Natural Features Report for the Cornerstone Estates Project

El Paso County, Colorado

December 7, 2021

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: 2021-15-1

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LIST OF ACROYNMS AND ABBREVIATIONS

AMSL	above mean sea level
Applicant	William Guman & Associates, Ltd.
BoCC	Board of County Commissioners
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
JD	Jurisdictional under the Clean Water Act
Non-JD	Non- jurisdictional under the Clean Water Act
Project	Cornerstone Estates Project
Report	Natural Features Report
Site	Cornerstone Estates 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

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 Cornerstone Estates (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

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 address is 11340 Goodson Road; it is located on the southeast edge of the Black Forest, approximately five miles north of Falcon, and 20 miles northeast of Colorado Springs. The sparsely forested northwest corner slopes down into native grasslands to the south and east. The surrounding land use is predominantly rural residential. A long, dirt driveway leads to the developed northwest corner of the Site where there is a small pond, a house, and two out-buildings. The eastern side of the Site consists of a 225-foot wide power line easement with multiple transmission lines (Figure 2).

Geographically, the Site is located within the northeast ¼ of Section 23, Township 12 South, Range 65 West in El Paso County, Colorado. The center of the Site is situated at approximately Latitude 38.993533°, Longitude -104.628067°. Refer to Figure 1, USGS Site Location Map.

1.3 Project Description

The Project proposes to divide the Site into 16 lots of approximately 2.5 to 3.6 acres each Refer to Figure 2, Proposed Site Plan. The Applicant would remove the existing buildings and construct infrastructure consisting of two roads, stormwater swales, and a large stormwater detention pond in the southeast corner (Tract A). The existing driveway and the northwest pond would remain. The eastern edge of the Site (~13.6 acres) would not be developed due to the existing power lines and associated easement. Homeowners would develop their own lots including grading, septic, water wells, and propane. Power would be provided by Mountain View Electric. Please refer to the development application for more details and plans.

FIGURE 1
USGS SITE LOCATION MAP

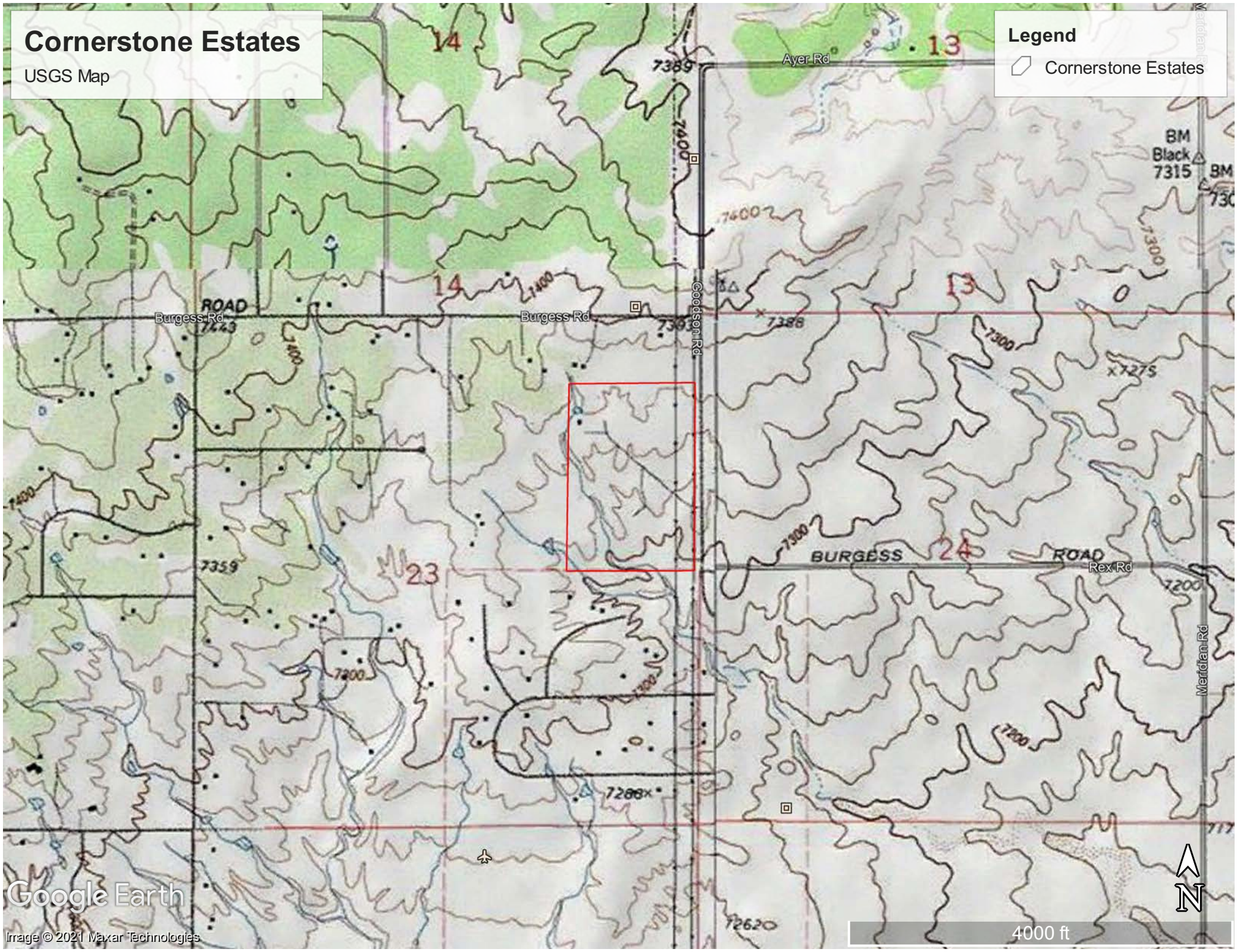

Cornerstone Estates
USGS Map
Legend
Cornerstone Estates
Ayer Rd
Burgess Rd
Burgess Rd
Goodson Rd
BURGESS ROAD
Rex Rd
Meridian Rd
BM Black 7315
14
13
23
24
7389
7400
7388
7359
7288
7262
Google Earth
Image © 2021 Maxar Technologies
N
4000 ft

FIGURE 2
PROPOSED SITE PLAN

FRANK & LUCILLE CALETTI
10435 BURGESS ROAD
COLORADO SPRINGS, CO 80908

ZONE RR-5

DAVID & SUSAN SMITH TRUST
10565 BURGESS ROAD
COLORADO SPRINGS, CO 80908

ZONE RR-5

TERENCE WEBB
10685 BURGESS ROAD
COLORADO SPRINGS, CO 80908

ZONE RR-5

NANCY HOMAN
10315 BURGESS ROAD
COLORADO SPRINGS, CO 80908

ZONE RR-5

GEORGE & CHERYL DUBRY
10305 BURGESS ROAD
COLORADO SPRINGS, CO 80908

ZONE RR-5

PORTER RANCH LTD PARTNERSHIP LLLP
P.O. BOX 63600
COLORADO SPRINGS, CO 80962

ZONE RR-5

DAVID MEEK
10950 REX ROAD
PEYTON, CO 80831

ZONE RR-5

DALE & KIM ELSTER
10790 SANDLILLY LANE
PEYTON, CO 80831

ZONE RR-2.5

DONALD & SHERYL MORRIS
10810 SANDLILLY LANE
PEYTON, CO 80831

ZONE RR-2.5

STEVE & DEBRA ROGGIE
10830 SANDLILLY LANE
PEYTON, CO 80831

ZONE RR-2.5

NIKKI ELLIOTT
1815 ROYAL CRESCENT STREET
SAN ANTONIO, TX 78231

LOCATION: 10860 SANDLILLY LANE

ZONE RR-2.5

10895 SANDLILLY LANE LLC
16950 SOUTHWOOD DR
COLORADO SPRINGS, CO 80908

ZONE RR-2.5

STEVEN & JOANNA ROOSENDAAL
10550 CHIMING BELL CIRCLE
PEYTON, CO 80831

ZONE RR-2.5

500' PROPERTY LINE OFFSET

50' NO-BUILD SETBACK

N89°04'07" E 1310.34'

S89°04'07" W 1310.29'

20' TRAIL EASEMENT ALONG GOODSON ROAD

PROPOSED FUTURE GOODSON RD. 90' R.O.W.

MONUMENT SIGN LOCATION 4' X 6'

BUILDING ENVELOPE

EXISTING BLDG. TO BE REMOVED

EXISTING BLDGS. TO BE REMOVED

LOT 1 2.50 AC (1.26 net) PROPOSED WELL AQUIFER: DENVER

LOT 1 ACCESS TO BE OFF MERCY COURT

LOT 2 2.58 AC (1.00 net) PROPOSED WELL AQUIFER: DAWSON

LOT 3 3.22 AC (1.00 net) PROPOSED WELL AQUIFER: DENVER

LOT 4 3.00 AC (1.44 net) PROPOSED WELL AQUIFER: DENVER

LOT 5 8.82 AC (3.91 net) 3.15 AC LESS FLAG STEM PROPOSED WELL AQUIFER: DAWSON

LOT 6 3.00 AC (2.12 net) PROPOSED WELL AQUIFER: DENVER

LOT 7 2.50 AC (1.95 net) PROPOSED WELL AQUIFER: DENVER LOT 7 ACCESS TO BE OFF OF REDEEMER LANE

LOT 8 3.63 AC (1.12 net) PROPOSED WELL AQUIFER: DAWSON

LOT 9 2.52 AC (1.18 net) PROPOSED WELL AQUIFER: DENVER LOT 9 ACCESS TO BE OFF REDEEMER LANE

LOT 10 2.51 AC (1.26 net) PROPOSED WELL AQUIFER: DENVER

LOT 11 3.00 AC (1.71 net) 2.64 AC LESS FLAG STEM PROPOSED WELL AQUIFER: DENVER

LOTS 11 & 12 TO HAVE SHARED LOT ACCESS. LOCATION TO BE DETERMINED AT FINAL PLAT.

LOT 12 3.30 AC (1.85 net) 3.05 AC LESS FLAG STEM PROPOSED WELL AQUIFER: DAWSON

LOT 13 3.45 AC (1.44 net) PROPOSED WELL AQUIFER: DENVER

LOT 14 3.31 AC (1.18 net) PROPOSED WELL AQUIFER: DENVER

LOT 15 2.83 AC (1.14 net) PROPOSED WELL AQUIFER: DAWSON

LOT 16 3.62 AC (1.29 net) PROPOSED WELL AQUIFER: DENVER, LOT 16 ACCESS TO BE OFF OF MERCY COURT

TRACT A 5.98 acres Open Space/ DRAINAGE

PRELIMINARY DETENTION POND

BOOK 2041 PAGE 834 ELECTRIC EASEMENT (XCEL ENERGY)

BOOK 2773 PAGE 85 ELECTRIC EASEMENT (MVEA)

POWER LINE EASEMENT

55X55' SIGHT TRIANGLE

MERCY COURT RURAL LOCAL (R.O.W. 60')

REDEEMER LANE RURAL LOCAL (R.O.W. 60')

GOODSON ROAD - MAJOR COLLECTOR (PHASE 2 90' R.O.W.) (24.5 PAVED ASPHALT 80')

REX ROAD (NON-ARTERIAL)

LEGEND:

EXISTING TOPOGRAPHY 2' INTERVAL

OPEN SPACE & DRAINAGE / DETENTION TRACT

TRACT TABLE:

NAME	DESCRIPTION	S.F.	AC
TRACT A	OPENSPACE DRAINAGE / DETENTION	260,488.80	5.98

NORTH

0' 100' 200' 300'

SCALE: 1" = 100'

William Guman & Associates, Ltd.
Landscape Architecture
Land Planning
Urban Planning
Community Design
815 North Weber Street
Colorado Springs, CO 80903
Phone: 719.633.9250
Fax: 719.633.9252
E-Mail: WGuman@aol.com
www.williamguman.com

CORNERSTONE ESTATES
PRELIMINARY PLAN

11340 GOODSON ROAD COLORADO SPRINGS 80908

DATE: 05/06/2008
DRAWN: SPC
CHECKED: WFG

REVISIONS:

DATE:	BY:	COMMENTS:
6/11/08	JRA	PRELIM PLAN RESUBMITTAL

PRELIMINARY PLAN

SHEET NO. 2 OF 2 SHEETS

SP-07-019

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:

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

Major vegetation communities, significant topographic features, major noxious weed stands, and potential wetlands were sketched on topographic and aerial base maps and/or recorded using a hand-held Global Positioning System (GPS) 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 wetlands and USACE jurisdiction to aid in planning. Along natural drainage swales the following were mapped on an aerial photo prior to the Site visit; channels, potential wetlands, and visible upland breaks. During the Site visit these areas were visited to confirm conditions. Vegetation within swales was noted as being upland, wetland (i.e. hydrophytic species are dominant, meet USACE wetland vegetation criteria), or mixed (i.e. both upland and wetland species were present). A full wetland delineation per USACE requirements, including soil sampling points, was not completed. The actual wetland extent will generally fall within (i.e. be less than) the preliminarily mapped areas shown on Figure 4, Vegetation Community Map.

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 spans across two Level IV Ecoregions. The northwest half of the Site is within Pine-Oak Woodlands (26i). This is a slightly elevated area comprised of a mosaic of grasslands, dense oak brush, and ponderosa pine woodlands, including the pine dominated Black Forest. The southeast portion is within Foothill Grasslands (26j), which encompasses a diverse mix of grasslands types, including small areas of tallgrass prairie that are rare in Colorado. Most of Colorado's eastern plains are vegetated with less diverse and less productive shortgrass prairie. However, the more diverse foothill grasslands persist due to slightly lower temperatures and more moisture (runoff, springs, and precipitation). Soils are loamy, gravelly, moderately deep, and mesic. Rangeland and pasture uses are common. Urban and suburban development has increased in recent years, expanding out from Colorado Springs.

3.1 Topography

The Site is generally characterized as undulating and sloping from north to the southeast. Site topography ranges from a high elevation of 7,362 feet above mean sea level (AMSL) on the northern boundary to a low elevation of 7,282 feet AMSL in the southeast corner. The higher north side of the Site is fairly flat with several wide and visually imperceptible drainage swales. The south side is hillier with steeper slopes, higher runoff volume, and more defined drainages. There are no significant topographic features or rock outcroppings. Refer to Figure 1, USGS Map

3.2 Drainage Swales

The Site is located within the Black Squirrel Creek watershed of the Arkansas River Drainage and outside of any FEMA mapped floodplains (FEMA, 2021). The drainages on Site are small headwater conveyances that flow to an unnamed intermittent tributary to Black Squirrel Creek, a perennial stream that flows into Chico Creek which flows to the Arkansas River. The drainages begin as ephemeral upland swales that concentrate flows until at some point wetlands and defined channels develop. The most well-defined swales are shown and labeled on Figure 4, Vegetation Community Map. This includes the Southwest and West swales that are mapped on Figure 1, the USGS topographic map as blue-line streams and by the USFWS NWI as intermittent streams. Along the West swale, there is a permanent pond near the house and two ephemeral ponds near smaller dams. The vegetation associated with the swales is described in Section 3.4.3.

Most of the drainage swales converge in the southeast corner of the Site where there is a shallow detention basin behind a T-shaped dam (Figure 4). Flows from the West swale regularly pool in the lowest portion of the basin, as evidenced by two small ephemeral pools that appear to have held water earlier in the year and the adjacent wetland vegetation. The rest of the basin does not appear to flood in most years. It is vegetated with a mix of upland and wetland species and no signs of recent inundation were observed. The field observations are consistent with aerial photographs that show the basin as dry except in 2015 when vegetation was greener than surrounding areas and in 1999 when both basins held water. An overflow channel has been cut through the southeast end of the dam; it is approximately four feet above the bottom of the basin and there were no signs that water has ever flowed through the channel creating a downstream surface connection. A wetland channel reforms approximately 150 feet south of the dam, on an adjacent property. The area between the dam and the channel was mowed, but appears to be wetlands based on the relatively dense vegetation.

Figure 3
CNHP RIPARIAN AREAS MAP

Figure 3
CNHP Riparian Areas Map

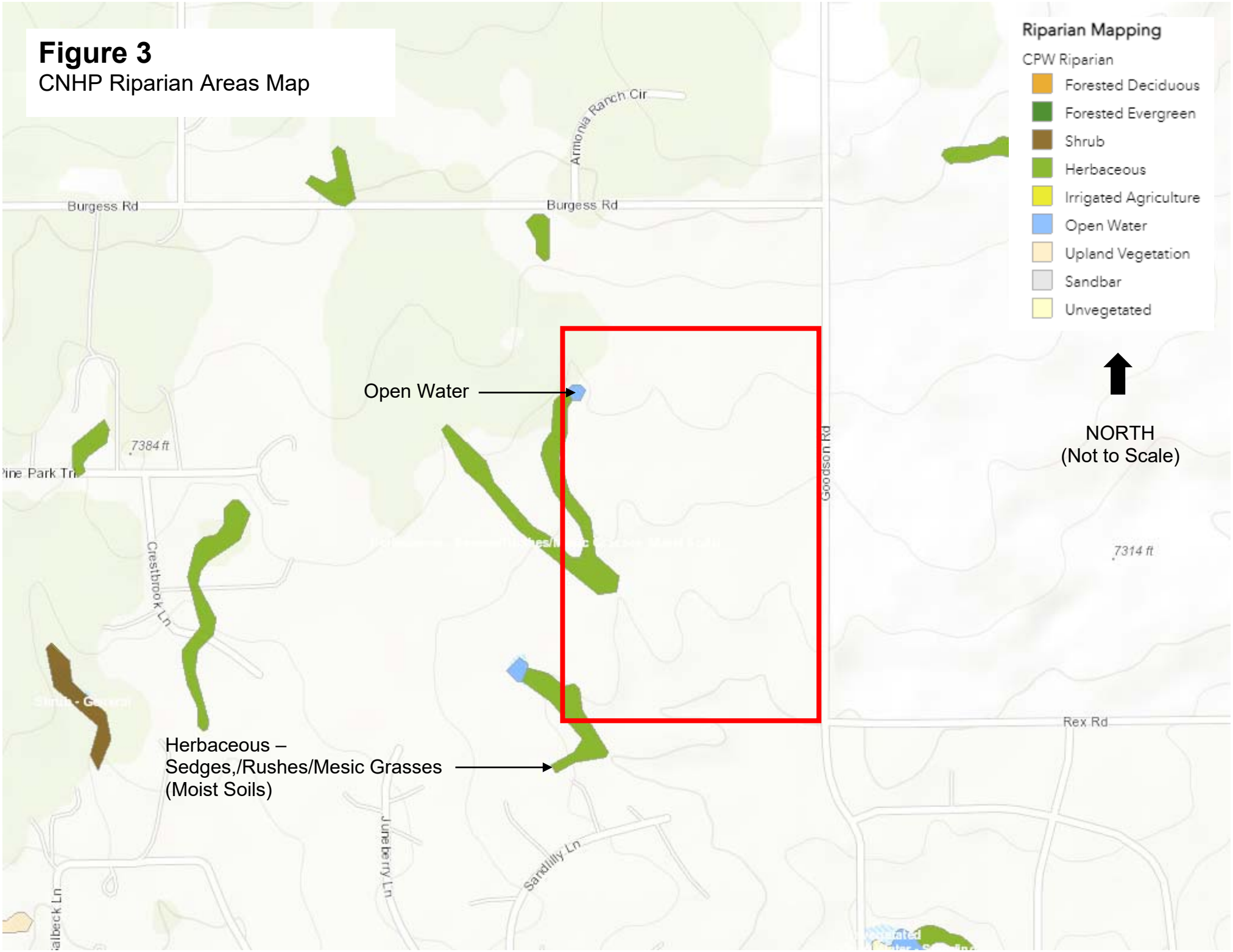


FIGURE 4

VEGETATION MAP

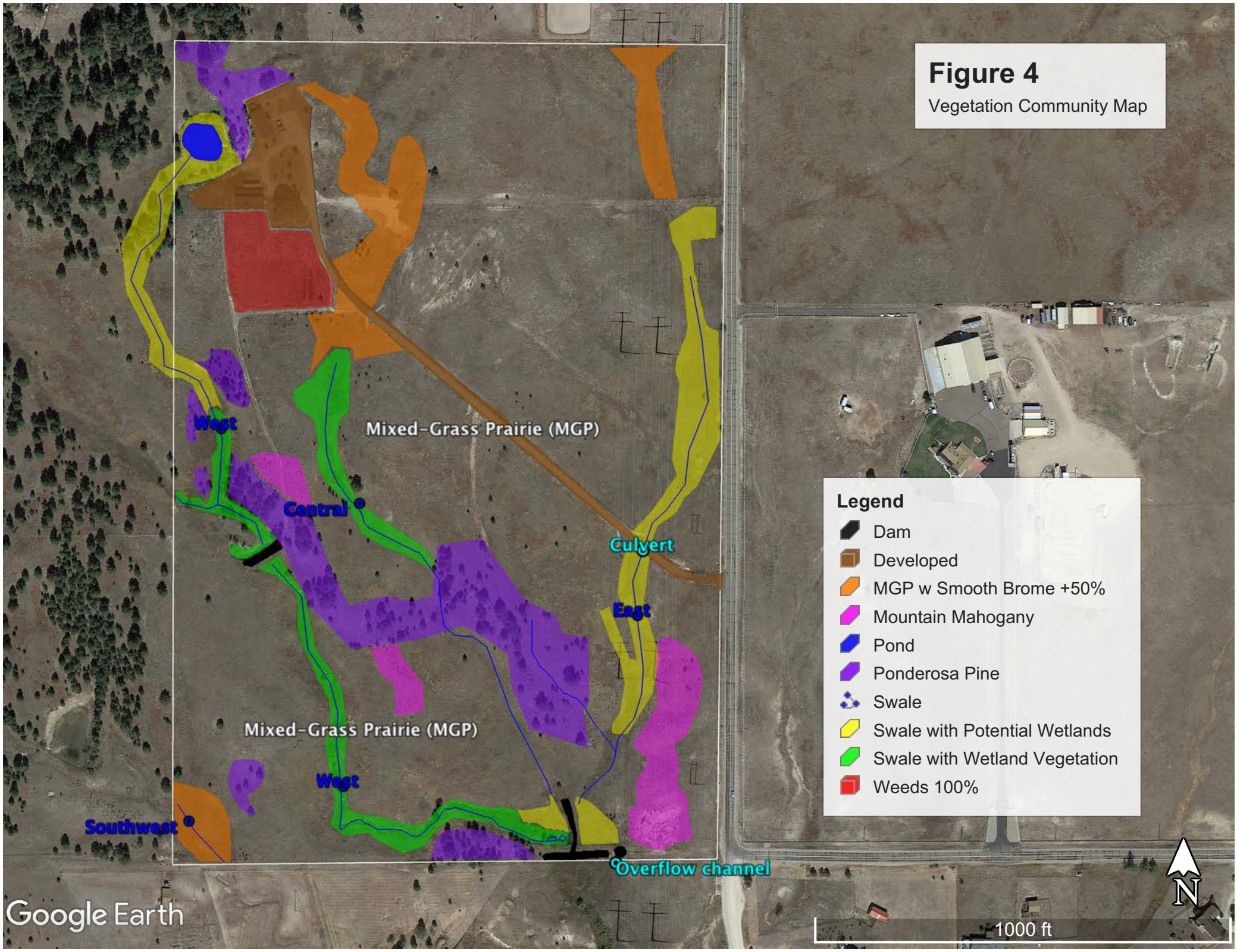


Figure 4
Vegetation Community Map
Mixed-Grass Prairie (MGP)
West
Central
Culvert
East
Mixed-Grass Prairie (MGP)
West
Southwest
Overflow channel
Legend
Dam
Developed
MGP w Smooth Brome +50%
Mountain Mahogany
Pond
Ponderosa Pine
Swale
Swale with Potential Wetlands
Swale with Wetland Vegetation
Weeds 100%
N
1000 ft
Google Earth

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 B, USDA Soil Survey for additional information.

Pring coarse sandy loam (Map Unit #71) is the soil type that underlies 100% of the Site. This well-drained alluvium occurs on alluvial fans, valley side slopes, hills, and ridges in the foothill and Black Forest areas of Colorado. Slopes range from 0 to 30 or more percent. This soil has rapid permeability with a low run-off class that is not frequently flooded. The available water capacity is low (about 6.0 inches). Pring soils are not classified as hydric.

Pleasant loam is listed as a minor component of the mapped Pring soils, 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).

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

Vegetation on the Site is predominantly high quality mixed-grass prairie with small areas of ponderosa pine (*Pinus ponderosa*) and mountain mahogany (*Cercocarpus montanus*) shrubs. The Site is not currently grazed. Most of the grasslands are in excellent condition, but non-native smooth brome is well-established in some areas. The multiple swales contain small ephemeral drainages with vegetation ranging from short grass prairie uplands to wetlands. The drainages have been moderately disturbed by construction of dams and an influx of weeds from neighboring properties. However, the less-disturbed sections include diverse wetlands and mesic patches of tallgrass prairie.

Refer to Figure 3, CNHP Riparian Areas and Figure 4, Vegetation Community Map. Refer to Appendix E for a photo location map and representative photographs of site conditions.

3.4.1 Mixed-grass Prairie

The majority of the Site is vegetated with extremely diverse mixed-grass prairie consisting of tallgrass, midgrass, and shortgrass species. Species composition shifts based on the slope, aspect, soils, and hydrology.

Mid-grass prairie is the predominant type. Common grass species include needle and thread (*Hesperostipa comata*), little bluestem (*Schizachyrium scoparium)*, blue grama (*Bouteloua gracilis*), and mountain muhly (*Muhlenbergia montana*). There are lesser amounts of forbs including fringed sage (*Artemisia frigida*), silver sage (*Artemisa ludoviciana*), spreading buckwheat (*Eriogonum effusum*), and prairie aster spp. (*Symphyotrichum* spp.).

Shortgrass prairie is present south of the driveway in relatively dry areas such as hilltops and south facing slopes. Species are similar to in the midgrass prairie but the composition shifts towards more drought tolerant species with blue grama being the dominant species.

Tallgrass prairie occurs in relatively mesic areas throughout the Site. In the hilly areas south of the driveway small patches of tallgrass prairie are present in some swales, north facing slopes, and slightly shaded areas. Tallgrass prairie is more extensive north of the driveway where it is is associated with several wide, poorly defined (almost flat), mesic swales. The tallgrass prairie species are similar to the midgrass prairie, but composition shifts towards taller, more mesic species. Little bluestem is one of the dominant species. Other species that were generally restricted to tallgrass prairie were prairie dropseed (*Sporobolus heterolepsis*), green needlegrass (*Stipa viridula*), switchgrass (*Panicum virgatum*), and stiff goldenrod (*Solidago rigida*). Big bluestem (*Andropogon gerardii*), a “keystone” tallgrass prairie species, was observed in small patches. Non-native smooth brome (*Bromus inermis*) is common in mesic swales and uplands, especially in the northwest quarter of the Site, under the powerline, and in swales adjacent to the existing driveway. Smooth brome is an invasive plant that outcompetes and replaces native grasslands.

Historically, tallgrass prairie occupied approximately 60 million hectares, but most has been converted to row crops and less than two percent remains (CNHP 2001a). Most tallgrass prairie occurs in the eastern third of the Great Plains, but there are disjunct remnants of tallgrass prairie on the west edge of the Great Plains in Colorado’s foothill grasslands where precipitation is higher than on the short grass prairie that cover the eastern side of the state. Multiple rare plant and animal species are associated with tallgrass prairie, including at least five species of skippers (butterflies in the family Hesperiidae) known to rely on big bluestem as their primary host plant. Most of Colorado’s tallgrass prairie has been developed or degraded by overgrazing and hay production.

3.4.2 Ponderosa Pine and Mountain Mahogany

There are open patches of ponderosa pine and mountain mahogany. The scattered ponderosa pine are mostly on north and west facing slopes. The understory is vegetated with mixed-grass prairie species, but with sparser cover when the trees are dense. Scattered mountain mahogany shrubs occur in drier hilltops and south facing slope where the herbaceous layer is comprised of shortgrass prairie species. These species increase the structural diversity of vegetation which improves wildlife habitat by creating visual cover, thermal cover, and nesting locations.

3.4.3 Swales and Potential Wetlands

Vegetation within the swales includes both upland and wetland areas (Figure 4). The upland vegetation is similar to the previously described mixed-grass prairie species. As moisture increase, vegetation in the swales transitions from upland species to hydrophytic species with dominants species including (listed from upland species to obligate wetland species): smooth brome, Canada thistle (*Cirsium arvense*), Baltic rush (*Juncus balticus*), narrowleaf willow (*Salix exigua*), and Nebraska sedge (*Carex nebrascensis*). Swales containing a mix of upland and wetland species (i.e., mesic riparian areas) were mapped as potential wetlands. This typically included a mix Canada thistle and Baltic rush, sometimes with lesser amounts of smooth brome.

Soil sampling points completed in conjunction with more detailed vegetation sampling would be needed to determine whether these transitional/riparian areas meet USACE wetland criteria. Each of the swales is summarized below.

The Southwest swale crosses just 200 feet of the Site. It is best characterized as an ephemeral upland swale. During the Site visit it was dry, had no visible indicators of recent flow, and was vegetated with predominantly upland vegetation (smooth brome 50%). Conditions appeared to be similar on the upstream and downstream portions on adjacent properties.

The West swale is the most significant one on the Site. It begins near the northwest corner of the Site, fills a pond near the house, continues to south, and into a seasonal pond created by a tall dam. Below the dam, the channel reforms and then continues to the south and east until it ends in another small seasonally ponded area created by a dam. Most of the swale is vegetated with Baltic rush mixed with more reliably hydrophytic species such as wild mint (*Mentha arvensis*). There are smaller patches of diverse sedges, non-native Canada thistle, sandbar willow, and cattails (*Typha latifolia*). There is sparse, emergent wetland vegetation in the small seasonally flooded ponds. Occasional high flows are evidenced by head-cutting and a well-defined channel after the turn to the east where brush has been piled.

The Central swale has no defined channel or ordinary high water mark. The upper end consists of a large depression vegetated with Baltic rush in the center and mesic tallgrass prairie species on the perimeter, including big bluestem. Farther downstream (southeast) the wetlands transition to shortgrass prairie upland vegetated with blue grama. This typically happens where occasional flows deposit sandy soils, thus creating relatively dry growing conditions.

The East swale begins in mesic tallgrass prairie north of the driveway. Near the driveway, vegetation becomes weedier with the dominant species shifting back and forth between Baltic rush (a wetland plant) and smooth brome (an upland plant) with lesser cover of other species including Canada thistle and switchgrass. The lower (south) end was mapped as upland because smooth brome was the dominant species.

The West, Central, and East swales converge in a shallow basin in the southeast corner of the Site. Most of the basin is vegetated with mesic, borderline wetland vegetation. The dominant species are non-native redtop (*Agrostis gigantea*) (non-native) and prickly lettuce (*Lactuca serriola*) (non-native) along with native slender wheatgrass (*Elymus trachycaulus*). There is also low cover of common mullein (*Verbascum thapsus*), a C-list noxious weed.

3.4.4 Developed and Disturbed Areas

Development and disturbance are minor. Development consists of the existing buildings in the northwest corner, a long dirt driveway, and the power line along the east side of the Site. Vegetation beneath the powerline is predominantly mixed-grass prairie with some patches of non-native vegetation (mostly smooth brome and Canada thistle). There are three main disturbed areas. The most disturbed is an extremely weedy area south of the existing buildings that appears to have been used as a pasture and is mapped as “Weeds 100%” on Figure 4. Cover here is comprised of non-native species including smooth brome (25%) and noxious weeds (30%) with 25% bare ground. The second disturbed area is the shallow basin and dams in the southeast corner. This area is also weedy, likely due to construction disturbance and an inflow of non-native species from adjacent Sites. Disturbance on the rest of the Site appears to be due to past minor construction including along the power line and near the house. As previously described, non-native smooth brome is common in these moderately disturbed areas, especially in more mesic areas. Many of these areas are mapped as “MGP w Smooth Brome +50%” on Figure 4.

3.5 Noxious Weeds

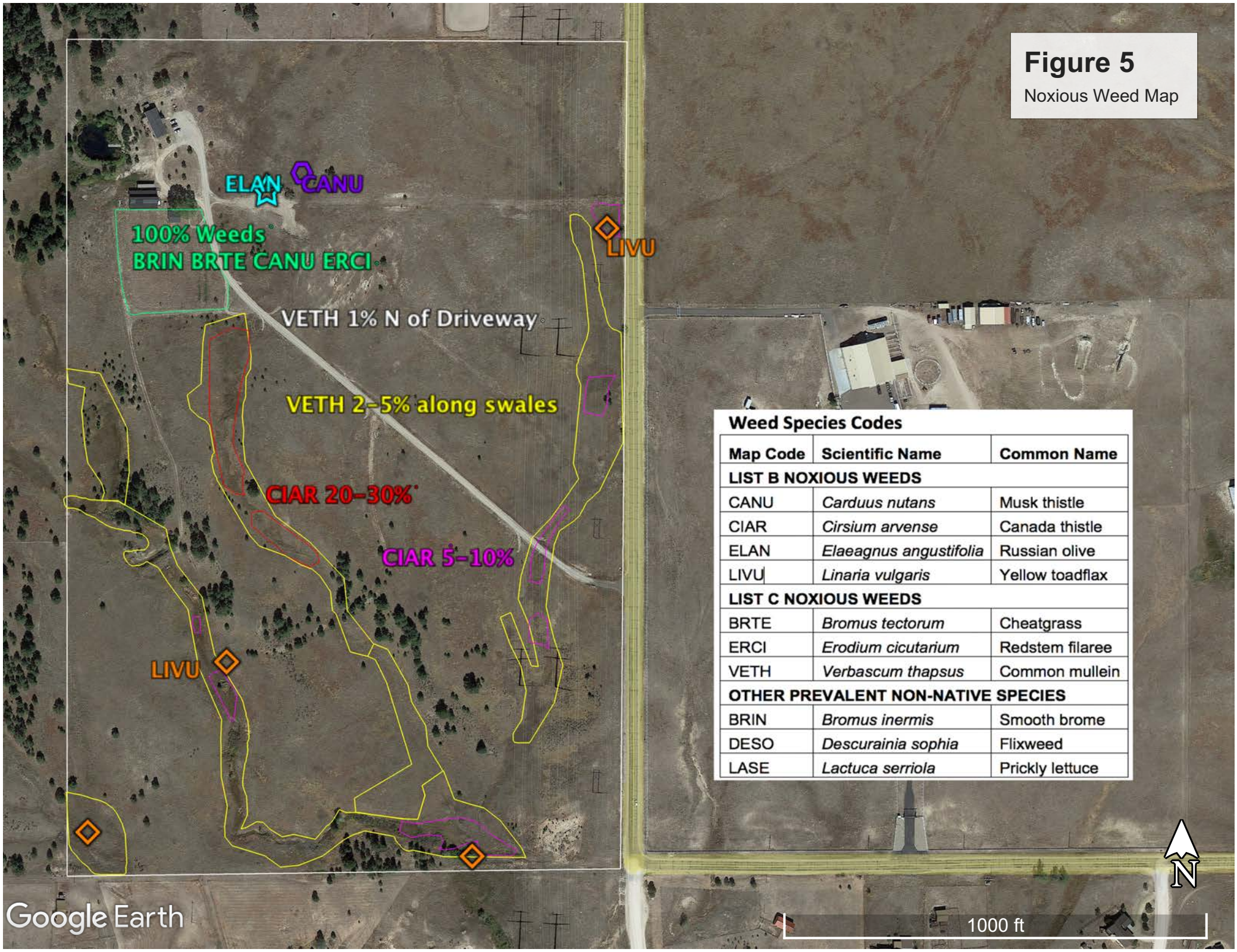
Refer to Figure 5 (Noxious Weed Map) and Appendix C (Weed Management Plan) for details on State-listed noxious weeds.

FIGURE 5

NOXIOUS WEED MAP

Figure 5

Noxious Weed Map



Weed Species Codes

Map Code	Scientific Name	Common Name
LIST B NOXIOUS WEEDS		
CANU	*Carduus nutans*	Musk thistle
CIAR	*Cirsium arvense*	Canada thistle
ELAN	*Elaeagnus angustifolia*	Russian olive
LIVU	*Linaria vulgaris*	Yellow toadflax
LIST C NOXIOUS WEEDS		
BRTE	*Bromus tectorum*	Cheatgrass
ERCI	*Erodium cicutarium*	Redstem filaree
VETH	*Verbascum thapsus*	Common mullein
OTHER PREVALENT NON-NATIVE SPECIES		
BRIN	*Bromus inermis*	Smooth brome
DESO	*Descurainia sophia*	Flixweed
LASE	*Lactuca serriola*	Prickly lettuce

4.0 SUMMARY STATEMENT OF IMPACTS

4.1 Drainage Swales

Initial infrastructure construction would impact the three main drainages swales and associated wetland vegetation (Figure 6). The most significant impacts would be due to construction of the staging area and adjacent erosion control because they would impact well-established wetlands along the Central swale and adjacent tallgrass prairie vegetation. Drainage modifications would impact most of the East swale. The large sediment basin in the southeast corner would impact portions of all the swales.

The lots have been laid out so that the existing drainages are along the lot edges. When homeowners develop their lots, there will be unavoidable minor impacts to drainages that must be crossed to access lots. Major impacts should be avoidable, but would be up to the discretion of lot owners.

4.2 Vegetation

Most of the Site is vegetated with high quality native vegetation consisting of diverse mixed-grass prairie with lesser amounts of ponderosa pines and mountain mahogany. The drainage swales are vegetated with a mix of upland and wetland vegetation including generally weedy wetlands and diverse tallgrass prairie. There are limited areas of developed and disturbed habitat. Of these habitat types, only WOTUS, including wetlands and other waters, have legal protections. Although mixed-grass prairie has no legal protection, it is a frequently overlooked high value habitat due to its relative rarity in Colorado and high biological diversity. The rarest mixed-grass prairie element are the patches of tallgrass prairie with big bluestem that occur along swales and in the northern portion of the Site. The scattered ponderosa pines are visually significant, increase vegetative diversity, and provide wildlife habitat.

Direct negative impacts to native vegetation communities will result from the construction of roads, utilities, and homes. The seed mix in the GESC plans will also have a negative impact because it consists of mostly nonnative species such as smooth brome, crested wheatgrass (*Agropyron cristatum*) and reed canary grass (*Phalaris arundinacea)* (highly invasive in wetlands). Only the “Sandy Soil Seed Mix” consists of native species.

Additional negative impacts may occur if construction spreads weeds around the Site or if homeowners replace native vegetation with non-native species. See Appendix C. Weed Management for additional details on weed management. Indirect negative impacts will include an increase of impervious area, run-off, and concentration of flows that alter natural hydrology and associated vegetation communities.

The project has the potential to protect approximately 13.6 acres within the existing power line easement and along most of the swales because they are located along lot lines.

4.3 Significant Features

There are no significant topographic features, rock outcroppings, or other significant natural features on Site beyond what is described above. Thus, the project would not impact these resources.

FIGURE 6
IMPACT MAP

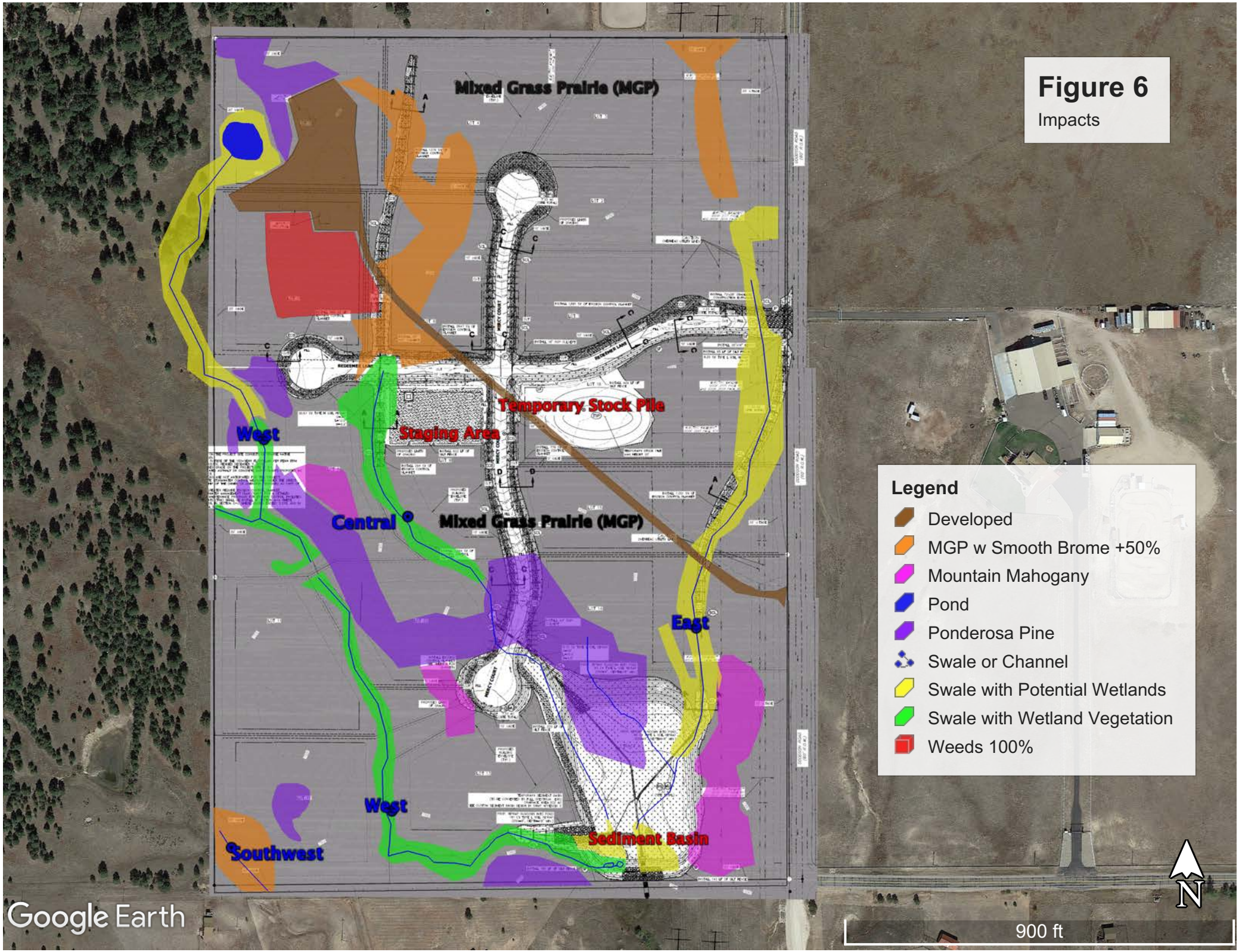


Figure 6
Impacts
Mixed Grass Prairie (MGP)
Temporary Stock Pile
Staging Area
West
Central
Mixed Grass Prairie (MGP)
East
West
Southwest
Sediment Basin
Legend
Developed
MGP w Smooth Brome +50%
Mountain Mahogany
Pond
Ponderosa Pine
Swale or Channel
Swale with Potential Wetlands
Swale with Wetland Vegetation
Weeds 100%
N
900 ft
Google Earth

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. 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 Clean Water Act (CWA) is administered by the USACE and prohibits the discharge of dredged or fill material into waters of the U.S. (WOTUS) (including wetland habitat) without a valid permit. In order to be a WOTUS under USACE jurisdiction, wetlands or waters typically must have a continuous surface connection to downstream 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. There is wetland vegetation and potential wetlands in three drainages (Figure 4). There are upland breaks along each drainage. Thus, they may not be WOTUS under USACE jurisdiction.

- The West swale has continuous wetlands through almost the entire Site except for an ~30' wide upland break at the small dam near the west side of the site. (The USACE classified this as a jurisdictional WOTUS in 2008, but that determination expired in 2013.)
- The Central drainage has well-developed wetlands at the north end, but an ~800' long vegetated upland break further south. (The USACE determined that this drainage was not jurisdictional in 2008, but that determination expired in 2013.)
- The East swale is vegetated with a mix of upland and wetland species (potential wetlands) with an ~200 foot long upland break near the southeast corner of the Site.
- All three drainages converge in a low area in the southeast corner of the site and behind a dam along the south side of the property. The dam appears to block flows from continuing to the south. There is also a small overflow channel cut through the dam, but this is approximately four feet above the bottom of detention and does not appear to flow in typical years creating a perennial surface water connection to the channel downstream of the dam.
- No culverts were observed, but it possible that existing culverts were partially buried and or obstructed by vegetation. A piece of old plastic pipe was observed along the south dam.

Based on the preliminary wetland mapping and unofficial jurisdictional evaluation, the swales and wetlands on Site are isolated and non-jurisdictional for the reasons described above. However, until the dams are more carefully assessed for culverts and an Approved Jurisdictional Determination (AJD) is officially requested and received from the USACE, the applicant should assume that all of the mapped wetland vegetation, swales, and ponded areas are jurisdictional.

If deemed jurisdictional, the Applicant would need to design the site to first avoid and then obtain CWA Section 404 Permit authorization from the USACE prior to construction to authorize any development-related impacts. If impacts to jurisdictional wetlands or waters are unavoidable, impacts must be minimized to the extent that they meet the requirements of a Nationwide Permit. If individual landowners would impact WOTUS by site grading and development of driveways and structures, then they would also need to individually comply with Section 404 of the CWA. Since lot development is all part of one project, the USACE may require impacts for the whole Site to be evaluated together as one complete project, not making individual lot owners fend for themselves.

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 or 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 Recommendations

The following recommendations are intended to minimize negative impacts and increase positive impacts. The primary goal is minimize impacts to existing areas of undisturbed vegetation with high biological diversity.

1. Follow the recommendations of the Noxious Weed Management Plan (Appendix C).
2. The 2016 Urban Drainage and Flood Control District, Urban Drainage Criteria Manual (2016 UDFCD Manual), Volume 2, Chapter 13 - Revegetation has excellent native seed mixes that are appropriate for the Site.
    a. Update the existing Grading, Erosion, and Sediment Control (GESC) Plan with seed mixes from the 2016 UDFCD Manual. (The current GESC plans include seed mixes are from the 2012 UDFCD Manual that are mostly non-native except for the "Sandy Soil Seed Mix.")
    b. Add QuickGuard sterile triticale (Triticum aestivum x secale cereale) , a fast growing, cool season sterile cover crop, to the upland mix at a minimum rate of 5 pounds per acre to serve as temporary erosion control.
    c. Require homeowners and any future construction projects to re-vegetate disturbed areas with the 2016 UDFCD Manual Seed Mixes.
3. During construction, limit ground disturbance within existing undisturbed habitats. Disturbed habitat includes the existing developed area, 100% weedy area, and areas of mixed-grass prairie with more than 50% smooth brome (Figure 6).
4. The staging area and temporary stockpile identified on the GESC Plans are both located within high quality mixed-grass prairie habitat. The staging area will also impact wetland vegetation along the Central swale. Impacts to mixed-grass prairie and wetland vegetation could be reduced by relocating them to the northwest into the existing developed area, 100% weedy area*, or the mixed-grass prairie with smooth brome area

(Figure 6). *See Appendix C. Weed Management Plan regarding steps to prevent spreading weeds to new areas.

5. South of Redeemer Lane and along the west side of the staging area, grading below a new culvert outlet would impact ~200' of the Central swale and associated wetland vegetation in a wide depression. Shift the culvert alignment and/or reduce grading to minimize impacts. One lower impact alternative would be to control runoff via an extended detention or bioretention basin located north of Redeemer Lane. This approach would avoid most or all wetland impacts south of the road. Depending on flow volumes and design requirements, it may be possible to reduce the basin size by using the roadbed as part of the detention system and limit construction to a micropool and slow release outlet control. If grading south of Redeemer Lane is necessary, then wetland impacts could be reduced by using the existing depression as a shallow basin created by installing a check dam across the swale to detain occasional high flows. This would preserve most of the existing wetland vegetation and maintain the natural hydrology.
6. South of Redeemer Lane and along the east side of the Site, much of the East drainage swale (~650') would not be developed, but would be modified for drainage. This is presumably due to an increase in runoff from development. Grading the entire swale would impact hydrology and vegetation. Consider controlling runoff volume via a bioretention basin immediately south of Redeemer Lane and leaving the existing swale as is. The basin could be designed to mimic a natural ephemeral wetland that would have wildlife habitat and aesthetic value. Another low impact alternative would be to construct low check dams along the existing swale instead of re-grading such a long section.
7. Implement a low impact development stormwater management system that minimizes modifications to the natural hydrology, utilized the existing topography, and does not significantly increase flows into the drainages or cause erosion. This should include requiring landowners to manage runoff on their own property rather than directing it onto driveways or roads.
8. Designate natural preservation areas along drainage swales and adjacent buffers to preserve natural drainage, wetlands, mixed-grass prairie, and adjacent ponderosa pines. Include measures that prohibit adjacent homeowners from altering the vegetation and allow access for noxious weed management. This should also apply to the power line easement area.
9. Encourage or require lot owners to preserve existing, native vegetation and the visual character of the Site by minimizing the total construction footprint per lot and require seeding and planting of native vegetation.
10. Create and implement a neighborhood native vegetation management plan for the power line easement, open space areas, stormwater detention areas, Tract A, drainages (i.e., common areas), and within relevant portions of private lots that begins as soon as construction is complete. Common areas should then be taken over and maintained by a sufficiently funded Home Owners Association (HOA). The goal of the plan would be to preserve and restore native vegetation, including noxious weed management.
11. Create and enforce Codes, Covenants and Restrictions (CC&Rs) that require private lot owners to comply with a neighborhood native vegetation and weed management plan and State law, the Colorado Noxious Weed Act.

12. Curtail light pollution by using minimal outdoor lighting, motion sensor lights, downcast lighting, and low brightness. Include similar requirements in the HOA guidelines and do not allow uplighting. In addition to benefitting wildlife, “dark skies” are an attractive amenity because there is growing light pollution awareness and people appreciate seeing the stars.
13. Minimize the installation of fencing that could injure or impact wildlife as documented by CPW guidelines (CPW 2009 and 2021). When fencing is needed, use wildlife friendly fences and/or include specific wildlife crossings along fence lines. Pronghorn are of particular concern because they do not jump over fences and can be injured by barbed-wire fences when crawling under them.

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>
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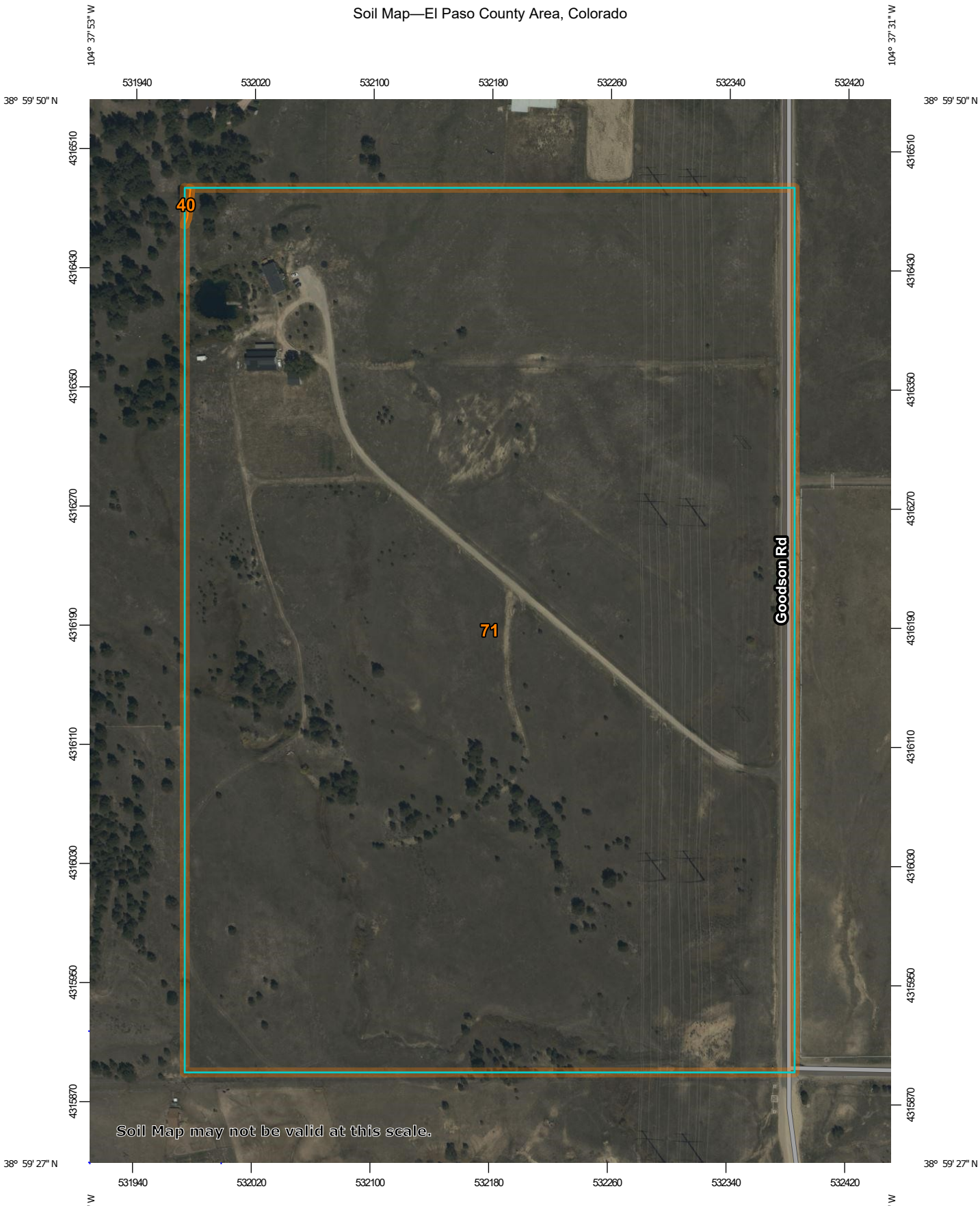
APPENDIX A
USDA SOIL SURVEY

Soil Map—El Paso County Area, Colorado



Map Scale: 1:3,480 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

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 11, 2018—Oct 20, 2018

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
40	Kettle gravelly loamy sand, 3 to 8 percent slopes	0.0	0.0%
71	Pring coarse sandy loam, 3 to 8 percent slopes	60.6	100.0%
Totals for Area of Interest		**60.6**	**100.0%**

APPENDIX B

REPRESENTATIVE PHOTOGRAPHS

PHOTO LOCATION MAP

(Photos taken October 29, 2021)

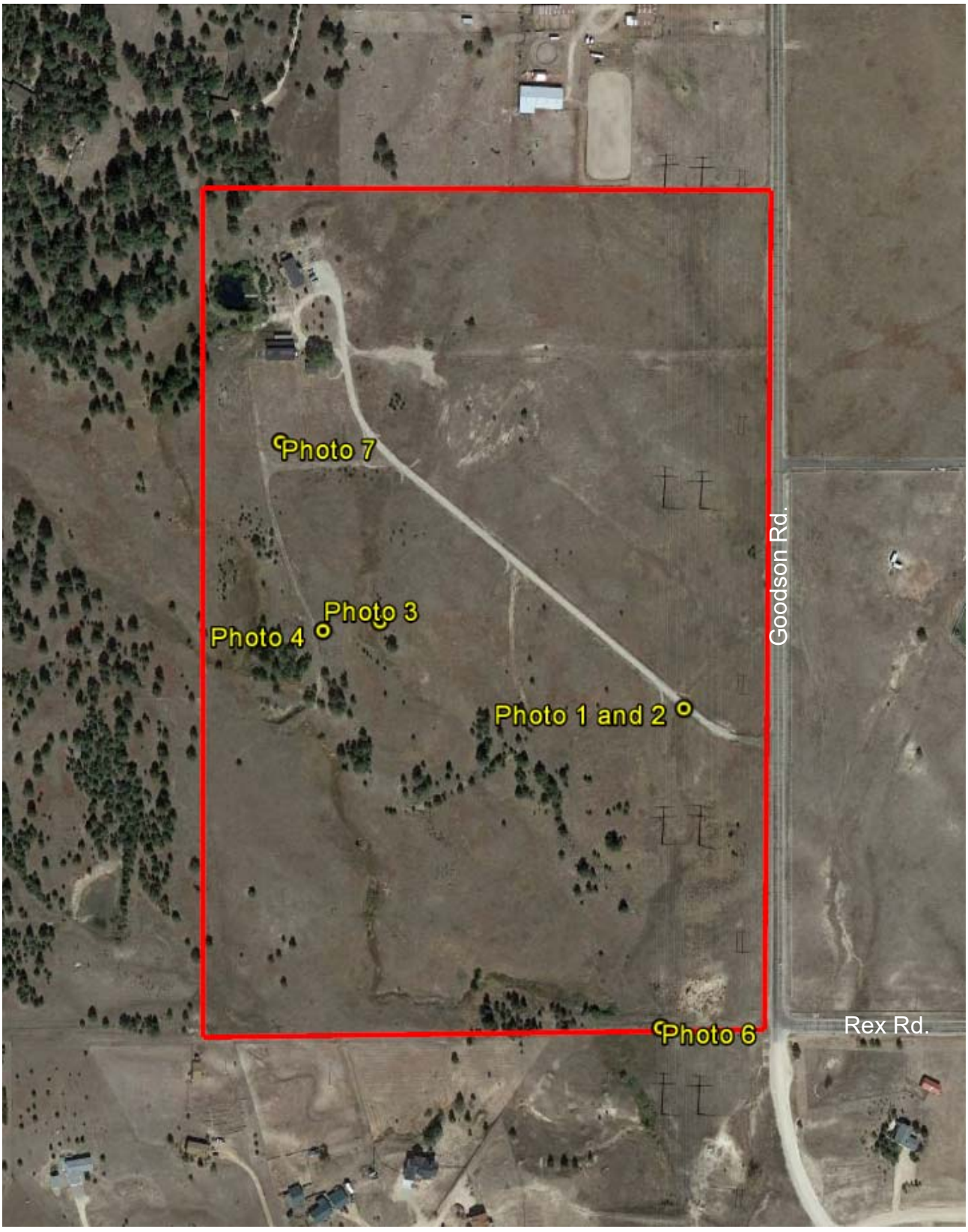


Photo 1 – East swale, facing north from the existing driveway. In the foreground are potential wetlands with upland and wetland species, including the dark-colored Canada thistle (List-B noxious weed).

Photo 2 – Diverse mid- and tallgrass prairie, north of existing driveway.

Photo 3 – West edge of Site, facing southeast along the West swale. These potential wetlands and tallgrass prairie are very high quality due to the lack of weeds and presence of big and little bluestem grasses.

Photo 4 –Dry ridge with mountain mahogany shrubs and shortgrass prairie. Tallgrass prairie is on lower slopes. Facing southeast towards Central swale wetlands that are partially visible in front of the large ponderosa pine.

Photo 5 – West swale wetlands, patch of narrowleaf willows and cattails.

Photo 6 – Facing west from the southeast dam. Property line/fence is photo left, overflow channel is in the foreground, and detention area is photo right (no indicators of recent flow or flooding). A patch of sandbar willows behind the West swale dam is visible in the background. The Central swale edge is visible near the top right corner of the photo.

Photo 7 – Facing north across area mapped as “Weeds 100%” and towards the existing outbuildings mapped as “Developed.”

APPENDIX C

WEED MANAGEMENT PLAN

CORNERSTONE ESTATES
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 or 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, 2021) 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 weeds that are designated for eradication statewide.
- List B: Species with discrete statewide distributions that are subject to eradication, containment, or suppression in designated portions of Colorado.
- 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

Most of the Site is in excellent condition with limited cover of noxious weeds or other nonnative species. Noxious weed concentrations are shown on Figure 5, Noxious Weed Map. Some generally weedy areas, including mixed-grass prairie with smooth brome are shown on Figure 4, Vegetation Community Map. Noxious weeds were associated with three main areas/situations.

- In the southern portion of the Site, noxious weeds are generally limited to swales where soil moisture is higher and runoff carries in weeds from adjacent properties. Three species of noxious weeds were observed. Canada thistle patches are present in moderately wet areas with the highest cover (20-30%) patches in the central swale/drainages. Common mullein (1-5% cover) is mostly confined to the drier portions

of the swales. A few small patches of yellow toadflax were observed along the edges of the swales.
- North of the driveway, noxious weeds and non-native species are associated with the eastern swale and small areas of earth disturbance such as those associated with importing soil to fill in a small pond.
- The weediest portion of the entire Site is located south of the existing house and immediately south of a small two-stall shed. This area appears to have been used as a small pasture for livestock and they may have been fed weed-contaminated hay. Non-native cover is almost 100% and includes multiple species that were seen nowhere else on the Site. Observed noxious weeds were redstem filaree (filaree)(20%), musk thistle (5%) and cheat grass (5%). Measures should be taken to avoid spreading soil from here to other areas of the Site.

The following noxious weeds as listed on the Colorado Department of Agriculture Noxious Weed List (CDA, 2021a) were found concentrated in upland/riparian swales and sporadically dispersed through the site in disturbed areas:

List A noxious weed species observed on the Site:
- None found

List B noxious weed species observed on the Site:
- Canada thistle (*Cirsium arvense*)
- musk thistle (*Carduus nutans*)
- Russian olive (*Elaeagnus angustifolia*)
- yellow toadflax (*Linaria vulgaris*)

List C noxious weed species observed on Site:
- common mullein (*Verbascum thapsus*)
- downy brome or cheatgrass (*Bromus tectorum*)
- redstem filaree (*Erodium cicutarium*)

Watch List weed species observed on Site:
- None found

Several non-native/weed species were observed on Site that are not on the state noxious weed list, but tend to be problematic.

- Smooth brome (*Bromus inermis*) is an invasive grass that is commonly used in re-vegetation. It is common north of the driveway and along the powerline, especially in swales.
- Flixweed (*Descurainia sophia)* patches were observed north of the driveway, in the areas with smooth brome.
- Prickly lettuce (*Lactuca serriola*) was present in a dense patch (approximately 40% cover) in the low areas at the south end of the Central swale near the southeast corner of the Site (mapped as Potential Wetland on Figure 4).

The following table is provided to assist the reader with cross-referencing the scientific and common names of weed species identified on the Figure 4, Noxious Weed Map, including a map code for each species (i.e., the first 2 letters of the scientific genus and species name).

Weed Species Codes

Map Code	Scientific Name	Common Name
LIST B NOXIOUS WEEDS		
CANU	*Carduus nutans*	Musk thistle
CIAR	*Cirsium arvense*	Canada thistle
ELAN	*Elaeagnus angustifolia*	Russian olive
LIVU	*Linaria vulgaris*	Yellow toadflax
LIST C NOXIOUS WEEDS		
BRTE	*Bromus tectorum*	Cheatgrass
ERCI	*Erodium cicutarium*	Redstem filaree
VETH	*Verbascum thapsus*	Common mullein
OTHER PREVALENT NON-NATIVE SPECIES		
BRIN	*Bromus inermis*	Smooth brome
DESO	*Descurainia sophia*	Flixweed
LASE	*Lactuca serriola*	Prickly lettuce

1.3 Noxious Weed Management Plan

All of the List B species on the Site are designated for suppression, except for Russian olive which is designated for elimination (CCR, 2020). 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:

Prior to Construction:

1. Hire an experienced, independent contractor with a Colorado Pesticide Applicator License to complete chemical control of weeds, especially Canada thistle which must also be killed at the root in addition to mechanical control of flowering seed heads. They may also complete mechanical and biological control.
2. Create a native habitat restoration and weed control plan for the open space areas (public and private), including those areas where weeds have the potential to proliferate, expand and infect the adjacent landscape. The highest priorities are to:
    a. **Prevent the spread of weeds from the area mapped as "Weeds 100%" to other parts of the Site (Figure 5).**
    b. Do not bring in new weeds with equipment, fill material, straw, non-native seed mixes, etc.
    c. Eliminate the following noxious weeds that are present in low numbers: Russian olive, musk thistle, and yellow toadflax.
    d. Along swales, suppress Canada thistle, yellow toadflax, and any other A- or B-list noxious weeds. Common mullein may be addressed at the same time but is a lower priority.
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. Biological control is available for yellow toadflax (insects) and possible Canada thistle (rust fungus) (EPC, 2018a).
4. Initiate chemical controls for Canada thistle and yellow toadflax to stop their continued spread.
5. Initiate mechanical control for Canada thistle and musk thistle. Weed whacking prior to going to seed is suitable for both species. Musk thistle may also be pulled.

During construction staging:

1. Fence off all areas outside the construction footprint and the “Weeds 100% Area” to prevent vehicles from driving through them and spreading weed seed to new areas (Note: fencing will also prevent unpermitted wetland impacts).
2. Alternatively, since the “Weeds 100%” area is already disturbed, it could be used for a staging area IF weeds are controlled by repeated soil sterilization with steam or chemicals (with a short half-life). Following sterilization and/or complete degradation of the chemicals, re-seed those areas (that the landowner wants to retain as native grassland) with a seed mix comprised of a sterile cover crop and native species until the lot is developed. If topsoil (4-6 inches) is removed from this area in lieu of sterilization, it must not be used elsewhere and should be disposed of by burying it beneath at least twelve inches on non-weedy topsoil. To ensure an adequate growth media is present to support a native stand of grass, weed-free topsoil and/or soil amendments will need to be imported to cover areas that have been stripped.
3. Designate a minimal number of vehicle crossings.

During construction:

1. Prior to any grading of the non-weedy areas, salvage the top six inches of topsoil so that it can be replaced and reused for re-vegetation of natural areas. If possible, immediately move soil to re-vegetation areas. If soil must be stockpiled, stockpile it in windrows and minimize the time in order to maintain native seed viability.
2. Do not import weedy soil from other Sites. If suitable topsoil is not available on-site, then 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.
3. Noxious weeds are most likely to 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.
4. Control weeds within staging areas and along construction access roads on at least a monthly basis during the growing season including mowing, chemical control, and mechanical weed removal. Alternatively, staging areas may be treated with repeated steam soil sterilization.

Construction completion:

1. Prior to revegetation, de-compact soils in the staging area and any other compacted areas. At a minimum, soils must be ripped to a minimum depth of 12 inches in 2 directions, allowing rain, nutrients and plant roots to penetrate deep into the soil surface.
2. Re-vegetate all disturbed areas with native seed mixes. Excellent native seed mixes that are appropriate for the Site are available in the 2016 Urban Drainage and Flood Control District, Urban Drainage Criteria Manual, Volume 2, Chapter 13. Revegetation.
3. Do not use non-native species for revegetation because they generally outcompete native plant species, alter natural ecosystems, and degrade wildlife habitat. Some common invasive species are smooth brome, crested wheatgrass (*Agropyron cristatum*), reed canary grass (*Phalaris arundinacea*), Kentucky bluegrass (*P. pratensis*) and redtop (*Agrostis gigantea or alba*). Other non-natives commonly included in “native” seed mixes that should not be used are meadow foxtail (*Alopecurus pratensis*), intermediate wheatgrass (*Agropyron/Thinopyrum intermedium*), perennial ryegrass (*Lolium perenne),* Canada bluegrass (*Poa compressa*), tall wheatgrass (*A./T. elongatum*), and rush wheatgrass (*A./T. ponticum*).

4. Continue chemical controls for Canada thistle and yellow toadflax to suppress existing populations and prevent spread into new areas.
5. Continue mechanical control for Canada thistle and musk thistle. Weed whacking prior to going to seed reduced the spread of both species. Musk thistle may also be pulled.

The Site development 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/or individual lot owners should be educated about the identification and control of noxious and common weeds on Site. The HOA should be responsible for weed control through Codes, Covenants and Restrictions (CCRs) on private lots and provide funding to continue ongoing weeds control in any common areas. 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).

TABLE 1 – NOXIOUS WEED MANAGEMENT SUMMARY

Species	**Occurrence**	**Management[1,2,3]**
LIST B[4]		
Canada thistle (*Cirsium arvense*)	Common and concentrated in drainage swales	Suppress. May be able to eliminate in some areas. Perennial that spreads mainly via deep rhizomatous roots, but also seeds. Spot treatment with herbicide is most effective throughout the growing season, and imperative in the fall before dormancy in order for the chemicals to be transported to the roots. Mow, cut, bag, and dispose of any flowers every 10 to 21 days during the growing season before flowers mature to reduce seeding. Care should be taken not to spread seeds to new areas or to damage wetlands. Biological control with rust fungus (*Puccinia puntiformis*) may reduce cover by 45% to 100%.

TABLE 1 – NOXIOUS WEED MANAGEMENT SUMMARY		
Species	**Occurrence**	**Management[1,2,3]**
musk thistle (*Carduus nutans*)	Uncommon, a few scattered plants	Suppression is required, elimination is recommended because this species is not yet established on Site. Biennial that reproduces only by seed. Identify individual plants in mid- to late-summer, after flowers emerge and before going to seed. Cut, bag, and dispose of any flowers. Kill basal rosettes by digging them up and/or spot treatment with herbicide, especially in the fall so that chemicals are pulled into the root system. Mechanical control by homeowners is a good option.
Russian olive (*Elaeagnus angustifolia*)	Two small trees north of existing driveway. Check for more around house and pond.	Elimination is required. Cut trees, then immediately treat stumps with herbicide to prevent re-sprouting.
yellow toadflax (*Linaria vulgaris*)	Several small patches near drainage swales. Monitor for additional patches.	Suppression is required and elimination may be possible since this species is not yet common on-Site. Perennial that reproduces via creeping root system and seeds. Mowing/cutting to reduce seeds combined with herbicide treatment to kill roots. Treat with herbicide in summer and fall, followed by native grass seeding to create competition (collect native seed from nearby areas). Three biological control insects are available.
LIST C		
Common mullein (*Verbascum thapsus*)	Dispersed in uplands and more concentrated in drainage swales.	Establish other vegetation and minimize disturbance to prevent existing seeds from sprouting in bare soil. This species is not hugely problematic, so control in conjunction with other species when it would be cost effective. Mechanical control by homeowners is a good option.

TABLE 1 – NOXIOUS WEED MANAGEMENT SUMMARY		
Species	**Occurrence**	**Management[1,2,3]**
cheatgrass (downy brome) (*Bromus tectorum*)	Primarily in old paddock area mapped as "100% Weeds".[4]	Suppress*. Monitor for spread. Annual that seeds in spring. Repeated spring mowing to prevent seeding. If seeds are present, mow and bag clippings. Clean mowing equipment prior to working in other areas. Pre-emergent herbicide is recommended in any area where cheatgrass is intermixed with good cover of native species. Homeowners can assist in control by mowing known infestations.
redstem filaree (Erodium cicutarium)	Primarily in old paddock area mapped as "100% Weeds".[4]	Suppress. Biennial, seeds germinate best in sparsely vegetated areas. Apply post-emergence herbicide to plants that are actively growing and in the seedling to flower stage of growth (March to August). Establish dense, native vegetation. For small areas, hand pulling is effective if seeds are bagged/disposed off.

[1]Refer to the El Paso County "Noxious Weed and Control Methods" booklet for additional detail (El Paso County, 2018a).
[2]When using herbicides, always read and follow the product label to ensure proper use and application.
[3]If near water or wetlands, only use herbicides and formulations approved for use near water.
[4]These species are concentrated in one area with multiple weeds and no native species. Thus, elimination of all plants followed by total revegetation with a native seed mix or sod is recommended in order to prevent spread into new areas.

2.0 Summary of Potential Impacts

Weeds observed on Site include the List B and List C noxious weed species noted above. Site development activities typically cause weeds to increase due to increased earth disturbance, overturning/exposing latent, dormant seed in the soil, and new weeds being brought in via wind, livestock, vehicles, 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 then taken over and implemented by private lot owners and/or the HOA. Following construction this should by sufficiently funded by the HOA and apply to the power line easement (if allowed), open space areas, stormwater detention areas, drainages and buffers, and within relevant portions of

private lots that will remain in a natural/native state. Control of List B species should be the highest priority.

2. Introduce biological, mechanical and chemical controls for weed suppression and eradication as soon as possible.
3. Include requirements in the CCRs that landowners manage weeds on their property per the Colorado Noxious Weed Act and El Paso County guidelines. Educate homeowners on identification of noxious and common weeds and which ones they can control mechanically. For example, the scattered common mullein and musk thistle can be reduced if homeowners know they are weeds and remove flowers before they go to seed.
4. Include requirements in the CCRs that any areas disturbed by home construction must be re-seeded with native species from the 2016 Urban Drainage and Flood Control District, Urban Drainage Criteria Manual, Volume 2, Chapter 13. Revegetation, or from other native seed mixes that have been reviewed by an ecologist with knowledge of Colorado grasslands and approved by the HOA.
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 importation of any plants on the Colorado Noxious Weed List, including the Watch List. Prohibit use of smooth brome, crested wheatgrass, and reed canarygrass.
7. Weeds (common and noxious) are serious impediments to habitat quality throughout Colorado. Codes, covenants and restrictions (CC&Rs) that require implementation of noxious weed management strategies should be implemented by a HOA and individual land owners to mitigate and control weeds as per State and County requirements to protect and ensure native plant communities continue to exist.

3.0 Regulations and Recommendations

3.1 Colorado Noxious Weed Act

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