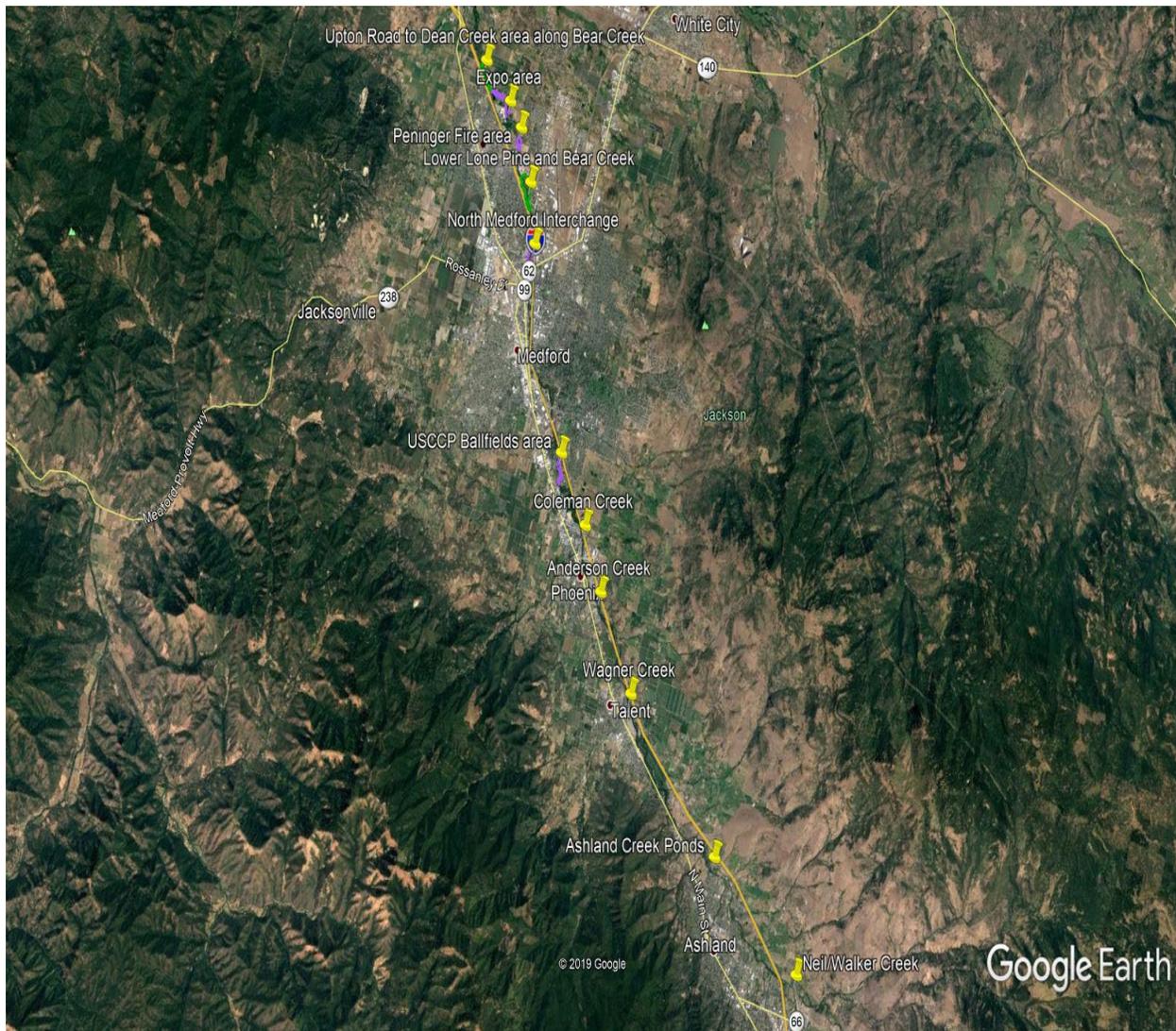


**Final Report for the Bear Creek Restoration Initiative**



**Submitted by**  
**Rogue Valley Council of Governments**  
**to**  
**the Rogue River Watershed Council**  
**December 2019**

# Bear Creek Restoration Initiative Final Report

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## Introduction

In early 2019, Rogue River Watershed Council (RRWC) approached the Rogue Valley Council of Governments (RVCOG) to assist them in leading a project involving several groups to develop a prioritized list of riparian restoration projects along Bear Creek. Riparian restoration is not a new effort along Bear Creek and has been a part of regional Clean Water Act implementation activities (TMDL) since at least 2003. Several existing plans and guidance documents, as well as ordinances spell out where, what and when actions should occur. Implementation of restoration actions has been largely opportunistic rather than planned over the entire length of Bear Creek. In addition, there are other factors along Bear Creek that add complexities to restoration and management of the corridor.

The main goal of the project was to work with other entities and municipalities in the Bear Creek Watershed to establish a Bear Creek Restoration Initiative (Initiative). The Initiative will provide a forum for discussing and coordinating restoration actions in the Bear Creek watershed focusing on Bear Creek and its tributaries. In addition, the Initiative will identify some key sites for restoration along the Bear Creek Corridor. The Initiative welcomed all groups interested in implementing restorative actions on public and private lands.

## Goals

The goals of the Initiative were to:

1. Schedule and convene Bear Creek Restoration Initiative sessions. *We held three in-person meetings and several one-on-one discussions with team members. A fourth large meeting was not held due to scheduling conflicts. We are currently planning a large tour for early May 2020 in place of the fourth large meeting.*
2. Schedule and convene a small technical team (five members, with invited guests) to discuss restoration needs and prioritization using existing planning documents and previous prioritization efforts as a starting point. *The technical team met four times throughout the life of the project. Technical team members included:*
  - a. The Freshwater Trust (TFT)
  - b. Lomakatsi Restoration Project (Lomakatsi)
  - c. RRWC
  - d. Plant Oregon
3. Create a GIS-based restoration data set for the Bear Creek Corridor with the assistance of the technical team.
  - a. Map layer(s) showing past, present and planned restoration actions.
  - b. An additional GIS component was added in December 2019 to create an ArcGIS online map showing the data compiled and/or created for this project, including data on the 10 priority areas collected using Survey123.
4. Compile a library of existing restoration guidance documents. The guidance documents are available on the project website.
5. Develop a list of restoration projects, with the assistance of the Technical team, within the Bear Creek Corridor for consideration by RRWC, Rogue Basin Partnership (RBP), and other restoration groups.
6. Use existing planning documents (e.g., vegetation management plan calculator) and created materials to create cost estimates for completing the list of restoration projects

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(#5) and identify any funding sources and timelines for completing applications. These include:

- a. Bear Creek Master Plan (City of Medford 2003).
  - b. Bear Creek Greenway Management Plan (RVCOG 2005).
  - c. Bear Creek Watershed Total Maximum Daily Load (ODEQ 2007).
  - d. Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (Coho Recovery Plan) (NMFS 2014).
  - e. Rogue Restoration Action Plan (RBP 2015).
  - f. Rogue Basin Cohesive Forest Restoration Strategy: A Collaborative Vision for Resilient Landscapes and Fire Adapted Communities (Metlan et al. 2015).
  - g. Oregon Conservation Strategy (Strategy) (ODFW 2016).
  - h. Bear Creek Greenway Long-Term Vegetation Management Plan (Plan) (RVCOG 2017).
7. Use the “Stream Smart” website/Bear Creek Stewards webpage to provide information pertaining to the Initiative’s restoration efforts.
  8. Convene a public open house to present information about restoration actions being taken along Bear Creek. *An open house/public forum is planned for a future phase of this project.*
  9. Promote this effort in other ongoing forums (TMDL, fire protection, brownfield and economic development, public safety, homeless populations, and/or transportation planning) to begin to merge management of the area for multiple objectives and programs. *Activity was promoted at TMDL quarterly meetings.*

The products of the Initiative use the previously mentioned Plan (6h.) as a guiding document. The Plan was developed to provide recommendations for the long-term vegetation management of the area by providing a systematic approach to effectively control invasive plants, plant native vegetation, provide a competitive edge for existing native vegetation, and re-establish shade along the entire Bear Creek corridor. This Plan interacts with the Bear Creek Greenway Management Plan (BCGMP) by providing specific actions to control invasive plants, enhance existing native vegetation, and restore native riparian vegetation where appropriate (e.g., transition and restoration areas) (RVCOG 2006). Actions include:

- Increasing public safety and reducing fire potential along the Greenway and the adjacent riparian corridor, consistent with section 2.1 of the BCGMP.
- Controlling invasive plants along the Greenway, consistent with section 2.3 of the BCGMP.
- Enhancing and establishing native vegetation along the Bear Creek riparian corridor; consistent with section 2.4 of the BCGMP.

This report provides the original deliverables (a GIS-based data set (#3) and a prioritized list of riparian projects (#5)). This report also provides a series of recommendations to continue this collaborative Initiative.

## Background

Current Conditions: The Bear Creek Greenway (Greenway) is a 20-mile, paved, multi-use trail that links the cities of Ashland, Talent, Phoenix, Medford and Central Point. The Greenway is continuous from the Ashland Dog Park to the Dean Creek Frontage Road near Seven Oaks Interchange on I-5, north of Central Point. The Greenway provides a separated route from cars, with only two at-grade road crossings. The Greenway parallels I-5, Highway 99, and Bear Creek, and provides Rogue Valley residents and visitors to the area a close-in spot for bird watching and wildlife viewing, as well as exercise and general recreation. Parks along the route provide parking, restrooms, and drinking water.

An annual average of 250 trips per day are taken at any given point along the trail, making the trail as busy as many local streets and roads (Bear Creek Greenway Joint Powers Committee 2017). The visitation provides an excellent opportunity to provide local residents with information and examples of stream and riparian stewardship. In discussions with Greenway users in 2016, reasons provided for using the greenway include: enjoying the open space along the Greenway and associated streams, as a source of recreation close to home, and as a transportation corridor between home and work (C. Tuss, personal communication. September 2016).

The Bear Creek watershed, located entirely within Jackson County, is the most urbanized watershed in Southern Oregon. Bear Creek is approximately 28.8 miles long and is ranked in the “poor” water quality category by the Oregon Department of Environmental Quality (DEQ) due to a number of pollution concerns. The communities surrounding Bear Creek have been negatively impacted by water pollution. In 1992, a Total Daily Maximum Load (TMDL) was established for Bear Creek. The TMDL was the second for Oregon, with the Tualatin River being the first.

Bear Creek and its tributaries run directly through urban residential and industrial areas serving as home to over 200,000 people. The Medford Metropolitan Service Area is the fourth largest MSA in Oregon. The creek flows through five communities, the largest being Medford, before it joins the Rogue River at river mile 127. The riparian area is comprised of thick patches of invasive plants and the creek is water quality-limited for phosphorus, dissolved oxygen, temperature and bacteria. Bear Creek is used for spawning, rearing, and migration for adult Chinook and Coho salmon, as well as Steelhead. Coho salmon are currently listed as threatened under the Endangered Species Act. Bear Creek is very warm for much of the late spring, summer, and early fall. The TMDL goal for water temperature is 64.4°F for Bear Creek. During the hottest period of the year (usually first part of August), water temperatures are exceeding 68° F. Young Steelhead and Coho salmon are only able to survive the hot summer months by finding pockets of cool water.

The presence of a vegetative canopy over water courses is crucial to providing protective cover for fish and other wildlife species in these habitats, and in regulating water temperature within the stream ecosystem. A DEQ report estimated Bear Creek currently has 15 percent shade but has the capacity for 54 percent shade (ODEQ 2000, Bear Creek Riparian Shade Assessment).

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Appropriate vegetation management actions would increase stream shading and improve water quality in Bear Creek. Establishment and/or enhancement of riparian shade will lead to meeting shade targets (maximizing shade potential) and result in shading of the water and subsequently lower temperatures which will help meet the shade and pollution reduction goals of local TMDL programs. Establishment and long-term management of vegetation along riparian corridors has been identified as a priority need throughout the Bear Creek watershed and the Rogue Basin. The Freshwater Trust, with funding from the Oregon Watershed Enhancement Board, recently developed a Riparian Extent and Status Tool (“REST” v1.0). REST is complete and available on the Rogue Basin Partnership website: <http://www.roguepartners.org/rogue-restoration-action-plan/>. This tool was designed to assist with planning, prioritizing and grant writing for riparian restoration work in the inland Rogue, especially that which compliments in stream anchor habitat priority areas.

In addition, control of invasive species and implementation of restoration efforts using native plant species are key items in local TMDL implementation plans.

Bear Creek is on the eastern edge of the Klamath Ecoregion described in the Oregon Conservation Strategy (Strategy) (ODFW 2016). The Strategy identifies land use changes, disruption of natural disturbance regimes and invasive species as the key issues for this area. Specifically:

- Land Use Conversion and Urbanization
  - Rapid urbanization can strain the ability of sensitive habitat, such as valleys, wetlands, and aquatic habitats to continue to provide valued ecological functions and services. Rapid development increases the potential for conflict between people and wildlife. For example, increasing road traffic increases the potential for collisions with migrating species, creating a hazard to both motorists and wildlife.
- Altered Fire Regimes
  - Historically, the area was dominated by fire-adapted vegetation and experienced widely variable fire regimes, ranging from areas with relatively short fire return intervals to areas with 50+ year return intervals. Fire suppression has damaged forest health, resulting in undesirable changes in vegetation and increased intensity of wildfires as a result of increased fuel loads. Efforts to reduce fire danger can help to restore fish and wildlife habitat but require careful planning.
- Loss of Habitat Connectivity
  - The area is naturally diverse and heterogeneous. Some habitat types have been particularly disrupted by fragmentation and loss of connectivity, including late-successional forests and valley-bottom habitats. Opportunities for large-scale protection or restoration of native landscapes are limited. Existing development, growth pressures, high land costs, and the fragmented nature of ownerships and remaining native habitats all present barriers to large-scale ecosystem restoration.

Broad-scale conservation strategies will need to focus on restoring and maintaining more natural ecosystem processes and functions within a landscape that is managed primarily for other values. This may include an emphasis on conservation-oriented management techniques for existing land uses and

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restoration of some key ecosystem components, such as river-floodplain connections and riparian function.

- Invasive Species
  - Invasive plants are of concern in the area. Invasive plants disrupt native communities, diminish populations of at-risk native species, and threaten the economic productivity of resource lands. Invasive plants have been on the increase for the last 20 years. While not nearly as extensive as invasive plants, non-native animals also have impacted native fish and wildlife populations.

Some of the native species identified in the Strategy occurring in the Bear Creek corridor include Acorn woodpecker, Lewis woodpecker, Monarch butterfly, Pacific lamprey, Coho salmon, Chinook salmon, and summer Steelhead.

The Initiative notes the inherent conflict between management of vegetation for public safety and vegetation management to promote fish and wildlife habitat. When blackberry thickets are mechanically removed to reduce hiding cover and fuel loads, this often results in the simultaneous elimination of native riparian vegetation and associated degradation of water quality. In some cases, a simple mechanical treatment will also result in a monoculture of blackberry, as all competition is removed. The challenge for this plan will be to balance these goals appropriately to develop a greenway that reduces non-native vegetation, supports safe recreation, and provides the important ecological benefits to Bear Creek.

## Management Issues

Several issues impacting management of the riparian area along Bear Creek and its tributaries were identified during the project:

***Invasive plants:*** There are numerous species of invasive plants in the riparian corridor. New species are being regularly identified, mapped, and treated. Invasive plants have been introduced into an environment outside their native range. Within their native range they have factors (such as climate, pests, diseases and competitors) that regulate their reproduction and spread. In the new environment, these factors may not be present, and the introduced plants may soon out-compete the native plants and even exclude other vegetation. Invasive plants are known to reduce biodiversity, displace native plants and wildlife, reduce land values, inhibit recreational activities and tourism, reduce water availability while increasing soil erosion, increase fuel loading for wildfires and are toxic to domestic animals, native wildlife and humans (OSU 2003). Invasive plants such as Himalayan blackberry (blackberry) form dense patches that exclude other vegetation (OSU 2006) and provide fuel for wildland fires (OSU 2003). Known invasive plants found along the Greenway and/or the riparian corridor include blackberry, poison hemlock, English ivy, puncture vine (goat head), tamarisk, purple loosestrife, and reed canary grass.

***Use of Herbicides to Control Invasive Plants:*** The use of herbicides to control invasive plants varies by jurisdiction and is not allowable in all areas. However, use of herbicides is recommended as part of an integrated approach to weed control when used properly and applied by a certified, licensed applicator. Control of widespread infestations is difficult, if not impossible, without their use.

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It's important for the public to know that areas of widespread plants like poison hemlock can't reasonably be controlled without some careful herbicide applications. In addition, the sheer amounts of star thistle, puncturevine, blackberry and other thorny/nasty (aka, weeds that are hard to get volunteers to help remove) weeds are too abundant to keep in check without some herbicide use. Spot spraying noxious weeds in public areas (e.g., park lands) is quite different from applying it to fields with plants that people will eat.

All herbicides must be approved by the National Oceanic and Atmospheric Administration and the Oregon Department of Agriculture (RVCOG 2005). Herbicides will only be used by licensed, certified, applicators. Herbicide applications will be “spot” treatments, targeting specific invasive plants during specific season(s) of the year when the target species are most vulnerable to the treatment. We recommend areas to be treated with herbicides be noticed for 24 hours prior to treatment. Signs should stay in treatment areas a minimum of 24 hours after treatment. We recommend the use of Aquaneet, approved for use in and around waterways by the Environmental Protection Agency, rather than Roundup because some of the additional ingredients aren't as safe around water. It should be realized that Aquaneet, or any systemic herbicide can translocate from the root hairs of the ‘treated or target’ plants to the roots of ‘desired’ plants, thus eliminating both.

It is recommended that these actions be part of an Integrated Pest Management Plan (IPM Plan). An IPM Plan is one of the major strategies used by Medford Parks and Recreation Department in the maintenance of park facilities. Although there are numerous definitions of IPM, the following definition is taken from the Pacific Northwest Insect Control Handbook:

“Integrated pest management is an ecologically-based pest control strategy that relies heavily on natural mortality factors such as natural enemies and weather and seeks out control tactics that disrupt these factors as little as possible. IPM uses pesticides, but only after systematic monitoring of pest populations and natural control factors indicates a need. Ideally, an integrated pest management program considers all available pest control actions, including no action, and evaluates the potential interaction among various control tactics, cultural practices, weather, other pests, and the crop to be protected.”

***Management for Fish and Wildlife Concerns:*** Stream corridors are among the most productive habitats in southwest Oregon. They represent a small percentage of the landscape, but wildlife species diversity and density are high in riparian zones, making riparian corridors vital in regards to wildlife habitat (Oakley 1985). Riparian areas are particularly important in arid and semi-arid landscapes. The vegetation in most riparian zones is structurally more diverse and biomass production is higher than the adjacent upland areas providing an increased diversity of niches for wildlife to exploit. In addition, water, aquatic insects, and fish provide resources supporting wildlife species that require both aquatic and upland environments. (Oakley et al. 1985). Some of the key species occurring in this area are Coho and Chinook salmon, summer Steelhead, Monarch butterflies, Pacific lamprey, beaver and bald eagles.

Riparian areas also offer many benefits including:

- Delivering large woody debris to increase instream habitat complexity or create habitat in the riparian corridor,

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- Providing important habitat for a variety of species, controlling erosion, increasing streambank stability, reducing pollutants and sediment, moderating stream flow, and insulating streams from high air temperatures,
- Supporting “...*the most diverse bird communities in the arid and semiarid portions of the western United States (Knopf et al. 1988, Dobkin 1994, Saab et al. 1995).*” Quoted from RHJV 2007,
- Creating microclimates that support unique invertebrate communities (Rykken et al. 2007),
- Providing habitat for riparian obligate amphibian species and supporting higher overall herptile abundance (Gomez and Anthony 1996),
- Providing shade, cooling water for native salmon and other aquatic species, and
- Filtering pollutants from overland flow prior to entering Bear Creek and its tributaries.

**Management for Public Safety (fire, general safety and vector control):** We have disrupted fire regimes for the last 100 years across the Mediterranean forests and woodlands of the Rogue Basin (McNeil and Zobel 1980, Agee 1991, Colombaroli and Gavin 2010, Sensenig et al. 2013), including lowland and mixed conifer riparian forests (Messier et al. 2012). Invasive, non-native plants may be responsible for serious, long-term ecological impacts, including altering fire behavior and fire regimes. Invasive plants may affect fire behavior and fire regimes, often by increasing fuel bed flammability, which increases fire frequency. Therefore, knowing how to successfully manage invasive plants and their impacts on natural resources is crucial (Erickson and White 2007). Following management guidelines in the Plan will reduce fire risk.

Though well used, the Greenway is complicated due to its age, existing development, and infrastructure. The area is a well-known location for the unsheltered population, adding frequent response from law enforcement and fire agencies for illegal occupancy, prohibited camping and warming fires, pollution, and numerous other illegal activities. Invasive plants provide a dense monoculture of vegetation that provides hiding areas for criminal activities such as theft and assault. These dense patches can deter law enforcement from protecting lawful users of the area and the public from using these open areas for recreational endeavors such as walking, hiking, bird watching and biking. Spacing requirements, plant selection, and management methods will help to address this concern.

The dense patches of invasive plants such as blackberry limit access by Jackson County Vector Control staff when attempting to remove or reduce areas where vectors (mammals, birds, insects or other arthropods which transmit disease pathogens) can easily breed. For example, stagnant water removal, destruction of old tires and cans which serve as mosquito breeding environments, and good management of used water can reduce areas of excessive vector incidence (Jackson County Vector Control, personal communication, August 25, 2019). Further examples of environmental controls include reducing the prevalence of open defecation (often associated with illegal camping activities). This can reduce the incidence of flies acting as vectors to spread diseases via their contact with feces of infected people.

**Management for Recreation - Opportunities to coordinate restoration, management and public involvement events and tasks:** Vegetation management along the Greenway in Medford and other areas has provided an opportunity to engage residents in stream clean-up events and native planting efforts. In addition, organizations such as Oregon Stewardship, the RRWC, TFT

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and the LOMAKATSI have been working on similar riparian restoration efforts along the Greenway as independent projects. There are other groups implementing or interested in implementing projects and events that would contribute to the overall objective of this Initiative.

**Areas of special consideration:** There are areas along the Greenway that have unique uses, attributes, or other factors that require additional management concerns. For example, they can be designated for a number of reasons including: control of invasive plants needing special control methods, management of areas for monarch butterflies and native pollinators, areas adjacent to fish spawning or fish observation areas, areas of unique or historical significance and right-of-way areas such as sewer and power lines.

**Multi-Jurisdictional Ownership and Management:** To meet the requirements of the Jackson County Riparian Ordinance, the Oregon Department of Fish and Wildlife (ODFW) must approve removal of any vegetation (native or invasive) within the 50-foot riparian corridor of Bear Creek or its tributaries. A riparian planting plan is prepared for review and approval by ODFW prior to any removal of vegetation within this zone. Any invasive plant that is removed needs to be replaced with desirable species, preferably natives. In addition, ODFW requests a stem density per acre of 640 stems. Emphasis is placed on retaining existing native trees and snags. Removal of large patches of invasive plants such as blackberry by heavy equipment should be scheduled outside of the general nesting period for migratory birds (March through July). Restoration projects should focus on enhancing or establishing a shade canopy. ODFW recommends the establishment of 1,000 new ponderosa pine trees along the Greenway by 2030. This species survives fire and drought with age (ODFW, personal communication, August 15, 2019).

## Initiative Deliverables

**List of Prioritized Riparian Restoration Projects:** This list of prioritized projects was developed during Bear Creek Restoration Initiative sessions and one-on-one discussions outside of the sessions using these factors:

- Work is ongoing, and a partnership is in place.
- Work is planned and there is opportunity for a partnership, especially with non-traditional partners (such as ODF, local fire districts, etc).
- Planned work is part of an existing master plan.
- Work is in an area that addresses restoration needs and public safety concerns (fuels reduction needs, illegal activities, etc).

### 1. Ashland Pond area

- Area size: 45 acres composed of riparian corridor of lower reach of Ashland Creek and approximately 0.5 miles of Bear Creek.
- Length of stream reach: 1 mile (0.5 on Ashland Creek, 0.5 miles on Bear Creek)
- Partners: City of Ashland, Talent Irrigation District, TFT and Lomakatsi.
- Tasks:
  - Initial removal of invasive plants (Himalayan blackberry, English ivy, poison hemlock), where needed.
  - Supplemental planting with native trees and shrubs, where needed.
  - Control of invasive plants for 5 years.

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- Cost estimate (\$250,000)
  - Phases: This riparian project could be coupled with fish passage improvement (screen Ashland Pond diversion) and instream habitat work.
  - Benefits: enhanced riparian and wetland habitat, improved water quality, reduced fire risk.
  - Other: Some work is being done here by TFT and Lomakatsi. In addition, the City of Ashland, as part of its new water quality trading program, must find at least 24 acres of riparian vegetation within the Bear Creek watershed to restore. The objective of this water quality trading program is to “grow shade to cool the stream”.
2. Phoenix area (Blue Heron Park/Anderson Creek confluence to Coleman Creek)
- Area size: 19 acres, composed of riparian corridor of Bear Creek.
  - Length of stream reach: 1.5 miles along Bear Creek
  - Partners: City of Phoenix, Jackson County, Jackson County Fire District 5, Jackson County Social Services, ODFW, RRWC, RVCOG, RVSS.
  - Tasks:
    - Initial removal of invasive plants (Himalayan blackberry, English ivy, poison hemlock)
    - Supplemental planting with native trees and shrubs
    - Control of invasive plants for 5 years
  - Cost estimate \$150,000 for phase 1, \$170,000 for phase 2.
  - Phases: This project includes 1.3 acres of wetland enhancement within Blue Heron Park. Planned to be a multi-year project.
  - Benefits: Enhanced riparian and wetland habitat, improved water quality (stormwater treatment), reduced fire risk. Removal of public safety hazards and infrastructure
  - Other: Coleman Creek culvert passage at Houston Road and canal crossing. In addition, the City of Ashland, as part of its new water quality trading program, must find at least 24 acres of riparian vegetation within the Bear Creek watershed to restore. The objective of this water quality trading program is to “grow shade to cool the stream”.
3. Peninger Fire area below Pine Street in Central Point to Expo Center
- Area size: 45 acres, composed of riparian corridor Bear Creek.
  - Length of stream reach: 0.75 mile on Bear Creek
  - Partners: Jackson County, Jackson County Fire District 3, JSWCD, City of Central Point, ODOT, ODF, Lomakatsi and RVCOG.
  - Tasks:
    - Control of invasive plants (Himalayan blackberry, poison hemlock, puncture vine, Japanese knotweed)
    - Supplemental planting with native trees and shrubs (approximately 7 acres).
    - Control of invasive plants for 5 years
  - Cost estimate (\$300,000)
  - Phases: This riparian project could be coupled with instream habitat work.

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- Benefits: enhanced riparian habitat, improved water quality, reduced fire risk.
  - Other: This project was in response to the July 2018 Peninger Fire that burned approximately 100 acres. The fire started in July 2018 on the west side of Bear Creek and burned approximately 15 acres of ODOT managed land immediately downstream of the Pine Street Bridge. The fire removed several acres of thick blackberry. Actions - Phase 1 involved erosion and invasive plant control measures (fall of 2018) and seeding with native grass and forbs within the 15-acre ODOT managed area. Phase 2 (fall of 2019, winter of 2020) includes the planting of native trees and shrubs with pollinator plants on east and west side of Bear Creek within the ODOT managed area. JSWCD has provided \$30,000, City of Central Point has provided \$25,000, ODOT has provided \$25,000 of staff and equipment time. This area is being used to as an outdoor laboratory for local elementary and middle schools in the area. Through December 2019 more than 500 local elementary school students have taken part in these sessions.
4. Wagner Creek confluence
- Area size: 12 acres. Composed of riparian corridor along Bear Creek and lower Wagner Creek to west Valley View Road.
  - Partners: RRWC, City of Talent, Jackson County, JSWCD, several private landowners
  - Tasks:
    - Initial removal of invasive plants (Himalayan blackberry, poison hemlock)
    - Supplemental planting with native trees and shrubs
    - Control of invasive plants for 5 years
  - Cost estimate (\$200,000)
  - Phases: This riparian project could be coupled with fish passage improvement (sewer line obstacle to juvenile steelhead) and instream habitat work.
  - Benefits: enhanced riparian habitat, improved water quality, reduced fire risk.
  - Other: Manure storage facility, irrigation conversion, exclusion fencing, two diversion structures, plant irrigation and stewardship
5. Neil Creek/Walker Creek confluence
- Area size: 25 acres, composed of riparian corridor.
  - Length of stream reach: 1 mile.
  - Partners: City of Ashland, Talent Irrigation District, TFT, JSWCD and Lomakatsi.
  - Tasks:
    - Initial removal of invasive plants (Himalayan blackberry, poison hemlock)
    - Supplemental planting with native trees and shrubs
    - Control of invasive plants for 5 years
  - Cost estimate (\$250,000)
  - Phases: This riparian project could be coupled with fish passage improvement (Tolman and Clayton barriers) and instream habitat work.
  - Benefits: enhanced riparian and wetland habitat, improved water quality, reduced fire risk.
  - Other: Some work is being done here by TFT and Lomakatsi. In addition, the City of Ashland, as part of its new water quality trading program, must find at

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least 24 acres of riparian vegetation within the Bear Creek watershed to restore. The objective of this water quality trading program is to “grow shade to cool the stream”.

6. Lower Lone Pine Creek and Bear Creek Pine Street Bridge in Central Point
  - Area size: 60 acres, composed of riparian corridor of Bear Creek.
  - Length of stream reach: 1 mile on Bear Creek
  - Partners: City of Central Point, City of Medford, Jackson County, Knife River, TFT and Lomakatsi.
  - Tasks:
    - Initial removal of invasive plants (Himalayan blackberry, English ivy, poison hemlock)
    - Supplemental planting with native trees and shrubs
    - Control of invasive plants for 5 years
  - Cost estimate (\$250,000)
  - Phases: This riparian project could be coupled with instream habitat work.
  - Benefits: enhanced riparian habitat, improved water quality, reduced fire risk.
  - Other: This area is immediately upstream of the Peninger Fire area and downstream of existing projects by TFT and LOMAKATSI on Lone Pine Creek. ODFW recommends big-leaf maple be included in the plant list for this area (ODFW, personal communication August 15, 2019).
  
7. Upton Road to Dean Creek.
  - Area size: 25 acres, composed of riparian corridor of Bear Creek.
  - Length of stream reach: 1 mile on Bear Creek
  - Partners: Jackson County, JSWCD, Jackson County Fire District 3.
  - Tasks:
    - Initial removal of invasive plants (Himalayan blackberry, poison hemlock)
    - Supplemental planting with native trees and shrubs
    - Control of invasive plants for 5 years
  - Cost estimate (\$250,000)
  - Phases: This riparian project could be coupled with fish passage improvement and instream habitat work.
  - Benefits: enhanced riparian and wetland habitat, improved water quality, reduced fire risk.
  
8. Confluence of Wrights Creek
  - Area size: 18 acres, composed of riparian corridor of lower reach of Wrights Creek and approximately .5 miles of Bear Creek.
  - Length of stream reach: 1 mile (0.5 on Wrights Creek, 0.5 miles on Bear Creek)
  - Partners: JSWCD, Talent Irrigation District, TFT and Lomakatsi.
  - Tasks:
    - Initial removal of invasive plants (Himalayan blackberry, poison hemlock)
    - Supplemental planting with native trees and shrubs
    - Control of invasive plants for 5 years
  - Cost estimate (\$250,000)

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- Phases: This riparian project could be coupled with fish passage improvement and instream habitat work.
- Benefits: enhanced riparian and wetland habitat, improved water quality, reduced fire risk.

