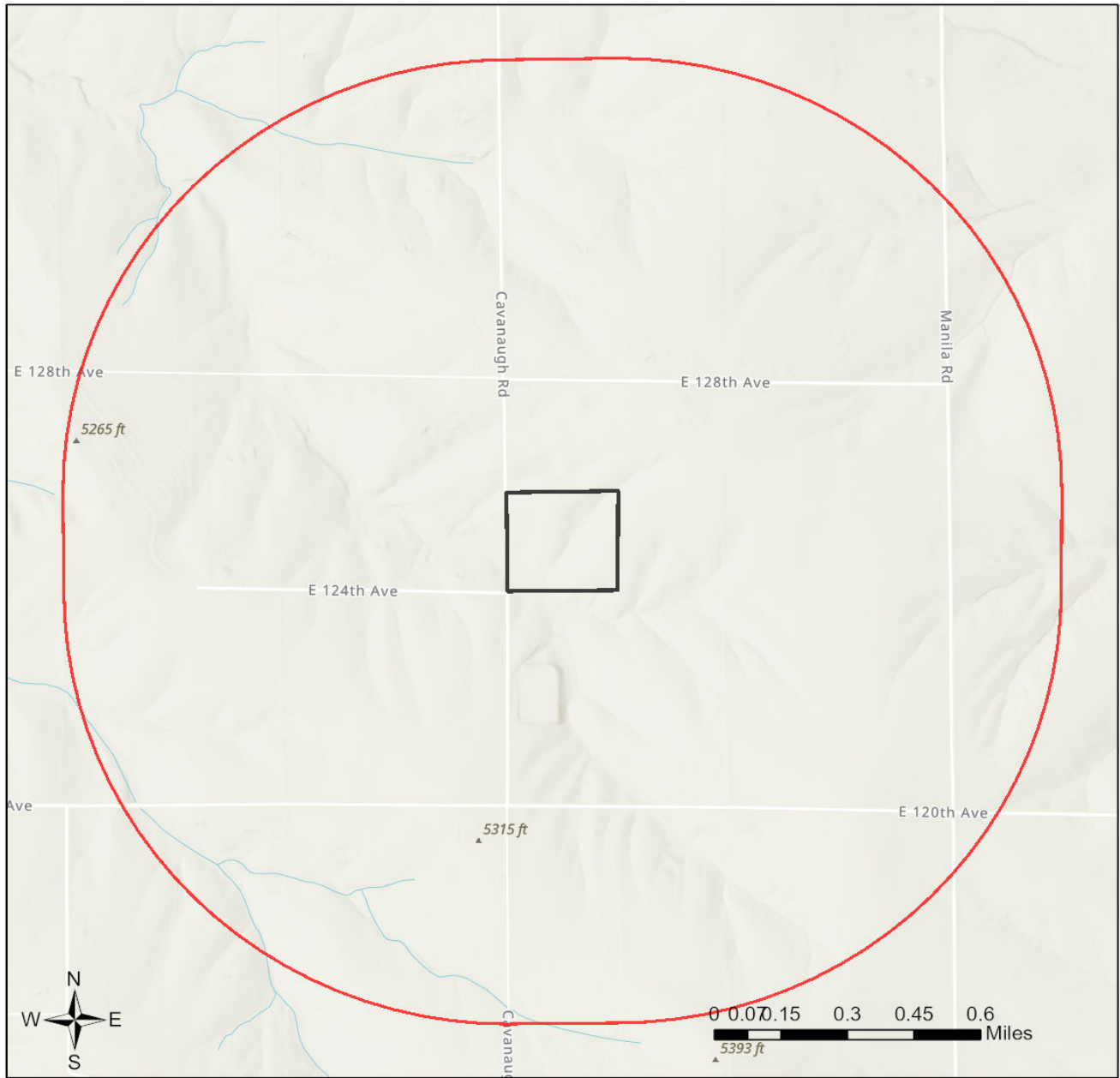


-  Buffered Search Area
-  Project Boundary



Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS  
Esri, USGS  
Maxar

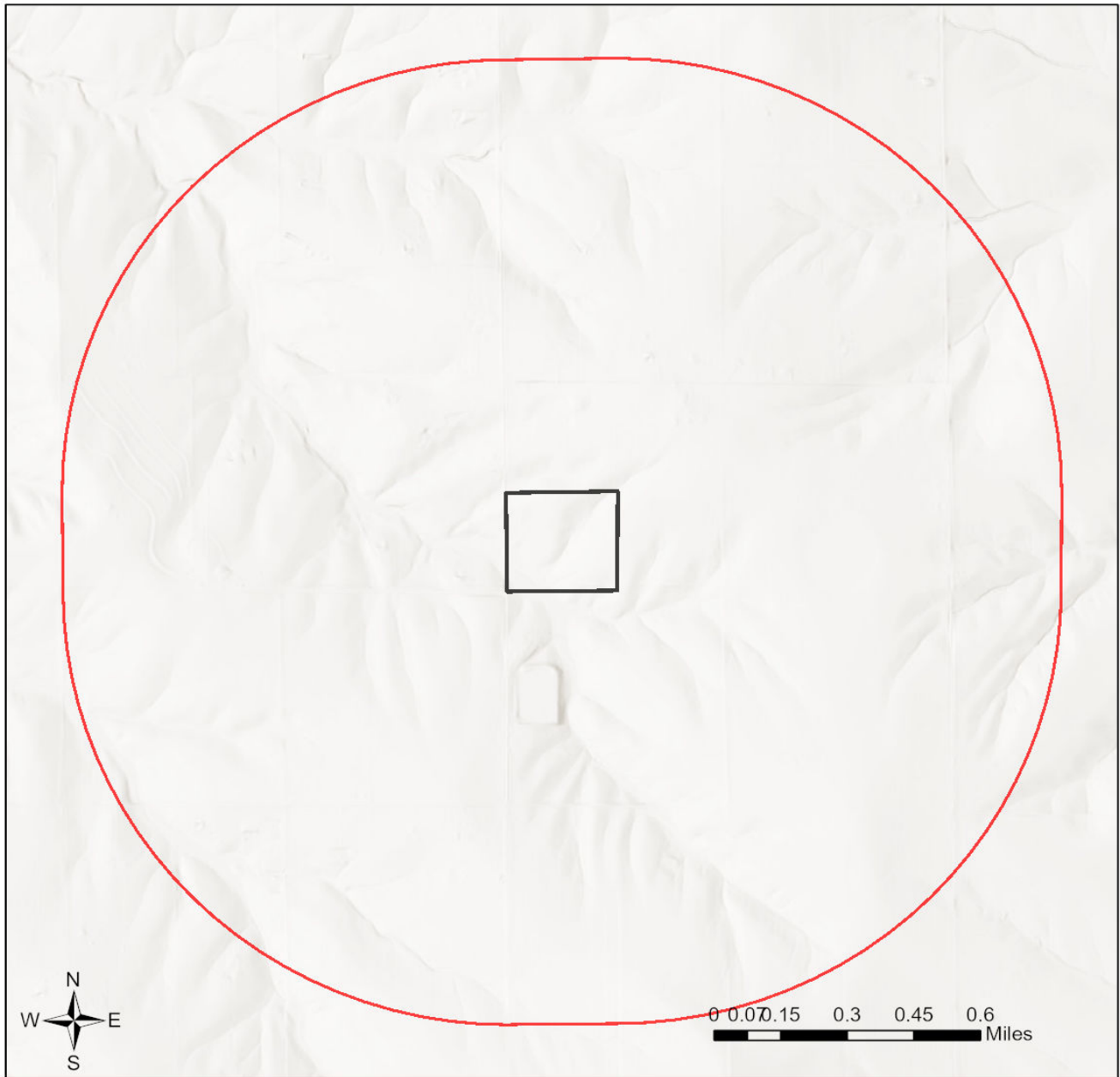
## Project Topographic Map with Land Management Status



