



# Natural Features Report for the Estates at Cathedral Pines Project

El Paso County, Colorado

July 6, 2022

Prepared for:



William Guman & Associates, Ltd.  
731 North Weber Street, Suite 10  
Colorado Springs, CO 80903

Prepared by:



1455 Washburn Street  
Erie, Colorado 80516  
(p): 970-812-3267

Project Number: 2022-3-1



**TABLE OF CONTENTS**

**1.0 INTRODUCTION ..... 1**  
1.1 PURPOSE ..... 1  
1.2 SITE LOCATION ..... 1  
1.3 PROJECT DESCRIPTION ..... 1  
**2.0 METHODOLOGY ..... 4**  
**3.0 ENVIRONMENTAL SETTING ..... 5**  
3.1 TOPOGRAPHY ..... 5  
3.2 DRAINAGE BASIN AND DRAINAGES ..... 5  
3.3 SOILS ..... 8  
3.4 VEGETATION ..... 8  
    3.4.1 Cleared Areas (former Ponderosa Pine Forest) ..... 9  
    3.4.2 Ponderosa Pine Forest ..... 9  
    3.4.3 Swales ..... 9  
3.5 NOXIOUS WEEDS ..... 10  
**4.0 SUMMARY STATEMENT OF IMPACTS ..... 11**  
4.1 VEGETATION ..... 11  
4.2 DRAINAGE SWALES ..... 11  
4.3 SIGNIFICANT FEATURES ..... 12  
**5.0 REGULATIONS ..... 12**  
5.1 CLEAN WATER ACT ..... 12  
5.2 COLORADO NOXIOUS WEED ACT ..... 13  
5.3 SUMMARY OF RECOMMENDATIONS ..... 13  
**6.0 REFERENCES ..... 15**

**LIST OF FIGURES**

FIGURE 1. USGS SITE LOCATION MAP ..... 2  
FIGURE 2. PRELIMINARY SITE PLAN ..... 3  
FIGURE 3. CNHP WETLAND & RIPARIAN AREAS MAP ..... 6  
FIGURE 4. VEGETATION COMMUNITY MAP ..... 7

**LIST OF APPENDICES**

APPENDIX A – USDA SOIL SURVEY DATA  
APPENDIX B – REPRESENTATIVE PHOTOGRAPHS AND PHOTO LOCATION MAP  
APPENDIX C – WEED MANAGEMENT PLAN

## LIST OF ACROYNMS AND ABBREVIATIONS

AMSL	above mean sea level
Applicant	William Guman & Associates, Ltd.
CCRs	Codes, Covenants and Restrictions
CDA	Colorado Department of Agriculture
CNHP	Colorado Natural Heritage Program
COGCC	Colorado Oil and Gas Conservation Commission
CPW	Colorado Parks and Wildlife
CWA	Clean Water Act
Ecos or ecos	Ecosystem Services, LLC
FEMA	Federal Emergency Management Agency
GESC plan	Grading, Erosion, and Sediment Control Plan
HOA	Home Owners Association
JD	Jurisdictional under the Clean Water Act
Non-JD	Non- jurisdictional under the Clean Water Act
Project	Estates at Cathedral Pines project
Report	Natural Features Report
Site	Estates at Cathedral Pines site
NRCS	Natural Resource Conservation Service
NTCHS	National Technical Committee for Hydric Soils
NWI	National Wetland Inventory
PCA	CNHP Potential Conservation Area
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WOTUS	Waters of the United States, including wetland habitat

## 1.0 INTRODUCTION

Ecosystem Services, LLC (Ecos or ecos) was retained by William Guman & Associates, Ltd. (Applicant) to perform a natural resource assessment for the proposed Estates at Cathedral Pines (Project) and to prepare this Natural Features Report (Report).

The contact information for the Applicant and ecos representatives for this Report is provided below:

### Applicant

Bill Guman, PLA, ASLA, APA  
William Guman & Associates, Ltd.  
731 North Weber Street, Suite 10  
Colorado Springs, Colorado 80903  
Phone: 719-633-9700  
bill@guman.net

### Agent

Grant Gurnée, P.W.S.  
Ecosystem Services, LLC  
1455 Washburn Street  
Erie, Colorado 80516  
Phone: (303) 812-3267  
[grant@ecologicalbenefits.com](mailto:grant@ecologicalbenefits.com)

## 1.1 Purpose

The purpose of this Report is to ascertain the physical/ecological characteristics and conditions of the Site, identify potential environmental constraints associated with development, and document any significant topographic or natural features.

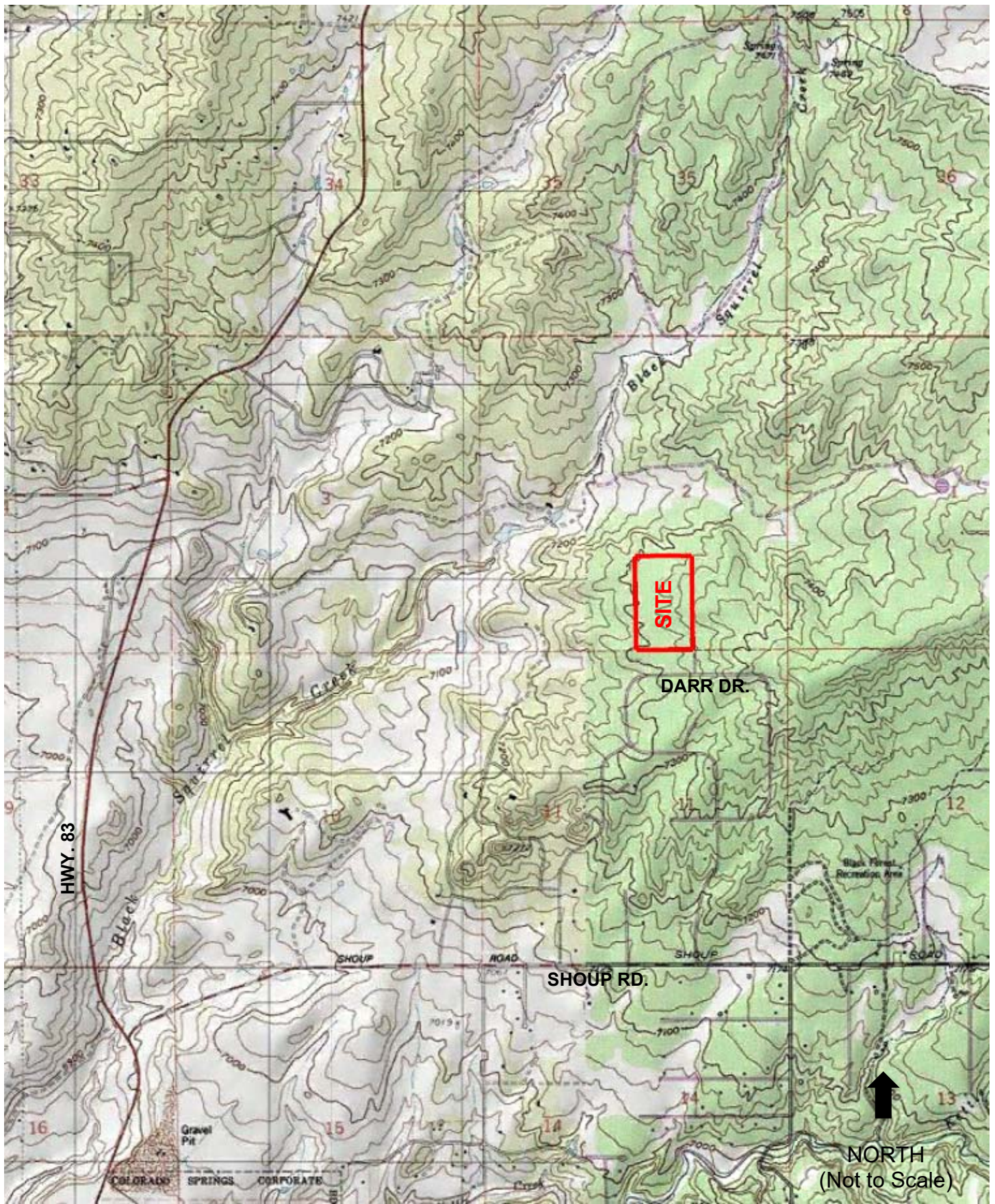
## 1.2 Site Location

The Site is located in the Black Forest in El Paso County, Colorado approximately 6.6 miles due east of the northeastern boundary of Colorado Springs on land that was primarily burned during previous wildfires. It is situated approximately one mile north of Shoup Road, 1.6 miles east of Highway 83, 0.03 mile southwest of Saxton Hollow Road and Winslow Drive runs along the central to southern portions of its eastern boundary in. The surrounding land use is predominantly rural residential.

