

## APPENDIX G: Common Control Measures Summary

### Common Control Measures

The following table summarizes common control methods applied target invasive species found in, or in close proximity to, the Forest or Scenic Area. The table provides information about specific herbicides and other control methods that are effective on the target species. These prescriptions would be applied using the Project Design Criteria (PDC) in Section 2.2. These recommendations serve as the basis for all treatment methods proposed and analyzed in this EIS for both known treatment areas as well as treatment areas that will be identified through the Early Detection / Rapid Response Strategy (EDRR). The table was prepared by Linda Mazzu (BLM Botanist) May 2005 and updated by David Lebo (Forest Botanist) and Robin Dobson (Scenic Area Biologist/Ecologist), January/February 2006.

Target Species	General Prescription	Herbicide Options	When/How to Treat with Herbicides
Bohemian knotweed (POBO) Japanese knotweed (POCU6) Giant knotweed (POSA4) Himalayan knotweed (POPO5) Perennials	<ul style="list-style-type: none"> <li>• Herbicide treatment most effective. Use stem injection or foliar spray. Dead canes can be left.</li> <li>• Some manual removal possible for small infestation (1-5 plants). All plant parts should be removed.</li> <li>• Re-vegetate with desirable species if surrounding cover is primarily non-native.</li> </ul>	<ul style="list-style-type: none"> <li>• Glyphosate</li> <li>• Imazapyr</li> <li>• Triclopyr</li> </ul>	<ul style="list-style-type: none"> <li>• Stems &gt; 3/4": Stem injection    Stems &lt; 3/4": Foliar spray</li> <li>• Foliar spray for all stems when using imazapyr and follow-up with stem injection.</li> <li>• Treat June through September</li> <li>• Stem injection should not require revisit, but foliar spray should require at least one.</li> </ul>

Target Species	General Prescription	Herbicide Options	When/How to Treat with Herbicides
<p>Bull thistle (CIVU)                      Spiny plumeless thistle (CAAC)                      Musk thistle (CANU4)</p> <p>Biennial (musk thistle can be a winter annual, annual, or biennial)</p>	<ul style="list-style-type: none"> <li>• Use manual, mechanical or herbicide control or a combination.</li> <li>• Any manual method that severs the root below the soil surface will kill these plants. Effective control requires cutting at the onset of blooming. Treatment before plants are fully bolted results in re-growth. Repeated visits at weekly intervals over the 4 to 7 week blooming period provide most effective control.</li> <li>• Timing of mowing is critical (within 2 days of full flowering for musk thistle).</li> <li>• If herbicides are used, manual treatments could be used for follow-up. Relative amounts of herbicide to manual treatments would decline over time.</li> <li>• Biological controls may be helpful to suppress populations in combination with other methods.</li> <li>• Re-vegetate with desirable species.</li> </ul>	<ul style="list-style-type: none"> <li>• Clopyralid</li> <li>• Picloram</li> <li>• Chlorsulfuron</li> <li>• Glyphosate</li> <li>• Metsulfuron methyl</li> <li>• Triclopyr</li> </ul>	<ul style="list-style-type: none"> <li>• Backpack spray whenever possible.</li> <li>• Apply to rosettes in either the spring or fall.</li> <li>• Yearly revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>
<p>Butter and eggs (LIVU2)                      Dalmation toadflax (LIGEDA)</p> <p>Perennials</p>	<ul style="list-style-type: none"> <li>• Hand pull or dig small populations or when regular volunteers are available. Plants can be left on site, but may reduce germination of desirable species due to mulching effect.</li> <li>• Cutting stands in spring or early summer will eliminate plant reproduction, but not the infestation.</li> <li>• These treatments may take up to ten years due to long term seed viability.</li> <li>• If herbicides are used, manual treatments could be used for follow-up. Relative amounts of herbicide to manual treatments would decline over time.</li> <li>• Re-vegetate with desirable species. Plant communities in good condition may recover without replanting.</li> </ul>	<ul style="list-style-type: none"> <li>• Metsulfuron methyl</li> <li>• Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>• Backpack spray. This species tends to be scattered.</li> <li>• Apply during active growth in spring before bloom or in late summer or fall during re-growth.</li> <li>• Revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank. This control could vary by site. Even after three years of consecutive treatments, control may range widely.</li> </ul>

