

Riparian Planting Plan

All Ecology grant recipients are required to submit a riparian planting plan to the Ecology Project Manager whenever any planting is to be done that will be funded in part or whole with Ecology funding or when it is being used as match for Ecology funding. When planting is to occur at multiple sites as part of a single agreement, individual riparian planting plans must be submitted for each site. All restoration activities must be consistent with the current NRCS standards and Technical Guide¹ and the Stream Habitat Restoration Guidelines².

An alternative plan can be submitted in lieu of this template, as long as it contains all elements described herein. In the case of match projects, planting plans developed by partnering entities is acceptable.

AGREEMENT / RECIPIENT INFORMATION	
Grant Number: OTGP-2020-LCEP-00023	Grant Recipient: Lower Columbia Estuary Partnership
Project Manager / Contact: Chris Hathaway	
PROJECT INFORMATION	
Property / Site Name: Burnt Bridge Creek Meadowbrook North – Phase II	Implementation Target Date: 9/1/2019-9/1/2021
Closest Water Body and Type: Burnt Bridge Creek – Perennial Stream	

PROJECT LOCATION
<i>Briefly describe location. Include lat / long³, Township/Range/Section, river mile, and any other landmarks or coordinates available.</i>
Meadowbrook North (southern side) is located in Vancouver, WA between NE Burton Rd (on the south) and NE Royal Oaks Drive (on the north). T2-0N, R2-0E Section 20. Approximate river mile 8.2. Site is at the downstream end of the Meadowbrook North open space.
Latitude, Longitude: 45.6415221, -122.5802997

PROJECT / SITE DESCRIPTION
<i>Discuss historic condition, site potential, plant communities, and stream condition. Also, discuss water quality problems and causes, current condition, etc.</i>
Burnt Bridge Creek at the Meadowbrook North site is a small perennial stream. Historically the site was likely forested with a mix of deciduous and coniferous trees (similar to the large forest stand on the western side of the creek). The Phase II planting area is a 1.25-acre area on the eastern floodplain which expands existing planting projects in the stream reach. In 2017, the Estuary Partnership planted a 50' buffer along approximately 675' of stream at the downstream portion of the site, in addition to other upstream plantings funded by other entities. Phase II includes

¹ http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/references/?cid=nrcs143_026849.

² Cramer, Michelle L. (managing editor). 2012. Stream Habitat Restoration Guidelines. Co-published by WDFW, WDNR, WDOT, and Ecology, Wa. State RCO, Puget Sound Partnership, and the USFWS. Olympia, Wa. <http://wdfw.wa.gov/publications/01374/wdfw01374.pdf>.

³ <http://www.latlong.net/>.

expanding this restored riparian buffer to approximately 150' wide to increase water quality benefits, reduce non-native edges, and build on past planting success. The unplanted portions of the site currently consists of mostly lawn type grass, a few native species, and some invasive species. The riparian buffer on the eastern side of the creek lacks large wood, shade, and habitat complexity. With proper invasive species management, riparian plantings, and time, the site has the potential to establish a rich, complex, multi-species, self-sustaining riparian buffer.

Currently BBC at the project site is on Ecology's 303d list for four impairments: temperature, dissolved oxygen, pH, and fecal coliform. Prior to entering the Meadowbrook North site, BBC flows through the Royal Oaks Golf course – where riparian buffers are few. In addition, at the northern edge of the project site the Peterson Channel flows into BBC. Water in the Peterson Channel is almost entirely discharge from the SEH America manufacturing facility.

RESTORATION GOALS

What are the goals of your restoration and planting efforts? This may include water quality goals, fish/wildlife goals, and others.

The project's overall restoration goal is to reestablish a healthy riparian buffer along the creek by managing invasive species, planting native trees and shrubs, and providing maintenance to ensure the native plants become established and are 'free to grow'. By re-establishing a healthy riparian buffer, the project will help achieve long-term goals for the creek and the watershed. A healthy riparian buffer will shade the creek from the sun which will help lower stream temperatures. The riparian buffer will also increase habitat diversity and complexity, improve conditions for fish, wildlife and birds, and provide future sources of large wood to the creek. A healthy riparian buffer will also increase micro-detritus inputs to the creek improving food web cycling. The Estuary Partnership engages local students and volunteers in this restoration process to support and inspire long-term watershed stewardship and protection of waterways.