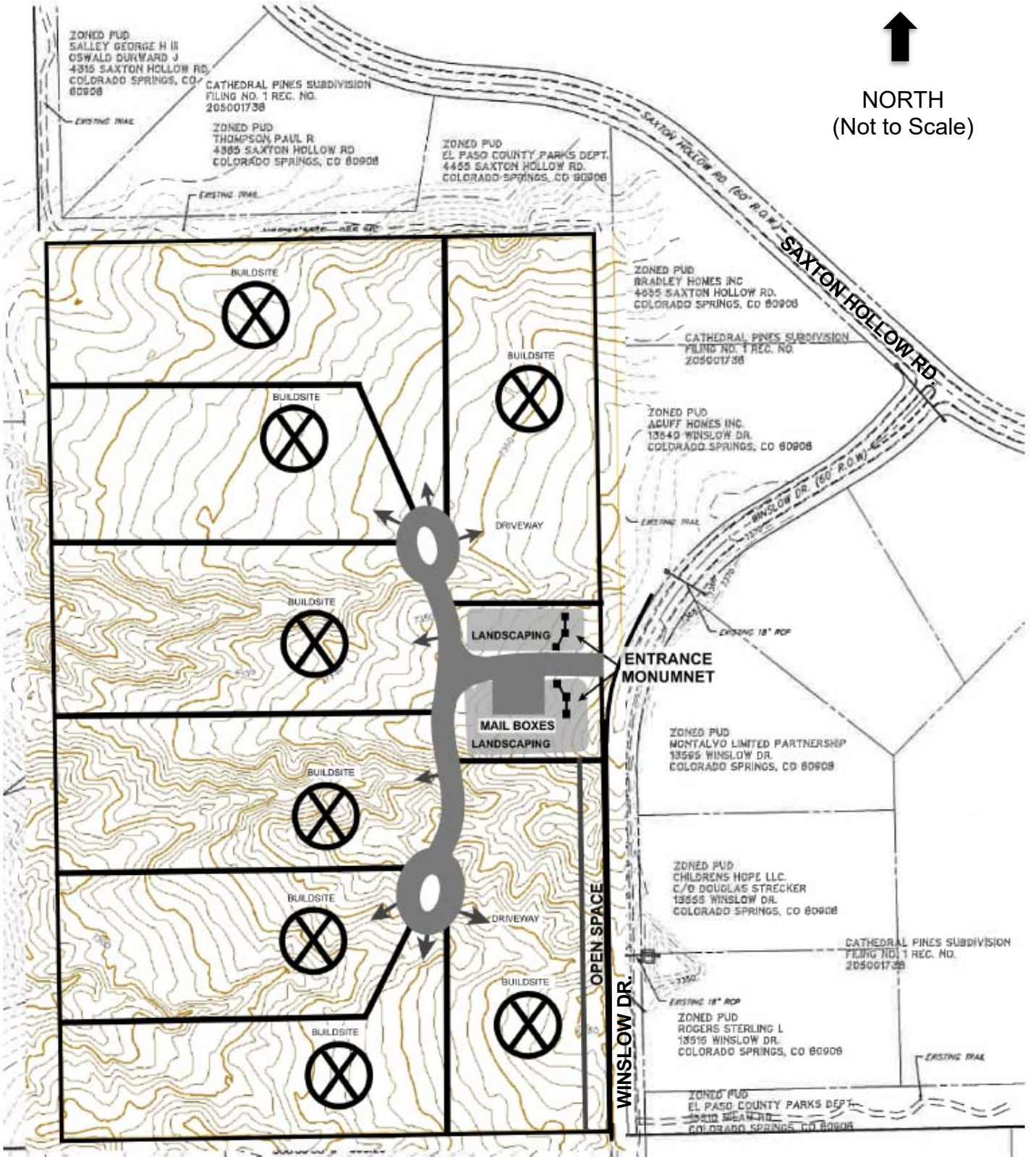
Geographically, the Site is located within the southeast  $\frac{1}{4}$  of Section 2, Township 12 South, Range 66 West in El Paso County, Colorado. The center of the Site is situated at approximately Latitude 39.029517°, Longitude -104.745761°. Refer to Figure 1, USGS Site Location Map.

## 1.3 Project Description

The Project proposes to divide the Site 8 lots for single family residences (Figure 2). Initial infrastructure is limited to a short entrance road and an entrance area with some landscaping and mailboxes. The homeowners would develop their own lots including driveways, grading, septic, water wells, and propane. Please refer to the development application for more details and plans.



USGS 7.5 min. Quad: Black Forest  
Latitude: 39.029517° N Longitude: -104.745761° W



SOURCE: Guman and Associates, 1/10/2022

## 2.0 METHODOLOGY

Ecos performed an office-level assessment in which available databases, resources, literature and field guides on local flora and fauna, and aerial imagery were reviewed to gather background information on the environmental setting of the Site. The resources reviewed during the office assessment include but are not limited to the following:

- Colorado Department of Agriculture (CDA) Noxious Weed List;
- Colorado Natural Heritage Program (CNHP)
  - Survey of Critical Biological Resources, El Paso County, Colorado (CNHP 2001a).
  - Survey of Critical Wetlands and Riparian Areas in El Paso and Pueblo Counties, Colorado (CNHP, 2001b);
- Colorado Oil and Gas Conservation Commission (COGCC) GIS Online;
- Black Forest Preservation Plan (El Paso County, 1987)
- El Paso County Master Plan;
- Google Earth current and historic aerial imagery;
- U.S. Army Corps of Engineers (USACE) 1987 Corps of Engineers Wetlands Delineation Manual;
- USACE 2010 Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Great Plains Region;
- U.S. Department of Agriculture (USDA) PLANTS Database;
- USFWS National Wetland Inventory (NWI);
- U.S. Geological Survey (USGS); and
- Site-specific background data provided by the Applicant, including topographic base mapping, site development layout/concept plans, GESC plan, and other pertinent data.

Following the collection and review of existing data and background information, ecos conducted a field assessment of the Site to compare background information with present-day conditions, ascertain the physical/ecological characteristics and conditions of the Site, identify potential environmental constraints associated with development improvements, and determine the presence/absence and approximate extent of the following features:

- Drainages and Riparian Areas
- Significant topographic features and rock outcroppings.
- Vegetation Communities;
- Noxious weed stands; and
- Other significant natural features.

Ecos sketched the features listed above on topographic and aerial base maps and/or recorded locations using a hand-held Global Positioning System as deemed necessary. Representative photographs were taken to assist in describing and documenting Site conditions and potential environmental issues/constraints.

Field reconnaissance also included an initial assessment of waters of the U.S., including wetland habitat (WOTUS) and probable USACE jurisdictional status to aid in planning. Vegetation within potential WOTUS (if present) were noted as being upland, wetland (i.e., hydrophytic species), or mixed (i.e., both upland and wetland specie). A full wetland delineation per USACE requirements, including Wetland Data Sheets and soil sampling points, was not completed.

### **3.0 ENVIRONMENTAL SETTING**

The Site is located in the UESPA Level III Ecoregion: 26 Southwestern Tablelands (Chapman et al, 2006). More specifically, the Site is located within the Pine-Oak Woodlands (26i), Level IV Ecoregion. The Pine-Oak Woodlands ecoregion is a dissected plain with dense oakbrush and deciduous oak woodlands combined with ponderosa pine woodlands. The southern portion is known locally as the Black Forest. Although woodlands dominate, the region is a mosaic of woodlands and grasslands. It is somewhat more dissected than the surrounding Foothill Grasslands (26j) ecoregion. The Pine-Oak Woodlands may be an outlier of the ponderosa pine woodlands found in the mid-elevation forests of the Southern Rockies (21) to the west. Soils are formed from weathered sandstone and shale with some outwash on uplands. Land use is woodland, wildlife habitat, and some rangeland. Areas of the region are rapidly urbanizing.

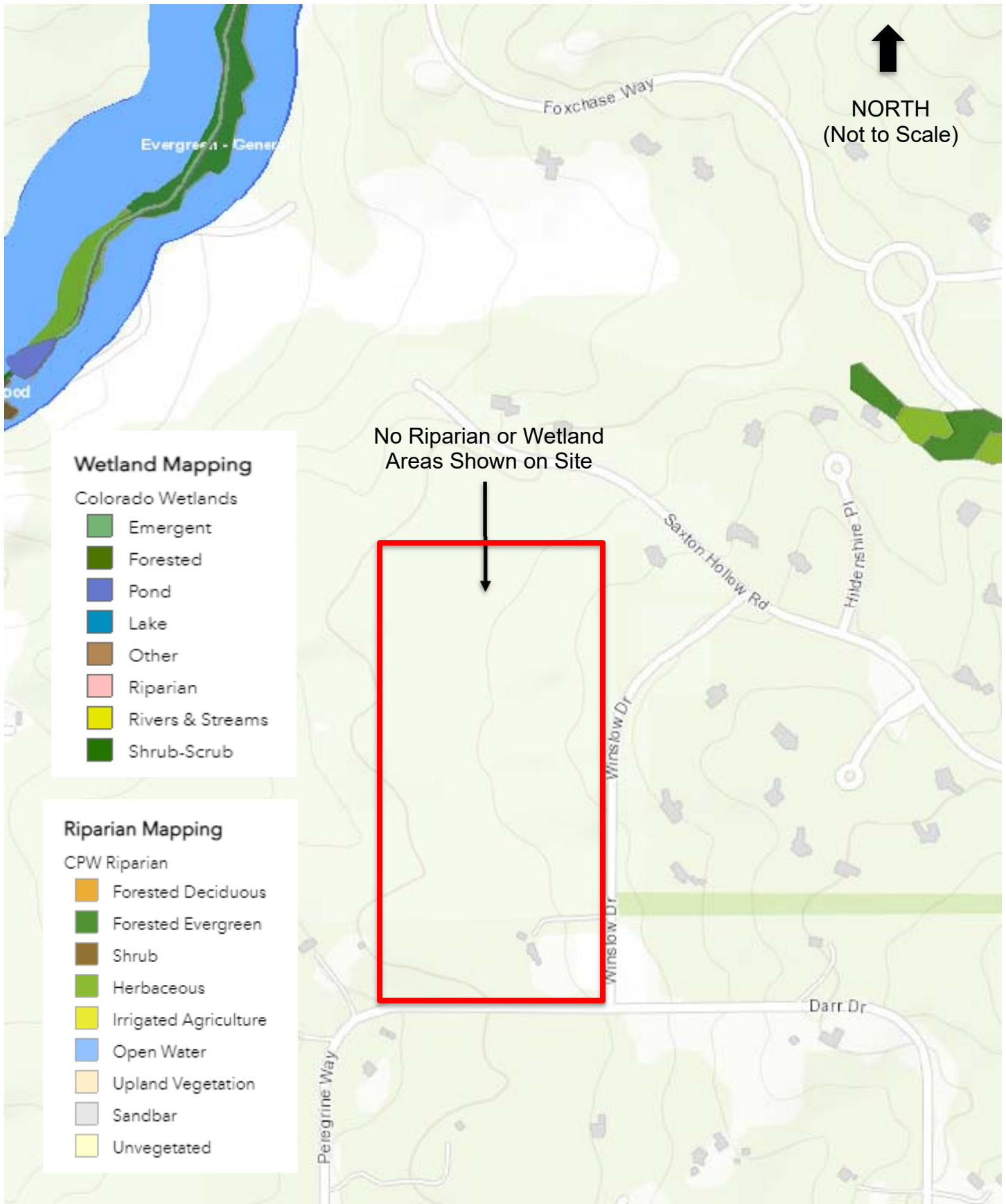
#### **3.1 Topography**

The Site is generally characterized as gently sloping from east to west. Site topography ranges from a high elevation of 7,360 feet above mean sea level (AMSL) along the east-central boundary to a low elevation of 7,290 feet AMSL in the southwest corner. The Site has outstanding views of the Front Range mountains due its location on a west-facing slope in the upper portion of the Black Forest at 1,000 feet above the Monument Creek Valley (Interstate Highway 25). There are no significant topographic features or rock outcroppings.

