



**U.S. Department of the Interior  
Bureau of Indian Affairs**

Confederated Tribes of the Umatilla Indian Reservation

# **Integrated Weed Management Plan**

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# EXECUTIVE SUMMARY

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## Introduction

The Umatilla Indian Reservation (UIR) established by the Treaty of June 9, 1855, 12 Statute 945, between the United States and the Cayuse, Umatilla, and Walla Walla Tribes lies along the foothills of the Blue Mountains in northeastern Oregon immediately east of Pendleton. The UIR covers a variety of terrain and land uses, including rough uneven forests and rangelands, gently sloping agricultural fields, and long narrow floodplains supporting dense riparian vegetation. The Blue Mountains border the UIR to the east and the City of Pendleton lies to the west.

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) continue to depend on natural resources for development of a strong, diversified economy while preserving cultural, subsistence, and aesthetic values. Fishing and hunting, as well as the gathering of roots and berries, are deeply rooted within the Tribal social structure. For CTUIR to exercise Tribal Treaty rights and express cultural values, the watersheds and floodplains must be ecologically healthy and capable of sustaining robust communities of First Foods in part supported by a healthy structure, pattern, and function of vegetation. The harvesting, processing, manufacturing, and marketing of farm, forest, livestock, and mineral products provide income to landowners and the CTUIR. Together with the Wildhorse Resort and Casino, use of natural resources form the foundation of the economy of the UIR.

Approximately two-thirds of the UIR is infested at some level with non-native plant species. Invasive weeds compete with native vegetation on the UIR and threaten the vitality of native ecosystems and the cultural values they support. Before development of this plan, weed data were collected during some invasive weed control projects and reported to comply with specific grant funding sources; however, the dataset was incomplete. Also, the data had not been collected using similar methods. Therefore, the CTUIR did not have a detailed representation of the conditions and status of invasive weed presence throughout the UIR.

## Purpose and Need

The Integrated Weed Management Plan (IWMP) and its associated activities were needed because invasive weeds displace wildlife and native plants, reduce biodiversity, decrease forage and crop production, cause injury to humans and animals, alter soil nutrients and water cycling, increase fire danger, and decrease aesthetic value. Within the reservation boundary, the checkerboard land ownership pattern poses challenges for invasive weed management. Privately owned lands within the UIR, along with rights-of-way and easements, including railroad and motorized vehicle transportation networks, act as vectors for the introduction and expansion of invasive weeds to the UIR. The CTUIR invasive weed control efforts to-date have focused on removing or controlling non-native or invasive weeds on the UIR range and forestlands. These conditions represented the need for a more effective invasive weed control program.

The overarching goal of the IWMP is to reverse the trend of invasive weed establishment and expansion throughout the UIR to foster healthy natural ecosystems and protect and enhance rangeland, agriculture, forest lands, riverine floodplains, and associated riparian systems in support of the First Food Missions for the perpetual cultural, economic, and sovereign benefit of the CTUIR in a way that emphasizes time and cost efficiencies.

## Issues and Concerns

A preliminary list of issues and concerns relating to invasive weeds and weed management were identified during a meeting of an Interdisciplinary Team (IDT) comprised of CTUIR staff representing the natural resources, office of information technology, economic and community development, public works, and planning departments on July 20, 2017. These issues and concerns were refined during a subsequent IDT meeting held on October 12, 2017. Input was also received by the Fish and Wildlife Commission, Cultural Resource Committee, Economic Community Development Committee, Tiicham Conservation District, Land Protection Planning Commission, and Water Resources Commission. Additionally, input was solicited through mail out to CTUIR membership and a website posting on August 18, 2017. All input received was reviewed, combined, and summarized to generate the list of issues and concerns being used to inform the development of the IWMP.

As a result of these efforts, the IDT identified issues and concerns associated with the following categories as significant to the development of the IWMP:

- (1) Invasive Weed Management
- (2) Water Quality and Fish Habitat
- (3) Wildlife and Wildlife Habitat
- (4) Threatened and Endangered Plant and Wildlife Species
- (5) Cultural Resources and Traditional Uses
- (6) Fire
- (7) Climate Change
- (8) Socioeconomic Factors
- (9) Public Health and Safety

## Management Direction

The CTUIR will implement an integrated weed management strategy involving multiple weed management methods, including education, prevention, inventory, coordination, treatment, restoration, and monitoring, as funding allows. The goal of integrated weed management is to maximize effectiveness while minimizing the adverse environmental, economic, and social impacts associated with weed management. Integrated weed management allows a combination of one or more methods, which is typically more effective than a single type. An integrated weed management strategy also will allow the CTUIR the flexibility to select and implement the weed management strategies deemed most viable and effective based on the specific weed species targeted for treatment and site-specific conditions.

The integrated weed management strategy under the IWMP includes prioritizations and restrictions for treatment activities. Because achieving complete eradication of all invasive weeds within the IWMP management area is not realistic, the activities include a prioritization strategy for treatment to guide an efficient, effective, and ecologically based approach to invasive weed management. The IWMP also includes some restrictions, primarily related to the use of pesticides, treatment near water, and treatment near First Food harvest areas necessary to achieve the goals and objectives identified during the scoping and alternative development process.

The land ownership patterns on the UIR pose challenges to the CTUIR with respect to weed management and implementing authority throughout the IWMP management area. The following elements of the

IWMP and associated best management practices (BMP) and standard operating procedures (SOP) apply to all projects and actions that take place within the IWMP management area, even those not performed by the CTUIR if the projects or actions require a conditional use permit from the CTUIR. Project or actions are required to demonstrate compliance with all CTUIR management plans, including the IWMP as a condition of approval.

## Education

Education and awareness are important aspects of integrated weed management. All individuals responsible for conducting weed treatments within the IWMP management area will be adequately trained and educated on proper, effective weed control methods. Additionally, the CTUIR will provide education and outreach opportunities for the public. Increasing awareness of what invasive weeds are, what they look like, how and when they spread, and the threat they pose will help the public, CTUIR staff, and weed management contractors understand the importance of long-term weed management and how to select and implement the most appropriate weed management methods.

### Public Education and Outreach

CTUIR will promote education and awareness to the public by:

- Posting general weed information on the CTUIR website, including the weed field guide, CTUIR weed list, weed management fact sheets and frequently asked questions, and the IWMP.
- Posting signage and notices of when and where herbicides are applied to prevent collecting plants during or immediately after herbicide treatments.

The following topics will be covered:

- Timing treatment activities to avoid the period when weeds are in seed to prevent additional spreading.
- What the priority weed species are and what they look like.
- What the most problematic weed vectors are, where they are located, and what actions and behaviors can help to avoid weeds spreading from identified vectors.
- How to employ better, effective weed control, including how to control weeds, what to look for, and potential species that can be planted that help keep weeds at bay.
- Proper waiting time to collect plants/plant parts after herbicides have been applied.
- Whether post-treatment waiting times vary by herbicide, plant species or plant part (e.g., leaves, stems, roots).

### Education and Training for CTUIR Staff and Contractors

The CTUIR will provide an annual training for all CTUIR staff and contractors that perform weed treatment activities within the IWMP management area. The training would cover the IWMP; specific topics may include:

- How to select appropriate treatment methods on a site-specific basis to minimize harming or killing non-target plants.
- The importance of treating weeds when they are not in seed to avoid additional spread.
- Notification protocol for treating weeds on fee or allotted lands.
- Proper use and application of herbicides, including what chemicals are allowed, use of personal protective equipment, appropriate storage, applicable laws and responsibilities as an applicator, and licensing requirements.
- Weed species prioritization according to the most recent CTUIR invasive weed list.

- Priority management areas and their appropriate treatment methods.
- Weed and native plant identification.

## Prevention

The most cost and time effective way to control invasive weeds is to prevent them from ever establishing. Education and awareness efforts as described above are one form of prevention. Additionally, the CTUIR will incorporate prevention efforts into the IWMP through BMPs associated with ground-disturbing activities and restoration and revegetation that will minimize the potential for weeds to spread, become established, or be transported as a result of projects and maintenance activities within the IWMP management area. BMPs focus on use of weed free material, cleaning equipment and clothing, minimizing disturbed areas, and inspecting equipment and work areas and will be followed for all activities performed by the CTUIR as well as activities within the IWMP management area requiring a conditional use permit from the CTUIR that result in ground disturbance.

## Inventory

Information on the presence, location, and distribution of invasive weeds is key to planning and prioritizing management efforts for maximum effectiveness and efficiency. The CTUIR has a limited comprehensive inventory of invasive weeds and, therefore, does not have a complete picture of the conditions of invasive weeds throughout the UIR. A comprehensive invasive weed inventory of the entire IWMP management area is needed to properly plan and treat invasive weeds and provide a baseline condition to understand the change in invasive weeds throughout the UIR as the IWMP is implemented. This, however, is prohibitively expensive and only viable if the CTUIR obtains funding specifically to perform the inventory. The CTUIR will seek possible funding mechanisms for the inventory. The inventory will gather the information listed below, which will be managed as a GIS database and updated regularly through ongoing monitoring efforts:

- All weed species present on the UIR
- Locations of existing infestations
- Acreage of infestations
- Density of weeds within the infestations
- General plant community characteristics

The CTUIR will also collect weed data as part of the monitoring element of this plan. Until funding is acquired to perform the reservation-wide inventory, the data collected as part of the monitoring effort will be added to the GIS database currently being managed for weeds. Data from the GIS weed management database will be used as appropriate, to plan and prioritize weed management efforts.

## Coordination

Coordination between all individuals and departments that play a role in weed management throughout the IWMP management area is a key element of integrated weed management. All CTUIR departments will use the IWMP as a guide for planning and implementing weed management activities throughout the IWMP management area. CTUIR will also coordinate with outside agencies and organizations as appropriate, such as Umatilla County, weed districts, and universities. An annual coordination meeting will be held each spring, attended by a minimum of one representative within each CTUIR department that treats invasive weeds, either directly or through contractors, as part of its responsibilities. Additionally, the THPO, a wildlife biologist, plant ecologist, and fisheries biologist will attend the annual coordination meeting to provide input regarding sensitive resources that could be affected by weed management activities. The purpose of the annual coordination meeting is to coordinate planned weed

treatment activities for the upcoming year to avoid redundancy, collaborate, and share information and resources between departments. Topics discussed at the meeting may include but not be limited to:

- A summary of the status of invasive weed coverage and management, using data stored in the GIS database.
- Review of the current CTUIR weed list and priority weed species and treatment areas.
- Discussion of available funding for weed management activities for the upcoming year.
- Discussion of weed treatment projects planned or proposed for the upcoming year.

## **Treatment**

### **Treatment Options**

Successful long-term invasive weed control will require a combination of different treatment methods. The specific combination of treatment methods selected will be tailored to the target weed species, the invasive weed infestation size and location, types of desirable vegetation present, cost, management goals at the treatment site, and presence of any sensitive resources. To prevent adverse effects from invasive weed treatments, selection of treatment methods will prioritize the most effective approach that poses the least risk to humans and natural and cultural resources.

The primary treatment methods available for invasive weed control include the following:

- manual (e.g., pulling and grubbing)
- mechanical (e.g., use of chainsaws, mowers, or weed eaters)
- biological (introducing biological control agents)
- targeted grazing by livestock
- prescribed fire
- herbicide application

A description of each treatment method is provided below, along with tips and guidelines for appropriate implementation of each treatment method for optimal results. All treatment methods will be implemented by the CTUIR for weed management consistent with the BMPs and SOPs.

### **Manual Treatments**

Manual treatment methods such as hand pulling, digging, and grubbing can be effective for controlling some invasive weeds, particularly annual and tap-rooted species in relatively small infestations that do not have an established seed bank. Although labor and time intensive, manual treatments typically cause minimal environmental impact. The key to effective manual treatment is to remove as much of the root as possible while minimizing soil disturbance; otherwise, new sites will be created that are ideal for establishment of new seedlings or invasion by additional weeds. Manual treatments are often ineffective for the control of perennial or rhizomatous species or those with deep and/or easily broken roots. Remaining root fragments have the potential to resprout; and for some species, including rush skeletonweed, hand pulling can increase the number of plants in an infestation.

If a weed seed bank is already established, manual treatments may need to be conducted several times annually. If new seedlings sprout after the first manual treatment is completed, additional treatments may be needed to prevent the weed from re-establishing, which can make manual treatment of invasive weeds in remote locations unpractical. Manual treatments are most practical for small infestations or if a large pool of labor is available. Manual treatments can also be used in combination with other treatments. For example, shrubs can be pulled and cut, and resprouts and seedlings can later be treated with herbicides.

## **Mechanical Treatments**

Mechanical treatments rely on the use of weed trimmers, chainsaws, masticators, and mowers. Weed trimmers and mowers can be used to prevent invasive weeds from becoming fire hazards. Mowing can be used to create fuel breaks in invasive weed infestations along roads in areas prone to wildfires. Chainsaws and masticators can be used to cut and scatter large shrubs or small trees, such as Himalayan blackberry and wild rose.

The most effective time to mow invasive weeds is when desired plants are dormant, and the weeds have reached the flowering stage. Mowing plants too early will allow them to re-grow. Mowing will be avoided when weeds are seeding as it can facilitate seed dispersal, and during the migratory bird nesting season to protect ground-nesting birds.

For perennials, mechanical treatments followed by herbicide application to the re-growth in the fall can stress weeds and provide desirable vegetation a competitive edge. For example, mechanical removal of Himalayan blackberry with chainsaws or an excavator-mounted masticator in the summer, followed by herbicide application in the fall, has been an effective tool for restoring native vegetation to riparian areas along Isquilktpé Creek.

## **Biological Control**

Biological control refers to the intentional release of organisms, including plant-eating insects, nematodes, mites, or pathogens that attack specific invasive weed species. Biological control agents are used to manage invasive weed populations by reducing the population to an acceptable background level, by stressing target plants, and reducing competition with desirable plant species. While biological control agents are not effective for eradicating weed infestations, they can reduce populations below damaging thresholds and hinder further spread. Biological control agents are most effective for long-term control of dense infestations that occur over large areas and for situations when other control options are limited. Biological controls can also be integrated effectively with other control methods. For example, they can be used to reduce the interiors of large infestations while treating outlying satellite occurrences and the perimeters of the large infestations with herbicides.

Of the invasive weeds known to occur in the IWMP management area, biological control agents are available for bull thistle, Canada thistle, Dalmatian toadflax, diffuse knapweed, rush skeletonweed, spotted knapweed, St. Johnswort, and yellow starthistle.

## **Targeted Grazing**

Targeted grazing for invasive weed management aims to give desirable vegetation a competitive advantage over invasive weeds. While targeted grazing may not eradicate invasive weeds, it can be an effective weed management tool if timed correctly. The season and duration of grazing should be timed to remove seed-producing structures before viable seeds are produced. Grazing must also be seasonally timed for when the targeted invasive weeds are most palatable to livestock and to minimize effects on desirable vegetation. To improve competition with invasive weeds, desirable vegetation must have adequate time to recover between grazing periods.

Sheep, goats, and cattle can be used for targeted grazing. Sheep and goats will preferentially eat broadleaf plants, while cattle will preferentially graze grasses. Sheep and goats have been used to control several species of invasive weeds in the Northwest, including leafy spurge, yellow starthistle, and Russian knapweed. Goats can be used to remove dead weed litter and seed from fence lines and other areas to minimize weed spread. Cattle grazing early in the season prior to seed set can help limit the spread of



invasive annual grasses. After grazing weed seed, livestock should be fed other forage for four or five days before moving to other pastures.

The use of targeted grazing can be an effective tool in areas with limited access, steep slopes, or other areas where it is impractical to apply herbicides. Similar to other weed treatment methods, targeted grazing is often more effective when used in combination with other treatments. For example, targeted grazing that results in removal of weed litter or thatch can increase the effectiveness of follow-up herbicide treatment.

### **Prescribed Fire**

Similar to targeted grazing, prescribed fire can be used to promote desirable vegetation at the expense of invasive weeds. Knowledge of the morphology, phenology, and life history of the target weed, as well as the desirable vegetation, is needed to develop an effective burn prescription. Prescribed fire is often most effective when conducted just before flower or seed set or at the young seedling or sapling stage for trees and shrubs. Prescribed fire can also be an effective tool for removing seed and thatch in dense, invasive annual grass infestations prior to herbicide application. After performing a prescribed burn, the burn area should be revegetated with native species to prevent invasive weeds from re-establishing. The use of prescribed burns for controlling invasive weeds will be used on a case by case basis. Burn plans will continue to be developed for each prescribed burn that will consider impacts to human health from prescribed fire generated smoke. Additionally, the CTUIR Office of Air Quality will limit burn decisions between October 1st through June 1st based on local atmospheric conditions.

### **Herbicide Treatments**

A wide variety of herbicides are available for weed control. These chemicals vary widely in their mode of action, toxicity, non-target effects, and environmental effects. They must be chosen carefully and applied appropriately to ensure their effectiveness. For herbicide use, the CTUIR has compiled a list of allowable herbicides and adjuvants, associated allowable application methods, geographic areas of application (i.e., riparian versus upland), and stream buffers (i.e., from bankfull width). The CTUIR Herbicide and Adjuvant list follows the BPA herbicide restrictions according to the BPA Habitat Improvement Program III Biological Opinion, allowing all herbicides and adjuvants with the same active ingredients as those included in the BPA list. Additionally, the CTUIR herbicide list allows the active ingredient Indaziflam which is used in Esplanade®. This herbicide is only allowed for upland applications. Herbicides will be applied only to lands and uses for which they are labeled, and all label restrictions will be followed. Herbicide application will also follow the BMPs included in Appendix A, also modeled after the BPA Habitat Improvement Program III Biological Opinion. The BPA wildlife mitigation areas maintained by the CTUIR are required to comply with these herbicide restrictions; therefore, herbicide use will be consistent throughout the entire IWMP management area.

Herbicides can be applied using ground-based or aerial methods. Ground-based methods include backpack foliar sprayers with hand-held wands, wicks, and truck- or all-terrain vehicle (ATV)-mounted spraying systems. Backpack sprayers are effective for small areas, areas inaccessible by vehicles, and for spot treatment of invasive weeds interspersed with desirable plant species. Backpack sprayers can target specific plants, thereby minimizing impacts on non-target species. Wicks can be used to target specific weeds and minimize spray on non-target plants. Truck- or ATV-mounted spraying systems are more efficient than backpack spraying for large infestations and infestations located adjacent to roads and trails. Aerial herbicide applications can be conducted with helicopters or fixed-wing aircraft. In non-agricultural areas, aerial herbicide applications will generally be limited to large infestations that are inaccessible using ground-based methods.

## Prioritization

Prioritization of invasive weed treatment activities in the IWMP management area is key to meeting the goals and objectives of the IWMP. Due to the amount of land infested by invasive weeds within the IWMP management area and the CTUIR's resources available annually, achieving complete eradication of all invasive weeds within the IWMP management area is not realistic in the near future. Therefore, the IWMP includes a prioritization strategy for treatment activities to guide an efficient, effective, and ecologically based approach to invasive weed management. The CTUIR prioritization strategy is structured to (1) achieve the biggest gains in weed management for the resources expended and (2) protect the resources within the IWMP management area deemed most important to the CTUIR.

To achieve these outcomes, there are two main components to the CTUIR prioritization strategy:

1. **Species Prioritization.** Management objectives have been developed for individual weed species based on their current abundance, level of invasiveness, ease of management, and potential impacts on native species and habitats.
2. **Priority Management Areas.** Management objectives have been developed for priority management areas identified by the CTUIR as the most critical areas for weed management due to their ecological or cultural significance as well as areas known to serve as invasive weed vectors.

Management objectives for both invasive weed species and priority areas will be used to prioritize the type and location of invasive weed treatments. Weed species and priority areas will be managed to meet one or more of the following objectives: prevention, eradication, reduction, or containment.

- **Prevention** of invasive weed establishment is the most effective, economical, and ecologically sound approach to weed management; once established, invasive weeds can be difficult and costly to control. Early detection and rapid response will be the primary management strategies used to prevent invasive weed species from establishing.
- **Eradication** is meant to eliminate an invasive weed species from an individual site. While eradication of a large weed infestation is often not practical, eradication can be an effective strategy for small or newly established infestations. Eradication can also be effective for (1) satellite weed infestations located adjacent to, but separate from, large infestations, (2) isolated infestations far from other infestations, or (3) the borders of large infestations to control further spread. A key element to successfully eradicating invasive weeds is early detection of the weed infestation and rapid response to prevent reproduction and the development of a seed bank. Eradication is not complete until all viable seed is depleted from the soil.
- **Reduction** of the size or extent of existing weed infestations is an appropriate management objective when eradication is not practical. It is effective for minimizing impacts to native species or facilitating future eradication.
- **Containment** is an appropriate treatment method for large infestations where eradication is not practical, for areas serving as vectors, for species with limited control options, and to protect important resources proximate to large, established infestations. Portions of the infestations are treated to the extent that the weed is not expanding beyond the established treatment zones.

### Species Prioritization

Weed species have been split into four prioritization categories aimed at achieving the biggest gains in weed management for the resources expended. These four categories are defined below in order of prioritization along with their primary management objective. The CTUIR will maintain an official

Invasive Weed List for the IWMP management area that includes the prioritization categories listed below. The CTUIR Invasive Weed List will be reviewed on an annual basis by the CTUIR and updated as necessary based on the annual review.

3. **Watch List Species.** Watch List species are defined as invasive weeds that are not currently known to occur in the IWMP management area but have the potential to establish and become invasive. Prevention is the primary management objective for IWMP Watch List species. If any of the Watch List species are detected in the IWMP management area, the species will become a “Priority 1” species for treatment and eradication of the infestation will be attempted.
4. **Priority 1 Species.** Priority 1 species are defined as invasive weeds with small infestations in the IWMP management area that are quick to spread, and/or are difficult to control. Eradication will be the primary management strategy for Priority 1 species. Priority 1 species are the highest priority for treatment; eradication will likely require repeated treatments.
5. **Priority 2 Species.** Priority 2 species are defined as invasive weeds that are limited in abundance, but widespread in the IWMP management area. Reduction will be the primary management strategy for Priority 2 species. Annual treatment may be needed to prevent more severe infestations of Priority 2 species.
6. **Priority 3 Species.** Priority 3 species are defined as invasive weeds that are already widespread in the IWMP management area, and will thus be costly to control, or are considered less invasive than Priority 1 or Priority 2 species. Treatment of Priority 3 species will be focused along roads and other vectors for containment and to prevent the population from spreading.

