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May 7, 2019

**PROJECT NO: 0224-CS19**

Client: Ms. Careena Barry

Reference: Summary Letter, Initial Wildlife/Biological Assessment for Mouse Habitat & Initial Wetlands Assessment, Proposed residential development, Bentgrass Meadows St, Falcon, CO

Dear Ms. Barry,

At your request, we have completed the initial wildlife/biological assessment for mouse habitat and initial wetlands assessment for the referenced project. Results of our evaluation are summarized below.

**PURPOSE and SCOPE**

The purpose of this initial wildlife/biological assessment is to determine the likely effects of the proposed development on the mouse species listed as threatened, endangered, proposed, or candidate species under the Endangered Species Act (ESA) of 1973, that potentially occur in the area. Our scope of services did not include a detailed biological assessment of any kind.

The purpose of the initial wetland assessment was to survey and delineate the boundaries of potentially jurisdictional water features within the project boundaries, as defined under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Prior to the field survey, a preliminary desktop analysis was performed to evaluate overall water resource characteristics of the project and determine the presence of potentially jurisdictional watercourses. A site visit and an initial wetland delineation were conducted in April 2019. The initial wetland assessment was performed in general accordance with the Rocky Mountains, Valleys, and Coasts Regional Supplement to the 1987 USACE Wetland Delineation Manual (USACE 1987).

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## STUDY AREA

The location and the extent of the study area is located as shown in Figure 1 and Figure 2. The proposed development consists of building a residential neighborhood in a partially developed residential and commercial area of El Paso County, Colorado. Besides nominal earthwork for building lot grading and neighborhood roadways, we do not anticipate significant site grading or site topography alterations or vegetation alterations for this project. Site surface conditions are as shown in the attached photographs.

The study area is located in a partially urban, partially developed, residential and commercial areas at an elevation of approximately 6,920-7,010 feet. The general habitat types within the study area include upland grassy/weedy habitat, riparian habitat, and minor adjacent landscaped areas. The area has an average annual precipitation of approximately 16-17 inches, an annual max temperature of 62 degrees, and an average minimum temperate of 36 degrees Fahrenheit.

## PREBLE'S MEADOW JUMPING MOUSE HABITAT

Preble's or PMJM is a small mammal approximately 9-inches in length with large hind feet adapted for jumping, a long bicolor tail (which accounts for 60% of its length), and a distinct dark stripe down the middle of its back, bordered on either side by gray to orange-brown fur. This largely nocturnal mouse lives primarily in heavily vegetated, shrub dominated riparian (streamside) habitats and immediately adjacent upland habitats along the foothills of southeastern Wyoming south to Colorado Springs along the eastern edge of the Front Range of Colorado. The Preble's mouse enters hibernation in September or October and doesn't emerge until May. Its diet changes seasonally and consists of insects, seeds, fungus, fruit and more.

The Preble's is a small mouse with an extremely long tail, large hind feet, and long hind legs, which allow the mouse to escape from predators by making incredible jumps. The distinctive long tail is bicolored, lightly furred, and often twice as long as the body, occupying more than 60 percent of the total body length. The Preble's has a dark broad stripe on its back that runs from head to tail and is bordered on either side by gray to orange-brown fur. Population trends and density are not well known and there is no reliable abundance estimates for the Preble's.

Preble's meadow jumping mouse habitat consists of dense, well-developed wetland and riparian areas with dense vegetation, as well as the adjoining uplands containing undisturbed shrub and grass uplands up to 300 feet beyond the 100-year floodplain. Upland areas are used to hibernate, forage, and escape flooding. Hibernation occurs underground or beneath logs or other similar shelters from mid-October through early May. The Preble's may travel more than 2.3 miles along linear riparian habitats.

**As noted in the attached Figure 3, the entire study area is located in a block clearance zone for Preble's. Block clearance zones are areas that the USFWS has determined, through analysis of species survey data and occurrence information, that there is a very low probability of the species occurring in an area and that it is likely extirpated from that area.**

**The current Preble's block clearance zone shows the entire site area as block-cleared.** We understand that Preble's absence in the site vicinity has been confirmed through field surveys, trapping surveys conducted by regulatory agencies. These surveys were reportedly negative for the presence of Preble's. Habitat for Preble's in the site area has been highly degraded due to the presence of adjacent development that have impacted and removed riparian habitat over the years. Culverts that convey streams and ditches under adjacent and nearby major public roadways or streets were not designed for wildlife passage and, therefore, they fragment habitat for many riparian species such as Preble's. The adjacent residential and commercial developments likely prohibit movement and connectivity of the species. Adjacent and nearby vegetation do not necessarily contain appropriate denning habitat for Preble's.

The entirety of project construction activities would occur within the block clearance zone for Preble's. There would be no direct impacts to riparian habitat in occupied Preble's habitat that has not been block cleared. Construction activities may temporarily affect Preble's in the vicinity of the site area if construction activities are conducted during the Preble's active season (May 1 through November 1). Construction activities are expected to occur year-round. Although temporary disturbance from construction activities may occur, the effect is expected to be minor and temporary because it is likely that the species, if present in the vicinity area, would avoid the area during construction activities. It is unlikely there are any occupied burrows in the action area riparian areas due to the high levels of human disturbance and degraded adjacent upland habitat. However, if occupied burrows were present, construction activities, such as heavy equipment operation could impact burrows through ground vibration and loud noise. In addition, Preble's could be crushed or smothered by construction equipment or workers.

## **INITIAL WETLANDS ASSESSMENT**

A site visit and an initial wetland assessment/delineation was conducted in general accordance with the Rocky Mountains, Valleys, and Coasts Regional Supplement to the 1987 USACE Wetland Delineation Manual (USACE). The determination of a wetland depends on the presence or absence of three parameters: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology during the wettest season. Vegetation, soils, and hydrology were analyzed for the determination of the presence of wetlands, watercourses, and other special aquatic features. Photographs were recorded depicting field conditions at the time of the site visit (see Appendix). Initial summary results of the field assessment and desk study are detailed below.

**National Wetlands Inventory Maps:** A review of NWI maps (USFWS) was conducted to determine the potential presence, location, size, and type of wetlands located within the Project boundaries. The USFWS generates NWI maps through aerial photograph interpretation. NWI maps may not accurately depict the extent or existence of wetland systems in a specific area, nor do maps consistently and accurately identify wetland type. As such, the maps were utilized for preliminary analysis only. Field reconnaissance was conducted to determine the true extent and type of wetlands located within the Project, and to verify the information gathered through NWI data review. NWI data did not depict any wetlands within the project boundaries (Figure 5).

**FEMA Maps:** A review of FEMA FIRM floodplain maps (FEMA) was conducted to determine the existence, location, and extent of floodplains located within the project boundaries. The FIRM maps depict floodplain areas along rivers and tributaries. The maps record the following data: 100-year floodplains (1% chance of annual flooding) and 500-year floodplains (0.2% annual chance of flooding), the height of the base flood (Base Flood Elevations), and the risk premium zones developed from topographical information across a floodplain. The FEMA generates FIRM floodplain maps for flood insurance purposes. A review of El Paso County FEMA FIRM panels indicate portions of the project area adjacent to an unnamed tributary to Black Squirrel Creek No. 2 are at risk of inundation by a 100-year flood (Figure 10 and 11). The remainder of the property is identified as Zone X flood zone, which consists of areas of minimal flood risk “outside the 1-percent and 0.2-percent-annual-chance floodplains” (FEMA 2005). The Project is located within FEMA FIRM panel 08041C0553G, El Paso County.