### 9. Confluence of Jackson Creek

- Area size: 15 acres, composed of riparian corridor of lower reach of Jackson Creek and approximately 0.5 miles of Bear Creek.
- Length of stream reach: 1 mile (0.5 on Jackson Creek, 0.5 miles on Bear Creek)
- Partners: Jackson County, JSWCD, TFT and Lomakatsi.
- Tasks:
  - Initial removal of invasive plants (Himalayan blackberry, poison hemlock)
  - Supplemental planting with native trees and shrubs
  - Control of invasive plants for 5 years
- Cost estimate (\$250,000)
- Phases: This riparian project could be coupled with fish passage improvement and instream habitat work.
- Benefits: enhanced riparian and wetland habitat, improved water quality, reduced fire risk.
- Other: The Freshwater Trust is discussing possible restoration actions near the mouth of Bear Creek, approximately 2 miles downstream. These actions could provide an opportunity to include riparian and instream habitat improvements throughout this stream reach.

### 10. Highway 62 downstream to I-5 crossing in north Medford

- Area size: 60 acres, composed of riparian corridor along approximately 0.5 miles of Bear Creek.
- Length of stream reach: 0.5 miles on Bear Creek
- Partners: City of Medford, ODOT, Crater Lake Ford, Medford Railroad Park and Lomakatsi.
- Tasks:
  - Initial removal of invasive plants (Himalayan blackberry, poison hemlock)
  - Supplemental planting with native trees and shrubs
  - Control of invasive plants for 5 years
- Cost estimate (\$250,000)
- Phases: This riparian project could be coupled with fish passage improvement and instream habitat work.
- Benefits: enhanced riparian and wetland habitat, improved water quality, reduced fire risk.

These projects areas have existing native vegetation but need to have an initial removal of blackberries and other invasive plants as a first task, then supplemental planting with native species to increase species diversity or density where appropriate. They then need long-term maintenance (a minimum of five years, preferable longer). Several of these areas contain other restoration needs, such as flow augmentation, fish passage improvement, and/or habitat enhancement. Opportunities to address multiple needs should be given priority.

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There are several areas that need continued maintenance. These areas were “restored” by previous efforts but are in need of long-term maintenance.

- Bear Creek Park/confluence of Lazy Creek
  - Area size: 12 acres, composed of riparian corridor of lower reach of Lazy Creek and approximately 0.3 miles of Bear Creek.
  - Length of stream reach: 0.4 mile (0.1 on Lazy Creek, 0.3 miles on Bear Creek)
  - Partners: City of Medford, Oregon Stewardship.
  - Tasks:
    - Control of invasive plants for 5 years
  - Cost estimate (\$20,000 over 5 years)
  - Phases: This riparian project needs continued vegetation management as described in the Plan.
  - Benefits: enhanced riparian and wetland habitat, improved water quality, reduced fire risk.
  
- Hawthorne Park to Highway 62 along Bear Creek in north Medford.
  - Area size: 45 acres, composed of riparian corridor along approximately 1 miles of Bear Creek.
  - Length of stream reach: 1 mile on Bear Creek.
  - Partners: City of Medford, Oregon Department of Transportation, JSWCD.
  - Tasks:
    - Control of invasive plants for 5 years
  - Cost estimate (\$20,000 over 5 years)
  - Phases: This riparian project needs continued vegetation management as described in the Plan.
  - Benefits: enhanced riparian and wetland habitat, improved water quality, reduced fire risk.
  - Other: The City of Medford and JSWCD provided funding in 2014 and 2015 to remove blackberries and other invasive plants from the site and to plant native trees and shrubs to supplement the existing native vegetation. ODOT provided match in the form of crew time and equipment. This contribution allowed the original project area to be larger than planned (45 acres vs the original 15 acres). ODOT continues to perform mowing of a portion of the area and has added more trees on the east side of the Greenway in subsequent years.

Some of these areas and issues are complex; master plans may be a logical first step to encompass opportunities.

**Possible Funding sources:** This is not meant to be an exhaustive list of possible funding sources, but a starting point to generate ideas and opportunities. Funding to cover the cost of these projects, or portions of these projects, could come from public and private funds, such as:

- The City of Ashland, as part of its new water quality trading program, must find at least 24 acres of riparian vegetation within the Bear Creek watershed to restore. The objective of this water quality trading program is to “grow shade to cool the stream”.

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- The Blue-Sky Habitat Fund from PacifiCorp, administered through The Freshwater Trust.
- The National Fish and Wildlife Foundation (NFWF).
- The Oregon Watershed Enhancement Board (OWEB).
- Non-traditional funding such as fuels reduction funds from the Oregon Department of Forestry through the Firewise program.
- Most of these funding sources require a match (usually one-to-one). This match can be provided from federal, state and local partners as a “cash” or “in-kind services” contribution to the project.

### **GIS based data set and map:**

Explanations on the data layers can be found in Appendix A.



## Recommendations

- **The formation of The Bear Creek Initiative.** A working group dedicated to the restoration and rehabilitation of Bear Creek and its communities. See Appendix B for copy of Proposal.

A possible funding opportunity for this recommendation is the Environmental Justice Collaborative Problem-Solving (EJCPS) Cooperative Agreement Program, administered by the Environmental Protection Agency. The next funding opportunity may be November 2020 if funding is available.

- **General Plan for Native Tree and Shrub Planting along Bear Creek.** Based on input from the Initiative sessions, a general planting plan with a recommended plant list is included in Appendix C. The planting list identifies fire resistant plants, adds plant diversity to the vegetation composition, while providing stream shade, and enhancing pollinator habitat components. We recommended a minimum of 10 species be included in any planting project to restore or supplement existing native vegetation.
- **A Riparian Programmatic Planting Plan.** We recommend actions taken to remove/control invasive plants and enhance/restore native vegetation within the riparian buffer area be addressed as part of a programmatic approach to ensure consistent treatment and achievement of the project's goals and objectives. The RBP Riparian Work Group is preparing a "programmatic approach" that could streamline the review and approval step while providing the desired riparian conditions.
- **A tour of a riparian restoration project along Lone Pine Creek that incorporates "site lines" into the planting design.** This tour is recommended for Spring 2019 (April) and could be the first of a set of tours highlighting sites with unique strategies (e.g., riparian planting done with the need for site lines to aid public safety concerns).
- **An "Annual Celebration of Bear Creek Restoration".** Held in the spring as part of Bear Creek Watershed week each year to acknowledge the broad spectrum of "restoration" accomplished and planned within the Bear Creek Corridor. Logistics including format, specific calendar dates, etc. will be developed.
- **The creation and use of the Bear Creek restoration survey tools.** RVCOG staff developed some survey tools using GIS apps that can be downloaded to smart phones or tablets. These apps allow the user to complete surveys while in the field. The surveys automatically note the time, location and answers to the predesigned survey questions. In addition, photos of the locations taken onsite can be uploaded. This allows the data layer to be updated in real time. The resulting survey information can be used to create spreadsheets and reports. RVCOG staff can provide training to all organizations wanting to participate. See Appendix D.

