

TULLOCH HYDROELECTRIC PROJECT

(FERC Project No. 2067)

2026 TERRESTRIAL NOXIOUS WEED SURVEY REPORT



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TABLE OF CONTENTS

1.0 Introduction 3

1.1 Sudden Oak Death 3

2.0 Survey Goals and Objectives 4

2.1 Survey Area 4

2.2 Objectives 4

3.0 Methods.....4

3.1 Gathering Data and Prepare for Field Survey 4

3.2 Noxious Weed Management.....4

4.0 Results 5

4.0.1 Non-Native Invasive Plant Occurrences.....5

4.1 Species of Concern.....5

4.1.1 Italian Thistle (*Carduus pycnocephalus*).....5

4.1.2 Barbed Goatgrass (*Aegilops triuncialis*).....6

4.1.3 Medusahead (*Elymus caput-medusae*).....6

4.1.4 Yellow Star-thistle (*Centaurea solstitialis*) 7

4.1.5 Tree of Heaven (*Ailanthus altissima*).....7

4.2 Area-Specific Notes and Supplementary Observations 8

5.0 Discussion.....8

5.1 Project Operation and Maintenance 9

6.0 Noxious Weed Efforts Planned for 2027 9

6.1 Training 9

6.2 Noxious Weed Management and Outreach 9

7.0 Attachments to the 2026 Update.....9

8.0 References Cited..... 10

1.0 INTRODUCTION

On February 16, 2006, the Federal Energy Regulatory Commission (FERC) issued a new license to the Tri-Dam Project (Tri-Dam) for continued operation and maintenance of the Tulloch Hydroelectric Project, FERC Project No. 2067 (Project). Under license article 405, the implementation of a Vegetation Management Plan (Plan) is required to comply with the license. On February 8, 2007, Tri-Dam filed a Plan with FERC, which was approved and modified by FERC on July 1, 2008. One goal of the plan is the minimization and control of noxious weeds that are in the survey area, including both terrestrial and aquatic nuisance species. This report documents terrestrial noxious weed monitoring, and management activities for the Tulloch Hydroelectric Project during the 2026 reporting period. Aquatic nuisance vegetation is outside the scope of this report and is addressed separately.

The Tulloch Project includes the 1,260-acre Tulloch Reservoir with a gross storage capacity of 66,968 acre-feet at normal maximum elevation of 510 feet. The project boundary incorporates lands occupied by project structures and access roads.⁹ There are 1,638 acres of land within the project boundary, the majority of which is privately owned. There are 108 acres of federally owned land: 80 acres managed by Reclamation, 28 acres managed by BLM, and 419 acres owned by Tri-Dam. Land within the project boundary generally includes all land within five vertical feet of the normal maximum water surface elevation of 510 feet. This includes virtually no horizontal distance from the normal full pool elevation in some areas, where landowners have installed bulkheads, but more typically provides from about 10 to 30 feet of horizontal distance from the water's edge.

On May 11, 2026, Tri-Dam and University of California, Agriculture and Natural Services staff observed, identified, and recorded the following noxious weed species for FERC Project No. 2067. The first survey for terrestrial noxious weeds was conducted in September 2006, covering areas detailed in the plan. During the 2026 survey, five (5) noxious species were recorded in the project survey area, including the following:

- Italian Thistle (*Carduus pycnocephalus*)
- Barbed Goat Grass (*Aegilops triuncialis*)
- Medusa Head (*Taeniantherum [Elymus] caput-medusae*)
- Yellow Star Thistle (*Centaurea solstitialis*)
- Trees of Heaven (*Ailanthus altissima*)

These species observations are included and described in detail in Section 4.0 Results and in Attachment B - 2026 Noxious Weed Occurrence Information Table.

1.1 Sudden Oak Death

Under Article 405, condition 8 of the project license, Tri-Dam is to detect and control Sudden Oak Death (SOD) (*Phytophthora remorum*). SOD is a fungal disease in native trees and shrubs in coastal counties in California. According to the California Oak Mortality Task Force, there has not been a confirmed case of SOD in Calaveras, Tuolumne, or Stanislaus counties since the early 2000's. The hot dry summers in the Central Sierra foothills is thought to discourage the development of this pathogenic fungus in the natural plant communities found at the project site. No SOD was detected during this survey, but Tri-Dam will continue to monitor its presence in and around the project area.

2.0 SURVEY GOALS AND OBJECTIVES

The goal of the survey is to identify the occurrence and distribution of terrestrial noxious weeds within the defined survey area and document management activities. The survey supports treatment, prevention of spread during Project operation, and updates to occurrence maps and outreach materials.

2.1 Survey Area

The survey area corresponds to the FERC boundary of the Project. It includes Tulloch Dam, the Tulloch Powerhouse and spillway, Tri-Dam lands used for maintenance and operations, and the entire shoreline of Tulloch reservoir, including relevant areas within or adjacent to the Project boundary, as defined by the applicable license, approved Vegetation Management Plan (VMP), and survey scope.

2.2 Objectives

Objectives of the terrestrial noxious weed survey are:

- Survey designated Project facilities, shoreline, and monitoring sites.
- Document species, location, and density or abundance for each occurrence.
- Document treatment methods, dates, area treated, disposal methods, and effectiveness where control was performed.
- Document staff training, public outreach, agency consultation, and follow-up monitoring.

3.0 METHODS

3.1 Gathering Data and Prepare for Field Survey

In May 2026, Scott Oneto from the University of California, Agriculture and Natural Resources, met with Tri-Dam to present updated noxious weed information relevant to the survey. During this meeting, Tri Dam reviewed the plan of action, discussed necessary tools and personal protective equipment (PPE) for the 2026 survey, and scheduled a dedicated field day on May 11, 2026. On that day, Tri Dam staff, along with Mr. Oneto, conducted the survey, reviewing previous occurrence maps, updating data on plan within the survey area, and assessing area boundaries and facilities. Noxious weeds are defined as species listed by the California Department of Food and Agriculture (CDFA) with a noxious weed rating (CDFA 2021). Attachment C (CCR 4500 Noxious Weeds – 2021) contains a list of noxious weeds that have the potential to occur in or adjacent to the Project area.

3.2 Noxious Weed Management

As per the Vegetation Management Plan, Tri-Dam is responsible for managing species and populations located within the FERC Boundary and adjacent lands. In locations where feasible, identified populations of noxious weeds were treated by Tri-Dam staff. In areas outside of the FERC boundary and on private land, authorization is needed from landowners for Tri-Dam to manage weed populations. Many of the locations with noxious weeds are remote with steep shoreline and are not always feasible to treat. Treatment is performed on an annual basis along with terrestrial weed survey.

4.0 RESULTS

4.0.1 Non-Native Invasive Plant Occurrences

All accessible areas of the survey area were surveyed in 2026. Tri-Dam and University of California staff identified and recorded occurrences of noxious weeds in the Project area. When possible, species requiring control were hand pulled or mechanically removed and properly disposed of by Tri-Dam. Some occurrences were treated opportunistically even though Tri-Dam was not required to control them.

Five findings were identified on the noxious weed species list in 2026, which included 23 occurrences:

- Italian Thistle (14 occurrences, 2.5-acres+)
- Barbed Goat Grass (1 occurrences, 0.25-acres+)
- Medusa Head (1 occurrences, 0.25-acres+)
- Yellow Star Thistle (2 occurrences, several plants)
- Trees of Heaven (5 occurrences, .5-acres+)

4.1 Species of Concern

The following are candidate species appearing in Tulloch vegetation-management materials.

4.1.1 Italian Thistle (*Carduus pycnocephalus*)



Italian Thistle is CCR 4500 Noxious Weed (CDFA 2021), meaning it is not specific "A", "B", or "C" ratings but still require management and regulation. Italian thistle is an annual herb that is not native to California. It has common names including Italian thistle, Italian plumeless thistle, and Plymouth thistle, is a species of thistle. It is native to: the Mediterranean region in southern Europe, North Africa, and Western Asia; East Europe and the Caucasus; and the Indian Subcontinent. The plant has become an introduced species in other regions, and on other continents, often becoming a noxious weed or invasive species.

Tri-Dam recorded 14 occurrences of Italian thistle approximately covering a cumulative 2.5 acres (Attachment C, Page 10 of 11). Two occurrences were mechanically treated on Tri-Dam property along project roads. Future treatment will depend on accessibility and response to previous treatments.

4.1.2 Barbed Goatgrass (*Aegilops triuncialis*)



Barbed goat grass is CDFA 4500-listed, meaning 4500 includes various levels of control depending on the species, but still require management actions and regulations (CDFA 2021).

Barbed goat grass is an annual grass that inhabits dry, disturbed sites, as well as undisturbed grasslands and oak woodlands. It is becoming a dominant grass in foothill grasslands of central California. This species is closely related to wheat (*Triticum aestivum*) and was originally introduced in wheat breeding programs. It has since infested extremely large areas within the state. The average plant produces about 130 seeds, and

isolated plants can produce as many as 3,000 seeds, which remain viable in soil for three to five years. The mature plant has cylindrical spikes that may persist intact on the dried stem or may fall off the stem in-tact; over time, the spike may disarticulate at the joints, increasing dispersal mechanisms. Seeds generally fall near the parent plant and can be dispersed to longer distances in high use areas by human activity, vehicle traffic, wind and animals. The intact spikes are buoyant and more likely to float, while the individual joints are likely spread through the other vectors listed. This weed can directly injure livestock by lodging in their eyes or mouths and is unpalatable to cattle (DiTomaso and Healy 2007; CDFA 2021). On rangeland, since grazers avoid barbed goat grass, it tends to survive and thrive compared with the preferred forage (Kaufman and Kaufman 2007).

Recommended treatments for the control of barbed goat grass are mowing and burning; both can be effective to reduce seed production. However, with both methods, treatment timing is sensitive. Mowing should occur after flowering, and before goat grass seeds reach maturity. Burning should occur before the joints fall apart; burning will not eradicate fallen seeds. A second season treatment and annual monitoring is recommended to inhibit an increased germination which may occur due to increased fertility and light. In addition, hand pulling or hoeing small infestations is effective if the roots are pulled and air-dried (CDFA 2021).

The 2006 survey recorded multiple occurrences of barbed goat grass, but the 2026 Tri-Dam survey found only one instance of this species. Treatment was considered not feasible at the site due to private property concerns and remote location. The site will continue to be monitored, and any future detections of barbed goat grass will be promptly addressed with eradication measures.

4.1.3 Medusahead (*Elymus caput-medusae*)



Medusahead is CDFA 4500-listed, meaning 4500 includes various levels of control depending on the species, but still require management actions and regulations (CDFA 2021).

Medusa-head is an aggressive annual winter grass with slender stems. It reaches 6-24 inches in height. The awns or spikes at the tips of the plant are 1-4 inches long, minutely barbed, are compressed into the center when green, and twist apart upon drying. This species matures 2-4 weeks later than most other annual grasses

and stands out green against surrounding brown grasses. After producing seeds, Medusa-head turns light gray or tan in color.

Medusa-head reproduces by seed. Seeds are dispersed by wind, water, and by attaching to the coats of animals, machinery, vehicles, and clothing. Medusa-Head flowers in May-June and is predominantly self-pollinating. An average of 8-15 seeds is produced per spike in late spring or early summer. Seeds usually disperse by mid-summer and can remain dormant for over six months. The seeds of this plant can germinate and grow in the dense leaf litter layer, without contacting the soil. If they suffer desiccation, the primary root dies, but a new root develops if they are moistened again.