### **Priority Management Areas**

Locations within the IWMP management area that will be priority areas for invasive weed management include culturally and ecologically sensitive areas and areas that serve as vectors for weed spread into uninfested areas.

- **Cemeteries.** CTUIR-managed cemeteries are highly infested with weeds such as puncturevine, among others. They are considered priority weed management areas due to their cultural importance and because they serve as vectors due to the high amount of foot traffic from those visiting the cemetery, particularly when weeds are in seed. Management objectives for cemeteries will be based on the specific invasive weeds present and will follow the species prioritization listed according to the current CTUIR Invasive Weed List. Treatment methods should be selected on a site-specific basis according to species and size of infestation.
- **Root fields.** Root fields are considered priority weed management areas due to their cultural importance as First Foods. Management objectives for root fields will be based on the specific invasive weeds present and will follow the species prioritization listed according to the current CTUIR Invasive Weed List. Weed treatment in root fields will prioritize methods that pose the least risk to human health and impacts on First Foods. Acceptable treatment methods in root fields include hand pulling, biological control, and spot herbicide application with backpack sprayers or wicks. To avoid herbicide contamination of harvested roots, herbicides should not be applied in root fields the season before, or during the root harvest season. If targeted grazing is used, it should be timed for when First Foods are dormant (i.e., after seed set) to avoid impacting seed production and trampling or grazing of culturally important plants.
- **Big game winter range.** Big game winter range is a priority weed management area due to the cultural importance of big game as First Foods. Management objectives for big game winter range will be based on the specific invasive weeds present and will follow the species

prioritization listed according to the current CTUIR Invasive Weed List. Treatment methods should be selected on a site-specific basis according to species and size of infestation.

- **Riparian areas.** Riparian areas are priority weed management areas due to the cultural importance of the associated fish habitats for First Foods. Management objectives for riparian areas will be based on the specific invasive weeds present and will follow the species prioritization listed according to the current CTUIR Invasive Weed List. Herbicide use in riparian areas will follow the buffer widths as listed in Appendix B. While mechanical and targeted grazing treatments in riparian areas can be effective for controlling large weed infestations, treatments should avoid impacting the adjacent stream, stream bank geomorphology, and native vegetation.
- **Huckleberry fields.** Huckleberry fields are considered priority weed management areas due to their cultural importance as First Foods. Management objectives for huckleberry fields will be based on the specific invasive weeds present and will follow the species prioritization listed according to the current CTUIR Invasive Weed List. Manual treatments, biological control, and spot herbicide application with backpack sprayers or wicks are the most appropriate treatment methods for huckleberry fields.
- **Wetlands and wet meadows.** Wetlands and wet meadows are considered priority weed management areas due to the presence of culturally important plants, such as tules. Management objectives for wetlands and wet meadows will be based on the specific invasive weeds present and will follow the species prioritization listed according to the current CTUIR Invasive Weed List. Manual treatments, prescribed fire, and biological control are the most appropriate treatment methods for wetlands and wet meadows. If herbicides are the only effective control method for the target weed species, herbicides used in areas with standing water must be formulated for aquatic use.
- **High-quality native plant communities with few invasive weeds.** High-quality native plant communities are considered priority areas due to the ecological importance and rarity of these plant communities within the IWMP management area. The primary management objectives for high-quality native plant communities are prevention and eradication. Eradication will be attempted for any invasive weed species, regardless of whether the species is categorized as Priority 1, 2, or 3. Weed treatments will prioritize methods with the least impacts on native species. Acceptable treatment methods include hand pulling, biological control, and spot herbicide application with backpack sprayers or wicks.
- **Vectors (roads, railroad rights-of-way, pipeline rights-of-way, and powerline rights-of-way).** Vectors are priority weed management areas because weeds can quickly spread from these areas to un-infested areas, typically due to frequent disturbance and traffic to and from these areas, especially when invasive weeds are in seed. The primary weed management objective for vectors is containment. Treatment methods should be selected on a site-specific basis according to species and size of infestation; ground-based herbicide treatments will be most appropriate in most scenarios.

### **Treatment Prioritization**

Weed treatments will be prioritized annually according to the weed species prioritization and priority management areas described above. Proposed weed treatments will be scored according to the Weed Prioritization Scoring for Weed Treatments SOP. At the annual coordination meeting, weed treatment projects will be selected for the year based primarily on the weed management projects receiving the highest scores from the weed treatment prioritization calculator. Other considerations for treatment prioritization may include agency contracts requiring weed treatments, funding sources that may target specific invasive weeds, and landowner agreements that require invasive weed control.

While the CTUIR will attempt to manage weeds on all lands identified in the scope of this plan, noxious weed funding is non-reoccurring, competitive funding. Funds are not successfully acquired each year, or some years very little funding is available; therefore, land/homeowners must bear considerable responsibility for managing weeds on their properties. During the implementation period of this plan it should be assumed that CTUIR weed managers will not be able to treat weeds on every request. If weed management funding does become re-occurring, the CTUIR will re-assess their abilities to treat noxious weeds within the scope of the funding.

## **Restoration and Revegetation**

The need to revegetate following weed treatments will depend both on the composition of the plant community in the treatment area and the amount of disturbance created by the treatment. In areas where weeds have invaded an otherwise native-dominated plant community, and the treatment does not result in large disturbed areas, native species already present on site can often naturally recolonize and additional revegetation is not needed. In contrast, in weed treatment areas that are highly disturbed with few native species present, revegetation is often needed to prevent new weed species from establishing following control of the target weed species. For example, thistles and common mullein often colonize large patches of bare ground created following timber sales and when large Himalayan blackberry patches are removed. Seeding these types of areas following treatment with a native species mix can provide desirable vegetation to compete with invasive weeds and help reduce further weed establishment. Additionally, development projects, maintenance activities, and activities that result in ground disturbance that also require a conditional use permit from the CTUIR will be required to revegetate any disturbed areas as soon as possible after disturbance occurs following appropriate restoration and revegetation BMPs included in Appendix A.

If revegetation following weed treatments is required, the plant materials used should be native and appropriate to the site. Per the Invasive Weed Management revegetation standard, revegetation is required if natural revegetation of plants will not establish sufficient cover, development activity requires certain plant communities to meet objectives, or the vegetation that will establish or has established on the site is not an acceptable plant community. In each weed treatment area proposed for seeding and/or planting, environmental conditions such as elevation, aspect, soils, composition of desirable species, site potential, and the availability of plant materials will be considered when developing seed mixes and/or planting lists. If the environmental conditions indicate native species will not establish well enough after seeding to adequately compete with invasive plants, non-native desirable species may be considered.

Effective long-term weed control in some of the IWMP management areas, particularly grasslands, will ultimately require restoration of the native plant communities. Much of the grasslands are currently dominated by invasive annual grasses and are highly susceptible to invasion by a variety of other invasive weeds. Restoration of native plant communities is beyond the scope of this plan and will need to be addressed in other management planning efforts.

## **Monitoring**

Monitoring is an important component of invasive weed management and prevention. Monitoring can provide the knowledge needed for evaluating management efforts, and adjusting them if necessary, to reach invasive plant management objectives more effectively and efficiently. When resources are available, regularly scheduled invasive weed surveys will be conducted across the IWMP management area to evaluate invasive weed management efforts. Weed surveys will focus on Priority Management Areas because these areas are either culturally and ecologically sensitive or are areas that serve as vectors for weed spread into un-infested areas.

Invasive weed surveys will consist of recording the presence of new invasive weed occurrences, as well as conducting an assessment of the status of existing occurrences. Data including the location, phenology, size, and density of each occurrence will be entered and/or updated in the CTUIR weeds database. Assessments done on weed occurrences over time will be used to monitor changes on infestation size and distribution and to track the effectiveness of treatments that have been implemented. Other monitoring methods that can be used to track changes in weed abundance over time could include photo points or detailed plant cover or frequency data collected in vegetation monitoring plots.

If resources are not available to conduct regular weed surveys, at a minimum, monitoring will consist of entering all new invasive weed treatments into the CTUIR weeds database and conducting an assessment of the success of weed treatments annually for three years following treatment. Simple photographs may be the least costly method of documenting treatment results. In addition to weed treatment areas and Priority Management Areas, other priority areas for monitoring include newly disturbed areas that have a high likelihood of new invasive weed introductions, such as recently burned areas and recent timber harvests. These areas will be assessed for the first three years after completion to determine if new invasive weeds have established and whether an invasive weed treatment plan needs to be developed. Monitoring data will be collected according to the Invasive Weed Monitoring and Data Collection SOP.

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# Acronyms and Abbreviations

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## A

ATV All-terrain vehicle

## B

BIA Bureau of Indian Affairs  
BMP Best Management Practice  
BPA Bonneville Power Administration

## C

CAA Clean Air Act  
CFR Code of Federal Regulations  
CTUIR Confederated Tribes of the Umatilla Indian Reservation

## D

DEQ Oregon Department of Environmental Quality  
DNR Department of Natural Resources  
DPS Distinct Population Segment

## E

EFH Essential Fish Habitat  
EPA Environmental Protection Agency  
ESA Endangered Species Act

## F

FR *Federal Register*

## G

GIS Geographical Information System

## I

IDT Interdisciplinary Team  
IWMP Integrated Weed Management Plan

## M

mg/L Milligrams per liter  
MSA Magnuson-Stevens Fishery Conservation and Management Act  
msl Mean Sea Level

## **N**

NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration

## **O**

ODFW	Oregon Department of Fish and Wildlife
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## **S**

SOP	Standard Operating Procedure
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## **T**

THPO	Tribal Historic Preservation Office
TMDL	Total Maximum Daily Loads

## **U**

UIR	Umatilla Indian Reservation
USFWS	U.S. Fish and Wildlife Service
U.S.C.	United States Code

## **W**

WQMP	Water Quality Management Plan
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# CHAPTER 1 – INTRODUCTION

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## 1.1 Purpose and Need

The Integrated Weed Management Plan (IWMP) and its associated activities were needed because invasive weeds displace wildlife and native plants, reduce biodiversity, decrease forage and crop production, cause injury to humans and animals, alter soil nutrients and water cycling, increase fire danger, and decrease aesthetic value. Within the reservation boundary, the checkerboard land ownership pattern poses challenges for invasive weed management. Privately owned lands within the Umatilla Indian Reservation (UIR), along with rights-of-way and easements, including railroad and motorized vehicle transportation networks, act as vectors for the introduction and expansion of invasive weeds to the UIR. Confederated Tribes of the Umatilla Indian Reservation (CTUIR) invasive weed control efforts to-date have focused on removing or controlling non-native or invasive weeds on the UIR range and forestlands. These conditions represented the need for a more effective invasive weed control program.

The overarching goal of the IWMP is to reverse the trend of invasive weed establishment and expansion throughout the UIR to foster healthy natural ecosystems and protect and enhance rangeland, agriculture, forest lands, riverine floodplains, and associated riparian systems in support of the First Food Missions for the perpetual cultural, economic, and sovereign benefit of the CTUIR in a way that emphasizes time and cost efficiencies.

## 1.2 Process for the Development of the Integrated Weed Management Plan

The Interdisciplinary Team (IDT) used a three-step process to identify strategies for integrated management that responds to the issues and concerns identified during the planning process. The IDT first established goals and objectives for integrated weed management on the UIR and then identified the standards or the physical, biological, and social conditions necessary for any alternative to meet the goals and objectives. Finally, the IDT formulated a strategy for change in management that reasonably could be expected to meet the goals and objectives, if fully funded and implemented. The IDT considered the effects that integrated weed management may have on Tribal culture and natural resource values.

## 1.3 Relationship to Federal Statutes

### 1.3.1 National Environmental Policy Act of 1969; Title 42 United States Code (U.S.C.) § 4321-4370d

The National Environmental Policy Act of 1969 (NEPA), as amended, requires that federal agencies consider the potential effects of actions that might adversely affect the environment and consider possible alternative courses of action to reduce impacts before approving the project. Consequently, all federal government agencies established procedures to prepare environmental assessments and environmental impact statements. Environmental assessments and environmental impact statements contain statements of the environmental effects of proposed federal agency actions.

An environmental assessment was prepared to determine if the approval of the IWMP by the Bureau of Indian Affairs (BIA) and implementation of the IWMP by BIA and the Tribe would likely result in significant impacts. A Finding of No Significant Impact was issued on September 6, 2018.

### **1.3.2 National Historic Preservation Act of 1966; 54 U.S.C. 300101 et seq.**

The National Historic Preservation Act of 1966 (NHPA), as amended, protects historic and archaeological properties during the planning and implementation of federal undertakings. Cultural resources must be identified during the planning phase of a project, the significance for potentially affected cultural resources must be determined, and potentially adverse impacts on any significant sites that may be affected must be mitigated.

Pursuant to Section 101(d)(2) of the NHPA, a Tribal Historic Preservation Office (THPO) for the Umatilla Reservation assumed the responsibilities of the State Historic Preservation Office (SHPO). Similar to the BIA's consultation with a SHPO, the BIA Archaeologist consults with the THPO for their review of federal undertakings on the Umatilla Reservation.

### **1.3.3 Archaeological Resources Protection Act of 1979; Title 16 U.S.C. §470aa et seq.**

The Archaeological Resources Protection Act of 1979, as amended, protects archaeological resources on public and Indian lands by establishing criminal and civil penalties for unlawful excavation, removal, or destruction of such resources and sets up permitting policies through the appropriate land manager.

### **1.3.4 Native American Graves Protection and Repatriation Act; Title 25 U.S.C. § 3000 et seq.**

The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), as amended, protects Native American burials during planning and implementation of projects on federal or trust lands, including all land ownership within the UIR and CTUIR trust lands outside the UIR. In the event of a known burial, the project must address treatment of the burial in consultation with the CTUIR. In the event of an inadvertent discovery of Native American human remains, all work in the immediate vicinity of the burial must cease in order to develop a Plan of Action under NAGPRA to address treatment of the remains in conformance with the NAGPRA regulations, Title 42 Code of Federal Regulations (CFR) Part 10.1 et seq.

### **1.3.5 Endangered Species Act of 1973; Title 16 U.S.C. § 1531 et seq.**

The Endangered Species Act of 1973 (ESA), as amended, provides a means for the protection of all endangered and threatened plant and animal species. It is comprehensive in that it also provides for the protection of the critical habitats on which these species depend for survival. Federal agencies, in consultation with the U.S. Fish and Wildlife Service (USFWS) and/or National Oceanic and Atmospheric Administration (NOAA) Fisheries Service (Regulatory Agencies), must insure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The BIA consults with the Regulatory Agencies on ESA Section 7.

### **1.3.6 Magnuson-Stevens Fishery Conservation and Management Act; Title 16 U.S.C. § 1801 et seq.**

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996, establishes procedures intended to identify, conserve, and enhance

Essential Fish Habitat (EFH) for those species regulated under a federal fisheries management plan. The MSA requires federal agencies to consult with NOAA Fisheries regarding actions or proposed actions that may adversely affect EFH (Section 305(b)(2)). EFH is defined under the MSA as those waters and substrate necessary to fish for “spawning, breeding, and feeding, for growth to maturity.”

### **1.3.7 Pacific Northwest Electric Power Planning and Conservation Act; Title 16 U.S.C. § 839-839h et seq.**

The Pacific Northwest Electric Power Planning and Conservation Act of 1980 addresses the impact on fish and wildlife of hydroelectric dams on the Columbia River. The Act establishes the Pacific Northwest Electric Power and Conservation Planning Council and directs the Council to adopt a regional energy conservation and electric power plan and a program to protect, mitigate, and enhance fish and wildlife on the Columbia River and its tributaries. Among other things, the Act is intended to protect, mitigate, and enhance the fish and wildlife, including related spawning grounds and habitat, of the Columbia River and its tributaries, particularly anadromous fish. The Act directs the Administrator to use the Bonneville Power Administration (BPA) fund and applicable laws to protect, mitigate, and enhance fish and wildlife projects of the Columbia River and its tributaries in a manner consistent with the Act, the plan, and the fish and wildlife program.

### **1.3.8 Clean Air Act of 1970; Title 42 U.S.C. § 7401 et seq.**

The Clean Air Act of 1970 (CAA), as amended, was originally enacted to protect the quality of the nation's air resources and the public health and welfare. The second purpose of the CAA is to initiate a research and development program to achieve the prevention and control of air pollution. Third, the act provides means for technical and financial assistance for state and local governments, so they may carry out air pollution prevention and control programs. The final goal of the CAA is to encourage the development of regional air pollution prevention and control programs.

The law authorizes the Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards to protect health and public welfare and to regulate emissions of hazardous air pollutants. Federal agencies must comply with all federal, state, and Tribal air quality standards and requirements for smoke management when conducting prescribed fires.

### **1.3.9 Clean Water Act of 1972; Title 33 U.S.C. § 1251 et seq.**

The Clean Water Act of 1972, as amended, established the basic structure for regulating dischargers of pollutants into the waters of the United States and establishing quality standards for surface waters. In accordance with provisions of this statute, the CTUIR and the EPA have developed Total Maximum Daily Loads (TMDL) and a Water Quality Management Plan (WQMP) for the UIR. The CTUIR coordinates with the U.S. Army Corps of Engineers on Clean Water Act Section 404 compliance, if there is proposed discharge of pollutants in waters of the United States

## **1.4 Relationship to First Foods Mission**

From the CTUIR perspective, natural resources upon which Tribal members depend are cultural resources, whether they are within the reservation, in the ceded or Aboriginal-Title lands, or at usual and accustomed fishing/hunting/gathering areas. Further, the mission and functions of the CTUIR Department of Natural Resources (DNR) are guided by the First Foods Paradigm. As such, the CTUIR DNR has adopted a mission based on indigenous foods. These foods are served at ceremonial meals and are known to the CTUIR as First Foods. Listed in the order in which they are served, they are: water, salmon, deer, cous, and huckleberry. The CTUIR identifies and calls attention to physical and ecological processes that

sustain and produce the remaining First Foods in order to be responsible and responsive to the CTUIR community (Jones et al. 2008).

The First Foods are central to the CTUIR DNR mission statement:

To protect, restore, and enhance the First Foods - water, salmon, deer, cous, and huckleberry - for the perpetual cultural, economic, and sovereign benefit of the CTUIR. We will accomplish this utilizing traditional ecological and cultural knowledge and science to inform: 1) population and habitat management goals and actions; and 2) natural resource policies and regulatory mechanisms.

The First Foods serving order includes representatives of “men’s foods” (water, salmon, and deer); and “women’s foods” (cous and huckleberry). These gender categories reflect the harvest, preparation, and serving roles associated with First Foods.

The First Foods are considered by the CTUIR DNR to constitute the minimum ecological products necessary to sustain CTUIR culture. Any efforts to manage First Foods, including invasive weed management, must consider ecological processes that relate to the sustained production of First Foods.

## **1.5 Relationship to Other CTUIR Management Plans**

The CTUIR IWMP complements the other CTUIR management plans described in this section. The CTUIR IWMP does not replace or supersede these plans.

### **1.5.1 Comprehensive Plan of the Confederated Tribes of the Umatilla Indian Reservation**

In 2010, the CTUIR, through Board of Trustees Resolution Number 10-079, adopted a Comprehensive Plan that set forth its long-range goals as they relate to treaty reserved rights, both on and off the UIR, and the current and future needs of its enrolled members. The Comprehensive Plan established the goal of promoting integrated natural resource management to ensure the long-term health, availability, wise use, and production of natural resources consistent with Tribal cultural values and sound management principles (CTUIR 2010a).

Pertinent objectives of the Comprehensive Plan for management of natural resources include:

- To ensure that ground and surface waters are available to satisfy CTUIR treaty rights, the needs of CTUIR members, and the citizens of the UIR
- To protect, enhance, and restore functional floodplain, channel, and watershed processes to provide sustainable and healthy habitat for aquatic species of the First Food order
- To provide sustainable harvest opportunities for big game species of the First Food order by protecting, conserving, and restoring big game populations and their habitats
- To assess the distribution and security of cultural foods plants (roots, berries) and protect and enhance them for CTUIR member use
- To protect, preserve, and perpetuate the CTUIR’s culturally significant places and resources for the benefit of current and future generations (CTUIR 2010a)

Meeting the goals and objectives and standards and guidelines established as part of the integrated weed management planning effort will directly contribute to protection and enhancement of water resources and functional processes, conservation of big game habitat, and protection of First Foods and culturally important plants.



## **1.5.2 Water Code, Total Maximum Daily Load, and Water Quality Management Plan**

In 2003, the CTUIR Board of Trustees adopted Resolution Number 03-100, enacting a new comprehensive Water Code integrating Water Quality Implementing Provisions and Stream Zone Alteration Regulations into its text. The new Water Code established an anti-degradation policy to provide for the maintenance and protection of waters of the UIR. The Water Code further provided that any person who performs any activity that alters streamflow, water quality, ground contours, or perennial vegetation in several named stream zones on the UIR first had to obtain a valid Stream Zone Alteration Permit.

In 2004, the CTUIR Board of Trustees adopted Resolution Number 04-73, enacted a TMDL “to restore water quality and cultural integrity” of the waters of the reservation. The TMDL set water quality restoration targets for two pollutants, temperature and turbidity. The TMDL seeks to reduce late summer stream temperatures and the amount of in stream fine sediments as much as possible.

The Water Commission of the CTUIR adopted a WQMP in 2008 that identifies Best Management Practices (BMP) necessary to achieve the water quality objectives.

## **1.5.3 Historic Preservation Code**

The Historic Preservation Code of the CTUIR (Historic Preservation Code) was adopted in 2016. The purpose of the Historic Preservation Code is to provide a framework to preserve, protect, and perpetuate the cultural resources of the CTUIR. The Historic Preservation Code establishes the Cultural Resource Committee and its powers and duties, the Cultural Resources Protection Program and its duties, the THPO, processes and procedures for a cultural resource review of Tribally permitted or reviewed projects and inadvertent discoveries on Tribal lands, as well as prohibited adverse effects to cultural resources and enforcement.

