

Section 5.0 – Maintenance Plan

Maintenance is critical for the first few years to ensure the survival of the plantings and needs to be included in the planning for the project. Annual maintenance should include weed control and irrigation until the plants are established enough to outcompete the invasives, particularly where smaller seedling plant material (plugs and cuttings) has been used or in areas where invasion by exotic species and competition by herbaceous forbs and grasses are a problem.

Site visits should occur on a regular basis (at least annually) to monitor irrigation needs, erosion, weed growth, wildlife damage, insect and disease problems, shading needs, flooding, and other problems. Forms for monitoring sites can be found in Appendix III and a Maintenance and Monitoring calendar in Appendix IV.

5.1 Weed Control

During riparian corridor establishment, competition for light and nutrients from weeds can cause mortality and substantially reduce seedling growth. Typically, in sandy soils competition for water with grasses and herbs is primary, while competition for light is primary in clay or loamy soils (Massingill 2003). Additionally, dense grass and herbaceous areas create prime habitat for rodent species that may damage seedlings. Weed species control for the planting program focuses on identification of the source, eradication of the species from the planting area and education to reduce damage to plants by competition and animal damage.

Weed control methods include cutting, grubbing, mowing, mulching, vispor matting, biological and/or herbicides.



Figure 5-1: Suppression of weeds with application of mulch around a ponderosa pine.

5.1.1 Manual Control

Hand tools such as pulaskis, hoe dads, and pruners are used for manual removal of invasive/ weed species. This method has been shown effective in smaller planting areas that can be maintained bimonthly during the growth period (typically April through September). There are local groups that are available for manual control of projects including the Job Council, the County Community Justice Crews, and others.



Figure 5-2: Crews using hand tools to cut back invading blackberry vines.

Vispor matting or mulching is used for suppression of weed species. When matting is used, 3 to 4 foot square will be placed around the plant and properly staked down while mulching will require a minimum mulch cover at 3' diameter around the tree and 2-6" deep. Mulch has been used successfully on a larger scale to suppress weed growth. Mulch was applied to the entire planting area to a depth of approximately 4 inches. Applying mulch combined with manual control of weeds and an established irrigation system was successful.

5.1.2 Chemical Control

Where manual control is not sufficient, chemical treatment may be considered. It is recommended that local ordinances, regulations, and landowner preference be consulted before applying any herbicides. In addition, all herbicides should be applied by licensed professionals. Application methods may include spot-treatments, cut-stump, or broader application with herbicides labeled for aquatic use (see Appendix V for herbicide labels). In most cases, treatment covering an area approximately 30" in diameter around the plant and occurring 2 to 3 times will provide enough weed control to get the plant through the establishment period. Weed control prior to planting is used where feasible to avoid any damage to the plants by herbicide drift. If chemical control is necessary after planting the following methods will reduce damage to the seedlings:

- Spot treatment using a backpack sprayer- increase sprayer's drip size and provide protection around trees such as tree tubes.
- Cut stump application applying herbicide directly to the freshly cut stem in late summer or early fall.

5.2 Animal Damage

Animal damage to seedlings can vary depending on location. If animal damage is noted during site visits, appropriate methods will be evaluated based on type of damage and animal species. For deer and small rodent damage vexar tubing or screen protectors will be placed around the base of tree and shrub species. If beaver damage is apparent tree tubes may be used.

Animal Species	Control Method
Deer	Vexar tubing, screen protectors
Small rodent	Vexar tubing, screen protectors
Beaver	Tree tubes

Table 5-1: Animal damage control methods.



5.3 Irrigation

Southern Oregon native riparian plants are adapted to long, dry summers and should not require long-term irrigation to survive once they are established. However, irrigation is recommended for the first 3-5 years. A temporary drip system is recommended if possible. Drip systems are the most efficient systems from a water use standpoint and target specific plants by localized placement of water, thereby reducing weed growth (estimations of water needs for individual species are based on the California's Water Use Classification of Landscape Species (WUCOLS III) system). Drip systems may be connected to a local water supply or a small pump. Other areas, where irrigation systems are not be feasible, installation of tree gators, a watering truck, or a water holding tank in combination with a small pump need to be used to water the plants. The irrigation methods or system used and subsequent maintenance of needs to be a component of the site maintenance plan. Where pumping water from a local stream is necessary, permission to irrigate or a limited water use license needs to be obtained.



Figure 5-4: Drip Irrigation System along Lazy Creek.

5.4 Shading requirements

During the plant establishment period, some species may require afternoon shade, which will help plant moisture retention. Where possible, plants should be placed in naturally shaded areas, such as near existing down logs. Shade screens may also be utilized to reduce temperatures and loss from the base of the plant. Shade screens can also be used in areas where exposure to solar radiation damages the seedling.



Figure 5-6: Shade screen protecting the base of a seedling.

5.5 Release of Plants/ Reinforcement Planting

In some areas, once removal of weed species or a disturbance such as fire occurs natural revegetation will follow. Pruning existing plants leaving a primary and secondary leader will enhance natural revegetation.



Figure 5-7: Cottonwood with lower limbs pruned.

In addition, after planted seedlings are established, it is recommended that the trees are

periodically thinned to maintain vigorous growth and maximize nutrient uptake. Some seedling mortality is expected; however, if stand density falls below 150 trees per acre (typical density for a natural riparian corridor), additional plantings will be needed.

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