

# Bridge Street Bridge Replacement

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## Habitat Management and Mitigation Plan

City of Sumner, Pierce County, Washington



Prepared for:

**City of Sumner Public Works Department**

1104 Maple Street

Suite 260

Sumner, WA 98390

March 2015

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## 1.0 Introduction

This habitat management plan has been prepared for the Bridge Street Bridge Replacement project in accordance with Sumner Municipal Code (SMC) 16.56.080. The Code requires a management plan for any proposed development within 1,000 feet of fish and wildlife habitat areas. These fish and wildlife habitats include<sup>1</sup>:

A. Areas with which federally or state-listed endangered, threatened, or sensitive species of fish, wildlife, or plants have a primary association;

B. Areas with habitats and species of local importance, including the following:

1. Areas with which state-listed monitor or candidate species or federally listed candidate species have a primary association, and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term;

2. Special habitat areas which may provide specific habitats which certain animals and plants require such as breeding habitat, winter range, and movement corridors;

C. Naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish and wildlife habitat;

D. Waters of the state, including all water bodies classified by the Washington State Department of Natural Resources water typing classification system as detailed in WAC 222-16-031;

E. Lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal entity;

F. State natural area preserves and natural resource conservation areas. (Ord. 2071 § 34, 2003: Ord. 1546 § 1 (part), 1992)

As the proposed project will occur over the White River, a water of the state, a habitat management plan is required. This habitat management plan contains provisions for implementation, monitoring, and maintenance of proposed mitigation commitments developed for the protection of fish and wildlife habitat.

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<sup>1</sup> SMC 16.56.050 <http://www.codepublishing.com/wa/sumner/>

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## 2.0 Project Description

The City of Sumner is proposing to replace the existing 360-foot long steel truss bridge across the White River on Bridge Street. The bridge will be replaced with a standard precast concrete girder bridge directly downstream of the existing bridge. This bridge type and alignment was approved by the Sumner City Council as the most cost-effective and environmentally-sensitive solution of the four analyzed alternatives. Shifting the alignment slightly downstream allows the existing bridge to be utilized during construction, precluding the need for a temporary detour bridge which significantly reduces the number of temporary piles that will need to be driven below the Ordinary High Water Mark (OHWM) of the White River. The bridge will be widened from two 10-foot travel lanes to two 11-foot travel lanes and 5-foot bike lanes in both directions. 6.5-foot (including curbing) sidewalks will also be constructed. Project activities will involve removal of the existing bridge, construction of temporary work platforms, installation of drilled shafts, bridge deck construction, abutment construction, paving, marking, signage, illumination, utility relocation and landscaping. The roadway sections directly east and west of the existing bridge will also be improved as part of this proposed project.

The project is located at approximately river mile (RM) 0.73 of the White River, just east of the intersection of Valley Ave. E. and Pacific Ave. and 245 feet west of the intersection of Bridge St. and Fryar Ave. in southwest Sumner (Figures 1 and 2), in Section 24 of Township 20E and Range 04E. The river runs generally north to south through the project area.

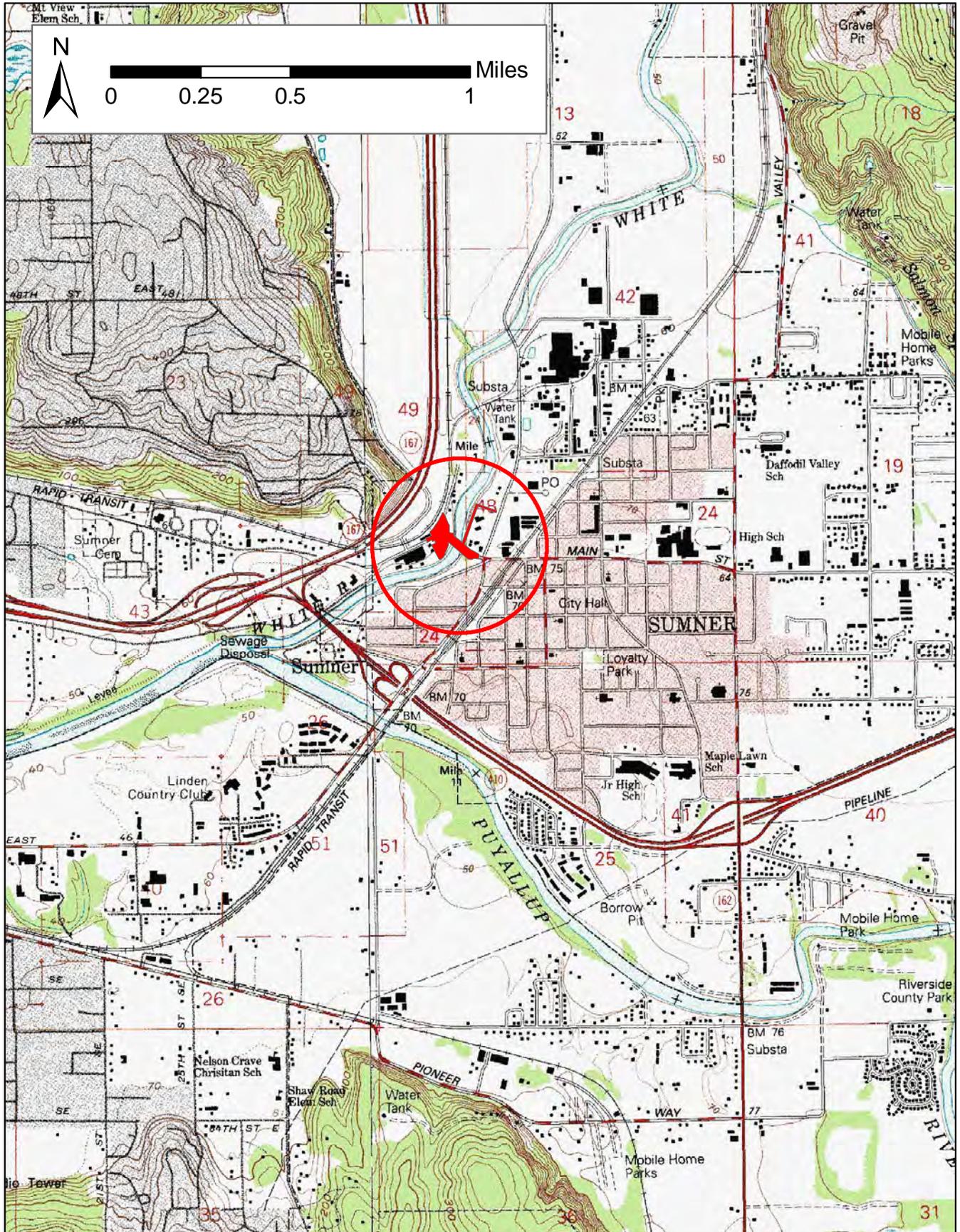
Currently the existing bridge is weight restricted to 12 tons or less. This prohibits large delivery trucks, buses, and tractor-trailers from utilizing this route. The bridge was built in 1927 and is currently evaluated as structurally deficient and functionally obsolete. It has a current sufficiency rating of 7 out of 100 which is well below a rating of 50 for priority replacement. Replacement of this bridge is needed to maintain safe crossing conditions for vehicles and pedestrians.