## **1.5.4 Other Natural Resource Management Plans**

The BIA and CTUIR adopted a Wildland Fire Management Plan in 2000, a WQMP in 2008 (referenced above), a Forest Management Plan in 2010, and an Agricultural Resource Management Plan in 2016. A Range Management Plan is currently being developed and the CTUIR also plans to develop a Travel and Access Management Plan.

## **1.5.5 Bonneville Power Administration Wildlife Mitigation Area Noxious Weed Plans**

The Rainwater, Wanaket, and Isqúultpe BPA wildlife mitigation areas each have existing noxious weed management plans required (and funded) by the BPA. These weed management plans identify target weed species and objectives, strategies, and treatment options within each wildlife mitigation area. Invasive weed management activities within the wildlife mitigation areas follow the BPA herbicide restrictions according to the BPA Habitat Improvement Program III Biological Opinion (USFWS 2013 and National Marine Fisheries Service [NMFS] 2013).

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# CHAPTER 2 – THE MANAGEMENT SITUATION

## 2.1 Background Information

The UIR established by the Treaty of June 9, 1855, 12 Statute 945, between the United States and the Cayuse, Umatilla, and Walla Walla Tribes lies along the foothills of the Blue Mountains in northeastern Oregon immediately east of Pendleton (Figure 2-1). The UIR covers a variety of terrain and land uses, including rough uneven forests and rangelands, gently sloping agricultural fields, and long narrow floodplains supporting dense riparian vegetation. The Blue Mountains border the UIR to the east and the City of Pendleton lies to the west.



**Figure 2-1. Umatilla Indian Reservation**

The CTUIR continue to depend on natural resources for development of a strong, diversified economy while preserving cultural, subsistence, and aesthetic values. Fishing and hunting, as well as the gathering of roots and berries, are deeply rooted within the Tribal social structure. For CTUIR to exercise Tribal Treaty rights and express cultural values, the watersheds and floodplains must be ecologically healthy and capable of sustaining robust communities of First Foods in part supported by a healthy structure, pattern, and function of vegetation. The harvesting, processing, manufacturing, and marketing of farm, forest, livestock, and mineral products provide income to landowners and the CTUIR. Together with the Wildhorse Resort and Casino, use of natural resources form the foundation of the economy of the UIR.

Approximately two-thirds of the UIR is infested at some level with non-native plant species. Invasive weeds compete with native vegetation on the UIR and threaten the vitality of native ecosystems and the cultural values they support. Problematic invasive weed species on the UIR include diffuse knapweed (*Centaurea diffusa*), spotted knapweed (*Centaurea stoebe*), rush skeletonweed (*Chondrilla juncea*), whitetop (*Cardaria draba*), common crupina (*Crupina vulgaris*), Himalayan blackberry (*Rubus armeniacus*), garlic mustard (*Alliaria petiolata*), St. Johnswort (*Hypericum perforatum*), sulfur cinquefoil (*Potentilla recta*), multiflora rose (*Rosa multiflora*), medusahead (*Taeniatherum caput-medusae*), ventenata (*Ventenata dubia*), yellow starthistle (*Centaurea solstitialis*) as well as many others. Previous to development of this plan, weed data were collected during some invasive weed control projects and reported to comply with specific grant funding sources; however, the dataset was incomplete. Also, the data had not been collected using similar methods. Therefore, the CTUIR did not have a detailed representation of the conditions and status of invasive weed presence throughout the UIR.

## 2.2 Reservation Setting

### 2.2.1 Land Ownership

The UIR originally encompassed 800 square miles (512,000 acres) but was reduced to 157,982 acres by the Slater Act of 1885, 23 Statute 340. In addition to the lands within the reservation, the CTUIR own 18,750 acres outside the reservation but within the original 1855 reservation boundary. This land was acquired through a special act of Congress in 1939, 53 Statute 1351, that restored surplus allotted lands that had not been disposed of to reservation status and is referred to as the Johnson Creek Restoration Area. The Tribe also maintains land in southeast Washington (Rainwater Wildlife Area) and along the Columbia River in northeast Oregon (Wanaket Wildlife Area and Wánapa) through purchases with BPA mitigation funds that have been converted from fee to tribal trust status. In total, CTUIR lands encompass 192,727 acres (Table 2-1).

Today, the land ownership pattern on the UIR is a checkerboard of parcels falling into three main classes: (1) deeded land held in fee-simple estate by non-Indians, Indians, and the CTUIR; (2) Tribal trust land with legal title held by the United States and the beneficial or equitable title held by the CTUIR; and (3) allotted trust land with legal title held by the United States and the beneficial or equitable title held by an individual Indian allottee or his or her heirs. Management of these lands poses unique challenges with jurisdictional problems. The CTUIR has adopted a policy of purchasing non-Indian lands to restore Indian ownership as property becomes available and funds permit.

For purposes of the IWMP, the management area is defined as all lands within the UIR and all Tribal fee and trust lands outside of the UIR. Table 2-1 summarizes land ownership class by acreage within the IWMP management area; Figure 2-2 shows the IWMP management area boundary.

<b>TABLE 2-1 LAND OWNERSHIP IN THE IWMP MANAGEMENT AREA</b>	
<b>Land Ownership Class</b>	<b>Acres</b>
<b>Within the Reservation Boundary</b>	
Allotment Trust	64,979
Fee	63,714
Tribal Trust	11,574
Tribal Fee	19,278
<b>Outside of the Reservation Boundary</b>	
Tribal Trust	17,745
Tribal Fee	14,437
<b>TOTAL</b>	<b>192,727</b>

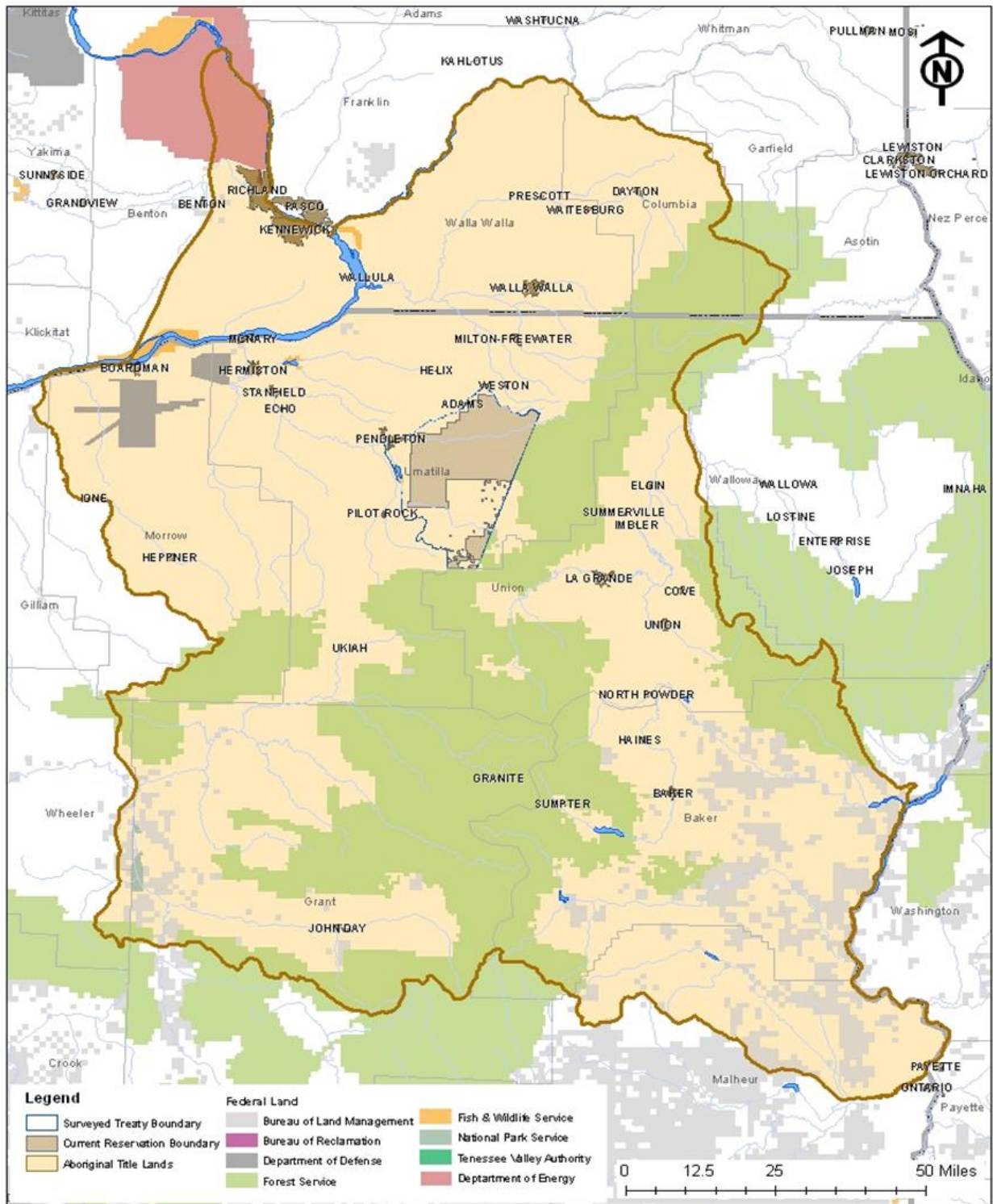


Figure 2-2. Integrated Weed Management Plan Management Area

## 2.2.2 Climate

The entire UIR falls within Oregon's North Central Climatic Zone (Zone 6; Johnson and Clausnitzer 1992). Weather is predominately influenced by Pacific Ocean air masses. The major influences on the regional climate are the Cascade Mountains, which form a barrier against warm moist fronts from the Pacific Ocean (Johnson and Clausnitzer 1992). The Columbia Gorge provides a break in the curtain of the Cascade Mountains and occasionally allows moisture laden marine air to penetrate into the northern Blue Mountains.

The UIR experiences strong seasonal fluctuations in both temperature and precipitation. During summer, the UIR experiences a continental climate with warm days, cool nights, and little precipitation. Winters exhibit short periods of extreme cold intermixed with milder temperatures. Heavy fog with visibility less than 1,200 feet is very common during the winter months along the valley bottoms when high pressure conditions are present. Precipitation also changes dramatically with the seasons with most precipitation occurring during the fall, winter, and spring. The climate of the UIR is also strongly influenced by elevation. Precipitation falls mainly as rain at lower elevations. Average annual precipitation is markedly higher at higher elevations in the Blue Mountains with much of this occurring as snowfall (Johnson and Clausnitzer 1992).

## 2.2.3 Topography

The landforms of the UIR can be divided into four groups: the Pendleton Plains, the Blue Mountain Slope, the Blue Mountain Uplands, and the Stream Bottomlands. The Pendleton Plains are a slightly dissected plateau characterized by gently rolling slopes favorable to crop production and are found between 1,200 to 2,000 feet above mean sea level (msl). The Blue Mountain Slope, located between 2,000 to 3,000 feet above msl, is a series of steep-walled canyons ascending to the more plateau-like Blue Mountain Uplands. The Blue Mountain Uplands are a region of meadows and forested land. Approximately one-third of the UIR is within this subdivision with elevations ranging from 3,000 feet above msl to approximately 4,100 feet above msl. The Stream Bottomlands are found along the Umatilla River, McKay Creek, Patawa Creek, Isquiltpe Creek, and Meacham Creek, which dissect other landforms and are characterized by moderately flat floodplains edged by moderate to steep slopes.

## 2.3 Invasive Weeds

Problematic invasive plant species on the UIR include diffuse and spotted knapweed, rush skeletonweed, whitetop, common crupina, Himalayan blackberry, garlic mustard, St. Johnswort, sulfur cinquefoil, multiflora rose, medusahead, ventenata, and yellow starthistle, as well as many others. A full list of invasive weeds known to occur in the IWMP management area is provided in Table 2-2.

Within the IWMP management area (Figure 2-2), invasive weeds occur in patches of varying sizes and densities. While the CTUIR does not have a detailed understanding of the conditions and status of invasive weed presence throughout the UIR due to minimal inventory, invasive weeds are known to be more abundant in certain areas than in others. Areas within or adjacent to human development, including roadsides, railroads, pipelines, transmission line rights-of-way, residential areas, and the margins of agricultural fields, are often highly infested with invasive weeds. Invasive weeds typically found in these areas include bull thistle (*Cirsium vulgare*), cheatgrass (*Bromus tectorum*), common teasel (*Dipsacus fullonum*), puncturevine (*Tribulus terrestris*), Russian thistle (*Salsola kali*), diffuse knapweed, Scotch thistle (*Onopordum acanthium*), St. Johnswort, and yellow starthistle.

Grasslands are one of the most highly invaded habitat types within the IWMP management area. Historic grazing practices that degraded native grassland plant communities, combined with their open canopies

and wide spacing between plants, increase susceptibility to weed invasion. In many of the grasslands on the UIR, native bunchgrasses have been severely diminished and replaced by invasive annual grasses, including cheatgrass, meadusahead, and ventenata. These invasive annual grasses are generally less palatable to wildlife and livestock, resulting in reduced forage availability. The conversion of native bunchgrasses to invasive annual grasses also alters habitat structure, reducing habitat quality for grassland-dependent songbirds and other wildlife species. In addition to directly competing with, and eliminating native species, invasive grasses provide fine-textured, early-maturing fuel that can increase the frequency and extend the season of wildfires. Other particularly problematic invasive plants that outcompete native plant species in grasslands include bachelor's button (*Centaurea cyanus*), diffuse knapweed, rush skeletonweed, spotted knapweed, St. Johnswort, sulfur cinquefoil, and yellow starthistle. Knapweeds and starthistles are known to produce chemicals that prevent other plant species from germinating, thereby modifying invaded sites so they become inhospitable to the original plant community (Boersma et al. 2006).

Forests are generally the least invaded habitats in the IWMP management area. High canopy cover and relatively intact native plant communities reduce the susceptibility of forests to weed invasion. However, invasive weeds can quickly establish in forests following timber harvests or wildlife, due to the reduction in canopy cover, ground disturbance, and introduction of weed seeds on harvesting/firefighting equipment. Invasive weeds that typically occur in disturbed areas in forests include bull thistle, common mullein (*Verbascum thapsus*), Scotch thistle, and St. Johnswort.

**TABLE 2-2  
INVASIVE WEEDS KNOWN TO OCCUR IN THE IWMP MANAGEMENT AREA**

Common name	Scientific name	Umatilla County Noxious Weed List Designation <sup>1</sup>	Oregon Noxious Weed List Designation <sup>1</sup>
Bachelor's button	<i>Centaurea cyanus</i>	–	–
Black locust	<i>Robinia pseudoacacia</i>	–	–
Bulbous bluegrass	<i>Poa bulbosa</i>	–	–
Bull thistle	<i>Cirsium vulgare</i>	–	B-listed
Bur chervil	<i>Anthriscus caucalis</i>	–	–
Canada thistle	<i>Cirsium arvense</i>	B-listed	B-listed
Catchweed	<i>Asperugo procumbens</i>	–	–
Cereal rye	<i>Secale cereale</i>	B-listed	–
Cheatgrass	<i>Bromus tectorum</i>	–	–
Common bugloss	<i>Anchusa officinalis</i>	A-listed	B-listed, T-designated
Common crupina	<i>Crupina vulgaris</i>	A-listed	B-listed
Common mullein	<i>Verbascum thapsus</i>	–	–
Common teasel	<i>Dipsacus fullonum</i>	–	–
Dalmatian toadflax	<i>Linaria dalmatica</i>	B-listed	B-listed, T-designated
Diffuse knapweed	<i>Centaurea diffusa</i>	B-listed	B-listed
Field bindweed	<i>Convolvulus arvensis</i>	–	B-listed, T-designated
Garlic mustard	<i>Alliaria petiolata</i>	A-listed	B-listed, T-designated
Himalayan blackberry	<i>Rubus armeniacus</i>	–	B-listed
Houndstongue	<i>Cynoglossum officinale</i>	–	B-listed
Jointed goatgrass	<i>Aegilops cylindrica</i>	B-listed	B-listed
Kochia	<i>Bassia scoparia</i>	B-listed	B-listed
Medusahead	<i>Taeniatherum caput-medusae</i>	B-listed	B-listed
Multiflora rose	<i>Rosa multiflora</i>	–	–
Musk thistle	<i>Carduus nutans</i>	B-listed	B-listed
Myrtle spurge	<i>Euphorbia myrsinites</i>	A-listed	B-listed
Perennial pepperweed	<i>Lepidium latifolium</i>	–	B-listed, T-designated

TABLE 2-2 INVASIVE WEEDS KNOWN TO OCCUR IN THE IWMP MANAGEMENT AREA			
Common name	Scientific name	Umatilla County Noxious Weed List Designation <sup>1</sup>	Oregon Noxious Weed List Designation <sup>1</sup>
Poison hemlock	<i>Conium maculatum</i>	B-listed	B-listed
Puncturevine	<i>Tribulus terrestris</i>	B-listed	B-listed
Purple loosestrife	<i>Lythrum salicaria</i>	A-listed	B-listed
Rattail fescue	<i>Vulpia myuros</i>	–	–
Reed canarygrass	<i>Phalaris arundinaceae</i>	–	B-listed, T-designated
Rush skeletonweed	<i>Chondrilla juncea</i>	A-listed	B-listed, T-designated
Russian knapweed	<i>Acroptilon repens</i>	B-listed	B-listed
Russian olive	<i>Elaeagnus angustifolia</i>	–	–
Russian thistle	<i>Salsola kali</i>	–	–
Scotch thistle	<i>Onopordum acanthium</i>	B-listed	B-listed
Smooth brome	<i>Bromus inermis</i>	–	–
Spikeweed	<i>Centromadia pungens</i>	A-listed	B-listed
Spotted knapweed	<i>Centaurea stoebe</i>	A-listed	B-listed, T-designated
Spreading hedge-parsley	<i>Torilis arvensis</i>	–	–
St. Johnswort	<i>Hypericum perforatum</i>	B-listed	B-listed
Sulfur cinquefoil	<i>Potentilla recta</i>	–	B-listed
Swainsonpea	<i>Sphaerophysa salsula</i>	–	B-listed
Sweetbriar rose	<i>Rosa eglanteria</i>	–	–
Tall oatgrass	<i>Arrhenatherum elatius</i>	–	–
Tansy ragwort	<i>Senecio jacobaea</i>	A-listed	B-listed
Tree of heaven	<i>Ailanthus altissima</i>	–	B-listed
Ventenata	<i>Ventenata dubia</i>	–	–
Viper's bugloss	<i>Echium vulgare</i>	A-listed	–
Whitetop (hoary cress)	<i>Cardaria draba</i>	B-listed	–
Yellow flag iris	<i>Iris pseudacorus</i>	A-listed	B-listed
Yellow starthistle	<i>Centaurea solstitialis</i>	B-listed	B-listed

NOTES:  
<sup>1</sup>A-listed: A weed of known economic importance that occurs in the state/county in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states/county make future occurrence in Oregon seem imminent.  
B-listed: A weed of economic importance which is regionally abundant, but which may have limited distribution in some counties.  
T-designated: A designated group of weed species that are selected and will be the focus for prevention and control by the Noxious Weed Control Program. Action against these weeds will receive priority (Oregon Department of Agriculture 2017)

## 2.4 Water Quality and Fish Habitat

The IWMP management area is located in the Umatilla, Middle Columbia-Lake Wallula, Upper Grande Ronde, and Walla Walla subbasins. For the last 150 years, increased demands on the watersheds in the IWMP management area have degraded water quality conditions. The CTUIR developed water quality standards in conjunction with the EPA in 1999 to regulate water quality conditions on the UIR. A TMDL that addresses stream temperature and turbidity was completed by the CTUIR in 2005 providing ample evidence that water quality standards were not being met (CTUIR 2005). The TMDL established reduction goals for stream temperature and sediment and led to the completion of a WQMP in 2008 (CTUIR 2008). The Umatilla River, Meacham Creek, Tutuilla Creek, and other tributaries are generally too warm in mid and late summer while the Umatilla River and Mission Creek exceed water quality standards for turbidity because of too much fine sediment eroding from stream channels and moving off adjacent lands into the stream (CTUIR 2004).



Water temperature is a concern in streams throughout most of the Umatilla River drainage from May until early November, which coincides with periods of low water flow. Oregon Department of Environmental Quality (DEQ) (2001) listed 287 miles in the Umatilla subbasin as impaired for elevated water temperatures, including the entire mainstem Umatilla River. The CTUIR (2005) listed seven streams, or segments of streams, within the UIR as water quality limited for temperature (CTUIR 2005). The highest water temperatures have been recorded in late July and early August when ambient air temperatures are high. During this period, the Umatilla River warms rapidly from the headwaters to the mouth, reaching sub-lethal (64°F to 74°F) and early lethal temperatures (74°F to 80°F) for salmonids its entire length. Most of the tributaries of the Umatilla River where temperature data were collected also reached sub-lethal and early lethal ranges for salmonids (DEQ 2001).

The Umatilla River produces large amounts of sediment, much of which originates from the weathered basalt and unconsolidated loess deposits. The primary sources include bank and upland erosion of tributaries and their watersheds, both of which may be accelerated by land uses (DEQ 2001). Peak sedimentation usually occurs during rainstorms or snowmelts associated with freeze and thaw periods (Northwest Power and Conservation Council 2004). Both the CTUIR and the State of Oregon have established numeric water quality standards for suspended solids or streambed fines (CTUIR 2005; DEQ 2001). One of the sediment-impaired stream segments that significantly deviated from the target standard is Wildhorse Creek (at its confluence with the Umatilla River), which had a peak turbidity value of over 5,000 Nephelometric Turbidity Units measured on April 23, 1997 (DEQ 2001). The CTUIR identified segments of two streams, Umatilla River and Mission Creek, on the UIR that do not meet water quality standards for turbidity.

Other water quality issues identified on the UIR include elevated acidity (pH), nitrate, and bacteria. Elevated summer temperatures, excessive algal (periphyton) growth, and attendant increases in pH are common during summer months in the upper Umatilla River as it flows from the North and South Fork of the Umatilla to the Highway 11 Bridge at RM 57.1 (DEQ 2001). Two monitoring stations (Spring Hollow Creek, a tributary to Wildhorse Creek, and Wildhorse Creek) have recorded concentrations of nitrates >10 milligrams per liter [mg/L], which violate general criteria set for public water supplies. Nitrates show up in very low concentrations (<0.10 mg/L total Nitrate) in the upper subwatersheds, slightly elevated levels (<0.40 mg/L) in the middle Umatilla subwatershed, and 0.20 to 1.50 mg/L in McKay Creek (downstream of dam) (DEQ 2001). Most reaches and tributaries of the Umatilla River upstream of Pendleton have low levels of *Escherichia coli* (E. coli) bacteria (less than 150 per 100 milliliters). Areas in the Umatilla subbasin with high E. coli counts include the middle reaches of Wildhorse Creek (450 to 600 per 100 milliliters) and the Umatilla River near and downstream of the city of Pendleton (greater than 600 per 100 milliliters) (DEQ 2001).