Mowing for two consecutive years can help reduce infestations of Medusa-head. Mowing in combination with grazing, was found to be effective in reducing infestations. Heavy grazing by sheep in early spring (when it is still palatable) can assist in controlling it, but animals should be removed before seed heads form to limit dispersal. Burning stands of Medusa-head prior to seed dispersal is reported as an effective control measure.

4.1.4 Yellow Star-thistle (*Centaurea solstitialis*)



Yellow Star-thistle is CDFA 4500-listed, meaning 4500 includes various levels of control depending on the species, but still require management actions and regulations (CDFA 2021).

Yellow Star Thistle is gray green to blue-green in color. It grows from 0.5 to 3 feet in height and has deep taproots. Flowers are bright yellow, with long, sharp spines surrounding the flower base. Stems and leaves are covered with soft wool.

Yellow Star Thistle is a non-woody annual plant. It flowers from late May to September, sometimes into December or later. With low levels of self-fertilization, this thistle depends on honeybees, bumblebees, and other insects for pollination. Each seed head can produce approximately 35 to 80 seeds. Dispersal over greater distances is assisted by animals and human beings. Long-distance dispersal of the seeds is also assisted by vehicles, contaminated hay or crop seed, and moving livestock.

For small patches, manual removal works well. Hand-pulling or weed-whacking is best done before full flowering or viable seed production (May-June). Grazing by cattle, sheep, or goats can reduce abundance, growth, and productivity when done during May-June, after the plants have bolted, but before the buds produce spines.

4.1.5 Tree of Heaven (*Ailanthus altissima*)



Tree of Heaven has a C rating on the CDFA pest lists and is considered noxious in California. It requires management actions and regulations (CDFA 2021).

Chinese Tree-of-heaven, also known as Ailanthus, is a rapidly growing, deciduous tree native to Central China. Ailanthus has smooth stems with pale gray bark and chestnut brown twigs. It has large compound leaves, which range from 1-4 feet in length. Mature trees can reach 80 feet or more in height. The seeds are enveloped by papery sheaths called samaras, which are slightly twisted, making them spin as they fall. The wood of ailanthus is soft, coarse-grained, and creamy white to light brown in color.

Flowering occurs in June. Female trees produce seeds from late summer to early fall. A single tree can produce around 325,000 to

350,000 seeds each year. Seeds are found inside papery, twisted, winged structures called samaras, which are well adapted for wind dispersal. Mature trees also produce suckers from the roots and resprout rapidly from cut stumps and root fragments.

Due to its rapid growth, abundant seed production, high seed germination rate, and root and stump sprouting capabilities, the removal of *Ailanthus* requires more than one year of treatment and follow-up monitoring. Seedlings can be pulled or dug up, but removal or poisoning of the entire root system is important to prevent fragments from regrowing. Cutting *Ailanthus* trees may be ineffective unless the roots are also treated or poisoned, because the plant can produce stump sprouts and root suckers (connected to a pre-existing lateral root). The use of the herbicides Glyphosate, Triclopyr, Imazapyr, and Dicamba has been reported to be effective in *Ailanthus* control. Herbicides may be applied according to the state-approved pesticide labels to the leaves, the basal bark, cut stump, or the interior of the tree by injection.

4.2 Area-Specific Notes and Supplementary Observations

Each occurrence of noxious weeds is documented and is represented on a map in Attachment A. Every occurrence is uniquely identified using four letters from the genus and species name followed by a two-digit number (e.g., CAPY 01) (see Attachment B).

The following notes provide further observations of plants that are not noxious but are listed as an invasive species and found on the CAL-IPC.

- **Himalayan Blackberry** (*Rubus discolor*) – Was found in three separate locations. All locations were in secluded coves. Although not listed as a noxious weed, it has a high rating from Cal-IPC due to its ability to create a dense cover and choke out understory. Observed populations ranged in density. No treatment was applied during the survey, but the areas will be monitored and control measured will be implemented if necessary.
- **Woolly Mullein** (*Verbascum thapsis*) – Found in two separate locations with a population of 1-2 plants. Each location is in undeveloped area and is likely to spread by natural methods. It has a limited rating from Cal-IPC so no treatment was applied during the survey, the areas will be monitored in future surveys.
- **Black Mustard** (*Brassica nigra*) – Was found in two separate locations with various degrees of density. Both locations have access to public roads, which is the most likely cause of spread. It has a moderate rating from Cal-IPC. Due to private property restrictions, no treatment was performed during the survey, the areas will be monitored in future surveys.
- **Chinese Pistache** (*Pistacia chinensis*) – One plant was found in a remote cove. It has a low to moderate rating from Cal-IPC so no treatment was applied during the survey, the areas will be monitored in future surveys.

5.0 DISCUSSION

The use of public roads and Project access roads by Tri-Dam and others may support the dispersal of noxious weeds, as seeds are transported on vehicles or footwear. Recreational boats and other watercraft can also transport weeds, on the watercraft itself or the trailers used to transport them over land. Tri-Dam's use is limited to the Project operation and maintenance activities which consist of periodic clearing of vegetation around Project facilities. The majority of the Tulloch Reservoir is privately owned, and the introduction of noxious species can be very variable depending on the occupancy and activities of the individual landowners. Tri-Dam does not have authority to limit activities on private lands above outside of the FERC boundary at 515 feet.

In general, noxious weeds on the Project tend to occur in open, sunny areas of disturbed soil along the shoreline of the reservoir. Tri-Dam located 23 occurrences of five species of noxious weeds on the Project. Of these occurrences, nine require ongoing management for eradication. Tri-Dam's responsibility for noxious weed management consists of the Italian thistle, Tree of Heaven, medusa

head, and barbed goat grass occurrences. Additionally, no effective treatment was developed for noxious weed populations outside of the project boundary on private lands, which is now common throughout the region. Tri-Dam will continue to follow all efforts to control the spread of noxious weeds detailed in Section 3 and ensure educational materials are available for private landowners.

5.1 Project Operation and Maintenance

Tri-Dam's use is limited to Project operation and maintenance activities which consist of periodic clearing of vegetation around Project facilities. Tri-Dam also ensures that reservoir conditions are safe for recreational use through weekly inspections and removing debris from the reservoir. Through Tri-Dam's Shoreline Management Plan (SMP), any construction activities within the FERC boundary must include measures designed to prevent the proliferation of non-native invasive plants throughout the reservoir area. Project lands are inspected periodically to certify that they are in conformance with the SMP.

6.0 NOXIOUS WEED EFFORTS PLANNED FOR 2027

As per the approved plan under license article 405, Tri-Dam will continue to monitor the spread of terrestrial noxious weeds in and around Project lands. Noxious weed management and survey efforts will be documented and submitted to FERC and other stakeholder agencies for review. This includes Calaveras and Tuolumne Counties, HOA's, California department of Fish and Wildlife, United States Army Core of Engineers, and other appropriate entities

6.1 Training

Per license article 405, Tri-Dam has updated the project's environmental training to include new information about noxious weeds. Training occurred during the survey, and for all Tri-Dam staff during the annual safety week. Noxious weed and vegetation management training on July 22, 2026 was performed by Makenzie Patton from the California Department of Fish and Wildlife. See the training sign in sheets in Attachment E.

6.2 Noxious Weed Management and Outreach

Tri-Dam staff will continue to observe Project areas for noxious weeds. The next noxious weed survey is planned for the late spring of 2027. In October of 2026, Tri-Dam updated its website and the public outreach material that informs the public and private landowners around the reservoir about noxious weeds and how to manage them. Outreach material was also updated at all public kiosks around the reservoir in May of 2026. Tri-Dam has continued to spread its "Clean, Drain, Dry" campaign, which educates the public and private residences around the reservoir to properly clean their boats and trailers. Continuing this program should diminish the impact of terrestrial and aquatic invasive species. An updated terrestrial weed pamphlet can be found in Attachment F. Tri-Dam will continue to work with HOA's, commercial businesses, and private landowners around Lake Tulloch to diminish the spread of noxious weeds.

7.0 ATTACHMENTS TO THE 2026 UPDATE

- Attachment A – 2026 Terrestrial Noxious Weed Occurrence Map
- Attachment B – 2026 Noxious Weed Occurrence Information Table
- Attachment C – California Noxious Weed list
- Attachment D – Federal Noxious Weed list
- Attachment E – Staff Training Documentation
- Attachment F – Public Outreach Materials
- Attachment G – Resource Agency Consultation and Responses

8.0 REFERENCES CITED

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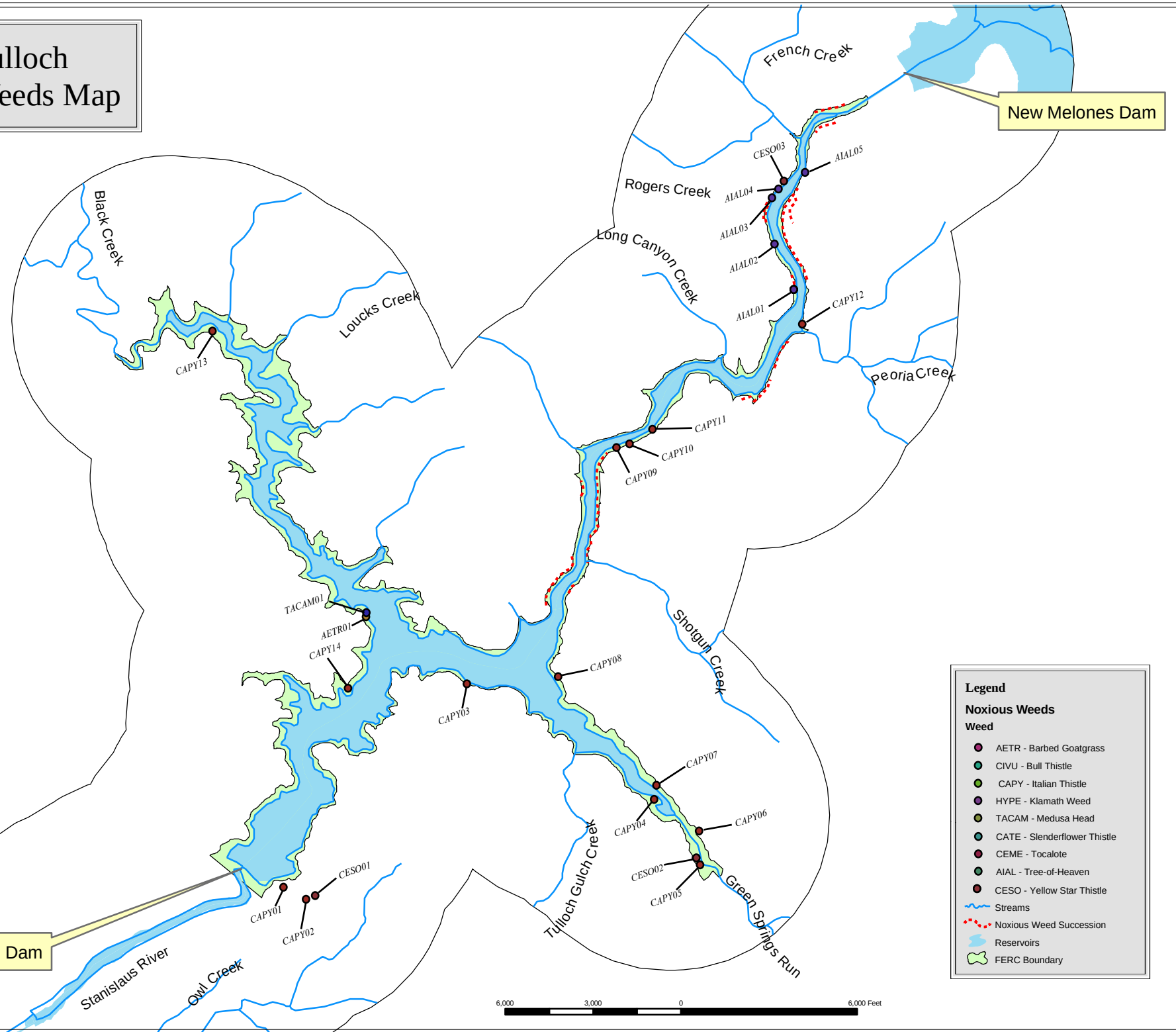
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Tulloch Hydroelectric Project
FERC Project No. 2067