**Soil Survey Maps:** The El Paso County Soil Survey indicates the project area traverses three soil associations including Blackland loamy sand (1 to 9 percent slopes), Blackland-Fluvaquentic Haplaquolls, and Columbine gravelly sandy loam (Figure 4). None of these soils are classified as a hydric soil in El Paso County by the Natural Resources Conservation Service (NRCS).

**Wetlands:** Potentially jurisdictional wetlands were not observed within the project boundaries at the time of the site visit. Soils, hydrologic indicators, and vegetation were examined on site to determine the presence or absence of wetlands. Potentially jurisdictional wetlands were not observed within and adjacent to the riverine within project boundaries. Field indicators did not include any narrowly defined bed and bank and wetland vegetation within and abutting the riverine. Wetland vegetation was not present within project boundaries or adjacent to the riverine or ponds. This is not to say that a very small limited area of wetlands are not present immediately adjacent to the edges of the existing ponds (within 10 feet) present adjacent to the north-central project boundary (Meadows Filing No. 3). Soil saturation and some ponding was evident at the locations of the ponds present in this area. It should be noted that a detailed wetlands delineation was beyond our scope of services.

This report has been prepared exclusively for the client, its' consultant, engineers and subcontractors for the purpose of design and construction of the proposed structures. No other engineer, consultant, or contractor shall be entitled to rely on information, conclusions or recommendations presented in this document without the prior written approval of AGS.

We appreciate the opportunity to be of service to you on this project. If we can provide additional assistance or observation and testing services during design and construction phases, please call us at 1 888 276 4027.

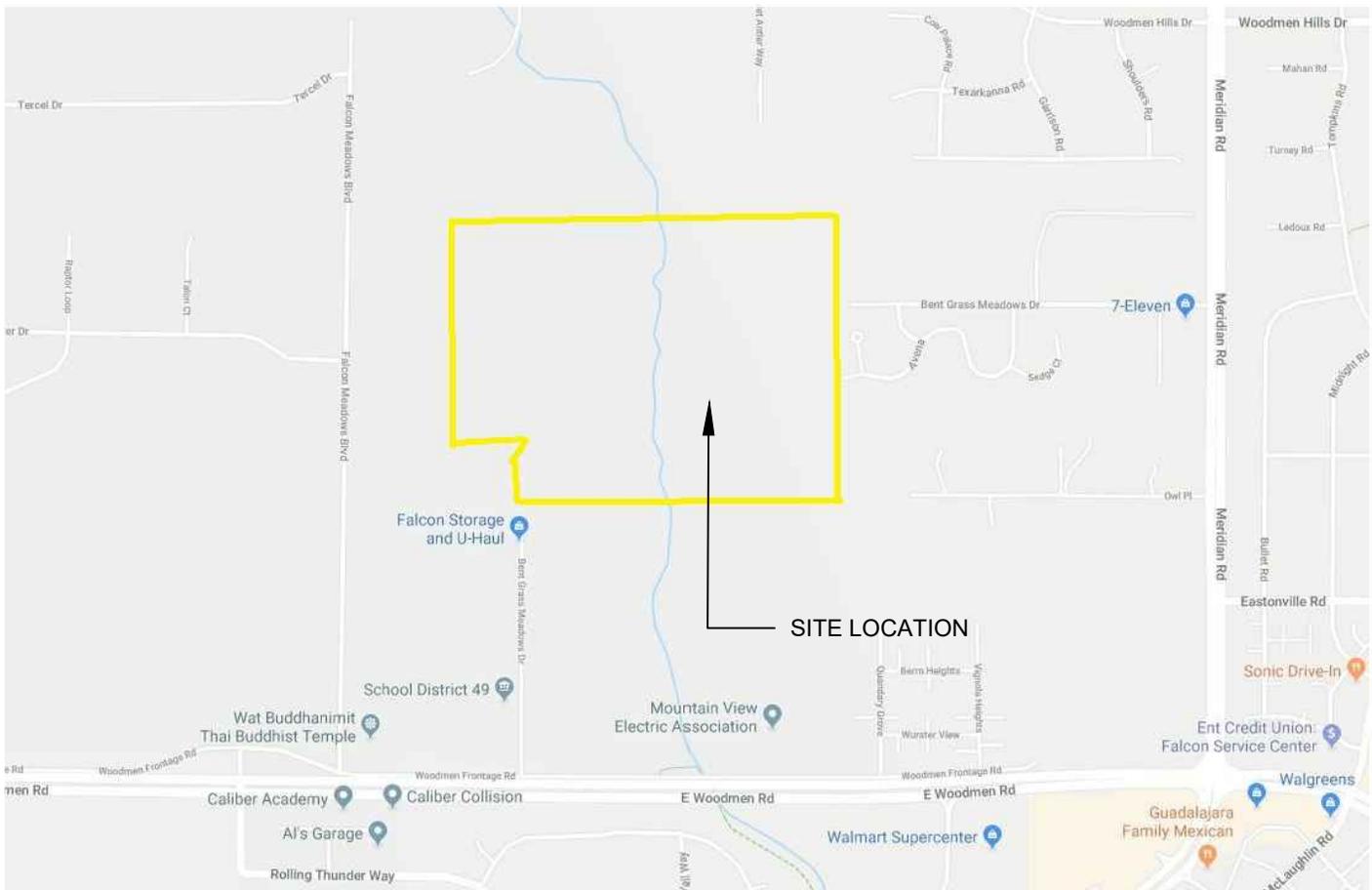
Sincerely,



Sam Adettiwar, MS, PE, GE, P.Eng, M.ASCE  
Senior Engineer

Attachments

# FIGURES





PROJECT BOUNDARY

NOTE:  
SCHEMATIC PLAN TO SHOW APPROXIMATE SUBSURFACE EXPLORATION LOCATION ONLY; NOT SURVEYED.



LEGEND:

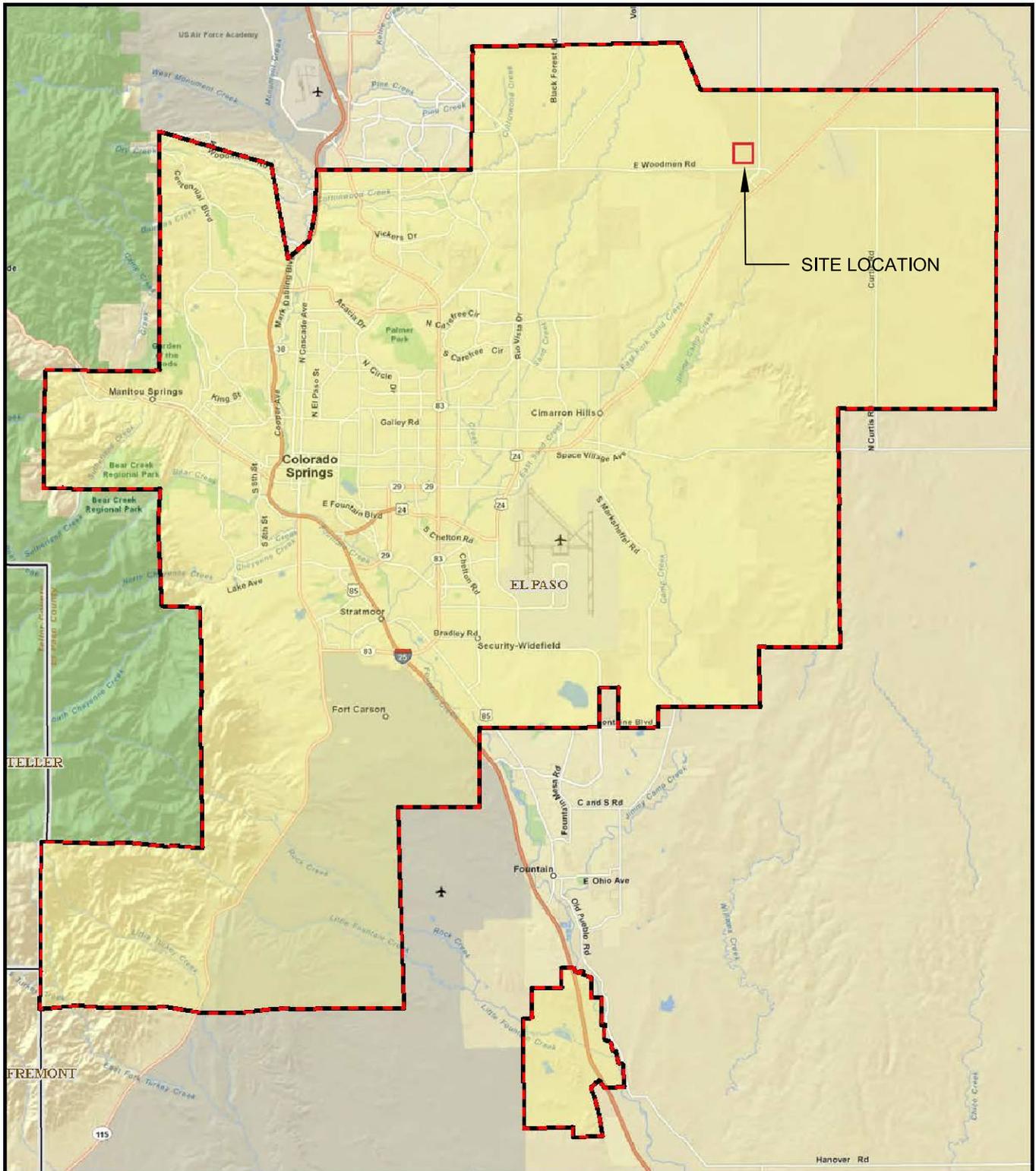
 DESIGNATES SUBSURFACE INFILTRATION LOCATION, BY AMERICAN GEOSERVICES, LLC. , NOVEMBER 2018 SEE EXPLORATION LOG IN APPENDIX FOR FURTHER DETAILS.

REFERENCE:  
ELPASO COUNTY  
COLORADO GIS

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FIGURE 2: SCHEMATIC SITE PLAN





**PREBLE'S MEADOW JUMPING MOUSE BLOCK CLEARANCE MAP: COLORADO SPRINGS**



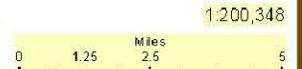
Please contact the U.S. Fish & Wildlife Service, Colorado Field Office, at (303) 236-4773 for assistance using this map. Visit <http://1.usa.gov/n5r48y> for more information on Preble's and the Block Clearance.



**Block Clearance Area**



**County Boundaries**

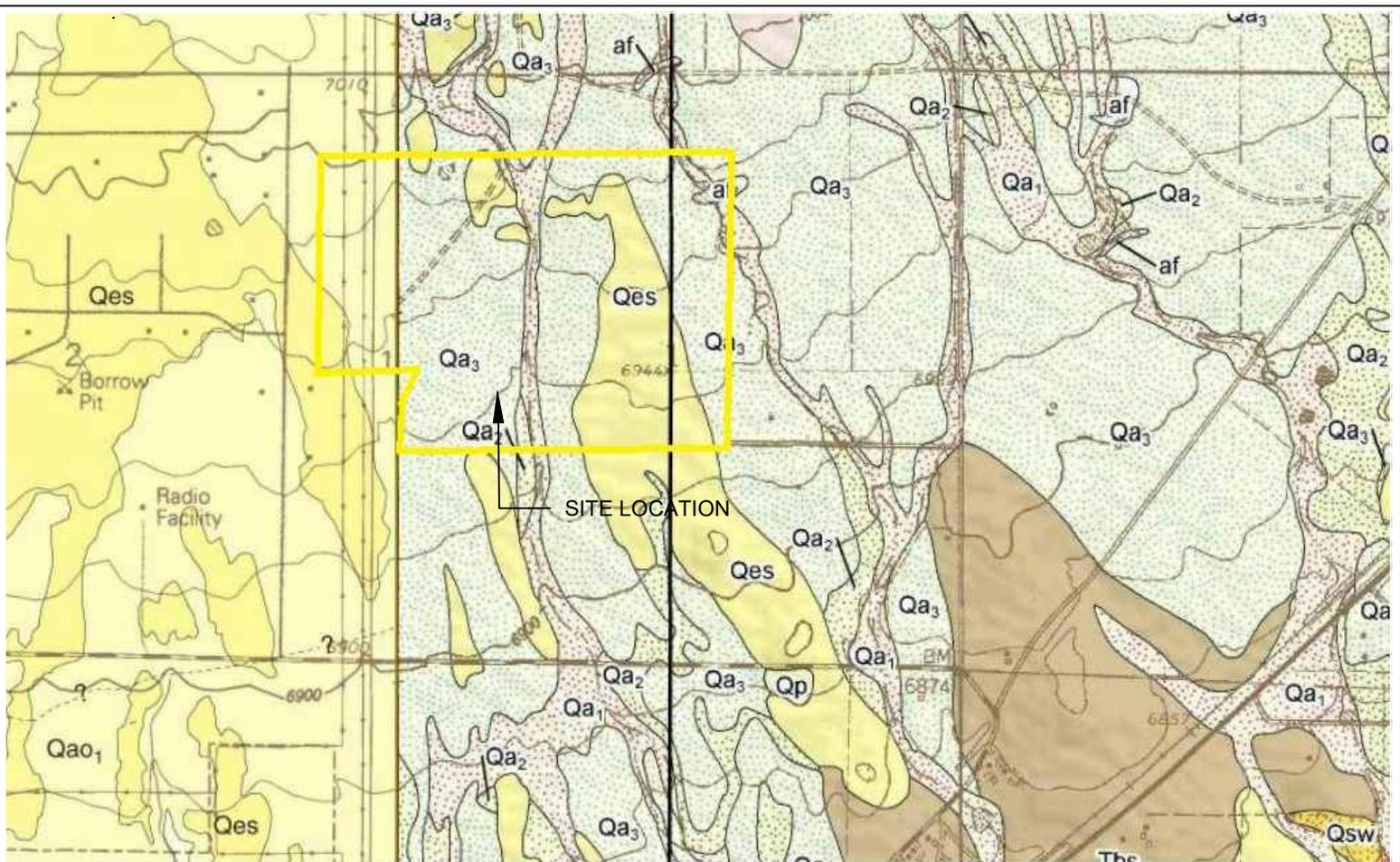


23 FEB 2012 | NAD83 UTM Z13N  
Basemap: World Street Map, ESRI Services



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**FIGURE 2A: BLOCK CLEARANCE MAP**



### LEGEND

- 
**Alluvium two (lower Holocene)** — Dark gray to brown, poorly to well sorted, moderately consolidated, silt, sand, gravel, and minor clay and occasional boulders in stream terrace deposits approximately 6-12 feet above the modern flood plain or as non-terrace forming alluvium in valley headwaters. Clasts are subrounded to well rounded and the dominant sediment is sandy gravel with a silty sand matrix. Clay seams are poorly to moderately stratified. The unit correlates with the Piney Creek Alluvium described by Hunt (1954) in the Denver area and of Maberry and Lindvall (1972). The unit is subject to occasional flooding and is a potential source of sand and gravel. Maximum exposed thickness of the unit locally exceeds 20 feet.
- 
**Alluvium three (upper Pleistocene)** — Tan to reddish brown to grayish brown, poorly sorted, moderately consolidated poorly to moderately stratified silt, sand, gravel, and cobbly gravel and occasional boulders in stream terrace deposits approximately 10-20 feet above the modern flood plain or as non-terrace forming alluvium in valley headwaters that underlies the younger alluviums. The unit contains dark gray clay beds that may be expansive. Clasts are subrounded to well rounded and the dominant sediment is sandy gravel with a sandy matrix. The unit correlates with the Broadway Alluvium described by Hunt (1954) in the Denver area and of Maberry and Lindvall (1972). The unit is a potential source of sand and gravel. Maximum exposed thickness of the unit locally exceeds 20 feet.
- 
**Eolian sand (Holocene to upper Pleistocene)** — Yellowish-brown to tan, fine- to coarse-grained, frosted sand and silt deposited by wind. Typically this unit is faintly stratified and non-cohesive; dune forms are not present. The unit is likely deposited as a sandsheet by winds capable of moving very fine gravel-sized clasts. Eolian sand is moderately compacted, easily excavated, and drains well. Unit locally may exceed 5 feet in thickness.