Site Specific Goals Include:

1. Restore native vegetation to 1.25 acres of riparian habitat, planting 2,500 native plants.
2. Engage local community members and students in hands-on stormwater/clean water education to encourage watershed literacy and stewardship

GENERAL DESCRIPTION OF PLANTING

Discuss how the site should look after planting. How will the plants be distributed across the project site? Will they be evenly distributed or planted in groups? Are you planting a diversity of trees, shrubs, forbs, and grasses, or are there limitations to what you are planting and why?

Plant species will be native trees and shrubs selected to match the site conditions and habitat needs. Plants will be a mix of bare root, potted and live stake types, ranging in size from 8" to 48" tall. Planting layout will generally exhibit meandering rows parallel to the stream with plants spaced between 5-10' feet apart. Estuary Partnership staff, students, and/or volunteers will plant plants employing a number of different planting methods. The area will be planted with a relatively high density of plants in order to account for some mortality. Planting in high densities also allows us to avoid the use to tubes which are expensive, time consuming to install, and often end up separated from plants and strewn across the site.

Post-planting the site will look like a riparian restoration site with native trees and shrubs leafing out and growing. As native plants grow larger, non-native species will be outcompeted and the creek will become less visible. The trees will shade the stream, provide cover and habitat diversity, and restore the riparian buffer that historically existed along the creek.

PLANTING SPECIES AND TYPE

List each species (common or latin name), type of planting, and number to be planted (of each species, or combination of species if unknown). We understand that this may be an estimate only and species composition may change as site conditions are better understood. Please copy and paste more lines as necessary.

Draft plant list provided below. Plants will primarily be bareroot and potted type plants

Latin Name	Common Name	Form	Total Unit	Bareroot	Cuttings	Potted	Size	Moisture	Exposure
<i>Abies grandis</i>	Grand Fir	Tree	100			100		Dry-Moist	Partial-Sun
<i>Acer macrophyllum</i>	Bigleaf Maple	Tree	200			200		Dry-Moist	Shade-Sun
<i>Amelanchier alnifolia</i>	Serviceberry	Tree	100			100		Dry-Moist	Shade-Sun
<i>Crataegus douglasii</i>	Black Hawthorn	Tree	100	100				Dry-Moist	Partial-Sun
<i>Rhamnus purshiana</i>	Cascara	Tree	100	100				Dry-Moist	Shade-Sun
<i>Cornus sericea</i>	Red Osier Dogwood	Shrub	200			200		Moist-Wet	Shade-Sun
<i>Mahonia aquifolium</i>	Tall Oregon Grape	Shrub	300			300		Moist	Shade-Partial
<i>Physocarpus capitatus</i>	Ninebark	Shrub	100	100				Moist- Wet	Shade-Sun
<i>Rosa nutkana</i>	Nootka rose	Shrub	300			300		Moist-Wet	Partial-Sun
<i>Sambucus racemosa</i>	Red Elderberry	Shrub	200			200		Moist	Shade-Partial
<i>Symphoricarpos albus</i>	Common Snowberry	Shrub	300	300				Moist-Wet	Shade-Sun
<i>Prunus emarginata</i>	Bitter cherry *	Tree	200	200				Dry-Moist	Sun
<i>Sambucus cerulea</i>	Blue elderberry	Shrub	300	300				Dry-moist	Sun
TOTAL			2,500	1,100	0	1,400			

Who will be installing the plants (list all that apply)?

- Our Staff WCC Crews Volunteers Other: *Students*

NOXIOUS WEED MANAGEMENT

Describe the noxious weeds present on the site, which species are of most concern, which species will be treated / managed, and what pre planting and post planting treatment / management you are planning.

Invasive and non-native species at the site include: The site has been mowed for recreation and park-like conditions and primarily consists of non-native lawn grasses. Management strategies are included below.