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- **Better Coordination with ongoing efforts:** Look for ways to improve coordination with Total Maximum Daily Load, stormwater management, Cooperative Weed Management Areas, brownfields, and other efforts along Bear Creek. An approach described here: <https://www.fairfaxcounty.gov/publicworks/news/pilot-program-remove-litter-waterways-begins> along the Bear Creek Corridor involving Jackson County, the municipalities and the organizations working with the homeless population in the area may provide a long term solution to long term care of the area while providing opportunities to address social issues as well as environmental concerns. Rogue Retreat’s “Clean Sweep” program could be a key piece of a larger effort to remove trash and maintain native vegetation while reducing unwanted activities along the Bear Creek corridor and Greenway.

## Appendix A: GIS Layer Description

**Bear Creek Restoration Initiative Top Ten Sites Inventory** – Summarizes information collected on the top 10 priority sites using the Survey 1-2-3 app and the Bear Creek Restoration Initiative Inventory Form (designed survey).

**Bear Creek Restoration Initiative Priority Areas** – Locations of the top ten priority areas identified by the working group and technical team.

**Bear Creek Restoration Initiative Priority Areas ½ Mile** – Top ten priority areas buffered with a half mile circle. The purpose of the buffer is to look at potential overlap with other restoration areas (planned, in progress, completed, and/or needed).

**Potential Restoration Projects** – Identifies potential restoration project areas (invasive species management, planting of native species) that have been identified as needing restoration but do not currently have funding to complete the project and/or a project sponsor (lead agency, NGO, watershed council). Projects that move into the active or completed categories move to the Restoration Project Locations list.

**Restoration Project Locations** – Identifies known restoration project areas (invasive species management, planting of native species) that are actively being worked on or completed. Projects from multiple agencies and entities are included.

**Special Consideration Areas** – Data layer created for the Bear Creek Greenway Vegetation Management Plan identifying areas along Bear Creek that have areas of special significance (e.g., pollinator gardens, monarch waysides, areas of historical significance, etc.).

## Appendix B: The Bear Creek Initiative

A working group dedicated to the restoration and rehabilitation of Bear Creek and its communities.

**Preamble:** In early 2019, the Rogue River Watershed Council asked the Rogue Valley Council of Governments to convene a forum of interested organizations to identify a list of riparian restoration projects along Bear Creek and several of its tributaries. Riparian restoration is not a new effort along Bear Creek. Several existing plans and guidance documents, as well as ordinances spell out where, what and when actions should occur.

There have been many successful examples of past collaboration at a local level. A recent example includes a fish habitat project. The project required various technical expertise in fish biology, hydrology, botany, and geology fields to create a set of tasks to create a quality habitat (such as good water quality and complex stream features) for native fish. This project was successful due to strong partnerships, different perspectives and a holistic understanding of the issues in the area.

The Bear Creek Initiative (BCI) is an attempt to provide a renewed effort that takes traditional restoration perspectives and adds a social and public safety component to the mix to address the issues facing Bear Creek, the most urbanized creek in southwest Oregon.

**Background:** Bear Creek is a 29-mile creek that flows from south of Ashland to the Rogue River. It passes through the towns of Ashland, Talent, Phoenix, Medford, and Central Point. The creek has historically been the most polluted tributary to the Rogue River due to irrigation returns, wastewater treatment outfall, storm water pollution, agriculture, and more. The creek has been neglected for years due to the construction and location of the I-5 freeway corridor that runs next to and over the creek for most of its 29 miles. The creek is home to Chinook and Coho salmon, steelhead and Pacific lamprey that return home to spawn every year. Residents use the Bear Creek Greenway that runs along its shores.

The Bear Creek Greenway is a 20-mile, paved, multi-use trail that links cities from Central Point, Medford, Phoenix, Talent, and Ashland. The trail system is used (on average) 250 times each day.

**Initiative Proposal:** We propose the creation of a working group (Group) made up of fish and wildlife biologists, restoration practitioners, public safety officers, human health professionals, community service workers, environmental non-profits, and representatives from Jackson County and the municipalities to provide advice and services for the betterment of the Bear Creek corridor and the communities that depend on it.

**Working Group Purpose & Mission:** The purpose of the Group is to restore Bear Creek's riparian corridor, water quality, and public usability and Greenway while addressing the homeless issue and assisting those in need with housing and resources when available. The Group's mission is to provide guidance in addressing the environmental and social issues that come with managing an urban stream restoration program such as the Bear Creek Initiative.

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**Working Group Actions and Activities:** Appropriate group members will conduct site visits and assist in proposal preparation as needed. The group will work to identify priority locations where the environmental health of the creek and its surroundings are depleted and in need of restoration. By including representatives from public health organizations, the group will identify appropriate solutions to assist in creating a more sustainable, safe, secure residence for people are living along the creek in these particular areas.

We recommend a uniform Memorandum of Understanding (MOU) that would allow a working arrangement between the organizations contributing to the Group. In the future, this Group may host periodic workshops, symposiums, and annual events to celebrate Bear Creek. While the Group's primary focus is riparian restoration, it hopes to encompass and support actions to improve water quality, fish passage, stream flow improvements, and homeless issues within Bear Creek and its corridor.

**Group Structure:** The Group is structured to be a high functioning and collaborative team, led by a Coordinator, to address continued riparian restoration along Bear Creek, its tributaries and the Bear Creek Greenway. The Group is intended to be a nimble cadre of experts who can aid in a responsive, appropriate, and professional manner. The Group is designed to have dozens of members, with the expectation that when an event arises, small teams can be formed from the greater group to respond (due to the level of experience and depth of knowledge for the topic) in a timely and effective manner.

**Funding:** Funding for the Group will come from private and public grants, existing technical assistance programs (such as the landowner's assistance programs), and community health and service programs. Additional membership(s) would be allowed in the Group based on the expertise and understanding of the projects and its complexity.

There are several local foundations who could be very interested in a collaborative project like this. Local businesses as well may be interested in supporting the BCI with donations or monetary sponsorships.

**Other:** In addition to these ancillary conditions, the BCI would like to lean on its partner agencies and jurisdictions to take appropriate actions in removing and controlling invasive plants, enhancing native vegetation, and providing shade for fish bearing streams. Due to the high profile of this work, the group is encouraged that this will not only reduce many of the environmental dilemmas but will also function as a successful education and outreach initiative, tailoring to each individual jurisdiction's needs.

The undertaking of a large-scale project in the urban portions of Bear Creek area may take different strategic planning and collaboration than projects have in the past. Bringing in additional resources from public safety and human health practitioners may provide a more diverse and comprehensive prescription to the complex set of issues we are looking for.

### **List of Potential Participating Organizations:**

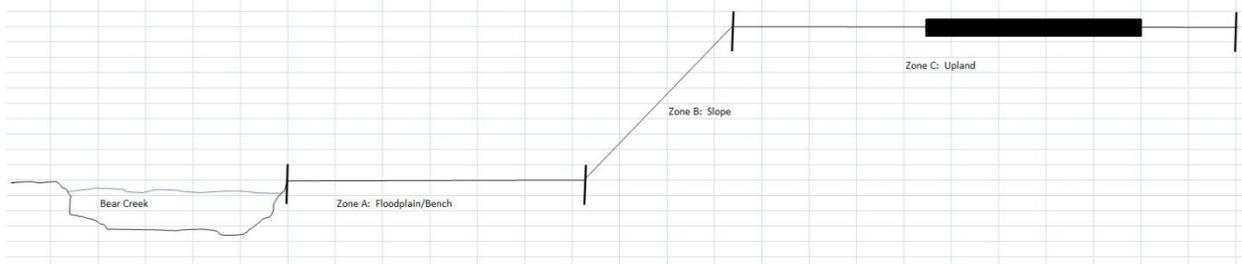
City of Ashland  
City of Central Point  
City of Phoenix  
City of Talent  
City of Medford  
City of Medford Police Department, Livability Team  
Cow Creek Band of Umpqua Tribe of Indians  
Jackson County Continuum of Care  
Jackson County Fire Districts  
Jackson County Parks  
Jackson County Vector Control  
Jackson Soil and Water Conservation District  
Lomakatsi Restoration Project  
Oregon Department of Transportation  
Oregon Department of Fish and Wildlife  
Oregon Department of Forestry  
Oregon Stewardship  
Rogue Basin Partnership  
Rogue Fly Fishers  
Rogue Retreat  
Rogue River Keeper  
Rogue River Watershed Council  
Rogue Valley Audubon  
Rogue Valley Council of Governments  
The Freshwater Trust

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## Appendix C: General Plan for Native Tree and Shrub Planting along Bear Creek

- Minimum plant density of 640 stems per acre (this can include existing native vegetation).
- Plant willow stakes in December.
- Due to the summer conditions, plant native trees and shrubs during November through mid-March. Site conditions (such as existing native vegetation, topography and access to water for irrigation) will dictate species, size and numbers to plant.
- Three planting zones (Figure 1, Table 1):
  - Zone A focuses on plants capable of tolerating flooding and like a wetter footprint,
  - Zone B plants are mixed and, in some cases, need to tolerate extreme conditions due to the slopes and nature of the understory, and
  - Zone C plants provide more shade and can tolerate sun and drier conditions.
- When possible, use larger containers (one gallon or larger) for trees and shrubs to attain the desired planting goals more rapidly. Larger containerized plant stock is more tolerant of existing local climate conditions because they are less vulnerable to transplant shock and are more capable of moisture retention during the transplanting process (National Tree Trust, 1997). The use of smaller plants, such as plugs, will require more maintenance due to competition from invasive plants.
- Oregon Department of Fish and Wildlife has recommended the establishment of 1,000 ponderosa pine trees along the Bear Creek Greenway by 2030 (ODFW, personal communication August 15, 2019).

**Figure 1.**



**Table 1: Native plants by zone:**

### ***Zone A Plants***

Willows (toe of slope)	White Alder*	Hinds Walnut	Pacific dogwood*
Western Dogwood*	Pacific Ninebark	Snowberry	Douglas Spirea
Blue Elderberry	Sedge species	Rush species (Juncus)	

### ***Zone B Plants***

Dogwood*	Snowberry	Rose (nootka, woodsii)*	Douglas Hawthorne
Oregon Ash*	Oceanspray	Big Leaf Maple*	Douglas Spirea
Willows (toe of slope)	Chokecherry*	Woods Rose*	Black Oak*

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### *Zone C Plants*

Oregon Ash*	Big Leaf Maple*	Incense Cedar	Ponderosa Pine*
White Oak*	Oregon Grape*	Snowberry	Mock Orange
Oceanspray			

\*Indicates preferred species based on fire resistance properties.

**Plant maintenance:** Starting in February use work crews to remove invasive plants such as poison hemlock and blackberries. If using herbicide, use licensed herbicide applicator to spot spray invasive plants (such as poison hemlock, puncture vine) every six weeks. Use manual labor crews as needed to remove re-sprouting blackberries through late spring early summer. Use license herbicide applicator to spot spray remaining blackberry sprouts in early fall.

# Bear Creek Restoration Initiative Final Report

## Appendix D. Survey Tool for Riparian Restoration Projects

### Riparian Restoration Projects

This map shows the locations of restoration projects (e.g., invasive species management, planting).

#### Bear Creek Restoration Initiative Inventory Form

The purpose of this survey is to inventory and map restoration projects in the Rogue Basin. Please fill out the information as detailed as possible.

#### Date and Time

#### Site/Project Name\*

#### Project Site Status

Established (planted over 2 years ago)

Ongoing (planted currently or within 2 years. Maintenance ongoing)

Planned/Projected

#### Project Status Notes

Add any additional relevant information regarding the past or planned restoration activities on the site.

## Project Status Notes

Add any additional relevant information regarding the past or planned restoration activities on the site.

## Project Sponsor

Are there lead entities/contacts for the project?

Estimated size of project (in acres).

## Existing Site Information

Number of Trees and Shrubs Planted

Acres of invasives treated

Site Conditions/Site Needs

**Site Conditions/Site Needs**

**Restoration needs**

Canopy  
Cover/Shade

Shrubs

Ground Cover

Bank Stabilization (willow cuttings, willow mattresses)

Other

**Estimated Number of Trees and Shrubs needed**

**Dominant Invasive Species**

Please note all the invasive species that are present in significant numbers

Blackberry

English Ivy

Poison Hemlock

Japanese Knotweed

Goathead/Puncturevine

Starthistle

Garlic Mustard

Reed Canary  
Grass

Other

## Special Needs

Reduce Fire Risk

Improve Public Safety

Recreation

Infrastructure (water lines, sewer lines, utilities, etc.)

Trouble Spot

Other

## Specific Site Needs

Activities that will be included as part of the ongoing or planned restoration.

Weeding

Watering

Mulch

Plant Protection

Replanting

Other

## Links to other projects

Please note any tie ins to other projects (e.g., instream work, barrier removal)

**Image # 1**

## Image # 1

Press here to choose image file. (<10MB) 

## Image # 2

Press here to choose image file. (<10MB) 

## Image #3

Press here to choose image file. (<10MB) 

## Image # 4

Press here to choose image file. (<10MB) 

## Location