The proposed new bridge will be a 48-foot 4-inch wide, two-lane vehicular bridge, with a deck constructed of standard Washington State Department of Transportation (WSDOT) pre-cast and pre-stressed concrete girders. It will be a 2-span bridge of 304-foot total length, with a 201-foot clearspan and 12-foot clearance above the 100-year floodplain (Figure 3). No permanent in-water structures are being proposed. Temporary in-water work will include the driving and removal of 30 24" diameter steel pipe piles for a downstream temporary work platform as well as installation and removal of a sheet pile cofferdam around the existing pier closest to the west bank of the river during pier demolition.

Construction of the bridge, temporary work platforms, construction access, and east/west roadway improvements will require the disturbance and/or removal of up to 35,050 sq. ft. (0.80 acre) of vegetation. An additional 32,670 sq. ft. (0.75 acre) of shrub and herbaceous vegetation may be disturbed for a potential construction access trail. Much of the disturbed vegetation is invasive blackberry (*Rubus sp.*) and all unimproved disturbed areas will be replanted with appropriate native vegetation. An additional 3,126 sq. ft. (0.07 acre) area will be converted from asphalt to native vegetation to mitigate for the permanent vegetation removal due to the new bridge embankments.

Up to 16 trees within the project area may be felled to accommodate construction access and building of the new bridge. These trees will be securely anchored along the banks and into the wetted channel of the river to provide Large Woody Debris (LWD). Displaced trees will be replaced with native trees at a rate of at least 3 to 1.

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### Figure 1 - Vicinity Map

*Bridge Street Bridge Replacement*

**City of Sumner**

47.204038 N lat / -122.245678 W long

S24/T20N/R04E

March 16, 2015

 Project Area

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 Project Area

### Figure 2 - Project Area

*Bridge Street Bridge Replacement*

**City of Sumner**

47.204038 N lat / -122.245678 W long

S24/T20N/R04E

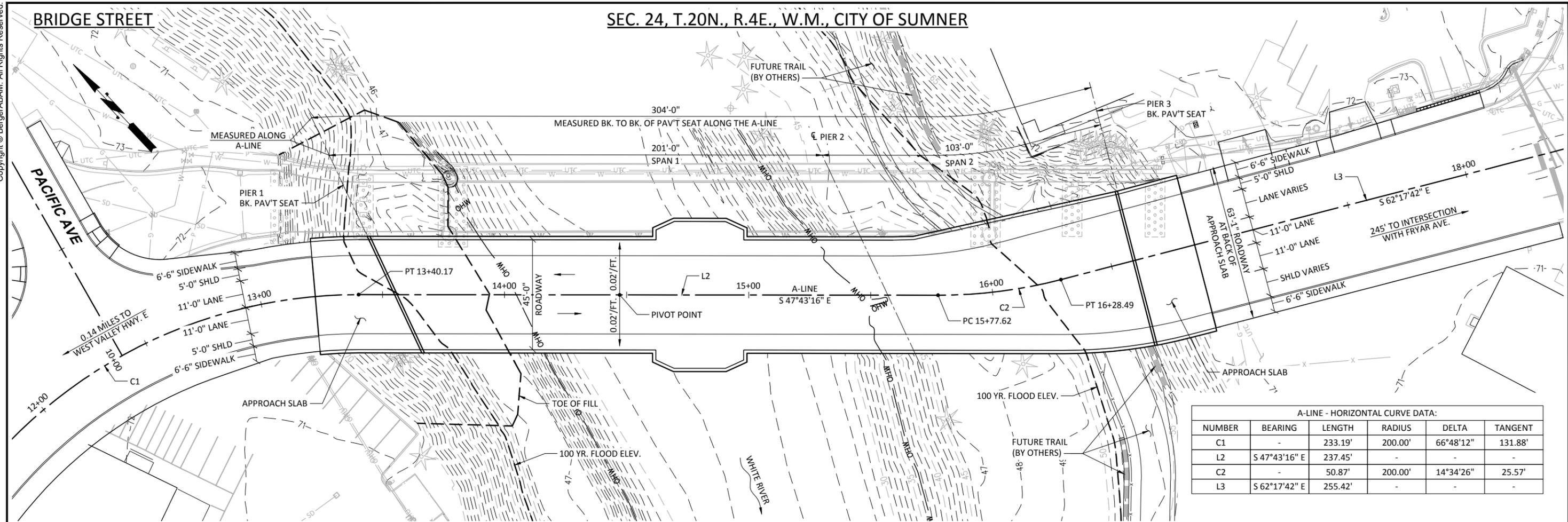
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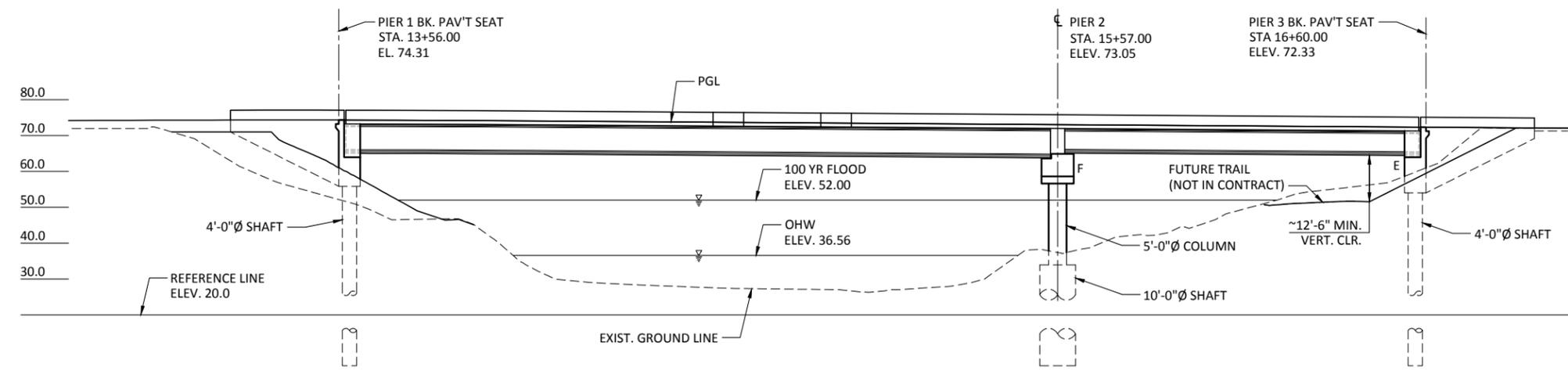
Last Saved by: Tom Lemons on: Dec 19, 2014 3:36 PM. File: C:\FederalWay\2013\A13.0302\CADD\Drawgs\20\_S-01.dwg