Rivers and streams within the IWMP management area support numerous resident fish species, including bull trout (*Salvelinus confuentus*), rainbow trout (*Oncorhynchus mykiss*), mountain whitefish (*Prosopium williamsoni*), Pacific lamprey (*Lampetra tridentate*), and various non-game species. Anadromous salmonids include summer steelhead (*oncorhynchus mykiss*), coho salmon (*Oncorhynchus kisutch*), and spring and fall Chinook salmon (*Oncorhynchus tshawytscha*) (CTUIR 2016). Coho and Chinook salmon were extirpated in the early 1900s, shortly after construction of Three Mile Dam, an irrigation diversion located in the lower Umatilla River. However, after an approximated 75-year absence, coho and Chinook salmon were re-introduced in conjunction with actions designed to reconstruct irrigation diversions and augment in-stream flows in the lower basin (Northwest Power and Conservation Council 2004).

Lack of perennial stream flows, insufficient riparian cover, and low numbers of in-stream woody debris are the primary factors limiting anadromous fisheries production for streams within the IWMP management area (Northwest Power and Conservation Council 2004). The CTUIR's DNR Programs have enhanced approximately 10 river miles of anadromous salmonid habitat and one mile of resident fisheries

habitat on the UIR since 1988. Fish habitat enhancements have focused on Mission Creek, the upper McKay Creek, and lower Spring Hollow Creek, a tributary to Wildhorse Creek. Mission Creek supports populations of steelhead and Coho salmon. Both upper McKay creek and Spring Hollow Creek do not currently support anadromous fish but contain resident fish populations. Enhancements in these three drainages have included treatment of invasive weeds, plantings of native riparian vegetation, in stream structural enhancements, and construction of riparian livestock exclusion fencing. The installation of culverts on the lower Mission Creek, Moonshine Creek, and Cottonweed Creek has improved fish passage. Watershed scale restoration and management plans are currently being developed for the Patawa/Tutuilla Creek Drainages (CTUIR 2016). Additional habitat recovery and protection efforts are necessary to increase fish survival and improve natural production capabilities. Poor land use practices have reduced riparian vegetation, degraded water quality, and likely diminished water table elevations and in-stream flows. In agricultural areas, pesticide runoff affects stream water quality and potentially fish and other aquatic organisms in some of these areas. Past and current agricultural practices have further affected fish habitat by altering natural stream channel form and function. Loss of stream channel meander from channelization and diking has accelerated stream velocity due to increases in surface gradient (Northwest Power and Conservation Council 2004).

## 2.5 Wildlife and Wildlife Habitat

Dominant wildlife habitats in the IWMP management area include agricultural areas, grasslands, shrublands, forests, and riparian areas and wetlands. A description of each habitat type and associated wildlife species is provided in this section.

In agricultural areas, wildlife habitats can be found in untilled riparian areas and wetlands, fencerows, road and irrigation ditches, untilled rights-of-way, idle lands, pasturelands, and land enrolled in the U.S. Department of Agriculture Conservation Reserve Program. Food crops in areas under annual tillage can provide forage and cover for wildlife during the growing season. In severe winters, big game species, including Rocky Mountain elk (*Cervus elphaus*), mule deer (*Odocoileus hemionus*), and white-tailed deer (*Odocoileus virginianus*) often move into agricultural areas and forage on winter crops. Introduced upland game bird species, including California quail (*Callipepla californica*), gray partridge (*Perdix perdix*), and ring-necked pheasant (*Phasianus colchicus*) utilize portions of agricultural areas year-round that contain suitable foraging, nesting, and hiding cover. Agricultural areas also provide important foraging habitat for a variety of raptors and other migratory birds.

Grasslands were historically dominated by bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), Sandberg's bluegrass (*Poa secunda*), and basin wildrye (*Leymus cinereus*) (Shelford and Hanson 1947). The native grasses offered high quality grazing for livestock. The combined stress of grazing and fire has allowed invasive annual grasses, including medusahead, cheatgrass, and ventenata, to invade and dominate native grasslands. Grasslands provide winter range for Rocky Mountain elk, mule deer, and white-tailed deer. Chukar (*Alectoris chukar*) occur in steep rocky grassland habitats, while gray partridge occurs in grasslands adjacent to agriculture. Grasslands also provide nesting and foraging habitat for a variety of raptors and other migratory birds.

Shrublands occur primarily on north and east facing slopes. Common snowberry (*Symphoricarpos albus*) associated with mesic grasslands occurs in small dense patches. Nootka rose (*Rosa nutkana*), along with Idaho fescue, comprises another low shrub community although of limited extent. The most abundant tall shrub community is dense black hawthorn (*Crataegus douglasii*) that forms stands with a closed canopy resulting in poorly represented understory. Mallow ninebark (*Physocarpus malvaceus*) dominated shrub fields are frequent in narrow side canyons where recent fires have occurred. Redstem ceanothus (*Ceanothus sanguineus*) is a common associate in forested, mountain brush or grassland type. Shrublands

provide winter and transitional range for Rocky Mountain elk, mule deer, and white-tailed deer. Shrublands also provide nesting and foraging for a variety of raptors and other migratory birds.

Forested habitats are dominated by ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii*), lodgepole pine (*Pinus contorta*), grand fir (*Abies grandis*), and western larch (*Larix occidentalis*). There are also smaller amounts of Engelmann spruce (*Picea engelmannii*) and quaking aspen (*Populus tremuloides*). The Interior Douglas-fir series is the principal forest plant community type found in the IWMP management area. This series is typically dominated by Douglas-fir mixed with varying proportions of western larch, ponderosa pine, grand fir and lodgepole pine. The grand fir and lodgepole pine series are usually at the same intermediate elevations as the Douglas-fir series. The ponderosa pine series is usually at slightly lower elevations. Individual tree species occur in a predictable pattern based on a climatic gradient where temperature and moisture vary with change in aspect and elevation. The landscape has undergone, and continues to undergo, modifications due to disturbances such as fire, windstorms, timber harvest, and livestock grazing). Forests provide summer range for Rocky Mountain elk and mule deer. Native upland game bird species, including dusky grouse (*Dendragapus obscurus*), ruffed grouse (*Bonasa umbellus*), and mountain quail (*Oreortyx pictus*), as well as the introduced wild turkey (*Meleagris gallopavo*), occur in forest edges. Other wildlife species typically found in forests include black bear (*Ursus americanus*), mountain lion (*Felis concolor*), and a variety of raptors and other migratory birds.

Riparian areas and wetlands contain the most biologically diverse habitats and species assemblages because of their variety of structural features (including live and dead vegetation) and proximity to water bodies (Quigley and Arbelbide 1997). Common deciduous trees and shrubs in riparian areas include black cottonwood (*Populus trichocarpa*), white alder (*Alnus rhombifolia*), willow (*Salix* spp.), and Rocky Mountain maple (*Acer glabrum*) (CTUIR 2010b). Wetland habitats on the UIR have decreased in the past 100 years, but the loss is difficult to quantify. Many wetlands in agricultural areas have been filled to increase tillable acres (Quigley and Arbelbide 1997). Based on limited analysis conducted by the CTUIR (1997), wetland losses in the upper Umatilla River range from 30 to 35 percent. The majority of wetlands are associated with riparian corridors and floodplains of the Umatilla River and its tributaries. Wildlife species typically found in riparian areas and/or wetlands include white-tailed deer, beaver (*Castor canadensis*), mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), and racoon (*Procyon lotor*). Native upland game bird species, including dusky grouse (*Dendragapus obscurus*), ruffed grouse (*Bonasa umbellus*), and mountain quail (*Oreortyx pictus*), as well as the introduced wild turkey (*Meleagris gallopavo*) occur on the edges of riparian areas. Riparian areas and wetlands also provide nesting and foraging for a variety of amphibians, waterfowl, and other migratory birds.

## 2.6 Threatened and Endangered Plant and Wildlife Species

Section 7 of the ESA (16 U.S.C. 1531 et seq.) of 1973 as amended, and its implementing regulations found at 50 CFR 402, require federal agencies to insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat.

Table 2-3 lists the federal and state-listed endangered, threatened, and candidate species identified as potentially occurring in the IWMP management area. This list was compiled from 1) the USFWS Information for Planning and Consultation list for the IWMP management area (USFWS 2017), 2) the StreamNet database to determine presence of NOAA fisheries-listed species (Streamnet 2018), and 3) the state Threatened, Endangered, and Candidate Fish and Wildlife Species list (Oregon Department of Fish and Wildlife [ODFW] 2017). Based on a review of the habitat types present in the IWMP management area and the known range of each species, only bull trout, Middle Columbia River steelhead, Snake River

Basin steelhead, and Snake River Chinook were carried forward for further analysis. Canada lynx, gray wolf, Washington ground squirrel, yellow-billed cuckoo, and whitebark pine were not carried forward for further analysis due to lack of suitable habitat and/or lack of known occurrence in the IWMP management area (Table 2-3).

<b>TABLE 2-3 FEDERAL AND STATE THREATENED, ENDANGERED, AND CANDIDATE SPECIES WITH POTENTIAL TO OCCUR IN THE IWMP MANAGEMENT AREA</b>		
<b>Species</b>	<b>Status</b>	<b>Occurrence potential</b>
<b>Fish</b>		
Bull trout ( <i>Salvelinus confluentus</i> )	Federally threatened	Known to occur
Middle Columbia River steelhead ( <i>Oncorhynchus mykiss</i> )	Federally threatened	Known to occur
Snake River Basin steelhead ( <i>Oncorhynchus mykiss</i> )	Federally threatened	Known to occur
Snake River Chinook spring/summer-run ( <i>Oncorhynchus tshawytscha</i> )	Federally threatened	Known to occur
<b>Mammals</b>		
Canada lynx ( <i>Lynx canadensis</i> )	Federally threatened	None. Suitable habitat includes moist, cool, boreal spruce-fir forests. There is no suitable habitat for this species in the IWMP management area.
Gray wolf ( <i>Canis lupis</i> )	Federally endangered	None. While gray wolf is likely to occur in the IWMP management area, the species is federally endangered only in western Oregon (west of the centerline of Highway 395 and Highway 78 north of Burns Junction and west of the centerline of Highway 95 south of Burns Junction) and western Washington (west of the centerline of Highway 97 and Highway 17 north of Mesa and west of the centerline of Highway 395 south of Mesa). These areas are all west of the IWMP management area.
Washington ground squirrel ( <i>Spermophilus washingtoni</i> )	State endangered	None. The species inhabits isolated grassland remnants in Washington, east of the Columbia River in Adams, Douglas, Franklin, Grant, Lincoln, and Walla Walla counties; and in north-central Oregon in the northern halves of Gilliam and Morrow counties and in northwestern Umatilla County (75 <i>Federal Register</i> [FR] 69222), but is not known to occur in the IWMP management area.
<b>Birds</b>		
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	Federally threatened	None. The species prefers large continuous riparian zones with cottonwoods and willows for breeding. There is no suitable habitat for this species in the IWMP management area.

TABLE 2-3 FEDERAL AND STATE THREATENED, ENDANGERED, AND CANDIDATE SPECIES WITH POTENTIAL TO OCCUR IN THE IWMP MANAGEMENT AREA		
Species	Status	Occurrence potential
<b>Plants</b>		
Whitebark pine ( <i>Pinus albicaulis</i> )	Candidate	None. The species is typically found growing at alpine timberline or with other high-mountain conifers just below the timberline and upper montane zone. There is no suitable habitat for this species in the IWMP management area.

## 2.6.1 Bull Trout

Bull trout are most often associated with undisturbed stream habitat characterized by diverse cover and structure (e.g., large woody debris, undercut banks, boulders, and pools). Maintaining bull trout populations requires stream channel and flow stability. Bull trout spawning is limited to cold, clean, generally pristine streams, often within headwater reaches. At the time of initial listing as a threatened species, bull trout were estimated to have been extirpated from approximately 60 percent of their historical range. Reasons for bull trout decline include habitat loss and fragmentation, interaction with nonnative species, poor water quality, and fish passage issues (USFWS 2015). Of the six recovery units identified in the 2015 USFWS Bull Trout Recovery Plan, only the Mid-Columbia Recovery Unit is located in the IWMP management area (USFWS 2015).

The bull trout population in the Umatilla subbasin is part of the Columbia River Distinct Population Segment (DPS). Historically, fluvial bull trout would have had access to the Columbia River and its tributaries and been connected to populations in the adjacent basins, forming a larger metapopulation (Buchanan et al. 1997). Construction of Three-Mile Dam and McKay Dam has impacted the fluvial bull trout population and has prevented access to and from the Columbia River. Construction of mainstem dams further isolated the Umatilla bull trout from neighboring populations in the Walla Walla River (Buchanan et al. 1997).

In the Umatilla subbasin, because of poor water quality conditions, bull trout are isolated in the headwaters of the Umatilla River and Meacham Creek (ODFW 2005). Bull trout are found in the mainstem Umatilla River upstream of Thorn Hollow, at elevations above 1,600 feet. Spawning and rearing occurs in the North and South Forks of the Umatilla River and in North Fork Meacham Creek. Suitable spawning habitat also exists in the East Fork of Meacham Creek, but bull trout have not been found there (Buchanan et al. 1997). Bull trout are found year-round in Isquulktpé Creek, Ryan Creek, North Fork Umatilla River, Coyote Creek, Shimmiehorn Creek, and Meacham Creek, although no spawning has been identified in these areas (Buchanan et al. 1997).

In the Grande Ronde River subbasin, bull trout currently spawn and rear in the Upper Grande Ronde River and tributary streams of the upper river where critical habitat is designated (USFWS 2015).

Bull trout in the IWMP management area are known to occur on the UIR (in the Umatilla River, Meacham Creek, and Isquulktpé Creek), as well as off-reservation tribal fee lands, including Gladow (in Meacham Creek), Lookingglass (in Lookingglass Creek and Little Lookingglass Creek), Catherine Creek (in Catherine Creek) and Rainwater Wildlife Area (in South Fork Touchet River, Burnt Fork, and Griffin Fork) (Streamnet 2018).

## **2.6.2 Middle Columbia River Steelhead**

The Middle Columbia River steelhead DPS includes all naturally spawning steelhead populations below natural and artificial impassable barriers in streams from above the Wind River, Washington, and the Hood River, Oregon, upstream to and including the Yakima River, Washington, and progeny of seven artificial propagation programs (NMFS 2016). Designated critical habitat encompasses all river reaches, including estuarine areas, adjacent riparian zones, and tributaries within the range of this DPS as designated on September 2, 2005 (70 FR 52630).

Of the four major population groups within the Middle Columbia River steelhead DPS, the Umatilla/Walla Walla major population group occurs within the IWMP management area. Umatilla River origin summer steelhead adults typically enter the Columbia River from the Pacific Ocean in June through August of the year before spawning. Spawning occurs in the mainstem of the Umatilla River primarily from Minthorn Springs upstream (RM 65) and in the headwater tributaries. However, some spawning has been observed as far downstream as Feed Canal Division (RM 28). Major spawning tributaries in the Umatilla subbasin include Birch Creek, Meacham Creek, and Isqúultpe Creek. Steelhead rearing streams include, but are not limited to, Meacham Creek, Isqúultpe Creek, Buckaroo Creek, Boston Canyon Creek, Mission Creek, and Coonskin Creek (Contor 2004). High summer water temperatures, lack of vegetation canopy cover, insufficient quantity of pools, and lack of large woody debris, bank instability, and flashy stream flow characterize all of these streams. Land uses including timber harvest, roads, and livestock grazing have contributed to these habitat conditions.

Middle Columbia River steelhead in the IWMP management area are known to occur on the UIR (in the Umatilla River, South Patawa Creek, Mission Creek, Cottonwood Creek, Moonshine Creek, Coonskin Creek, Buckaroo Creek, Stage Gulch, Isqúultpe Creek, Meacham Creek, Boston Canyon, and Beaver Creek), as well as off-reservation tribal fee lands, including Gladow (in Meacham Creek) (Streamnet 2018).

## **2.6.3 Snake River Basin Steelhead**

The Snake River Basin steelhead DPS includes all naturally spawning populations of steelhead originating below natural and manmade impassable barriers in the Snake River and its tributaries. Designated critical habitat encompasses all river reaches, including estuarine areas, adjacent riparian zones, and tributaries within the range of this DPS as designated on September 2, 2005 (70 FR 52630).

Adult Snake River Basin steelhead return to mainstem rivers from late summer through fall, where they remain in larger rivers for several months before moving upstream into smaller tributaries. Adult dispersal toward spawning areas varies with elevation, with the majority of adults dispersing into tributaries from March through May, with earlier dispersal at lower elevations and later dispersal at higher elevations.

Of the six major population groups within the DPS, the Grande Ronde River drainage group falls within the IWMP management area.

SNAKE RIVER BASIN steelhead in the IWMP management area are known to occur on the UIR (in Johnson Creek) and on off-reservation tribal fee lands, in Lookingglass Creek, Little Lookingglass Creek, and Catherine Creek (Streamnet 2018).

## **2.6.4 Snake River Spring Chinook Salmon**

The Snake River spring/summer-run Chinook salmon Evolutionary Significant Unit (ESU) includes all naturally spawned populations of spring/summer-run Chinook salmon in the mainstem Snake River and the Tucannon River, Grande Ronde River, Imnaha River, and Salmon River subbasins; and progeny of 15

artificial propagation programs (NMFS 2014). Designated critical habitat encompasses all river reaches, including estuarine areas, adjacent riparian zones, and tributaries within the range of this Evolutionary Significant Unit as designated on October 25, 1999 (64 FR 57399).

Of the five major population groups within the DPS, the Grande Ronde/Imnaha River groups fall within the IWMP management area. Each of these populations faces a “high” risk of extinction. Although recent natural spawning abundance estimates have increased, all populations remain below minimum natural origin abundance thresholds (NMFS 2014).

Adult Snake River spring/summer Chinook salmon enter the Columbia River on their upstream spawning migration from February through March and arrive at their natal tributaries from June through August. Spawning occurs in August and September.

Snake River spring Chinook salmon in the IWMP management area are known to occur in Catherine Creek on off-reservation tribal fee land (Streamnet 2018).

## **2.7 Cultural Resources and Traditional Uses**

Section 106 of the NHPA as amended, and its implementing regulations found at 36 CFR Part 800, require federal agencies to identify cultural resources for a federal action. The significance of the resources must be evaluated using established criteria outlined at 36 CFR 60.4. If a resource is determined to be a historic property, Section 106 of the NHPA requires that effects of the undertaking on the resource be determined. A historic property is: “...any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Places, including artifacts, records, and material remains related to such a property...” (NHPA, 16 USC 470w, Sec. 301[5]).

Archaeological and historical sites are the physical evidence of the presence of ancestors of the CTUIR since time immemorial and are also critical to CTUIR culture. They include encampments, lithic scatters, lithic tool quarrying sites, rock cairns, burials, petroglyphs, isolated artifacts, village/habitation sites, historic structures, and other types of archaeological and historical sites.

Other types of sites that are critical to CTUIR culture but may not have an archaeological component include, but are not limited to, sacred sites or traditional cultural properties, vision quest sites, traditional gathering areas, native plant habitats, hunting areas, and fishing sites.

Besides ‘historic properties,’ the CTUIR has their own cultural resources. Several types of cultural resources are present within the IWMP planning/ancestral area that reflect the relationship between the CTUIR and the landscape of the Columbia Plateau and Blue Mountains, including First Foods, culturally important plants, archaeological and historical sites, and other types of sites.

First Foods are the minimum ecological products necessary to sustain CTUIR culture, and include water, salmon, deer, cous, and huckleberry. As described in the tribal creation stories, Salmon was the first to promise to take care of the Indian people when asked by the Creator, followed by deer, cous, and huckleberry. Water is of primary importance among First Foods as well since it is both a resource itself and is critical to the production of the other First Foods. First Foods were and are hunted and gathered in a seasonal round: salmon from the river systems in the spring, cous from the foothills of the Blue Mountains in late spring and early summer, huckleberries and game from the mountains in the late summer, and salmon from the Columbia River and tributaries again in the fall. Serving First Foods in the longhouse is a reminder of the promises made by the First Foods to care for the people, and the people’s responsibility to take care of and respectfully use the First Foods. Sustained production of the First Foods through the protection of and care for First Foods habitats, which allows access to First Foods for

harvesting, processing, preserving, and sharing, is critical to the continuation of CTUIR culture. Without First Foods, the continuity of CTUIR culture cannot be sustained. First Foods hold such importance that all activities carried out by the CTUIR are evaluated to determine if they will benefit First Foods or not (CTUIR 2018b, Jones et al. 2008).

In addition to First Foods, several other plants are considered culturally significant to the CTUIR. These culturally significant plants are numerous, and those that may be collected, used, or consumed include (but are not limited to) plants used as medicines and plants used for subsistence activities. These plants grow in a variety of habitats throughout the IWMP management area. Many of these culturally important plants are critical to the continuity of First Foods habitats and survival of First Foods, serving as a food source for First Foods or an important part of First Foods habitat. Because of the role these plants play in CTUIR culture, protection and maintenance of their habitat also is critical to CTUIR culture.

## 2.8 Fire

Fire historically occurred relatively frequently in the IWMP management area and played a major role in the composition and structure of native plant communities. In addition to lightning-ignited fires, human-set fires were common in the Blue Mountains into the mid-1800s. Native tribes including the Cayuse, Nez Perce, Paiute, Shoshone, and Umatilla burned forests throughout the Blue Mountains to improve hunting and grazing and to increase production of edible berries and roots (Williams 2000). Fires typically burned from summer until the onset of fall rain, and fire frequency and severity varied with elevation and topography (Juran 2017). In forested areas, the fire return interval likely varied from 6 to 8 years at lower elevations to sixty or more years at higher elevations (CTUIR 2010b). Where fires were frequent, fuels seldom accumulated to high levels and the fires were usually low severity (with pockets of moderate to high severity) surface fires. At the higher, more moist elevations, the fire return interval was much longer, and fire events would develop into stand replacement fires (CTUIR 2010b).

Attempts to exclude both natural and human-set fires began in the early 20th century. Fire exclusion, along with livestock grazing and logging, has increased fuel loads and altered native plant community composition and structure (Juran 2017). In forested areas, fire exclusion has resulted in increases in tree density, accumulation of litter and duff, and an increase in shade-tolerant conifers. The establishment of invasive annual grasses in both forested and non-forested areas has increased fine fuel continuity, which has lengthened the fire season, increased fire size, and increased rates of spread (Juran 2017). Areas that are within or adjacent to human development, including roadsides, railroads, pipelines, transmission line rights-of-way, and residential areas, are highly infested with invasive weeds. During the dry summers, invasive weeds in these areas provide a continuous bed of highly flammable fuel that can readily carry a fast-moving fire, posing fire hazards to the CTUIR community and ecologically and culturally important habitats.

## 2.9 Climate Change

The CTUIR Climate Change Vulnerability Assessment (CTUIR 2015) identified the following climate change projections for CTUIR Aboriginal Title Lands, which encompass the entirety of the IWMP management area:

- Seasonal average maximum monthly temperatures will likely increase steadily throughout the 21st century. This trend will culminate with an increase of around 5°F to 12°F by the end of the century. The largest increase is projected to be during the summer.
- Increases in average maximum summer temperatures alone are projected to increase by



- between +2°F and +10°F by mid-century while winter temperatures are projected to increase by between +1°F and +8°F
- There will likely be a large increase in the number of days that exceed 90° in the summer by the end of the century. Projections show a doubling of the number of days that exceed 90°F in the summer from 13 to 26 days by mid-century and a tripling to 39 days by the end of the century. Spring and fall may see a few more days over 90°F.
- Changes in precipitation patterns are less clear-cut than for temperature. The analysis suggests little overall change in total annual precipitation, but summers will be potentially drier while the other seasons are slightly wetter.
- Uncertainties in the precipitation projections are much larger than uncertainties in the temperature projections. There are especially large uncertainties for projections of the number of days with no precipitation.

In addition, Elsner and Hamlet (2010) predict a transition of 75 percent mixed rain/snow system in the 20<sup>th</sup> century to an almost 100 percent rain dominant behavior by the end of the 21<sup>st</sup> century for the Columbia Basin Region.

## 2.10 Socioeconomic Factors

The CTUIR depend on natural resources for development of a strong diversified economy while preserving cultural, subsistence, and aesthetic values. Fishing and hunting as well as the gathering of roots and berries are deeply rooted within the Tribal social structure. Tribal members still rely upon wildlife as well as fish as a primary source of food. These same resources play important roles in tribal ceremonial and cultural activities. At one time, roots were known to constitute as much as one-half of the diet and fish about one-third. It is presently a cultural tradition for the women of the tribes to gather roots in the foothills of the Blue Mountains on the UIR.

The harvesting, processing, manufacturing, and marketing of farm, forest, livestock, and mineral products provide income to landowners and the CTUIR. The majority of land on the UIR is in agricultural or livestock production. Invasive weed infestations lower crop yields and result in loss of livestock forage and income loss. The City of Pendleton, Umatilla County, and the UIR have historically relied heavily on natural resources and agriculture. The Wildhorse Casino and Resort also plays a substantial role in the CTUIR economy.

The longhouse and Tribal cemeteries are both culturally and socially important places in the UIR. The longhouse is an important cultural and social building on the UIR as it is used for Tribal events and celebrations and serving First Foods in the longhouse is a reminder of the promises made by the First Foods to care for the people. The longhouse and Tribal cemeteries have both become infested with puncturevine and other invasive weeds. Maintenance and preservation of these important areas is important to the CTUIR.

## 2.11 Public Health and Safety

The UIR is in a Class II Area in attainment with the National Air Ambient Quality Standards. There are no major point sources of air emissions regulated under Title III, Title IV, or Title V of the CAA. Area air emissions sources on the UIR include fugitive dust, stationary sources too small or numerous to account for individually, residential wood burning, and prescribed fires. The use of prescribed fire as a weed management tool in the IWMP management area is currently limited to burning Himalayan blackberry piles following cutting, removing common reed in wetlands before applying herbicides, and burning

annual grasses prior to herbicide application. Prescribed fire is also used to regenerate tules at the Wanaket Wildlife Area and to reduce fuels following forest thinning projects. The CTUIR Office of Air Quality is responsible for the air quality conditions within the contiguous boundaries of the UIR and make daily burn decisions between October 1st through June 1st based on local atmospheric conditions (CTUIR 2018a).

# CHAPTER 3 – INTEGRATED WEED MANAGEMENT DIRECTION

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After careful review of the issues and concerns and the options available for integrated weed management on the UIR, the BIA and CTUIR selected integrated weed management direction based on the following criteria:

- (1) The management strategy must comply with provisions of the Comprehensive Plan; the Water Code, TMDL, and WQMP; the Historic Preservation Code of the CTUIR; and other CTUIR management plans.
- (2) The management strategy must balance the cultural, social, economic, and environmental values of the CTUIR.
- (3) The management strategy must foster healthy natural ecosystems and protect and enhance rangeland, agriculture, forest lands, riverine floodplains, and associated riparian systems.
- (4) The management strategy must protect federal threatened or endangered species (bull trout, Middle Columbia River steelhead, Snake River Basin steelhead, and summer steelhead) habitat and protect important deer and elk security habitat.
- (5) The management strategy must provide a reasonable opportunity to achieve the goals and objectives identified during the planning process.
- (6) The management strategy must preserve options for change in management activities if monitoring reveals that the goals and objectives are not being achieved.

## 3.1 Goals and Objectives

Goals and objectives for the intended outcome of the IWMP were developed by the IDT during the IWMP planning process. Goals represent broader primary outcomes and objectives represent the steps taken to achieve those broader goals.

### 3.1.1 Invasive Weed Management

*Goal 1. Develop an integrated weed management strategy to reverse the trend of invasive weed colonization and expansion throughout the UIR to foster healthy ecosystems in support of the First Food Mission for the perpetual cultural, economic, and sovereign benefit of the CTUIR.*

- **Objective 1a.** Identify problems stemming from invasive weed infestations and prioritize actions to solve the problems in consideration of ecological, agricultural, economic, and cultural factors.
- **Objective 1b.** Identify and address vectors that introduce and spread invasive weeds.
- **Objective 1c.** Consider alternative management practices, particularly for areas difficult to access.
- **Objective 1d.** Use [Geographical Information System] GIS to effectively track weed infestations and treatment efforts.
- **Objective 1e.** Focus treatment in areas of highest risk and concern to Tribal membership.
- **Objective 1f.** Provide for the uses and values of the CTUIR regarding natural resources that support physical and ecological processes contributing to First Foods and other culturally important plants.
- **Objective 1g.** Implement a variety of control methods, including biological, physical, and cultural control practices.

*Goal 2. Provide and implement consistent management direction for invasive weed control within the IWMP management area.*

- **Objective 2a.** Provide education and outreach for Tribal members and non-tribal members living within the UIR.
- **Objective 2b.** Obtain input and agreement from CTUIR staff, committees, commissions, and the Tribal membership on the components of the IWMP.
- **Objective 2c.** Ensure the IWMP is consistent with other existing weed management documents, plans, and biological opinions that apply to the IWMP management area.

*Goal 3. Identify and implement weed management direction that achieves the biggest gains for the resources expended.*

- **Objective 3a.** Identify high priority areas to target treatments based on anticipated effectiveness and input from Tribal members.
- **Objective 3b.** Establish a weed list specific to the UIR with priority ranking.
- **Objective 3c.** Implement a monitoring program to track the effectiveness of weed treatments, changes to existing infestations, and new infestations on the UIR.
- **Objective 3d.** Emphasize adaptive management based on findings from ongoing monitoring efforts.
- **Objective 3d.** Prioritize prevention of invasive weed establishment, including early detection and rapid response to prevent weeds from establishment.

*Goal 4. Increase the abundance of native plant species and habitat in the IWMP management area.*

- **Objective 4a.** Contain large-scale infestations of invasive weeds.
- **Objective 4b.** Protect and restore native and culturally important plant species.
- **Objective 4c.** Minimize the killing of non-target plants.
- **Objective 4d.** Prevent encroachment of invasive weeds and other non-native plants into uninfected areas.

### **3.1.2 Water Quality and Fish Habitat**

*Goal 5. Maintain and restore the chemical, physical, and biological conditions of streams within the IWMP management area.*

- **Objective 5a.** Develop and implement BMPs to protect waterbodies from herbicides.
- **Objective 5b.** Provide for channel and substrate conditions that will not limit spawning and rearing of native fish.
- **Objective 5c.** Enhance a diverse community of self-sustaining upland and floodplain native vegetation that supports physical and ecological processes contributing to First Foods, such as water and fish.
- **Objective 5d.** Provide control and/or suppression of invasive and noxious weed species to allow native plant species to establish and to prevent the loss of aquatic, riparian, and floodplain habitat to weed infestation.

*Goal 6. Protect and restore the riparian zones, wetlands, and watersheds within the IWMP management area.*

- **Objective 6a.** Follow the manufacturer's labels for application of herbicides near surface waters and wetted areas.
- **Objective 6b.** Identify allowable herbicides near water and associated buffers.

### 3.1.3 Wildlife and Wildlife Habitat

*Goal 7. Maintain, protect, and restore the quality of native plant and wildlife habitats within the IWMP management area.*

- **Objective 7a.** Identify native plant species and habitats that are most at risk of invasive weed infestation.
- **Objective 7b.** Maintain the amount and arrangement of cover and forage areas to optimize and maximize use by big game.
- **Objective 7c.** Develop a strategy for revegetation following weed treatments.

*Goal 8. Ensure adequate distribution of well-connected persistent high-quality habitat representing different plant community types and structural stages for other wildlife species.*

- **Objective 8a.** Maintain and restore native plant species cover to maintain and improve habitat conditions for wildlife species.
- **Objective 8b.** Minimize impacts of weed treatments on non-target plants.

### 3.1.4 Threatened and Endangered Plant and Wildlife Species

*Goal 9. Protect threatened and endangered plant and wildlife species and their habitats.*

- **Objective 9a.** Identify specific geographic areas or invasive weed species that pose the highest risk to threatened and endangered species.

*Goal 10. Contribute to range-wide recovery of threatened and endangered plant and wildlife species.*

- **Objective 10a.** Identify opportunities to improve habitat critical to threatened and endangered plant and wildlife species.
- **Objective 10b.** Consider impacts to threatened and endangered plant and wildlife species when determining appropriate weed treatments.

### 3.1.5 Cultural Resources and Traditional Uses

*Goal 11. Maintain or enhance First Foods and other culturally important plants.*

- **Objective 11a.** Ensure any control methods used for invasive weed species do not negatively affect First Foods and other culturally important plants.
- **Objective 11b.** Prioritize weed management activities that enhance the production of First Foods and other culturally important plants.
- **Objective 11c.** Minimize impacts on non-target plants
- **Objective 11d.** Identify weed management efforts in habitats supporting First Foods.

*Goal 12. Ensure that culturally important plants are safe for consumption and handling.*

- **Objective 12a.** Identify if any culturally important plants are unsafe for use or consumption as a result of herbicide applications.
- **Objective 12b.** Notify Tribal membership of when/where herbicide treatments will occur.

*Goal 13. Maintain the integrity of cultural resource sites.*

- **Objective 13a.** Prevent damage of existing cultural resource sites by activities that might disturb artifacts and features (hearths, rock cairns, and other objects).
- **Objective 13b.** Prevent damage to and adverse changes to the setting of traditional cultural properties.

### **3.1.6 Fire**

*Goal 14. Provide for the natural role of fire in maintaining a viable and healthy ecosystem.*

- **Objective 14a.** Plan for the response of invasive weeds to fire when wildfires or prescribed burns occur.

### **3.1.7 Climate Change**

*Goal 15. Incorporate climate change into the IWMP management strategy.*

- **Objective 15a.** Emphasize adaptive management strategies as needed for addressing changes to native plant and invasive weed coverage resulting from climate change.
- **Objective 15b.** Use the monitoring program to identify changes to native plant and invasive weed coverage potentially resulting from climate change.

### **3.1.8 Socioeconomic Factors**

*Goal 16. Maintain adequate funding and staffing levels to fully implement the IWMP.*

- **Objective 16a.** Identify funds and staff required for inventory of invasive weeds, development of treatment plans, and implementation activities.
- **Objective 16b.** Pursue funding and cost sharing sources to carry out the management activities and monitoring program.

*Goal 17. Identify and protect areas of importance to the CTUIR community.*

- **Objective 17a.** Identify areas of importance.
- **Objective 17b.** Develop management strategies for areas of importance to the CTUIR community, such as root fields, cemeteries, and the longhouse.

### **3.1.9 Public Health and Safety**

*Goal 18. Protect human health and safety.*

- **Objective 18a.** Follow manufacturer's labels for application of herbicides.
- **Objective 18b.** Require use of personal protective equipment for application of herbicides.

## **3.2 Mitigation and Standards and Guidelines**

Mitigation includes specific means, measures or practices that would reduce or eliminate effects of the proposed action or alternatives. Mitigation measures can be applied to reduce or eliminate adverse effects to biological, physical, or socioeconomic resources. Mitigation may be used to reduce or avoid adverse impacts, whether or not they are significant in nature.

As defined in the CEQ Regulations (40 CFR 1508.20) mitigation can include:

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing impact by limiting the degree of magnitude of the action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
5. Compensating for the impact by replacing or providing substitute resources or environments.

Here, we include CTUIR Standards and Guidelines with the mitigation (BMPs when conducting weed management, including herbicide application). Standards and guidelines are the physical, biological, and social conditions necessary to meet the goals and objectives of the IWMP. Standards are acceptable levels of quality or attainment and are mandatory, and guidelines are recommendations. Standards are indicated by *shall* terminology and guidelines are indicated by *should* terminology.

### **3.2.1 Invasive Weed Management**

1. Weed inventory data *shall* be reviewed annually to identify trends and prioritize treatments.
2. Weed management activities *shall* be identified, planned, and implemented in accordance with the identified priority management areas and priority weeds.
3. For purposes of this IWMP, weeds *shall* be defined as those identified on the current CTUIR invasive weed list.
4. Educational materials *shall* be made available to all CTUIR members and non-CTUIR members living within and near the IWMP management area.
5. All individuals responsible for conducting weed treatments *shall* be properly trained and educated on proper, effective weed control methods.
6. All weed management activities *shall* be consistent with existing weed management documents, plans, and biological opinions that apply to the IWMP management area.
7. The IWMP *shall* be implemented across all departments of the CTUIR.
8. All weed management activities *shall* be consistent with all relevant state, federal, and CTUIR statutes and permits.
9. All conditional uses listed in the CTUIR Land Development Code *shall* be reviewed for weed management conditions as applicable to the use and consistency with the IWMP as part of the conditional use permit process.
10. All ground-disturbing projects within the IWMP management area *shall* incorporate BMPs to prevent the spread of invasive weeds.
11. Rights-of-way and/or easements granted within the IWMP management area *shall* comply with IWMP Standards and Guidelines.
12. Any entity performing weed treatment activities *shall* notify owners of fee or allotted lands prior to weed treatment activities on those lands.
13. Only herbicides on the CTUIR approved list *shall* be used within the IWMP management area.
14. The manufacturer's EPA-approved labels *shall* be strictly followed when applying herbicides for each weed treatment activity.
15. Weed treatments *shall* not be performed when the plant being treated is in seed.

16. Chemical weed treatments *should* not be performed when the plant being treated is in flower, to prevent impacts on native pollinators.
17. Weed treatments *shall* occur in accordance with the identified treatment window for the weed species being treated or per the herbicide manufacturer's EPA-approved label and relevant BMPs.
18. All weed treatments *shall* be tracked in the GIS weed management database.
19. Standard Operating Procedures (SOP) *shall* be developed and followed when weed treatments are performed by the CTUIR. Procedures *shall* include documenting and monitoring the following:
  - Treatment location
  - Weed extent
  - Weed density
  - Treatment method
20. Appropriate treatment methods and BMPs *shall* be selected on a site-specific basis to minimize impacts to important resources and non-target plants.
21. Revegetation (by seeding or transplanting) of native grasses, forbs, and shrubs *shall* be required under the following circumstances:
  - a. Natural regeneration of plants will not establish sufficient cover;
  - b. Development activity requires certain plant communities to meet objectives; or
  - c. The vegetation that will establish or has established on the site is not an acceptable plant community.
22. A prioritized seed preference list for any seeding operation *shall* be as follows:
  - a. Locally adapted native seed
  - b. Native cultivars
  - c. Non-invasive introduced species

Cultivars or non-invasive introduced species shall only be used in the absence of adequate true native seed sources, when environmental and economic thresholds for native perennial grasses have been exceeded, or when threats of weed infestation or accelerated soil erosion are immediate and cannot be addressed in a timely manner with true native seeds. In such cases, landowners or operators shall use non-native species with non-persistent characteristics as approved by the CTUIR Restoration Ecologist.
23. Revegetation after weed treatments in active floodplains, riparian areas, and wetlands with shrubs, including areas having potential for shrubs or where shrubs have been removed in the past, *should* achieve 80 percent coverage of each bank with at least 50 percent of that cover at full height typical for the shrub species involved.
24. Revegetation after weed treatments in riparian areas that cannot support shrub vegetation (e.g., rocky or thin soils), springs, and isolated or seasonal wetlands *should* support or have measurable progress, as measured by plant composition and ground cover, toward supporting riparian plant communities or wetland plant communities typical to the site.
25. Native shrub and tree selection for any revegetation project *shall* be locally adapted to the area. It is preferable to have local native stock that originates at or as near the project area as possible.
26. The CTUIR Restoration Ecologist *shall* provide plant lists for native and noninvasive plants.



### **3.2.2 Water Quality and Fish Habitat**

1. Only herbicides approved for application near water per the manufacturer's EPA-approved label *shall* be applied near surface water or wetted areas.
2. Pesticides *shall* not be applied or stored within 100 feet of a well.
3. Revegetation in active floodplains, riparian areas, and wetlands *shall* be performed after weed treatment activities in accordance with the revegetation standards and guidelines listed for native vegetation.
4. Mechanical weed treatments in stream channels and riparian areas *shall* follow standards listed in the CTUIR Water Code.

### **3.2.3 Wildlife and Wildlife Habitat**

1. Weed prevention activities in high priority wildlife habitat *should* be prioritized.
2. Seeding and/or planting with native species *shall* be performed after weed treatment activities in accordance with the revegetation standards and guidelines listed under integrated weed management.

### **3.2.4 Threatened and Endangered Plant and Wildlife Species**

1. Legal and biological requirements for the protection of endangered, threatened, and sensitive plants and animals *shall* be met.
2. Biological reviews *shall* be carried out according to the requirements of the ESA as amended. Consultation requirements of the USFWS and NOAA Fisheries Service *shall* be met.

### **3.2.5 Cultural Resources and Traditional Uses**

1. Herbicide treatments *shall* be planned and implemented in a way that avoids making culturally important plants unsafe for use and consumption.
2. The CTUIR THPO *shall* be consulted prior to the initiation of any weed treatments that include ground-disturbing activities (including burning).
3. Weed treatments *shall* not damage existing cultural resource sites.
4. CTUIR membership community *should* be educated and informed of weed treatment activities that could affect culturally important plants, such as:
  - when/where weed treatments take place;
  - the proper waiting time to collect plants and medicines after herbicide treatments; and
  - whether certain plants or parts of plants (leaves, stems, roots) are affected differently.
5. Specific management strategies *shall* be developed and followed for areas near the longhouse.
6. Revegetation after weed treatments *should* include or enhance culturally important plants when feasible.

### **3.2.6 Fire**

1. Prescribed fire *should* be considered as a weed treatment strategy when it has the potential to contribute to the success of restoration.
2. Prior to conducting prescribed fires, a weed treatment and revegetation strategy *should* be developed to prevent post-burn weed establishment and spread.
3. After wildfires occur, the burn area *should* be assessed for the potential for weed infestation and treated and/or revegetated in accordance with the revegetation standards and guidelines listed for native vegetation.

### **3.2.7 Climate Change**

1. Weed treatment and rehabilitation strategies *should* be adapted as needed to address changes to native plant and weed species composition and abundance resulting from climate change.

### **3.2.8 Socioeconomic Factors**

1. Resources for treatment activities *should* be consolidated and shared between departments.
2. Weed treatment management activities *shall* be coordinated between departments.
3. Specific management strategies *shall* be developed and followed for CTUIR-managed cemeteries within the IWMP management area.

### **3.2.9 Public Health and Safety**

1. When applying herbicides, the manufacturer's EPA-approved label instructions *shall* be strictly followed to avoid impacts associated with aerial drift.
2. Any prescribed burning *shall* be performed in accordance with federal and/or CTUIR smoke management plans.
3. Workers applying herbicides *shall* use personal protective equipment to reduce exposure to chemicals.

Herbicide storage and disposal *shall* be consistent with the manufacturer's EPA-approved label and state and federal regulations for pesticide containment and disposal.

## **3.3 Integrated Weed Management Strategy**

The CTUIR will implement an integrated weed management strategy involving multiple weed management methods, including education, prevention, inventory, coordination, treatment, restoration, and monitoring. The goal of integrated weed management is to maximize effectiveness while minimizing the adverse environmental, economic, and social impacts associated with weed management. Integrated weed management allows a combination of one or more methods, which is typically more effective than a single type. An integrated weed management strategy also will allow the CTUIR the flexibility to select and implement the weed management strategies deemed most viable and effective based on the specific weed species targeted for treatment and site-specific conditions.

The integrated weed management strategy under the IWMP includes prioritizations and restrictions for treatment activities. Because achieving complete eradication of all invasive weeds within the IWMP management area is not realistic, the activities include a prioritization strategy for treatment to guide an efficient, effective, and ecologically based approach to invasive weed management (Appendix A). The

IWMP also includes some restrictions, primarily related to the use of pesticides, treatment near water, and treatment near First Food harvest areas necessary to achieve the goals and objectives identified during the scoping and alternative development process.

