

**Draft Amended Noxious Weed Control
Plan
Oregon Trail Solar Facility**

**Prepared for
Oregon Trail Solar, LLC**

Prepared by



Updated Plan, with modifications, reviewed and approved by ODOE, in consultation with Gilliam
County Weed Department

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1.0 Introduction

Oregon Trail Solar, LLC (Oregon Trail) holds a Site Certificate from the Oregon Energy Facility Siting Council for the Oregon Trail Solar Facility (Facility) in Gilliam County, Oregon. Condition 43 of the Site Certificate requires the following:

During construction and operation of the facility, the certificate holder shall implement a weed control plan substantially similar to the draft Noxious Weed Plan included in Attachment F of this site certificate, as approved by the Department in consultation with Gilliam County Weed Control Officer or other appropriate County officials to control the introduction and spread of noxious weeds.

The Oregon Trail Solar Facility will be developed in two phases: Phase 1 will involve the construction of the battery storage system, while Phase 2 will focus on building the solar arrays and associated collection line infrastructure. This plan was initially prepared for Phase 1 in consultation with Oregon Department of Energy (ODOE) and Oregon Department of Fish and Wildlife (ODFW) and has been updated to address the Phase 2 areas and incorporate sheep grazing as a vegetation control mechanism.

1.1 Background Information

The Gilliam County Weed Department works to keep noxious weeds at a minimum on roadways and throughout the county, assists area landowners with land maintenance needs, and follows the Oregon Department of Agriculture (ODA) noxious weed policy and classification system as part of ODA's Noxious Weed Control Program (Appendix A. ODA Noxious Weed Policy and Classification System 2024). Noxious weeds are identified on the State of Oregon noxious weed list and mapped by ODA as occurring in Gilliam County. "A" listed weeds are economically important, nonnative species with limited distribution in the county. "B" listed weeds are economically important, nonnative species that are regionally abundant. At the County level, eradication is required for "A" listed weeds at an intensive level, with containment the goal for "B" listed weeds. "T" listed weeds are a designated group of weed species that are selected and will be the focus for prevention and control by the Noxious Weed Control Program. Action against these weeds will receive priority (Appendix A).

For the purposes of this weed control plan, the term "weed" refers to any species on the Gilliam County weed list regardless of its "A" or "B" status. This plan outlines the measures Oregon Trail will implement to control weeds within areas disturbed by Project construction and operation. The Project will disturb up to 6 acres; this plan applies to any area not occupied by aboveground infrastructure associated with the Project (i.e. temporarily disturbed areas).

1.2 Noxious Weed Control Goals

Overarching goals of post-construction operations are prevention, identification, and control of weeds.

2.0 Noxious Weed Species of Concern

Tetra Tech completed a field survey for the Project during spring, summer, and fall of 2025 to map habitat types and other resources. No noxious weeds were observed within the Project during the spring; however, four species on the ODA noxious weed list [jointed goatgrass (*Aegilops cylindrica*) medusahead grass (*Taeniatherum caput-medusae*), and diffuse knapweed (*Centaurea diffusa*) and puncturevine (*Tribulus terrestris*)] were observed (Table 1). These species were noted to occur in varying densities within the site boundary. Another notable invasive species of concern that was observed was Russian thistle (*Salsola tragus*). This varied from low to high cover throughout the Project (Table 1).

Table 1. Noxious Weed and Invasive Species of Greatest Concern Documented in the Project Vicinity

Common Name	Scientific Name	Mapped in Project Vicinity 2025 ¹	Percent Cover within Project Vicinity 2025
B List Weeds			
<i>Dicots</i>			
Puncturevine	<i>Tribulus terrestris</i>	X	<5
Diffuse Knapweed	<i>Centaurea diffusa</i>	X	15
<i>Monocots</i>			
Jointed goatgrass	<i>Aegilops cylindrica</i>	X	<5
Medusahead grass	<i>Taeniatherum caput-medusae</i>	X	50
T List Weeds			
Puncturevine	<i>Tribulus terrestris</i>	X	<5
Invasive Species of Concern			
<i>Dicots</i>			
Russian thistle	<i>Salsola tragus</i>	X	50
<i>Monocots</i>			
Cheatgrass	<i>Bromus tectorum</i>	X	40
1. Source: ODA 2025.			

The results of these pre-construction surveys were reviewed along with the weed maps for Gilliam County (ODA 2024) to identify the weed species of greatest concern either occurring or with a high potential for occurring in the vicinity of the Project site boundary. Additional monitoring will be necessary to ensure that each weed species on the Gilliam County list is identified and treated appropriately, as described in Section 4.0 of this plan.