**SEC. 24, T.20N., R.4E., W.M., CITY OF SUMNER**



A-LINE - HORIZONTAL CURVE DATA:					
NUMBER	BEARING	LENGTH	RADIUS	DELTA	TANGENT
C1	-	233.19'	200.00'	66°48'12"	131.88'
L2	S 47°43'16" E	237.45'	-	-	-
C2	-	50.87'	200.00'	14°34'26"	25.57'
L3	S 62°17'42" E	255.42'	-	-	-

**PLAN**



**ELEVATION**

ELEVATIONS ARE FINAL GRADE MEASURED AT THE TOP OF ROADWAY ALONG THE A-LINE

**A-LINE PROFILE**

**P.C. GIRDERS (WF100G & WF83G)  
CONT. FOR LL LOADING: HL-93**

**PERMIT SUBMITTAL**

MARK	REVISION DESCRIPTION	BY	APP.	DATE

**BergerABAM**  
33301 9th Avenue South, Suite 300  
Federal Way, Washington 98003-2600  
(206) 431-2300 Fax: (206) 431-2250

**CITY OF SUMNER WASHINGTON**

DRAWN BY LWC  
DESIGN BY JSD  
CHECK BY GAB  
PROJ MGR CWS

**CITY OF SUMNER**  
**BRIDGE STREET BRIDGE REPLACEMENT**  
GENERAL PLAN AND ELEVATION

DRAWING NO. **S-1**  
PROJECT NO. A13.0302  
DATE: 12/19/14  
SHEET NO. 25 OF 96

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### 3.0 Existing Environmental Conditions

The proposed project is located over the White River, at approximately river mile (RM) 0.73, just east of the intersection of Valley Ave. E. and Pacific Ave. and 245 feet west of the intersection of Bridge St. and Fryar Ave. in southwest Sumner. The river flows generally north to south through the project area. According to the City of Sumner zoning map, the areas on the west and east sides of the bridge are zoned General Commercial and Mixed Use development, respectively (City of Sumner 2010).

The proposed project area is located within the nearly level floodplain of the White River. Elevation of the site varies from 74 ft. at the highest point to 36.56 ft. at the Ordinary High Water Mark (OHWM) of the White River. This area consists completely of Puyallup fine sandy loam, which is formed in mixed alluvium under hardwoods and conifers on natural levees in major river valleys (NRCS 2013).

The proposed project area is characterized by a sparse overstory of black cottonwoods (*Populus balsamifera*) and bigleaf maples (*Acer macrophyllum*) with some small red alders (*Alnus rubra*) and willows (*Salix spp.*). The shrub layer is dominated by invasive Himalayan blackberry (*Rubus armeniacus*) with some red osier dogwood (*Cornus sericea*), snowberry (*Symphoricarpos albus*), bracken fern (*Pteridium aquilinum*), sword fern (*Polystichum munitum*), horsetail (*equisetum sp.*), and miscellaneous grasses. There are also many invasive vines including English ivy (*Hedera helix*), evergreen clematis (*Clematis vitalba*), and field bindweed (*Convolvulus arvensis*).

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**Photo 1. Cottonwoods and dense Himalayan blackberry in the SW portion of project area**



**Photo 2. Small bigleaf maples and dense Himalayan blackberry in NW portion of project area**

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**Photo 3. Dense Himalayan blackberry and invasive vines in SE portion of project area**



**Photo 4. Bigleaf maples with understory of snowberry and sword fern in NE portion of project area**

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## 4.0 Species and Habitat Presence

Habitat within 1,000 feet of the project area includes the White River and the adjacent forested riparian habitat on both sides of the river. 200 feet from the OHWM of the White River is designated as Riparian Management Zone (RMZ) in the northwest portion of the proposed project area as it is within the “Urban Conservancy” shoreline environment designated by the City of Sumner (SMC 16.14.030). 50 feet from the OHWM of the White River is designated as RMZ in the other 3 quadrants of the proposed project area as these areas are within the “Urban” shoreline environment (SMC 16.14.050).

### 4.1 White River

The White River originates from the Emmons and Fryingpan glaciers on the north face of Mt. Rainier and flows 68 miles from its mountain source to its confluence with the Puyallup (SSDC 2007) (Kerwin 1999). It has a drainage area of approximately 494 square miles. Within the project area the White River flows in a southern direction, outletting into the Puyallup River approximately 0.73 miles south of the project area. Areas of the White River within or adjacent to the proposed project area are listed as impaired by WSDOE on the 303(d) and 305(b) lists. Within the project area, the White River is listed as a Category 5 water on the WSDOE 303(d) list for fecal coliform and a Category 1 water for pH and ammonia, Category 2 water for temperature, and Category 5 water for fecal coliform on the WSDOE 305(b) list. 0.7 miles north of the project area the White River is 305(b) listed as a Category 5 water for temperature and Category 2 water for dissolved oxygen (DO). 0.3 miles south the White River is also listed as a Category 3 303(d) water for temperature (WSDOE 2012). Flows within the project area are regulated by the Mud Mountain Dam (at RM 28) which diverts upstream flows to Lake Tapps. These flows rejoin the White River through the Lake Tapps diversion (RM 3.6) which is located approximately 2.9 miles upstream (north) of the project area.

The lower White River has been subject to flood control modifications including diking and gravel removal to deepen the channel. In efforts to limit the extent of flooding, levees have been created along the river. The levees prevent floodplain connectivity from properly functioning at this time. Flood control has also led to extensive development of the lower river floodplain from Auburn downstream. Because of flood control efforts, habitat elements such as pool frequency, refugia, and off channel habitat are not properly functioning in the action area. Levees and dikes have reduced channel complexity, the recruitment of LWD, and the potential for juvenile refugia and rearing.