Terrestrial Noxious Weed Report – 2026
Attachment A - 2026 Terrestrial Noxious Weed Occurrence Map

Lake Tulloch Noxious Weeds Map



Tulloch Hydroelectric Project
FERC Project No. 2067

Terrestrial Noxious Weed Report – 2026
Attachment B - 2026 Noxious Weed Occurrence Information Table

Number Of Occurrence	Occurrence Number Reference	GPS Site Location	Density	Description
Italian Thistle (CAPY)				
1	CAPY01	37.8747952 -120.5998798	4	Dense plants along a project road near Tri-Dam boat launch.
2	CAPY02	37.8735866 -120.5997104	3	Moderate plant growth along project road, near water tank for Tulloch Dam.
3	CAPY03	37.8933641 -120.5782943	5	Severe plant growth outside of project boundary left of private residence
4	CAPY04	37.8816863 -120.5561034	1	Trace amounts of plants along shoreline
5	CAPY05	37.8752726 -120.5504296	2	Low amounts of plants along shoreline
6	CAPY06	37.8753958 -120.5505176	1	Trace amounts of plants along shoreline
7	CAPY07	37.8824940 -120.5551652	1	Trace amounts of plants along shoreline
8	CAPY08	37.8932609 -120.5674589	5	Severe plant growth outside of project boundary
9	CAPY09	37.9146080 -120.5597709	3	Low amounts of plants along shoreline
10	CAPY10	37.9151735 -120.5586632	1	Trace amounts of plants along shoreline
11	CAPY11	37.9160447 -120.5557829	2	Trace amounts of plants along shoreline
12	CAPY12	37.9255923 -120.5372380	1	Trace amounts of plants along shoreline
13	CAPY13	37.9271396 -120.6073416	2	Low amounts of plants along shoreline
14	CAPY14	37.8922594 -120.5917343	3	Trace amounts of plants along shoreline
Barbed Goat Grass (AETR)				
1	AETR01	37.8988462 -120.5893780	5	Severe plant growth inside and outside of project boundary in ranch land
Medusa Head (TACAM)				
1	TACAM01	37.8988462 -120.5893780	5	Severe plant growth inside and outside of project boundary in ranch land
Yellow Star Thistle (CESO)				
1	CESO01	37.8741587 -120.5993980	3	Moderate plant growth along project road, near water tank for Tulloch Dam.
2	CESO02	37.8753958 -120.5505176	1	Trace amounts of plants along shoreline
3	CESO03	37.9378810 -120.5398400	1	Trace amounts of plants along shoreline
Tree of Heaven (AIAL)				
1	AIAL01	37.9297838 -120.5377133	3	Dozen trees on the shoreline.

Number Of Occurrence	Occurrence Number Reference	GPS Site Location	Density	Description
Tree of Heaven (AIAL)				
2	AIAL02	37.9331277 -120.5399586	5	Over 50 trees within the FERC boundary, along the shoreline
3	AIAL03	37.9358251 -120.5408218	4	High number of trees along the shoreline
4	AIAL04	37.9368693 -120.5407165	1	One tree along the shoreline
5	AIAL05	37.9389730 -120.5372140	3	Two dozen trees along the shoreline
Density Scale: 1=Trace (1-2 plants) 2=Low (2-10 plants) 3=Moderate (11-25 plants) 4=High (26-50 Plants) 5=Severe (50+ plants)				

Tulloch Hydroelectric Project
FERC Project No. 2067

Terrestrial Noxious Weed Report – 2026
Attachment C - California Noxious Weed list

**CDFA Weed Pest Ratings and CCR 4500 Noxious Weeds
as of June 22, 2021**

Scientific Name	Common Name	CDFA Pest Rating	CCR 4500 Noxious Weed
A' Rated Weeds			
<i>Alternanthera philoxeroides</i>	alligatorweed	A	x
<i>Arctotheca calendula</i>	capeweed, as fertile or seed bearing plants	A	x
<i>Baccharis halimifolia</i>	sea-myrtle	A	
<i>Carrichtera annua</i>	Ward's weed	A	
<i>Chrysanthemoides monilifera</i>	bitoubush	A	
<i>Clematis vitalba</i>	old man's beard	A	
<i>Crupina vulgaris</i>	bearded creeper	A	x
<i>Dittrichia viscosa</i>	false yellowhead	A	
<i>Echium plantagineum</i>	Paterson's curse	A	
<i>Enchylaena tomentosa</i>	ruby saltbush	A	
<i>Euphorbia hypericifolia</i>	graceful spurge	A	
<i>Euphorbia myrsinites</i>	myrtle spurge	A	
<i>Fallopia</i> spp. (Bohemian, giant, and Japanese knotweeds) see Reynoutria	Bohemian, giant, and Japanese knotweeds	A	x
<i>Galega officinalis</i>	goatsrue	A	x
<i>Geranium lucidum</i>	shining cranesbill	A	
<i>Gymnocoronis spilanthoides</i>	Senegal tea plant	A	
<i>Halimodendron halodendron</i>	Russian salt tree	A	x
<i>Heracleum mantegazzianum</i>	giant hogweed	A	
<i>Heteranthera reniformis</i>	kidneyleaf mudplant	A	
<i>Hydrilla verticillata</i>	hydrilla	A	x
<i>Hydrocharis morsus-ranae</i>	European frogbit	A	x
<i>Hygrophila polysperma</i>	Indian swampweed	A	x
<i>Limnobiium laevigatum</i>	South American spongeplant	A	x
<i>Limnophila sessiliflora</i>	Asian marshweed	A	x
<i>Ludwigia decurrens</i>	winged water-primrose	A	x
<i>Ludwigia peruviana</i>	Peruvian water-primrose	A	x
<i>Mantisa salmantica</i> (syn. <i>Centaurea salmantica</i>)	dagger-flower	A	
<i>Monochoria vaginalis</i>	false pickerel weed	A	
<i>Nymphoides peltata</i>	yellow floating-heart	A	x
<i>Orobanche aegyptiaca</i> (syn. <i>Phelipanche aegyptiaca</i>)	Egyptian broomrape	A	

<i>Orobanche ramosa</i> (syn. <i>Phelipanche ramosa</i>)	branched broomrape	A	x
<i>Parthenium hysterophorus</i>	Santa Maria feverfew	A	x
<i>Phytolacca heterotepala</i>	Mexican pokeweed	A	
<i>Reynoutria japonica</i> (syn. <i>Fallopia j.</i> ; <i>Polygonum cuspidatum</i>)	Japanese knotweed	A	x
<i>Reynoutria sachalinensis</i> (syn. <i>Fallopia s.</i> ; <i>Polygonum s.</i>)	giant knotweed	A	x
<i>Reynoutria x bohemica</i> (syn. <i>Fallopia x b.</i> ; <i>Polygonum x b.</i>)	Bohemian knotweed	A	x
<i>Salsola collina</i>	spineless russianthistle; slender russianthistle	A	x
<i>Striga</i> spp. (witchweed) [<i>Striga asiatica</i> is on the CCR 4500 list]	witchweed	A	x
<i>Vachellia nilotica</i> (syn. <i>Acacia n.</i>)	prickly acacia	A	
<i>Viscum album</i>	European mistletoe	A	x
<i>Volularia tubuliflora</i> [on CCR 4500 list under earlier identification as <i>V. canariensis</i>]	desert knapweed	A	x
<i>Zizania latifolia</i>	Manchurian wild rice	A	
B' Rated Weeds			
<i>Ambrosia trifida</i>	giant ragweed	B	
<i>Butomus umbellatus</i>	flowering-rush	B	
<i>Carthamus oxyacantha</i>	jeweled distaff thistle	B	
<i>Cenchrus echinatus</i>	southern sandbur	B	x
<i>Cenchrus longispinus</i>	mat sandbur	B	x
<i>Cenchrus spinifex</i> (syn. <i>C. incertus</i>)	coast sandbur	B	x
<i>Cytisus striatus</i>	Portuguese broom	B	
<i>Erica lusitanica</i>	Spanish heath	B	
<i>Euphorbia dendroides</i>	tree spurge	B	x
<i>Euphorbia helioscopia</i>	sun spurge	B	
<i>Gypsophila paniculata</i>	baby's breath	B	
<i>Halogeton glomeratus</i>	halogeton	B	x
<i>Hieracium aurantiacum</i> (see <i>Pilosella aurantiaca</i>)	orange hawkweed	B	
<i>Hypericum canariense</i>	Canary island St.Johnswort	B	x
<i>Iris pseudacorus</i>	yellow-flag iris	B	
<i>Lepidium coronopus</i> (syn. <i>Coronopus squamatus</i>)	swinecress	B	x
<i>Limnophila indica</i>	Indian marshweed	B	x
<i>Limonium duriusculum</i>	European sea-lavender	B	
<i>Limonium ramosissimum</i>	Algerian sea-lavender	B	

