

APPENDIX F

Recommended Native Plant Species and Methods for Yreka Creek Greenway

INTRODUCTION

Build-out of the proposed Yreka Creek Greenway will involve the following general types of natural communities:

- Aquatic areas, including streams and ponded areas. Ponded areas include natural freshwater marshes and beaver ponds, and constructed retention basins and landscape ponds that retain water for at least a portion of the growing season.
- Wetlands along the immediate edges of streams and ponded areas, and low-lying wet meadows, where the water table is at or very close to the ground surface for at least part of the growing season.
- Riparian areas adjacent to streams, ponded areas, and wet meadows, most notably including floodplains but also within constructed bioswales and retention basins, where the water table is close enough to the ground surface to sustain plants through the dry season. In landscaped areas, planted riparian vegetation may be sustained by seasonal irrigation.
- Upland areas on banks and higher ground adjacent to riparian areas, where plants are adapted to obtaining moisture primarily from seasonal precipitation.

Most of the Greenway network is intended to be comprised of natural areas that will be re-established through the process of ecological restoration, including extensive floodplain restoration that will yield the added benefit of flood hazard reduction. Construction of bioswales, retention basins, and landscape ponds will involve the process of ecological landscaping, in which ecological restoration principles and methods are applied to what are otherwise constructed landscapes, in order to make those areas natural-appearing and ecologically functional. Ephemeral (seasonal) drainages through developed areas, most notably in residential back yards, can be approached as either restoration or landscaping projects depending on the desires of individual landowners. Flows within ephemeral drainages within developed areas will be more or less regulated.

APPROACH

The following approach is recommended for ecological restoration and landscaping projects within the Greenway network:

- Shape the ground surface to restore or mimic natural topography, correspond to desired proximity to the water table, capture, convey, and infiltrate runoff in a natural manner, achieve sustainable stream channel and floodplain configuration (geomorphology), and appear natural. Many existing ephemeral drainages have retained their natural topography, and in many cases also their native vegetation, and only require re-watering via storm drain modifications.
- If including a constructed water feature, it should be nestled low in the topography rather than perched, and any containment berms used should be gently sloped and shaped in such a way as to not look like levees or dams.
- Use topsoils native to the area to restore or create a natural soil profile. In Yreka, soil types generally consist of heavy clay soils on slopes, silty clay soils in low-lying alluvial areas, and very gravelly soils in dredged areas. Dredge tailings are very porous and lack sufficient fines, and are therefore difficult to re-vegetate unless capped with topsoil.

- Use soils that are as weed-free as possible. This is not always possible in large earth-moving projects, but is particularly important in small projects when soil is imported from elsewhere in town. Processed topsoil is commercially available locally and should be weed-free, but is costly and may not work as well for some native plant species as indigenous soils.
- Cap soil with a natural mulch layer to reduce erosion, hold soil moisture, suppress weeds, and provide soil nutrients. Wood chips, fine-textured bark, or straw work well. If the latter, it should be certified weed-free. Using rice straw is one way to minimize the likelihood of introducing weeds.
- Include boulders and logs in the landscape to provide additional wildlife habitat and help create a natural appearance. Boulders should be from the local area, preferably with moss and/or lichen, and not scarred by heavy equipment. They should be partially “planted” into the ground, and grouped in a semi-clustered manner using different sizes. Logs should have broken ends, not cut by a chainsaw.
- Use plant species that are indigenous to the local area, collected and/or propagated from local sources. Plant sources include locally-collected seeds, commercially-obtained seeds (not as good genetically as locally-collected, especially for insect-pollinated species, but much more cost-effective), plugs (from meadow vegetation), cuttings (especially willow species), plants propagated from seed or cuttings (as is done by the Siskiyou Arboretum and USFS plant nurseries), and plants transplanted from the wild. Transplanting can be very effective but landowner permission must be obtained (private or public), unless collected from the project site itself.
- Assemble plants in natural communities reflecting how they grow in nature, and locate them in the landscape based on their water and sun/shade requirements. It is also important for aesthetic reasons to avoid planting rank-and-file (in rows), but rather to plant in a semi-random way as would be found in nature.
- Include plant species that benefit birds, pollinators, butterflies, and other wildlife species, and that provide cover, nesting sites, etc.
- Suppress invasive weeds by planting natives immediately after soil disturbance, and avoid soil disturbance after replanting. Where Himalayan blackberry is a problem, the planting of native riparian trees will help shade out the blackberries over time.
- Avoid increasing fire danger due to over-planting with fire-prone species. In landscaped areas close to buildings, riparian plant species can be used in lieu of upland species, and can be sustained by seasonal irrigation. This will also create a cooler, more humid, and shadier environment close to buildings. Less water is needed for this type of irrigation than for lawns. Also, unlike lawns and ornamental landscapes, the watering regime for native riparian vegetation should involve infrequent deep watering (for deep root development) rather than frequent shallow watering.
- In public Greenway areas, it is also important to not over-plant in order to maintain sight distance for user safety and to discourage camping by transients. Emphasizing trees with high canopies and an open understory is a good solution.
- Using fertilizer at the time of planting can be helpful, but natives should not be fertilized after planting.
- Interim maintenance should be done for several seasons, consisting of interim irrigation and weeding. Deep watering tubes can help with irrigation, and grazing exclosures can help prevent deer and rabbit damage (see attached drawing). Installing wire mesh around large trees is recommended to prevent beaver damage.