3.0 Noxious Weed Control Plan

3.1 Overview

Short-term weed control will be through herbicide use and seeding. Seeding will occur in all areas temporarily disturbed during construction. It will be important to ensure that the short-term herbicide use does not affect the establishment of the perennial grass cover intended to provide long-term control. To support the success of herbicide use and seeding, Russian thistle will be removed at the Phase 1 site, prior to September 30, 2025.¹ It will also be important to ensure that the short-term herbicide use does not affect the establishment of the perennial grass cover intended to provide long-term control. Early detection and management of small populations before they can expand into larger populations is extremely important for successful control.

Long-term weed control will be accomplished through the seeding of perennial grasses known to compete well with noxious weeds, such as thickspike wheatgrass (*Elymus lanceolatus*) and Sandberg's bluegrass (*Poa secunda*).

Long-term success for noxious weed control will be: (1) minimizing the presence/abundance of noxious weeds; and (2) preventing the spread of these species during the planned construction activities. Noxious weed control will continue for the life of the Project. Supplemental seeding may be needed to achieve this goal. Subsequent fertilizer application will be limited in areas treated for noxious weeds, and the timing of the seeding will need to be coordinated with any herbicide applications.

Noxious weed management will be a mix of the treatments recommended for each individual weed in the following sections. Biologists will use adaptive management techniques to get the best control of weed populations on site.

In an effort to improve weed control and vegetation management, a sheep grazing program may be implemented. Sheep grazing activities and evaluation of success in vegetation management and noxious weed control, will be monitored and reported as established in Section 4 of this plan. Spot herbicide treatments would continue to be implemented for noxious weeds throughout the site. However, it is anticipated that these treatments would be reduced when combined with the sheep grazing program.

Jointed goatgrass and puncturevine are the species of primary concern ("target" species), as they were observed onsite during preconstruction surveys. The target species will be the same for all onsite areas, but the treatment implementation will vary slightly according to these parameters. The herbicides used and the timing of application will differ depending on whether the species are (1) perennial, broad-leaved, or dicot weeds, or (2) annual grasses or monocots. Appropriate

¹ Specific recommendation provided by Gilliam County Weed Department on August 27, 2025 in response to the Oregon Department of Energy's request for review and comment of the draft plan.

herbicides differ substantially between dicots and monocots. Additional information for target species and different options for control can be reviewed below.

3.1.1 Jointed Goatgrass Treatment

Jointed goatgrass is an introduced, cool season, annual grass that is closely related to and a common contaminant of winter wheat. Jointed goatgrass grows from 15 to 30 inches tall as a tufted, annual bunchgrass. The reproduction of jointed goatgrass is solely by seed, seeds remain viable for 3 to 5 years, and each plant can produce approximately 3,000 seeds. Plants prefer to germinate in compacted soils thriving along roadways, between crop rows, railroad tracks, and other rights-of way.

Jointed goatgrass seedlings germinate mostly from September to early November dependent on favorable soil moisture. The plant then has an overwinter dormant period followed by new seed in the spring. The seed has a long flowering period which allows it to successfully compete with other species for sunlight, nutrients, and water. Additionally, jointed goatgrass tolerates drought better than winter wheat and other annual grasses.

The objective when managing existing infestations of jointed goatgrass is to eliminate as many live plants and disrupt as much seed production as possible. As a rule, actions to follow for an overall management approach are to check seed stock, hay, straw, and mulch for presence of seeds; encourage use of spray washing stations; detect, map, and eradicate new populations as early as possible; combine weed control methods (see below) for most effective control; and implement monitoring and follow-up treatments for missed plants or seedlings.

In general, a combination of control methods should be used when managing jointed goatgrass. The following table lays out the methods of treatments and the timing of those treatments.

Table 2. Treatment Methods and Timing for Jointed Goatgrass

Treatment Method	Treatment Timing
Hand Removal/Mowing	<p>Hand pull, cut, or hoe before the seed head exits the sheath in late winter or early spring to prevent plants from maturing and reaching seed production. Remove as much of the root as possible and allow eradicated plants to dry in place on the surface of the soil.</p> <p>Mow in late winter to early spring when inflorescences are formed but are still within the sheath.</p> <p>Several return visits to a site should be done to eliminate new plants.</p>
Herbicides	<p>Prior to flowering, a nonselective herbicide will be used as treatment of jointed goatgrass. Consider using glyphosate as a spot treatment or as a broadcast spray. Glyphosate is advantageous compared to other nonselective herbicides because it allows reseeding shortly after spraying.</p> <p>Apply glyphosate to actively growing plants before the seedheads develop within the sheath.</p>
Seeding competitive species	<p>Plan to reseed after removal of jointed goatgrass with desirable native plants that will directly compete for soil moisture, light, nutrients, and space.</p>

