



US Army Corps
of Engineers®
Seattle District

**BIOLOGICAL EVALUATION
FOR INFORMAL ESA CONSULTATION
For: Willows Road Restoration Project
(Corps Reference Number:**



Version: May 2012

Date: March 23, 2018

SECTION A - General Information			
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4. Location where proposed work will occur			
Willows Road and right-of-way between 90th Street and 124th Street in the city of Redmond, WA			
Waterbodies: WRIA 8 (Cedar-Sammamish); Willows Creek and Gun Club Creek (6th Field HUC #171100120304), which are left bank (LB) tributaries to the Sammamish River.			
See Project Vicinity Map, Appendix A.			
¼ Section: NE	Section: 3	Township: 25N	Range: 05E
½ Section: E	Section: 34	Township: 26N	Range 05E
¼ Section: SE	Section: 27	Township: 26N	Range: 05E
Latitude: 47.68630° N (Willows Creek Crossing of Willows Road)		Longitude: -122.14642° W	

5. Description of Work:

The City of Redmond (City) intends to rehabilitate the pavement surface on Willows Road between NE 90th and 124th Streets (Appendix A: Figure 1). The existing road section will be repaved and ramps will be upgraded to comply with the Americans with Disabilities Act (ADA). In addition, the project will replace two culverts that span Willows Road: one at Willows Creek and one at Gun Club Creek. The new culverts will generally be in the same footprint as the culverts being removed, but additional width will be provided to improve fish passage (Appendix B: Sheets C-13 to C-18).

At Willows Creek, the existing 43 x 27-inch arch corrugated metal pipe (CMP) will be replaced with a 12-foot-wide by 5-foot-high three-sided box culvert (Appendix B: Sheet C-13). Strip footings on each side of the culvert will be 2 feet by 2 feet, and the culvert will be stabilized in place with seven 4-inch-diameter pin piles on each side of the culvert, for a total of 14 pin piles (Appendix B: Sheet C-16). The piles will extend 25 feet beneath the existing ground surface. At Gun Club Creek, the existing 36 x 22-inch arch CMP will be replaced with a 10-foot-wide by 4-foot-high four-sided box culvert (Appendix B: Sheet C-14). The culvert will be placed on an 18-inch-deep rock pad foundation (Appendix B: Sheet C-18). The existing Gun Club Creek culvert contains a 72-inch-diameter Type 2 catch basin that is buried beneath the roadway and that currently diverts stormwater from the roadway to Gun Club Creek. Asphalt has been placed over the lid for this structure and therefore it is not accessible. The existing stormwater will continue to discharge to Gun Club Creek through the new culvert. Both streams will be bypassed around the culvert removal/replacement areas to allow construction to occur in the dry (Appendix B: Sheets SP01-SP02). Culverts will likely be constructed using precast construction methods. An existing 8-inch water line will be expanded to 1 foot in diameter and lowered to a depth of 7 to 8 feet below the road surface and parallel to Willows Road.

Clearing and grading outside the road prism will only be required at the culvert replacement locations and includes 1,300 square feet of temporary impacts to wetlands, stream, and associated buffers at the Willows Creek crossing of Willows Road, and 1,450 square feet of temporary impacts to wetlands, stream, and associated buffers at the Gun Club Creek crossing of Willows Road. All areas of disturbance will be restored post-construction and monitored accordingly.

The U.S. Army Corps of Engineers (Corps) is the lead federal agency for permitting. The Corps regulates Waters of the U.S., including wetlands, through Section 404 of the Clean Water Act of 1972. It is anticipated that the project will be permitted under a Nationwide Permit 14 (Linear Transportation Projects).

6. Construction Techniques:

A. Construction sequencing and timing of each stage (duration and dates):

Project construction is scheduled to begin in March 1, 2019, and to be complete by November 30, 2019. Culvert replacements will be timed to coincide with the allowable in-water work window for the Sammamish River and its tributaries, which is anticipated to be between July 1 and September 30 for Willows Creek and Gun Club Creek, or as indicated on the Hydraulic Project Approval (HPA), yet to be issued for the project. Roadway resurfacing activities may occur at any time during this period.

B. Site preparation:

Site preparation will include installing erosion control measures and preparing the work zone.

The proposed new culverts will be constructed in the approximate same location as the existing structures. In order to remove the existing structures and install the new structures in the dry, it will be necessary to isolate the work area and bypass stream flows around the construction area. To ensure that the construction area is isolated from flowing waters, the City is proposing to divert the entire flow from that portion of Willows Creek in the construction footprint through a temporary minimum 24-inch-diameter, 105-foot-long bypass pipe. Similarly, the entire flow of Gun Club Creek will be bypassed through the construction area by a minimum 18-inch-diameter and 125-foot-long bypass pipe. The bypass will be accomplished by directing aboveground flow in the streambed through the bypass pipe (Appendix B: Sheets SP-01 and SP-02). In anticipation of HPA requirements, sand bag revetments or a similar temporary diversion, will be installed at the upstream end of the bypass inlet to divert the entire flow of the stream through the temporary bypass pipe. A similar revetment will be installed at the downstream end of the bypass to prevent backwater from entering the work area. For the Gun Club Creek culvert, which has a stormwater discharge into the culvert via a catch basin, if necessary stormwater will be diverted/pumped to an upstream detention facility during construction activities.

Prior to installation of the temporary stream bypass system, fish will be removed by qualified biologists from the portion of the channel to be dewatered. Typically, a ¼-inch mesh block net is installed several feet upstream of the location for the upstream bypass cofferdam. A block net is also placed several feet downstream of the lowermost bypass cofferdam. Fish are then removed using a backpack electrofisher between the upstream and downstream block netting. Several passes may be required to ensure that all fish are removed. Once the fish removal has been completed, the bypass system can be installed, and the existing culvert removed. Fish salvage will take place in accordance with current Washington State Department of Transportation (WSDOT) *Fish Exclusion Protocols and Standards*.