The land ownership patterns on the UIR pose challenges to the CTUIR with respect to weed management and implementing authority throughout the IWMP management area. The following elements of the IWMP and associated BMPs and SOPs (Appendix A) apply to all projects and actions that take place within the IWMP management area, even those not performed by the CTUIR if the projects or actions require a conditional use permit from the CTUIR. Project or actions are required to demonstrate compliance with all CTUIR management plans, including the IWMP as a condition of approval. Elements of this plan most applicable to non-tribal actions include Prevention (Section 3.3.2), Treatment Activities (Section 3.3.5), Restoration and Revegetation (Section 3.3.6), and Monitoring (Section 3.3.7).

### **3.3.1 Education**

Education and awareness are important aspects of integrated weed management. All individuals responsible for conducting weed treatments within the IWMP management area will be adequately trained and educated on proper, effective weed control methods. Additionally, the CTUIR will provide education and outreach opportunities for the public. Increasing awareness of what invasive weeds are, what they look like, how and when they spread, and the threat they pose will help the public, CTUIR staff, and weed management contractors understand the importance of long-term weed management and how to select and implement the most appropriate weed management methods.

#### **3.3.1.1 Public Education and Outreach**

CTUIR will promote education and awareness to the public by:

- Posting general weed information on the CTUIR website, including the weed field guide, CTUIR weed list, weed management fact sheets and frequently asked questions, and the IWMP.
- Posting signage and notices of when and where herbicides are applied to prevent collecting plants during or immediately after herbicide treatments.

The following topics will be covered:

- Timing treatment activities to avoid the period when weeds are in seed to prevent additional spreading.
- What the priority weed species are and what they look like.
- What the most problematic weed vectors are, where they are located, and what actions and behaviors can help to avoid weeds spreading from identified vectors.
- How to employ better, effective weed control, including how to control weeds, what to look for, and potential species that can be planted that help keep weeds at bay.
- Proper waiting time to collect plants/plant parts after herbicides have been applied.
- Whether post-treatment waiting times vary by herbicide, plant species or plant part (e.g., leaves, stems, roots).

### **3.3.1.2 Education and Training for CTUIR Staff and Contractors**

The CTUIR will provide an annual training for all CTUIR staff and contractors that perform weed treatment activities within the IWMP management area. The training would cover the IWMP; specific topics may include:

- How to select appropriate treatment methods on a site-specific basis to minimize harming or killing non-target plants.
- The importance of treating weeds when they are not in seed to avoid additional spread.
- Notification protocol for treating weeds on fee or allotted lands.
- Proper use and application of herbicides, including what chemicals are allowed, use of personal protective equipment, appropriate storage, applicable laws and responsibilities as an applicator, and licensing requirements.
- Weed species prioritization according to the most recent CTUIR invasive weed list.
- Priority management areas and their appropriate treatment methods.
- Weed and native plant identification.

### **3.3.2 Prevention**

The most cost and time effective way to control invasive weeds is to prevent them from ever establishing. Education and awareness efforts as described above are one form of prevention. Additionally, the CTUIR will incorporate prevention efforts into the IWMP through BMPs associated with ground-disturbing activities and restoration and revegetation that will minimize the potential for weeds to spread, become established, or be transported as a result of projects and maintenance activities within the IWMP management area. BMPs focus on use of weed free material, cleaning equipment and clothing, minimizing disturbed areas, and inspecting equipment and work areas and will be followed for all activities performed by the CTUIR as well as activities within the IWMP management area requiring a conditional use permit from the CTUIR that result in ground disturbance. The full suite of BMPs is provided in Appendix A.

### **3.3.3 Inventory**

Information on the presence, location, and distribution of invasive weeds is key to planning and prioritizing management efforts for maximum effectiveness and efficiency. As described in Section 1.2, the CTUIR has a limited comprehensive inventory of invasive weeds and, therefore, does not have a complete picture of the conditions of invasive weeds throughout the UIR. A comprehensive invasive weed inventory of the entire IWMP management area is needed to properly plan and treat invasive weeds and provide a baseline condition to understand the change in invasive weeds throughout the UIR as the IWMP is implemented. This, however, is prohibitively expensive and only viable if the CTUIR obtains funding specifically to perform the inventory. The CTUIR will seek possible funding mechanisms for the inventory. The inventory will gather the information listed below, which will be managed as a GIS database and updated regularly through ongoing monitoring efforts (Section 3.3.7):

- All weed species present on the UIR
- Locations of existing infestations
- Acreage of infestations
- Density of weeds within the infestations
- General plant community characteristics

The CTUIR will also collect weed data as part of the monitoring element of this plan (Section 3.3.7). Until funding is acquired to perform the reservation-wide inventory, the data collected as part of the monitoring effort will be added to the GIS database currently being managed for weeds. Data from the

GIS weed management database will be used as appropriate, to plan and prioritize weed management efforts.

### **3.3.4 Coordination**

Coordination between all individuals and departments that play a role in weed management throughout the IWMP management area is a key element of integrated weed management. All CTUIR departments will use the IWMP as a guide for planning and implementing weed management activities throughout the IWMP management area. CTUIR will also coordinate with outside agencies and organizations as appropriate, such as Umatilla County, weed districts, and universities. An annual coordination meeting will be held each spring, attended by a minimum of one representative within each CTUIR department that treats invasive weeds, either directly or through contractors, as part of its responsibilities. Additionally, the THPO, a wildlife biologist, plant ecologist, and fisheries biologist will attend the annual coordination meeting to provide input regarding sensitive resources that could be affected by weed management activities. The purpose of the annual coordination meeting is to coordinate planned weed treatment activities for the upcoming year to avoid redundancy, collaborate, and share information and resources between departments. Topics discussed at the meeting may include but not be limited to:

- A summary of the status of invasive weed coverage and management, using data stored in the GIS database.
- Review of the current CTUIR weed list and priority weed species and treatment areas.
- Discussion of available funding for weed management activities for the upcoming year.
- Discussion of weed treatment projects planned or proposed for the upcoming year.

### **3.3.5 Treatment**

#### **3.3.5.1 Treatment Options**

Successful long-term invasive weed control will require a combination of different treatment methods. The specific combination of treatment methods selected will be tailored to the target weed species, the invasive weed infestation size and location, types of desirable vegetation present, cost, management goals at the treatment site, and presence of any sensitive resources. To prevent adverse effects from invasive weed treatments, selection of treatment methods will prioritize the most effective approach that poses the least risk to humans and natural and cultural resources.

The primary treatment methods available for invasive weed control include the following:

- manual (e.g., pulling and grubbing)
- mechanical (e.g., use of chainsaws, mowers, or weed eaters)
- biological (introducing biological control agents)
- targeted grazing by livestock
- prescribed fire
- herbicide application

A description of each treatment method is provided below, along with tips and guidelines for appropriate implementation of each treatment method for optimal results. All treatment methods will be implemented by the CTUIR for weed management consistent with the BMPs and SOPs in Appendix A. Additionally, a list of approved herbicides and adjuvants, along with prescribed buffers, is included in Appendix B.

## **Manual Treatments**

Manual treatment methods such as hand pulling, digging, and grubbing can be effective for controlling some invasive weeds, particularly annual and tap-rooted species in relatively small infestations that do not have an established seed bank. Although labor and time intensive, manual treatments typically cause minimal environmental impact. The key to effective manual treatment is to remove as much of the root as possible while minimizing soil disturbance; otherwise, new sites will be created that are ideal for establishment of new seedlings or invasion by additional weeds. Manual treatments are often ineffective for the control of perennial or rhizomatous species or those with deep and/or easily broken roots. Remaining root fragments have the potential to resprout; and for some species, including rush skeletonweed, hand pulling can increase the number of plants in an infestation.

If a weed seed bank is already established, manual treatments may need to be conducted several times annually. If new seedlings sprout after the first manual treatment is completed, additional treatments may be needed to prevent the weed from re-establishing, which can make manual treatment of invasive weeds in remote locations unpractical. Manual treatments are most practical for small infestations or if a large pool of labor is available. Manual treatments can also be used in combination with other treatments. For example, shrubs can be pulled and cut, and resprouts and seedlings can later be treated with herbicides.

## **Mechanical Treatments**

Mechanical treatments rely on the use of weed wackers, chainsaws, masticators, and mowers. Weed wackers and mowers can be used to prevent invasive weeds from becoming fire hazards. Mowing can be used to create fuel breaks in invasive weed infestations along roads in areas prone to wildfires. Chainsaws and masticators can be used to cut and scatter large shrubs or small trees, such as Himalayan blackberry and wild rose.

Mowing can be an effective weed management tool if timed to prevent or greatly reduce seed production (Sheley et al. 2017). Frequent mowing of rhizomatous broadleaf weeds may initially stimulate growth, but over time imposes stress as plants re-grow and use up energy. The most effective time to mow invasive weeds is when desired plants are dormant, and the weeds have reached the flowering stage. Mowing plants too early will allow them to re-grow. If re-growth is followed by flowering, additional mowing will be needed to prevent seed production (Owsley 2009). Mowing must be avoided when weeds are seeding as it can facilitate seed dispersal, and during the migratory bird nesting season to protect ground-nesting birds.

For perennials, mechanical treatments followed by herbicide application to the re-growth in the fall can stress weeds and provide desirable vegetation a competitive edge. For example, mechanical removal of Himalayan blackberry with chainsaws or an excavator-mounted masticator in the summer, followed by herbicide application in the fall, has been an effective tool for restoring native vegetation to riparian areas along Isquiltpe Creek.

## **Biological Control**

Biological control refers to the intentional release of organisms, including plant-eating insects, nematodes, mites, or pathogens that attack specific invasive weed species. Biological control agents are used to manage invasive weed populations by reducing the population to an acceptable background level, by stressing target plants, and reducing competition with desirable plant species. While biological control agents are not effective for eradicating weed infestations, they can reduce populations below damaging thresholds and hinder further spread. Insect biological control agents typically require 2 to 3 years to establish and 10 to 20 years to significantly affect weed populations (USFWS 2009). Biological control agents are most effective for long-term control of dense infestations that occur over large areas and for

situations when other control options are limited. Biological controls can also be integrated effectively with other control methods. For example, they can be used to reduce the interiors of large infestations while treating outlying satellite occurrences and the perimeters of the large infestations with herbicides.

Of the invasive weeds known to occur in the IWMP management area, biological control agents are available for bull thistle, Canada thistle, Dalmatian toadflax, diffuse knapweed, rush skeletonweed, spotted knapweed, St. Johnswort, and yellow starthistle.

### **Targeted Grazing**

Targeted grazing refers to the application of a specific kind of livestock at a determined season, duration, and intensity to accomplish defined vegetation or landscape goals (American Sheep Industry 2006). Targeted grazing for invasive weed management aims to give desirable vegetation a competitive advantage over invasive weeds. While targeted grazing may not eradicate invasive weeds, it can be an effective weed management tool if timed correctly. The season and duration of grazing should be timed to remove seed-producing structures before viable seeds are produced. Grazing must also be seasonally timed for when the targeted invasive weeds are most palatable to livestock and to minimize effects on desirable vegetation. To improve competition with invasive weeds, desirable vegetation must have adequate time to recover between grazing periods.

Sheep, goats, and cattle can be used for targeted grazing. Sheep and goats will preferentially eat broadleaf plants, while cattle will preferentially graze grasses. Sheep and goats have been used to control several species of invasive weeds in the Northwest, including leafy spurge, yellow starthistle, and Russian knapweed. Goats can be used to remove dead weed litter and seed from fence lines and other areas to minimize weed spread. Cattle grazing early in the season prior to seed set can help limit the spread of invasive annual grasses. After grazing weed seed, livestock should be fed other forage for four or five days before moving to other pastures. This time period prevents the possibility of spreading weeds carried in livestock digestive systems (Owsley 2009).

The use of targeted grazing can be an effective tool in areas with limited access, steep slopes, or other areas where it is impractical to apply herbicides. Similar to other weed treatment methods, targeted grazing is often more effective when used in combination with other treatments. For example, targeted grazing that results in removal of weed litter or thatch can increase the effectiveness of follow-up herbicide treatment.

### **Prescribed Fire**

Similar to targeted grazing, prescribed fire can be used to promote desirable vegetation at the expense of invasive weeds. Knowledge of the morphology, phenology, and life history of the target weed, as well as the desirable vegetation, is needed to develop an effective burn prescription. Prescribed fire is often most effective when conducted just before flower or seed set or at the young seedling or sapling stage for trees and shrubs. Prescribed fire can also be an effective tool for removing seed and thatch in dense, invasive annual grass infestations prior to herbicide application. After performing a prescribed burn, the burn area should be revegetated with native species to prevent invasive weeds from re-establishing. The use of prescribed burns for controlling invasive weeds will be used on a case by case basis. Burn plans will continue to be developed for each prescribed burn that will consider impacts to human health from prescribed fire generated smoke. Additionally, the CTUIR Office of Air Quality may limit burn decisions between October 1st through June 1st based on local atmospheric conditions.

## **Herbicide Treatments**

A wide variety of herbicides are available for weed control. These chemicals vary widely in their mode of action, toxicity, non-target effects, and environmental effects. They must be chosen carefully and applied appropriately to ensure their effectiveness. For herbicide use, the CTUIR has compiled a list of allowable herbicides and adjuvants, associated allowable application methods, geographic areas of application (i.e., riparian versus upland), and stream buffers (i.e., from bankfull width) (Appendix B). The CTUIR Herbicide and Adjuvant list follows the BPA herbicide restrictions according to the BPA Habitat Improvement Program III Biological Opinion (USFWS 2013), allowing all herbicides and adjuvants with the same active ingredients as those included in the BPA list. Additionally, the CTUIR herbicide list allows the active ingredient Indaziflam which is used in Esplanade®. This herbicide is only allowed for upland applications. Herbicides will be applied only to lands and uses for which they are labeled, and all label restrictions will be followed. Herbicide application will also follow the BMPs included in Appendix A, also modeled after the BPA Habitat Improvement Program III Biological Opinion (USFWS 2013). The BPA wildlife mitigation areas maintained by the CTUIR are required to comply with these herbicide restrictions; therefore, herbicide use will be consistent throughout the entire IWMP management area.

Herbicides can be applied using ground-based or aerial methods. Ground-based methods include backpack foliar sprayers with hand-held wands, wicks, and truck- or all-terrain vehicle (ATV)-mounted spraying systems. Backpack sprayers are effective for small areas, areas inaccessible by vehicles, and for spot treatment of invasive weeds interspersed with desirable plant species. Backpack sprayers can target specific plants, thereby minimizing impacts on non-target species. Wicks can be used to target specific weeds and minimize spray on non-target plants. Truck- or ATV-mounted spraying systems are more efficient than backpack spraying for large infestations and infestations located adjacent to roads and trails. Aerial herbicide applications can be conducted with helicopters or fixed-wing aircraft. In non-agricultural areas, aerial herbicide applications will generally be limited to large infestations that are inaccessible using ground-based methods.

### **3.3.5.2 Prioritization**

Prioritization of invasive weed treatment activities in the IWMP management area is key to meeting the goals and objectives of the IWMP. Due to the amount of land infested by invasive weeds within the IWMP management area and the CTUIR's resources available annually, achieving complete eradication of all invasive weeds within the IWMP management area is not realistic in the near future. Therefore, the IWMP includes a prioritization strategy for treatment activities to guide an efficient, effective, and ecologically based approach to invasive weed management. The CTUIR prioritization strategy is structured to (1) achieve the biggest gains in weed management for the resources expended and (2) protect the resources within the IWMP management area deemed most important to the CTUIR.

To achieve these outcomes, there are two main components to the CTUIR prioritization strategy:

1. **Species Prioritization.** Management objectives have been developed for individual weed species based on their current abundance, level of invasiveness, ease of management, and potential impacts on native species and habitats.
2. **Priority Management Areas.** Management objectives have been developed for priority management areas identified by the CTUIR as the most critical areas for weed management due to their ecological or cultural significance as well as areas known to serve as invasive weed vectors.



Management objectives for both invasive weed species and priority areas will be used to prioritize the type and location of invasive weed treatments. Weed species and priority areas will be managed to meet one or more of the following objectives: prevention, eradication, reduction, or containment.

- **Prevention** of invasive weed establishment is the most effective, economical, and ecologically sound approach to weed management; once established, invasive weeds can be difficult and costly to control. Early detection and rapid response will be the primary management strategies used to prevent invasive weed species from establishing.
- **Eradication** is meant to eliminate an invasive weed species from an individual site. While eradication of a large weed infestation is often not practical, eradication can be an effective strategy for small or newly established infestations. Eradication can also be effective for (1) satellite weed infestations located adjacent to, but separate from, large infestations, (2) isolated infestations far from other infestations, or (3) the borders of large infestations to control further spread (Di Tomaso 2005). A key element to successfully eradicating invasive weeds is early detection of the weed infestation and rapid response to prevent reproduction and the development of a seed bank. Eradication is not complete until all viable seed is depleted from the soil.
- **Reduction** of the size or extent of existing weed infestations is an appropriate management objective when eradication is not practical. It is effective for minimizing impacts to native species or facilitating future eradication.
- **Containment** is an appropriate treatment method for large infestations where eradication is not practical, for areas serving as vectors, for species with limited control options, and to protect important resources proximate to large, established infestations. Portions of the infestations are treated to the extent that the weed is not expanding beyond the established treatment zones.

### **Species Prioritization**

Weed species have been split into four prioritization categories aimed at achieving the biggest gains in weed management for the resources expended. These four categories are defined below in order of prioritization along with their primary management objective. The CTUIR will maintain an official Invasive Weed List for the IWMP management area that includes the prioritization categories listed below. The CTUIR Invasive Weed List will be reviewed on an annual basis by the CTUIR and updated as necessary based on the annual review. Appendix C includes the 2018 CTUIR Invasive Weed List.

1. **Watch List Species.** Watch List species are defined as invasive weeds that are not currently known to occur in the IWMP management area but have the potential to establish and become invasive. Prevention is the primary management objective for IWMP Watch List species. If any of the Watch List species are detected in the IWMP management area, the species will become a “Priority 1” species for treatment and eradication of the infestation will be attempted.
2. **Priority 1 Species.** Priority 1 species are defined as invasive weeds with small infestations in the IWMP management area that are quick to spread, and/or are difficult to control. Eradication will be the primary management strategy for Priority 1 species. Priority 1 species are the highest priority for treatment; eradication will likely require repeated treatments.
3. **Priority 2 Species.** Priority 2 species are defined as invasive weeds that are limited in abundance, but widespread in the IWMP management area. Reduction will be the primary management strategy for Priority 2 species. Annual treatment may be needed to prevent more severe infestations of Priority 2 species.
4. **Priority 3 Species.** Priority 3 species are defined as invasive weeds that are already widespread in the IWMP management area, and will thus be costly to control, or are considered less invasive

than Priority 1 or Priority 2 species. Treatment of Priority 3 species will be focused along roads and other vectors for containment and to prevent the population from spreading.

### **Priority Management Areas**

Locations within the IWMP management area that will be priority areas for invasive weed management include culturally and ecologically sensitive areas and areas that serve as vectors for weed spread into uninfested areas.

- **Cemeteries.** CTUIR-managed cemeteries are highly infested with weeds such as puncturevine, among others. They are considered priority weed management areas due to their cultural importance and because they serve as vectors due to the high amount of foot traffic from those visiting the cemetery, particularly when weeds are in seed. Management objectives for cemeteries will be based on the specific invasive weeds present and will follow the species prioritization listed according to the current CTUIR Invasive Weed List. Treatment methods should be selected on a site-specific basis according to species and size of infestation.
- **Root fields.** Root fields are considered priority weed management areas due to their cultural importance as First Foods. Management objectives for root fields will be based on the specific invasive weeds present and will follow the species prioritization listed according to the current CTUIR Invasive Weed List. Weed treatment in root fields will prioritize methods that pose the least risk to human health and impacts on First Foods. Acceptable treatment methods in root fields include hand pulling, biological control, and spot herbicide application with backpack sprayers or wicks. To avoid herbicide contamination of harvested roots, herbicides should not be applied in root fields the season before, or during the root harvest season. If targeted grazing is used, it should be timed for when First Foods are dormant (i.e., after seed set) to avoid impacting seed production and trampling or grazing of culturally important plants.
- **Big game winter range.** Big game winter range is a priority weed management area due to the cultural importance of big game as First Foods. Management objectives for big game winter range will be based on the specific invasive weeds present and will follow the species prioritization listed according to the current CTUIR Invasive Weed List. Treatment methods should be selected on a site-specific basis according to species and size of infestation.
- **Riparian areas.** Riparian areas are priority weed management areas due to the cultural importance of the associated fish habitats for First Foods. Management objectives for riparian areas will be based on the specific invasive weeds present and will follow the species prioritization listed according to the current CTUIR Invasive Weed List. Herbicide use in riparian areas will follow the buffer widths as listed in Appendix B. While mechanical and targeted grazing treatments in riparian areas can be effective for controlling large weed infestations, treatments should avoid impacting the adjacent stream, stream bank geomorphology, and native vegetation.
- **Huckleberry fields.** Huckleberry fields are considered priority weed management areas due to their cultural importance as First Foods. Management objectives for huckleberry fields will be based on the specific invasive weeds present and will follow the species prioritization listed according to the current CTUIR Invasive Weed List. Manual treatments, biological control, and spot herbicide application with backpack sprayers or wicks are the most appropriate treatment methods for huckleberry fields.
- **Wetlands and wet meadows.** Wetlands and wet meadows are considered priority weed management areas due to the presence of culturally important plants, such as tules. Management objectives for wetlands and wet meadows will be based on the specific invasive weeds present and will follow the species prioritization listed according to the current CTUIR Invasive Weed

List. Manual treatments, prescribed fire, and biological control are the most appropriate treatment methods for wetlands and wet meadows. If herbicides are the only effective control method for the target weed species, herbicides used in areas with standing water must be formulated for aquatic use.