3.1.2 Medusahead Grass

Medusahead is an annual grass that can grow up to two feet tall. This grass germinates in the fall and rapidly develops a root system throughout the winter months making it very competitive with native vegetation for moisture in the soil. Medusahead is considered a “transformer” species, meaning that it will change ecosystem function to fit the needs of the medusahead. The primary way medusahead is able to change ecosystem function is due to the high silica content in the stems and leaves. It is considered unpalatable by cattle and other livestock and so the grass is not grazed after the plant has matured. The high silica also prevents the seedheads from decomposing which can create a thick layer of thatch buildup on the soil surface, creating both a fire hazard and inhibiting native plant regeneration through shading.

Medusahead can exist as a monoculture once it is established on disturbed soils, however its seeds do not persist in the soil for long periods of time like other weeds in the Arid West. Medusahead seeds persist in the soil for less than two years so large-scale, intensive treatment for this weed can be limited to a couple of years of preventing the grass from going to seed with adaptive management occurring after that time.

There is some evidence that combining multiple treatment types can control two years’ worth of seed production in one year (Kyser et. al 2014). For instance, burning in the late spring/early summer to control first year’s seed crop followed with using a preemergence herbicide in the fall to prevent seed production in the following year. The following table lays out the methods of treatments and the timing of those treatments.

Table 3. Treatment Methods and Timing for Medusahead Grass

Treatment Method	Treatment Timing
Mowing/Handweeding	Late spring (May during regular years, June during cold springs) when medusahead is in the early flowering stage. For effective control, mowing must be completed late in the plant’s development but before it produces viable seed. Look for the beginnings of a seed head to know when to mow or handpull.
Grazing	Sheep will eat medusahead when it is first growing or after a re-growth from spraying. Optimal timing for grazing is in the late spring after medusahead stems elongate and before they develop seedheads. Caution must be taken when grazing with sheep that the medusahead does not have seed heads because the seeds will get caught in the sheep’s wool.
Herbicides	A pre-emergent can be applied in the fall to keep new grasses from going to seed. Applications of herbicides in the spring must be done
Seeding competitive species	Although not a native, crested wheatgrass (<i>Agropyron cristatum</i>) is commonly used by NRCS in Conservation Reserve Program plantings throughout the Inland Northwest. Crested wheatgrass is competitive with medusahead and can be used to crowd out medusahead in anticipation of the final revegetation of the site.

3.1.1 Diffuse Knapweed

Diffuse knapweed is an annual, biennial, or short-lived perennial winter-hardy forb that can grow 1 to 3.5 feet tall. Diffuse knapweed has many spreading branches giving it a tangled ball-shaped form and a tumble-weed mobility when broken, this mobility allows a far range for seed dispersal. Flowering occurs from June through October, producing anywhere from 5 to 900 seeds per plant. Diffuse knapweed only reproduces through seed, dispersed seeds germinate throughout the growing season and can remain viable for many years.

Diffuse knapweed is spread through the movement of seed-contaminated hay, wind, wildlife, water, or motorized equipment. It is essential to prevent the spread by ensuring avenues of contaminants are identified and eradicated whenever possible.

Weed control methods used to manage diffuse knapweed consist of herbicides, biological control, grazing, and mechanical strategies. Thirteen knapweed biocontrol species are permitted for release in the U.S. Below two are listed as viable options based on habitat and compatibility with other treatment methods.

In general, a combination of control methods should be used when managing diffuse knapweed. The following table lays out the methods of treatments and the timing of those treatments.

Table 4. Treatment Methods and Timing for Diffuse Knapweed

Treatment Method	Treatment Timing
Biological Control	<p>Lesser knapweed weevil (<i>Larinus minutus</i>): Overwinter in soil litter. Adults feed on the leaves of rosettes and flowering plants, outer stem tissue, and flowers. Larvae feed on developing seeds.</p> <p>UV knapweed seedhead fly (<i>Urophora quadrifasciata</i>): Females lay up to 120 eggs within closed seedheads. Larval feed on receptacle tissue directly destroying seeds. Feeding induces the formation of galls which drain nutrients from plant.</p>
Grazing	<p>Rosettes of diffuse knapweed are readily grazed by sheep and goats. Spring and fall grazing can be effective at reducing flower production and density of young plants.</p> <p>Overgrazing must be avoided to prevent conditions that will facilitate diffuse knapweed growth. Life stages of biological control agents must be taken into consideration when grazing.</p>
Herbicides	<p>Best used on small patches or on edges of large infestations to prevent spreading.</p> <p>Apply when foliage first emerges in the spring or during the fall when plants are storing reserves for winter.</p>
Seeding competitive species	<p>Revegetation is best used in combination with other control tactics since diffuse knapweed is a strong competitor.</p> <p>Perennial grasses have been observed to provide significant competition to knapweed species. Growing taprooted forbs along with grasses increases ground cover and may be more effective in minimizing invasion of diffuse knapweed than grasses only.</p> <p>Control diffuse knapweed infestation prior to seeding.</p>