RECOMMENDED SPECIFICATIONS

Seeding

- (a) Riparian, upland, and spoils areas shall either be seeded with seed mixes specific to those areas, or a single combined seed mix may be used if budget constraints prevent separate mixes.
- (b) These areas shall be seeded at a rate of 50-80 pounds of seed/acre.
- (c) If hydroseeded, 500 pounds/acre of mulch shall be included in the mix, but fertilizer shall not be included.
- (d) Cobble/gravel channel bottoms and boulder/cobble armoring areas shall be manually seeded, with care taken to ensure that the seeds fall between the rocks.

Straw Mulch

- (a) All seeded areas except cobble/gravel and boulder/cobble areas shall be covered with 2 inches of rice straw or certified weed-free wheat straw mulch (about 2 tons/acre). When budgets allow, applying straw mulch over hydroseeded areas (a Caltrans specification) will increase plant survival and growth.
- (b) A tackifier shall be applied after straw spreading to keep the straw in place. On soils other than tailings, tracking-in the straw with a tracked machine like a dozer may be used in lieu of a tackifier.

Bark Mulch

- (a) Wood chips (such as commercially available "walk-on bark" or from fuels reduction projects) or quarter-inch minus bark mulch, placed 2 inches thick as a top-dressing, may be used in lieu of straw on disturbed ground at trailheads, and shall be used in bioswales.
- (b) Quarter-inch minus bark mulch placed 2 inches thick shall be used as a top-dressing in small retention basins along bioswales. Unlike wood chips, it will lock-up after installation and stay in place rather than floating away when basins fill.

Propagated Native Plants

- (a) Specified native plants may be purchased from the Siskiyou Arboretum for any type of project, or obtained from the Forest Service for public and non-profit projects.
- (b) Plant locations shall be marked using wire flags with a coding system to identify each species to be planted, or potted plants can simply be set out at their desired locations during planting.
- (c) Planting shall be done during cool conditions, preferably in the fall.
- (d) The planting sequence shall be as follows:
 - Dig hole about 20 inches deep.
 - On sloping ground, dig watering basin first so that hole depth is measured from basin bottom.
 - Partially fill hole with water and let soak in.
 - Place deep watering tube in hole to one side, with holes in tube facing center of plant hole.
 - Place mound of loose soil in bottom of hole.
 - Remove plant from container, gently loosen any bound roots, and prune off damaged roots.
 - Set plant on mound and adjust height so that top of root crown is slightly above basin grade.
 - Place appropriate amount of fertilizer in bottom of hole, if fertilizer is to be used.
 - Gently backfill while adjusting roots to fan out and prevent J-rooting or compression.