REFERENCE:  
U.S. GEOLOGICAL MAPS



FIGURE 3: GEOLOGIC MAP



LEGEND

**El Paso County Area, Colorado (C0625)**

El Paso County Area, Colorado (C0625)

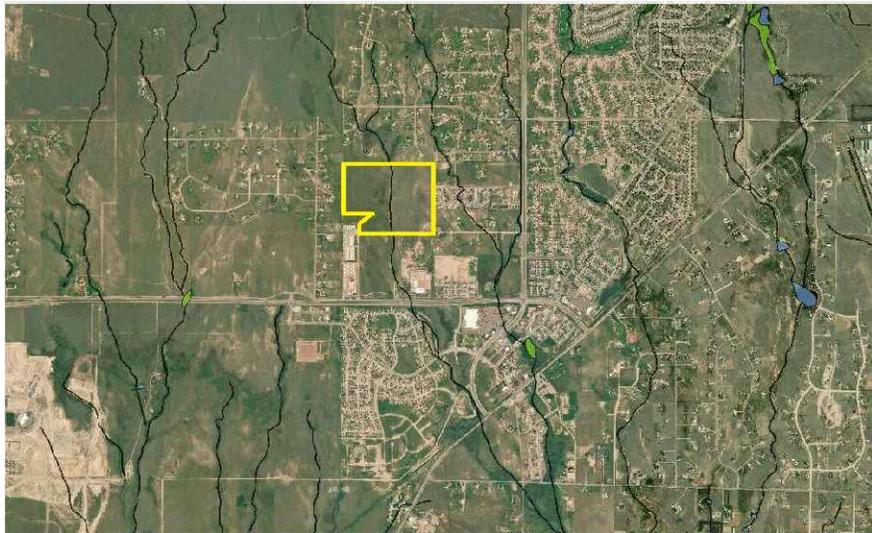
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	157.2	25.2%
9	Blakeland-Fluvaquentic Haplaquolls	77.1	12.3%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	390.3	62.5%
<b>Totals for Area of Interest</b>		<b>624.5</b>	<b>100.0%</b>



REFERENCE:  
WEB SOIL SURVEY



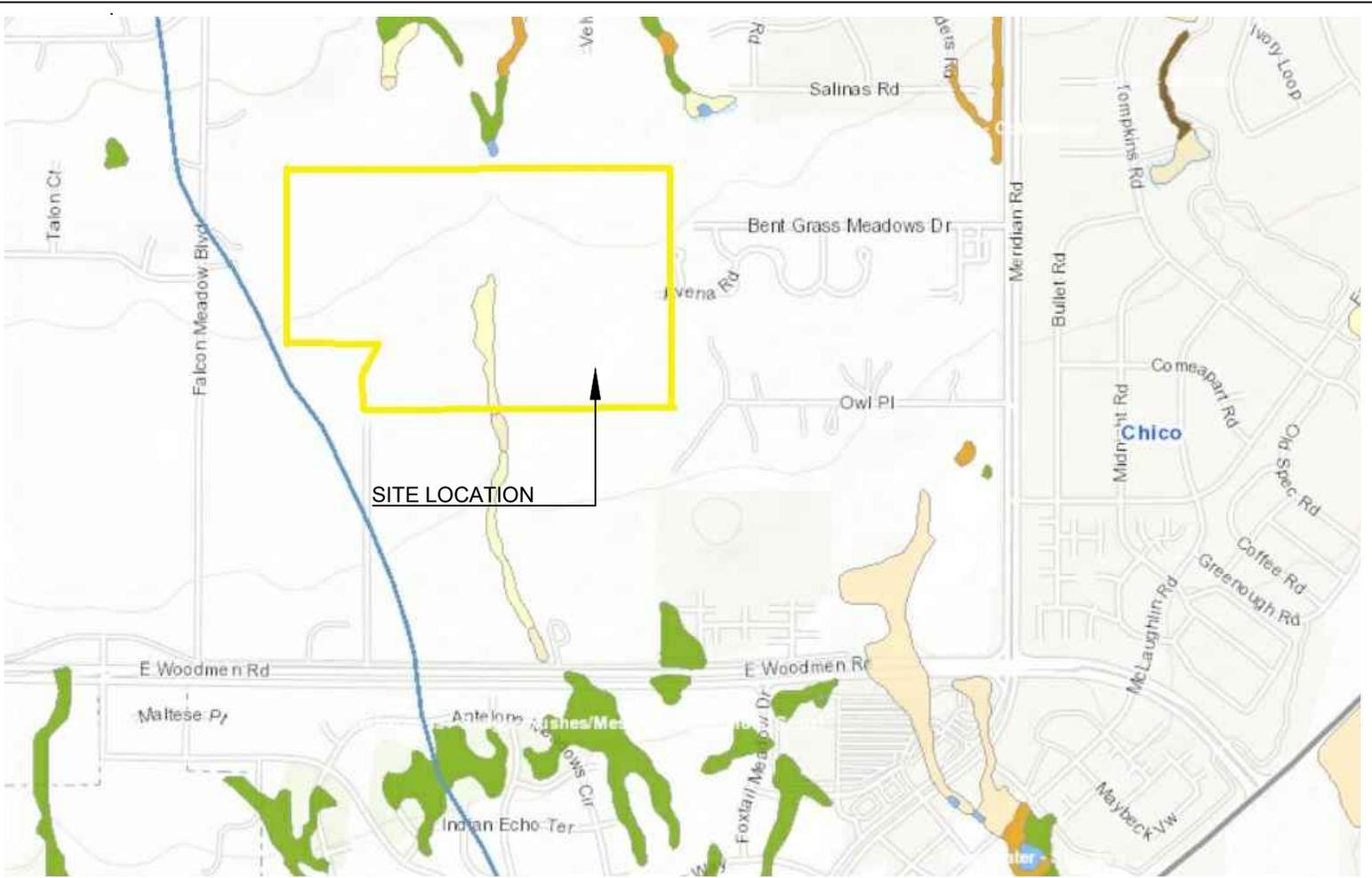
FIGURE 4: SOIL SURVEY MAP



REFERENCE:  
NATIONAL WETLANDS  
INVENTORY



FIGURE 5:  
NATIONAL WETLANDS INVENTORY  
MAP



- ### Riparian Mapping
- CPW Riparian
- Forested Deciduous
  - Forested Evergreen
  - Shrub
  - Herbaceous
  - Irrigated Agriculture
  - Open Water
  - Upland Vegetation
  - Sandbar
  - Unvegetated
- CPW Riparian Status
- Digital Data
  - No Data

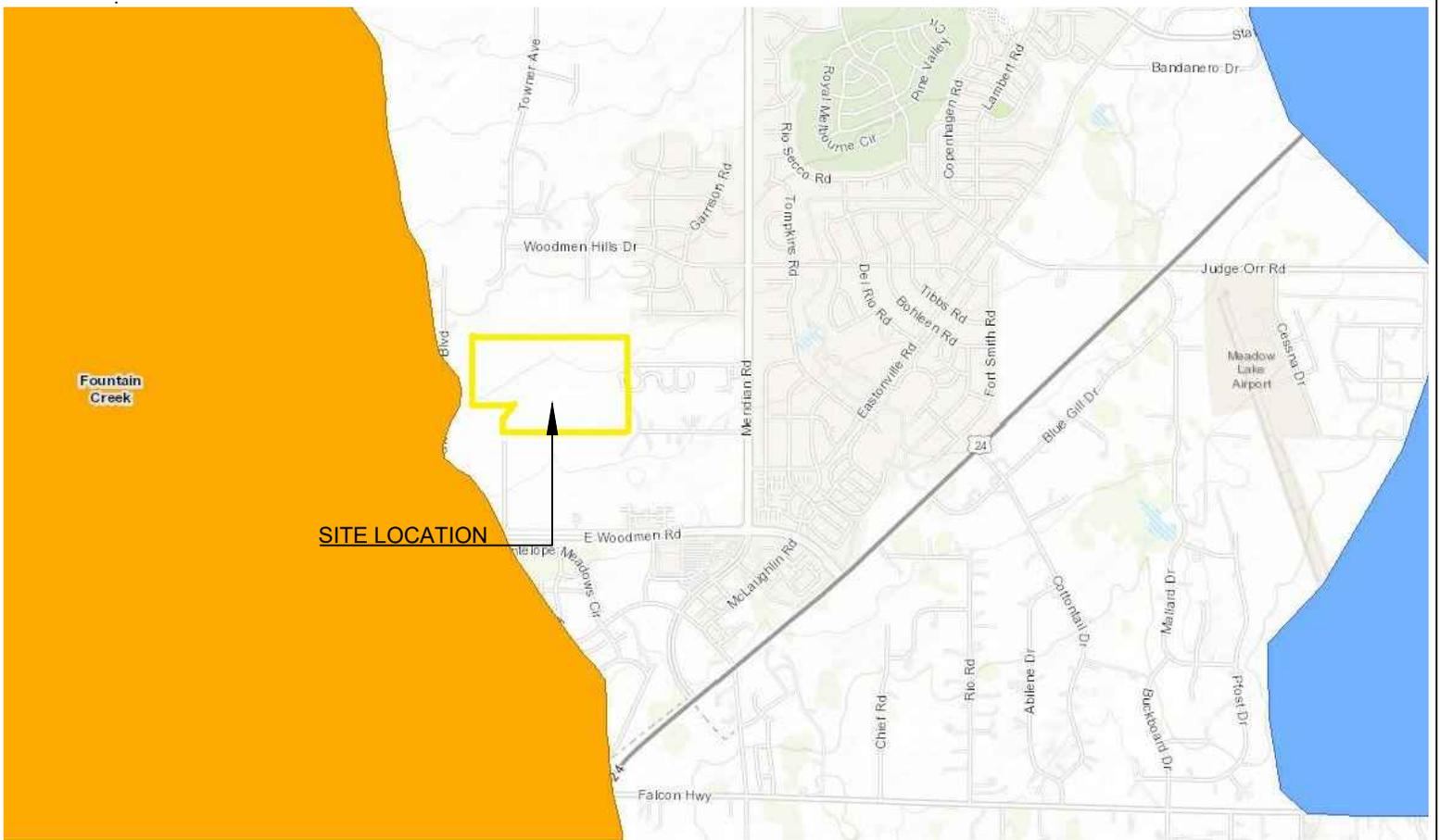


REFERENCE:  
 COLORADO SPRINGS  
 HAZARD VICINITY AND  
 ARC GIS MAPS



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**FIGURE 6: RIPARIAN MAP**



### CNHP Potential Wetland Conservation Areas

#### CNHP Potential Wetland Conservation Areas

- B1: Outstanding Biodiversity Significance
- B2: Very High Biodiversity Significance
- B3: High Biodiversity Significance
- B4: Moderate Biodiversity Significance
- B5: General Biodiversity Interest



N

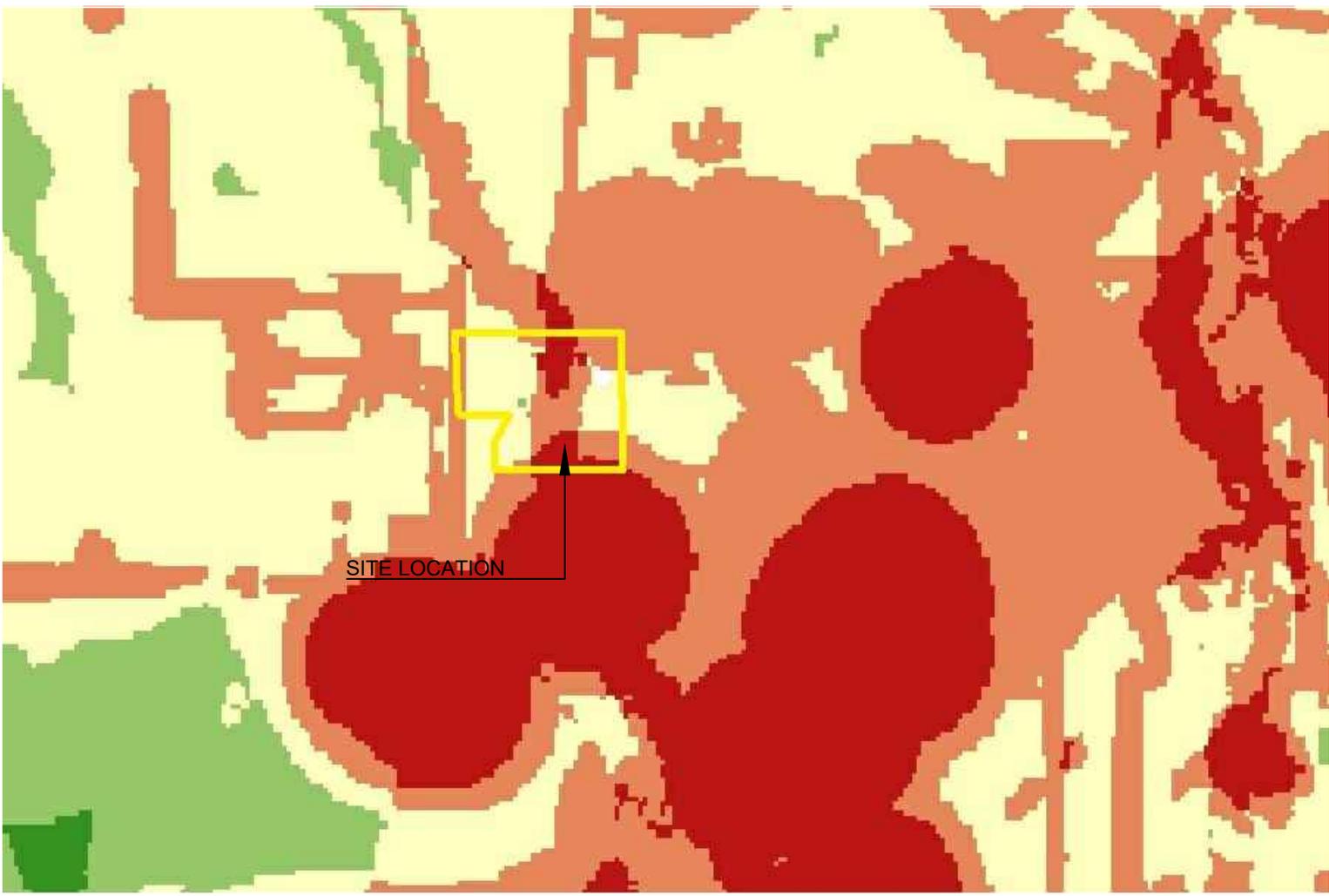
REFERENCE:

COLORADO GEOLOGICAL SURVEY



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FIGURE 7: WETLAND CONSERVATION



### Wetland Stressors

#### CNHP Wetland Stressors

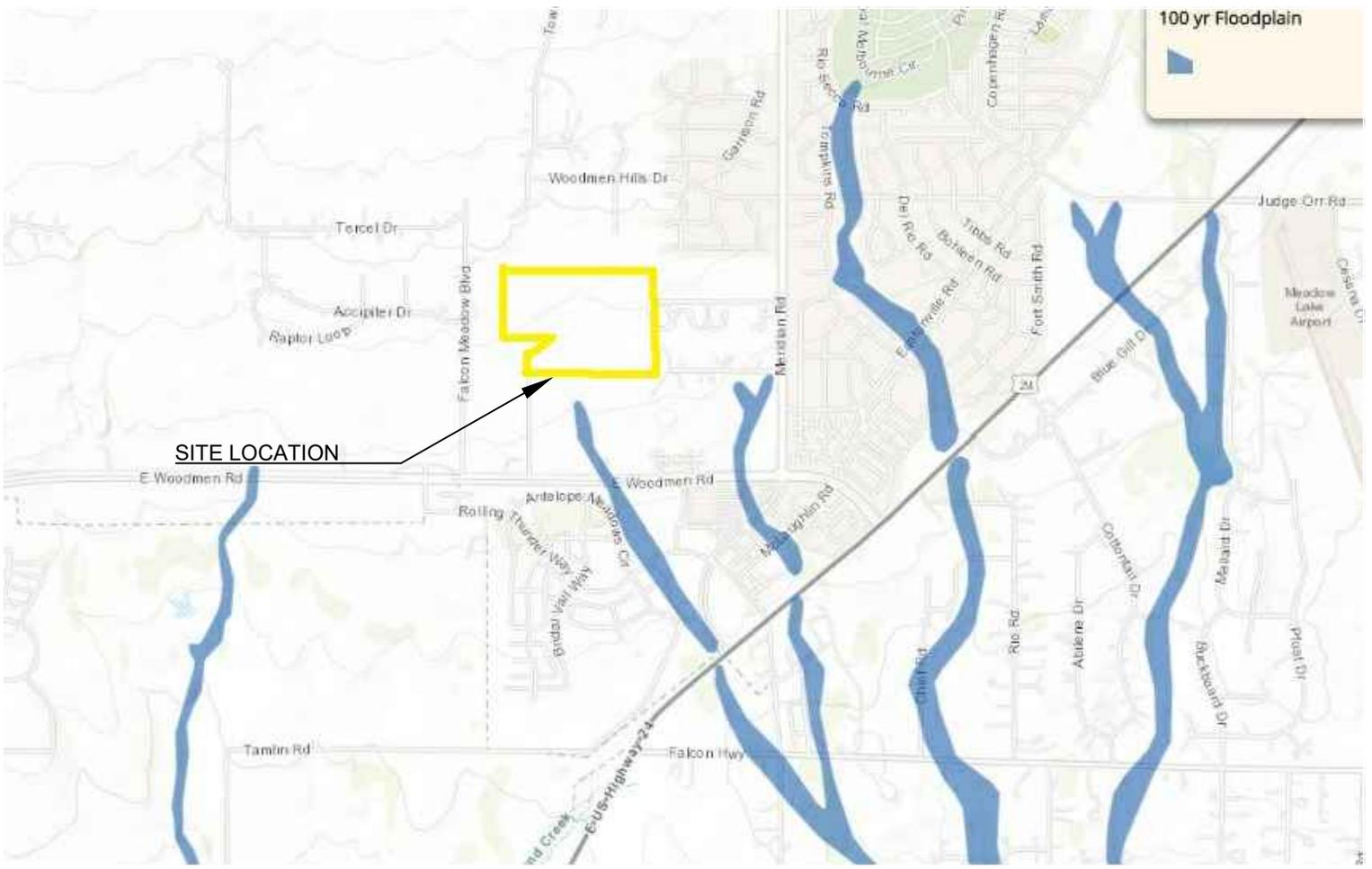
- None
- Low
- Moderate
- High
- Severe

NOTE: WETLAND STRESSORS ARE THOSE ENVIRONMENTAL OR PHYSICAL FACTORS THAT WOULD ADVERSELY AFFECT WETLAND FUNCTION. THESE STRESSORS MAY INCLUDE GRAZING, AGRICULTURE, ROAD CROSSING/DRAINAGE CONSTRICTIONS, EROSIONAL FEATURES, AND OIL AND GAS WELLS. BASED ON OUR KNOWLEDGE OF THE SITE USE AND PROPOSED CONSTRUCTION/USE, THERE HAS ALREADY BEEN OR WILL BE CESSATION OF THE STRESSERS DUE TO PROPOSED DEVELOPMENT. AT PRESENT, IN OUR OPINION, THE PERCENTAGE OF ON-SITE WETLANDS IMPACTED BY THE STRESSORS IS MINIMAL.



REFERENCE:  
 COLORADO GEOLOGICAL SURVEY

**FIGURE 8: WETLAND STRESSOR**



REFERENCE:

ELPASO COUNTY  
 COLORADO PLANNING  
 DEPARTMENT



FIGURE 9: FLOOD HAZARD MAP



Flood Hazard Zones:

-  1% Annual Chance Flood Hazard
-  Regulatory Floodway
-  Special Floodway
-  Area of Undetermined Flood Hazard
-  0.2% Annual Chance Flood Hazard
-  Future Conditions 1% Annual Chance Flood Hazard
-  Area with Reduced Risk Due to Levee