A search of the Washington State Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) and SalmonScape databases was conducted to identify the presence of habitats and species potentially present at the site. Salmonid species documented to utilize the White River in the project vicinity include Chinook, Coho, pink, sockeye, and chum salmon as well as bull trout and steelhead trout (WDFW 2013a, b). Of these, bull trout (Coastal/Puget Sound DPS), Chinook salmon (Puget Sound ESU), and steelhead (Puget Sound DPS) are listed as threatened under the Endangered Species Act. Critical habitat for bull trout and Chinook salmon has also been designated within the proposed project area. Refer to the attached Biological Assessment (Widener and Associates 2015) for specific information on these listed species and designated habitats within the proposed project area.

## 4.2 Wetlands

No wetlands have been mapped on the US Fish and Wildlife Service's National Wetland Inventory (NWI) database (USFWS 2013) or on the City of Sumner Wetland Inventory Map (City of Sumner 2007) directly adjacent to the project. Site reconnaissance has also been conducted and no wetlands were identified within the project area. There are also no hydrological connections between any nearby wetlands and the river reach within the proposed project boundaries. Several wetlands do exist within the terrestrial action area determined based on the potential construction noise generated. The wetland nearest to the project site is a freshwater emergent wetland, approximately 2,000 feet north of the proposed bridge. In general, there are not many wetlands adjacent to the lower reach of the White River due to the constrained channel, dikes, and steep banks in this section.

## 5.0 Project Effects on Fish and Wildlife Habitat

The proposed project will not require any permanent in-water structures. One existing pier of the existing bridge is partially located below the OHWM of the White River. This pier will be removed as part of the proposed bridge replacement. All proposed bridge structures and piers for the new bridge will be constructed at least 6 feet landward of the OHWM of the White River. The clear span above the river will be 12 feet above the 100-year flood level.

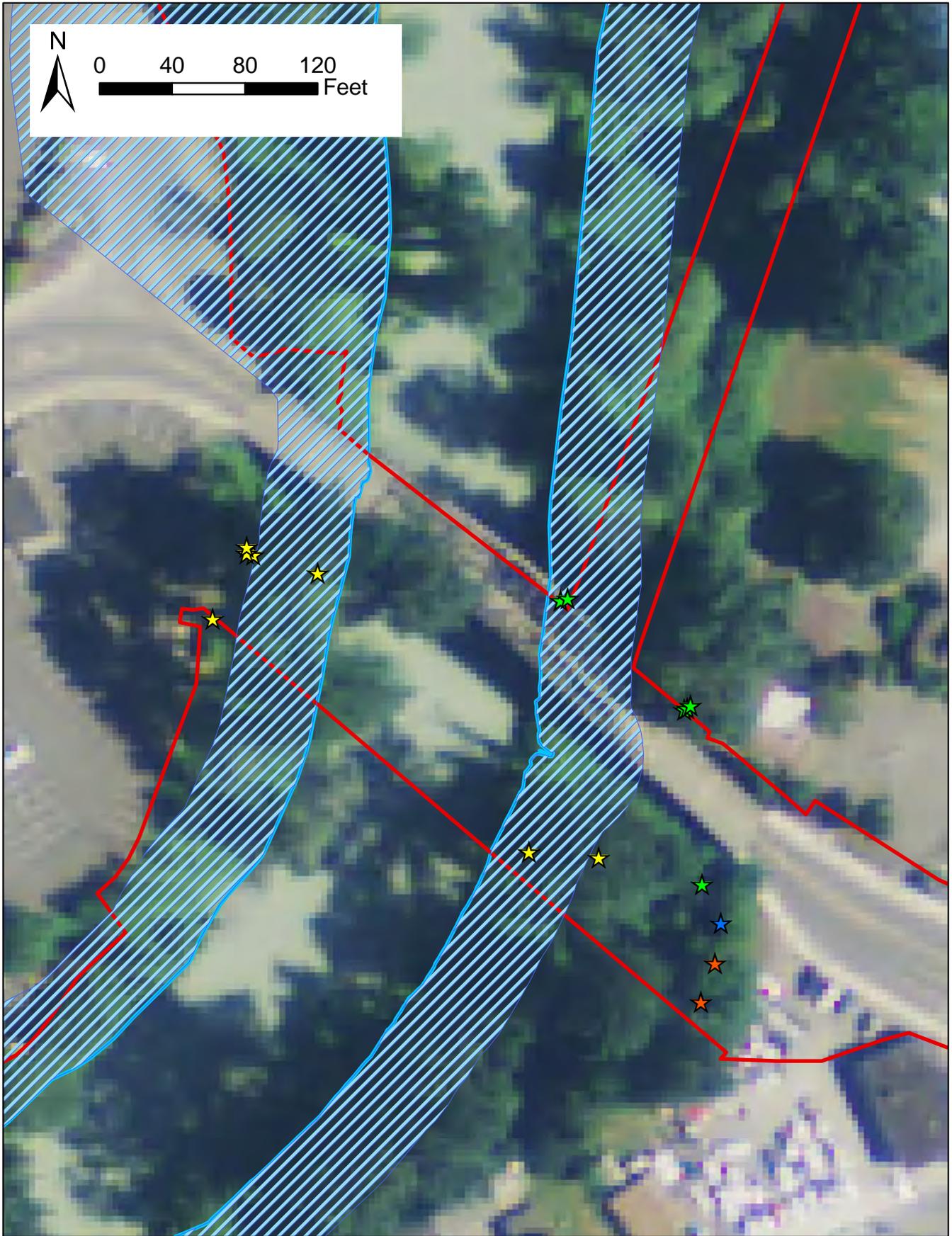
This project will involve vibratory pile driving/extraction and impact proofing both above and below the OHWM of the White River in order to install temporary 24" steel pipe piles and a sheet pile cofferdam. 30 piles will be driven/extracted below OHW in order to construct and disassemble the required downstream temporary work platform. Pile driving within the wetted channel of the river as well as adjacent to the river will likely result in temporary increases in sedimentation/turbidity within the aquatic action area of the project. Any increased sedimentation/turbidity should not exceed 300 feet in extent, which is within the limits set forth in the *Water Quality Standards of Surface Waters of the State of Washington* and the NPDES permit issued by the WSDOE. Refer to the attached Biological Assessment (Widener and Associates 2015) for specific information on proposed pile driving effects, including an underwater noise analysis.