- |   |   |   |
|---|---|---|
| <span style="border: 1px solid red; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Buffered Search Area                  | <span style="background-color: purple; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> NPS      | <span style="background-color: lightblue; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Local             |
| <span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Project Boundary                    | <span style="background-color: lightgreen; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> USFS | <span style="background-color: brown; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> NGO/Land Trust        |
| <span style="background-color: lightpurple; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Misc Federal (BOR, DOD, Misc) | <span style="background-color: teal; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> USFWS      | <span style="background-color: orange; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Private Conservation |
| <span style="background-color: yellow; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> BLM                                | <span style="background-color: tan; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Tribal      | <span style="border: 1px solid white; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Private               |
|   | <span style="background-color: blue; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> State      |   |

Esri, NASA, NGA, USGS, FEMA  
 Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS

### Project Web Map As Submitted By User



- G1 Element Present
- G2 Element Present
- G3 Element Present
- G4 Element Present
- G5 Element Present

- Occurrences are Extirpated
- Elements are Unranked
- Buffered Search Area
- Project Boundary

Esri, NASA, NGA, USGS, FEMA

## Regulatory Species

**Table 1. Documented Occurrences Within 1 Miles Of Project Area**

No results were found for this project area.

**Table 2. Potential Regulatory Species within Project Area: Models, Range Maps, or Records with Low Precision**

Major Group	Scientific Name	Common Name	Data Type	Global Rarity	State Rarity	ESA Status	CO Status	Other Status	Data Source
Birds	<a href="#">Aquila chrysaetos</a>	Golden Eagle	CPW Breeding Range	G5	S3S4B,S4N			BGEPA/SWAP Tier 1	CPW 20221213
Mammals	<a href="#">Zapus hudsonius preblei</a>	Meadow Jumping Mouse Subsp	CPW Overall Range	G5T2	S1	LT	ST	SWAP Tier 1	CPW 20221213

**Table 3. Fish & Wildlife Service Critical Habitats within 1 Miles of Project Area**

No results were found for this project area.

## Other Species of Concern

**Table 4. Documented Occurrences within 1 Miles of Project Area: Rare Species, Natural Communities, and Species of Economic, Recreational or Conservation Value**

No results were found for this project area.

**Table 5. Potential Occurrences within Project Area: Models, Range Maps, or Records with Low Precision**

Major Group	Scientific Name	Common Name	Data Type	Global Rarity	State Rarity	ESA Status	CO Status	Other Status	Data Source
Birds	<a href="#">Ammodramus savannarum</a>	Grasshopper Sparrow	CPW Breeding Range	G5	S3S4B			SWAP Tier 2/USFS	CPW 20221213
Birds	<a href="#">Athene cunicularia</a>	Burrowing Owl	CPW Breeding Range	G4	S4B		ST	BLM/SWAP Tier	CPW 20221213

**Table 5. Potential Occurrences within Project Area: Models, Range Maps, or Records with Low Precision**

Major Group	Scientific Name	Common Name	Data Type	Global Rarity	State Rarity	ESA Status	CO Status	Other Status	Data Source
								1/USFS	
Birds	<a href="#">Branta canadensis</a>	Canada Goose	CPW Foraging Area	G5	S5				CPW 20221213
Birds	<a href="#">Branta canadensis</a>	Canada Goose	CPW Winter Range	G5	S5				CPW 20221213
Birds	<a href="#">Buteo swainsoni</a>	Swainson's Hawk	CPW Breeding Range	G5	S5B			SWAP Tier 2	CPW 20221213
Birds	<a href="#">Calamospiza melanocorys</a>	Lark Bunting	CPW Breeding Range	G5	S4			SWAP Tier 2	CPW 20221213
Birds	<a href="#">Charadrius montanus</a>	Mountain Plover	CPW Breeding Range	G3	S2B		SC	BLM/SWAP Tier 1/USFS	CPW 20221213
Birds	<a href="#">Circus hudsonius</a>	Northern Harrier	CPW Breeding Range	G5	S3B			SWAP Tier 2/USFS	CPW 20221213
Birds	<a href="#">Falco mexicanus</a>	Prairie Falcon	CPW Breeding Range	G5	S4B,S4N			SWAP Tier 2	CPW 20221213
Birds	<a href="#">Peucaea cassinii</a>	Cassin's Sparrow	CPW Breeding Range	G5	S4B			SWAP Tier 2/USFS	CPW 20221213
Birds	<a href="#">Selasphorus rufus</a>	Rufous Hummingbird	CPW Migration Range	G4	SNA			SWAP Tier 2	CPW 20221213
Birds	<a href="#">Spizella breweri</a>	Brewer's Sparrow	CPW Breeding Range	G5	S4B			BLM/SWAP Tier 2/USFS	CPW 20221213
Mammals	<a href="#">Antilocapra americana</a>	Pronghorn	CPW Overall Range	G5	S4				CPW 20221213
Mammals	<a href="#">Antilocapra americana</a>	Pronghorn	CPW Winter Range	G5	S4				CPW 20221213
Mammals	<a href="#">Cynomys ludovicianus</a>	Black-tailed Prairie Dog	CPW Overall Range	G4	S3		SC	BLM/SWAP Tier 2/USFS	CPW 20221213
Mammals	<a href="#">Cynomys ludovicianus</a>	Black-tailed Prairie Dog	CPW Potential Occurrence	G4	S3		SC	BLM/SWAP Tier 2/USFS	CPW 20221213
Mammals	<a href="#">Eptesicus fuscus</a>	Big Brown Bat	CPW Overall Range	G5	S5				CPW 20221213
Mammals	<a href="#">Lasionycteris noctivagans</a>	Silver-haired Bat	CPW Overall Range	G3G4	S3S4				CPW 20221213
Mammals	<a href="#">Lasiurus borealis</a>	Eastern Red Bat	CPW Overall Range	G3G4	S2S3B				CPW 20221213
Mammals	<a href="#">Lasiurus cinereus</a>	Hoary Bat	CPW Overall Range	G3G4	S3S4B			SWAP Tier 2/USFS	CPW 20221213
Mammals	<a href="#">Lepus townsendii</a>	White-tailed Jackrabbit	CPW Overall Range	G5	S4			SWAP Tier 2	CPW 20221213
Mammals	<a href="#">Myotis lucifugus</a>	Little Brown Myotis	CPW Overall Range	G3G4	S4			SWAP Tier 1	CPW 20221213
Mammals	<a href="#">Odocoileus hemionus</a>	Mule Deer	CPW Overall Range	G5	S4				CPW 20221213
Mammals	<a href="#">Perimyotis subflavus</a>	Tricolored Bat	CPW Overall Range	G3G4	S2				CPW 20221213
Mammals	<a href="#">Perognathus fasciatus</a>	Olive-backed Pocket Mouse	CPW Overall Range	G5	S3			SWAP Tier 1	CPW 20221213
Mammals	<a href="#">Perognathus fasciatus</a>	Olive-backed Pocket Mouse	Range Map - within range	G5	S3			SWAP Tier 1	CNHP 20210615
Reptiles	<a href="#">Aspidoscelis sexlineata</a>	Six-lined Racerunner	CPW Overall Range	G5	S5				CPW 20221213
Reptiles	<a href="#">Chrysemys picta</a>	Painted Turtle	CPW Overall Range	G5	S5				CPW 20221213
Reptiles	<a href="#">Coluber constrictor</a>	Racer	CPW Overall Range	G5	S5				CPW 20221213
Reptiles	<a href="#">Crotalus oreganus</a>	Western Rattlesnake	CPW Overall Range	G5	SNR				CPW 20221213
Reptiles	<a href="#">Crotalus viridis</a>	Western Rattlesnake	CPW Overall Range	G5	S5				CPW 20221213