<i>Pilosella aurantiaca</i> (syn. <i>Hieracium aurantiacum</i>)	orange hawkweed	B	
<i>Rhagadiolus stellatus</i>	star endive	B	x
<i>Salsola gobicola</i>	barbwire russianthistle	B	
<i>Solanum marginatum</i>	white-margined nightshade	B	x
<i>Tamarix aphylla</i>	athel tree	B	
<i>Youngia japonica</i>	Japanese hawkweed	B	
C' Rated Weeds			
<i>Ageratum conyzoides</i>	tropical whiteweed	C	
<i>Ailanthus altissima</i>	tree of heaven	C	x
<i>Asclepias physocarpa</i> (syn. <i>Gomphocarpus p.</i>)	balloon plant	C	
<i>Boehmeria cylindrica</i>	smallspike false nettle	C	
<i>Brassica tournefortii</i>	Sahara mustard	C	
<i>Bromus tectorum</i>	cheatgrass	C	
<i>Cenchrus clandestinus</i> (syn. <i>Pennisetum clandestinum</i>)	kikuyugrass	C	x
<i>Cirsium ochrocentrum</i>	yellowspine thistle	C	x
<i>Convolvulus arvensis</i>	field bindweed	C	x
<i>Crepis pulchra</i>	smallflower hawksbeard	C	
<i>Diodia virginiana</i>	Virginia buttonweed	C	x
<i>Drymaria cordata</i>	whitesnow, tropical chickweed	C	x
<i>Euphorbia cyathophora</i>	dwarf poinsettia	C	
<i>Euphorbia hirta</i>	pillpod spurge	C	
<i>Fumaria muralis</i>	wall fumitory	C	
<i>Genista monspessulana</i>	French broom	C	x
<i>Hypericum perforatum</i>	Klamathweed, Saint John's wort	C	x
<i>Ipomoea aquatica</i>	water spinach	C	
<i>Laportea aestuans</i>	West Indian woodnettle	C	
<i>Ludwigia hexapetala</i>	water-primrose	C	x
<i>Misopates orontium</i>	lesser snapdragon	C	
<i>Misopates orontium</i> (syn. <i>Antirrhinum orontium</i>) [proposed C*]	lesser snapdragon	C	
<i>Myosoton aquaticum</i>	giant chickweed	C	x
<i>Myriophyllum aquaticum</i>	parrotfeather	C	
<i>Nymphaea mexicana</i>	banana waterlily	C	x
<i>Panicum antidotale</i>	blue panicgrass	C	x
<i>Pennisetum clandestinum</i> (see <i>Cenchrus clandestinus</i>)	kikuyugrass	C	x
<i>Phragmites australis</i> subsp. <i>altissimus</i>	non-native common reed	C	
<i>Phyllanthus tenellus</i>	Mascarene Island leaf-flower	C	

<i>Phyllanthus urinaria</i>	chamberbitter	C	
<i>Salpichroa organifolia</i>	lily of the valley vine	C	
<i>Salsola tragus</i>	common russianthistle	C	x
<i>Solanum cardiophyllum</i>	heartleaf nightshade	C	x
<i>Solanum torvum</i>	turkeyberry	C	
<i>Talinum paniculatum</i>	jewels of Opar, fameflower	C	
CCR 4500 List			
<i>Acacia paradoxa</i>	Kangaroo thorn		x
<i>Acaena anserinifolia</i>	biddy biddy		x
<i>Acaena novae-zelandieae</i>	biddy biddy		x
<i>Acaena pallida</i>	biddy biddy		x
<i>Achnatherum brachychaetum</i> (see <i>Amelichloa b.</i>)	punagrass		x
<i>Acroptilon repens</i> (syn. <i>Rhaponticum repens</i>)	Russian knapweed		x
<i>Aegilops cylindrica</i>	jointed goatgrass		x
<i>Aegilops geniculata</i> (<i>A. ovata</i> on CCR 4500 list)	ovate goatgrass		x
<i>Aegilops triuncialis</i>	barb goatgrass		x
<i>Aeschynomene</i> spp.	joint-vetch		x
<i>Alhagi maurorum</i>	camelthorn		x
<i>Allium paniculatum</i>	panicked onion		x
<i>Allium vineale</i>	wild garlic		x
<i>Alternanthera sessilis</i>	sessile joyweed		x
<i>Amelichloa brachychaeta</i> (syn. <i>Stipa b.</i> ; <i>Achnatherum b.</i>)	punagrass		x
<i>Araujia sericifera</i>	bladderflower		x
<i>Arundo donax</i>	giant reed		x
<i>Asphodelus fistulosus</i>	onionweed		x
<i>Atriplex amnicola</i>	swamp saltbush		x
<i>Berteroa incana</i>	hoary alyssum		x
<i>Brachypodium sylvaticum</i>	slender false-brome		x
<i>Cabomba caroliniana</i>	Carolina fanwort		x
<i>Carduus acanthoides</i>	plumeless thistle		x
<i>Carduus crispus</i>	curly plumeless thistle		x
<i>Carduus nutans</i>	musk thistle		x
<i>Carduus pycnocephalus</i>	slender-flowered thistle		x
<i>Carduus tenuiflorus</i>	Italian thistle		x
<i>Carthamus creticus</i> (syn. <i>C. baeticus</i>)	smooth distaff thistle		x
<i>Carthamus lanatus</i>	wooly distaff thistle		x
<i>Carthamus leucocaulos</i>	whitestem distaff thistle		x
<i>Centaurea calcitrapa</i>	purple starthistle		x

<i>Centaurea diffusa</i>	diffuse knapweed		x
<i>Centaurea iberica</i>	Iberian starthistle		x
<i>Centaurea jacea</i>	brown-ray knapweed		x
<i>Centaurea melitensis</i>	Maltese starthistle, tocalote		x
<i>Centaurea nigra</i>	black knapweed		x
<i>Centaurea nigrescens</i>	brown knapweed		x
<i>Centaurea solstitialis</i>	yellow starthistle		x
<i>Centaurea stoebe</i> (syn. <i>C. maculosa</i>)	spotted knapweed		x
<i>Centaurea sulphurea</i>	Sicilian starthistle		x
<i>Centaurea virgata</i> subsp. <i>squarrosa</i> (syn. <i>C. squarrosa</i>)	squarrose knapweed		x
<i>Centaurea x moncktonii</i> (syn. <i>C. pratensis</i>)	meadow knapweed		x
<i>Chondrilla juncea</i>	skeletonweed		x
<i>Chorisporea tenella</i>	purple mustard		x
<i>Cirsium arvense</i>	Canada thistle		x
<i>Cirsium vulgare</i>	bull thistle		x
<i>Coincya monensis</i>	star-mustard		x
<i>Coronopus squamatus</i> (see <i>Lepidium coronopus</i>)	swinecress		x
<i>Cortaderia jubata</i>	jubata grass		x
<i>Cucumis melo</i> var. <i>dudaim</i>	dudaim melon		x
<i>Cucumis myriocarpus</i>	paddy melon		x
<i>Cuscuta</i> spp. (California native species)	dodder		x
<i>Cuscuta</i> spp. (dodder, introduced species)	dodder, introduced species		x
<i>Cynara cardunculus</i>	artichoke thistle		x
<i>Cyperus esculentus</i>	yellow nutsedge		x
<i>Cyperus rotundus</i>	purple nutsedge		x
<i>Cytisus scoparius</i>	Scotch broom		x
<i>Delairea odorata</i>	cape ivy		x
<i>Dinebra chinensis</i> (syn. <i>Leptochloa chinensis</i>)	Asian sprangletop		x
<i>Dittrichia graveolens</i>	stinkweed, stinkwort		x
<i>Egeria najas</i>	anacharis		x
<i>Elymus repens</i> (syn. <i>Elytrigia repens</i>)	quackgrass		x
<i>Euphorbia graminea</i>	grassleaf spurge		x
<i>Euphorbia oblongata</i>	eggleaf spurge		x
<i>Euphorbia serrata</i>	serrate spurge		x
<i>Euphorbia terracina</i>	carnation spurge		x
<i>Euphorbia virgata</i> (syn. <i>E. esula</i>)	leafy spurge		x

<i>Fatoua villosa</i>	hairy crabweed		x
<i>Helianthus ciliaris</i>	Texas blueweed		x
<i>Heteropogon contortus</i>	tanglehead		x
<i>Hyoscyamus niger</i>	black henbane		x
<i>Isatis tinctoria</i>	dyer's woad		x
<i>Koenigia polystachya</i> (syn. <i>Polygonum p.</i> ; <i>Persicaria wallichii</i>) [on the CCR 4500 list as <i>Persicaria wallichii</i>]	Himalayan knotweed		x
<i>Lagarosiphon major</i>	oxygen weed; African elodea		x
<i>Lepidium appelianum</i> (syn. <i>Cardaria pubescens</i>)	globe-podded hoarycress		x
<i>Lepidium chalepense</i> (syn. <i>Cardaria chalepensis</i>)	lens-podded hoarycress		x
<i>Lepidium draba</i> (syn. <i>Cardaria draba</i>)	heart-podded hoarycress		x
<i>Lepidium latifolium</i>	perennial peppergrass, tall whitetop		x
<i>Leptochloa chinensis</i> (see <i>Dinebra chinensis</i>)	Asian sprangletop		x
<i>Limnium spongia</i>	American spongeplant; American frog's-bit		x
<i>Linaria dalmatica</i> (syn. <i>L. genistifolia</i> subsp. d.)	Dalmatian toadflax		x
<i>Lythrum salicaria</i>	purple loosestrife		x
<i>Mercurialis ambigua</i>	Spanish mercury		x
<i>Muhlenbergia schreberi</i>	nimblewill		x
<i>Nothoscordum gracile</i>	false garlic		x
<i>Oenothera sinuosa</i> (syn. <i>Gaura sinuata</i>)	wavyleaf gaura		x
<i>Oenothera xenogaura</i> (syn. <i>Gaura drummondii</i>)	Drummond's gaura		x
<i>Ononis alopecuroides</i>	foxtail restharrow		x
<i>Onopordum</i> spp.	including Scotch thistle, Illyrian thistle, and Taurian thistle		x
<i>Oryza rufipogon</i>	red rice		x
<i>Peganum harmala</i>	harmel		x
<i>Persicaria wallichii</i> (see <i>Koenigia polystachya</i>)	Himalayan knotweed		x
<i>Physalis longifolia</i> (syn. <i>P. virginiana</i> var. <i>sonorae</i>)	smooth groundcherry		x
<i>Physalis viscosa</i>	grape groundcherry		x
<i>Potentilla recta</i>	sulphur cinquefoil		x
<i>Prosopis strombulifera</i>	creeping mesquite		x
<i>Retama monosperma</i>	bridal veil broom		x
<i>Rorippa austriaca</i>	Austrian fieldcress		x

<i>Rorippa sylvestris</i>	creeping yellowcress		x
<i>Saccharum ravennae</i> (see <i>Tripsidium ravennae</i>)	ravennagrass		x
<i>Salsola damascena</i> (syn. <i>S. vermiculata</i>)	wormleaf salsola		x
<i>Salsola paulsenii</i>	Paulsen's russianthistle		x
<i>Salvia aethiopis</i>	Mediterranean sage		x
<i>Salvia virgata</i>	meadow sage		x
<i>Salvinia auriculata</i> s.l.	giant salvinia		x
<i>Scolymus hispanicus</i>	golden thistle		x
<i>Senecio jacobaea</i> (see <i>Jacobaea vulgaris</i>)	tansy ragwort		x
<i>Senecio linearifolius</i>	fireweed groundsel		x
<i>Senecio squalidus</i>	Oxford ragwort		x
<i>Sesbania punicea</i>	red sesbania, rattlebox		x
<i>Setaria faberi</i>	giant foxtail		x
<i>Solanum carolinense</i>	Carolina horsenettle		x
<i>Solanum dimidiatum</i>	Torrey's nightshade		x
<i>Solanum elaeagnifolium</i>	white horsenettle		x
<i>Sonchus arvensis</i>	perennial sowthistle		x
<i>Sorghum halepense</i>	Johnsongrass and other perennial <i>Sorghum</i> spp. including but not limited to sorghum almumand perennial sweet sudangrass		x
<i>Spartina alterniflora</i> and hybrids	smooth cordgrass		x
<i>Spartina anglica</i>	common cordgrass		x
<i>Spartina densiflora</i>	dense-flowered cordgrass		x
<i>Spartina patens</i>	saltmeadow cordgrass		x
<i>Spartium junceum</i>	Spanish broom		x
<i>Sphaerophysa salsula</i>	Austrian peaweed		x
<i>Stipa brachychaeta</i> (see <i>Amelichloa brachychaeta</i>)	punagrass		x
<i>Symphytum x uplandicum</i> [on CCR 4500 list under earlier identification as <i>S. asperum</i>]	Russian comfrey		x
<i>Taeniatherum caput-medusae</i> (syn. <i>Elymus c-m.</i>)	medusahead		x
<i>Tagetes minuta</i>	wild marigold		x
<i>Tamarix chinensis</i>	tamarisk, salt cedar		x
<i>Tamarix gallica</i>	tamarisk, salt cedar		x
<i>Tamarix parviflora</i>	tamarisk, salt cedar		x
<i>Tamarix ramosissima</i>	tamarisk, salt cedar		x
<i>Tribolium oblitterum</i>	capegrass		x