- (e) After planting, finish the watering basin around each plant, and immediately water the plant after planting. For plants on steep slopes, the root crown of the plant shall be aligned with the side-to-side grade, such that a watering basin can be provided that consists of a cut on the uphill side and fill on the downhill side, thereby creating a small terrace. Watering basins shall be 24 inches in diameter and 4 inches deep.
- (f) After constructing watering basins, a 2" layer of quarter-inch-minus bark mulch shall be placed in the basins in order to help hold moisture and suppress weeds.
- (g) Grazing exclosures shall be installed around selected propagated native plants as follows:
 - Pound in T-stake about 9 inches away from plant base.
 - Form poultry wire into 18-inch diameter sleeve.
 - Use ends to hook the sleeve together.
 - Slide sleeve over T-stake.
 - Attach sleeve to T-stake using a single strand of bailing wire so it can be easily removed for weeding.
- (h) For plants not having grazing exclosures, wire flags (pin flags) shall be installed next to the plants to aid in finding them during interim maintenance.

14.02 Willow Cuttings

- (a) Identify onsite willows from which to obtain cuttings (3 species).
- (b) Cuttings shall be cut immediately prior to planting and kept in water (top end up) in a bucket during planting.
- (c) Cuttings shall be at least 1 inch in diameter and at least 3 feet long.
- (d) Cuttings shall be planted with the top of the branch at the top (avoid planting upside-down).
- (e) Cuttings shall only be planted in low-lying areas close to the water table. Mark planting locations prior to planting.
- (f) Cuttings may either be pounded into the ground, or holes may be dug or augered. If pounded into the ground, the bottom of the cutting shall be cut at a double 45-degree angle (like a wooden stake), and the top shall not be overly splintered.
- (g) Cuttings shall be planted at least 2 feet into the ground (deeper if feasible), and shall protrude about 1 foot above ground.
- (h) Watering basins shall be constructed around each cutting, and bark mulch shall be placed in the basin, as described above. Deep watering tubes and/or grazing exclosures may be installed if the budget allows.
- (i) Willow cutting locations shall be marked by wire flags (pin flags).

RECOMMENDED NATIVE PLANT SPECIES

Wetland Areas

(a) Emergent Aquatic Species

Carex nudata (Torrent Sedge)
Scirpus acutus var. *occidentalis* (Tule)
Typha latifolia (Cattail)

(b) Sedges, Rushes, and Ferns

Athyrium filix-femina (Lady Fern)
Carex nebrascensis (Nebraska Sedge)
Carex praegracilis (Clustered Field Sedge)
Carex subfusca (Rusty Slender Sedge)
Juncus effusus (Common Rush)
Juncus ensifolius (Swordleaf Rush)
Scirpus microcarpus (Broadleaf Sedge; Panicked Bulrush))

(c) Grasses

Deschampsia cespitosa (Tufted Hairgrass)
Deschampsia elongata (Slender Hairgrass)
Hordeum brachyantherum (Meadow Barley)

(d) Wildflowers

Aralia californica (Aralia)
Asarum caudatum (Wild-ginger)
Aster chilensis (*Symphyotrichum chilense*) (California Aster)
Darmera peltata (Umbrella Plant; Indian Rhubarb)
Penstemon rhydbergii var. *oreocharis* (Meadow Penstemon)

(e) Tall Groundcovers and Small Shrubs:

Ribes inerme var. *klamathense* (White-Stemmed Gooseberry)
Rosa pisocarpa (Cluster Rose)
Spirea douglasii (Spirea)

(f) Large Shrubs:

Cornus sericea (Redtwig Dogwood)
Physocarpus capitatus (Ninebark)
Salix exigua (Narrow-leaved Willow)
Salix lucida ssp. *lasiandra* (Shining Willow)

(g) Trees:

Alnus rhombifolia (White Alder)
Betula occidentalis (Water Birch)
Salix laevigata (Red Willow)

Riparian Areas

(a) Grasses

Deschampsia cespitosa (Tufted Hairgrass)
Deschampsia elongata (Slender Hairgrass)
Elymus glaucus (Blue Wildrye)
Festuca californica (California fescue)
Festuca rubra (Red Fescue)
Hesperostipa comata (Needle-and-Thread)
Hordeum brachyantherum (Meadow Barley)
Leymus cinereus (Great Basin Wildrye)
Poa secunda (*P. scabrella*) (Bluegrass)

(b) Wildflowers

Achillea millefolium (Yarrow)
Aquilegia Formosa (Columbine)
Artemisia douglasiana (Mugwort)
Asclepias speciosa (Showy Milkweed)
Clematis ligusticifolia (Virgin's Bower)
Eschscholtzia californica (California Poppy)
Linum lewisii (Blue Flax)
Penstemon rhydbergii var. *oreocharis* (Meadow Penstemon)
Solidago canadensis ssp. *elongata* (Goldenrod)