Target Species	General Prescription	Herbicide Options	When/How to Treat with Herbicides
<p>Canada thistle (CIAR4) Perennial sowthistle (SOAR2)</p> <p>Perennial</p>	<ul style="list-style-type: none"> <li>• Herbicide treatment is most effective.</li> <li>• The only manual technique would be hand cutting of flower heads, which only suppresses seed production.</li> <li>• Mowing may be effective in rare cases if done monthly (this intensity would damage native species).</li> <li>• Covering with plastic tarp may also work for small infestations.</li> <li>• Re-vegetate with desirable species.</li> </ul>	<ul style="list-style-type: none"> <li>• Clopyralid</li> <li>• Picloram</li> <li>• Glyphosate</li> <li>• Chlorsulfuron</li> </ul>	<ul style="list-style-type: none"> <li>• Broadcast spray in dense cover, where dominant plant community is non-native.</li> <li>• Backpack spray whenever possible.</li> <li>• Apply in spring before to rosettes and prior to flowering.</li> <li>• Or apply in fall to rosettes; season is dependent upon herbicide used.</li> <li>• Yearly revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>
<p>Dyer's woad (ISTI)</p> <p>Biennial or perennial</p>	<ul style="list-style-type: none"> <li>• Hand pulling is an effective control in difficult terrain; otherwise, herbicide treatment is most effective.</li> </ul>	<ul style="list-style-type: none"> <li>• Chlorsulfuron</li> <li>• Metsulfuron</li> <li>• Imazapic</li> <li>• Aquatic Label Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>• If infestation is large, broadcast spray in early spring after emergence.</li> <li>• Backpack spray in spring when plants are actively growing.</li> </ul>
<p>English ivy (HEHE)</p> <p>Perennial</p>	<ul style="list-style-type: none"> <li>• Manually remove infestations by removing vines first, than digging root mats from the soil. Vines must be cut at both the shoulder and ankle height, then stripped away from the tree. Work away from the tree pulling out the entire root mat for at least six feet. – Apply herbicide where manual techniques are unsuccessful. Most successful in combination with string trimming.</li> <li>• If herbicides are used, manual treatments could be used for follow-up. Relative amounts of herbicide to manual treatments would decline over time.</li> </ul>	<ul style="list-style-type: none"> <li>• Triclopyr</li> <li>• Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>• Larger stems: Cut and paint anytime.</li> <li>• Foliar spray requires cracking the cuticle of the leaf or string trimming.</li> <li>• Yearly revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>

Target Species	General Prescription	Herbicide Options	When/How to Treat with Herbicides
<p>False brome (BRSY)</p> <p>Perennial</p>	<ul style="list-style-type: none"> <li>Control can be difficult since young plants tend to sprout under salal, braken fern, and other vegetation in many types of forest habitats, including dense conifer forest with closed canopies. False brome is a prolific seed producer, but may produce only a short-lived seed bank (1 year) although further research is needed to verify.</li> <li>Repeated mowing each season (2-3 times) along trails and roads before seed set occurs (in July) can effectively control the spread of existing populations. Repeated mowing each season is needed to remove all seed heads.</li> <li>Repeated grazing can effectively control populations.</li> <li>Herbicide applications are currently the most effective control treatment.</li> </ul>	<ul style="list-style-type: none"> <li>Glyphosate formulation without surfactant</li> </ul>	<ul style="list-style-type: none"> <li>Glyphosate formulation with surfactant, surprisingly, was <b>not</b> effective in treatments done at Oregon State University Research Forests. Difference in results for the two glyphosate formulations may have been due to different application rates and timing of application.</li> <li>Treat before seed set occurs (usually in July). Seed heads can remain on plants through November or December.</li> </ul>
<p>Garlic mustard (ALPE4)</p> <p>Biennial (sometimes flowers first season)</p>	<ul style="list-style-type: none"> <li>Hand pulling is the simplest and most effective approach for managing small or isolated infestations. It is important to remove the entire plant since new plants can sprout from root fragments. All pulled plants should be removed from the site, placed in bags, and disposed of as seed ripening continues even after plants are pulled. Seeds can remain viable in the soil for up to five years, so it is important to pull out <b>all</b> garlic mustard plants in an area every year until the seed bank is exhausted and seedlings no longer appear.</li> <li>Herbicide treatment is the most effective control for larger populations.</li> <li>Researchers are investigating the potential effectiveness of biological control agents (weevils and leaf-feeding beetles).</li> </ul>	<ul style="list-style-type: none"> <li>Glyphosate</li> <li>Triclopyr</li> </ul>	<ul style="list-style-type: none"> <li>Glyphosate can be applied at any time of the year, but is most effective when applied in the spring or fall when the plant is actively growing and absorbs the herbicide through growing leaf tissue or bark.</li> <li>Glyphosate is a non-selective herbicide and kills all plants. Applications in the fall may reduce harm to native herbaceous plants, which tend to be more dormant at that time of year.</li> </ul>