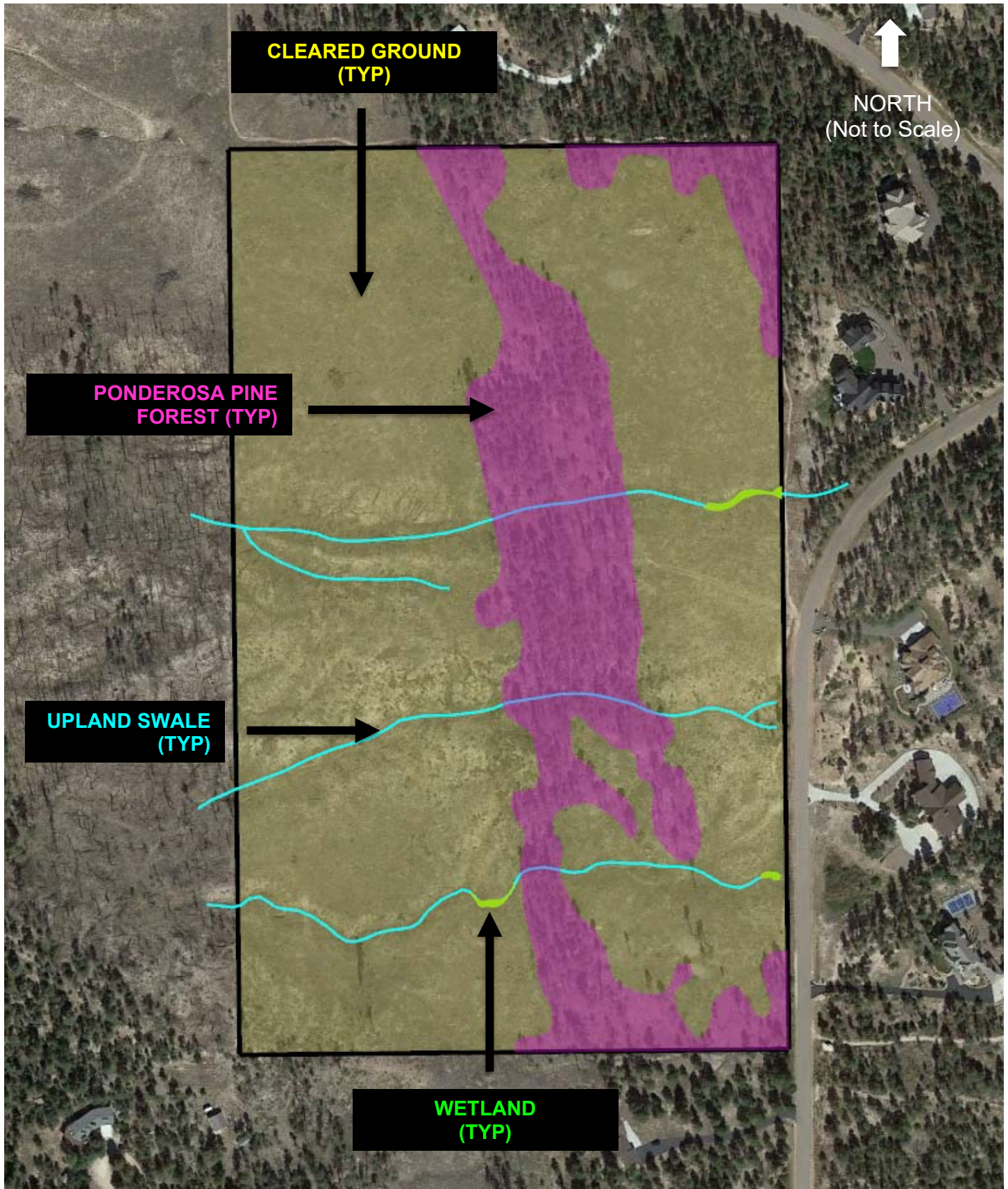
#### **3.2 Drainage Basin and Drainages**

The Site is located within the Fountain Creek sub-watershed of the Arkansas River Watershed and outside of any FEMA mapped floodplains (FEMA, 2021). Three swales are present in the north-central, central and south-central portions of the Site, they flow from east to west. The upper/east ends of the swales are small, approximately four feet deep and 40 feet wide. On the west side of the Site the two northernmost swales are much larger, approximately fifteen feet deep and 200 feet wide. Overland drainage from precipitation would generally flow westward within the swales toward Black Squirrel Creek, a perennial stream that flows into Monument Creek, then Fountain Creek, and then into the Arkansas River.





SOURCE: CNHP, Colorado Wetland Inventory (CWI)



**SOURCE:** Ecosystem Services, LLC Field Assessment, 6/20/2022  
Google Earth Aerial Image, 10/6/2019

### 3.3 Soils

Ecos utilized the U.S. Department of Agriculture, Natural Resource Conservation Service Web Soil Survey (USDA, NRCS, 2021) to determine the nature and composition of the underlying soil type and to determine if hydric soils are present within the Site, as this data assists in informing the presence/absence of potential wetland habitat regulated under the Clean Water Act (CWA). The soils data were also utilized to supplement the field observations of vegetation, as the USDA provides correlation of native vegetation species by soil type. Please refer to Appendix A, USDA Soil Survey for additional information.

Kettle gravelly loamy sand, 8 to 40 percent slopes (Map Unit #41) is the soil type that underlies 100% of the Site. The Kettle component makes up 85 percent of the map unit. Slopes are 8 to 40 percent. This component is on hills, uplands. The parent material consists of sandy alluvium derived from arkose. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the F048AY908CO Mixed Conifer ecological site. Non-irrigated land capability classification is 7e. This soil does not meet hydric criteria.

Pleasant loam is listed as a minor component of the mapped Kettle gravelly loamy sand soil, with total cover estimated by NRCS to be less than fifteen percent. The Pleasant series consists of very deep, well to moderately-well drained soils that form in depressions. Runoff is medium to ponded. Pleasant soils are classified as hydric because they may be ponded frequently during the growing season for long or very long duration (hydric soil criteria 3). This soil type is likely present in the swales that traverse the Site from east to west.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS, 1994) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field during wetland delineations. These visible properties are indicators of hydric soils. The indicators used to make onsite wetland determinations of hydric soils are specified in *Field Indicators of Hydric Soils in the United States* (USDA, NRCS, 2010).

### 3.4 Vegetation

The Site was vegetated with dense ponderosa pine (*Pinus ponderosa*) forest until 2013 when the Black Forest fire killed approximately 75 percent of the trees. The dead standing trees were removed between 2017 and 2019. Currently, vegetation within the Site consists of cleared areas (former forest) and remnant stands of ponderosa pine running north-south through the east-central portion of the Site with smaller patches in the northeast and southeast corners. Herbaceous vegetation is sparse and weedy in most areas. The Site is not currently grazed.

Refer to Figure 4 for a Vegetation Community Map. Refer to Appendix D for a photo location map and representative photographs of site conditions.

### 3.4.1 Cleared Areas (former Ponderosa Pine Forest)

Three-fourths of the Site is comprised of Cleared Areas (former Ponderosa Pine Forest) that is vegetated with exceptionally weedy, disturbed, sparse vegetation. Cover consists of approximately 30% bare ground, 35% native species, and 35% non-native species. The two main sources of disturbance were the 2013 wildfire and subsequent dead tree removal. The tree removal method appear to have been to pile up dead trees with heavy equipment and then mulch the wood onsite. Almost the entire Site has been disturbed by light grading but does not appear to have been re-seeded with native species. The abundant weeds could have been brought in and spread by the clearing equipment. They may also have started growing following the Black Forest fire, especially if the property had sparse herbaceous vegetation prior to the fire and was not reseeded with native species.

The three most common native species are threadleaf sedge (*Carex filifolia*) (an upland species), hairy goldenaster (*Heterotheca villosa*), and broadbeard penstemon (*Penstemon angustifolius*). There are numerous species of native flowering forbs scattered throughout the Site, but Native grass cover is less than five percent. There is one or two percent cover of scattered small ponderosa pines and aspens (*Populus tremuloides*) (one to three feet tall).