C. Equipment to be used:

Equipment used for repaving activities may include rollers, pavers, asphalt grinders, scrapers, dump trucks, and small trucks. The culvert replacements will be accomplished with equipment such as a pile driver, crane, excavator, dump truck, concrete truck, light service vehicles, and various hand tools.

D. Construction materials to be used:

Construction materials will be similar to that used in most roadway construction restoration projects including asphalt and striping paint. Additional materials required for culvert replacements include bypass piping, sandbags for the cofferdam, concrete, rebar, pin piles, and two types of streambed rock to simulate a natural streambed through the culverts.

E. Work corridor:

Work will be limited to the existing roadway and adjacent upland areas within the Willows Road right-of-way. All work areas (including staging areas, equipment wash-outs, and stockpiling areas) will be at least 100

feet away from the wetlands and the ordinary high water mark (OHWM) of Willows Creek, Gun Club Creek, or any other surface water features within the project corridor.

F. Staging areas and equipment wash-outs:

A nearby parking lot will be used for material storage and equipment staging. Access to the project site will be via existing roads.

G. Stockpiling areas:

Stockpiling areas will be limited to the existing roadway.

H. Running of equipment during construction:

Equipment will be operated only as necessary to complete project work. This may include some night work.

I. Soil stabilization needs/techniques:

Erosion control and clean site techniques will be implemented during construction to minimize the potential for excess sediment to reach streams, wetlands, or the surface water ditches adjacent to the work areas. Almost all work will be conducted within the existing Willows Road right-of-way in areas that are currently maintained or disturbed. All streamflow and any stormwater that discharges directly to the culverts will be bypassed around the construction area, which will allow for culvert removal and replacement activities to occur in the dry and minimize the potential to mobilize fine sediment.

J. Clean-up and re-vegetation:

Areas disturbed by construction activities will be stabilized with coir, mulch, or similar methods, and then planted. Upon project completion, all excess construction material will be removed from the site.

K. Stormwater controls/management:

The project will be designed to meet requirements of the Washington State Department of Ecology's current stormwater manual. A Stormwater Pollution Prevention Plan; Spill Prevention, Control, and Countermeasures Plan; and Temporary Erosion and Sedimentation Control Plan will be developed for the project. Stormwater currently being discharged to Gun Club Creek, as discussed above in Section B, will be diverted/pumped to an upstream wetland/detention facility until construction of the new culvert is complete. Upon project completion, stormwater will be redirected to the new culvert.

L. Source location of any fill used:

Native soil will be reused to the extent possible. Local, commercial sources will be used for any additional fill needed.

M. Location of any spoil disposal:

Project-generated waste material, such as construction debris, silt, excess dirt, or overburden, will be hauled off site to an approved disposal facility.

7. Action Area

The action area is defined as the area with the potential to be affected directly or indirectly by the project actions. The project has the potential to affect the species addressed in this analysis (see Section 8 below) in the following ways:

- Increased noise and human activity within the terrestrial environment;
- Exposure of soil to erosive elements that could carry excess sediment to fish-bearing waters and alter water quality; and
- Extent of physical modifications to riparian, aquatic, and upland habitat.

Willows Road is a fairly busy arterial with an approximate traffic volume of 2,400 vehicles per hour, which generates a noise level of approximately 70 dBA at a distance of 50 feet from the source. The city of Redmond also had an estimated population density of 3,325 people per square mile in 2016, which corresponds to a background noise level in the project area (exclusive of traffic) of approximately 55 dBA at a distance of 50 feet from the source. The extent of project-related noise will be the point where construction noise attenuates to that of the background noise level of 55 dBA. To assess what the combined noise level will be for all equipment working on the project, the rules for decibel addition were applied to the three loudest pieces of equipment anticipated to be used on the project, which includes a vibratory hammer (101 dBA at 50 feet from source), pavement scarifier (88 dBA at 50 feet from source), and pneumatic tools (85 dBA at 50 feet from the source). The resultant construction-related noise will be 101 dBA. To determine the distance point source construction noise will travel before it attenuates to the ambient sound level, the following equation was used:

$$D = D_o * 10^{((Construction\ Noise - Ambient\ Sound\ Level\ in\ dBA)/\alpha)}$$

Where:

D = the distance from the noise source

D_o = the reference measurement distance (50 feet in this case)

α = 25 for soft ground and 20 for hard ground

For point source noise, a spherical spreading loss model is used. These alpha (α) values assume a 7.5 dBA reduction per doubling distance over soft ground and a 6.0 dBA reduction per doubling distance over hard ground. Applying this formula to the project, it is estimated that construction-related noise will attenuate to background level at a distance of 3,459 feet or 0.66 mile from the project area (Appendix A: Figure 2).