**Table 5. Potential Occurrences within Project Area: Models, Range Maps, or Records with Low Precision**

Major Group	Scientific Name	Common Name	Data Type	Global Rarity	State Rarity	ESA Status	CO Status	Other Status	Data Source
Reptiles	<a href="#">Heterodon nasicus</a>	Plains Hognose Snake	CPW Overall Range	G5	S4				CPW 20221213
Reptiles	<a href="#">Holbrookia maculata</a>	Lesser Earless Lizard	CPW Overall Range	G5	S5				CPW 20221213
Reptiles	<a href="#">Lampropeltis gentilis</a>	Central Plains Milk Snake	CPW Overall Range	G5	S5			SWAP Tier 2	CPW 20221213
Reptiles	<a href="#">Phrynosoma hernandesi</a>	Hernandez's Short-horned Lizard	CPW Overall Range	G5	S5				CPW 20221213
Reptiles	<a href="#">Pituophis catenifer sayi</a>	Bullsnake	CPW Overall Range	G5T5	S5				CPW 20221213
Reptiles	<a href="#">Plestiodon multivirgatus</a>	Many-lined Skink	CPW Overall Range	G5	S4				CPW 20221213
Reptiles	<a href="#">Sceloporus consobrinus</a>	Fence/prairie/plateau Lizard	CPW Overall Range	G5	S5				CPW 20221213
Reptiles	<a href="#">Sceloporus tristichus</a>	Southern Plateau Lizard	CPW Overall Range	G5	S3				CPW 20221213
Reptiles	<a href="#">Terrapene ornata ornata</a>	Ornate Box Turtle	CPW Overall Range	G5T5	S5				CPW 20221213
Reptiles	<a href="#">Thamnophis elegans</a>	Western Terrestrial Garter Snake	CPW Overall Range	G5	S5				CPW 20221213
Reptiles	<a href="#">Thamnophis radix</a>	Plains Garter Snake	CPW Overall Range	G5	S5				CPW 20221213
Vascular Plants	<a href="#">Asclepias uncialis</a>	Dwarf Milkweed	CNHP Model	G2	S2			BLM/SWAP Tier 2/USFS	CNHP 20210601

## Special Areas and Land Status

**Table 6. CNHP Potential Conservation Areas and Other Special Areas within 1 Miles of Project Area**

No results were found for this project area.

**Table 7. Managed Areas within Project Area**

Name	Owner	Manager	Management Description	Public Access*	Protection Mechanism	Easement Holder	Data Source
	PRIVATE	PRIVATE	Private Land	No	NA		COMaP 20230223

\* It is the responsibility of the user to verify public access on any site as access can change over time. Entering an area that is not open to the public subjects an individual to possible sanctions for trespass under Colorado law.

**Water and Wetlands**

**Table 8. National Wetland Inventory (NWI) Features within Project Area**

NWI Code	Wetland Type	Total Acres	System	Class	Water Regime	Modifier	Data Source
PEM1A	Emergent	0.38	Palustrine	Emergent/Herbaceous	Temporarily Flooded	None	CNHP 20231001

## Project Report Appendix

Please visit the [CNHP website](#) for a more extensive collection of definitions for CODEX reports in addition to what is provided here below.

## About CNHP Data

One of CNHP's core research activities is managing a statewide database that details the locations of rare and imperiled species and natural plant communities in Colorado. We gather data from CNHP surveys and monitoring projects, as well as from partners and other trusted sources like herbariums. All of our data are compiled and managed in the Biodiversity Information Management System (Biotics), a web-enabled database platform hosted by [NatureServe](#). The species and natural plant communities we track are assigned global and state imperilment ranks based on rarity, threats, and trends, and their locations are mapped as element occurrences. Element occurrences include spatial data as well as details on condition, size, and landscape context. This information allows us to track both overall distribution and site-specific details describing how well elements are thriving at each location. We use element occurrences to delineate Potential Conservation Areas that represent the primary area needed to support the element occurrences, and often include additional suitable habitat or buffers from disturbance. **Please visit the [CNHP website](#) for more definitions and details related to CNHP data in CODEX.**

## CODEX Report Definitions

**CNHP Biodiversity Rank** – The significance of a potential conservation area in terms of its biological diversity ranging from B1 (Outstanding Biodiversity significance meaning protection of this potential conservation area can prevent a species from going extinct) to B5 (General interest or

**Managed Areas Name** – Name of the managed area.

**Manager** – The general land Manager.

open space for more globally secure species).

**CNHP Edit Date**— The date the CNHP potential conservation area record was last updated.

**CNHP Identifier**— A unique identifier for each CNHP data type, applicable only to CNHP data records.

**CO Status** – State status per Colorado Parks & Wildlife: Endangered (SE), Threatened (ST), or State Special Concern (SC).

**Common Name** – The common name of the species or plant community.

**Critical Habitat Status** – Critical habitat status for federally listed species under the Endangered Species Act.

**Proposed** – Proposed critical habitat

**Final** – Final critical habitat

**Critical Habitat Federal Register**- The volume number and first page of the federal register publication describing the critical habitat.

**Critical Habitat Publication Date** - Federal Register publication date.

**Data Source** – The agency and date of the data provided.

**Data Type** –

**CNHP EO** – A location in which an element is, or was, present.

**Management Description** - The general category of how the feature is managed.

**Other Species of Concern** – Other globally rare species and plant communities, BLM or USFS sensitive species, state listed species, or Tier 1 and Tier 2 priority species from Colorado's State Wildlife Action Plan, and species of economic and recreational value.

**Other Status** – Other status such as BLM sensitive species (BLM), U.S Forest Service sensitive species (USFS), and Tier 1 and Tier 2 priority species from Colorado's State Wildlife Action Plan (SWAP Tier 1, SWAP Tier 2).