Weed cover is extremely high and mostly consists of species on the Colorado Noxious Weed Lists B and C. There are two dominant non-native species throughout the Site, each with approximately 10 to 15 percent cover: 1) diffuse knapweed is spread throughout the Site with 15 percent cover in most areas; and 2) cheatgrass (*Bromus tectorum*) occurs in scattered dense patches and with lower cover in-between the dense patches. Common mullein (*Verbascum thapsus*) is the third most common species with cover ranging from one to ten percent. Cover of Canada thistle (*Cirsium arvense*) and yellow toadflax (*Linaria vulgaris*) is less than five percent overall and tends to be concentrated along swales. Since weeds were spread throughout the Site, a separate weed map was not prepared. The State Listed noxious weeds are summarized in the Weed Management Plan (Appendix C).

### 3.4.2 Ponderosa Pine Forest

The ponderosa pines are visually significant, increase vegetative diversity, and provide wildlife habitat. One-fourth of the Site is forested. There are approximately 7.5 acres of mature ponderosa pine running north-south through the east-central portion of the Site with smaller patches in the northeast and southeast corners. Dead trees were removed from approximately 3.5-acres of the forested areas, leaving an open woodland with less than 40 percent tree cover and disturbed herbaceous vegetation similar to that previously described (30% bare ground and 35% weeds).

In the ponderosa pine forest that was not impacted by tree removal (approximately 4.0-acres), tree cover is more than 50 percent and herbaceous cover is dense (90%) with few weeds. Native grasses are the dominant species including junegrass (*Koeleria macrantha*), blue grama (*Bouteloua gracilis*), Arizona fescue (*Festuca arizonica*), and mountain muhly (*Muhlenbergia montana*). Other common species include threadleaf sedge, broadbeard penstemon, small-leaf pussytoes (*Antennaria parviflora*), and the woody ground cover kinnikinnick (*Arctostaphylos uva-ursi*). Shrub cover is extremely low (less than one percent) and consists of mountain mahogany (*Cercocarpus montanus*) and Gambel's oak (*Quercus gambelii*).

### 3.4.3 Swales

Three natural drainage swales convey surface flows across the Site from east to west, they cross the north-central, central and south-central portions of the Site. The upper/east ends of the swales are small, approximately four feet deep and 40 feet wide. The two northernmost

swales increase in size towards the west side of the Site where they are approximately fifteen feet deep and 200 feet wide. During the Site visit, none of the swales have any visible evidence of recent surface flows or field indicators of an ordinary high water mark. Most of the swales are vegetated with upland vegetation similar to the previously described cleared areas. In moister sections, cover of slightly more mesic species increases, including Japanese brome (*Bromus japonicus*), smooth brome (*Bromus inermis*), western wheatgrass (*Pascopyrum smithii*), and Canada thistle (*Cirsium arvense*) (listed from upland species to more mesic species).

In three small areas moisture is sufficient to support vegetation where wetland species (i.e., hydrophytic species) are dominant. Two of the wetland areas are on the east side of the Site and receive runoff via culverts that flow under Winslow Drive. The third wetland is along a flat section of swale where water may occasionally pool. The dominant species are Kentucky bluegrass (*Poa pratensis*), Baltic rush (*Juncus balticus*), Dudley's rush (*J. dudleyi*), and starry false Solomon's seal (*Maianthemum stellatum*). Other common species are Canada thistle, common spikerush (*Eleocharis palustris*) and Emory's sedge (*Carex emoryii*). There were also sparse occurrences (1%) of small narrowleaf willows (*Salix exigua*) in the northernmost wetland. Soil sampling points were completed and field notes were taken to confirm the presence of wetland soils and hydrology..

### **3.5 Noxious Weeds**

Refer to the Appendix C Weed Management Plan for details regarding management of State-listed noxious weeds that were observed on the Site.

## 4.0 SUMMARY STATEMENT OF IMPACTS

### 4.1 Vegetation

Infrastructure illustrated in the Preliminary Site Plan (Figure 2) is limited to a short entrance road with adjacent landscaping, entrance monument and mailboxes. Most of these impacts would be within the disturbed, cleared areas. However, the entrance road would directly impact approximately ten percent (0.8 acre) of the remaining ponderosa pine forest (Figure 4). Impacts to the forested areas could be reduced by adjusting the entrance road alignment. Significant impacts could occur based on the locations of the construction staging area and adjacent erosion control, so these features should be located in the disturbed, cleared area.

Construction of five of the eight driveways as currently proposed would impact ponderosa pine forest. Additional impacts to ponderosa pine forest could occur if lot owners choose to clear trees for construction, aesthetics, or fire mitigation. Impacts to ponderosa pines could be minimized by designating preservation areas and/or requiring homeowners to replace any pines they cut down or that die due to construction. Dead trees are valuable habitat for nesting birds and should not be removed unless they are in danger of falling on homes/infrastructure or within fire mitigation zones.

All of the cleared areas and thinned forest are currently very weedy and immediate implementation of weed management is recommended, especially for knapweed, cheatgrass, and Canada thistle. Please refer to the Appendix C Weed Management Plan for additional details on weed management.

Additional negative impacts would occur if the construction/landscape contractors or homeowners use non-native seed mixes or replace native vegetation with non-native species. Many commercial seed mixes include invasive non-native species that outcompete and replaces native grasslands, such as smooth brome, Kentucky bluegrass, crested wheatgrass (*Agropyron cristatum*), and reed canary grass (*Phalaris arundinacea*) which is highly invasive in wetlands.

Native seed mixes are available in the Urban Drainage and Flood Control Manual, Chapter 13 Revegetation, available at [https://mhfd.org/wp-content/uploads/2019/12/13\\_Revegetation.pdf](https://mhfd.org/wp-content/uploads/2019/12/13_Revegetation.pdf). The “upland area seed mix – sandy soil” (Table A-2) is appropriate for most of the Site. Some grass species in the mix could be substituted with other native species present on Site (junegrass, Arizona fescue, and mountain muhly). However, any substitutions should be made in consultation with a native seed company and/or restoration ecologist.

### 4.2 Drainage Swales

The lot layout in the Preliminary Site Plan illustrates that drainage swales would pass through six of the eight lots (i.e., all lots except the two in the northwestern portion of the Site); and three of those six lots (i.e., central-western lots) indicate the location of the “BUILDSITE” within the drainages. Development of these six lots may require extensive grading which would impact the swales. Impacts could be minimized by adjusting the lots so that the swales are on the edges and/or moving the BUILDSITE outside of the drainage swales. As of the date of this Report it is not known if internal connector roads would be required to traverse the swales (e.g., for Fire Department access). The entrance road and associated landscaping would not impact any of the drainage swales, nor the three associated small wetland areas. However, two of the three wetlands could be impacted if any drainage modifications are made around the existing culverts. However, if the drainages need to be stabilized, check dams or grade controls could be constructed/located in the upland portion of the swales, downstream of the small wetlands.

Indirect negative impacts will include an increase of impervious area, run-off and concentration of flows that alter natural hydrology and associated vegetation communities. Downstream properties could be negatively impacted if runoff from the Site causes erosion, introduces non-native species, or includes toxic chemicals (fertilizer, herbicide, etc.).

### **4.3 Significant Features**

With the exception of the three swales described above, there are no significant topographic features, rock outcroppings, or other significant natural features within the Site. Six of the eight residential lots have the potential to impact these swales and it is not known as of the date of this Report if internal connector roads would be required to traverse them (e.g., for Fire Department access). Residential home development disturbance could be avoided via the establishment of defined building envelopes in which a landowner must locate their primary residence and ancillary facilities based on Codes, Covenants and Restrictions (CCRs) or similar Home Owners Association (HOA) requirements (e.g., the presumed intent of the “BUILDSITE” markers illustrated on the Preliminary Site Plan). Disturbance to the swales from internal connector roads (if necessary) could be minimized via thoughtful crossing alignment (e.g., at narrow points along each swale that avoid the wetlands) and via free-spanning road crossing structures (e.g., 3-sided box culverts or bridges).

## **5.0 REGULATIONS**

### **5.1 Clean Water Act**

The stated purpose of the 2018 El Paso County Development Standards for “Wetlands” is: “...to ensure wetlands are identified during the development process, and that appropriate actions are taken to minimize negative impacts to wetlands and avoid the removal of wetlands where practicable or as may be required by the U.S. Army Corps of Engineers.

The State is currently considering regulating impacts to wetlands and waters by designating “waters of the State” regulations. This would likely include areas that are not currently under USACE jurisdiction due to a lack of a surface connection to downstream wetlands or waters.

Section 404 of the CWA is administered by the USACE and prohibits the discharge of dredged or fill material into waters of the U.S. including wetland habitat (WOTUS) without a valid permit. In order to be deemed jurisdictional under the CWA, wetlands or waters typically must have a continuous surface connection to downstream to other WOTUS. The USACE typically considers dams without culverts and vegetated upland swales to be surface connection breaks (i.e., upland breaks). Only the USACE has the authority to make jurisdictional determinations.

Ecos completed preliminary wetland mapping and an initial jurisdictional determination (Figure 4). There are three very small wetlands located along the drainage swales. Based on the Preliminary Site Plan it does not appear that construction will impact any of the wetland areas, but Guman and the County can address this as the Site Plans are further developed.

Since the majority of the swales are uplands with no OHWM, the USACE may likely consider the wetlands within them to be “isolated” (i.e., not connected to a downstream WOTUS) and therefore, not under CWA jurisdiction. Based on the preliminary wetland mapping and unofficial

jurisdictional evaluation by Ecos, the swales and wetlands on Site are isolated and non-jurisdictional for the reasons described above.

If the swales can be avoided by all Site development related impacts (i.e., identified as “No Build” areas on the Final Site Plan), then no further action is required under the CWA. However, if impacts to the swales are proposed on the Final Site Plan, then an Approved Jurisdictional Determination (AJD) and/or 404 Permit application must be submitted to the USACE; and until verification and/or approval is received from the USACE, the Applicant should assume that all of the mapped wetland swales are jurisdictional, avoid any impacts, and identify them as “No Build” areas on the Final Site Plan.