The action area also includes an aquatic zone of effect, which is the portion of Willows Creek and Gun Club Creek from 35 feet upstream of the existing culverts to approximately 135 feet downstream of each of the existing culverts. This area will be isolated and dewatered and will be subjected to the direct and indirect effects associated with clearing, grading, and excavation activities below the OHWM, as well as the direct effects associated with fish salvage (Appendix A: Figure 1). The upstream end of the bypass pipes will extend approximately 10 feet upstream of the existing culverts. The upstream extent of the aquatic zone of effect will

include this distance plus an additional 25 feet upstream to account for fish salvage activities. Similarly, the downstream end of the bypass pipes will extend approximately 10 feet beyond the existing culverts, and an additional 25 feet will be added to account for fish removal activities. The downstream boundary of the aquatic zone of effect will extend an additional 100 feet downstream from that point to account for the potential direct and indirect effects associated with clearing and grading activities, and the potential for water quality and habitat impacts via increased sedimentation and turbidity (Appendix A: Figure 1). The downstream extent of the aquatic zone of effect was determined by using the regulatory mixing zone as established in the *Water Quality Standards for Surface Waters of the State of Washington; Chapter 173-201A Washington Administrative Code* (WAC), which indicates that for waters with flows up to 10 cubic feet per second, the point of compliance shall be 100 feet downstream of the activity causing the turbidity disturbance (Ecology 2016).

The action area will also include a terrestrial zone of effect that includes the entire road prism between NE 90th Street and NE 124th Street, as well as the culvert removal/replacement areas that extend beyond the roadway prism on either side of the culverts. These areas will be disturbed to install new wingwalls for the box culverts (Appendix A: Figure 1).

8. Species Information:

A list of species listed or proposed for listing under the Endangered Species Act (ESA) in the action area was obtained from the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) on January 14, 2018 (see Appendix D). USFWS identified five species and NMFS identified two species to be considered in the effects analysis for the proposed project (Table 1). No designated or proposed critical habitat is present in the action area.

Table 1. ESA-Listed Species and Critical Habitat Potentially Present in the Project Action Area

Species	Status	Critical Habitat Status
Bull trout (<i>Salvelinus confluentus</i>)	Threatened	Designated; none in project action area
Marbled murrelet (<i>Brachyramphus marmoratus</i>)	Threatened	Designated; none in project action area
Streaked horned lark (<i>Eremophila alpestris strigata</i>)	Threatened	Designated; none in project action area
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	Threatened	Proposed; none in project action area
North American wolverine (<i>Gulo gulo luscus</i>)	Proposed Threatened	Not proposed or designated
Puget Sound ESU Chinook salmon (<i>Oncorhynchus tshawytscha</i>)	Threatened	Designated; none in project action area
Puget Sound DPS steelhead (<i>Oncorhynchus mykiss</i>)	Threatened	Designated; none in project action area

ESU = evolutionarily significant unit; DPS = Distinct Population Segment

None of these species are expected to occur in the action area, however, for the following reasons:

- Marbled murrelets require old-growth forest for nesting and marine habitats for foraging. No breeding habitat is present in the action area and no observations of nesting murrelets have been documented within 10 miles (WDFW 2018). The nearest location where critical habitat has been designated for the marbled murrelet is more than 25 miles from the action area.
- Streaked horned larks are known to occur in Washington only in portions of southern Puget Sound, along the Washington coast, and at lower Columbia River islands (78 Federal Register [FR] 61452, October 3, 2013). Breeding habitat for streaked horned larks in Washington consists of grasslands and sparsely vegetated areas at airports, sandy islands, and coastal spits. The subspecies is largely absent from the Puget Trough during the non-breeding season; individuals observed in this area outside of the breeding season have been seen using habitats similar to those used for breeding. No such habitat is present in the action area, and the action area is not within the known range of the subspecies. The nearest location where critical habitat has been designated for the streaked horned lark is more than 50 miles from the action area.
- Yellow-billed cuckoos require large blocks of riparian forest habitat for breeding and foraging. No such habitat is present in or near the action area. Currently, the species no longer breeds in western Canada and the northwestern continental United States (Washington, Oregon, and Montana) (79 FR 59992, October 3, 2014). No observations of this species have been documented within 10 miles of the action area (WDFW 2018). No critical habitat for the yellow-billed cuckoo has been proposed in Washington.
- North American wolverines avoid people and developed areas and prefer cold and remote mountainous areas with persistent spring snow cover. No such habitat is present in the lowland, industrial setting of the action area.

A more detailed discussion of aquatic species is found below in Section F.

9. Existing Environmental Conditions:

A. Shoreline riparian vegetation and habitat features

Gun Club Creek: Immediately upstream (west) of the project vicinity, Gun Club Creek flows eastward adjacent to a stormwater pond, then enters a culvert under the 9845 Willows Road office building driveway and turns northeast and enters a short segment of day-lighted channel before entering the culvert beneath Willows Road (Appendix C: Photo 1). The riparian vegetation in this area consists primarily of mowed grass and ornamental evergreen trees. On the east side of the roadway, the channel turns north-northwest and flows parallel with Willows Road (Photos 2 and 3) and is situated between Willows Road and the Redmond Central Connector Trail. Riparian vegetation in this area consists primarily of emergent wetland vegetation and mowed grass (Parametrix 2018). After flowing through the culvert under the Overlake Christian Church parking lot driveway, Gun Club Creek flows east within a linear ditch between the parking lot and the southern boundary of the Willows Run Golf Complex (Photo 4). The riparian vegetation along this portion of the stream corridor is dominated by a thin strip of poplars and ornamental trees and shrubs. The stream then flows into a culvert under the Sammamish River Trail, which outfalls directly into the Sammamish River.

Willows Creek: Immediately upstream (southwest) of the project vicinity, Willows Creek flows through a forested area, then enters the culvert beneath Willows Road (Appendix C: Photo 5). Riparian vegetation in this area consists primarily of reed canarygrass, Himalayan blackberry, and red-osier dogwood, with an overstory of red alder trees (Appendix C: Photo 6). A wetland (Wetland E) drains into Willows Creek from the south, directly upstream (west) of Willows Road (Parametrix 2018). Willows Creek then flows out of the culvert under Willows Road (Appendix C: Photo 7), daylight for approximately 15 feet, then flows into a recently replaced culvert under the Redmond Central Connector Trail (Appendix C: Photo 8). Riparian vegetation in this area consists primarily of reed canarygrass with an overstory of red alder trees. A wetland (Wetland D) drains into Willows Creek from the south, directly downstream (east) of Willows Road (Parametrix 2018). Downstream (east) of the Redmond Central Connector Trail, Willows Creek flows approximately 20 feet, then empties into an inline sediment trap. Riparian vegetation in the sediment trap vicinity consists primarily of emergent wetland vegetation and red alder trees. Downstream of the sediment trap, Willows Creek flows generally eastward through a series of piped and day-lighted sections (Appendix C: Photo 9). The creek discharges to the Sammamish River through a culvert under the Sammamish River Trail, near the outlet of Gun Club Creek.

B. Aquatic substrate and vegetation

Gun Club Creek: Gun Club Creek, downstream of the Willows Road culvert, is dominated by fine silt with little or no areas of gravel (Appendix C: Photo 10). Aquatic vegetation includes water parsley, reed canarygrass, and common cattail (Appendix C: Photos 3 and 11). On the west side of Willows Road, there is a short length of constructed channel between Willows Road and a culvert beneath an office building driveway; the gradient of Gun Club Creek increases, creating a higher gradient riffle. Because of the gradient here, it appears that larger cobble-sized angular rock was added to the channel (Appendix C: Photo 12).

Willows Creek: Upstream of Willows Road, substrates are a mixture of sand and very fine gravel (Appendix C: Photo 13). Reed canarygrass is present along some channel margins. Willows Creek then flows out of the culvert under Willows Road, daylight for approximately 15 feet, then flows into a recently replaced culvert under the Redmond Central Connector Trail. The stream channel in this location is approximately 10 feet wide, with a cobble and gravel substrate; the substrate was likely placed in the stream during culvert installation beneath the trail (Appendix C: Photos 8 and 14). Downstream of the culvert, the channel enters an inline pond and the substrate changes to primarily fines, including sand and silt.

C. Surrounding land/water uses

Land use in the northern half of the project corridor is a mixture of agriculture, urban recreation (golf course), and business park whereas the southern half of the project area is more a mixture of business and manufacturing park with some limited parks and open space.

D. Level of development

Project work will occur primarily within the Willows Road right-of-way with the exception of small areas on either side of the existing culverts that will be disturbed to allow installation of the new culverts. The northern end of the project area, between NE 116th Street and 124th Street, is bordered by the Sammamish Valley Park and agricultural land to the east, and undeveloped forest land with some scattered development (residential and commercial structures) to the west. The central portion of the

project area, between NE 100th Court and NE 116th Street, is bordered by the Willows Run Golf Course and a church parking lot to the east, and commercial/office buildings and associated parking areas to the west, with some scattered patches of undeveloped forest land. The southern end of the project area, between NE 90th Street and NE 100th Court, is surrounded by commercial/office buildings and associated parking areas. Topography is relatively flat along the entire project corridor. Overall, the southern half of the project area is built out with office and manufacturing buildings, with the level of development decreasing as the roadway passes through agricultural and recreational land use types.

E. Water quality

Willows Creek would be considered as not properly functioning for the water quality parameter, having been identified on the Washington State 303(d) list of impaired waterbodies for bacteria, dissolved oxygen, and bioassessment (Ecology 2018). Gun Club Creek is not mapped on the Washington State 303(d) list of impaired waterbodies, but is likely to be functioning “at risk” for this parameter given stormwater inputs and untreated runoff from pollution-generating impervious surfaces in the vicinity.

F. Describe use of the action area by listed salmonid fish species

Listed salmonid species, including Chinook salmon, bull trout, and steelhead, are precluded from Gun Club Creek and Willows Creek by inadequate habitat conditions for spawning, rearing, or migration; passage barriers; and inadequate flow regimes. Surveys conducted in both streams have also failed to identify use by these sensitive species.

Bull Trout: Bull trout require specific habitat conditions suitable to their life history needs. For example, water temperature conditions during the summer are an important component of rearing and growth of bull trout. Goetz (1989) suggests optimum water temperature for bull trout rearing at approximately 35.5°F. Sub-lethal effects are evident at temperatures exceeding optimum level (Lantz 1970). High summer water temperatures (up to 69.4°F) in freshwater systems likely preclude or limit summer use by bull trout. Bull trout typically spawn in the fall and prefer larger streams (if accessible) that have a cold groundwater upwelling component (Pratt 1984). Water temperature above 59°F is believed to limit bull trout distribution, which may partially explain the patchy distribution within some watersheds (Rieman and McIntyre 1993). In addition, bull trout require stable and non-turbid streamflow during storm events for winter rearing. For example, bull trout greater than 4 inches in length prefer holding velocities of around 5 inches/second, and bull trout less than 4 inches in length prefer holding velocities of 4 inches/second (Spence et al. 1996).

Populations of bull trout have been documented within Water Resource Inventory Area (WRIA) 8 (Lake Washington/Cedar/Lake Sammamish watershed), but self-sustaining populations within WRIA 8 are known only from the Cedar River basin and in Chester Morse Reservoir (Berge and Mavros 2001; Kerwin 2001). Although no populations of bull trout have been identified in the project area, incidental observations of individual fish have been made in Issaquah Creek (another tributary in the Sammamish River drainage basin). Identification of these individual fish does not conclusively indicate the presence of bull trout populations, but it does suggest that fish occasionally migrate into Lake Washington, Lake Sammamish, and their larger tributaries.

According to the Washington Department of Fish and Wildlife (WDFW) database (2018), bull trout have a documented presence in the Sammamish River. No evidence exists indicating that bull trout would be

present in the Sammamish River or tributaries such Willows Creek and the Gun Club Creek. Habitat within the action area is generally considered to not be properly functioning. Although it is possible that bull trout could be present in the mainstem Sammamish River during a portion of the year, the habitat in the action area during summer is not suitable for this species; therefore, bull trout use would be severely limited or absent altogether. Specifically, the lack of deep pools, lack of large woody debris, high levels of fine sediment, high water temperatures, and degraded riparian conditions in the Sammamish River present unsuitable habitat conditions for bull trout. These results are the primary indicators that the Sammamish River habitat during the summer and early fall would not likely support any life history stage for bull trout. In addition, other essential habitat features required by bull trout such as spawning gravels, vegetative cover, and instream refugia are of poor quality in the action area and are thus not likely to support their life histories.

Bull trout are not expected to be present in tributaries to the Sammamish River, including Willows Creek and Gun Club Creek, due to a lack of historic occurrence in these systems and a lack of suitable habitat for this species during the proposed project activities. Suitable habitat for bull trout comprises high functioning aquatic habitat: cold water; clean substrate; complex stream habitat units and in-stream habitat elements; and a high degree of habitat connectivity. High functioning habitat necessary to support this species is not present in Willows Creek or Gun Club Creek. It is extremely unlikely that bull trout will occur in the action area during the proposed work period.

Chinook Salmon: According to the WDFW database (2018), Puget Sound Chinook may use the Sammamish River as migratory and rearing habitat, with adult spawning potentially occurring in a number of the larger tributaries to the Sammamish River such as Bear Creek. No evidence exists indicating that Chinook salmon occur in Willows Creek or Gun Club Creek, based on a lack of access (fish passage blockage and an intermittent flow regime) in Gun Club Creek, observations of stream habitat conditions in Willows Creek, and no occurrence of Chinook juveniles during fish surveys (Washington Trout 2005). Chinook salmon are not present in Gun Club Creek due to the lack of fish access to this habitat and the intermittent character of the stream hydrology during the anticipated in-water work period. Willows Creek is not used by migrating or spawning adult Chinook due to the small stream and basin size, low flows, shallow depths, and smaller gravel and fine sediment as the primary substrate constituents. Juvenile Chinook are exceedingly unlikely to be present in these two stream systems at any time during the year and will not be present during the project's in-water work window due, in part, to shallow water, low flow regime, and elevated water temperatures. Therefore, while Chinook are known to use the mainstem Sammamish River for migratory movement, and adults are known to spawn in some of the larger tributaries to the Sammamish River, it is extremely unlikely that Chinook will occur in the action area during the proposed work period for project construction.

Steelhead: According to WDFW, winter steelhead are known to utilize the Sammamish River as rearing habitat (WDFW 2018). However, the winter steelhead stock associated with Lake Washington is considered to be in critical condition (2002 Salmonid Stock Inventory [SaSI] assessment; WDFW 2002) and was degraded down from a depressed stock assessment in 1992. Reduction in stock health assessment appears to be due to a pattern of chronic declines in escapements over the years, with a dramatic short-term decline in 2000 and 2001. Total escapement numbers for the Lake Washington winter steelhead runs declined from 1,816 in 1986 to between 20 and 48 from 2000 to 2004 (final year of SaSI data collection for this stock), indicating that the steelhead annually returning to the Sammamish/Lake Washington drainages do so in very small numbers. More recent data for the Cedar River and South Lake Washington

steelhead stock indicate very low natural spawner escapement numbers—fewer than 8 individuals every year since 2007. The consistently very small numbers of individuals in the watershed strongly suggest that the probability of steelhead occurring in the action area is extremely unlikely.

Similar to the situation with bull trout noted above, high summer water temperatures, high levels of suspended solids, floodplain modifications and lack of floodplain habitat connectivity, lack of suitable pools and large woody debris, and poor riparian habitat quality are all factors that likely severely limit or preclude the presence of steelhead in the Sammamish River during the anticipated summer construction window for the project. Adult steelhead will not be present in the mainstem Sammamish River during the anticipated summer in-water work window. Also, the relatively high summer water temperatures and low habitat suitability of the Sammamish River for juvenile steelhead afford an exceedingly unlikely probability of juvenile steelhead presence.

Steelhead are exceedingly unlikely to be present in the unnamed project stream due to the lack of fish access to this habitat. Based on the critically low numbers of steelhead in the Lake Washington subpopulation, coupled with a lack of habitat suitability and access associated with Gun Club Creek and Willows Creek, and a general lack of function associated with the Sammamish River habitat elements during the proposed construction period, it is extremely unlikely that steelhead will be present within the action area during project construction.

G. Is the project located within designated/proposed bull trout or Pacific salmon critical habitat?

The aquatic zone of effect portion of the action area does not include any designated critical habitat for Chinook salmon, steelhead, or bull trout.

H. Describe use of the action area by other listed fish species (green sturgeon, eulachon, bocaccio, canary rockfish, and yelloweye rockfish).

The action area does not include any marine aquatic habitats; therefore, none of these species use habitat in the action area.

I. Is the project located within designated/proposed critical habitat for any of the species listed below?

<i>Southern resident killer whale</i>	<i>Marbled murrelet</i>
<i>Northern spotted owl</i>	<i>Western snowy plover</i>
<i>Green sturgeon</i>	<i>Eulachon</i>

No designated or proposed critical habitat for any of these species (or for Puget Sound/Georgia Basin rockfish) is present in the action area.

J. Describe use of action area by marbled murrelets. How far to the nearest marbled murrelet nest site or critical habitat?

Marbled murrelets are not present in the action area. Most foraging populations of this species are associated with areas around the San Juan Islands, the northern coast of the Olympic Peninsula, and the outer coast of Washington State. No suitable nesting habitat is available within the action area, and no marine habitat suitable for this species' foraging needs exists within the action area.

K. Describe use of action area by the spotted owl. How far to the nearest spotted nest site or critical habitat?

Northern spotted owls are not present in the action area. This species is associated with mature or old-growth coniferous forests, which provide the nesting and roosting habitat the owls need. Breeding incidences and appropriate habitat for this species occurs in the mountainous eastern portion of King County, more than 20 miles east of the action area.

L. For marine areas only: Describe use of action area by Southern Resident killer whales. How often have they been seen in the area and during what months of the year?

Not applicable

M. For marine areas and Columbia River: How far is the nearest Steller sea lion haulout site from the action area? Describe their use of the action area.

Not applicable

N. For marine areas only: Forage Fish Habitat – only complete this section if the project is in tidal waters.

Check box if Washington Department of Fish and Wildlife (WDFW) documented habitat is present.

Surf Smelt: **Pacific Herring:** **Sand Lance:**

Check box if the proposed action will occur in potentially suitable forage fish spawning habitat:

Surf Smelt: **Pacific Herring:** **Sand Lance:**

If no boxes are checked, please explain why site is not suitable as forage fish spawning habitat.

Not applicable: The project is not in tidal waters.

10. Effects Analysis

Direct effects on listed fish species are not anticipated in either Gun Club Creek or Willows Creek due to the presence of fish passage barriers; lack of suitable spawning, rearing, or migration habitat; and the fact that numerous surveys have failed to document listed fish species within these watercourses. However, because these species may be present within the Sammamish River at certain times of the year and in extremely low numbers, the species are being evaluated for potential direct and indirect effects from the proposed action. Direct effects include all impacts associated with the construction and implementation of the project. Direct effects also include those impacts or disturbances that might occur very close to the time of construction. For the proposed work, potential direct effects include:

- Installation and temporary presence of work isolation structures (e.g., stream bypass)
- In-water disturbances to stream habitat such as substrate, including impacts associated with fish removal and subsequent removal of the existing culverts

- Potential increase in turbidity due to sediment disturbance, and introduction of debris and/or contaminants into the stream (e.g., petroleum products from equipment)
- Clearing/grading at culvert construction area

Direct effects are evaluated for the three species that may occur within the action area: bull trout, Chinook salmon, and steelhead. All other listed species do not occur in the action area; therefore, no further evaluation of direct effects of the project is made for these species.

Isolation of Work Area: All work isolation structures (cofferdams/bypass piping) will be installed and removed during the approved in-water work window. The work isolation structures to be installed in Willows Creek and Gun Club Creek are anticipated to be placed within the wetted channel. Prior to installation of the work isolation structures, block nets will be placed upstream and downstream of the Willows Creek and Gun Club Creek culvert crossings, and fish will be removed from the project site. The presence of listed salmonid species is not anticipated during these periods, and no direct effects associated with this element of project construction are anticipated. Exposure of listed salmonid species to this project element is not anticipated. Once installed, the isolation structures will physically prevent contact of listed salmonid species with construction activities occurring within the isolated portions of the streams.

Effects of Work Isolation Structures on Bull Trout, Chinook, and Steelhead: No direct effects on these species from installation of work isolation structures are anticipated. There is no potential for any of these species to be exposed to the effects of this activity because work isolation structures will be installed during the in-water work window, when adults and juveniles of all three species will be absent from the action area.

In-Water Disturbance to Stream Substrate: Some minor disturbances to the stream and stream substrate of Willows Creek and Gun Club Creek are likely due to installation of a fish-passable culvert to replace two undersized existing culverts. The short segment of the stream channel to be disturbed will be isolated using block nets, and any fish in the isolated section of channel will be removed according to WSDOT and NMFS protocols prior to substrate disturbance activities, culvert removal, and subsequent installation.

Effects of In-Water Disturbance to Stream Substrate on Bull Trout, Chinook, and Steelhead: None of these species is expected to be present within the short segments of Willows Creek or Gun Club Creek when work is underway. Given the lack of species occurrence, the short period of activity, and the relatively minor magnitude of in-water disturbance activities and associated work (i.e., fish removal in the short segment of Willows Creek to be isolated), no effects on bull trout, Chinook, and steelhead are anticipated due to a lack of exposure.

Potential Increase in Turbidity: The project has some potential to mobilize disturbed sediments from work conducted within the isolation structures of Willows Creek and Gun Club Creek during culvert removal and subsequent installation of fish-passable culverts. Temporary erosion and sediment control (TESC) measures, minimization measures associated with avoiding or minimizing sediment mobilization associated with the construction activity, and best management practices (BMPs) targeted to reduce or avoid sediment mobilization will be in place throughout project construction activities. Mobilization of sediment is not anticipated to be substantial given these conservation measures, and any sediment mobilized is expected to be short in duration and not persist beyond construction.

Effects of Potential Increase in Turbidity on Bull Trout, Chinook, and Steelhead: The presence of these species in the action area is considered highly unlikely. In addition, increases in turbidity may occur, but are not anticipated to reach a threshold of measurable impact due to stream flow and dilution. Given the lack of occurrence of Chinook salmon, bull trout, and steelhead in Willows Creek or Gun Club Creek during construction activity, and the anticipated mixing and dilution for any sediment that is mobilized during construction, no effects on these species from turbidity increases are anticipated due to a lack of exposure.

Vegetation Clearing: The removal of streamside vegetation and large woody debris can result in a reduction in riparian habitat functions until such a point that the vegetation becomes re-established and matures (Salo and Cundy 1987; Beschta et al. 1987; Sedell et al. 1988; Gregory et al. 1991; Murphy and Meehan 1991; Spence et al. 1996). The culverts will be located in approximately the same locations as the existing culverts; however, the expanded width of the new culverts as well as new wingwalls for the culverts will require some streambank grading and tree removal upstream and downstream of the existing culvert locations. Approximately 4 trees will be removed upstream and 7 trees from downstream of the existing Willows Creek culvert. Trees include red alder and black cottonwood. No trees are located within disturbance areas at either end of the Gun Club Creek culvert.

Effects of Vegetation Clearing on Bull Trout, Chinook, and Steelhead: While removal of these trees is anticipated to result in a minor reduction in the overall large woody debris recruitment potential for the area over the next several decades, the removal of streamside vegetation is anticipated to have no effect on bull trout, Chinook salmon, and steelhead because of their lack of distribution into the action area, and because the project proponent is proposing to replace removed trees with native trees and shrubs, and will monitor the plantings to ensure establishment for a period of 5 years post-construction. Over the long term, the proposed replacement plantings are anticipated to increase habitat complexity and contribute to stabilization of streambanks in the project area.

Indirect effects are those resulting from the proposed action that occur later in time but are reasonably certain to occur. For this project, potential indirect effects are described below.

Clearing of Riparian and Upland Vegetation: Clearing of riparian vegetation could result in an indirect effect on fish species as a result of decreased habitat suitability and riparian complexity. While cleared areas will be revegetated following construction, it will likely take a minimum of a decade for plantings to reach the maturity of those removed during construction. Trees, particularly mature conifers, within riparian areas provide shade and cover for the stream, add organic input, and offer the highest potential for increasing habitat complexity when they eventually fall into streams. No mature conifers are being removed as part of the proposed action. The project proponent will replant cleared areas adjacent to the culvert areas and will also monitor those plantings for a period of 3 years post-construction to ensure survival. Because of the absence of listed species from the action area, long-term and indirect effects on listed species as a result of vegetation clearing from riparian and upland areas are not anticipated.

Sedimentation: Indirect effects on Chinook salmon, bull trout, and steelhead habitat may occur from excessive sedimentation if the potential for sedimentation is not properly managed. Soils disturbed during construction could provide a chronic source of erosion and sedimentation if not properly stabilized following construction. The HPA for the proposed action is anticipated to require that within 7 days of project completion, all disturbed areas must be protected from erosion using vegetation or other means, and that all

revegetation must be completed within 1 year. Indirect effects related to sedimentation are not anticipated for Chinook salmon, bull trout, and steelhead because their presence in the action area is not anticipated.

Land Use Change Associated with Transportation Projects: Except for the culvert replacement work, the proposed action only includes repaving activities. No additional lanes or facilities are being added. Following completion of the project, the roadway will maintain the current level of service. Therefore, the proposed action is not anticipated to contribute to land use change within the action area, and indirect effects on listed species associated with land use change are not anticipated.

Stormwater: The proposed action will not result in an increase in impervious surface within the basin. Except for the culvert replacement work, this project is strictly a repaving project. Existing stormwater detention and treatment facilities will remain in place. Therefore, with no increase in pollution-generating impervious surface area and no degradation of water quality, the proposed project will have no indirect effects on listed species regarding stormwater.

11. Conservation Measures:

Conservation measures and BMPs have been incorporated into the proposed project to avoid and minimize short-term and long-term impacts to listed species and their habitats in the project vicinity. Significant short-term effects on water quality are not expected if erosion control and spill containment BMPs are properly implemented, monitored, and maintained during construction. Long-term water quality impacts are not expected. A TESC plan will be prepared and implemented to minimize sedimentation into the stream and prevent erosion. The following includes BMPs and conservation measures designed to avoid and minimize impacts to listed species.

Erosion and Sediment Control:

- Implementing construction phasing that minimizes the amount of earthwork that exposes the ground surface to erosion
- Implementing a TESC plan, including sediment-control BMPs such as silt fences, check dams, sediment traps, sedimentation basins, and flocculation methods
- Using erosion-control practices (seeding, mulching, soil conditioning with polymers, use of geosynthetics, sod stabilization, erosion-control blankets, vegetative buffer strips, and preservation of trees with construction fences)
- Using construction entrances, exits, and parking areas that reduce tracking sediment onto public roads
- Performing routine inspections of erosion-control and sediment-control BMPs and subsequent BMP maintenance

In-Water Work:

- Willows Creek and Gun Club Creek will be temporarily bypassed through the construction area using a bypass pipe and sand bag revetments, and the construction area will be dewatered to allow work to occur in the dry.

- Fish removal and isolation of the in-water work area will be conducted in accordance with the WSDOT 2012 *Fish Exclusion Protocols and Standards* (WSDOT 2012). Electrofishing will be used only if other removal methods are unsuccessful in removing fish from the work area.
- Work within Willows Creek and Gun Club Creek will require an HPA from WDFW. The project will comply with all permit conditions to minimize impacts on aquatic resources.
- The bypass pipe will be sized to pass anticipated flows during construction.

Clearing and Vegetation Removal:

- Exposed slopes and disturbed areas around the construction area will be replanted.
- Installation of high visibility construction fencing around the work area will define the work area and protect sensitive areas such as wetlands and streams from construction-related impacts.
- All trees removed from the riparian area will be replaced with native trees and shrub species.
- Plantings will be monitored for 5 years post-construction to ensure survival.