<i>Tribulus terrestris</i>	puncture-vine		x
<i>Triplidium ravennae</i> (syn. <i>Saccharum r.</i>)	ravennagrass		x
<i>Ulex europaeus</i>	gorse		x
<i>Zostera japonica</i> (syn. <i>Nanozostera j.</i>)	dwarf eelgrass; Japanese eelgrass		x
<i>Zygophyllum fabago</i>	Syrian beancaper		x

Tulloch Hydroelectric Project
FERC Project No. 2067

Terrestrial Noxious Weed Report – 2026
Attachment D - Federal Noxious Weed list

Federal Noxious Weed List

Effective as of December 10, 2010

Aquatic

Latin Name	Author(s)	Common Name(s)
<i>Azolla pinnata</i>	R. Brown	Mosquito fern, water velvet
<i>Caulerpa taxifolia</i> (Mediterranean strain)	(Vahl) C. Agardh	Killer algae
<i>Eichhornia azurea</i>	(Swartz) Kunth	Anchored water hyacinth, rooted
<i>Hydrilla verticillata</i>	(L.) Royle	Hydrilla
<i>Hygrophila polysperma</i>	T. Anderson	Miramar weed
<i>Ipomoea aquatica</i>	Forsskal	Water-spinach, swamp morning
<i>Lagarosiphon major</i>	(Ridley) Moss	African elodea
<i>Limnophila sessiliflora</i>	(Vahl) Blume	Ambulia
<i>Melaleuca quinquenervia</i>	(Cavanilles) S.T. Blake	Broadleaf paper bark tree
<i>Monochoria hastata</i>	(Linnaeus) Solms-Laubach	Arrowleaf false pickerelweed
<i>Monochoria vaginalis</i>	(N.L. Burm.) K. Presl	Heartshape false pickerelweed
<i>Ottelia alismoides</i>	(L.) Pers.	Duck lettuce
<i>Sagittaria sagittifolia</i>	Linnaeus	Arrowhead
<i>Salvinia auriculata</i>	Aublet	Giant salvinia
<i>Salvinia biloba</i>	Raddi	Giant salvinia
<i>Salvinia herzogii</i>	de la Sota	Giant salvinia
<i>Salvinia molesta</i>	D.S. Mitchell	Giant salvinia
<i>Solanum tampicense</i>	Dunal	Wetland nightshade
<i>Sparganium erectum</i>	Linnaeus	Exotic bur-reed

Parasitic

Latin Name	Author(s)	Common Name(s)
<i>Aeginetia</i> spp.	Linnaeus	Varies by species
<i>Alectra</i> spp.	Thunb.	Varies by species
<i>Cuscuta</i> spp. (except for natives)	Linnaeus	Dodders
<i>Orobancha</i> spp. (except for natives)	Linnaeus	Broomrapes
<i>Striga</i> spp.	Lour.	Witchweeds

Terrestrial

Latin Name	Author(s)	Common Name(s)
<i>Acacia nilotica</i> = <i>Vachellia nilotica</i>	(L.) Willd. ex Delile (L.) P.J.H. Hurter &	Prickly acacia (updated 3/21/2017)
<i>Ageratina adenophora</i>	(Sprengel) King &	Crofton weed
<i>Ageratina riparia</i>	(Regel) King & H. Rob.	Mistflower, spreading snakeroot
<i>Alternanthera sessilis</i>	(L.) R. Brown ex de	Sessile joyweed
<i>Arctotheca calendula</i>	(L.) Levyns	Capeweed
<i>Asphodelus fistulosus</i>	Linnaeus	Onionweed (corrected 3/21/2107)
<i>Avena sterilis</i>	Durieu	Animated oat, wild oat
<i>Carthamus oxyacantha</i>	M. Bieberstein	Wild safflower
<i>Chrysopogon aciculatus</i>	(Retzius) Trinius	Pilipiliula
<i>Commelina benghalensis</i>	Linnaeus	Benghal dayflower
<i>Crupina vulgaris</i>	Cassini	Common crupina
<i>Digitaria scalarum</i>	(Schweinfurth)	African couchgrass, fingergrass
<i>Digitaria velutina</i>	(Forsskal) Palisot de	Velvet fingergrass, annual
<i>Drymaria arenariodes</i>	Humboldt & Bonpland ex J.A. Schultes	Lightning weed
<i>Emex australis</i> = <i>Rumex hypogaeus</i>	Steinheil T. M. Schust. & Reveal	Three-corned jack (updated 3/21/2017)
<i>Emex spinosa</i> = <i>Rumex spinosus</i>	Campdera L.	Devil's thorn (updated 3/21/2017)
<i>Euphorbia terracina</i>	Linnaeus	False caper, Geraldton carnation
<i>Galega officinalis</i>	Linnaeus	Goatsrue
<i>Heracleum</i>	Sommier & Levier	Giant hogweed
<i>Imperata brasiliensis</i>	Trinius	Brazilian satintail
<i>Imperata cylindrica</i>	(L.) Raeuschel	Cogongrass
<i>Inula britannica</i>	Linnaeus	British yellowhead
<i>Ischaemum rugosum</i>	Salisbury	Murainograss
<i>Leptochloa chinensis</i>	(Linnaeus) Nees	Asian sprangletop
<i>Lycium ferocissimum</i>	Miers	African boxthorn
<i>Lygodium flexuosum</i>	(L.) Sw.	Maidenhair creeper
<i>Lygodium microphyllum</i>	(Cav.) R. Br.	Old world climbing fern
<i>Melastoma</i>	Linnaeus	Malabar melastome
<i>Mikania cordata</i>	(Burman f.) B. L.	Mile-a-minute
<i>Mikania micrantha</i>	Kunth	Bittervine
<i>Mimosa invisa</i> Now: <i>M. diplotricha</i>	Martius C. Wright	Giant sensitive plant (Updated July 2016)
<i>Mimosa pigra</i>	Linnaeus	Catclaw mimosa
<i>Moraea collina</i>	Thunberg	Cape tulip
<i>Moraea flaccida</i>	(Sweet) Steudel	One leaf cape tulip
<i>Moraea miniata</i>	Andrews	Two leaf cape tulip
<i>Moraea ochroleuca</i>	(Salisbury) Drapiez	Apricot tulip
<i>Moraea pallida</i>	(Baker) Goldblatt	Yellow tulip
<i>Nassella trichotoma</i>	Nees) Hackel ex	Serrated tussock

Latin Name	Author(s)	Common Name(s)
<i>Onopordum acaulon</i>	Linnaeus	Stemless thistle
<i>Onopordum illyricum</i>	Linnaeus	Illyricum thistle
<i>Opuntia aurantiaca</i>	Lindley	Jointed prickly pear
<i>Oryza longistaminata</i>	A. Chevalier & Roehrich	Red rice
<i>Oryza punctata</i>	Kotschy ex Steudel	Red rice
<i>Oryza rufipogon</i>	Griffith	Red rice
<i>Paspalum scrobiculatum</i>	Linnaeus	Kodo-millet
<i>Pennisetum clandestinum</i>	Hochstetter ex Chiovenda Hochst. ex Chiov.	Kikuyugrass (updated 3/21/2017)
<i>Pennisetum macrourum</i> = <i>Cenchrus caudatus</i>	Trinius (Schrud.) Kuntze	African feathergrass (updated 3/21/2017)
<i>Pennisetum pedicellatum</i> = <i>Cenchrus pedicellatus</i>	Trinius (Trin.) Morrone	Kyasumagrass (updated 3/21/2017)
<i>Pennisetum polystachion</i> = <i>Cenchrus polystachios</i> subsp. <i>polystachios</i>	(Linnaeus) Schultes (L.) Morrone	Missiongrass, thin napiergrass (updated 3/21/2017)
<i>Prosopis alpataco</i>	R. A. Philippi	Mesquite
<i>Prosopis argentina</i>	Burkart	Mesquite
<i>Prosopis articulata</i>	S. Watson	Velvet mesquite
<i>Prosopis burkartii</i>	Munoz	Mesquite
<i>Prosopis caldenia</i>	Burkart	Calden
<i>Prosopis calingastana</i>	Burkart	Cusqui
<i>Prosopis campestris</i>	Griseback	Mesquite
<i>Prosopis castellanosi</i>	Burkart	Mesquite
<i>Prosopis denudans</i>	Bentham	Mesquite
<i>Prosopis elata</i>	Burkart	Mesquite
<i>Prosopis farcta</i>	(Banks & Solander) J.F.	Syrian mesquite
<i>Prosopis ferox</i>	Grisebach	Mesquite
<i>Prosopis fiebrigii</i>	Harms	Mesquite
<i>Prosopis hassleri</i>	Harms	Mesquite
<i>Prosopis humilis</i>	Gillies ex Hooker &	Algaroba
<i>Prosopis kuntzei</i>	Harms	Mesquite
<i>Prosopis pallida</i>	(Humboldt & Bonpland ex	Kiawe, algarroba
<i>Prosopis palmeri</i>	S. Watson	Mesquite
<i>Prosopis reptans</i>	Bentham	Tornillo
<i>Prosopis rojasiana</i>	Burkart	Mesquite
<i>Prosopis ruizlealii</i>	Burkart	Mesquite
<i>Prosopis ruscifolia</i>	Grisebach	Mesquite
<i>Prosopis sericantha</i>	Gillies ex Hooker &	Mesquite
<i>Prosopis strombulifera</i>	(Lamarck) Bentham	Argentine screwbean
<i>Prosopis torquata</i>	(Cavanilles ex Lagasca y Segura)	Mesquite

Latin Name	Author(s)	Common Name(s)
<i>Rottboellia</i>	(Lour.) W. Clayton	Itchgrass
<i>Rubus fruticosus</i>	Linnaeus	Wild blackberry
<i>Rubus moluccanus</i>	Linnaeus	Wild raspberry
<i>Saccharum spontaneum</i>	Linnaeus	Wild sugarcane
<i>Sagittaria sagittifolia</i>	Linnaeus	Arrowhead
<i>Salsola vermiculata</i>	Linnaeus	Wormleaf salsola
<i>Senecio inaequidens</i>	DC	South African ragwort
<i>Senecio</i>	Poir.	Fireweed
<i>Setaria pumila ssp. pallidefusca</i>	(Schumach.) B. K. Simon (Büse) B.K. Simon	Cattail grass
<i>Solanum torvum</i>	Swartz	Turkeyberry
<i>Solanum viarum</i>	Dunal	Tropical soda apple
<i>Spermacoce alata</i>	Aublet	Winged false buttonweed
<i>Tridax procumbens</i>	Linnaeus	Coat buttons
<i>Urochloa panicoides</i>	Beauvois	Liverseed grass

Change Log

Version	Date	Change Description	Species/Sections Affected
1.0	12/10/2010	(A) Formatting changes. (B) Added change log.	(A) Aquatic, Parasitic, and Terrestrial tables (B)

Tulloch Hydroelectric Project
FERC Project No. 2067

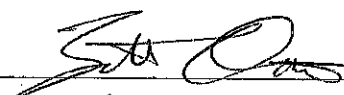
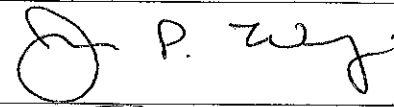
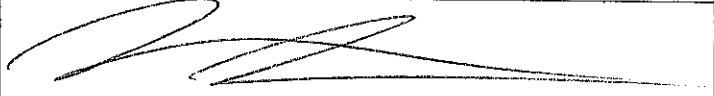
Terrestrial Noxious Weed Report – 2026
Attachment E – 2026 Staff Training Sign in Sheets



TRI-DAM PROJECT

Of the South San Joaquin & Oakdale Irrigation Districts

Purpose of Meeting: noxious weeds survey
Date: 5/11/2026
Tulloch Reservoir
Time: 8am

PRINT NAME	AGENCY	SIGNATURE
Scott Oneto	Univ. of Cal. S	
Steve Magny	TDP	
JORDAN WYLIE	TRI DAM PROJECT	
NICK PAYNE	TDP	

Safety Week 2026

Training Topic:

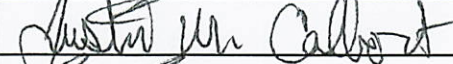
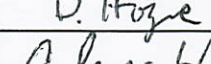
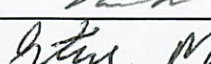
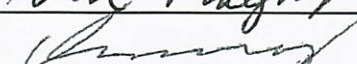
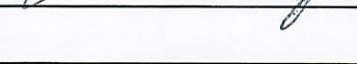
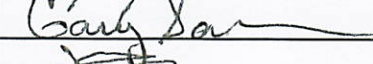
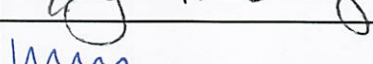
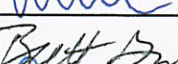
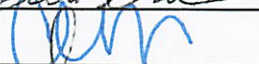
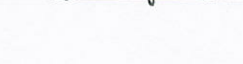
Noxious / Veg Mgmt

Instructor(s):

Mackenzie Patton

Date:

7/22

	Name		Signature
1	Brady	Ben	
2	Calbert	Justin	
3	Everhart	Eric	
4	Flud	Alex	
5	Gracia	Carson	
6	Hogue	Daniel	
7	Kiriluk	Alex	
8	Lertora	Ritchie	
9	Magney	Steve	
10	Mahoney	Izak	
11	Martens	Joshua	
12	Nugent	Cody	
13	Payne	Nick	
14	Royce	Ryan	
15	Sawyer	Gary	
16	Seel	Justin	
17	Wearin	Matt	
18	Wylie	Jordan	
19	Fleck	Vivien	
20	Gordon	Brett	
21	Martin	Carey	
22	Nicotero	Summer	

Tulloch Hydroelectric Project
FERC Project No. 2067

Terrestrial Noxious Weed Report – 2026
Attachment F – Updated Terrestrial Noxious Weed Pamphlet for Public Outreach

Guide to Terrestrial Noxious and Invasive Weeds

Near Lake Tulloch Reservoir



Public Identification, Prevention & Management Guide

Terrestrial Noxious Weeds Near Tulloch Reservoir - 2026



Purpose

The purpose of this Noxious Weed pamphlet is to assist the Tri-Dam Project in reaching the public to enlist their help in controlling the invasive, alien weeds that are threatening to displace native plants in the natural environment at Tulloch Reservoir. These invasive alien weeds also threaten to displace rare plant populations and reduce wildlife habitat values.

Tri-Dam's FERC License Conditions

The Federal Energy Regulatory Commission (FERC) required specific conditions to be implemented for the renewal of the FERC License for Tri-Dam's Tulloch Hydroelectric Project. FERC required a Vegetation Management Plan to include a plan to manage noxious weeds, in FERC's Article 405, at pages 23- 24, of the Order Issuing New License on February 16, 2006, for the South San Joaquin Irrigation and Oakdale Irrigation Districts' Tri-Dam Project No. 2067-020. The Vegetation Management Plan was approved on July 1, 2008. As part of the plan, a terrestrial noxious weed survey is performed annually by Tri-Dam Staff. Once identified, staff perform mitigation efforts where feasible. To help Tri-Dam prevent the spread of noxious weeds, this pamphlet informs the public around Tulloch Reservoir.

The following plants were found at Tulloch Reservoir by Project biologists and are classified by state and federal agencies as invasive or "Noxious Weeds". These weeds occur in patches on federal lands, state lands, TriDam lands, and private lands around the Tri-Dam Project boundary at Tulloch Reservoir:

1. Barbed Goatgrass (*Aegilops triuncialis*)
2. Chinese Tree-of-Heaven (*Ailanthus altissima*)
3. Italian Thistle (*Carduus pycnocephalus*)
4. Slender-flower Thistle (*Carduus tenuiflorus*)
5. Tocalote [Malta Starthistle] (*Centaurea melitensis*)
6. Yellow Star Thistle (*Centaurea solstitialis*)
7. Bull Thistle (*Cirsium vulgare*)
8. Klamath Weed [St. John's Wort] (*Hypericum perforatum*)
9. Himalayan Blackberry (*Rubus discolor* [procerus] [armeniacus])
10. Medusa-head Grass (*Taeniantherum* [Elymus] caput-medusae)

Noxious Weed Control Methods

The following pages discuss the biology of the plants listed by State or Federal agencies as "Noxious Weeds" and the control methods that have been reported as successful for each plant. The different methods for controlling weeds are summarized in this pamphlet.

Weed Prevention

The first line of defense against noxious weed invasions is to prevent their introduction into the project area. The following preventive measures should be utilized:

- Avoid disturbance to natural areas, including clearing of native vegetation and planting of nonnative plants.
- Avoid entering areas with existing noxious weed populations, or if entry is necessary, conduct work first in clean areas and then in areas with weeds, to avoid spreading weeds within the project area.
- Remember to clean equipment before leaving infested areas. Do not dump yard waste containing weeds that can spread seeds or re-root. Dispose of weed seed heads in the garbage. Do not mulch invasive weeds.
- Do not purchase or use invasive exotic species in landscaping or for land restoration or erosion control projects.
- Use hay for erosion control that is not contaminated with weeds. Commit to using certified weed-free straw for all construction or restoration projects or, if unavailable, use rice straw.
- For landscaping, use plants that are native to the Central Sierra foothills region as much as possible or those that are not known to be invasive.
- When planting seeds, use weed-free seed to help prevent the spread of most noxious weeds.
- Know your plants. If you are unsure of the identification of a plant, take a sample to a university, arboretum, department of agriculture office, local nature center, or native plant society for assistance. Find out whether it is known or suspected to be invasive. If the exotic plant is closely related to an invasive species, it is likely to have similar tendencies. To be on the safe side, if you don't know it, don't grow it.
- Avoid buying nursery stock that appears unhealthy and discard any unhealthy nursery stock in the trash. Do not mulch these plants on the project site.
- Control exotic invasive plants in your landscape either by removing them entirely or by managing them to prevent their spread outside your property. This may include pruning to prevent flowering and seed dispersal or cutting, mowing, or herbicide use to prevent vegetative spread.
- Do not dispose of aquatic pond or aquarium plants in natural waterways or lakes.
- Clean off your boat's propeller and boat trailer of any plant material before placing it in the lake after boating in other waterways.
- Discuss your concerns about invasive exotic plants with nurseries and garden shops and ask them not to sell these species. Provide them with printed material (such as this) explaining the problem to read later. Ask for non-invasive alternatives instead.

Noxious Weed Control Methods

- Notify neighboring land managers of invasive exotic plant occurrences.
- Offer to assist in exotic plant removal projects. Work with your local government to encourage the use of native plants in their urban and suburban landscapes.
- Provide them with lists of attractive, non-invasive, locally native alternatives that are naturally hardier, pest-resistant, and provide more nutritious food for wildlife than cultivated plants.

Hoeing or Hand Pulling

The hoeing or hand-pulling of small patches of weedy plants has been an effective method of controlling weeds since ancient times. It can prevent the spread of weeds to other areas if the seed heads and roots are bagged for proper disposal and not mulched into the soil.

Mowing

Cutting by hand, mowing with a mechanical mower, or whacking weeds with a string or blade trimmer before the weeds establish seeds may prevent the spread of the weeds to new areas. However, this method usually does not kill the weeds unless they are cut to the root line. This method still helps to control the spread of noxious weeds to new areas, but the mowing or cutting must be repeated periodically throughout the weed's growing period. Mowing must not be done when the weeds are bearing seed, unless the plants are caught in a basket or bag, or the seeds will be spread mechanically.

Solarization

Solarization of noxious weeds, over-shading or out-shading, is done with a thick layer of organic or inorganic mulch that may provide adequate shading and prevent growth of most light-sensitive plants. Most plants require sunlight for adequate growth. If heavy dark plastic is used, the edges must be secured with sandbags or rocks to hold the cover in place and to prevent sunlight from spreading in from the edges. This method may be very effective for controlling weeds in small patches. Solarization must be done at the beginning of the seed germination period. The solarizing cover must be left in place for the entire growing season for the noxious weed targeted. Solarization will kill both noxious weeds and native plants. Revegetation will be needed with fast-growing, hardy native seeds and plants to prevent the reintroduction of noxious weeds into the solarized areas and to prevent erosion of the bare soils left after solarization. Persistent follow-up and twice-yearly monitoring is needed to eliminate many of the invasive thistles, since some weedy thistle seeds can survive up to ten years.

Re-Seeding

Many weeds are opportunist that colonize disturbed areas where there is little competition from native plants. Re-seeding disturbed areas with competitive native plants is an effective long-term sustainable method of suppressing the weeds and allowing native plants to dominate weedy plants, choking out the weeds. Rapidly growing, competitive native plants should be used in weed control areas. Native

Noxious Weed Control Methods

plants do not require fertilizers or continued care, other than adequate water to establish their root systems. Native plants also provide forage for the local wildlife. Native plants should be seeded or planted at the beginning of the rainy season in the fall, usually around October 15th. Native plants recommended for re-seeding and replanting disturbed areas at the Tulloch Project are found in Tables at the end of this pamphlet. A list of potential native plant and native seed suppliers is also found at the end of this pamphlet.