3.1.2 Puncturevine Treatment

Puncturevine is a summer annual that can grow under a wide range of conditions; including hot and dry conditions which are prominent within the Project. This broadleaf weed grows low to the ground forming dense mats that can span out anywhere from 2 to 5 feet in diameter. Puncturevine germinates in the spring and summer and can flower within 3 weeks of germination continuing through the summer. Seeds are primarily dormant in the first season and can remain viable for up to 5 years. A typical puncturevine individual can produce 200 to 5,000 seeds during one growing season (C.A. Wilen 1972).

Long-term control of puncturevine can be achieved by reducing the number of seeds in the soil as it does not root from the stems. This is best accomplished by removing plants before they are able to produce seeds. As a rule, actions to follow for an overall management approach are to check seed stock, hay, straw, and mulch for presence of seeds; encourage use of spray washing stations; detect, map, and eradicate new populations as early as possible; combine weed control methods (see below) for most effective control; and implement monitoring and follow-up treatments for missed plants or seedlings.

In general, a combination of control methods should be used when managing jointed puncturevine. The following table lays out the methods of treatments and the timing of those treatments.

Table 35. Treatment Methods and Timing for Puncturevine

Treatment Method	Treatment Timing
Hand Removal/Hoeing	Cut the plant off at its taproot by handpulling or hoeing before or at flowering. Monitor the area and remove any new individuals throughout the spring and summer. Shallow tilling (about 1 inch deep) of seedlings or small plants can be effective as well. Mowing is not an effective method of control as the plant grows low to the ground.
Biological Control	Two weevil species (<i>Microlarinus lareynii</i> ; <i>M. lypriformis</i>) are effective in targeting the seeds and stems of puncturevine. The weevils are more effective if used together. The Gilliam County Weed Department must be contacted for more information on where to buy or collect these species.
Herbicides	Chemical control is generally not necessary for the control of puncturevine unless it is too difficult to do mechanical control. Pre-emergent products containing oryzalin, benefin, or trifluralin will provide partial control of germinating seeds. These must be applied prior to germination (late-winter to mid-spring). Post-emergent products containing 2, 4-D, glyphosate, and dicamba are effective on smaller or younger plants.
Seeding competitive species	Plan to reseed after removal of puncturevine with desirable native plants that will directly compete for soil moisture, light, nutrients, and space.

3.2 Seeding

The seed mixes are based on regionally appropriate species. Modifications to seed mixes may be required based on site conditions, climate, establishment performance, and market availability; or landowner preference if in areas of disturbed cropland. Any proposed alterations should be made with Oregon Trail's approval and maintain an appropriate seeding rate and species functional group compositions. The seeding window should be during the winter season (October 1 – March 30) for success in the Arid West.

Table 46. Seed Mix

Scientific Name	Common Name	Percent Composition
Grasses		
<i>Achnatherum hymenoides</i>	Ricegrass	20
<i>Elymus elymoides</i>	Bottlebrush Squirreltail	20 10
<i>Elymus lanceolatus</i> spp. <i>lanceolatus</i>	Thickspike Wheatgrass	20
<i>Poa secunda</i>	Sandberg’s Bluegrass	20 30
<i>Pseudoroegneria spicata</i>	Bluebunch Wheatgrass	20
Total Graminoids		100
Forbs		
<i>Achillea millefolium</i>	Yarrow	30
<i>Erigeron pumilus</i>	Shaggy Fleabane	20
<i>Eriogonum niveum</i>	Snow Buckwheat	20
<i>Linum lewisii</i>	Blue Flax	30
Total Forbs		100

3.3 Best Management Practices

Oregon Trail will implement best management practices during Project construction and operation to help prevent the invasion and spread of noxious weeds onsite. This will include the removal of Russian Thistle from the Phase 1 Project site prior to September 30, 2025.