Target Species	General Prescription	Herbicide Options	When/How to Treat with Herbicides
<p>Himalayan blackberry (RUDI2) Cutleaf blackberry (RULA)</p> <p>Perennial (canes die off annually)</p>	<ul style="list-style-type: none"> <li>• Use a combination of herbicides and manual and/or mechanical treatments. Usually mechanical removal of large biomass in the summer (using a mower, brush hog or brush claw), followed by manual removal of re-sprouting canes and roots, then herbicide treatment of new growth in the fall/winter is most effective. The massive root crown must be fully dug out at some point if using only manual/mechanical techniques. The cultural technique of grazing with goats is also a technique proving successful if goats can be confined to the blackberry area.</li> <li>• If herbicides are used, manual treatments could be used for follow-up. Relative amounts of herbicide to manual treatments would decline over time.</li> <li>• Re-vegetate with desirable species.</li> </ul>	<ul style="list-style-type: none"> <li>• Triclopyr</li> <li>• Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>• Cut and paint larger canes.</li> <li>• Broadcast spray is possible after canes are cut if non-targets are not an issue.</li> <li>• Backpack spray whenever possible.</li> <li>• Yearly revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>
<p>Houndstongue (CYOF)</p> <p>Perennial</p>	<ul style="list-style-type: none"> <li>• Hand pull or dig for small populations. Entire root system must be removed. Plants could be left on site if no seed pods are present (seed can remain viable for more than one year).</li> <li>• These treatments may take up to five years.</li> <li>• If herbicides are used, manual treatments could be used for follow-up. Relative amounts of herbicide to manual treatments would decline over time.</li> <li>• Re-vegetate with desirable species.</li> </ul>	<ul style="list-style-type: none"> <li>• Metsulfuron methyl</li> <li>• Imazapic</li> <li>• Picloram</li> <li>• Chlorsulfuron</li> <li>• Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>• Roadsides: Broadcast spray in dense cover, where dominant plant community is non-native.</li> <li>• Large non-sensitive sites: ATV broadcast spray</li> <li>• Other sites: Backpack spray</li> <li>• Apply during active growth, preferably basal rosette stage.</li> <li>• Revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>

Target Species	General Prescription	Herbicide Options	When/How to Treat with Herbicides
Leafy spurge (EUES)  Perennial	<ul style="list-style-type: none"> <li>• Leafy spurge is one of the first plants to emerge in the spring. Seed germination is high and seeds can remain dormant for 5-8 years in soils, although most seeds germinate within 2 years. Seeds are dispersed from mid- to late-July. They are explosively discharged (up to 16 feet), can float in and spread by water, and be dispersed by birds.</li> <li>• Repeated herbicide treatment (for 5-10 years or possibly longer) is the most effective control.</li> <li>• Prescribed fire in conjunction with herbicide treatment can be an excellent control in open areas. Results are very good whether burning is followed by spraying or vice versa, but, as with herbicide application alone, repeated treatments are needed for 5-10 years or longer.</li> <li>• Some weed extension services support repeated mowing or hand cutting, in conjunction with herbicide application to control leafy spurge; however, others consider mechanical and manual treatment ineffective because of the plant's extensive root system and ability to resprout. It is also capable of regrowing from belowground vegetative tissue.</li> <li>• Repeated sheep grazing, reportedly, has proven effective on ranches in Montana.</li> <li>• Biological controls (e.g., spurge hawkmoth) have been released, but are not effective by themselves in controlling leafy spurge.</li> </ul>	<ul style="list-style-type: none"> <li>• Glyphosate</li> <li>• Picloram</li> </ul>	<ul style="list-style-type: none"> <li>• Timing of application is important and varies by herbicide. Apply glyphosate in spring to prevent flowering and then again in early fall. An alternative recommendation is to apply glyphosate after seed set (mid-summer) <b>or</b> after fall regrowth but before a killing frost.</li> <li>• Apply picloram in spring (mid to late June) during seed development and then again in the fall (late September) during fall re-growth. Some research stresses the importance of two herbicide applications in one season: once in the spring to prevent seed development and again in the fall to promote translocation of the herbicide to the roots.</li> <li>• Leafy spurge cannot be controlled with a single herbicide treatment. Continuous monitoring and reapplication of herbicide(s) must continue for at least 5-10 years and, possibly, longer.</li> </ul>

Target Species	General Prescription	Herbicide Options	When/How to Treat with Herbicides
Meadow hawkweed (HIPR) Orange hawkweed (HIAU) Common hawkweed (HIVU) Perennials	<ul style="list-style-type: none"> <li>• Herbicide treatment is most effective.</li> <li>• Some manual removal possible for small infestations. All plant parts should be removed.</li> <li>• Covering with plastic tarp may also work for small infestations.</li> <li>• Nitrogen fertilization after treatment will encourage native plant growth if done in the spring.</li> <li>• Re-vegetate with desirable species.</li> </ul>	<ul style="list-style-type: none"> <li>• Clopyralid</li> <li>• Picloram</li> <li>• Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>• Backpack spray whenever possible.</li> <li>• Broadcast spray in areas of dense cover, where dominant plant community is non-native.</li> <li>• Treat in spring after most basal leaves emerge but before buds form. Fall treatment may also be effective, but research is limited.</li> <li>• Yearly revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>
Mediterranean sage (SAAE) Biennial	<ul style="list-style-type: none"> <li>• Best control is with current biological control; otherwise, herbicide treatment is effective.</li> </ul>	<ul style="list-style-type: none"> <li>• Clopyralid</li> <li>• Picloram</li> <li>• Aquatic Label Glyphosate for riparian/high water areas</li> </ul>	<ul style="list-style-type: none"> <li>• Backpack spray in late spring.</li> </ul>
Medusahead rye (TACA8) Winter annual	<ul style="list-style-type: none"> <li>• Repeated cutting/mowing with herbicide treatment is effective.</li> <li>• Manual removal can be effective with small populations.</li> <li>• A combination of prescribed fire (in June), herbicide application, and reseeding with native grasses is considered highly effective. Repeated treatments may be needed</li> <li>• Grazing supplemented by herbicide application and reseeding can also be effective.</li> <li>• No known or approved biological control agents.</li> <li>• Active restoration (seeding of a competitive desirable species) is important.</li> </ul>	<ul style="list-style-type: none"> <li>• Glyphosate</li> <li>• Imazapic</li> </ul>	<ul style="list-style-type: none"> <li>• Treatment should be done before seed formation or during the fall through early winter.</li> </ul>

Target Species	General Prescription	Herbicide Options	When/How to Treat with Herbicides
Perennial peavine (LALA4) Herb robert (GERO)  Perennial	<ul style="list-style-type: none"> <li>Hand pulling is most effective if the entire plant is pulled. Can be left on site.</li> <li>Care must be taken not to pull desirable vegetation which is intermingled usually.</li> <li>If herbicides are used, manual treatments could be used for follow-up. Relative amounts of herbicide to manual treatments would decline over time.</li> </ul>	<ul style="list-style-type: none"> <li>Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>On large infestations: Backpack spray in the early spring.</li> <li>Yearly revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>
Perennial pepperweed (LELA2)  Perennial	<ul style="list-style-type: none"> <li>Manual removal is not effective because of the extent of the plant's underground rooting system.</li> <li>Tillage spreads rhizomes that form new plants.</li> <li>Mowing at the flower bud growth stage can be effective when integrated with herbicide treatment(s).</li> <li>Biological control is limited because of the inability of biological control insects to select between <i>Lepidium</i> species, several of which are endangered.</li> <li>Herbicide use is the most effective treatment.</li> </ul>	<ul style="list-style-type: none"> <li>Glyphosate</li> <li>Metsulfuron methyl</li> <li>Chlorsulfuron</li> </ul>	<ul style="list-style-type: none"> <li>Glyphosate is most effective when applied to budding plants in the fall but before the first hard frost. Fall and spring applications are more effective than fall applications alone for large or severe infestations.</li> <li>Metsulfuron and chlorsulfuron are effective when applied from flower bud to early flowering.</li> </ul>
Policeman's helmet (also known as ornamental jewelweed) (IMGL)  Annual	<ul style="list-style-type: none"> <li>Hand pulling is effective for small infestations of this shallow-rooted plant.</li> <li>Mechanical treatment (mowing and cutting) is an effective control measure, but plants can resprout later, so mechanical treatment is not a long-term solution.</li> <li>Herbicide treatment should only be considered for larger infestations.</li> </ul>	<ul style="list-style-type: none"> <li>Aquatic Labeled Glyphosate</li> <li>Triclopyr</li> </ul>	<ul style="list-style-type: none"> <li>Herbicide treatment should be done before plants flower and produce seeds.</li> <li>It's important to practice active restoration and re-vegetate the site following herbicide treatment (especially with the use of glyphosate, which is a non-selective herbicide that kills all vegetation) to prevent re-infestation.</li> </ul>
Puncturevine (TRTE)  Annual	<ul style="list-style-type: none"> <li>Herbicide treatment is the most effective control.</li> <li>Biological control agents (insects) may be effective against puncturevine and are being tested.</li> </ul>	<ul style="list-style-type: none"> <li>Chlorsulfuron</li> <li>Picloram</li> <li>Imazapic</li> <li>Aquatic Label Glyphosate for riparian/high water areas</li> </ul>	<ul style="list-style-type: none"> <li>Backpack spray young plants.</li> </ul>

Target Species	General Prescription	Herbicide Options	When/How to Treat with Herbicides
Purple loosestrife (LYSA2)  Perennial	<ul style="list-style-type: none"> <li>• Hand removal of small populations or isolated stems is possible, but only if entire rootstock is removed. All plant parts must be removed from site.</li> <li>• The only other technique would be hand cutting of flower heads, which only suppresses seed production.</li> <li>• Herbicide treatment is most effective.</li> <li>• Re-vegetate with desirable species.</li> </ul>	<ul style="list-style-type: none"> <li>• Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>• Larger stems: Cut and paint high up stem under inflorescence.</li> <li>• A glove technique for hand wiping could be used. Wick up the top 1/3 of plant after flower heads are removed.</li> <li>• Yearly revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>
Reed canarygrass (PHAR3)  Perennial	<ul style="list-style-type: none"> <li>• Use a combination of herbicides and manual, mechanical, cultural or prescribed fire treatments. Manual treatments or mowing are only practical for small stands when multiple entries per year can be made. The entire population must be removed 2 to 3 times per year for at least five years.</li> <li>• Discing or plowing can be effective especially after herbicide treatment.</li> <li>• Prescribed burning several weeks after herbicide treatment or in the late fall could also be effective.</li> <li>• Covering populations with black plastic may be effective if shoots are not allowed to grow beyond tarps. This technique could take over two years to be effective.</li> </ul>	<ul style="list-style-type: none"> <li>• Sulfometuron methyl</li> <li>• Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>• Backpack spray whenever possible.</li> <li>• Broadcast spray in dense cover, where dominant plant community is non-native.</li> <li>• Apply in early spring when just sprouting before other wetland species have emerged.</li> <li>• Yearly revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>
Rush Skeletonweed (CHJU)  Perennial	<ul style="list-style-type: none"> <li>• No manual techniques recommended.</li> <li>• Frequent mowing of plants infested with gall mites by decrease the rate of spread.</li> <li>• Re-vegetate with desirable species.</li> </ul>	<ul style="list-style-type: none"> <li>• Clopyralid</li> <li>• Picloram</li> <li>• Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>• Broadcast spray in dense cover, where dominant plant community is non-native.</li> <li>• Backpack spray whenever possible.</li> <li>• Apply to rosette in late fall or up to early bolting stage in spring.</li> <li>• Application may be difficult due to lack of leaf surface.</li> <li>• Plants less than 5 years old respond best.</li> <li>• Aggressive repeated treatments will be necessary.</li> <li>• The number will be dependent on the herbicide used and the seed bank.</li> </ul>