- **High-quality native plant communities with few invasive weeds.** High-quality native plant communities are considered priority areas due to the ecological importance and rarity of these plant communities within the IWMP management area. The primary management objectives for high-quality native plant communities are prevention and eradication. Eradication will be attempted for any invasive weed species, regardless of whether the species is categorized as Priority 1, 2, or 3. Weed treatments will prioritize methods with the least impacts on native species. Acceptable treatment methods include hand pulling, biological control, and spot herbicide application with backpack sprayers or wicks.
- **Vectors (roads, railroad rights-of-way, pipeline rights-of-way, and powerline rights-of-way).** Vectors are priority weed management areas because weeds can quickly spread from these areas to uninfested areas, typically due to frequent disturbance and traffic to and from these areas, especially when invasive weeds are in seed. The primary weed management objective for vectors is containment. Treatment methods should be selected on a site-specific basis according to species and size of infestation; ground-based herbicide treatments will be most appropriate in most scenarios.

### **Treatment Prioritization**

Weed treatments will be prioritized annually according to the weed species prioritization and priority management areas described above. Proposed weed treatments will be scored according to the Weed Prioritization Scoring for Weed Treatments SOP (included in Appendix A). At the annual coordination meeting, weed treatment projects will be selected for the year based primarily on the weed management projects receiving the highest scores from the weed treatment prioritization calculator. Other considerations for treatment prioritization may include agency contracts requiring weed treatments, funding sources that may target specific invasive weeds, and landowner agreements that require invasive weed control.

While the CTUIR will attempt to manage weeds on all lands identified in the scope of this plan, noxious weed funding is non-reoccurring, competitive funding. Funds are not successfully acquired each year, or some years very little funding is available; therefore, land/homeowners must bear considerable responsibility for managing weeds on their properties. During the implementation period of this plan it should be assumed that CTUIR weed managers will not be able to treat weeds on every request. If weed management funding does become re-occurring, the CTUIR will re-assess their abilities to treat noxious weeds within the scope of the funding.

### **3.3.6 Restoration and Revegetation**

The need to revegetate following weed treatments will depend both on the composition of the plant community in the treatment area and the amount of disturbance created by the treatment. In areas where weeds have invaded an otherwise native-dominated plant community, and the treatment does not result in large disturbed areas, native species already present on site can often naturally recolonize and additional revegetation is not needed. In contrast, in weed treatment areas that are highly disturbed with few native species present, revegetation is often needed to prevent new weed species from establishing following control of the target weed species. For example, thistles and common mullein often colonize large patches of bare ground created following timber sales and when large Himalayan blackberry patches are removed. Seeding these types of areas following treatment with a native species mix can provide desirable vegetation to compete with invasive weeds and help reduce further weed establishment. Additionally,

development projects, maintenance activities, and activities that result in ground disturbance that also require a conditional use permit from the CTUIR will be required to revegetate any disturbed areas as soon as possible after disturbance occurs following appropriate restoration and revegetation BMPs included in Appendix A.

If revegetation following weed treatments is required, the plant materials used should be native and appropriate to the site. Per the Invasive Weed Management revegetation standard, revegetation is required if natural revegetation of plants will not establish sufficient cover, development activity requires certain plant communities to meet objectives, or the vegetation that will establish or has established on the site is not an acceptable plant community. In each weed treatment area proposed for seeding and/or planting, environmental conditions such as elevation, aspect, soils, composition of desirable species, site potential, and the availability of plant materials will be considered when developing seed mixes and/or planting lists. If the environmental conditions indicate native species will not establish well enough after seeding to adequately compete with invasive plants, non-native desirable species may be considered. A full description of revegetation standards applicable to weed treatments can be found in Section 3.2.1.

Effective long-term weed control in some of the IWMP management areas, particularly grasslands, will ultimately require restoration of the native plant communities. Much of the grasslands are currently dominated by invasive annual grasses and are highly susceptible to invasion by a variety of other invasive weeds. Restoration of native plant communities is beyond the scope of this plan and will need to be addressed in other management planning efforts.

### **3.3.7 Monitoring**

Monitoring is an important component of invasive weed management and prevention. Monitoring can provide the knowledge needed for evaluating management efforts, and adjusting them if necessary, to reach invasive plant management objectives more effectively and efficiently. When resources are available, regularly scheduled invasive weed surveys will be conducted across the IWMP management area to evaluate invasive weed management efforts. Weed surveys will focus on Priority Management Areas (refer to Section 3.3.5.2) because these areas are either culturally and ecologically sensitive areas or are areas that serve as vectors for weed spread into uninfested areas.

Invasive weed surveys will consist of recording the presence of new invasive weed occurrences, as well as conducting an assessment of the status of existing occurrences. Data including the location, phenology, size, and density of each occurrence will be entered and/or updated in the CTUIR weeds database. Assessments done on weed occurrences over time will be used to monitor changes on infestation size and distribution and to track the effectiveness of treatments that have been implemented. Other monitoring methods that can be used to track changes in weed abundance over time could include photo points or detailed plant cover or frequency data collected in vegetation monitoring plots.

If resources are not available to conduct regular weed surveys, at a minimum, monitoring will consist of entering all new invasive weed treatments into the CTUIR weeds database and conducting an assessment of the success of weed treatments annually for three years following treatment. Simple photographs may be the least costly method of documenting treatment results. In addition to weed treatment areas and Priority Management Areas, other priority areas for monitoring include newly disturbed areas that have a high likelihood of new invasive weed introductions, such as recently burned areas and recent timber harvests. These areas will be assessed for the first three years after completion to determine if new invasive weeds have established and whether an invasive weed treatment plan needs to be developed. Monitoring data will be collected according to the Invasive Weed Monitoring and Data Collection SOP included in Appendix A.

# CHAPTER 4 – IMPLEMENTATION OF THE MANAGEMENT PLAN

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## 4.1 Implementation Steps

The IWMP will be implemented through the following steps:

- (1) Identify funds and staff required for inventory of invasive weeds, development of treatment plans, and implementation activities.
- (2) Pursue funding and cost sharing sources to carry out the management activities and monitoring program.
- (3) Conduct inventory of invasive weeds as resources allow
- (4) Prioritize treatment projects
- (5) Determine appropriate treatment methods
- (6) Develop site-specific treatment plans
- (7) Conduct treatments
- (8) Monitor treatment effectiveness

As described in Section 3.3.4, priority weed treatment projects will be selected each year during an annual inter-departmental coordination meeting. The purpose of the meeting is to coordinate planned weed treatment activities for the upcoming year to avoid redundancy, collaborate, and share information and resources between departments. During the meeting, proposed weed treatments will be scored according to the Weed Prioritization Scoring for Weed Treatments SOP (see Appendix A), and weed treatment projects will be selected based primarily on the weed management projects receiving the highest scores. Other considerations for treatment prioritization may include agency contracts requiring weed treatments, funding sources that may target specific invasive weeds, and landowner agreements that require invasive weed control.

## 4.2 Timeframe

The CTUIR Invasive Weed List (Appendix C) will be reviewed annually by the CTUIR and updated as necessary based on the annual review. Every ten years, the IWMP will be re-evaluated and updated as needed to reflect changes in treatment priorities, treatment options, or other aspects of the IWMP.

## 4.3 Roles and Responsibilities

All CTUIR individuals and departments that play a role in weed management will use the IWMP as a guide for planning and implementing weed management activities in the IWMP planning area. A minimum of one representative within each CTUIR department that treats invasive weeds, either directly or through contractors, as part of its responsibilities, will attend the annual coordination meeting. Additionally, the THPO, a wildlife biologist, plant ecologist, and fisheries biologist will attend the annual coordination meeting to provide input regarding sensitive resources that could be affected by weed management activities. The DNR Range, Agriculture, and Forestry Restoration Ecologist will coordinate

weed control operations for the CTUIR until funding becomes available to hire a Noxious Weed Coordinator.

## **4.4 Organization and Funding**

CTUIR will deploy an aggressive funding strategy involving funding sources that allow for continued inventory, weed control, and monitoring strategies outlined in this IWMP. Coordination of funding efforts that result in effective and efficient implementation will include spring coordination meetings and fall accomplishment reports and periodic meetings with weed managers to discuss and plan for funding opportunities.

Funding for invasive weed management is currently spread amongst several CTUIR departments and programs. Within the Range, Agriculture, and Forestry program, annual project funding averages \$30,000 and ranges from \$15,000 to \$75,000. Funding is typically obtained from non-reoccurring, competitive sources. Funds are not successfully acquired each year, and in some years, very little funding is available. Much of the funds are expended on contracts and minor in-house application of herbicides. Other CTUIR programs allocate minor portions of their annual budgets to weed management.

Currently, the resources available to manage weeds outweighs the resources needed to fully implement the IWMP. To fully implement the IWMP and achieve desired control of infested areas, CTUIR weed managers estimate that a 1.5 full-time equivalent employee is required to coordinate control strategies and an additional \$150,000 is required annually for sub-contract funding to begin a multi-year effort to gain weed control of infested areas. When funding becomes available, CTUIR DNR plans to hire a Noxious Weed Coordinator. Consolidating weed management under one staff position dedicated to coordinating efforts amongst programs, with a small portion of position responsible for conducting minor weed management activities, would cost between \$75,000 to \$100,000 per year. Maintaining this position would require a steady stream of funding that is not currently available or anticipated to become available in the near future. If weed management funding does become re-occurring, the CTUIR will re-assess their abilities to dedicate a staff position to weed management coordination.

## **4.5 Adaptive Management**

Invasive weed monitoring will provide the knowledge needed for evaluating management efforts, and adjusting them if necessary, to reach weed management objectives more effectively and efficiently. As described in Section 3.3.7, when resources are available, regularly scheduled invasive weed surveys will be conducted across the IWMP planning area to evaluate invasive weed management efforts. If resources are not available to conduct regular weed surveys, at a minimum, monitoring would consist of entering all new invasive weed treatments into the CTUIR weeds database and conducting an assessment of the success of weed treatments annually for three years following treatment. CTUIR will use the results from monitoring efforts to refine and revise management strategies including prioritization and treatment plans.

# CHAPTER 5 – LIST OF PREPARERS

## 5.1 Preparers and Contributors

Table 5-1 is a list of CTUIR IDT members and consultants who contributed to the preparation of the IWMP.

<b>TABLE 5-1 LIST OF CONTRIBUTORS</b>		
<b>Name</b>	<b>Position Title</b>	<b>Area of Expertise</b>
<b>Confederated Tribes of the Umatilla Indian Reservation</b>		
Cheryl Shippentower	Plant Ecologist	Plant Ecology
Gordy Schumacher	Range, Agriculture, and Forestry Program Manager	Range, Agriculture, and Forestry
Kelly George	Land Acquisitions Coordinator	Economic Development
David Haire	Water Resources Manager	Water Resources
Robin Harris	Water Quality Coordinator	Water Resources
Mike Lambert	Fisheries Habitat Program Supervisor	Fisheries
Lindsay Chiono	Wildlife Biologist	Wildlife
Carey Miller	Tribal Historic Preservation Officer	Cultural Resources
Stacy Schumacher	GIS Program Manager	GIS
Patty Perry	Senior Planner	Planning
Amanda Schashtschneider	Soil Conservationist	Soils
Colleen Sanders	Climate Adaptation Planner	Climate Change
Jeff Casey	Fire Management Officer	Fire Management
Alaina Mildenerger	Office Manager	Public Works
<b>Environmental Planning Group, LLC (EPG)</b>		
Emily Newell	Project Manager	NEPA Planning
Adrien Elseroad	Ecologist	Plant and Wildlife Ecology
Anna Neuzil	Cultural Resources	Cultural Resources
Amanda O'Connor	NEPA Specialist	NEPA Planning
Shawn Childs	Senior Project Manager	NEPA Planning

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## CHAPTER 6 – REFERENCES

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**Appendix A**  
**Standard Operating Procedures and**  
**Best Management Practices**

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# APPENDIX A – STANDARD OPERATING PROCEDURES AND BEST MANAGEMENT PRACTICES

## Best Management Practices

### Ground-disturbing Activities

Table A-1 includes BMPs that would be followed for all ground-disturbing activities within the IWMP planning area, as applicable. The CTUIR will review all conditional use permit applications that include ground disturbance to ensure appropriate BMPs are incorporated into the project as part of the permit review and approval process. These BMPs are focused on preventing spread of invasive weeds that could result from ground disturbing activities.

<b>TABLE A-1 WEED MANAGEMENT BEST MANAGEMENT PRACTICES FOR GROUND DISTURBING PROJECTS AND CONDITIONAL USES</b>	
<b>BMP ID</b>	<b>Descriptions</b>
GD-1	Minimize soil disturbance and vegetation removal to the extent practical, consistent with project objectives.
GD-2	To prevent weed germination and establishment, retain native vegetation in and around project activity areas and keep soil disturbance to a minimum, consistent with project objectives.
GD-3	Locate and use weed-free project staging areas. Avoid or minimize all types of travel through weed-infested areas or restrict travel to periods when the spread of seeds or propagules is least likely.
GD-4	Inspect material sources on site and ensure that they are weed free before use and transport.
GD-5	Identify sites where construction equipment can be cleaned. Clean equipment before entering and exiting the construction site.
GD-6	Inspect, remove, and properly dispose of weed seed and plant parts found on workers' clothing and equipment. Proper disposal entails bagging the seeds and plant parts and incinerating them.
GD-7	Use weed-free material for ground-disturbing projects (seed, gravel, fill, mulch, erosion control materials, etc.)
GD-8	Inspect and document weed establishment at access roads, cleaning sites, and all disturbed areas.
GD-9	Include weed prevention measures, including project inspection and documentation, in operation and management plans.

### Weed Treatment Activities

Table A-2 includes BMPs that should be followed for weed treatment activities within the IWMP planning area, as appropriate. These BMPs primarily focus on preventing impacts to sensitive resources during and after weed treatments and prevent spread of invasive weeds after treatment.

<b>TABLE A-2 WEED MANAGEMENT BEST MANAGEMENT PRACTICES FOR WEED TREATMENT ACTIVITIES</b>	
<b>BMP ID</b>	<b>Descriptions</b>
<b>Manual Treatments</b>	
MAN-1	When appropriate, leave plant debris on site to retain moisture, supply nutrients, and reduce erosion.
MAN-2	Inspect, remove, and properly dispose of weed seed and plant parts found on workers' clothing and equipment. Proper disposal entails bagging the seeds and plant parts and incinerating them.

**TABLE A-2  
WEED MANAGEMENT BEST MANAGEMENT PRACTICES  
FOR WEED TREATMENT ACTIVITIES**

<b>BMP ID</b>	<b>Descriptions</b>
<b>Mechanical Treatments</b>	
MECH-1	Avoid mowing when weeds are seeding to prevent seed dispersal.
MECH-2	Conduct mechanical treatments along topographic contours to minimize runoff and erosion.
MECH-3	When appropriate, leave plant debris on site to retain moisture, supply nutrients, and reduce erosion.
MECH-4	When applying treatments, wear appropriate safety equipment and clothing and use equipment that is properly maintained.
MECH-5	Inspect, remove, and properly dispose of weed seed and plant parts found on workers' clothing and equipment. Proper disposal entails bagging the seeds and plant parts and incinerating them.
MECH-6	Ensure that power cutting tools used for mechanical treatments have approved spark arresters and that crews have proper fire-suppression tools during fire season.
<b>Biological Control</b>	
BIO-1	Use only biological control agents that have been tested and approved to ensure they are host specific.
<b>Targeted Grazing Treatments</b>	
GRAZ-1	Time grazing prior to weed seed set; or if seed set has occurred, do not move the domestic animals to uninfested areas for a period of seven days.
GRAZ-2	If targeted grazing is used in areas of First Foods or are culturally important, it should be timed for when they are dormant (i.e., after seed set) to avoid impacting seed production and trampling or grazing of culturally important plants.
<b>Prescribed Fire Treatments</b>	
FIRE-1	Prepare a prescribed fire burn plan when applying prescribed fire treatment.
FIRE-2	Avoid burning herbicide-treated vegetation for at least six months.
FIRE-3	Minimize prescribed fire during nesting and other important periods for wildlife.
<b>Herbicide Application</b>	
HERB-1	Apply herbicides only by an appropriately licensed applicator using an herbicide specifically targeted for a particular plant species that will cause the least impact to non-target species. The applicator will be responsible for preparing and carrying out the herbicide transportation and safety plan according to the Herbicide Transportation and Safety Plan SOP.
HERB-2	Limit herbicide carriers (solvents) to water or specifically labeled vegetable oil.
HERB-3	Mix herbicides more than 150 feet from any natural waterbody to minimize the risk of an accidental discharge; no more than three different herbicides may be mixed for any one application.
HERB-4	Apply herbicides at the lowest effective label rates, including the typical and maximum rates provided in Appendix C. For broadcast spraying, application of herbicide or surfactant will not exceed the typical label rates.
HERB-5	Only apply liquid or granular forms of herbicides as follows: <ul style="list-style-type: none"> <li>a) Broadcast spraying – attach hand held nozzles to back pack tanks or vehicles, or by using vehicle mounted booms.</li> <li>b) Spot spraying – attach hand held nozzles to back pack tanks or vehicles, hand-pumped spray, or squirt bottles to spray herbicide directly onto small patches or individual plants.</li> <li>c) Hand/selective – apply herbicides by wicking and wiping, basal bark, fill (“hack and squirt”), stem injection, or cut-stump.</li> <li>d) Triclopyr – shall not be applied by broadcast spraying.</li> </ul>
HERB-7	Only use the following aquatic application methods for emergent knotweed: stem injection (formulation up to 100 percent for emergent stems greater than 0.75 inches in diameter), wicking or wiping (diluted to 50 percent formulation), and hand-held spray bottle application of glyphosate (up to the percentage allowed by label instructions when applied to foliage using low pressure hand-held spot spray applicators).



**TABLE A-2  
WEED MANAGEMENT BEST MANAGEMENT PRACTICES  
FOR WEED TREATMENT ACTIVITIES**

BMP ID	Descriptions
HERB-8	<p>If overwater travel is required to reach invasive weed treatment sites, either by wading or inflatable raft or kayak, implement the following measures:</p> <ul style="list-style-type: none"> <li>a) No more than 2.5 gallons of glyphosate will be transported per person or raft, and typically it will be one gallon or less.</li> <li>b) Glyphosate will be carried in 1 gallon or smaller plastic containers. The containers will be wrapped in plastic bags and then sealed in a dry-bag. If transported by raft, the dry-bag will be secured to the watercraft.</li> </ul>
HERB-9	<p>Minimize herbicide drift and leaching, through the following:</p> <ul style="list-style-type: none"> <li>a) Do not spray when wind speeds exceed 10 miles per hour or are less than 2 miles per hour.</li> <li>b) Be aware of wind directions and potential for herbicides to affect aquatic habitat area downwind.</li> <li>c) Keep boom or spray as low as possible to reduce wind effects.</li> <li>d) Increase spray droplet size whenever possible by decreasing spray pressure, using high flow rate nozzles, using water diluents instead of oil, and adding thickening agents.</li> <li>e) Do not apply herbicides during temperature inversions, or when ground temperatures exceed 80 degrees Fahrenheit.</li> <li>f) Do not spray when rain, fog, or other precipitation is falling or is imminent. Wind and other weather data will be monitored and reported for all broadcast applications. Table A-3 identifies Bonneville Power Administration's proposed minimum weather and wind speed restrictions (to be used in the absence of more stringent label instructions and restrictions). During application, applicators will monitor weather conditions hourly at sites where spray methods are being used.</li> </ul>
HERB-10	Adhere to all aspects of the herbicide label for use, storage, and transport.
HERB-11	Consider surrounding land use before assigning aerial spraying as a treatment method and avoid aerial spraying near populated areas and areas with known culturally important plants.
HERB-12	Consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation and water sources.
HERB-13	Conduct mixing and loading operations in an area where an accidental spill would not contaminate surface or groundwater.
HERB-14	To avoid herbicide contamination of harvested roots, do not use herbicides in root fields the season before or during the root harvest season

## Restoration and Revegetation Activities

Table A-3 includes BMPs that would be followed for restoration and revegetation activities. These BMPs would be followed after ground disturbing activities within the IWMP planning area, and after some weed treatment activities if they result in high disturbance and few native species present. The CTUIR would review all conditional use permit applications that include ground disturbance to ensure revegetation activities are incorporated into the project, if necessary, as part of the permit review and approval process.

<b>TABLE A-3 WEED MANAGEMENT BEST MANAGEMENT PRACTICES FOR RESTORATION AND REVEGETATION ACTIVITIES</b>	
<b>BMP ID</b>	<b>Descriptions</b>
<b>Prevention</b>	
REVEG-1	To prevent conditions favoring weed establishment, re-establish vegetation on bare ground caused by project disturbance as soon as possible using either natural recovery or artificial techniques.
REVEG-2	Revegetate disturbed soil (except travel ways on surfaced projects) in a manner that optimizes plant establishment for each specific project site. For each project, define what constitutes disturbed soil and objectives for plant cover revegetation. Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching, as necessary.
REVEG-3	Where practical, stockpile weed-seed-free topsoil and replace it on disturbed areas (e.g., road embankments or landings).
REVEG-4	For restoration and revegetation activities, use native material where appropriate and feasible. Use certified weed-free or weed-seed-free hay or straw where certified materials are required and/or are reasonably available.

# Standard Operating Procedures

<b>SOP Title:</b>	Herbicide Transportation and Safety Plan
<b>SOP Purpose:</b>	A plan should be developed and followed for safe transportation and use of herbicides to reduce the likelihood of spills or misapplication, to take remedial actions in the event of spills, and to fully report the event.
<b>SOP Description:</b>	
<p>The Herbicide Transportation and Safety Plan will:</p> <ol style="list-style-type: none"> <li>1. Address spill prevention and containment.</li> <li>2. Estimate and limit the daily quantity of herbicides to be transported to treatment sites.</li> <li>3. Require that impervious material be placed beneath mixing areas in such a manner as to contain small spills associated with mixing/refilling.</li> <li>4. Require a spill cleanup kit be readily available for herbicide transportation, storage and application.</li> <li>5. Outline reporting procedures, including reporting spills to the appropriate regulatory agency.</li> <li>6. Require that equipment used in herbicide storage, transportation and handling are maintained in a leak proof condition.</li> <li>7. Address transportation routes so that hazardous conditions are avoided to the extent possible.</li> <li>8. Specify mixing and loading locations away from waterbodies so that accidental spills do not contaminate surface waters</li> <li>9. Require that spray tanks be mixed or washed further than 150 feet of surface water.</li> <li>10. Ensure safe disposal of herbicide containers.</li> <li>11. Identify sites that may only be reached by water travel and limit the amount of herbicide that may be transported by watercraft.</li> </ol> <p>All individuals involved, including any contracted applicators, would be instructed on the plan.</p>	

<b>SOP Title:</b>	Prioritization Scoring for Weed Treatment Projects
<b>SOP Purpose:</b>	Score proposed weed treatment projects using the CTUIR's prioritization strategy to help identify which weed treatments to pursue at the annual coordination meeting.
<b>SOP Description:</b> Insert the appropriate numerical score when answering each question. Proposed treatment areas with the highest scores should be considered priority treatment areas. An electronic version of the worksheet is also available that automatically calculates the prioritization score.	
<p>1) Does the infestation in the area threaten any of the following Priority Management areas (Yes= 3; No = 0)?</p> <p>_____ Cemeteries</p> <p>_____ Root Fields</p> <p>_____ Big Game Winter Range</p> <p>_____ Riparian Areas</p> <p>_____ Huckleberry Fields</p> <p>_____ Wetlands and Wet Meadows</p> <p>_____ High-quality native plant communities with few invasive weeds</p> <p>_____ Vectors (roads or rights-of-way (railroad, pipeline, powerline)</p> <p>2) Is the infestation in this area new or :</p> <p>_____ Under 2 Acres in Size (15)</p> <p>_____ Under 10 Acres in Size (10)</p> <p>_____ Over 10 Acres in Size (1)</p> <p>3) What type of infestation exists, for the most part?</p> <p>_____ Solid stand of plants (1)</p> <p>_____ Scattered large patches (3)</p> <p>_____ Scattered small patches (5)</p> <p>4) Is the species a:</p> <p>_____ Watch List Species (10)</p> <p>_____ Priority 1 Species (8)</p> <p>_____ Priority 2 Species (5)</p> <p>_____ Priority 3 Species (3) *See current version of CTUIR Weed List</p> <p>5) Is the area adjacent to an existing major infestation?</p> <p>_____ Yes (0)</p> <p>_____ No (10)</p> <p>6.) Is the source of this infestation currently being treated?</p> <p>_____ Yes (3)</p> <p>_____ No (0)</p> <p>7) Is there any coordinated/cooperative control action planned with other CTUIR departments or outside agencies for this area?</p> <p>_____ Yes (10)</p> <p>_____ No (1)</p> <p>8) Are any follow-up treatments or special management practices to enhance First Foods and culturally important plants planned for <u>this site</u>?</p> <p>_____ Yes (10)</p> <p>_____ No (0)</p>	
<b>0</b>	<b><i>Sum the point total for all items above.</i></b>

<b>SOP Title:</b>	Invasive Weed Monitoring and Data Collection
<b>SOP Purpose:</b>	Consistent invasive weed monitoring and data collection will facilitate consistent invasive weed data throughout the UIR to help the CTUIR understand the status and trends of invasive weeds.
<b>SOP Description:</b>	
<ol style="list-style-type: none"> <li>1. Collect weed data each time a weed treatment is performed, using a handheld GPS unit with the CTUIR Weed Database loaded. Collect the following information: <ul style="list-style-type: none"> <li>■ Treatment Location – Collect as a point at the approximate center of the infestation</li> <li>■ Weed Species – Enter the weed species present</li> <li>■ Weed Extent – Collect this as a polygon that encompasses the complete extent of the weed infestation.</li> <li>■ Weed Density – Enter notes describing the density of the weed infestation</li> <li>■ Treatment method – Select the appropriate choice from the drop-down menu: Manual, Mechanical, Biological, Grazing, Prescribed Fire, Herbicide Application.</li> <li>■ Treatment Date – Enter the date of the most recent treatment.</li> <li>■ Treatment Notes – Enter any additional notes to describe the treatment in more detail if needed. Such as the type of mechanical treatment, type of herbicide used, if multiple treatment methods were used, etc.</li> </ul> </li> <li>2. Re-visit weed treatment locations for a minimum of three years after treatment and update the information in the CTUIR Weed Database noting changes in the attributes listed above.</li> </ol>	

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**Appendix B**  
**Herbicide and Adjuvant Lists**

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## APPENDIX B – HERBICIDE AND ADJUVANT LISTS

TABLE B-1 ALLOWABLE HERBICIDES				
Active Ingredient	Common Trade Names <sup>1</sup>	Typical Application Rates (active ingredient per acre)	Maximum Label Application Rate(active ingredient per acre)	General Geographic Application Areas
2,4-D (amine) <sup>2</sup>	Many	0.5 to 1.5 lbs.	4.0 lbs	Upland <sup>3</sup> & Riparian
Aminopyralid	Milestone®	0.11 to 0.22 lbs	0.375 lb	Upland & Riparian
Chlorsulfuron	Telar®	0.25 to 1.33 oz	3.0 oz	Upland
Clethodim	Select®	0.125 to 0.5 lbs	0.50 lb	Upland
Clopyralid	Transline®	0.1 to 0.375 lbs	0.5 lb	Upland & Riparian
Dicamba	Banvel® Only	0.25 to 7.0 lbs	8.0 lbs	Upland & Riparian
Glyphosate 1	Many	0.5 to 2.0 lbs	3.75 lbs	Upland & Riparian
Glyphosate 2	Many	0.5 to 2.0 lbs	3.75 lbs	Upland & Riparian
Imazapic	Plateau®	0.063 to 0.189 lbs	0.189 lb	Upland & Riparian
Imazapyr	Arsenal® Habitat®	0.5 to 1.5 lbs.	1.5 lbs	Upland & Riparian
Indaziflam <sup>4</sup>	Esplanade®	0.038 oz	0.0272 oz	Upland
Metsulfuron methyl	Escort®	0.33 to 2.0 oz	4.0 oz	Upland
Picloram	Tordon®	0.125 to 0.50 lb	1 lb	Upland
Sethoxydim	Poast®	0.1875 to 0.375 lb	0.375 lb	Upland
Sulfometuron methyl	Oust®	0.023 to 0.38 oz	2.25 oz	Upland
Triclopyr (TEA)	Garlon 3A®	1.0 to 2.5 lbs	9.0 lbs	Upland & Riparian

SOURCE: U.S. Fish and Wildlife Service (USFWS). 2013. Formal Section 7 programmatic consultation on BPA’s Columbia River Basin Habitat Improvement Program. Oregon Fish and Wildlife Office, Portland, Oregon. TAILS no. 01EOFW00-2013-F-0199.

NOTES:

<sup>1</sup>Herbicides with the active ingredients shown in this table are allowed. Common trade names are provided as example brands that use those active ingredients.

<sup>2</sup>On June 30, 2011, NMFS issued a final biological opinion addressing the effects of this herbicide on ESA-listed Pacific salmonids. The opinion concluded that EPA’s proposed registration of certain uses of 2,4-D, including aquatic uses of 2,4-D BEE are likely to jeopardize the continued existence of the 28 endangered and threatened Pacific salmonids. As a result of this consultation, use of this herbicide will comply with all relevant reasonable and prudent alternatives from the 2011 Biological Opinion.

<sup>3</sup>Uplands are as defined as the combined average height of two site potential trees or 300 feet (whichever is greater).

<sup>4</sup>Indaziflam is not an approved herbicide active ingredient in the formal Section 7 programmatic consultation on BPA’s Columbia River Basin Habitat Improvement Program but is approved by the CTUIR to use within the IWMP planning area outside of BPA WMAs.

**TABLE B-2  
ALLOWABLE ADJUVANTS**

<b>Adjuvant Type</b>	<b>Trade Name</b>	<b>Labeled Mixing Rates per Gallon of Application Mix</b>	<b>General Geographic Application Areas</b>	
Colorants	Dynamark™ U.V. (red)	0.1 fl oz	Riparian	
	Aquamark™ Blue	0.1 fl oz	Riparian	
	Dynamark™ U.V. (blu)	0.5 fl oz	Upland	
	Hi-Light® (blu)	0.5 fl oz	Upland	
Surfactants	Activator 90®	0.16 to 0.64 fl oz	Upland	
	Agri-Dex®	0.16 to 0.48 fl oz	Upland	
	Entry II®	0.16 to 0.64 fl oz	Riparian	
	Hasten®	0.16 to 0.48 fl oz	Upland	
	LI 700®	0.16 to 0.48 fl oz	Riparian	
	R-11®	0.16 to 1.28 fl oz	Riparian	
	Super Spread MSO®	0.16 to 0.32 fl oz	Riparian	
	Syl-Tac®	0.16 to 0.48 fl oz	Upland	
	Drift Retardants	41-A®	0.03 to 0.06 fl oz	Riparian
		Valid®	0.16 fl oz	Upland

SOURCE: USFWS. 2013. Formal Section 7 programmatic consultation on BPA's Columbia River Basin Habitat Improvement Program. Oregon Fish and Wildlife Office, Portland, Oregon. TAILS no. 01EOFW00-2013-F-0199.

**TABLE B-3  
REQUIRED HERBICIDE BUFFER WIDTHS (FROM BANKFULL WIDTH)**

Active Ingredient	Broadcast Application <sup>1</sup>		Backpack Sprayer/Bottle <sup>2</sup> Spot Spray Foliar/Basal		Hand Application <sup>3</sup> Wicking/Wiping/Injection
	Minimum buffer from bankfull width (feet)	Max/Min wind speed (miles per hour)	Minimum buffer from bankfull width (feet)	Max/Min wind speed (miles per hour)	Minimum buffer from bankfull width (feet)
2,4-D (amine)	100	10/2	50	5/2	15
Aminopyralid	100	10/2	15	5/2	0
Chlorsulfuron	100	10/2	15	5/2	0
Clethodim	NA		50	5/2	50
Clopyralid	100	10/2	15	5/2	0
Dicamba (Banvel only)	100	10/2	15	5/2	0
Glyphosate 1	100	10/2	15	5/2	0
Glyphosate 2	100	10/2	100	5/2	100
Imazapic	100	10/2	15	5/2	0
Imazapyr	100	10/2	15	5/2	0
Indaziflam <sup>4</sup>	100	10/2	100	5/2	100
Metsulfuron methyl	100	10/2	15	5/2	0
Picloram	100	8/2	100	5/2	100
Sethoxydim	100	10/2	50	5/2	50
Sulfometuron methyl	100	10/2	15	5/2	0
Triclopyr (TEA)	NA	NA	50	5/2	0 for cut-stump application; 15 feet for other applications.
Herbicide Mixtures	100	Most conservative of listed herbicides	15	Most conservative of listed herbicides	Most conservative of listed herbicides

SOURCE: USFWS. 2013. Formal Section 7 programmatic consultation on BPA's Columbia River Basin Habitat Improvement Program. Oregon Fish and Wildlife Office, Portland, Oregon. TAILS no. 01EOFW00-2013-F-0199.

NOTES:

<sup>1</sup>Ground-based only broadcast application methods via truck/ATV with motorized low-pressure, high-volume sprayers using spray guns, broadcast nozzles, or booms.

<sup>2</sup>Spot and localized foliar and basal/stump applications using a hand-pump backpack sprayer or field-mixed or pre-mixed hand-operated spray bottle.

<sup>3</sup>Hand applications to a specific portion of the target plant using wicking, wiping or injection techniques. This technique implies that herbicides do not touch the soil during the application process.

<sup>4</sup>Indaziflam is not an approved herbicide active ingredient in the formal Section 7 programmatic consultation on BPA's Columbia River Basin Habitat Improvement Program but is approved by the CTUIR to use within the IWMP planning area outside of BPA WMAs.

**TABLE B-4  
REQUIRED ADJUVANT BUFFER WIDTHS (FROM BANKFULL WIDTH)**

Adjuvant	Broadcast Application <sup>1</sup>	Backpack Sprayer/Bottle <sup>2</sup> Spot Spray Foliar/Basal	Hand Application <sup>3</sup> Wicking/Wiping/Injection
	Minimum buffer from bankfull width (feet)	Minimum buffer from bankfull width (feet)	Minimum buffer from bankfull width (feet)
Dynamark (red)	100	15	0
Dynamark (yel)	100	15	0
Dynamark (blu)	100	50	50
Hi-Light (blu)	100	50	50
Activator 90®	100	15	0
Agri-Dex®	100	15	0
Entry II®	100	100	100
Hasten®	100	15	0
LI 700®	100	15	0
R-11®	100	50	50
Super Spread MSO®	100	15	0
Syl-Tac®	100	50	50
41-A®	100	15	0
Valid®	100	50	50

SOURCE: USFWS. 2013. Formal Section 7 programmatic consultation on BPA's Columbia River Basin Habitat Improvement Program. Oregon Fish and Wildlife Office, Portland, Oregon. TAILS no. 01EOW00-2013-F-0199.

NOTES:

<sup>1</sup>Ground-based only broadcast application methods via truck/ATV with motorized low-pressure, high-volume sprayers using spray guns, broadcast nozzles, or booms.

<sup>2</sup>Spot and localized foliar and basal/stump applications using a hand-pump backpack sprayer or field-mixed or pre-mixed hand-operated spray bottle.

<sup>3</sup>Hand applications to a specific portion of the target plant using wicking, wiping or injection techniques. This technique implies that herbicides do not touch the soil during the application process

**Appendix C**  
**CTUIR 2018 Weed List**

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# APPENDIX C – CTUIR 2018 WEED LIST

TABLE C-1 2018 CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION INVASIVE WEED LIST					
Common name	Scientific name	Draft CTUIR IWMP Designation	Known to occur in CTUIR IWMP Planning Area?	Umatilla County Noxious Weed List Designation	Oregon Noxious Weed List Designation
Bur chervil	<i>Anthriscus caucalis</i>	Priority 1- small, isolated infestations; Priority 3- large, established infestations	Yes		
Common bugloss	<i>Anchusa officinalis</i>	Priority 1	Yes	A-listed	B-listed, T-listed
Common crupina	<i>Crupina vulgaris</i>	Priority 1	Yes	A-listed	B-listed
Dalmatian toadflax	<i>Linaria dalmatica</i>	Priority 1	Yes	B-listed	B-listed, T-listed
Garlic mustard	<i>Alliaria petiolata</i>	Priority 1	Yes	A-listed	B-listed, T-listed
Myrtle spurge	<i>Euphorbia myrsinites</i>	Priority 1	Yes	A-listed	B-listed
Purple loosestrife	<i>Lythrum salicaria</i>	Priority 1	Yes	A-listed	B-listed
Rush skeletonweed	<i>Chondrilla juncea</i>	Priority 1	Yes	A-listed	B-listed, T-listed
Russian olive	<i>Elaeagnus angustifolia</i>	Priority 1- small, isolated infestations; Priority 2- large, established infestations	Yes		
Spotted knapweed	<i>Centaurea stoebe</i>	Priority 1	Yes	A-listed	B-listed, T-listed
Tansy ragwort	<i>Senecio jacobaea</i>	Priority 1	Yes	A-listed	B-listed
Tree of heaven	<i>Ailanthus altissima</i>	Priority 1	Yes		B-listed
Whitetop (hoary cress)	<i>Cardaria draba</i>	Priority 1	Yes	B-listed	
Bachelor's button	<i>Centaurea cyanus</i>	Priority 1- small, isolated infestations; Priority 2- large, established infestations	Yes		
Yellow starthistle	<i>Centaurea solstitialis</i>	Priority 1- small, isolated infestations; Priority 2- large, established infestations	Yes	B-listed	B-listed
Canada thistle	<i>Cirsium arvense</i>	Priority 1- small, isolated infestations; Priority 3- large, established infestations	Yes	B-listed	B-listed
Diffuse knapweed	<i>Centaurea diffusa</i>	Priority 1- small, isolated infestations; Priority 3- large, established infestations	Yes	B-listed	B-listed
Himalayan blackberry	<i>Rubus armeniacus</i>	Priority 1- small, isolated infestations; Priority 3- large, established infestations	Yes		B-listed

**TABLE C-1  
2018 CONFEDERATED TRIBES OF THE  
UMATILLA INDIAN RESERVATION INVASIVE WEED LIST**

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Multiflora rose	<i>Rosa multiflora</i>	Priority 1- small, isolated infestations; Priority 3- large, established infestations	Yes		
Russian knapweed	<i>Acroptilon repens</i>	Priority 1- small, isolated infestations; Priority 3- large, established infestations	Yes	B-listed	B-listed
Spikeweed	<i>Centromadia pungens</i>	Priority 1	Yes	A-listed	B-listed
Sulfur cinquefoil	<i>Potentilla recta</i>	Priority 1- small, isolated infestations; Priority 3- large, established infestations	Yes		B-listed
Yellow flag iris	<i>Iris pseudacorus</i>	Priority 1	Yes	A-listed	B-listed
Bull thistle	<i>Cirsium vulgare</i>	Priority 2	Yes		B-listed
Musk thistle	<i>Carduus nutans</i>	Priority 2	Yes	B-listed	B-listed
Perennial pepperweed	<i>Lepidium latifolium</i>	Priority 2	Yes		B-listed, T-listed
Puncturevine	<i>Tribulus terrestris</i>	Priority 2	Yes	B-listed	B-listed
Scotch thistle	<i>Onopordum acanthium</i>	Priority 2	Yes	B-listed	B-listed
Spreading hedge-parsley	<i>Torilis arvensis</i>	Priority 2	Yes		
Swainsonpea	<i>Sphaerophysa salsula</i>	Priority 2	Yes		B-listed
Viper's bugloss	<i>Echium vulgare</i>	Priority 2	Yes	A-listed	
Black locust	<i>Robinia pseudoacacia</i>	Priority 3	Yes		
Bulbous bluegrass	<i>Poa bulbosa</i>	Priority 3	Yes		
Catchweed	<i>Asperugo procumbens</i>	Priority 3	Yes		
Cereal rye	<i>Secale cereale</i>	Priority 3	Yes	B-listed	
Cheatgrass	<i>Bromus tectorum</i>	Priority 3	Yes		
Common mullein	<i>Verbascum thapsus</i>	Priority 3	Yes		
Common teasel	<i>Dipsacus fullonum</i>	Priority 3	Yes		
Field bindweed	<i>Convolvulus arvensis</i>	Priority 3	Yes		B-listed, T-listed
Houndstongue	<i>Cynoglossum officinale</i>	Priority 3	Yes		B-listed
Jointed goatgrass	<i>Aegilops cylindrica</i>	Priority 3	Yes	B-listed	B-listed
Kochia	<i>Bassia scoparia</i>	Priority 3	Yes	B-listed	B-listed



**TABLE C-1  
2018 CONFEDERATED TRIBES OF THE  
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Medusahead	<i>Taeniatherum caput-medusae</i>	Priority 3	Yes	B-listed	B-listed
Poison hemlock	<i>Conium maculatum</i>	Priority 3	Yes	B-listed	B-listed
Rattail fescue	<i>Vulpia myuros</i>	Priority 3	Yes		
Reed canarygrass	<i>Phalaris arundinaceae</i>	Priority 3	Yes		B-listed, T-listed
Russian thistle	<i>Salsola kali</i>	Priority 3	Yes		
Smooth brome	<i>Bromus inermis</i>	Priority 3	Yes		
St. Johnswort	<i>Hypericum perforatum</i>	Priority 3	Yes	B-listed	B-listed
Sweetbriar rose	<i>Rosa eglanteria</i>	Priority 3	Yes		
Tall oatgrass	<i>Arrhenatherum elatius</i>	Priority 3	Yes		
Ventenata	<i>Ventenata dubia</i>	Priority 3	Yes		
Buffalo bur	<i>Solanum rostratum</i>	Watch list	No		B-listed
Butterfly bush	<i>Buddleja davidii</i>	Watch list	No		B-listed
Camelthorn	<i>Alhagi pseudalhagi</i>	Watch list	No	A-listed	A-listed
Common reed	<i>Phragmites australis</i>	Watch list	No		B-listed
Creeping yellowcress	<i>Rorippa sylvestris</i>	Watch list	No	A-listed	B-listed
Dodder	<i>Cuscuta pentagona</i>	Watch list	No	B-listed	B-listed
Dyer's woad	<i>Isatis tinctoria</i>	Watch list	No		B-listed
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	Watch list	No		B-listed
False indigo bush	<i>Amorpha fruticosa</i>	Watch list	No		B-listed
Flowering rush	<i>Butomus umbellatus</i>	Watch list	No	A-listed	B-listed, T-listed
Japanese knotweed	<i>Polygonum cuspidatum</i>	Watch list	No	A-listed	B-listed
Johnsongrass	<i>Sorghum halepense</i>	Watch list	No	B-listed	B-listed
Leafy spurge	<i>Euphorbia esula</i>	Watch list	No	A-listed	B-listed, T-listed
Marijuana	<i>Cannabis sativa</i>	Watch list	No	A-listed	
Meadow hawkweed	<i>Hieracium pratense</i>	Watch list	No		B-listed, T-listed
Meadow knapweed	<i>Centaurea x moncktonii</i>	Watch list	No	A-listed	B-listed
Mediterranean sage	<i>Salvia aethiopsis</i>	Watch list	No	B-listed	
Milk thistle	<i>Silybum marianum</i>	Watch list	No		B-listed

**TABLE C-1  
2018 CONFEDERATED TRIBES OF THE  
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Orange hawkweed	<i>Hieracium aurantiacum</i>	Watch list	No		B-listed
Perennial peavine	<i>Lathyrus latifolius</i>	Watch list	No		B-listed
Purple starthistle	<i>Centaurea calcitrapa</i>	Watch list	No	A-listed	A-listed, T-listed
Quackgrass	<i>Agropyron repens</i>	Watch list	No	B-listed	
Ragweed	<i>Ambrosia artemesifolia</i>	Watch list	No	B-listed	B-listed
Ravenna grass	<i>Saccharum ravennae</i>	Watch list	No		A-listed, T-listed
Saltcedar	<i>Tamarix ramosissima</i>	Watch list	No		B-listed, T-listed
Scotch broom	<i>Cytisus scoparius</i>	Watch list	No		B-listed
Silverleaf nightshade	<i>Solanum elaeagnifolium</i>	Watch list	No		A-listed
Spiny cocklebur	<i>Xanthium spinosum</i>	Watch list	No		B-listed
Yellow nutsedge	<i>Cyperus esculentus</i>	Watch list	No		B-listed
Yellow toadflax	<i>Linaria vulgaris</i>	Watch list	No		B-listed