During construction and operations:

- Temporary ground-disturbing operations in weed-infested areas will be inspected and documented in accordance with the Project monitoring plan.
- Vehicles and equipment will be cleaned prior to entry into revegetation areas to help minimize introduction of noxious weed seeds to the site.
- To prevent conditions favoring weed establishment, temporarily disturbed areas will be revegetated as soon as possible.
- The site will be revegetated with appropriate, locally collected native seed or native plants; when these are not available, noninvasive and nonpersistent, nonnative species may be used.
- Seed and straw mulch to be used for site rehabilitation will be inspected and certified free of weed seed and propagules.

During operations:

- Information regarding target weed species will be provided at the operations and maintenance building.
- Weed prevention and control measures, including Project inspection and documentation, will be included in operations plans.
- For sheep grazing activities, Oregon Trail will:
 - Notify ODFW when domestic sheep will be at the facility.
 - Ensure fence checks are completed prior to sheep turnout and during the grazing season.
- Conduct staff training and establish a dedicated phone tree to report bighorn sheep sightings and escaped domestic sheep to ODFW staff (specifically Steve Cherry/Heppner District Office for this facility).

4.0 Monitoring and Adaptive Management

During construction:

- Noxious weed populations observed by the environmental monitor will be documented and relayed to on-site staff for proper treatment in accordance with Section 3.1 of this plan.

During operations:

- Monitoring will be conducted in the early spring, early summer, and late summer by a qualified botanist for the first 5 years following initial seeding, to assess weed growth and to recommend weed control measures. The weed monitoring will consist of two general components:
 - Site survey to identify weed species that have established within the disturbed areas; and
 - Inspections of treated areas to assess the success of the weed treatments, including use of sheep grazing.
- The site surveys will be a pedestrian survey of disturbed areas in mid to late May, then again in mid to late June, and end with a survey in mid to late August. The surveys will be scheduled to be initiated slightly before the herbicide application to identify any weed species, and after periods of intensive sheep grazing. The focus will be on weed species with greatest potential to occur onsite, as they were identified in adjacent Project areas (knapweed, starthistle, field bindweed, whitetop, jointed goatgrass, medusahead), as well as any other noxious weed species on the Gilliam County weed list that might require different control methods.
- The results of the site survey will be summarized in a short memorandum in which (1) any new weed populations observed and treatment protocols are identified, including protocol

for sheep grazing (stocking rates/month), (2) the location and weed species within disturbed areas are described, (3) plant composition throughout the Project is documented, (4) supplemental treatment methods are described, and (5) adaptive management methods are discussed to achieve the goal of noxious weed eradication.

- Subsequent monitoring results will be summarized in short memorandums in which the treatment success is described, any recommendations to improve treatment success through adaptive management are made, and any new weed species or emergence are noted. Long-term success for noxious weed control will be minimizing the presence and abundance of county and state listed noxious weeds. This will be measured and communicated annually for five years post-construction. Any existing or new populations of noxious/invasive weeds that have not been treated or need supplemental treatment will be relayed to on-site staff for prompt control. Monitoring frequently will ensure that species are treated at the proper time and will reduce the spread of noxious and undesirable weeds. The treatments will be deemed successful when there are no noxious weeds within the Project area. It is expected that noxious weed management will continue for the life of the Project.
- In each monitoring report to ODOE, the Certificate Holder shall provide an assessment of the adequacy and success of noxious weed control for all disturbed areas. The Certificate Holder will also report bighorn sheep sitings and any incidents of escaped domestic sheep to ODFWs Heppner District Office staff.

5.0 Amendment of the Plan

This Noxious Weed Plan may be amended from time to time by agreement of the Certificate Holder and EFSC. Such amendments may be made without amendment of the site certificate. EFSC authorizes ODOE to agree to amendments to this plan. ODOE shall notify EFSC of all amendments, and EFSC retains the authority to approve, reject, or modify any amendment of this plan agreed to by ODOE.

6.0 References

C.A. Wilen. 1972. Puncturevine. Integrated Pest Management for Home Gardeners and Landscape Professionals. University of California Statewide IPM Program.

ODA (Oregon Department of Agriculture). 2024. Noxious Weed Policy and Classification System. Noxious Weed Control Program, Salem, Oregon.

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Tetra Tech. 2025. Habitat Surveys: Oregon Trail Solar BESS Facility.

[Tetra Tech. 2025. Habitat Surveys: Oregon Trail Solar \(Phase 2\) October 2025.](#)

Appendix A. ODA Noxious Weed Policy and Classification System 2024

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Appendix B. Sheep Management
Memorandum

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~~Appendix C. ODFW Consultation~~

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