Target Species	General Prescription	Herbicide Options	When/How to Treat with Herbicides
Scotch broom (CYSC4)  Perennial	<ul style="list-style-type: none"> <li>• Hand pull, cutting, weed wrenching or digging small populations or when regular volunteers are available. Hand pulling or weed wrenching is most effective in moist soils. Plants can be left on site if no seed pods are present (seed can remain viable for more than one year). Cutting will require multiple visits in one year.</li> <li>• These treatments may take up to ten years due to long term seed viability.</li> <li>• If herbicides are used, manual treatments could be used for follow-up. Relative amounts of herbicide to manual treatments would decline over time.</li> <li>• Re-vegetate with desirable species.</li> </ul>	<ul style="list-style-type: none"> <li>• Triclopyr</li> <li>• Glyphosate</li> <li>• Clopyralid</li> <li>• Picloram</li> </ul>	<ul style="list-style-type: none"> <li>• Larger plants: Cut and paint</li> <li>• Smaller plants: Backpack spray where hand pulling or weed wrenching is not feasible.</li> <li>• Apply during active growth preferably in the spring to young plants.</li> <li>• Yearly revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>
Scotch thistle (also known as Scotch cottonthistle) (ONAC)  Biennial	<ul style="list-style-type: none"> <li>• Herbicide treatment is the most effective control.</li> </ul>	<ul style="list-style-type: none"> <li>• Picloram</li> <li>• Chlorsulfuron</li> <li>• Clopyralid</li> <li>• Metsulfuron</li> <li>• Aquatic Label                      Glyphosate for                      riparian/high water                      areas</li> </ul>	<ul style="list-style-type: none"> <li>• Backpack spray in the spring before plants bolt or during the fall on the rosettes.</li> </ul>
Shining geranium (GELU)  Annual	<ul style="list-style-type: none"> <li>• Hand pulling can be effective if the entire plant is pulled. Can be left on site.</li> <li>• Care must be taken not to pull desirable vegetation which is intermingled usually.</li> <li>• If herbicides are used, manual treatments could be used for follow-up. Relative amounts of herbicide to manual treatments would decline over time.</li> </ul>	<ul style="list-style-type: none"> <li>• Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>• On large infestations: Backpack spray in the early spring.</li> <li>• Yearly revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>