(c) Low Groundcovers:

Fragaria vesca (Wood Strawberry)
Rubus ursinus (California Blackberry)
Symphoricarpos mollis (Trip Vine)

(d) Tall Groundcovers and Small Shrubs:

Berberis aquifolium (Oregon Grape)
Equisetum hyemale (Scouring-rush Horsetail)
Paxistima myrsinites (Oregon Boxwood)
Pteridium acquilinum var. *pubescens* (Bracken Fern)
Rhus trilobata (Squawbush; Skunkbrush)
Ribes inerme var. *klamathense* (White-Stemmed Gooseberry)
Ribes roezlii (Sierra Gooseberry)
Rosa pisocarpa (Cluster Rose)
Rubus leucodermis (Blacktop Raspberry)
Rubus parviflorus (Thimbleberry)
Spirea douglasii (Spirea)
Symphoricarpos albus (Snowberry)
Vitis californica (Wild Grape)

(e) Large Shrubs:

Amelanchier alnifolia (Service-berry)
Cercis occidentalis (Redbud)
Cornus nuttallii (Mountain Dogwood)
Cornus sericea (Redtwig Dogwood)
Corylus cornutta (Hazelnut)
Garrya fremontii (Silk Tassel)
Philadelphus lewisii (Mock Orange)
Physocarpus capitatus (Ninebark)

Prunus virginianus ssp. *demissa* (Choke-cherry)
Rhamnus purshiana (Cascara)
Rhododendron occidentale (Western Azalea)
Ribes aureum (Golden Currant)
Salix exigua (Narrow-leaved Willow)
Salix lucida ssp. *lasiandra* (Shining Willow)

(f) Trees:

Acer macrophyllum (Big-leaf Maple)
Acer negundo var. *californicum* (Box Elder)
Calocedrus decurrens (Incense Cedar)
Fraxinus latifolia (Oregon Ash)
Juglans californica var. *hindsii* (Hinds Walnut)
Pinus ponderosa (Ponderosa Pine)
Populus balsamifera ssp. *trichocarpa* (Black Cottonwood)
Populus tremuloides (Quaking Aspen)
Pseudotsuga menziesii (Douglas-fir)
Salix laevigata (Red Willow)

Upland Areas

(a) Grasses

Achnatherum lemmonii (Needlegrass)
Bromus carinatus (California Brome)
Elymus elymoides (Squirreltail)
Elymus glaucus (Blue Wildrye)
Festuca californica (California fescue)
Festuca idahoensis (Idaho Fescue)
Festuca roemerii (Roemer's Fescue)
Festuca rubra (Red Fescue)
Hesperostipa comata (Needle-and-Thread)
Koeleria macrantha (June Grass)
Leymus cinereus (Great Basin Wildrye)
Muhlenbergia jonesii (Mountain Muhly)
Poa secunda (*P. scabrella*) (Bluegrass)
Pseudoroegneria spicata (Bluebunch Wheat Grass)

(b) Wildflowers

Achillea millefolium (Yarrow)
Asclepias speciosa (Showy Milkweed)
Balsamorhiza sagittata (Balsamroot)
Eriogonum nudum (Naked Buckwheat)
Eriogonum strictum (Blue Mountain Buckwheat)
Eriogonum vimineum (Wicker Buckwheat)
Eriophyllum lanatum (Woolly Sunflower)
Eschscholtzia californica (California Poppy)
Frasera (*Swertia*) *albicaulis* (Whitestem Frasera)
Grindelia nana (Idaho Gumplant)
Linum lewisii (Blue Flax)
Lomatium californicum (California Rock Parsnip)
Lupinus albicaulis (Sickle-keeled Lupine)
Lupinus albilfrons (Silver Bush Lupine)
Monardella odoratissima (Pennyroyal)
Penstemon deustus (Hotrock Penstemon)

(c) Low Groundcovers:

Fragaria vesca (Wood Strawberry)
Symphoricarpos mollis (Trip Vine)

(d) Tall Groundcovers and Small Shrubs:

Berberis aquifolium (Oregon Grape)
Ericameria (Chrysothamnus) nauseosa (Rubber Rabbitbrush)
Rhus trilobata (Squawbush; Skunkbrush)
Ribes roezlii (Sierra Gooseberry)
Rosa woodsii (Wood Rose)
Rubus parviflorus (Thimbleberry)

(e) Large Shrubs:

Amelanchier alnifolia (Service-berry)
Arctostaphylos patula (Greenleaf Manzanita)
Arctostaphylos viscida (Whiteleaf Manzanita)
Ceanothus cuneatus (Buckbrush)
Cercis occidentalis (Redbud)
Garrya fremontii (Silk Tassel)
Prunus subcordata (Klamath Plum)
Prunus virginianus ssp. *demissa* (Choke-cherry)
Ribes nevadense (Mountain Pink Currant)

(f) Trees:

Calocedrus decurrens (Incense Cedar)
Juniperus occidentalis (Western Juniper)
Pinus ponderosa (Ponderosa Pine)
Pseudotsuga menziesii (Douglas-fir)
Quercus garryana (Oregon Oak)

INVASIVE PLANT SPECIES

The following invasive plant species are recommended for control or eradication within Greenway areas:

- Himalayan Blackberry (*Rubus armeniacus*) (*R. discolor*): This perennial vine is widespread in riparian areas along streams. Although the berries are great to eat, control is needed in order to reduce displacement of native species, reduce interference with natural floodplain function, and reduce dense cover to facilitate Greenway user safety (sight distance), reduce fire danger, and discourage transient camping. Control methods include mechanical cutting (using weed eaters and power hedge trimmers) and herbicides.
- Yellow Star-Thistle (*Centaurea solstitialis*): This annual species is widespread in upland areas. It is allelopathic, which means that it releases chemicals into the soil that inhibit other plant species, thereby taking over large areas. Control is needed in order to reduce displacement of native species, and to eliminate the discomfort to Greenway users from the plant's prolific thorns. Once removed, the allelopathic chemicals will wash out of the soil and native species can take hold. Control methods include manual pulling, converting dry upland sites to riparian sites (through floodplain lowering/widening or via irrigation), and using a thistle-specific herbicide like Transline.
- Dyer's Woad (Marlahan Mustard) (*Isatis tinctoria*): This biennial to short-lived perennial species is also widespread in upland areas, and to some extent will also colonize riparian areas. Control is

needed because over time it will become dominant, thereby displacing native species. Control methods include manual pulling (has a single large tap root) and herbicides.

- White-top (*Lepidium draba*) (*Cardaria draba*): This perennial species forms dense patches in riparian areas and to some extent in wet meadows, thereby locally displacing native species. Since it spreads by underground rhizomes, manual pulling is not very effective, and herbicide treatment is usually required.
- Goat Heads/Puncture Vine (*Tribulus terrestris*): This annual species is not a problem in terms of displacing native species, but rather in producing thorny fruits that puncture shoes and bicycle tires. For this reason, control is appropriate in high-use areas. Manual pulling and herbicides are effective.
- Canada Thistle (*Cirsium arvense*): This perennial species is similar to white-top, in that it is rhizomaceous and forms dense localized patches, and manual pulling is not very effective. Control is best achieved by using a thistle-specific herbicide like Transline.
- Poison Hemlock (*Conium maculatum*): This annual species usually only colonizes localized areas, but is poisonous if ingested and sometimes if plant juices come in contact with skin. Manual pulling is very effective, but care should be taken to pull it before producing seeds.
- Teasel (*Dipsacus fullonum*): This biennial to short-lived perennial species is present in localized areas, and can sometimes become dominant in wet meadows. It doesn't fully displace native species, but can be unsightly and its clasping leaves provide prolific breeding grounds for mosquitos. Manual pulling is very effective, especially when in bloom since the tap root shrinks as the flowering stalk grows. Care should be taken to pull it before producing seeds.
- Woolly Mullein (*Verbascum thapsus*): This biennial species is usually fairly scattered on the landscape, but can become dominant as an early colonizer on freshly disturbed sites. Manual pulling is very effective, but care should be taken to pull it before producing seeds.

TREE & SHRUB PLANTING DETAIL:

