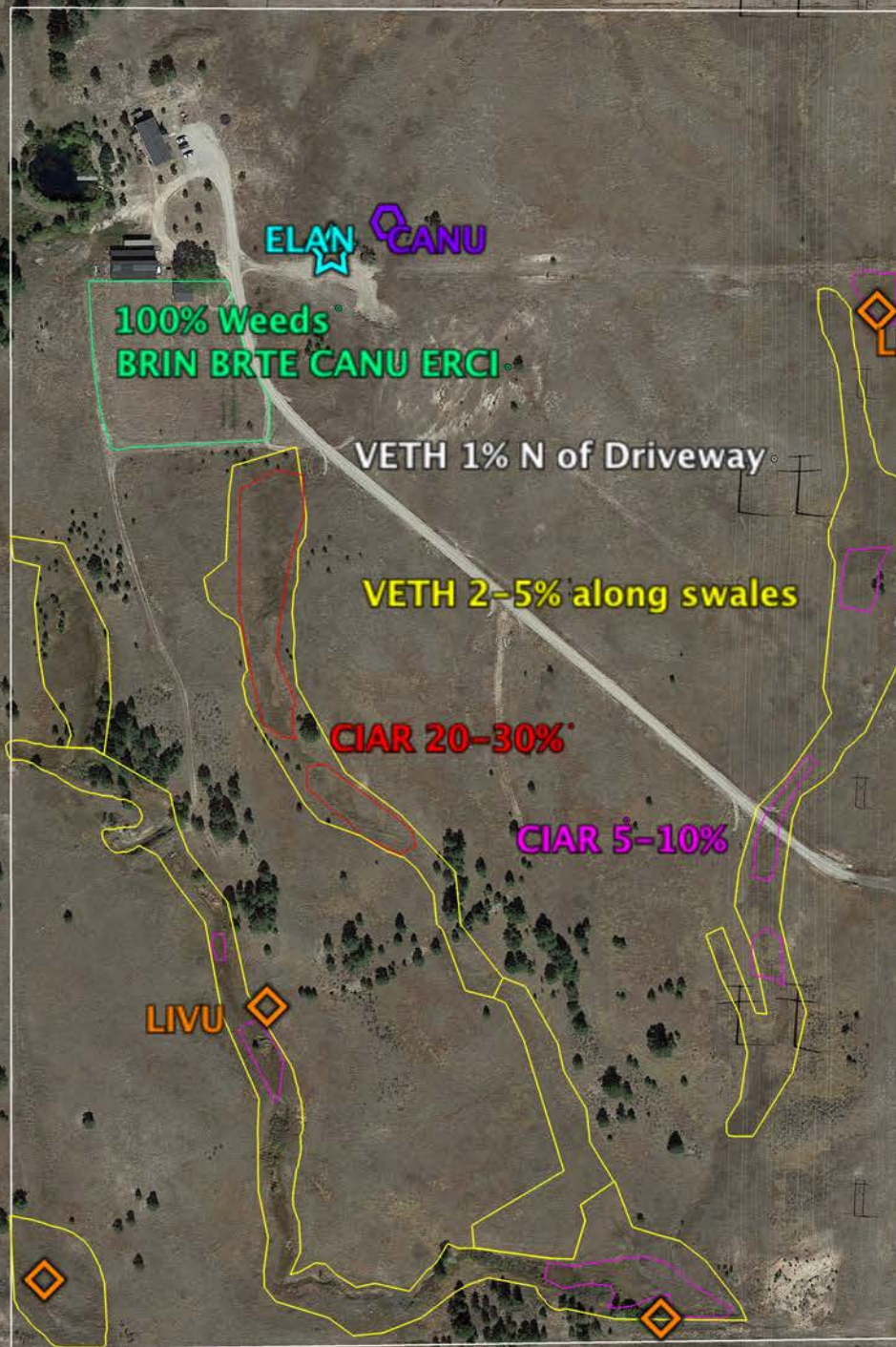


3.5 Noxious Weeds

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



1000 ft

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 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, 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 that 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	<i>Carduus nutans</i>	Musk thistle
CIAR	<i>Cirsium arvense</i>	Canada thistle
ELAN	<i>Elaeagnus angustifolia</i>	Russian olive
LIVU	<i>Linaria vulgaris</i>	Yellow toadflax
LIST C NOXIOUS WEEDS		
BRTE	<i>Bromus tectorum</i>	Cheatgrass
ERCI	<i>Erodium cicutarium</i>	Redstem filaree
VETH	<i>Verbascum thapsus</i>	Common mullein
OTHER PREVALENT NON-NATIVE SPECIES		
BRIN	<i>Bromus inermis</i>	Smooth brome
DESO	<i>Descurainia sophia</i>	Flixweed
LASE	<i>Lactuca serriola</i>	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 B⁴		
Canada thistle (<i>Cirsium arvense</i>)	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 (<i>Puccinia puntiformis</i>) may reduce cover by 45% to 100%.

TABLE 1 – NOXIOUS WEED MANAGEMENT SUMMARY

Species	Occurrence	Management^{1,2,3}
musk thistle (<i>Carduus nutans</i>)	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 (<i>Elaeagnus angustifolia</i>)	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 (<i>Linaria vulgaris</i>)	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 (<i>Verbascum thapsus</i>)	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) (<i>Bromus tectorum</i>)	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 (<i>Erodium cicutarium</i>)	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.

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

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

³If near water or wetlands, only use herbicides and formulations approved for use near water.

⁴These 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 be 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.