Up to 16 trees will be removed for construction of the new alignment, bridge, and associated access areas (Figure 4). Up to 11 trees will be removed on the east side of the river and up to 5 trees will be removed on the west side of the river. 4 of these trees are within City of Sumner's 50-foot established RMZ for the "Urban" shoreline environment (SMC 16.14.050). In addition, installation of the new bridge would result in a wider area of shading over the entire width of the river and riparian zone (46 ft. 9 in. compared to the existing 21 ft. wide bridge). Shading can reduce plants' abilities to photosynthesize and change the micro-climate and habitat such that species distributions may change over time. This may include reduction in primary production of aquatic algae that provide forage for macroinvertebrates that, in turn, provide forage for salmonid species. Shading impacts from the bridge are expected to be discountable as any temporary loss of shading from felled trees will be mitigated for by the wider bridge and trees planted to replace those that were felled.

There will also be disturbance and/or removal of up to 35,050 sq. ft. (0.80 acre) of vegetation, with additional potential disturbance of 32,670 sq. ft. for a possible access trail, if necessary (Figure 5). All of the vegetation removal will be temporary with the exception of the area filled for the new bridge embankments. 5,890 sq. ft. (0.14 acre) of vegetation will be permanently removed. Much of the disturbed vegetation is invasive blackberry (*Rubus sp.*) and all unimproved disturbed areas will be replanted with appropriate native vegetation. Areas within 25 feet of the proposed restoration areas will also be selectively cleared of noxious weeds in order to prevent their reinvasion into the restoration areas.

Other indirect impacts to the habitat within the project area could potentially include those of increased impervious surfaces and associated stormwater runoff. Impervious surfaces reduce the infiltration ability of natural surfaces to filter pollutants and excess nutrients before they reach a waterbody via runoff. They also result in increased peak flows. This should not, however, affect aquatic species. There are no documented sensitive terrestrial species occurring in the project vicinity.

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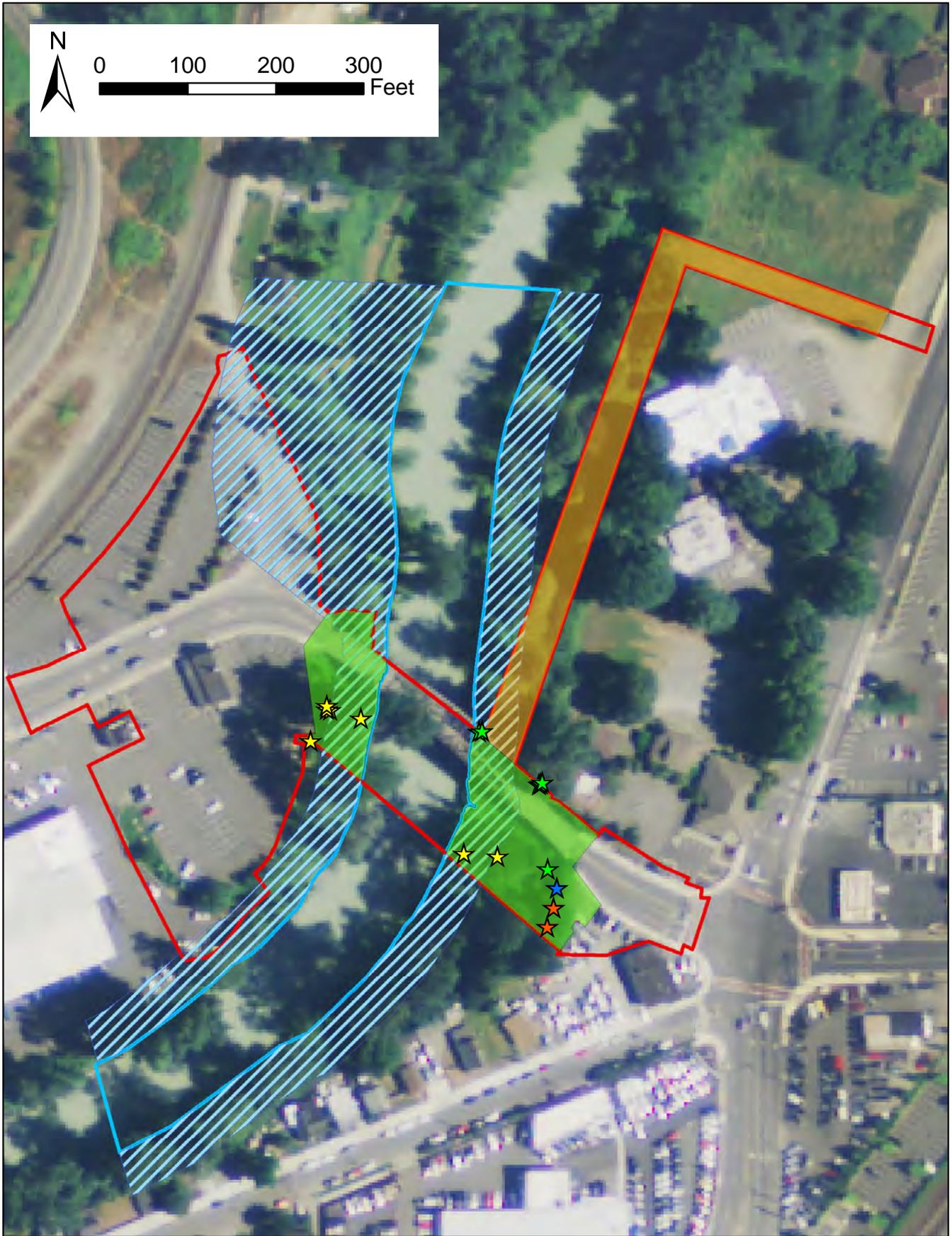


- ★ Bigleaf Maples
- ★ Cottonwoods
- ★ Cedars
- ★ Mountain Ash
- Project Area
- White River
- Riparian Management Zone

**Figure 4 - Potential Tree Removal**  
*Bridge Street Bridge Replacement*  
**City of Sumner**

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- ★ Bigleaf Maples
- ★ Cottonwoods
- ★ Cedars
- ★ Mountain Ash
- Vegetation Removal
- Potential Access Trail
- Project Area
- White River
- Riparian Management Zone

**Figure 5 - Vegetation Removal**  
*Bridge Street Bridge Replacement*  
**City of Sumner**

March 16, 2015

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## 6.0 Minimization and Mitigation Measures

### 6.1 Minimization/Avoidance for Temporary Impacts

During the course of the entire project, standard best management practices (BMPs) and other minimization measures will be implemented prior to, and maintained throughout, construction in order to avoid or reduce impact to fish and wildlife habitat. These BMPs and minimization measures include, but are not limited to:

- Installation of appropriate sediment and erosion control devices where appropriate, including:
  - Silt fence
  - Straw wattle
  - Inlet protection
  - Covering unworked and unstabilized areas
  - Hydroseeding
- Completing all work within the White River during the in-water work window of July 15 – September 30
- Providing a containment structure under the bridge, past the drip line, to catch debris generated from work on the deck in order to prevent debris from falling in to the river
- Limiting ground disturbance to the minimum amount necessary and marking clearing limits with high visibility fencing
- Implementation of a Spill Prevention, Control and Countermeasures (SPCC) plan to ensure that all potential contaminants are properly contained and handled
- Implementation of a Stormwater Pollution Prevention Plan (SWPPP) and monitoring requirements in accordance with the NPDES permit
- Preventing equipment from entering the water
- Containing and properly disposing of all waste materials in accordance with federal, state, and local laws
- Utilizing bubble curtains during in-water pile driving in water deeper than 2 ft.
- Utilizing sand bag berms around pile driving in less than 2 ft. of water in order to exclude fish
- Monitoring underwater noise and downstream turbidity during in-water work

### 6.2 Mitigation for permanent impacts

To mitigate for loss of vegetation, all unimproved disturbed areas will be seeded, mulched, and/or planted with native woody species as appropriate. Clearing and grubbing for the proposed project should eliminate most noxious weeds within the proposed riparian and upland restoration areas. Additional spot control may be needed prior to planting. If limited chemical application is deemed necessary, weeds will be sprayed with a WSDOE-approved herbicide by a licensed applicator. Noxious weeds will be removed within all areas proposed for restoration planting as well as within 25 feet upstream and downstream of restoration areas in order to reduce the potential for reinvasion. Native plants will be planted as appropriate in all areas where noxious weeds have been removed in order to provide competitive exclusion.

All bare areas will be hydro-seeded with native herbaceous species as soon as possible after ground disturbance is complete in a given area. Refer to Tables 2 and 3 for seeding specifications. Native species were chosen based on their suitability for the project area and their wildlife value. Four different

planting zones will be used based on the elevation of the site post-construction as well as adjacent land uses (Table 1). Zone 1 will be between the OHWM and the average flow stage of the White River. It will include emergent grasses and sedges and/or plants like salmonberry (*Rubus spectabilis*) and native willows (*Salix spp.*) that can withstand the water velocities and level of inundation expected in this zone. Zone 2 will be between the OHWM and the 100-year floodplain. This zone will be amended with compost, seeded with native riparian grasses, and planted with live stakes of native willow species and red-osier dogwood (*Cornus sericea*). Zone 3 will be between the 100-year floodplain and the top of the river bank. It will be amended with compost, seeded with a mix of native upland grasses, and planted with western red cedar (*Thuja plicata*) and Douglas fir (*Pseudotsuga menziesii*) on 10-foot centers, while allowing for a 15-foot setback from the proposed bridge. Zone 4 will be outside the river banks and will be planted as appropriate for adjacent land uses.

If the access trail is required for temporary construction access, this area will also be restored with the area below the 100-year floodplain being restored the same as Zone 2 and the area above the 100-year floodplain being restored the same as Zone 3.

**Table 1: Restoration and Enhancement Planting Summary**

Planting Zone	Area (sq. ft.)	Area (acres)
Zone 1	1,778	0.04
Zone 2	14,274	0.33
Zone 3	14,300	0.33
Zone 4	7,538	0.17
<b>Total Restoration</b>	<b>37,890</b>	<b>0.87</b>
Enhancement below 100-year floodplain	5,828	0.13
Enhancement above 100-year floodplain	5327	0.12
<b>Total Enhancement</b>	<b>11,155</b>	<b>0.26</b>

As the existing area is dominated by Himalayan blackberry, the proposed conversion to a forested riparian area with a native shrub and herbaceous understory will provide improved habitat within the riparian buffer of the White River. All species were selected based on their suitability for the area and their value to wildlife. Any locations in the vegetation enhancement areas that are selectively cleared of noxious weeds will also be planted with native species.

In accordance with SMC 16.20.090, all planted shrubs will be at least 18 inches in height. At the time of planting, deciduous trees will be at least two inches in caliper (diameter) one foot above grade, and coniferous trees will be at least five feet in height. 3-inch deep, 3-foot diameter mulch rings will be added around all trees and larger shrubs. Herbivory guards will be installed around trees and larger

shrubs as well. An irrigation system will be installed and implemented to ensure survival of restoration plantings.

Removed trees will be utilized as LWD along the shoreline and within the wetted channel as deemed suitable. This will provide improved habitat conditions in the form of cover, pools, and prey sources. The installation of LWD and native plantings will provide increased opportunity for LWD recruitment, natural shading, organic litter input, bank stabilization, and wildlife habitat. Those trees that are not used as LWD within the wetted channel will be used as standing snags or LWD within the restored riparian and upland areas.

The construction of the new bridge and approach roads will increase the area of impervious surface within the project area by approximately 14,136 sq. ft. (0.32 acre). Modifications will be made to the existing stormwater system to account for the increase in impervious area resulting from the proposed project. This project will not provide additional retention due to the poor soils on site. In addition, no additional detention is proposed as the White River is on the WSDOE list of flow control exempt surface waters. However, this project has been designed to comply with the WSDOE 2005 *Stormwater Management Manual for Western Washington* (SWMWW) and the 2011 WSDOT *Hydraulics Manual* (HM) for runoff treatment and conveyance. Runoff quality on site will be improved by the installation of a closed stormwater system on the proposed bridge that will convey runoff to the east where it will be treated by a proposed Linear Modular Wetland System (LMWS). This will provide for better stormwater treatment on site as stormwater runoff from the existing bridge flows directly into the White River. Stormwater conveyance will mimic the existing stormwater system, with several pipes being rerouted and one upsized to handle additional flow. Some existing pipes will need to be rerouted, but the proposed drainage areas will mimic those of the existing bridge and roadway approaches. One combined outfall will be created below the new bridge, with erosion control protection above the OHWM of the White River.

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**Table 2: Riparian Seed Mix**

- To be spread over bare spots below the 100-year floodplain line

Scientific Name	Common Name	Indicator Status	# PLS/ acre
<i>Agrostis exarata</i>	Spike Bentgrass	FACW	2
<i>Calamagrostis canadensis</i>	Canada Reed	FACW+	2
<i>Deschampsia cespitosa</i>	Tufted Hairgrass	FACW	6
<i>Glyceria occidentalis</i>	Western Manna Grass	OBL	90

Note 1: Grass seed of the above composition, proportion, and quality shall be applied at the rate of 100 pounds of Pure Live Seed (PLS) per acre.

Note 2: Riparian seed mix prepared by WSDOT horticulturist, Susan Buis.

Note 3: Wetland seeding mix seed provenance limited to the coastal Pacific Northwest, from southwest B.C. to the Willamette Valley and from the western slopes of the Cascade Mountains west to the Pacific Ocean, only elevations below 1000 feet. Provenance shall be certified in writing by the seed supplier.

**Table 3: Upland Seed Mix**

- To be spread over bare spots above the 100-year floodplain line

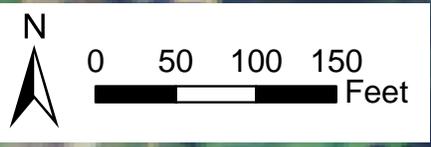
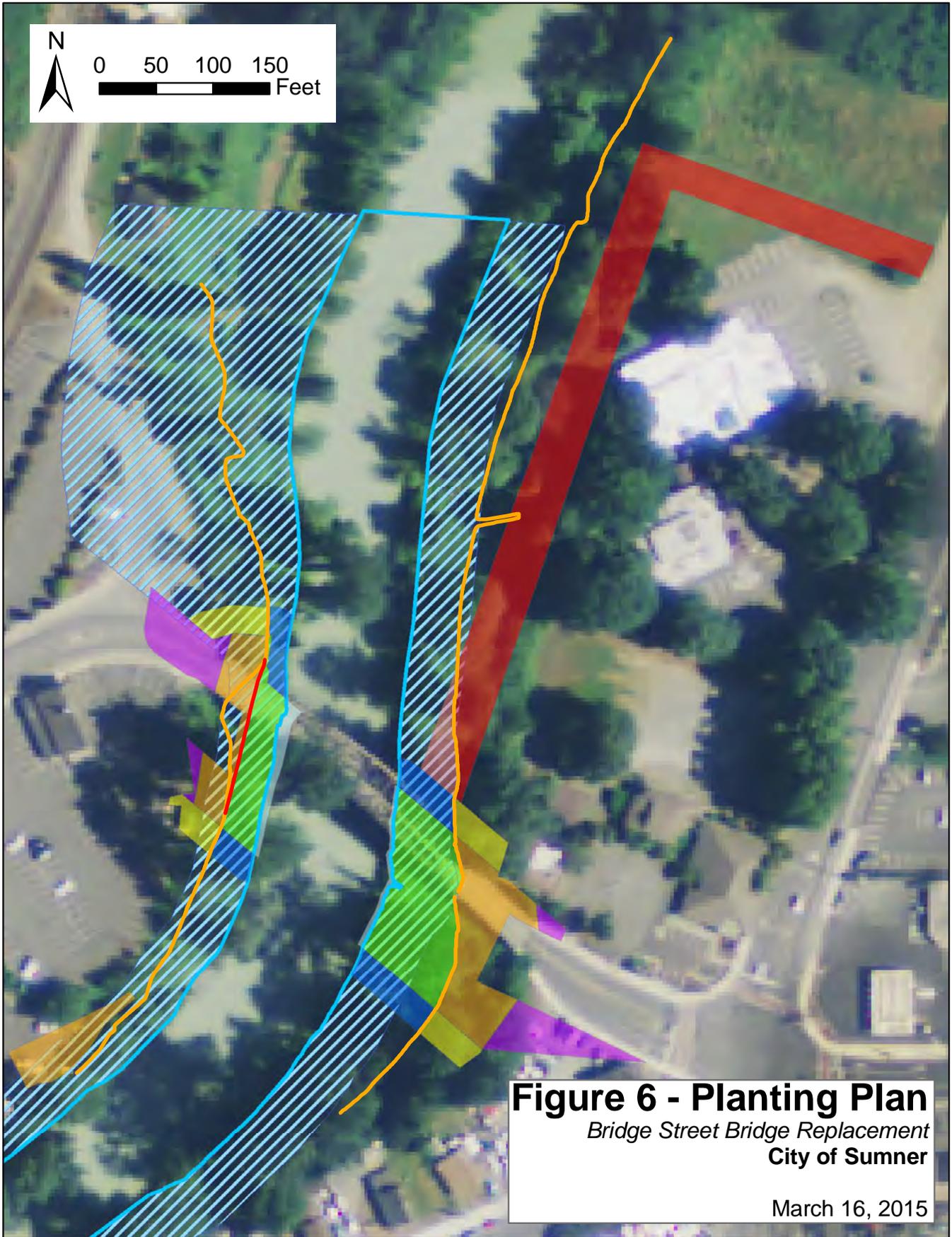
Scientific Name	Common Name	Indicator Status	# PLS/ acre
<i>Bromus carinatus</i>	California Brome	UPL	39
<i>Bromus sitchensis</i>	Alaska Brome	UPL	13
<i>Danthonia californica</i>	California Oatgrass	FACU	9
<i>Danthonia spicata</i>	Common Wild Oats	UPL	4
<i>Elymus glaucus</i>	Blue Wildrye	FACU	29
<i>Festuca occidentalis</i>	Western Fescue	UPL	6

Note 1: Grass seed of the above composition, proportion, and quality shall be applied at the rate of 100 pounds of Pure Live Seed (PLS) per acre.

Note 2: Upland buffer seed mix prepared by WSDOT horticulturist, Susan Buis.

Note 3: Upland buffer seeding mix seed provenance limited to the coastal Pacific Northwest, from southwest B.C. to the Willamette Valley and from the western slopes of the Cascade Mountains west to the Pacific Ocean, only elevations below 1000 feet. Provenance shall be certified in writing by the seed supplier.

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**Figure 6 - Planting Plan**  
*Bridge Street Bridge Replacement*  
**City of Sumner**  
 March 16, 2015

- |  |   |  |
|--|---|--|
|  White River OHW              |  Planting Zone 1 |  Riparian Enhancement   |
|  100-Year Floodplain          |  Planting Zone 2 |  Enhancement Above 100-year Floodplain                        |
|  Proposed 100 year floodplain |  Planting Zone 3 |  Potential Access Trail Riparian Restoration                  |
|  Riparian Management Zone     |  Planting Zone 4 |  Potential Access Trail Restoration Above 100-year Floodplain |

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### 6.3 Monitoring and Maintenance

All restoration areas will be monitored for a period of ten years, or until success standards have been met. This is in accordance with the requirements of SMC 16.16.060(I)(10). Upon project completion, an “As Built” report will be submitted to the City of Sumner documenting the final design of the restoration areas. This report will include both the proposed planting plan and the “As Built” planting plan showing densities, sizes, and locations of planted vegetation as well as which nurseries supplied the plants, the time of plantings, locations of reference points established as photo points, and sampling plot locations. It will also provide an analysis of any changes to the mitigation plan that occurred during construction.

