CHAPTER 17.0 REVEGETATION

17.1 Introduction

This chapter provides guidance for revegetation following land disturbance activities in the County. Construction activities typically result in soil disturbance and loss of stabilizing vegetation, often leading to erosion and creating an opportunistic environment for the establishment of invasive and nuisance weedy species. Restoring a healthy vegetation community protects topsoil, reducing erosion in upland areas and stabilizing channel banks. Healthy native plant communities suppress weeds, sustain ecosystems, sequester carbon and provide value to the local community. Proper revegetation is necessary to satisfy the requirements of most construction-related permits.

The *Revegetation* chapter of the MHFD Manual provides extensive guidance for revegetation of upland, riparian and wetland areas. These Standards provide a high-level overview of the various processes involved with revegetation and discussion of County-specific requirements that are not included in the MHFD Manual.

17.2 Site Preparation

Initial site preparation is essential for the successful re-establishment of vegetation and may vary depending on location and land use. For example, site preparation in an area devastated by wildfire will differ from that resulting from residential development. Evaluate the site and determine the type of plant community to be established based on elevation and hydrology. Prior to beginning construction, plan to stockpile as much topsoil as possible to be replaced following completion of construction activities. Soil testing is highly recommended to determine any necessary soil amendments.

Table 17-1 shows critical activities related to site preparation. Refer to the corresponding section of the *Revegetation* chapter of the MHFD Manual for discussion and guidance on these activities. In addition, the following County-specific requirements apply:

Weed Control - An integrated weed management plan (IWM), both during construction and following revegetation, shall be developed and implemented. Please refer to the Larimer County Weed District website (https://www.larimer.gov/naturalresources/weeds) for additional resources on preventing and managing weed infestations.

Table 17-1: Site preparation activities for revegetating upland, riparian and wetland habitats, with chapter references from the Revegetation chapter of the MHFD Manual

Revegetation Guidance Topic	
Activity	Section of *Revegetation* Chapter of MHFD Manual
Initial Hydrologic Evaluation	3.1
Initial Weed Evaluation and Control	3.2
Topsoil Preservation (including Existing Wetland Soil)	3.3
Soil Testing	3.4
Soil Amendment	3.5
Seed Bed Preparation	3.6
Tree Protection	3.7

17.3 Plant Material Selection

Plant selection will vary based on habitat type, schedule, budget and overall goals of a project. A vegetation site plan should be provided by a specialist trained in plant selection and revegetation.

Table 17-2 shows plant materials appropriate for different habitat types. Refer to the corresponding section of the *Revegetation* chapter of the MHFD Manual for additional discussion and guidance on these activities. In addition, the following County-specific requirements apply:

Seed Mix – The County has developed a preferred seed mix (see Appendix J) for revegetation. Alternative seed mixes may be used with prior approval from the County. Please refer to Section 17.8 of this chapter for seed mixes applicable to post-fire burn areas.

Table 17-2: Plant material for revegetating upland, riparian and wetland habitat types, with chapter references from the Revegetation chapter of the MHFD Manual

Plant Material	Section of *Revegetation* Chapter of MHFD Manual	Applicability to Habitat Type		
		Upland	Riparian	Wetland
Seed (permanent and temporary)	4.2	√	√	√ (limited)
Plugs	4.4.1	√	√	√
Containers	4.4.2	√	√	√
Bare Root	4.4.3	√	√	√
Balled and Burlapped (B&B)	4.4.4	√	√	√
Cuttings	4.4.5		√	√
Wetland Sod, Rhizones, Tubers	4.5			√

Additional Plant Selection Resources
The Colorado Native Plant Society has produced a series of publications titled *Native Plant Garden Guides* as a resource for selecting low-water native plant species appropriate for planting in the various regions of Colorado. These resources are available on the Colorado State University (CSU) Extension office website.

17.4 Plant Installation

Installation methods will vary depending on the plant selection and habitat type for the project. Table 17-3 shows plant installation methods appropriate for different habitat types. Please refer to the corresponding section of the *Revegetation* chapter of the MHFD Manual for additional discussion and guidance on these activities.

Table 17-3: Installation methods for revegetating upland, riparian and wetland habitat types, with chapter references from the Revegetation chapter of the MHFD Manual

Installation Method	Section of *Revegetation* Chapter of MHFD Manual	Applicability to Habitat Type		
		Upland	Riparian	Wetland
Seeding (multiple methods)	5.1 & 5.2	√	√	√ (limited)
Herbaceous Plug, Containerized, B&B, and Bare Root Stock Installation	5.3	√	√	√
Cutting Installation	5.4		√	√
Transplanting Wetland Plants (Wetland Sod, Rhizomes, Tubers)	5.5			√

17.5 Mulching

Mulching serves to provide a protective layer for newly planted vegetation in upland and riparian areas. Proper mulching can provide benefits such as moisture retention, erosion protection and weed control that increase the chances for successful revegetation.

Please refer to the *Revegetation* chapter of the MHFD Manual for additional discussion and guidance on the mulching topics below:

- Individual Planted Trees and Shrubs,

- Seeded Areas, and
- Types of Mulch (straw, rolled erosion control products, hydromulch, compost).

In addition, the following County-specific requirements apply:

Use of Straw Mulch – The use of straw mulch will require prior approval by the County so that it is not used in sensitive areas. Approved use of straw must be crimped and applied with a tackifier to assure it remains in place.

17.6 Maintenance

Any successful revegetation plan must address long-term maintenance. Revegetated areas often need to be replanted in subsequent years and are vulnerable to opportunistic weed infestation before desirable plant species become well-established. Temporary or permanent irrigation may be required. Plans should include provisions for long-term monitoring and adaptive management of revegetated areas to ensure successful outcomes.

Maintenance topics in the *Revegetation* chapter of the MHFD Manual include the following:

- Irrigation,
- Replacing dead trees/shrubs and spot reseeding bare areas,
- Vegetation protection from animals,
- Weed management,
- Managing erosion in riparian areas, and
- Maintenance of wetland areas

17.7 Post-construction Monitoring

Post-construction monitoring may be required to ensure vegetation is properly re-established prior to closure of permits. During post-construction monitoring, it is important to replace dead vegetation as soon as the planting window is appropriate so that the warranty period is not unnecessarily extended.

A Development Construction Permit from the County will generally have a 2-year warranty period after construction activities are substantially complete. The warranty period for a Land Disturbance Permit and/or Erosion Control Plan will vary by project. Specific requirements for those permits are subject to change and shall follow the most recent permit guidance.

Refer to the MHFD Manual *Revegetation* chapter for additional discussion and guidance on monitoring during warranty periods and long-term.

17.8 Post-Fire Revegetation

The Larimer County Department of Natural Resources has produced a document, *Seed Mixes, BMPs and Guidelines for Seeding and Mulching in the Cameron Peak Burn Area,* providing guidance on seed selection and best management practices for revegetating post-fire areas. Included in the document are seed mixes and directions for reseeding at different tiers of elevation, beginning with 6,000 ft. The document may be downloaded here: https://www.larimer.org/sites/default/files/uploads/2021/cpr_seedmix_bmps_2021.pdf.

17.9 Submittal Requirements

Revegetation plans must be included in construction stormwater management plans and/or erosion and sediment control plans and should include the following items:

- Percent vegetative cover (pre-construction)
- Soil types
- Description of seedbed preparation strategy (e.g., decompaction, soil testing, soil amendments)
- Seed mixes and seed tags that identify species name, common name, seed application rate (lbs of PLS/acre) and method of seeding (drill, drill depth, broadcast, hydroseed, etc.)
- Description mulching strategy (e.g., product, application method) with justification that the strategy is appropriate for site slopes and estimated length of vegetation re-establishment.
- Weed Management Plan per requirements of the County Natural Resources Department

17.10 Permits

Revegetation plans may be required and reviewed as part of one or more of the following permits:

- Development Construction Permit – Larimer County,
- Land Disturbance Permit – Larimer County,
- Construction Stormwater Discharge Permit – Colorado Department of Public Health and Environment, and
- CWA 404 Permit – US Army Corps of Engineers.

17.11 References and Resources

The following provide revegetation guidance:

Colorado State University (CSU) Extension Office: https://extension.colostate.edu/

Natural Resources Conservation Service (NRCS):
https://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/