**Owner** – The general land owner.

**Public Access** – Level of public access to the feature.

**Protection Mechanism** – Any mechanism of protection assigned to the managed area.

**Regulatory Species** – Species with federal protection under the Endangered Species Act or Bald and Golden Eagle Protection Act along with FWS designated critical habitat.

**Return on Investment Report** - Provides maps and the estimated annual benefit in dollars of conserved ecosystem services by ecosystem type within the project area in PDF format. Ecosystem types are derived from the 2016 National Land Cover Database (NLCD).

**Scientific Name** – The scientific name of the species or plant community

**CNHP General EO** – An element occurrence with imprecise directions; broadly mapped and typically historical or extirpated.

**[CNHP Observation](#)** – Sightings of species on CNHP's watchlist or sightings of tracked elements that do not meet the minimum criteria necessary to make an occurrence.

**[CNHP PCA](#)** – Areas in the state contributing to Colorado's biological diversity.

**CNHP Model** – Modeled presumed presence or habitat for a particular species.

**CNHP PCA (Important Plant Area)** – B1 or B2 CNHP potential conservation area supporting globally rare plants.

**CNHP Range Map** – Overall range for a particular species by HUC 10 and HUC 12 for aquatics.

**[Important Bird Area](#)** – The most important places for birds as identified by the National Audubon Society.

**[State Natural Area](#)** - Areas that contain at least one unique or high-quality natural feature of statewide significance as designated by the Colorado Natural Areas Program.

**CPW <description>** - CPW data with a long list of data types: observations, nest sites, leks, etc.

**Easement Holder** – Organization or agency holding an easement (if present).

**Special Areas and Land Status** – CNHP Potential Conservation Areas ([PCA](#)), [State Designated Natural Areas](#), [Important Bird Areas](#), and managed lands from the Colorado Ownership, Management and Protection database ([COMaP](#)), SB181 High Priority Habitat

**Special Areas Name** – The name of the special area.

**State Rarity** - The [rarity rank](#) used by CNHP and The Natural Heritage Network to track how rare a species or plant community is in Colorado, ranging from S1 (rarest) to S5 (most common).

**Viability Rank** – The estimated viability of the species or ecological integrity of the natural community based on condition, size, and landscape context, ranging from A (excellent) to D (poor).

**Water and Wetlands** – Wetland types from the [National Wetland Inventory database](#).

**Class** - The general appearance of the habitat in terms of either the dominant life form of the vegetation, or the physiography and composition of the substrate.

**Modifier** - Modifier assigned to further describe wetlands and deepwater habitats within the classification hierarchy based on water chemistry or ph, wetland or deepwater alteration, or soil type.

**NWI Code** – An alpha-numeric code corresponding to the classification nomenclature that best describes a particular wetland habitat. For more information on NWI data values, visit <https://www.fws.gov/wetlands/data/wetland-codes.html>

**ESA Status** – Federal status under the [Endangered Species Act](#): Endangered (E), Threatened (T), or Federal Candidate (C) with qualifiers for Partial Status (PS) and experimental populations (XN).

**Global Rarity** – The [rarity rank](#) used by CNHP and The Natural Heritage Network to track how rare a species or plant community is globally, ranging from G1 (rarest) to G5 (most common).

**Last Observation** – The most recent field observation.

**Major group** – The major group in which the element falls: Amphibians, Birds, Crayfish, Fish, Insects, Mammals, Mollusks, Natural Communities, Nonvascular Plants, Reptiles, and Vascular Plants.

**System** – A complex of wetlands and deepwater habitats that share the influence of similar hydrologic, geomorphologic, chemical or biological factors.

**Water Regime** - Description of water duration within a wetland habitat.

**Wetland Total Acres** - Total acres of the wetland type in the project area.

**Wetland Type** – The generalized [Cowardin](#) wetland type.





Outlook

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**Re: Prairie Pass Energy Storage System Project- Biological Assessment**

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**From** Hamous-Miller - DNR, Lexi <lexi.hamous-miller@state.co.us>

**Date** Tue 3/25/2025 5:41 PM

**To** Michelle Leis <mleis@dudek.com>

**Cc** Kurt.Nelson@jupiterpower.io <Kurt.Nelson@jupiterpower.io>; Joshua.Powell@jupiterpower.io <Joshua.Powell@jupiterpower.io>; Nathaniel Drucker <nat.drucker@jupiterpower.io>; Hannah Posey - DNR <hannah.posey@state.co.us>

Hi Michelle,

Thank you for including CPW in early consultation and review of this project. CPW likes to work with the Counties on commenting on projects through the County permitting processes. With that said, we will look forward to reviewing your final submitted plans to the County, but in the meantime, we will give preliminary comments for your planning purposes here. After review of the biological assessment, we agree with your assessment. In our letter to the County, we will include recommendations like the ones that were included in the biological assessment like: completing ground nest bird surveys prior to construction if it is to occur during the nesting season, designing fencing to be wildlife exclusionary (8ft in height at a minimum, no chain link, and no barbed wire, we recommend using game fencing with top smooth wires), providing 24-hour remote monitoring to detect animals that have become trapped within the facility, reporting mortalities, trapped or injured wildlife, or other reportable incidents to the local District Wildlife Manager (Hannah Posey) and any above-ground power lines to be constructed in accordance with APLIC standards to protect flying/perching and nesting raptors in the area. There is a chance for Burrowing Owls to be present on the proposed site. Burrowing owls are protected under the Migratory Bird Treaty Act. CPW recommends conducting surveys for Burrowing owls if construction is to occur between March 15- October 31st in accordance with [CPW's Burrowing Owl Survey Protocol](#). If nesting Burrowing Owls are present, no human encroachment or surface disturbance should occur within a 200-meter buffer of nesting burrows from March 15th to August 31st. If Burrowing Owls occupy the site, CPW recommends that earthmoving and other disturbance activities be delayed until late fall after they have migrated. Again, CPW looks forward to commenting on the final project details through the Adam's County permitting process. Please let us know if you have any additional questions.

**-Sincerely,**

**Lexi Hamous, MS ([She/Her](#))  
Northeast Region Land Use Coordinator  
Colorado Parks and Wildlife**

**Upcoming Leave dates: March 26-28**



LIVE LIFE  
OUTSIDE

[6060 Broadway, Denver, CO 80216](https://www.coloradoparksandwildlife.com/6060-Broadway-Denver-CO-80216)

303-916-2987

[Lexi.Hamous-Miller@state.co.us](mailto:Lexi.Hamous-Miller@state.co.us)

[CPW's Energy Webpage](#)



On Thu, Mar 20, 2025 at 3:24 PM Michelle Leis <[mleis@dudek.com](mailto:mleis@dudek.com)> wrote:

Good Afternoon,

I am emailing on behalf of my client to request a consultation regarding the Prairie Pass Energy Storage System Project located in Adams County. The kmz of the project location as well as a report for a biological assessment that was completed in June 2024 are attached for reference. Below is a summary of findings documented in that report:

- Project site is primarily composed of non-native grassland and disturbed area.
- A jurisdictional delineation was performed for the site in tandem with the biological assessment.
  - No aquatic resources were documented.
  - Consultation with USACE has been initiated to confirm these findings.
- Three special-status plant species and eight special-status wildlife species have potential to occur within the project site.
  - Conclusion and recommendations section of the attached report details proposed survey methods to determine presence of these species and best practices to minimize impacts if present.
- Although this is an energy storage system project, the Colorado Parks and Wildlife BMPs for Solar Energy Development are also referenced in this report and will be adhered to during construction and operation of the project

Please let us know if you have any questions or concerns regarding our findings and recommendations. We would be happy to set up a meeting and discuss the report and your expectations regarding wildlife surveys and mitigation during construction and operation if you would prefer.