PLANTING SITE PREPARATION

Describe how you will prep the site for planting. Include weed control, mulching, soil amenities, deer or livestock exclusion fencing, or any other site prep conducted before or during the planting.

City of Vancouver sites:

Pre-planting site preparation will include the City of Vancouver spraying herbicide on non-native species (mostly lawn grasses and some reed canarygrass) and covering the dead grass with 12-14 inches of mulch. This multi-faceted treatment technique suppressed invasive and non-native weed growth by chemical and 'sheet mulching' type means to effectively kill and smother the weeds. An added benefit of the mulch is it breaks down into nutrient rich organic soil material.

PLANTING SITE MAINTENANCE

Describe how you will maintain plants during the life of the agreement. Discuss browse protection, mortality replacement, or any other methods you will use to increase survival. Also, will plants need / receive maintenance after the project period? Why or why not? How long?

City of Vancouver sites:

The City of Vancouver uses a preventative site prep technique that lays a thick, 12-14 inch layer of mulch to suppress invasive plant regrowth. After planting, the City of Vancouver will provide maintenance treatments including targeted spot spray herbicide applications, as needed, to control invasive species re-growth. The mulch also provides an added benefit of moisture retention that reduces the need for additional watering. Over time, the native trees and shrubs will grow and shade out the non-native species. The trees will shade the stream, provide cover and habitat diversity, and restore the riparian buffer that historically existed along the creek.

The Estuary Partnership installs bare root plants at a high plant per acre stem density, to allow for 10-25% loss of plants due to animal herbivory, water stress, or native out-competition. This technique ensures the appropriate stem density for the habitat conditions are maintained in the long term while avoiding the use of a plant tubes which are expensive, time consuming to install, and often end up disconnected from plants and strewn across sites. The City of Vancouver also has the ability and is willing to use an irrigation system or a water truck to provide supplemental irrigation. The City of Vancouver (by themselves and with partners) have been restoring riparian buffers along creeks in the area using a similar project approach, for many years and have had excellent results.

IRRIGATION

Will your plantings be given supplemental irrigation? Yes No

If not, why not?

If yes, please answer the remaining questions⁴.

How long do you intend to irrigate the plants (months per year and number of years)? once or twice a summer as needed.

⁴ If you cannot answer one or more of these questions, or think you may need a temporary water right for irrigation, please contact the Project Manager or Water Resources Customer Service Line (Ecology, CRO) at 509-575-2597.

How will you irrigate the plantings? With On Site Ground Water With On Site Surface Water
 Transporting It In From Another Location. *From where?*
 Other (*please describe*): The City of Vancouver has a water truck that can easily access the site. Workers spray the plantings with water from the truck. Irrigation will be provided as necessary.

Will you be irrigating a total of ½ acre or less? Yes No, more than ½ acre Not Sure

Is the project within the 'place of use' of a water right? Yes No Not Sure

Do you need a temporary water right permit⁴? Yes No Not Sure

If yes, have you already obtained one?
 Yes No, but have applied No, and I haven't yet applied

PLANTING SITE MONITORING

What is your planting goal at the end of the project period?

The ecological goal of this project is to improve stream health and water quality by reducing invasive riparian cover, increasing native riparian cover, and increasing native stream shade. Planting and revegetation actions aim to establish an average of 1500 native stems per acre in the at the end of the project period (or approximately 75 % plant survival).

How was your plant goal determined? Please describe.

The plant stem density goal is determined by estimating the typical stems per acre of healthy mature riparian sites with similar plant communities. These estimates employ best professional judgement based on years of revegetation experience and habitat monitoring. Stem density per acre is an appropriate metric to monitor because it reflects the density of woody vegetation on the site and allows for interplanting if densities are found to be less than desired. To inform adaptive management strategies, the Estuary Partnership also tracks plant survival percentages to determine the average survival rates of our planting projects and provide information for future species lists and planting methods.

How will you measure this goal? Please describe.

The Estuary Partnership measures planting effectiveness by documenting site changes in several ways.

1. Visual Inspection: Regular site visits will occur to assess qualitative progress at the site. These visits will include inspection of plants to determine overall vigor and if any maintenance interventions are needed. Staff will note any site changes, plant damage, water stress, or other conditions that may affect plant success.
2. Photo Point Monitoring: Estuary Partnership staff will establish 5-10 photo points to document site conditions before restoration. Photo points should be located in areas that are expected to see the most amount of change related to planting. Photo points will be retaken after native plantings are installed and again at the end of the project period to showcase the visual changes at the site as the plants grow and begin to shade the stream.
3. Quantitative Stem Density Monitoring: The Estuary Partnership will define the plant density sampling area based on the size of the planting area. Sampling transects will be established within the planting area, and the number of transects will be dependent on the overall size

of the planting area. Sampling plots will be established at equal intervals along the sampling transect. To determine plant density, a count of the number of planted stems and determination of the plant status (Live/Dead) will be conducted within each sampling plot. Plant density per acre will be calculated along with estimated survival percent.

What is your timeline for monitoring or project tracking? How frequently will you visit and for how long?

Estuary Partnership staff will monitor site progress regularly. Visual inspection will occur once or twice per year during the project period. Photo point monitoring will occur before site prep, after planting and at the end of the project period. Quantitative stem density monitoring will occur the first summer after the entire site has been planted, the 3rd year after the site has been planted and the 5th year after the site has been planted.

What other monitoring, short and long term, will you do to determine whether your planting goals have been achieved? Please describe.

No additional monitoring is expected.

Are you doing any water quality, shade, or other environmental data collection?

Yes⁵ No *If yes, please describe:*

If yes, have you or are you developing a QAPP for this agreement? Yes No N/A

PROJECT SIZE

What is the size of the area to be planted, treated, enhanced, and/or protected? Please provide all of these metrics if you can: Acres: 1.25 Square Feet: 54,450 Stream Feet: 675'

1 or both sides of stream: One: X Two: Other:

PLANTING SITE RIPARIAN BUFFER

What will be the minimum width of the buffer?

35 ft. 50 ft. 75 ft. 100 ft. Other:

This project expands a 50' buffer project. An additional 50-100' will be planted under this grant, turning the site into a 100-150' buffer project.

How has the Ordinary High Water Mark (OHWM)⁶ been determined for this site?

N/A

If any or all of the project site will not meet the minimum required buffer size⁷, please describe why:

We expect all portions of the site to meet the minimum 50 ft. buffer width.

LIVESTOCK

Are livestock present or near? Yes No *If yes, what type?*

⁵ May require the development of a QAPP. Discuss with Ecology Project Manager.

⁶ For information on determining OHWM, see: <https://fortress.wa.gov/ecy/publications/documents/0806001.pdf>.

⁷ Refer to the appropriate Funding Guidelines for buffer size requirements, ask Ecology Program Manager if unsure.

Will there be a livestock exclusion fence installed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If yes, describe the fencing and who will install and maintain it:
If no, why? <input checked="" type="checkbox"/> Livestock cannot access plants <input type="checkbox"/> Fence already in place
<input type="checkbox"/> Other:

CULTURAL RESOURCES REVIEW
Have you initiated a 05-05 / 106 cultural resources review ⁸ ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
If no, please state when you expect it to be initiated:
If yes, please describe where it is at in the process: We have submitted the WA Ecology E.O. 05-05 or Section 106 NHPA Project Review document.
Have you developed an Inadvertent Discovery Plan (IDP)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

OTHER
Provide any additional information that will help us understand the project better.

⁸ Go to: <http://www.ecy.wa.gov/programs/wq/funding/Res/EnvRev/EnvRevMain.html> for Ecology cultural resource documents.

RIPARIAN PLANTING PLAN APPROVAL PAGE
GRANT NUMBER: OTGP-2020-LCEP-00023
RECIPIENT NAME: Lower Columbia Estuary Partnership
PROJECT SITE NAME: Burnt Bridge Creek Meadowbrook North – Phase II
<i>Once approved by the recipient and the Ecology Project Manager, this document must be signed by both parties before any implementation can begin. Failure to do so could result in the rejection of any related reimbursement request.</i>

Approval Signatures

 Recipient Organization Manager

 Date

 Recipient Project Manager

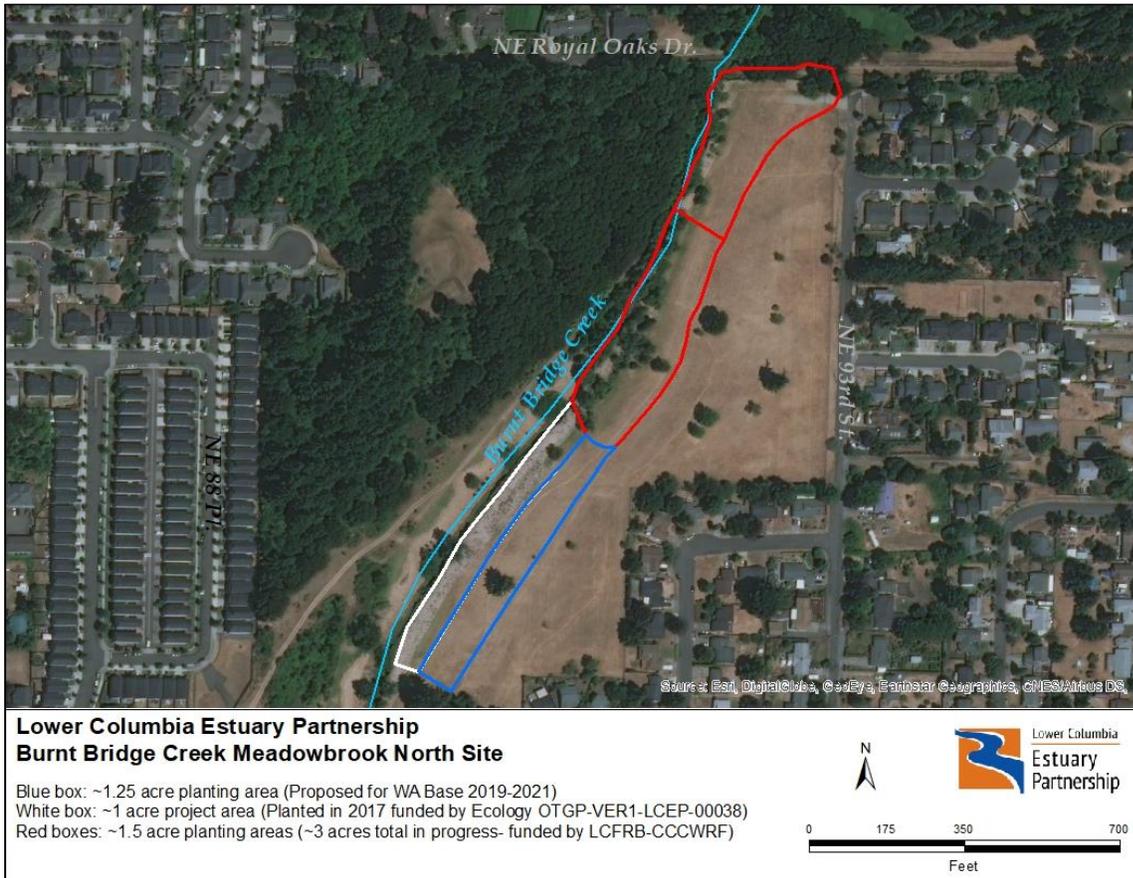
 Date

 Ecology Project Manager

 Date

Appendix A. Project Site Map

Attach a full-page aerial photo or detailed drawing of the site and adjacent water body. Indicate within that map, 1) the project boundary, 2) locations of plants and plant species or types, 3) location of exclusion fencing (existing and/or new), 4) existing plant communities, and 5) other BMPs within boundary. Map should include T/R/S lines and numbers and needs to be clear and detailed.



Appendix B. Project Site Photos

Please attached “before” photos of the project that are representative of the site conditions, problems, and cause of problems, particularly in relation to the vegetation and planting effort.



Photo 1: Project area looking south. Mulch was placed on east boundary of site, west boundary is the native plantings that were planted in an earlier phase of the project.



Photo 2: Project area looking north. Mulch was placed on east boundary of site, west boundary is the native plantings that were planted in an earlier phase of the project.