Grazing

Livestock can readily feed on most seedling noxious weeds at Tulloch Reservoir. However, some of the noxious weeds at the Tulloch Project are toxic or harmful to livestock when mature, especially horses. Goats and sheep are more tolerant of these plants. Some of the seeds of the noxious weeds at Tulloch Reservoir can pass through the digestive tract of livestock, remain viable, and the seeds can be spread to new areas. Grazing livestock in close proximity to this drinking water reservoir can cause contamination with animal feces. Penning a flock of chickens, geese, or turkeys in small patches of seedy weeds for a few weeks can be an effective way of removing the entire year's seed production from that patch of seedy annuals. Seed-eating birds have gullets that can grind up seeds that would normally pass through livestock undigested. A drawback to using portable bird pens would be the potential predation of the birds by the fox and coyotes observed at Tulloch Reservoir. Livestock also eat desirable native plants. Livestock cannot be used in areas zoned by Calaveras or Tuolumne Counties for urban residential or commercial land uses, since livestock grazing is not permitted in these County zoning districts.

Burning

Controlled burns of weedy fields and spot burning of weeds with a propane torch have been reported successful for controlling many noxious weeds in other areas, but burning is not recommended at Tulloch Reservoir due to the following: the narrow band above the waters edge within the project area (below the 515-foot elevation); the project's proximity to residential and commercial structures; difficult access to the shoreline by fire suppression equipment; and the steep canyon surrounding the project area, where fire management would be extremely difficult. Contact your local fire department for burning regulations.

Noxious Weed Control Methods

Herbicides

For situations where other control methods of weeds are not practical or safe, herbicidal control has been reported as an effective option. Herbicides are likely also to damage desirable native plants and may harm animals. Applications can be made during the early spring when most other non-target vegetation is dormant. Herbicides are not appropriate for some infested sites, especially those near water, near Endangered plant habitats, or near Endangered wildlife habitats. Near streams or lakes, particular caution should be taken when using herbicides to avoid polluting the water. Remember that Tulloch Reservoir is used as a drinking water supply for the adjacent community.

Prior to using any herbicide, check with the County Agricultural Commissioner to determine which chemicals are legal to use in this situation. The labels also give more precise information on mixing and safety precautions. Refer to the pesticide manufacturer's label for specific information and restrictions regarding herbicide use. Read the entire herbicide label carefully. All label directions for mixing and applying must be followed. All precautions must be followed, and recommended personal protective clothing and gear must be used. Herbicide use should be done in consultation with a State-licensed Pest Control Advisor (PCA), registered to do such herbicide work in each County. Lists of such licensed PCA specialists are available from your County Agricultural Commissioner.

All pesticides registered for use have a label that has been approved by the Environmental Protection Agency (EPA). The label contains information about the product, including its relative toxicity, potential hazard to humans and the environment, directions for use, storage and disposal, and first aid treatment in case of exposure.

Contact the State Department of Pesticide Regulation for questions regarding the use requirements, restrictions, or recommendations for any herbicide to be used. <https://www.cdpr.ca.gov/>

Tulloch Reservoir Noxious Weeds

Barbed Goat Grass (*Aegilops triuncialis*)



Weed Description

Barbed Goatgrass is a winter annual closely related to and resembling winter wheat (*Triticum aestivum* L.). Stems are erect, spreading, or abruptly bent. Stems branch and spread at the base. Leaf blades are flat, spreading, about 0.1 inch wide, and may be sparsely covered with fine hairs. It grows to 18 inches (45 cm) tall. Stems are solid when young, but become hollow with age. Leaf blades are rigid and not susceptible to rust. Roots are fibrous and develop rapidly to a great depth. The flowering spikelets are 1 per node, are alternate and lay flat against a groove in the zig-zag tip of the stem. Immature spikes are often reddish or purplish. It has 2-3 stiff, sharp, and minutely barbed awns on each spikelet, each 1.5-3 inches long. There are two 1-seeded fruits per joint, with the upper two spikelets sterile. Spikelets adhere to the stem and are difficult to separate from the joint, falling at maturity with the entire flowering head.

Reproduction

The florets of Barbed Goatgrass bloom from May to July. They produce seeds. Barbed Goatgrass seeds germinate in the joints in the field, but joints appear to reduce germination. Germination occurs under a wide range of temperatures, 41-77 degrees F (5°-25° C). Some seeds can remain dormant for up to 5 years. The long barbed awns may attach and be transported on hair, fur, wool, shoes, or clothes.

Control

Some Barbed Goatgrass seeds falling on the ground can survive controlled field burns, because outer portions of the joints protect the seeds. Heavy grazing and high intensity/short duration grazing appears to increase goatgrass density. The awns can pierce and damage the mouth and eyes of livestock. Grazing animals should be removed from infested areas before plants mature. Mowing can be an effective method of reducing seed production. Mowing should occur after flowering, but before goatgrass seeds mature. Early mowing will result in new tiller growth and late mowing will only spread viable seed. Deep tilling has been effective. Hand pulling or hoeing small infestations is effective, if the roots are pulled and air-dried. Harvest transport trucks should be covered and other vehicles thoroughly cleaned before moving from infested fields. Nonselective herbicides such as Glyphosate may be applied to control small infestations. A reseeding program of perennial grasses and legumes, or other desirable vegetation should follow spot treatments.

Tulloch Reservoir Noxious Weeds

Chinese Tree-Of-Heaven (Ailanthus Altissima)



Weed Description

Chinese Tree-of-heaven, also known as Ailanthus, is a rapidly growing, deciduous tree native to Central China. Ailanthus has smooth stems with pale gray bark and chestnut brown twigs. It has large compound leaves, which range from 1-4 feet in length. These leaves are compound of 11-25 smaller leaflets, which are arranged alternately along the stems. Each leaflet has 1-3 coarse teeth and odor glands near the base. Mature trees can reach 80 feet or more in height. In the spring, small yellow-green flowers are found at the tips of branches. The seeds are enveloped by papery sheaths called samaras, which are slightly twisted, making them spin as they fall. Ripe samaras are greenish yellow or reddish brown in color. The wood of ailanthus is soft, coarse-grained, and creamy white to light brown in color. All parts of the tree, particularly the flowers, have a strong unpleasant odor, suggestive of rancid or burnt nuts.

Reproduction

Ailanthus reproduces both sexually via seeds and asexually via vegetative sprouts from the roots. Flowering occurs in June. Ailanthus is dioecious, with male and female flowering on

separate trees. Female trees produce seeds from late summer to early fall. A single tree can produce around 325,000 to 350,000 seeds each year. Seeds are found inside papery, twisted, winged structures called samaras, which are well adapted for wind dispersal. Samaras occur in large clusters from September to October, and may remain on the female tree through the winter, but can be dispersed any time from October to the following spring. Mature trees also produce suckers from the roots and re-sprout rapidly from cut stumps and root fragments.

Control

Due to its rapid growth, abundant seed production, high seed germination rate, and root and stump sprouting capabilities, the removal of Ailanthus requires more than one year of treatment and follow-up monitoring. Seedlings can be pulled or dug up, but removal or poisoning of the entire root system is important to prevent fragments from regrowing. Cutting Ailanthus trees may be ineffective unless the roots are also treated or poisoned, because the plant can produce stump sprouts and root suckers (connected to a pre-existing lateral root). Establishing a thick cover of native trees or shrubs will help shade out establishments of Ailanthus seedlings. The use of the herbicides Glyphosate, Triclopyr, Imazapyr, and Dicamba has been reported to be effective in Ailanthus control. Herbicides may be applied according to the state-approved pesticide labels to the leaves, the basal bark, cut stump, or the interior of the tree by injection.

Tulloch Reservoir Noxious Weeds

Italian Thistle (*Carduus pycnocephalus*)



Weed Description

The Italian Thistle is an annual, broadleaf weed with slender spiny-winged stems. It is typically 1-4 feet in height, but can grow up to 6 feet tall. The leaves are deeply cut into 5 pairs of spiny lobes. The upper surface of the leaf is smooth and the underside is covered with woolly hairs. Flower heads are covered with dense matted hairs. Its cylindrical flowers are purplish or pinkish in color. Flowers appear at the ends of branches, singly or in clusters of 2-5, and are about 12-3/4 inch long. Italian thistle has a branched, slender taproot.

Reproduction

Italian Thistle is bisexual and pollinated by many different insects. It reproduces only by two types of seeds - brown seeds and silver seeds. A single plant can produce 20,000 seeds. Brown seeds generally remain in the flower heads, falling with them to the ground at the end of the season, and germinate at lower temperatures than the silver seeds. Silver seeds have a large feathery pappus and are dispersed by wind. They can remain dormant in the soil longer than the brown seeds (8-10 years). Seeds can

germinate from depths of three inches, but usually germinate at less than one inch. Germination occurs in the fall after the first rain. Seedlings grow through the winter as rosettes and flower from May to July, before the summer drought. In addition to wind dispersal, seeds are also dispersed by contaminated hay or feed, water, animals, and machinery. Seedlings establish best on bare, disturbed soil.

Control

Mechanical removal such as digging will kill Italian Thistle, but the root must be cut at least four inches below ground level so the plant does not regrow. Plants can regrow from the base even if the thistle is repeatedly mowed at 3 inches. Plants should be pulled before seeds set. Grazing by sheep, goats, and horses has also been known to be effective in controlling this thistle. Three species of insects, *Psylliodes chalsomera*, *Rhinocyllus conicus*, and *Ceutorhynchus trimaculatus* damage vital parts of the thistle, impacting seed production. Concern that these insects may prey on several of California's endangered native thistles in the genus *Cirsium*. Infection by two fungal rusts, *Puccinia* and *Alternaria*, is known to significantly reduce growth of this Thistle. A variety of herbicides including Diquat, Picloram, Glyphosate, Clopyralid, Milestone and 2,4-D have been reported successful in the control of this plant.

Tulloch Reservoir Noxious Weeds

Slender-Flower Thistle (*Carduus tenuiflorus*)



Weed Description

Slender-flower Thistle is a broadleaf, winter annual weed with slender stems and is typically 1-6.5 feet in height. It has triangular shaped large stem wings with spiny tips. The leaves of this thistle are cut into 6-8 pairs of spine-tipped lobes and the undersides are covered with woolly hairs. The flowers are purplish or pinkish in color and appear at the ends of branches, typically in clusters of 5-20. This thistle resembles Italian Thistle, but Slender-flower thistle usually has more than five cylindrical flower heads per cluster, its bracts are not hairy, and it has leaves with 12-20 lobes. Seeds are gray-brown. Some references felt this thistle is an indistinct species from Italian Thistle.

Reproduction

Slender-flower Thistles reproduce only by seed. Germination occurs in the fall after the first rain when temperatures reach 36-86 degrees F (2-30 degrees C [Centigrade]). Seedlings grow through the winter as rosettes, and flower from May-July, before the summer drought. Its small seeds have

a large pappus and are well adapted for wind dispersal. Seeds are also dispersed by contaminated hay or feed, water, animals, and machinery.

Control

Mechanical removal such as digging will kill Slender-flower Thistle, but the root must be cut at least four inches below ground level so the plant does not regrow. Plants can regrow from the base even if the thistle is repeatedly mowed at 3 inches. Plants should be pulled before seeds set. Grazing by sheep, goats, and horses has also been known to be effective in controlling this thistle. Three species of insects, *Psylliodes chalsomera*, *Rhinocyllus conicus*, and *Ceutorhynchus trimaculatus* damage vital parts of the thistle, impacting seed production. Infection by two fungal rusts, *Puccinia* and *Alternaria*, is known to significantly reduce growth of this Thistle. A variety of herbicides including Diquat, Picloram, Glyphosate, Clopyralid, Milestone and 2,4-D have been reported successful in the control of this plant.

Tulloch Reservoir Noxious Weeds

Tocalote (Malta Starthistle) (*Centaurea melitensis*)



Weed Description

Tocalote is an annual or biennial thistle with several stems from the base and branched in the upper part. Its erect or drooping stems have narrow wings and are 4-36 inches high. Most leaves are thin oblongs with deep lobes, 2-4 inches long. Leaves are alternate on the stem. Flowers are yellow and 0.3-0.5 inches long. Flower heads are in the upper leaf axils and are globe-shaped with firm bracts that are hairy when young. The margins of the bracts have several very short tan spines near the tip, with reddish, pinnately spiny bases. The seed pappus bristles are in several series. The similar weed, Yellow Star Thistle, has longer, yellow spines.

Reproduction

Tocalote blooms from May to June. Tocalote is insect-pollinated and reproduces by seed. Seed production is highly variable. Plants can produce 1-60 or more seeds per head and 1-100 or more heads per plant. Seeds fall near the parent plant or are dispersed to short distances by the wind, water, and soil movement. Seeds are often

Spread by humans, machinery, and livestock via the transportation of contaminated crop seed or hay. Seeds are also spread by road maintenance and moving livestock, which can contribute to the long-distance spread of the seeds. Wild birds such as quail and finches feed heavily on the seeds and are capable of long-distance dispersal. The seed bristles have microscopic barbs that can adhere to clothing, hair, and fur for seed dispersal. Seeds germinate after the first fall rains. Plants exist as basal rosettes through winter and early spring until flowering stems develop. Young seedlings are especially resistant to the effects of fall drought.

Control

Methods used to control Yellow Star Thistle can be applied to Tocalote. High-intensity, short-duration grazing by goats or sheep can be implemented. Mowing and spot burning can be very effective if done before spines form on the flower heads. Mowing too early can result in higher seed production. Monitoring and spot eradication of plants when they are discovered can also prevent the spread of this thistle. Hand pulling or grubbing, removing as much root as possible, may be useful in eradicating small infestations. Re-seeding with competitive native plant species is an effective long-term sustainable method of outcompeting Tocalote. Wild oat (*Avena* spp.) litter appears to inhibit Tocalote germination. The herbicides Clopyralid, Milestone, and Picloram have been reported to be effective in controlling Tocalote.

Tulloch Reservoir Noxious Weeds

Yellow Star Thistle (*Centaurea solstitialis*)



Weed Description

Yellow Star Thistle is gray-green to blue-green in color. It grows from 0.5 to 3 feet in height and has deep taproots. Flowers are bright yellow, with long, sharp spines surrounding the flower base. Stems and leaves are covered with soft wool. Basal leaves are deeply lobed and 2-3 inches in length. Upper leaves are sharply pointed and only 0.5-1.0 inches in length.

Reproduction

Yellow Star Thistle is a non-woody annual plant. It flowers from late May to September, sometimes into December or later. With low levels of self-fertilization, this thistle depends on honeybees, bumblebees, and other insects for pollination. Each seed head can produce approximately 35 to 80 seeds. Pappus-bearing seeds are dispersed after the flowers drop their petals, while non-pappus-bearing seeds may remain on the plant well into the winter. Without effective wind dispersal mechanisms, most seeds fall to the ground at the base of the parent plant. Even the plant's pappus-bearing seeds fall within 2 feet of the parent plant 92% of the time.

Dispersal over greater distances is assisted by animals and human beings. Birds such as house finches, goldfinches, pheasants, and quail feed on its seeds and transport them far from the parent plant. Long-distance dispersal of the seeds is also assisted by vehicles, contaminated hay or crop seed, and moving livestock. Germination occurs throughout the rainy season (October - June), with the maximum germination after the early fall rains when the seeds are exposed to moisture, light, and favorable temperatures of 50-68 F (10-20°C). Seeds remain dormant until they have adequate amounts of moisture.

Control

For small patches, manual removal works well. Hand-pulling or weed-whacking is best done before full flowering or viable seed production (May-June). Grazing by cattle, sheep, or goats can reduce abundance, growth, and productivity when done during May-June, after the plants have bolted, but before the buds produce spines. Toxic to horses. Re-seeding with competitive native plant species is an effective long-term sustainable method of outcompeting *C. solstitialis*. Competitive grasses used in re-vegetation programs for thistle management include native perennial grasses, such as big bluegrass (*Poa ampla*) and thick-spike wheatgrass (*Elymus lanceolatus*). The herbicides Clopyralid, Picloram, 2,4-D, Dicamba, Milestone, and Triclopyr have been reported to be effective in controlling Yellow Star Thistle as well.

Tulloch Reservoir Noxious Weeds

Bull Thistle (*Cirsium vulgare*)



Weed Description

The Bull Thistle is a biennial plant 2-5 feet in height. Stems are erect, hairy, spiny-winged, and branched. Lance-shaped leaves are short and broad, usually measuring less than 12 inches in length, and are very wavy or crinkled. They are prickly above but cottony underneath, giving the underside a grayish appearance. The leaves are lobed with 3-4 points per lance-shaped lobe, and each point ends in a long yellow spine with shorter spines between. In the first year, leaves form a rosette. Mature leaves alternate along the stem, causing the stalk to be prickly and winged. Flowers are found at the tips of branches, singly or in clusters. They are pinkish-purple and 1 ½ - 2 inches wide. Flower-head bracts are covered with spines. The pappus-bearing seeds of the Bull Thistle are oblong and straw colored.

Reproduction

The Bull Thistle flowers from June to September. It reproduces solely by seed. Mature plants can produce up to 4,000 seeds each. Seeds are typically 5 mm long and have a downy pappus

making them well suited for wind dispersal. Establishment is promoted by soil disturbance, which increases nutrient, water, and light availability to seedlings and reduces the vigor of competing vegetation

Control

The best control measure for Bull Thistle is to prevent the production and movement of seeds. Cleaning equipment before leaving infested areas, feeding hay that is not contaminated, and planting weed-free seed will prevent the spread of this thistle. Mowing or hand-cutting before the production of viable seeds will also prevent the spread of Bull Thistle. Mowing should be done after the pappus of the earliest seeds displays color and before they turn brown. When digging, the root should be dug at least 2 inches below ground level. Heads that are beyond the bud stage should be selected and placed in a tight container to be buried in a landfill. The Government has approved a biological control for Bull Thistle; however, it may attack other native *Cirsium* thistles. The herbicides 2,4-D Amine, Chlorsulfuron, Picloram, and Dicamba have been reported effective in the control of Bull Thistle when applied during the rosette stage of growth. Other herbicides reported successful in the control of this plant are Metsulfuron, Imazapic, Clopyralid, Milestone, and Triclopyr.

Tulloch Reservoir Noxious Weeds

Klamath Weed (St. John's Wort) (*Hypericum perforatum*)



September, with peak flowering occurring from mid to late June. Plants typically produce an average of 15,000-30,000 seeds each season. Seeds may be produced without fertilization. Developing seed capsules become moist and sticky. These sticky capsules can disperse by wind or water or by adhering to animals and humans. Seeds are hard-coated and remain intact even after being consumed by seed predators. Seeds may remain viable in the soil for up to 10 years. Germination occurs from fall through spring. Brief exposure to fire (212-284° F) often increases germination, while small amounts of calcium may affect the permeability of the seed coat and inhibit germination.

Weed Description

Klamath Weed stands 1 to 4 feet tall and has numerous rust-colored branches. Leaves are green, opposite, oblong-shaped, covered with tiny transparent dots, and are usually no more than an inch in length. Flowers have five separate petals and are bright yellow in color. The petals are about 0.5 inches long and dotted with black glands around the edges of each petal. Yellow colored stamens are arranged in three groups. The seeds are shiny black to brown and approximately 1 mm long. Seeds are often coated with a sticky, gel-like material that assists in dispersal. The taproot of this perennial plant may reach depths of 4 to 5 feet and allows it to survive year-round. Lateral roots typically grow 2 to 3 inches beneath the soil surface.

Reproduction

Klamath Weed is a perennial plant that reproduces by seed and by vegetative sprouts. Root systems are capable of forming buds, which grow into new plants separating from the parent plant. Klamath Weed flowers from June to

Control

Klamath Weed is known to be poisonous to animals, including causing brain lesions in livestock, and is generally avoided by grazers. So, grazing is not recommended for control. However, several beetles, including *Chrysolina hyperici* and *Chrysolina quadragemina*, feed on the foliage and have been used successfully as biological controls. Mechanical removal, such as mowing of Klamath weed, may stimulate vegetative reproduction from the roots. Herbicides that have been reported as effective for control of this *Hypericum* include 2,4-D, Picloram, and Glyphosate.

Tulloch Reservoir Noxious Weeds

Medusa Head (*Taeniantherum* [*Elymus caput-medusae*])



Weed Description

Medusa-head is an aggressive winter annual grass with slender stems. It reaches 6-24 inches in height. Leaf blades are approximately 1-3 mm (<0.1 inches) wide and roll inward at the margins. There are typically 24 blades per stem. The awns or spikes at the tips of the plant are 1-4 inches long, minutely barbed, are compressed into the center when green, and twist apart upon drying. This species matures 2-4 weeks later than most other annual grasses and stands out green against surrounding brown grasses. After producing seeds, Medusa-head turns light gray or tan in color. The seed heads do not break apart as seeds mature.

Reproduction

Medusa-head reproduces by seed. Seeds are dispersed by wind, water, and also by attaching to the coats of animals, machinery, vehicles, and clothing. Medusa-Head flowers in May-June and is predominantly self pollinating. An average of 8-15 seeds are produced per spike in late spring or early summer. Seeds usually disperse by mid-summer and can remain dormant for over six months. Seeds typically germinate after the first

rains in October or November, and the germination rate is high. Germination occurs under a broad temperature range (optimal 10-150 C or 50-59 F). The seeds of this plant are capable of germinating and growing in the dense leaf litter layer, without making contact with the soil. If they suffer desiccation, the primary root dies, but a new root develops if they are moistened again. Seeds can emerge from soil depths of up to 3-4 inches. Medusa-head continues to grow and produce seeds later than most grasses.

Control

Mowing for two consecutive years can help reduce infestations of Medusa-head. Mowing in combination with grazing, was found to be effective in reducing infestations. Heavy grazing by sheep in early spring (when it is still palatable) can assist in controlling it, but animals should be removed before seed heads form to limit dispersal. The stiff awns and hard florets can injure eyes and mouths of grazing animals. Plowing or discing before seeds set are also effective means for control. Revegetation with competitive native species, like Squirreltail grass (*Elymus elymoides*), may prevent Medusa-head from regaining dominance after control treatments. Burning stands of Medusa-head prior to seed dispersal is reported as an effective control measure. The western U.S. endemic crown rot fungus (*Fusarium culmorum*) is a potential biocontrol agent adapted to dry soils. The herbicides Atrazine, Glyphosate, and Paraquat have been reported effective to varying degrees, though they may cause harm to other species.

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Terrestrial Noxious Weed Report – 2026
Attachment G – Resource Agency Consultation and Responses