Thanks,

**Michelle Leis, M.S.**

Environmental Project Manager



*45 Years of Impactful Projects*

**O:** 720 894 8706 **C:** 760 815 3797

[dudek.com](http://dudek.com)



## TECHNICAL MEMORANDUM

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**To:** Gage Fuller, Jupiter Power  
**From:** Andrew Schad, INCE Bd. Cert., Dudek,  
Dana Lodico, PE, INCE Bd. Cert., Dudek  
**Subject:** Sound Study- Prairie Pass Energy Storage Project, Adams County, Colorado  
**Date:** April 17, 2026

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This report contains Dudek’s sound study for the Prairie Pass Energy Storage Project (Project), located in Adams County, Colorado. The study evaluates project operations from on-site stationary mechanical equipment (battery storage units and transformers) against applicable noise limits.

## 1 Background

### 1.1 Project Description and Setting

The Project will develop a battery energy storage system (BESS) facility in Adams County, Colorado. The Project will include construction of an onsite substation. The Project site is in an agricultural setting with residential land uses interspersed to the north, east, south, and west. The nearest home is to the west, approximately 500 feet from the project site boundary (see Figure 1).

### 1.2 Acoustical Fundamentals

#### 1.2.1 Common Terminology

Although the terms may be used interchangeably in the right context, “sound” is defined as any gas or fluid pressure variation detected by the human ear, and “noise” is unwanted sound. The preferred unit for measuring sound is the decibel (dB), which expresses the ratio of sound pressures to a reference value logarithmically and enables a wide range of audible sound to be evaluated and discussed conveniently. On the low end of this range, zero dB is not the absence of sound energy, but instead corresponds approximately to the threshold of average healthy human hearing; on the upper end, 120–140 dB corresponds to an average person’s threshold of pain.

The human ear is not equally responsive to all frequencies of the audible sound spectrum. An electronic filter is normally used when taking noise measurements that de-emphasizes certain frequencies in a manner that mimics the human ear’s response to sound; this method is referred to as A-weighting. Sound levels expressed under the A-weighted system are sometimes designated dBA. Unless otherwise noted, all sound levels discussed in this report are A-weighted.

The equivalent continuous sound level (Leq) is a single dB value which, if held constant during the specified time period, would represent the same total acoustical energy of a fluctuating noise level over that same time period; this is also known as the “average” sound level. Leq values are commonly expressed for periods of 1 hour, but longer or shorter time periods may be specified.

## 1.2.2 Exterior Noise Attenuation

Noise sources are classified in two forms: (1) point sources, such as stationary equipment or a group of construction vehicles and equipment working within a spatially limited area at a given time, and (2) line sources, such as a roadway with a large number of pass-by sources (motor vehicles). Sound generated by a point source typically diminishes (attenuates) at a rate of 6.0 dBA for each doubling of distance from the source to the receptor at acoustically “hard” sites and at a rate of 7.5 dBA for each doubling of distance from source to receptor at acoustically “soft” sites. Sound generated by a line source (i.e., a roadway) typically attenuates at a rate of 3 dBA and 4.5 dBA per doubling of distance, for hard and soft sites, respectively. Sound levels can also be attenuated by human-made or natural barriers. For the purpose of a sound attenuation discussion, a hard or reflective site does not provide any excess ground-effect attenuation and is characteristic of paved ground surfaces, as well as very hard-packed soils. An acoustically soft or absorptive site is characteristic of unpaved loose soil or vegetated ground.

For example, in the case of a 65 dBA noise level measured at 25 feet from a roadway centerline (a line source) with hard-packed shoulder (a hard site), an attenuation rate of 3 dBA per doubling of distance would apply; the traffic noise would diminish to 62 dBA at 50 feet from the centerline and to 59 dBA at 100 feet from the centerline. On a construction site (point source) where there is open ground with or without vegetation between the construction equipment and receiver (soft site), an attenuation rate of 7.5 dBA per doubling of distance would apply; the construction equipment noise, measured as 85 dBA at 50 feet from the construction equipment, would diminish to 77.5 dBA at 100 feet from the source and to 70 dBA at 200 feet from the source.

## 1.3 Noise Regulations

### 1.3.1 Adams County Development Standards and Regulations

The County’s Development Standards and Regulations establish noise criteria for various land uses, as laid out in section 4-16-03:

*The maximum permissible sound pressure levels of any continuous source of sound are established for a time period within each zone district listed. Sound pressure levels shall be measured at the property line or boundary of a public right-of-way, at a height of at least four (4) feet above the immediate surrounding surface, on a sound level meter of standard design and operated on the “A” weighting network.*

The maximum permissible sound pressure levels identified in section 4-14-03 are included in Table 1.

For a conservative analysis, this study assumes that all Project equipment is operating continuously at its maximum sound level, 24-hours per day. As such, the more restrictive nighttime noise limits are applied. As the adjacent parcels are all zoned Agricultural-3 (A-3), the 75 dBA nighttime limit is applied at the nearest property lines. The 50 dBA nighttime limit is applied at the boundary of the area of residential use of the nearest homes. These limits are considered as Leq limits.

**Table 1. Maximum Permissible Sound Pressure Levels**

Zone Districts	Day 7:00 a.m. – 10:00 p.m.	Night 10:00 p.m. – 7:00 a.m.
<i>Residential Estate (RE); Residential-1-A (R-1-A); Residential-1-C (R-1-C); Residential Two-Family (R-2); Residential Moderate Density (R-3); Residential High Density (R-4); Mobile Home Dwelling (MH); Commercial-O (C-0); Neighborhood Park (NP); Natural Areas (NA); Conservation (CO); Public Lands, Parks, Open Space, and Facilities (PL)</i>	55	50
<i>Commercial-1 (C-1); Commercial-2 (C-2); Commercial-3 (C-3); Commercial-4 (C-4); Commercial-5 (C-5); Industrial-1 (I-1)</i>	60	55
<i>Agricultural-3 (A-3); Agricultural-2 (A-2); Agricultural-1 (A-1); Industrial-2 (I-2); Industrial-3 (I-3); Regional Park (RP)</i>	80	75
<i>Other Overlay Zones</i>	<i>Same as Underlying Zone District</i>	
<i>Aviation (AV); Denver International Airport (DIA)</i>	None	None

**Source:** Adams County Development Standards and Regulations, page 4-233

## 2 Operational Sound Levels

### 2.1 Methodology

Sound modeling of Project operations was conducted in accordance with ISO Standard 9613-2, Acoustics – Attenuation of Sound During Propagation Outdoors, Part 2: General Method of Calculation, implemented using Datakustik’s CadnaA software application. The CadnaA model takes into account source sound power levels, surface reflection and absorption, atmospheric absorption, geometric divergence, meteorological conditions, walls, barriers, berms, and terrain. A temperature of 10 °C with 70% relative humidity was used. No attenuation due to foliage was included.

Sound sources modeled for the Project were major producers of continuous-type noise generation, which include battery containers, power conversion systems (PCSs), and main power transformers at the Project collector substation. While there may be other electrical transmission system components on site, such as breakers and buses, their noise emissions are—if any—sporadic and thus have no meaningful contribution to overall aggregate noise emission from the BESS facility during charging or discharging conditions. For a conservative analysis, this study assumes that all Project equipment is operating continuously at its maximum sound level, 24-hours per day. The following sound sources are included in the sound propagation model:

- *Battery energy storage containers (BESS)* - The Project proposes to use Samsung SBB 2.0 battery storage systems. Manufacturer data indicates that these units generate a sound pressure level of 65 dBA at a distance of 1 meter. Octave band data from a similar unit was used for modeling purposes and the units were validated to generate sound levels as specified by the manufacturer, resulting in a sound power level of 85 dBA for each unit. The Project proposes installation of approximately 438 BESS containers.
- *Power conversion system (PCS)* – The PCS includes a bi-directional inverter and a medium-voltage transformer. The Project plans to use the SMA 4600 kVA system. Based on one-third octave band sound emission data provided by the manufacturer, the reference sound power level for this unit is 93 dBA. The Project proposes installation of approximately 146 PCS units on site.
- *Substation transformers:* The Project utilizes three 115 megavolt-ampere (MVA) high voltage transformers. Based on the methodology outlined in the Electric Power Plant Environmental Noise Guide (Teplitzky et al. 1979), each would generate a sound power level of 99 dBA under full power with cooling fans operating (i.e., oil natural air force [ONAF] conditions).

Sound-sensitive uses in the general vicinity of the Project site include rural residences, with the nearest being 500 feet from the project boundary on the western side. Additional homes are located at further distances in all directions. Other adjacent land uses are primarily agricultural. Sound modeling included four discrete off-site receivers. In addition, a grid of in-model receivers spaced 75 feet by 75 feet was set at a height of 5 feet aboveground, spanning the project area and its immediate surroundings.

## 2.2 Results and Conclusions

The model results and receptor locations are presented graphically in Figure 1, Sound Modeling Results for Project Operations, and numerically in Table 2.

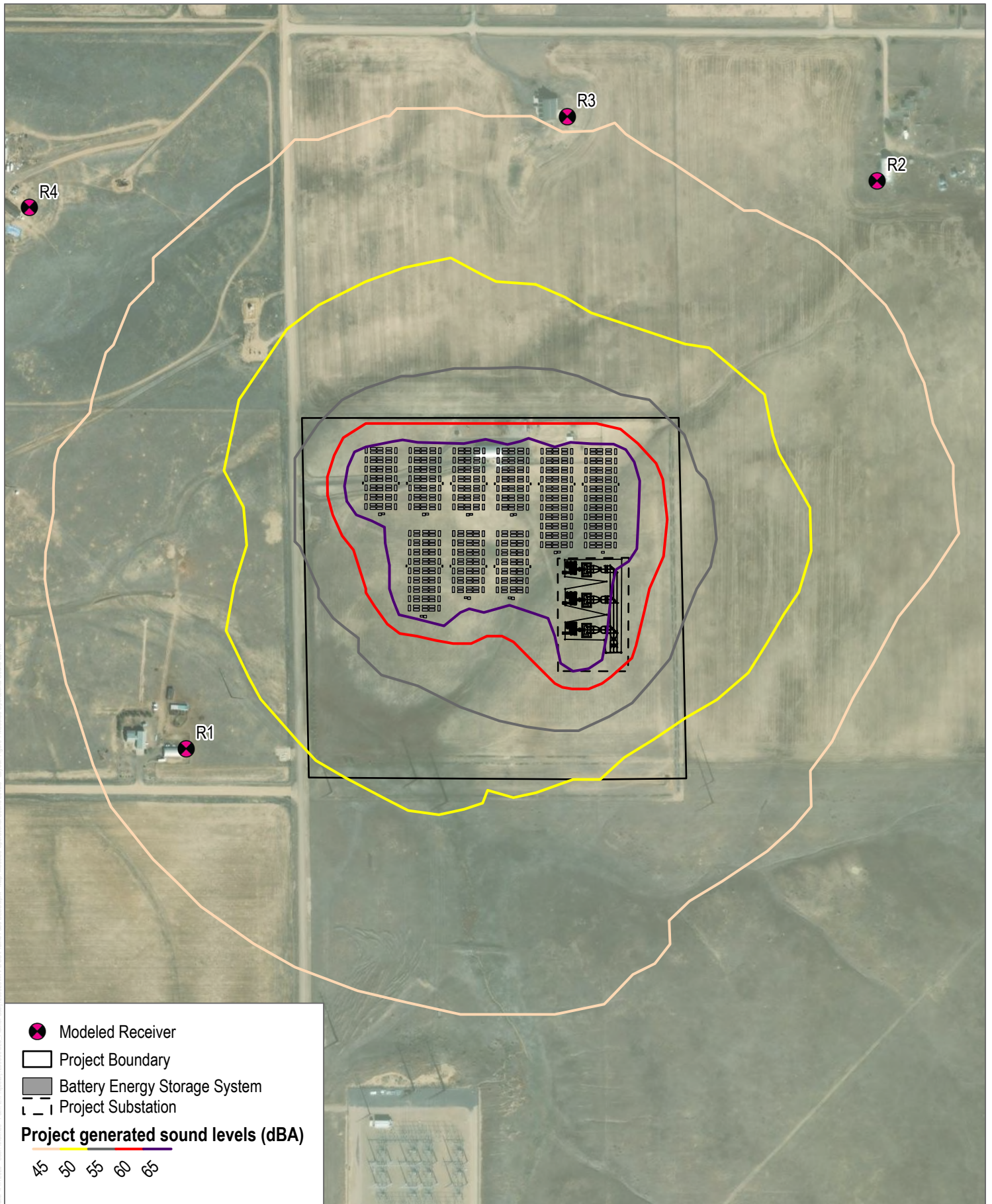
Project operational sound levels are below the County Development Standards nighttime residential sound level limit of 50 dBA Leq at the nearest residential use boundaries. As indicated in Table 2, the highest sound level exposure at a residence would be 48 dBA Leq. As shown in Figure 1, sound levels are also below the nighttime agricultural noise limit of 75 dBA Leq at all Project property lines.

**Table 2. Project Operational Sound Levels Compared to Noise Limits**

Model Receiver	Modeled Project Operational Noise Level with NRDs dBA (Leq 1hr )	Municipal Code Limit dBA Leq
R1	48	50
R2	21	50
R3	45	50
R4	41	50

**Notes:** dBA = A-weighted decibel; Leq 1hr = average noise level equivalent over a 1-hour period.

Based on sound propagation modeling, as described in this document, sound generated by Project operations would be in compliance with the Adams County Development Standards.



SOURCE: MAXAR 2022; cadnaA



**FIGURE 1**  
Modeled Operational Sound Levels

# PRAIRIE PASS HAZARDOUS MATERIALS AND WASTE MANAGEMENT PLAN

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**To:** Adams County Community & Economic Development Department  
**From:** Prairie Pass LLC  
**Subject:** Prairie Pass Energy Storage Project Hazardous Materials and Waste Management Plan  
**Date:** April 14, 2026

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A Hazardous Materials and Waste Management Plan has been prepared at the request of Adams County for the battery energy storage system (BESS) facility as a requirement of the Conditional Use Permit process. The intent of this Hazardous Materials and Waste Management Plan (Plan) is to provide a comprehensive plan for the controlling of hazardous materials and waste management during the construction and operation of the BESS facility by Prairie Pass LLC (applicant).

## 1 Waste Management

The Prairie Pass Energy Storage Project (Project) site will produce a small amount of solid waste from construction activities. This may include paper, wood, glass, plastics from packing material, waste lumber, insulation, scrap metal and concrete, empty nonhazardous containers, and vegetation waste. These wastes will be segregated, where practical, for recycling. Non-recyclable waste will be placed in dumpsters and removed on a regular basis by a certified waste-handling contractor for proper disposal at Class II (municipal solid waste) and Class III (construction materials and debris) landfills in compliance with the Colorado Solid Waste Disposal Sites and Facilities Act (C.R.S. 30-20-100 et seq.) and associated regulations (6 CCR 1007-2).

During normal operations, the facility will not produce waste or debris. Any incidental waste generated by personnel will be collected and disposed of appropriately.

## 2 Hazardous Materials

During normal operations, no batteries will be disposed of as waste. As necessary, batteries will be handled and transported off site for disposal in accordance with hazardous waste and universal waste standards (6 CCR 1007-3), including proper storage, handling, and transportation to approved recycling or disposal facilities.

The applicant will handle, store, and dispose of waste in a manner that controls blowing debris and other potential nuisance conditions, consistent with Adams County performance standards for industrial uses. All solid and hazardous waste will be handled, stored, and disposed of in accordance with local, state, and federal waste disposal regulations. This includes maintaining waste containment during transport, preventing waste deposition along public rights-of-way, and ensuring that uncovered loads are avoided or subject to applicable disposal fees. Hazardous materials, if encountered, will be managed under the Colorado Hazardous Waste Regulations (6 CCR 1007-3), and hazardous waste will not be disposed of on-site. Any potential pollutant sources shall be stored within a covered area to minimize exposure to precipitation and reduce the risk of stormwater contamination. In addition,

these materials will be placed in secondary containment systems designed to capture leaks or spills, thereby preventing the release of hazardous substances into the environment.

The facility will comply with all applicable hazardous materials reporting requirements under the Occupational Safety and Health Act of 1970 (29 U.S.C. 651 et seq.), which includes preparing and maintaining Safety Data Sheets (SDS) for lithium-ion batteries, electrolyte solutions, maintenance chemicals, and more. Copies of all SDS, along with an annual Emergency and Hazardous Chemical Inventory Form (Tier II report), must be submitted to the Local Emergency Planning Commission (LEPC), the State Emergency Response Commission (SERC), and the local fire district by March 1 of each year, as required by Emergency Planning and Community Right-to-Know Act (EPCRA) Sections 311 and 312. A comprehensive inventory detailing chemical names, quantities, storage locations, and hazard classifications must be maintained on-site and made available to Adams County upon request. Any significant changes in the type or quantity of hazardous materials, such as battery module replacements or introduction of new chemicals, will be reported promptly.

## PRAIRIE PASS NUISANCE PLAN

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**To:** Adams County Community & Economic Development Department  
**From:** Prairie Pass LLC  
**Subject:** Prairie Pass Energy Storage Project Nuisance Plan  
**Date:** April 14, 2026

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A Nuisance Plan has been prepared at the request of Adams County for the Prairie Pass Energy Storage Project (Project) as part of the Conditional Use Permit process. The intent of this Nuisance Plan (Plan) is to provide a comprehensive plan for the controlling of fugitive dust and vehicle tracking, noxious weeds, lighting, and sound during the construction and operation of the battery energy storage system (BESS) facility by Prairie Pass LLC (applicant).

### 1 Dust Mitigation During Construction

Minimal dust is expected to be generated during construction, as such the applicant will implement Best Management Practices (BMPs) to prevent fugitive dust from becoming airborne and traveling beyond the property lines. The site foreman will regularly monitor dust control efforts to ensure their effectiveness. Water will be sprayed as needed on soils and unpaved areas during dry weather to mitigate dust, with care taken to avoid overapplication and the creation of mud. Additionally, all vehicles operating on-site during construction will adhere to a speed limit of 15 mph or less to minimize dust emissions. Retention of existing vegetation in areas not planned for development is another strategy to minimize dust. If applicable, retention of existing vegetation will be discussed in the Project Landscape Plan.

Construction entrances and exits will be stabilized when necessary, using approved BMPs such as aggregate vehicle tracking pads underlain by geotextile fabric, or pre-fabricated track-out control mats. These controls will be installed at points where construction traffic enters or exits the site. Where necessary, wheel wash stations will be provided, and wash water will be directed to on-site sediment traps to prevent discharge into stormwater systems. Haul routes will be approved by Adams County, and the use of stabilized construction entrances such as gravel pads, track-out mats, or rumble strips will be utilized between unpaved and paved surfaces rather than dirt ramps.

### 2 Noxious Weed Management

To comply with Colorado Department of Agriculture and Adams County regulations, noxious weed management will occur throughout the construction and operational phases of the facility to prevent the introduction and spread of state-listed noxious weeds, which may occur due to site disturbance. General weed mitigation measures used to manage the spread of noxious weeds include regular inspections at the beginning, middle, and end of each growing season to assess weed presence, invasion levels, and, if determined necessary, treatment effectiveness. Appropriate management actions will be taken whenever noxious weeds are identified. During construction, a general weed control strategy will be followed if determined to be necessary during the regular inspections. Once the Project transitions to operations, operational staff will further develop and implement any necessary weed control strategies, ensuring ongoing compliance and effectiveness.

Key goals of noxious weed management include identifying and managing noxious weeds within and around disturbed areas, conducting pre- and post-treatment evaluations, minimizing the transport of weed species, and educating field personnel to support identification and control efforts. The success of noxious weed management will be reviewed and updated periodically to remain effective and responsive to site-specific conditions.

## 2.1 Noxious Weed Prevention

Noxious weeds are primarily spread through the dispersal of seeds and plant propagules such as spores and roots. The most effective control strategy is to prevent their introduction to the site. To support this, the applicant will implement a combination of preventative practices throughout construction and operations.

Preventative measures include thorough cleaning of all equipment before it enters the Project area to avoid transporting weed seeds from other locations. All seed mixtures used for revegetation or temporary stabilization will be certified weed-free, as will any hay, straw, or mulch materials used on-site. Regular inspections will be conducted to detect and address new weed infestations early, before they become established or spread.