Approval of the “As Built” report will establish the beginning of the monitoring period. A site visit will be made the summer after planting and survival rates of plantings will be assessed. Formal monitoring procedures will be performed in years one, two, three, five, seven and ten after initial acceptance of the “As Built” report. Successful mitigation will be measured by attainment of the performance standards described in this habitat management plan document.

The variables that will be measured during each monitoring year include stem density of woody plants and percent cover of herbaceous, shrub, and tree strata within each established sampling plot. Photo points will also be established to create a representative view of the entire planted restoration area. A total of eight photo points will be established, with photos taken in each cardinal direction (N, S, E, and W) during each monitoring year. Panoramic photos will also be created showing as much of the restoration areas as possible. These photos will be submitted with each monitoring report.

Sampling plots will be randomly established throughout the restoration areas. Three plots will be randomly established in each of the restored quadrants. These sampling plots will be 10 feet by 10 feet square plots demarcated in the field with a steel post as the center of the plot. Some of the plot centers will likely be used as photo points.

Formal monitoring will be performed during the growing season in years one, two, three, five, seven, and ten after approval of the “As Built” report. Monitoring reports will be submitted to the City of Sumner before the end of each monitoring year. Monitoring plans will be prepared as described in SMC 16.16.060(I)(10).

The City of Sumner Department of Public Works will be responsible for the long-term maintenance of the restoration site after the monitoring period has concluded. Site inspections will occur every 8 years at the same time the City of Sumner completes required Growth Management Act (GMA) updates per RCW 36.70A.130(5)a. Management/maintenance activities will include the inspection of mitigation site planting areas to assess plant survival with replacement as necessary. Pierce County listed noxious weeds will also be assessed and controlled as necessary. Trash will also be removed, vandalism will be repaired, and signage/fencing will be repaired/replaced as necessary. Long-term maintenance and management will be funded by the City of Sumner.

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## 6.4 Performance Standards and Contingency Plan

### 6.4.1 Performance Standards

The following performance standards provide quantifiable standards to measure mitigation success. Mitigation will be deemed successful when the restoration areas exhibit all of the Year 10 performance standards (success standards) below. In accordance with SMC 16.20.090, during monitoring years 1 and 2 all planted trees and shrubs will exhibit 100% survival. The contractor will be responsible for replacing any dead plants during these first two years. Herbaceous cover will also have attained complete coverage within one growing season. If not, any areas of bare soil will be reseeded with appropriate native species. The following performance standards will be met during each respective monitoring year:

#### **Year 1 Performance Standards**

- 100% plant survival
- 100% coverage of herbaceous groundcover
- Less than 20% aerial coverage of all noxious weeds, 0% coverage of Class A noxious weeds
- Installed habitat features secure and functioning

#### **Year 2 Performance Standards**

- 100% plant survival
- Less than 20% aerial coverage of noxious weeds, 0% coverage of Class A noxious weeds
- Installed habitat features secure and functioning

#### **Year 3 Performance Standards**

- 5 woody stems per 100 sq. ft.
- Less than 20% aerial coverage of noxious weeds, 0% coverage of Class A noxious weeds
- Installed habitat features secure and functioning

#### **Year 5 Performance Standards**

- 35% aerial coverage of woody plants (trees/shrubs)
- Less than 20% aerial coverage of noxious weeds, 0% coverage of Class A noxious weeds
- Installed habitat features secure and functioning

#### **Year 7 Performance Standards**

- 50% aerial coverage of woody plants (trees/shrubs)
- Less than 20% aerial coverage of noxious weeds, 0% coverage of Class A noxious weeds
- Installed habitat features secure and functioning

#### **Year 10 Performance Standards/Success Standards**

- 70% aerial coverage of woody plants (trees/shrubs)
- Less than 20% aerial coverage of noxious weeds, 0% coverage of Class A noxious weeds
- Installed habitat features secure and functioning

## 6.4.2 Contingency Plan

The following contingency actions may occur if deemed necessary to promote successful development of the site:

Failure to meet a 100 percent survival rate at any of the aforementioned sites within two years after planting will result in the following contingency actions:

Replanting will be conducted to replace all dead woody (tree/shrub) plantings.

Failure to meet the aforementioned aerial cover or stem density performance measures in a given year within planted areas will result in the following contingency actions:

A review of vegetation management will be conducted with the resource agencies and the City of Sumner to determine a corrective course of action if the aerial coverage or stem density performance measures are not met.

Failure to meet non-native invasive species performance measures and standards in a given year at a given site, including the 25 ft. vegetation enhancement areas, will result in the following contingency actions:

The area in question will receive biological and/or mechanical weed control and if deemed necessary, chemical applications will be made by licensed applicators with a valid aquatic endorsement in accordance with Department of Ecology guidelines.

Significant mortality due to herbivory will result in the following contingency action:

Herbivory guards will be added to any new plantings.

Any revisions to the mitigation plan will be coordinated with and approved by the resource agencies prior to implementation.

## 7.0 Conclusion

While the proposed project is anticipated to have short-term impacts on fish and wildlife habitat adjacent the White River, the minimization and mitigation strategies presented in this Habitat Management and Mitigation Plan should result in long-term improvements to the riparian habitat within and adjacent to the proposed project area. No permanent in-water structures are being proposed; however, there will be some in-water work during installation/removal of piles for the downstream temporary work platform and one cofferdam. There are listed fish species that could potentially be present within the proposed project area during construction; therefore in-water work will only occur during approved work windows and various minimization measures have been incorporated into the project. Refer to the attached Biological Assessment for the specific avoidance and minimization measures that will be taken to limit potential impacts to listed fish species and designated critical habitat.

There are no sensitive terrestrial species known to occupy the area within 1,000 feet of the project. In addition, there are no wetlands within the immediate vicinity of the project area. Appropriate temporary sediment and erosion control BMPs and construction measures will be implemented and maintained throughout construction to minimize/prevent impacts to the White River. All unimproved disturbed areas will be restored upon project completion. In addition, 25 feet upstream and downstream of the project will be enhanced by removing noxious weeds. Habitat value will be improved with the planting of a variety of site-appropriate native trees and shrubs, planting of native grass species, the removal of noxious weeds, and the installation of large woody debris.

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