If the swales are deemed jurisdictional, the Applicant would need to obtain the 404 Permit authorization from the USACE prior to construction to authorize any development-related impacts. If avoidance of impacts to jurisdictional WOTUS are not feasible, then impacts must be minimized to the extent practicable, and preferably such that they meet the requirements of a Nationwide Permit. If individual landowners propose to impact WOTUS, then they would also need to comply with Section 404 of the CWA. Since lot development is considered part of “one single and complete project” under Section 404 of the CWA, the USACE may require impacts for the whole Site to be evaluated and permitted cumulatively.

## **5.2 Colorado Noxious Weed Act**

The stated purpose of the 2018 El Paso County Development Standards for “Noxious Weeds” is “to ensure that proposed development is reviewed in consideration of the impacts to noxious weeds in order to:

- Implement the El Paso County Noxious Weed Management Plan;
- Implement the provisions of the Colorado Noxious Weeds Act;
- Reduce the spread of noxious weeds; and
- Reduce County cost for noxious weed management in newly accepted right-of-ways.”

A Weed Management Plan is provided in Appendix C to address this standard.

## **5.3 Summary of Recommendations**

The following recommendations are intended to assist in minimizing negative, development related impacts and increase positive impacts. The primary goal is minimize impacts to areas that are regulated under the CWA and existing areas of undisturbed vegetation with high biological diversity/wildlife habitat value.

1. Minimize removal of ponderosa pines during both initial construction and home construction.
2. Align lots to minimize impacts to ponderosa pines and swales, per the Black Forest Master Plan (El Paso County, 1987).
3. Avoid all swale and wetland impacts as this will minimize environmental impacts to drainage and wildlife movement corridors and avoid the potential need for CWA Section 404 permitting.
4. Create and implement a Native Vegetation Restoration Plan and Weed Control Plan as soon as possible. It is anticipated that immediately following initial Site development this effort would be taken over and maintained by a sufficiently funded HOA. The goal of the Plan would be to preserve and restore native vegetation while removing noxious weeds. It would entail preparing lists of native and drought tolerant landscaping species to be



used including grasses, forbs, shrubs, and trees. This Plan should be consistent with any fire mitigation requirements.

5. Designate “No Build” preservation areas for the ponderosa pines and drainage swales.
6. Follow the recommendations of the Weed Management Plan (Appendix C).
7. The 2016 Urban Drainage and Flood Control District, Urban Drainage Criteria Manual (2016 UDFCD Manual), Volume 2, Chapter 13 - Revegetation “upland area seed mix – sandy soil” (Table A-2) is appropriate for most of the Site. Some of the grass species in Table A-2 could be substituted with other native species identified on the Site (junegrass, Arizona fescue, and mountain muhly). However, any substitutions should be made in consultation with a native seed company or restoration ecologist. Require homeowners and any future construction projects to re-vegetate disturbed areas with the same native seed mix via CCRs or similar HOA regulations.
8. Do not plant the following non-native species that can out-compete and replace native vegetation: smooth brome, crested wheatgrass, and reed canary grass. Avoid or minimize planting Kentucky bluegrass or other species that require extensive watering. Do not use commercial seed mixes with these species, even those sold as “native” seed mix.
9. Implement a low impact development stormwater management system that minimizes modifications to the natural hydrology, utilizes the existing topography, and does not significantly increase flows into the drainages or cause erosion. This should include requiring landowners (via CCRs or similar HOA regulations) to manage runoff on their own property rather than directing it onto driveways or roads.
10. Encourage or require lot owners to preserve vegetation and the visual character of the Site by minimizing the total construction footprint per lot and planting native vegetation.
11. Curtail light pollution by using minimal outdoor lighting, motion sensor lights, downcast lighting, and low brightness bulbs. Include similar requirements in the HOA guidelines and do not allow up-lighting. In addition to benefitting wildlife, “dark skies” are an attractive amenity because there is growing light pollution awareness and people appreciate seeing the stars.
12. Minimize the installation of fencing that could injure or impact wildlife as documented by CPW guidelines (i.e., CPW 2009 and 2021 guidelines suggest not using fencing unless absolutely necessary). When fencing is needed, use wildlife friendly fences and/or include specific wildlife crossings along fence lines.

## 6.0 REFERENCES

CDA (Colorado Department of Agriculture). 2021. Noxious Weed. Available at: <https://aq.colorado.gov/conservation/noxious-weeds>.

Chapman, S.S, G.E. Griffith, J.M. Omernik, A.B. Price, J. Freeouf, and D.L. Schrupp. 2006. Ecoregions of Colorado (color poster with map, descriptive text, summary tables and photographs): Reston, Virginia, U.S. Geological Survey.

CCR (Colorado Code of Regulations). 2020. Rules Pertaining To The Administration And Enforcement Of The Colorado Noxious Weed Act (8 CCR 1206-2). Department of Agriculture, Conservation Services Division. Effective October 30, 2020.

CNHP (Colorado Natural Heritage Program). 2001a. Survey of Critical Biological Resources, El Paso County, Colorado. Available at: [https://cnhp.colostate.edu/wp-content/uploads/download/documents/2001/elpaso\\_final.pdf](https://cnhp.colostate.edu/wp-content/uploads/download/documents/2001/elpaso_final.pdf)

CNHP. 2001b. Survey of Critical Wetlands and Riparian Areas in El Paso and Pueblo Counties, Colorado. Available at: [https://cnhp.colostate.edu/wp-content/uploads/download/documents/2001/CNHP\\_EIPaso\\_Pueblo\\_Wetland0827.pdf](https://cnhp.colostate.edu/wp-content/uploads/download/documents/2001/CNHP_EIPaso_Pueblo_Wetland0827.pdf)

CNHP. 2021. Colorado Wetland Inventory Mapping Tool. Available at: <http://www.cnhp.colostate.edu/cwic/location/viewSpatialData.asp>.

COGCC (Colorado Oil and Gas Conservation Commission). 2021. COGCC GIS Online.

CPW (Colorado Parks and Wildlife). 2021. Developing with Wildlife in Mind. <https://cpw.state.co.us/learn/Pages/LivingwithWildlifeDeveloping.aspx>

CPW. 2009. Fencing with Wildlife in Mind. Publication prepared by W. Hanophy. Available at: <https://cpw.state.co.us/Documents/LandWater/PrivateLandPrograms/FencingWithWildlifeInMind.pdf>

CSU (Colorado State University) Extension. 2013. Diffuse and Spotted Knapweed, Fact Sheet No. 3.110, Natural Resources Series - Range. Available at: [https://mountainscholar.org/bitstream/handle/10217/182891/AEXT\\_031102013.pdf?sequence=16](https://mountainscholar.org/bitstream/handle/10217/182891/AEXT_031102013.pdf?sequence=16)

El Paso County. 2018a. Noxious Weeds and Control Methods. Prepared by the Community Services Department - Environmental Division. Available at: <https://communityservices.elpasoco.com/wp-content/uploads/Environmental-Division-Picture/Noxious-Weeds/Noxious-Weed-Control-Book.pdf>

El Paso County. 2018b. Land Development Code: Effective October 16, 2018:

El Paso County, Colorado - Land Development Code Chapter 6 - GENERAL DEVELOPMENT STANDARDS 6.3. - ENVIRONMENTAL STANDARDS – 6.3.3 Fire Protection and Wildfire mitigation. Available at: [https://library.municode.com/co/el\\_paso\\_county/codes/land\\_development\\_code?nodeId=CH6GEDEST\\_6.3ENST](https://library.municode.com/co/el_paso_county/codes/land_development_code?nodeId=CH6GEDEST_6.3ENST)

El Paso County Land Development Code Chapter 5 - Section 5.3, Standards for Review, Approval, and Administration of Uses, 5.3.2 Special Use (including Mineral and Natural Resource Extraction). Available at: [https://library.municode.com/co/el\\_paso\\_county/codes/land\\_development\\_code?nodeId=CH5USDIST\\_5.3STREAPADUS](https://library.municode.com/co/el_paso_county/codes/land_development_code?nodeId=CH5USDIST_5.3STREAPADUS)

El Paso County, 1987. Black Forest Preservation Plan. <https://assets-planningdevelopment.elpasoco.com/wp->

[content/uploads/ResourcesReference/MasterPlan/Black-Forest-Preservation-Plan.pdf](#) Approved December 1987.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Urban Drainage and Flood Control District, 2016. Urban Storm Drainage Criteria Manual, Volume 2, Chapter 13. Revegetation. [https://mhfd.org/wp-content/uploads/2019/12/13\\_Revegetation.pdf](https://mhfd.org/wp-content/uploads/2019/12/13_Revegetation.pdf). January 2016.

USACE (U.S. Army Corps of Engineers). 2010. Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys and Coasts Region (Version 2) (USACE, 2010).

USACE, 2008. Letter from USACE to William Guman and Associates regarding jurisdictional determination for potential WUS at Cornerstone Estates. Dated April 28, 2008 (expired April 28, 2013).

USDA (U.S. Department of Agriculture). 2021. USDA PLANTS Database. Available at: <http://plants.usda.gov/>.

USDA, NRCS. 2021. Web Soil Survey. Available at: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.