The applicant will also coordinate with adjacent landowners to manage weed threats that may cross property boundaries, recognizing that regional cooperation is key to long-term success. Any infestations that pose a risk to natural or reclaimed areas will be treated using accepted weed management methods, tailored to the species, location, and severity of the infestation.

## 2.2 Weed Management

The applicant will implement a weed management strategy to control noxious weeds within the Project area if deemed necessary during the regular inspections. This strategy allows for the selection of one or more treatment methods based on site-specific conditions, the species of concern, and the extent of infestation. The goal is to apply effective, environmentally responsible control measures that support long-term vegetation health and regulatory compliance. Additionally, the Project area will consist of a gravel surface between equipment and foundations, which will limit the opportunities for vegetation to grow.

The selected control methods will be tailored to the specific site conditions and weed species present. Using a diverse set of tools helps protect pollinators, reduce risks to wildlife, prevent herbicide resistance, and limit chemical persistence in the environment. All weed control practices will comply with relevant federal, state, and local laws.

The following methods may be used individually or in combination as deemed necessary by site personnel:

### **Cultural Control**

Where landscaping is required, the applicant will use targeted revegetation practices to reduce the spread of noxious weeds and promote healthy plant growth. Disturbed areas will be promptly reseeded with certified weed-free, native species suited to site conditions. Seeding will be done at optimal densities with minimal fertilizer use to avoid encouraging weed growth.

Construction activities will be carefully planned to limit unnecessary soil disturbance, and exposed areas will be stabilized quickly. These measures will help establish competitive vegetation, reducing opportunities for weed infestation.

## Mechanical Control

Mechanical methods such as mowing, pulling, disking, or plowing may be used to physically disrupt weed growth and seed development. These techniques are most effective when timed correctly, particularly before seed production. While annual weeds can often be managed with mowing or removal, perennial species with deep root systems are more resistant. In such cases, mowing may only limit seed spread without eliminating the plant, and tilling may worsen infestations by stimulating root sprouting. As a result, mechanical control is typically most effective when used in combination with other methods.

## Biological Control

Biological control may be used to help manage noxious weed populations by introducing species-specific insects or plant pathogens that disrupt weed growth and reproduction. These methods are most effective when applied at the right time to limit seed production. While biological controls typically do not eliminate infestations entirely, they can reduce weed populations to more manageable levels. The use of biological controls is generally most appropriate for larger infestations that can support the introduced agents. If used, all biological control efforts will be coordinated with the Colorado Department of Agriculture's Biological Pest Control Program.

## Chemical Control

Chemical control may be used to manage noxious weeds through the targeted application of herbicides. When applied correctly, herbicides can disrupt plant growth, prevent seed development, and minimize soil disturbance. Selection will be based on weed type, timing, site conditions, and past treatments, with the goal of maximizing effectiveness while minimizing environmental impact.

To prevent herbicide resistance, products with different modes of action will be rotated. All herbicides will be applied by licensed personnel following manufacturer labels and Colorado regulations. Environmental factors, protection of non-target species, and safety considerations such as runoff potential and pollinator impact will guide product selection.

Herbicide applications will follow all safety protocols, including proper equipment calibration, use of personal protective equipment (PPE), and adherence to Restricted Entry Intervals (REIs). Application records will be maintained as required by the Colorado Department of Agriculture, and all containers will be disposed of safely and in accordance with label instructions.

## 2.3 Monitoring and Follow-up

Effective weed control often requires multiple growing seasons, especially in areas with well-established infestations and persistent seed banks. To ensure long-term effectiveness, the applicant will maintain detailed records of control efforts and monitor their outcomes. This information will guide adjustments to treatment strategies and priorities over time. The program will be updated as site conditions evolve, and new infestations will be addressed promptly to prevent spread.

## 3 Lighting

This section details the required lighting standards during the construction and operation phases of the Project. Specifically, lighting facilities would be positioned so no direct light or reflection would create a nuisance or hazard on adjacent properties or the road right-of-way. Additional details are discussed below.

### 3.1 Construction

Construction will mainly occur during normal working hours in the daylight, minimizing the need for temporary lighting. Should the need for additional lighting arise, temporary lights will be installed in compliance with Section 4-11-02-06-01 of the Adams County Development Standards and Regulations. Temporary lighting will be shielded and downcast to minimize and eliminate bleeding outside of the Project area. Lights will not exceed 150,000 lumens per source, exceed more than 24ft in height, or Project more than 0.1 lumens beyond the property lines. Any lighting installed during construction will be on a temporary as-needed basis and will be removed prior to the completion of construction.

### 3.2 Operation

During operations, there will not be nighttime lighting except for motion-activated lighting that will be used for security purposes or for emergency maintenance activities. Any lighting installed will be dark-sky compliant and will be designed to minimize light pollution and help to conserve energy.

## 4 Sound

### 4.1 Existing Sound Conditions

The existing sound environment in a Project area can be characterized by the area's general level of development because the level of development and ambient sound levels tend to be closely correlated. Areas which are not urbanized are relatively quiet, while areas which are more urbanized are noisier as a result of roadway traffic, industrial activities, and other human activities. Given the rural nature of the Project area, ambient sound levels are expected to be in a day/night average sound level range of 40 dB to 50 dB. Average ambient sound levels during Project construction and operation were assessed as part of the Project's Sound Study to ensure they are within prescribed regulatory thresholds.

### 4.2 Construction

Construction activity will occur with varying levels of staffing, construction delivery, and equipment use throughout the construction period. The majority, if not all Project construction activities are anticipated to occur during normal daytime work hours. Possible exceptions may include limited night construction activities that are considered time critical (such as concrete pours or assembly and fabrication activities) and may require extension of work hours based on inherent process requirements or material driven characteristics. As the design phase of the Project progresses, updates will be made to the plan to include additional mitigation measures, if deemed necessary, based on the anticipated construction worker vehicles, construction delivery trucks that are anticipated to travel to the Project site each day.

The specific measures for reducing employee exposure to high (above permissible) sound levels during construction of the Project are described below. Sound will be generated from the mechanical disturbance of soils on the site by equipment engaged in grading, earth moving, loading, and unloading of bulk materials, trenching, excavating, pile driving, and by the traveling of equipment and vehicles on paved and unpaved surfaces of the site.

All employees working in a potentially high sound level environment shall be monitored and protected against exposure to sound levels that equal or exceed 85 A-weighted decibels for an 8-hour time weighted average. When preliminary sound level surveys indicate an employee may be exposed to a level that equals or exceeds the “action level,” they will be placed in a monitoring program. Monitoring will be repeated whenever a change in production, process, equipment, or controls increase sound exposure to the extent that additional employees may be exposed at or above the action level. Hearing protection will be made available to all employees exposed to the action level at no cost to the employee. Hearing protection shall be replaced as necessary.

### 4.3 Operation

During operation, the Project is not expected to generate significant noise and would comply with the applicable regulations related to noise. Operational sound will primarily be associated with normal functioning of the BESS and substation equipment, while routine inspections and maintenance activities will produce only brief and infrequent sound from light vehicles or small equipment. Operational sound will be discussed further in the Project’s Sound Study.