Target Species	General Prescription	Herbicide Options	When/How to Treat with Herbicides
Spotted knapweed (CEBI2) Diffuse knapweed (CEDI3) Meadow knapweed (CEPR2) Brownray knapweed (CEJA5) Black knapweed (CENI2) Russian knapweed (CERE6) Squarrosa knapweed (CESQ) Yellow star thistle (CESO3) Biennials or perennials	<ul style="list-style-type: none"> <li>• Hand pull or dig small populations or when regular volunteers are available.</li> <li>• Remove all plant parts from the site. Multiple entries per year are required.</li> <li>• Mowing is possible, but timing is critical.</li> <li>• These treatments may take up to ten years due to long term seed viability.</li> <li>• If herbicides are used, manual treatments could be used for follow-up. Relative amounts of herbicide to manual treatments would decline over time.</li> <li>• Re-vegetate with desirable species.</li> </ul>	<ul style="list-style-type: none"> <li>• Clopyralid</li> <li>• Picloram</li> <li>• Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>• Roadsides: Broadcast spray in dense cover, where dominant plant community is non-native.</li> <li>• Other sites: Backpack spray</li> <li>• Treat in spring before bud stage.</li> <li>• Yearly revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>
St. Johnswort (HYPE) Perennial	<ul style="list-style-type: none"> <li>• Hand removal of small populations or isolated stems is possible, but repeated treatments will be necessary as lateral roots give rise to new plants. Pulled or dug plants must be removed from the area and burned.</li> <li>• These treatments may take up to ten years due to long term seed viability.</li> <li>• Biological controls will most likely not be effective in damp, cool climates.</li> <li>• Re-vegetate with desirable species.</li> </ul>	<ul style="list-style-type: none"> <li>• Metsulfuron methyl</li> <li>• Picloram</li> <li>• Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>• Backpack spray whenever possible.</li> <li>• Broadcast spray larger areas of dense cover, where dominant plant community is non-native.</li> <li>• Apply metsulfuron methyl when plants are fully emerged and in active growth.</li> <li>• Apply picloram in early growth stages before bloom.</li> <li>• Yearly revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>

Target Species	General Prescription	Herbicide Options	When/How to Treat with Herbicides
<p>Tansy ragwort (SEJA) Common tansy (TAVU)</p> <p>Biennial or perennial</p>	<ul style="list-style-type: none"> <li>• Hand pulling is effective if done in moist soils. This is most effective after the population has been brought under control.</li> <li>• Mowing is the most common technique and is effective if done prior to flowering.</li> <li>• These treatments may take up to ten years due to long term seed viability.</li> <li>• Ensure biological controls are present nearby or request their introduction.</li> <li>• If herbicides are used, manual treatments could be used for follow-up. Relative amounts of herbicide to manual treatments would decline over time.</li> <li>• Re-vegetate with desirable species.</li> </ul>	<ul style="list-style-type: none"> <li>• Metsulfuron methyl</li> <li>• Picloram</li> <li>• Clopyralid</li> <li>• Glyphosate</li> </ul>	<ul style="list-style-type: none"> <li>• Roadsides: Braodcast spray in dense cover, where dominant plant community is non-native</li> <li>• Large non-sensitive sites: ATV broadcast spray</li> <li>• Other sites: Backpack spray</li> <li>• During active growth, up through flowering stage.</li> <li>• Revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>
<p>Water hemlock (CIMA2)</p> <p>Biennial or perennial</p>	<ul style="list-style-type: none"> <li>• Hand grubbing (digging and pulling) and herbicide treatment are the best control methods.</li> </ul>	<ul style="list-style-type: none"> <li>• Aquatic Labeled Glyphosate</li> <li>• Picloram</li> </ul>	<ul style="list-style-type: none"> <li>• Backpack spraying plants in the late spring or early summer, when plants are growing, is the best time to apply herbicide(s).</li> </ul>
<p>Whitetop (CADR)</p> <p>Perennial</p>	<ul style="list-style-type: none"> <li>• Diligent hand pulling or digging can control small infestations, but plants must be completely removed within 10 days after emergence throughout growing season for two to four years</li> <li>• Mowing followed a month later by herbicide may be effective. Mowing must be done during full flowering.</li> <li>• If herbicides are used, manual treatments could be used for follow-up. Relative amounts of herbicide to manual treatments would decline over time.</li> <li>• Re-vegetate with desirable species.</li> </ul>	<ul style="list-style-type: none"> <li>• Metsulfuron methyl</li> <li>• Chlorsulfuron</li> <li>• Sulfometuron methyl</li> <li>• Glyphosate</li> <li>• Picloram</li> </ul>	<ul style="list-style-type: none"> <li>• Backpack spray whenever possible.</li> <li>• Broadcast spray in dense cover, where dominant plant community is non-native.</li> <li>• Apply at pre-bloom to bloom growth stage or to rosettes in the fall</li> <li>• Yearly revisits will be necessary; the number of which is dependent on the herbicide used and the seed bank.</li> </ul>