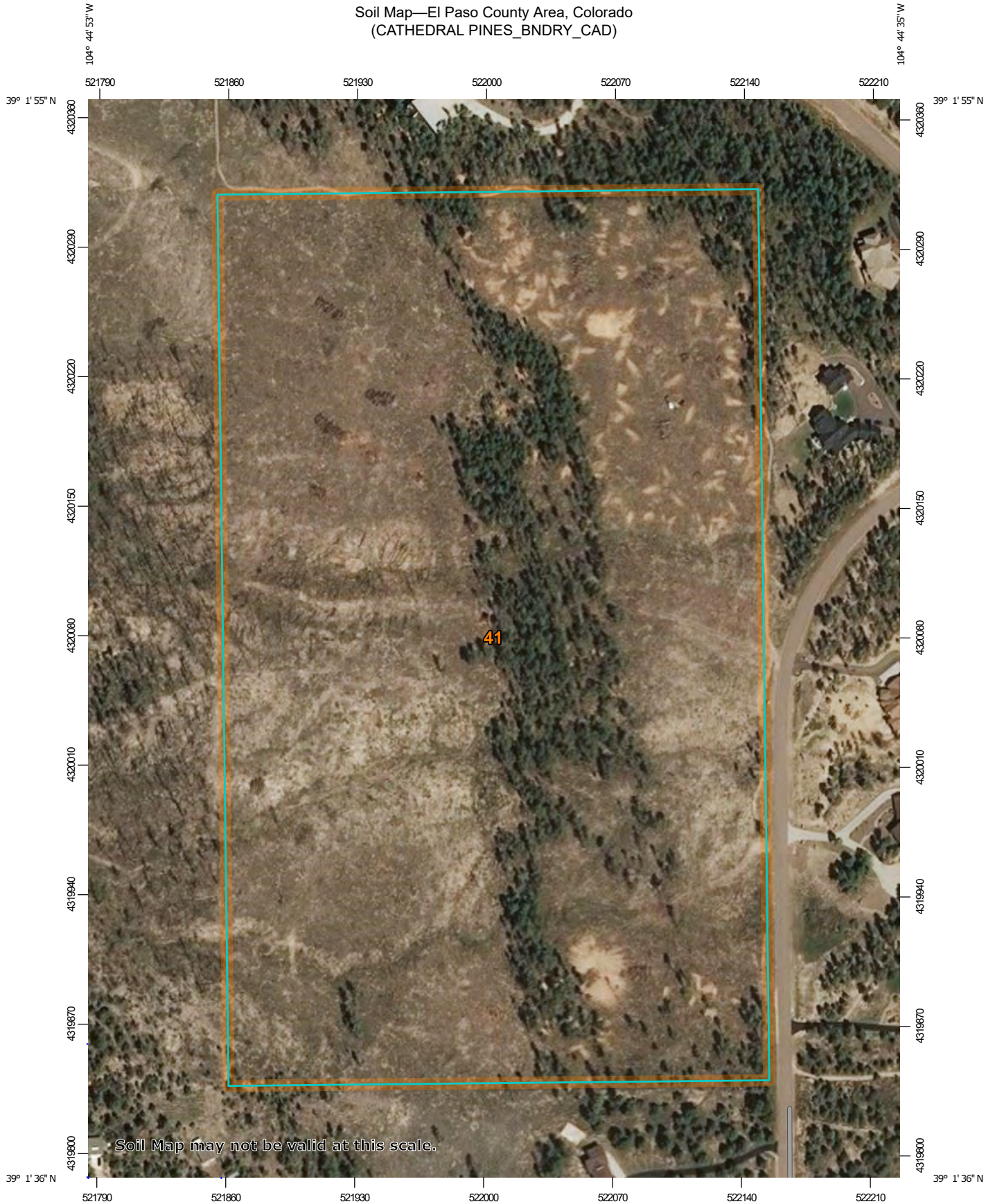
Weber, William A. and R.C. Wittmann. 2012. Colorado Flora: Eastern Slope, Fourth Edition. University Press of Colorado, Boulder, Colorado.

Whitson, Tom D. L.C. Burrill, S.A. Dewey, D.W. Cudney, B.E. Nelson, R.D. Lee, and R. Parker. 2004. Weeds of the West, 9th Edition. Western Society of Weed Science, Western United States Land Grant Universities Cooperative Extension Services, and the University of Wyoming, Jackson Hole, Wyoming.

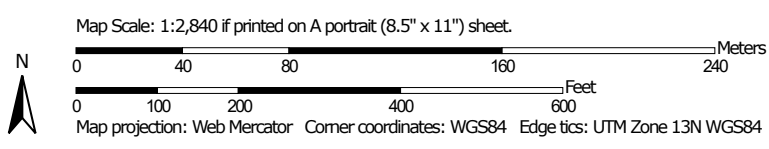
Wingate, Janet. L. 1994. Illustrated Key to the Grasses of Colorado. Wingate Consulting, Denver, Colorado.

**APPENDIX A**  
**USDA SOIL SURVEY DATA**

Soil Map—El Paso County Area, Colorado  
(CATHEDRAL PINES\_BNDRY\_CAD)




Soil Map may not be valid at this scale.



## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado  
Survey Area Data: Version 19, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 8, 2018—May 26, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
41	Kettle gravelly loamy sand, 8 to 40 percent slopes	35.1	100.0%
<b>Totals for Area of Interest</b>		<b>35.1</b>	<b>100.0%</b>

## El Paso County Area, Colorado

### 41—Kettle gravelly loamy sand, 8 to 40 percent slopes

#### Map Unit Setting

*National map unit symbol:* 368h

*Elevation:* 7,000 to 7,700 feet

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Kettle and similar soils:* 85 percent

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

#### Description of Kettle

##### Setting

*Landform:* Hills

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

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Sandy alluvium derived from arkose

##### Typical profile

*E - 0 to 16 inches:* gravelly loamy sand

*Bt - 16 to 40 inches:* gravelly sandy loam

*C - 40 to 60 inches:* extremely gravelly loamy sand

##### Properties and qualities

*Slope:* 8 to 40 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Somewhat excessively drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* High  
(2.00 to 6.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Low (about 3.4 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* B

*Ecological site:* F048AY908CO - Mixed Conifer

*Hydric soil rating:* No

#### Minor Components

##### Pleasant

*Percent of map unit:*

*Landform:* Depressions

*Hydric soil rating:* Yes



**Other soils**

*Percent of map unit:*

*Hydric soil rating:* No

**Data Source Information**

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 19, Aug 31, 2021

## Component Text Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the selected area. The component descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit. A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the associated soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas (components) for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The "Map Unit Component Nontechnical Descriptions" report gives a brief, general description of the soil components that occur in a map unit. Descriptions of nonsoil (miscellaneous areas) and minor map unit components may or may not be included. This description is written by the local soil scientists responsible for the respective soil survey area data. A more detailed description can be generated by the "Map Unit Description" report.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

## Report—Component Text Descriptions

### El Paso County Area, Colorado

**Map Unit:** 41—Kettle gravelly loamy sand, 8 to 40 percent slopes

**Description Category:** ECOSITE

Kettle: 85 percent

Per the PES initiative, assigning Ecological Site to the components that were NULL. This assign is based in information in the paper copy published soil survey ie. plants in the map unit descriptions, and range and forested tables). Also if data in NASIS is populated such as habitat types (ie other vegetation classifications)and existing plant tables. PES Project 2020

**Description Category:** GENSOIL

Kettle: 85 percent

The Kettle component makes up 85 percent of the map unit. Slopes are 8 to 40 percent. This component is on hills, uplands. The parent material consists of sandy alluvium derived from arkose. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the F048AY908CO Mixed Conifer ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

**Description Category: GENSOIL**

Pleasant:

Generated brief soil descriptions are created for major soil components. The Pleasant soil is a minor component.

**Description Category: GENSOIL**

Other soils:

Generated brief soil descriptions are created for major soil components. The Other soils soil is a minor component.

**Data Source Information**

Soil Survey Area: El Paso County Area, Colorado  
Survey Area Data: Version 19, Aug 31, 2021

**APPENDIX B**  
**REPRESENTATIVE PHOTOGRAPHS AND PHOTO LOCATION MAP**

**PHOTO LOCATION MAP & REPRESENTATIVE PHOTOS**

(Photos taken 6/20/2022)

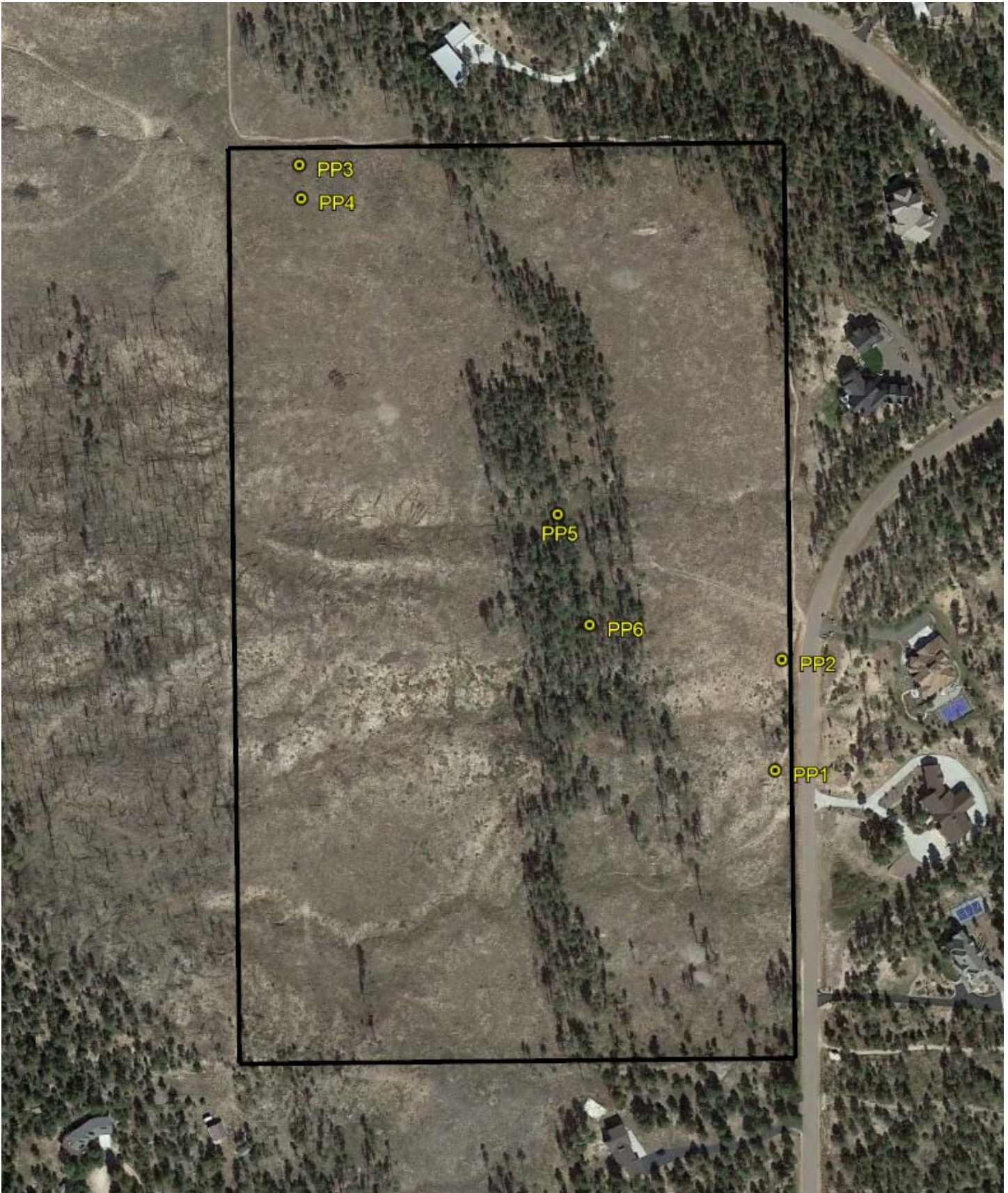




PHOTO POINT 1: View south



PHOTO POINT 1: View southwest



PHOTO POINT 1: View west



PHOTO POINT 2: View west



PHOTO POINT 2: View northwest



PHOTO POINT 2: View north





PHOTO POINT 2: View east



PHOTO POINT 3: View west



PHOTO POINT 3: View northwest



PHOTO POINT 3: View north



PHOTO POINT 3: View east



PHOTO POINT 3: View south



PHOTO POINT 3: View southwest



PHOTO POINT 4: View east



PHOTO POINT 5: View west



PHOTO POINT 6: View north

**APPENDIX C**  
**WEED MANAGEMENT PLAN**

## **Appendix C Cathedral Pines Weed Management Plan**

### **1.0 Weeds**

The stated purpose of the 2018 El Paso County Development Standards for “Noxious Weeds” is: “To ensure that proposed development is reviewed in consideration of the impacts to noxious weeds in order to:

- Implement the El Paso County Noxious Weed Management Plan;
- Implement the provisions of the Colorado Noxious Weeds Act;
- Reduce the spread of noxious weeds; and
- Reduce County cost for noxious weed management in newly accepted right-of-ways.”

### **1.1 Regulatory Background**

The Colorado Department of Agriculture maintains a list of noxious weed species (CDA, 2020a) and works with counties to manage noxious weeds. Weed management on Site must follow El Paso County Noxious Weed Management Plan requirements, including the “El Paso County Noxious Weeds and Control Methods” report (El Paso County, 2018a).

There are four CDA categories of noxious weeds:

- List A: Rare noxious that are designated for eradication statewide.
- List B: Discretely distributed noxious weeds that must be eradicated, contained, or suppressed, depending on their location, to stop their continued spread.
- List C. These species are well-established in Colorado. Species management plans are designed to support the efforts of local governing bodies to facilitate more effective integrated weed management. The goal of such plans is not to stop the continued spread of these species, but to provide additional education, research, and biological control resources to jurisdictions that choose to require management of List C species.
- Watch List Species are those may pose a potential threat to the agricultural productivity and environmental values. The Watch List is intended to serve advisory and educational purposes only. Its purpose is to encourage the identification and reporting of these species to the Commissioner in order to assist in determining which species should be designated as noxious weeds.

### **1.2 Noxious Weed Inventory Results**

The ground on approximately 85% of the Site is disturbed and exceptionally weedy. The ground cover in these disturbed areas consists of approximately 30% bare dirt, 35% native species, and 35% non-native species. Non-native cover consists mostly of State-listed noxious weeds including diffuse knapweed (10%), cheatgrass (10%), common mullein (3 to 10%), and Canada thistle (0 to 10%) with lesser cover of other species. The tree removal method appears to have been to pile up dead trees with heavy equipment and then mulch the wood onsite. Thus, almost the entire Site has been disturbed by heavy equipment operation and the light grading done to pile up the dead material and/or to spread out the mulched wood. The Site does not appear to have been re-seeded with native species following tree removal.

The only areas with undisturbed ground cover, dense native vegetation, and minimal noxious weed cover are the ponderosa pine forest where no tree removal was done (roughly four acres and 12% of the total Site).

Since weeds are ubiquitous throughout more than 80% of the Site, individual weed patches and weed infestations were not individually mapped. Noxious weeds are present in all open areas (~26 acres) and the forested areas where dead trees were removed (~4 acres). Noxious weed cover is highest where there are dense patches of cheatgrass with over 60% cover and along the swales. The following noxious weeds as listed on the Colorado Department of Agriculture Noxious Weed List (CDA, 2021a) were observed:

List A noxious weed species observed on the Site:

- None found

List B noxious weed species observed on the Site:

- Canada thistle (*Cirsium arvense*)
- diffuse knapweed (*Centaurea diffusa*)
- musk thistle (*Carduus nutans*)
- yellow toadflax (*Linaria vulgaris*)

List C noxious weed species observed on Site:

- cheatgrass aka downy brome (*Bromus tectorum*)
- common mullein (*Verbascum thapsus*)
- common St. Johnswort (*Hypericum perforatum*)
- redstem filaree (*Erodium cicutarium*)

Watch List weed species observed on Site:

- None found

Common, but problematic weed species observed on Site:

- Field pennycress (*Thlaspi arvense*)
- Kentucky bluegrass (*Poa pratensis*)
- Redtop (*Agrostis gigantea*)
- Smooth brome (*Bromus inermis*)

### **1.3 Noxious Weed Management Plan**

All of the List B species on the Site are designated for suppression (CDA, 2018a). The Colorado Noxious Weed Act defines suppression as “*reducing the vigor of noxious weed populations within an infested region, decreasing the propensity of noxious weed species to spread to surrounding lands, and mitigating the negative effects of noxious weed populations on infested lands.*” Suppression efforts may employ a wide variety of integrated management techniques. Per the El Paso County Noxious Weed and Control Methods document (El Paso County, 2018a): “*The most effective way to control noxious weeds is through Integrated Pest Management (IPM). IPM incorporates weed biology, environmental information, and available management techniques to create a management plan that prevents unacceptable damage from pests, such as weeds, and poses the least risk to people and the environment. IPM is a combination of treatment options that, when used together, provide optimum control for noxious*



weeds; however, IPM does not necessarily imply that multiple control techniques have to be used or that chemical control options should be avoided.

- *Prevention: The most effective, economical, and ecologically sound management technique. The spread of noxious weeds can be prevented by cleaning equipment, vehicles, clothing, and shoes before moving to weed free areas; using weed-free sand, soil, and gravel; and using certified weed free seed and feed.*
- *Cultural: Promoting and maintaining healthy native or other desirable vegetation. Methods include proper grazing management (prevention of overgrazing), re-vegetating or re-seeding, fertilizing, and irrigation.*
- *Biological: The use of an organism such as insects, diseases, and grazing animals to control noxious weeds; useful for large, heavily infested areas. Not an effective method when eradication is the objective but can be used to reduce the impact and dominance of noxious weeds.*
- *Mechanical: Manual or mechanical means to remove, kill, injure, or alter growing conditions of unwanted plants. Methods include mowing, hand pulling, tilling, mulching, cutting, and clipping seed heads.*
- *Chemical: The use of herbicides to suppress or kill noxious weeds by disrupting biochemical processes unique to plants.”*

The following information provides general measures to prevent introducing new weeds and spreading existing weeds during construction:

#### Immediately

1. Weeds are spread throughout the Site and will continue to increase if no control measures are implemented. Begin weed control with a focus on the swales and reducing diffuse knapweed and cheatgrass.
2. Apply Esplanade in the forested areas that have more than seventy percent native groundcover. This will prevent non-native seeds from sprouting for two to three years, thus preventing weeds from moving into these areas.
3. Biological control is a low cost and non-invasive way to begin controlling weeds. Optimum results take 3-5 years. Contact the Colorado Department of Agriculture Request-A-Bug program at 970-464-7916 to reserve insects, determine the species/quantity needed, and discuss release schedules (CDA, 2020b). At a minimum, insects should be introduced to control the diffuse knapweed. Biological control may also be available for yellow toadflax, musk thistle, Canada thistle, and common Saint Johnswort.

#### Prior to Construction:

1. Create a Native Habitat Restoration and Weed Control Plan for Project, including phases for pre-construction, during construction, and post-construction. Identify short-term weed management priorities to control the largest infestations and List B species. Set goals for reducing invasive species cover to less than five percent prior to selling lots. Identify any preservation areas where weeds would be managed by the HOA long-term; this may include infrastructure easements or natural areas such as the swales and ponderosa pine forests.
2. Develop a mowing program to control weeds, especially the dense patches of cheatgrass in spring. It is critical to remove, bag and dispose of cheatgrass seed before they set and disperse seed so that they do not create another crop the following year.