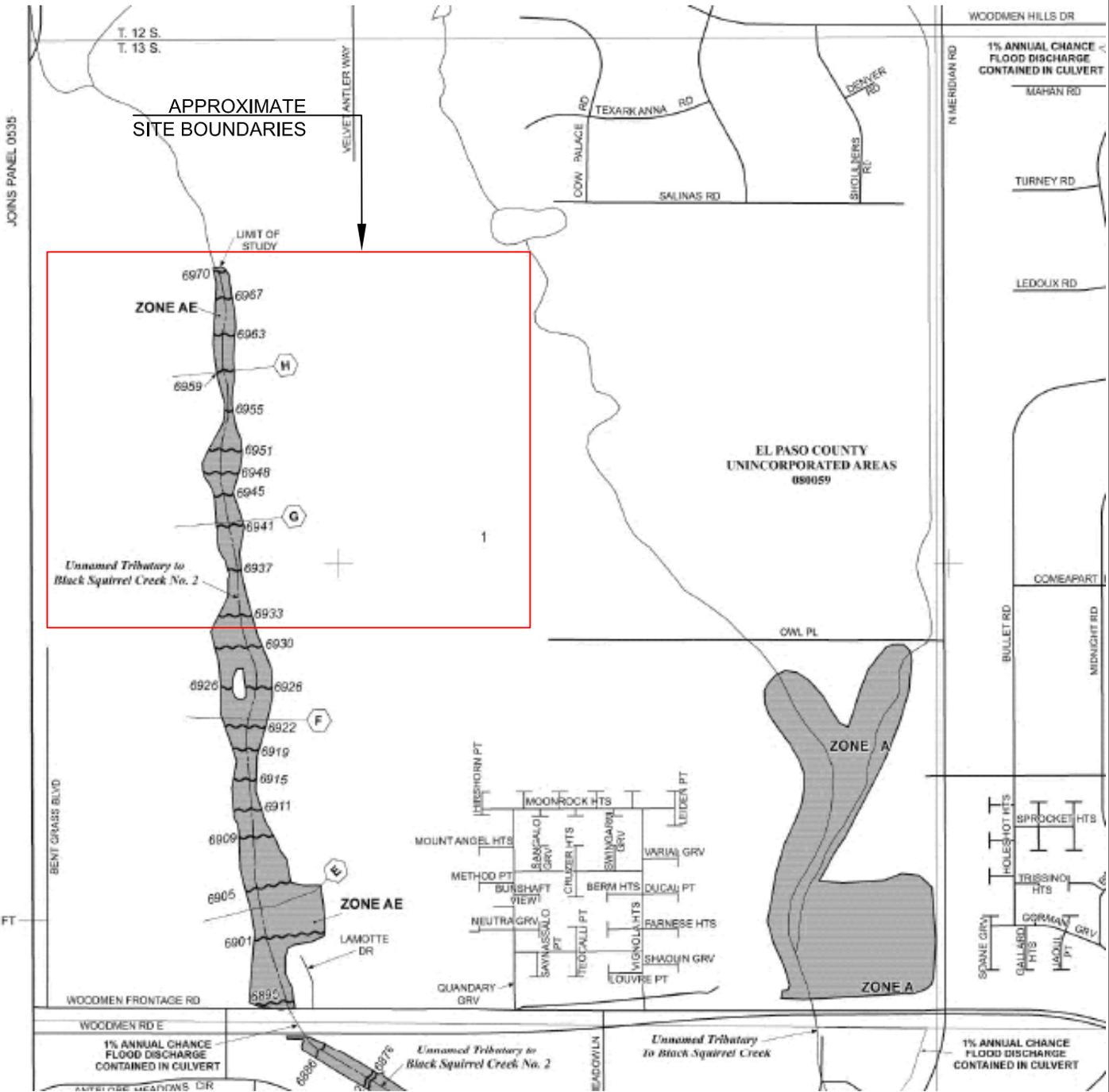


REFERENCE:

FEMA.GOV



FIGURE 10: FEMA MAP



**ZONE A** No Base Flood Elevations determined.  
**ZONE AE** Base Flood Elevations determined.

- Floodplain boundary
- - - Floodway boundary
- - - Zone D Boundary
- CBRS and OPA boundary
- █ Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- ~ 513 ~ Base Flood Elevation line and value; elevation in feet\*  
(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet\*
- \* Referenced to the North American Vertical Datum of 1988 (NAVD 88)
- ⬢ — ⬢ Cross section line

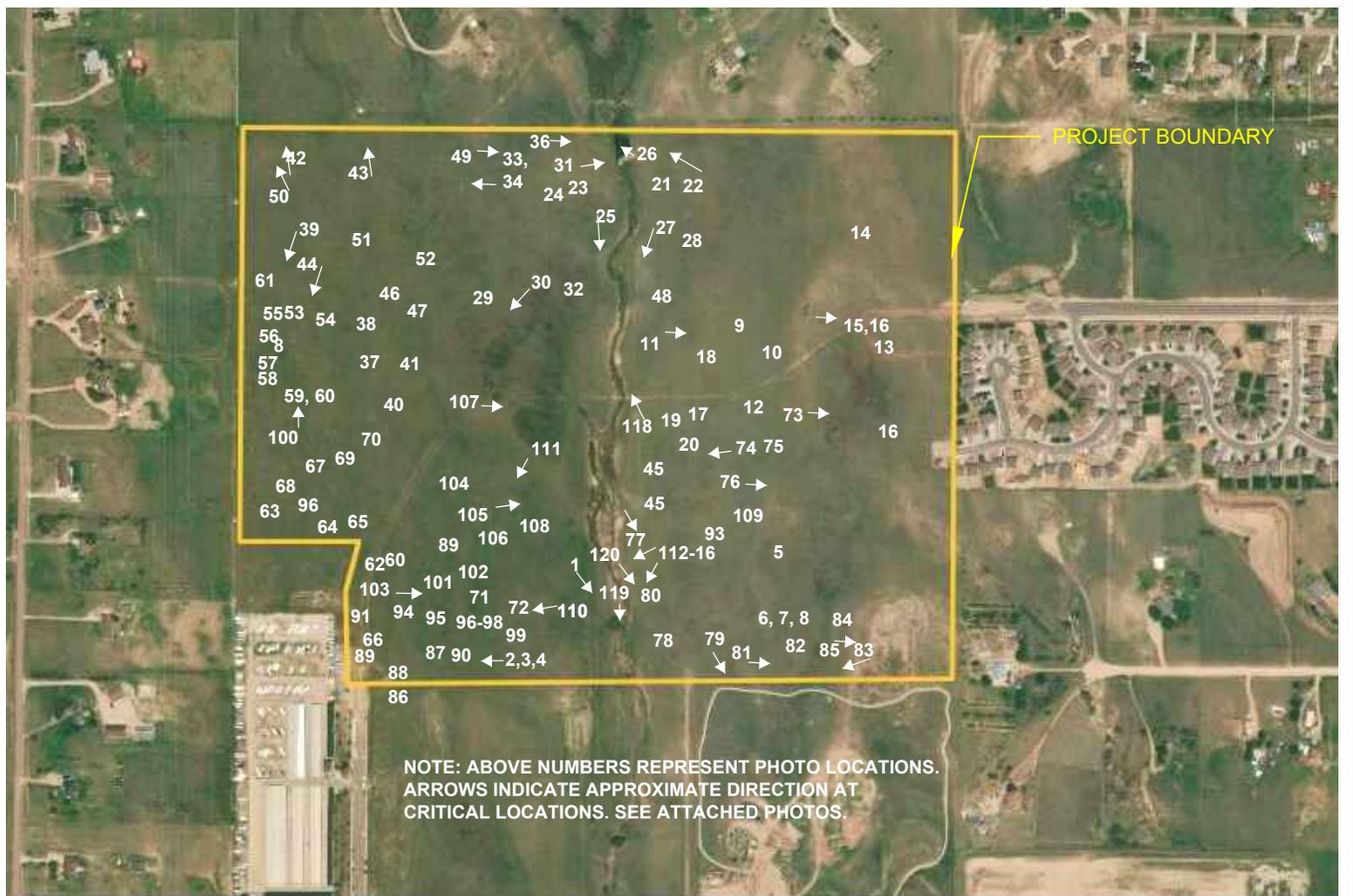


REFERENCE:  
 FLOOD INSURANCE RATE  
 MAP

**FIGURE 11: FIRM MAP DETAILS**

PHOTOGRAPHIC  
DOCUMENTATION

**(SEE FIGURE 2  
FOR LOCATIONS)**



NOTE:  
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REFERENCE:  
ELPASO COUNTY  
COLORADO GIS



FIGURE 2: SCHEMATIC SITE PLAN



**PHOTO- 1**



**PHOTO- 2**



**PHOTO- 3**



**PHOTO- 4**



**PHOTO- 5**



**PHOTO- 6**



**PHOTO- 7**



**PHOTO- 8**



PPHOTO- 9PHOTO - 9



PHOTO- 10PHOTO - 10



PHOTO- 11PHOTO - 11



PHOTO- 12PHOTO - 12



**PHOTO- 13**



**PHOTO- 14**



**PHOTO- 15**



**PHOTO- 16**



**PHOTO- 17PHOTO - 17**



**PHOTO- 18PHOTO - 18**



**PHOTO- 19PHOTO - 19**



**PHOTO-20PHOTO - 20**



**PHOTO- 21**



**PHOTO- 22**



**PHOTO- 23**



**PHOTO- 24**



**PHOTO- 25**



**PHOTO- 26**



**PHOTO- 27**  
**PHOTO - 27**



**PHOTO- 28**  
**PHOTO - 28**



**PHOTO-29TO - 29**



**PHOTO-300**



**PHOTO- 311**



**PPHOTO- 322**



**PHOTO- 33**



**PHOTO- 34**



**PPHOTO- 35**



**PPHOTO- 36**



**PPHOTO- 37**



**PPHOTO- 38**



**PPHOTO- 39**



**PPHOTO- 40**



**PHOTO- 41**



**PHOTO- 42**



**PHOTO- 43**



**PHOTO- 44**



**PHOTO- 45**



**PHOTO- 46**



**PHOTO- 47**



**PHOTO- 48**



**PHOTO- 49**



**PHOTO- 50**



**PHOTO- 51**



**PHOTO- 52**



**PHOTO- 53**



**PHOTO- 54**



**PHOTO- 55**



**PHOTO- 56**



**PHOTO- 57**



**PHOTO- 58**



**PHOTO- 59**



**PHOTO- 60**



**PHOTO- 61**



**PHOTO- 62**



**PHOTO- 63**



**PHOTO- 64**



**PHOTO- 65**



**PHOTO- 66**



**PHOTO- 67**



**PHOTO- 68**



**PHOTO- 69**



**PHOTO- 70**



**PHOTO- 71**



**PHOTO- 72**



**PHOTO- 73**



**PHOTO- 74**



**PHOTO- 75**



**PHOTO- 76**



**PHOTO- 77**



**PHOTO- 78**



**PHOTO- 79**



**PHOTO- 80**



**PHOTO- 81**



**PHOTO- 82**



**PHOTO- 83**



**PHOTO- 84**



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**PHOTO- 87**



**PHOTO- 88**



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**PHOTO- 91**



**PHOTO- 92**



**PHOTO- 93**



**PHOTO- 94**



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**PHOTO- 96**



**PHOTO- 97**



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**PHOTO- 99**



**PHOTO- 100**



**PHOTO- 101**



**PHOTO- 102**



**PHOTO- 103**



**PHOTO- 104**



**PHOTO- 105**



**PHOTO- 106**



**PHOTO- 107**



**PHOTO- 108**



**PHOTO- 109**



**PHOTO- 110**



**PHOTO- 111**



**PHOTO- 112**



**PHOTO- 113**



**PHOTO- 114**



**PHOTO- 115**



**PHOTO- 116**



**PHOTO- 117**



**PHOTO- 118**



**PHOTO- 119**



**PHOTO- 120**

# APPENDIX

## El Paso County Area, Colorado

### 8—Blakeland loamy sand, 1 to 9 percent slopes

#### Map Unit Setting

*National map unit symbol:* 369v

*Elevation:* 4,600 to 5,800 feet

*Mean annual precipitation:* 14 to 16 inches

*Mean annual air temperature:* 46 to 48 degrees F

*Frost-free period:* 125 to 145 days

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Blakeland and similar soils:* 85 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Blakeland

##### Setting

*Landform:* Hills, flats

*Landform position (three-dimensional):* Side slope, talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium derived from sedimentary rock and/or eolian deposits derived from sedimentary rock

##### Typical profile

*A - 0 to 11 inches:* loamy sand

*AC - 11 to 27 inches:* loamy sand

*C - 27 to 60 inches:* sand

##### Properties and qualities

*Slope:* 1 to 9 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Somewhat excessively drained

*Runoff class:* Low

*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 19.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 5 percent

*Available water storage in profile:* Low (about 4.5 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* A

*Ecological site:* Sandy Foothill (R049BY210CO)

*Hydric soil rating:* No

### **Minor Components**

#### **Other soils**

*Percent of map unit:*

*Hydric soil rating:* No

#### **Pleasant**

*Percent of map unit:*

*Landform:* Depressions

*Hydric soil rating:* Yes

## **Data Source Information**

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 16, Sep 10, 2018

## El Paso County Area, Colorado

### 9—Blakeland-Fluvaquentic Haplaquolls

#### Map Unit Setting

*National map unit symbol:* 36b6  
*Elevation:* 3,500 to 5,800 feet  
*Mean annual precipitation:* 13 to 17 inches  
*Mean annual air temperature:* 46 to 55 degrees F  
*Frost-free period:* 110 to 165 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Blakeland and similar soils:* 60 percent  
*Fluvaquentic haplaquolls and similar soils:* 30 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Blakeland

##### Setting

*Landform:* Hills, flats  
*Landform position (three-dimensional):* Side slope, talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Sandy alluvium derived from arkose and/or eolian deposits derived from arkose

##### Typical profile

*A - 0 to 11 inches:* loamy sand  
*AC - 11 to 27 inches:* loamy sand  
*C - 27 to 60 inches:* sand

##### Properties and qualities

*Slope:* 1 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat excessively drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 19.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Available water storage in profile:* Low (about 4.5 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* A  
*Ecological site:* Sandy Foothill (R049BY210CO)  
*Hydric soil rating:* No

## Description of Fluvaquentic Haplaquolls

### Setting

*Landform:* Swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*H1 - 0 to 12 inches:* variable

### Properties and qualities

*Slope:* 1 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Poorly drained  
*Runoff class:* Very high  
*Capacity of the most limiting layer to transmit water (Ksat):*  
Moderately high to high (0.20 to 6.00 in/hr)  
*Depth to water table:* About 0 to 24 inches  
*Frequency of flooding:* Occasional  
*Frequency of ponding:* None  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

### Interpretive groups

*Land capability classification (irrigated):* 6w  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* D  
*Hydric soil rating:* Yes

## Minor Components

### Other soils

*Percent of map unit:*  
*Hydric soil rating:* No

### Pleasant

*Percent of map unit:*  
*Landform:* Depressions  
*Hydric soil rating:* Yes

## Data Source Information

Soil Survey Area: El Paso County Area, Colorado  
Survey Area Data: Version 16, Sep 10, 2018

## El Paso County Area, Colorado

### 19—Columbine gravelly sandy loam, 0 to 3 percent slopes

#### Map Unit Setting

*National map unit symbol:* 367p  
*Elevation:* 6,500 to 7,300 feet  
*Mean annual precipitation:* 14 to 16 inches  
*Mean annual air temperature:* 46 to 50 degrees F  
*Frost-free period:* 125 to 145 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Columbine and similar soils:* 85 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Columbine

##### Setting

*Landform:* Flood plains, fan terraces, fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

##### Typical profile

*A - 0 to 14 inches:* gravelly sandy loam  
*C - 14 to 60 inches:* very gravelly loamy sand

##### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Runoff class:* Very low  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 19.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Very low (about 2.5 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* A  
*Ecological site:* Gravelly Foothill (R049BY214CO)  
*Hydric soil rating:* No

#### Minor Components

##### Fluvaquentic haplaquolls

*Percent of map unit:*  
*Landform:* Swales

*Hydric soil rating: Yes*

**Pleasant**

*Percent of map unit:*

*Landform: Depressions*

*Hydric soil rating: Yes*

**Other soils**

*Percent of map unit:*

*Hydric soil rating: No*

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