3. Initiate chemical controls. Canada thistle proliferates via seed and underground roots/rhizomes. In combination with mechanical controls (mowing and picking seed heads), chemicals should be applied to thistle plants and/or patches every year in the fall until they are eradicated. Chemicals should be applied just before thistle goes dormant so that the plants draw the herbicide into the roots/rhizomes and kills the underground parts.
4. In the Fall of 2022, apply a native seed mix to all open areas and all forested areas where native ground cover is less than sixty percent. Do not apply seed mix in forested areas with native ground cover more than sixty percent. Native seed mixes are available in the Urban Drainage and Flood Control Manual, Chapter 13 Revegetation, available at [https://mhfd.org/wp-content/uploads/2019/12/13\\_Revegetation.pdf](https://mhfd.org/wp-content/uploads/2019/12/13_Revegetation.pdf). The “upland area seed mix – sandy soil” (Table A-2) is appropriate for most of the Site. Some grass species in the mix could be substituted with other native species present on Site (junegrass, Arizona fescue, and mountain muhly). However, any substitutions should be made in consultation with a native seed company or restoration ecologist.

During construction staging:

1. Limit the construction staging and impact areas to as small an area as possible.
2. Fence off all preservation areas to prevent accidental impacts, to keep new weeds from being transported into these areas on vehicles, and to minimize vehicles tracking weeds from the Site to other properties.

During construction:

1. Since this Site is so weedy, many of the following measures are to prevent the introduction of new weeds to the Site and to minimize spreading weeds from the Site to new places.
2. Clean equipment and vehicles before they come onto the Site. Also, clean equipment and vehicles as soon as possible after they leave the Site.
3. Control weeds within staging areas and along construction access roads on an ongoing basis.
4. Do not import soil from other Sites. Engineered biotic soil media is a cheaper, weed-free product that may be used as a substitute for imported topsoil to provide growth media, organics and nutrients if suitable topsoil is not available from onsite.
5. Continue weed control in throughout the Site, especially in high priority and preservation areas.
6. Noxious weeds will become established in areas where the native vegetation and soil have been disturbed by construction. Thus, maintaining and then quickly re-establishing desirable vegetation post-construction will minimize weed infestations. Desirable vegetation may consist of native plant communities or landscaped areas.
7. Staging areas tend to become compacted and weedy. When finished using staging areas, grade off the top three to six inches of soil, prepare soils for planting (decompact, amend, etc.), and seed with a native seed mix. If the staging area will be reused or developed within a year, then seed it with a sterile cover crop such as Triticale.
8. Use temporary irrigation to establish native vegetation, including upland grasses and forbs. This will increase seed germination and increase plant survival. Rapid establishment of native vegetation will decrease establishment of non-native vegetation and noxious weeds.

The Site Plan should include measures to prevent introducing new weeds and spreading existing weeds during construction (including prevention measures above). Following construction, the Homeowner’s Association (HOA) and individual lot owners should be made responsible for weed control through Codes, Covenants and Restrictions (CCRs) including designated HOA fees. Weed management recommendations for the species observed on the Site are summarized in Table 2. Refer to the El Paso County “Noxious Weed and Control Methods” booklet for additional details (El Paso County, 2018a).

<b>TABLE 1 – NOXIOUS WEED MANAGEMENT SUMMARY</b>		
<b>Species</b>	<b>Occurrence</b>	<b>Management<sup>1,2,3</sup></b>
<b>LIST B<sup>4</sup></b>		
Canada thistle ( <i>Cirsium arvense</i> )	Concentrated and common in swales, up to 10% cover. Less common in uplands, scattered patches with cover less than 5%.	Focus on swales. Mowing/weed-whacking combined with herbicide treatment. Cut every 10 to 21 days during the growing season to prevent seeding. Spot treatment with herbicide, especially in the fall so that chemicals are pulled into the root system.
diffuse knapweed ( <i>Centaurea diffusa</i> )	Severe infestation. Common in all upland areas with average cover of 10% (ranging from 3 to 20%)	Biological control is the best approach for this species since it is so widespread and several effective biocontrol species are available. A weevil was observed on the diffuse knapweed that could be a knapweed flower weevil ( <i>Larinus minutus/obtusus</i> ). This is an insect used to help reduce knapweed (i.e. biocontrol), is best used in conjunction with other species.  Treat densest patches with herbicide in spring and fall. Seed with native species in Fall 2022 and in any bare areas created during construction.

**TABLE 1 – NOXIOUS WEED MANAGEMENT SUMMARY**

<b>Species</b>	<b>Occurrence</b>	<b>Management<sup>1,2,3</sup></b>
musk thistle ( <i>Carduus nutans</i> )	Scattered in uplands with less than 1% cover.	<p>Biological: The thistle crown weevil, <i>Trichosirocalus horridus</i>, is available for control.</p> <p>Mechanical: Best option since this species is not yet established onsite. Sever the root below the soil surface prior to plant flowering. Mowing/cutting is effective at full bloom when plant is highly visible, but cut flowers must be disposed of properly because seeds can develop on cut flowers.</p> <p>Chemical: Spot treatment with herbicide in spring and fall if encountered while spraying for Canada thistle.</p>
yellow toadflax ( <i>Linaria vulgaris</i> )	Most common in swales and in northeast portion of Site Multiple small patches, but overall cover less than 1%.	<p>Controlling toadflax is expensive and difficult. Control when infestations are small. Prevention is the best option.</p> <p>Biological: Several species are available.</p> <p>Chemical: Most effective. Use herbicide late August through September.</p>

**LIST C**

**TABLE 1 – NOXIOUS WEED MANAGEMENT SUMMARY**

Species	Occurrence	Management <sup>1,2,3</sup>
<p>cheatgrass (<i>Bromus tectorum</i>)</p>	<p>Present throughout Site with overall cover of ~10%. Cover is over 60% in scattered dense patches (possibly associated with former tree mulching areas), 5 to 20% along swales, and less than 5% in most other areas.</p>	<p>Cheatgrass can prevent establishment of native plants and increases wildfire risk. Prioritize control in the dense patches and along swales. Mow or weed-whack repeatedly in spring to prevent it from going to seed. Use selective pre- and post-emergent herbicide treatment. In the densest patches, removing the top four inches of cheatgrass, wood mulch, and soil is recommended, if possible.</p> <p>Drill seed treated areas with native seed, ideally in March.</p>
<p>common mullein (<i>Verbascum thapsus</i>)</p>	<p>Dispersed throughout Site (3 to 10% cover).</p>	<p>Control of this species is a low priority since it typically decreases once native cover is restored.</p> <p>Establish native vegetation and minimize new disturbance to prevent existing seeds from sprouting in bare soil.</p> <p>Mow in the bolting to early flowering stage to reduce seed production where feasible. Use herbicide to kill existing rosettes. Hand-pulling is effective, but likely not feasible for such large areas.</p>
<p>common St. Johnswort (<i>Hypericum perforatum</i>)</p>	<p>Scattered in uplands with less than 1% cover.</p>	<p>Biocontrol may now be available in Colorado.</p> <p>Establish native vegetation in sparsely vegetated areas.</p> <p>Use herbicide in spring.</p> <p>Hand-pulling is effective if all plant material is removed, but likely not feasible for such large areas.</p>

**TABLE 1 – NOXIOUS WEED MANAGEMENT SUMMARY**

Species	Occurrence	Management <sup>1,2,3</sup>
redstem filaree ( <i>Erodium cicutarium</i> )	Scattered in uplands with less than 1% cover.	<p>Establish native vegetation in sparsely vegetated areas.</p> <p>Mechanical: Hand pulling is effective but not feasible on a large scale. All flowers and seeds must be disposed of.</p> <p>Chemical: Spot treatment with herbicide in spring if encountered while spraying for Canada thistle.</p>

<sup>1</sup>Refer to the El Paso County “Noxious Weed and Control Methods” booklet for additional detail (El Paso County, 2018a).

<sup>2</sup>When using herbicides, always read and follow the product label to ensure proper use and application.

<sup>3</sup>If near water or wetlands, only use herbicides and formulations approved for use near water.

<sup>4</sup>All of the List B species on the Site are designated for suppression (Colorado Code of regulations, 2018).

## 2.0 Summary of Potential Impacts

Weeds observed on Site include the List B and List C noxious weed species noted above. Suppression is required for all List B species. Site development typically causes weeds to increase due to increased earth disturbance and new weeds being brought in on vehicles and shoes, soil and fill material, landscaping supplies, etc. The following recommendations are intended to minimize negative impacts and increase positive impacts:

1. Implement an integrated noxious weed management plan that begins as soon as possible, continues through construction, and is taken over and implemented by private lot owners and the HOA following construction. Control of List B species (especially knapweed) and reduction of cheatgrass should be the highest priorities.
2. Introduce biological, mechanical and chemical controls for weed suppression and eradication as soon as possible.
3. Increase cover of native grasses and forbs in sparsely vegetated areas.
4. Include requirements in the CCRs that landowners manage weeds on their property per the Colorado Noxious Weed Act and El Paso County guidelines.
5. Prohibit importation of fill dirt and landscaping material from other locations unless it is first sterilized, then amended with organics and nutrients.
6. Prohibit exportation of soil from the Site so that weeds are not spread to new locations.

### **3.0 Regulations and Recommendations**

#### **3.1 Colorado Noxious Weed Act**

In order to ensure Project compliance with the Act, the Noxious Weed Management Plan referenced in Section 3.5 and Appendix C of this Report should be implemented, and further site-specific weed management strategies should be implemented on an ongoing basis, starting as soon as feasible.