Stormwater Pollution Prevention:

- A Spill Prevention, Control, and Countermeasures (SPCC) plan will be implemented. Elements of this plan will satisfy all pertinent requirements set forth by federal, state, and local laws and regulations.
- All vehicles operated within 100 feet of any stream or waterbody will be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected will be repaired before the vehicle resumes operation. When not in use, all vehicles will be stored in the staging areas.
- All mechanical equipment will be fueled at least 150 feet from the stream.
- Spill response equipment will be on site to respond to any potential fluid leakage.
- The proposed action will add no new impervious surface to the drainage basin.

Staging Areas:

- All staging and stockpile areas will be located outside of streams, wetlands, and vegetated buffers. Staging and stockpile areas will be limited to paved areas.
- Staging areas will be located in areas that will prevent the potential for contamination of any wetland or waterbody. Servicing and refueling of vehicles will not occur within 150 feet of the stream to reduce potential spills of petroleum and hydraulic fluids in sensitive areas. Additionally, drip pans will be fitted with absorbent pads and placed under all equipment being fueled.

Construction Activities:

- Any use of wet concrete will include provisions for allowing adequate time and protection of material to ensure adequate curing before coming into contact with water.

12. Determination of Effect: *No Effect*

The proposed project will have *no effect* on listed species or those proposed for listing under the ESA because no such species are known or expected to use habitats in the action area. Suitable habitat for the following species is wholly absent from the action area:

- Chinook salmon
- Steelhead

- Bull trout
- Marbled murrelet
- Streaked horned lark
- Yellow-billed cuckoo
- North American wolverine

Critical Habitat

The action area does not include any areas of designated or proposed critical habitat for any ESA-listed species (see Table 1). Therefore, the project will have *no effect* on designated critical habitat for any of these species.

13. EFH Analysis

A. Description of the Proposed Action (may refer to Biological Evaluation project description)

The City of Redmond intends to rehabilitate the pavement surface on Willows Road between NE 90th Street and NE 124th Street. The existing road section will be re-paved and ADA ramps will be upgraded. In addition, the project will replace two culverts that span Willows Road: one at Willows Creek and one at Gun Club Creek. The new culverts will generally be in the same footprint as the culverts being removed, but additional width will be provided to improve fish passage. See descriptions in Section 5 and Section 6 of this document, above.

B. Addresses EFH for Appropriate Fisheries Management Plans (FMPs)

The Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), includes a mandate that NMFS must identify essential fish habitat (EFH) for federally managed commercially harvestable fish, and federal agencies must consult with NMFS on all activities, or proposed activities, authorized, funded, or undertaken by the agency that may adversely affect EFH.

EFH has been defined for the purposes of the Magnuson-Stevens Act as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (NMFS 2004). NMFS (2004) has further added the following interpretations to clarify this definition:

- “**Waters**” include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate;
- “**Substrate**” includes sediment, hard bottom, structures underlying the waters, and associated biological communities;
- “**Necessary**” means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem; and
- “**Spawning, breeding, feeding, or growth to maturity**” covers the full life cycle of a species.
- “**Adverse effect**” means any impact that reduces the quality and/or quantity of EFH; such impacts can include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in

species' fecundity), site-specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

The Pacific Fishery Management Council (PFMC) has designated EFH for the Pacific Coast groundfish fishery, the coastal pelagic species fishery, and the Pacific Coast salmon fishery. No aquatic habitats are present in the action area; therefore, the action area includes no EFH for any species in these fisheries.

C. Effects of the Proposed Action

For the proposed action, only species of the Pacific salmon fishery could potentially be affected because the project occurs within the Sammamish drainage, which is a freshwater system. The EFH designation for the Pacific salmon fishery includes all streams, lakes, ponds, wetlands, and other waterbodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except above the impassable barriers identified by PFMC. The Pacific salmon management unit includes Chinook, coho, and pink salmon. No impassable barriers were identified by PFMC within the action area of the Sammamish watershed. For the proposed project, coho salmon could potentially be impacted (Chinook salmon and pink salmon are not present within the action area).

Effects of the proposed project on Pacific salmon EFH will be similar to the effects on ESA-listed salmonids evaluated previously in this Biological Evaluation. Construction-related impacts will be temporary in nature and will occur either outside of the wetted perimeter of the stream systems in the action area, or in work areas physically isolated from surface water during the approved in-water work window. Some mobilization of sediment may occur as a result of construction activity; this is anticipated to be minor, limited in time, and localized in space. Long-term benefits may be associated with removal of undersized culverts and replacement with a fish-passable structure on Willows Creek and Gun Club Creek.

D. Proposed Conservation Measures

Conservation measures associated with EFH for Pacific salmonids are specified in Section 11. The implementation of the conservation measures to avoid or limit potential project impacts to ESA-listed species is anticipated to similarly avoid and minimize impacts to EFH.

E. Conclusions for EFH (taking into account proposed conservation measures)

The conservation measures and special provisions described in this Biological Evaluation are considered adequate to prevent adverse effects on EFH for Chinook and coho salmon in this project. The project may result in some minor and limited impacts to water quality in Willows Creek and Gun Club Creek in the immediate vicinity of culvert removal activities as a direct result of sediment mobilization. No significant impacts to EFH for Pacific salmon are anticipated to occur as a result of construction, and removal of existing undersized culverts on Willows Creek and Gun Club Creek will likely result in a minor, long-term benefit to EFH. No permanent adverse effects on EFH for Pacific salmon will occur as a result of this project. Therefore, the project will result in *no adverse effect* on EFH for Pacific salmon.

There is no EFH for coastal pelagic species within the action area; therefore, there will be *no adverse effect* on coastal pelagic EFH as a result of the proposed action.

There is no EFH for ground fish within the action area; therefore, there will be *no adverse effect* on ground fish EFH as a result of the proposed action.

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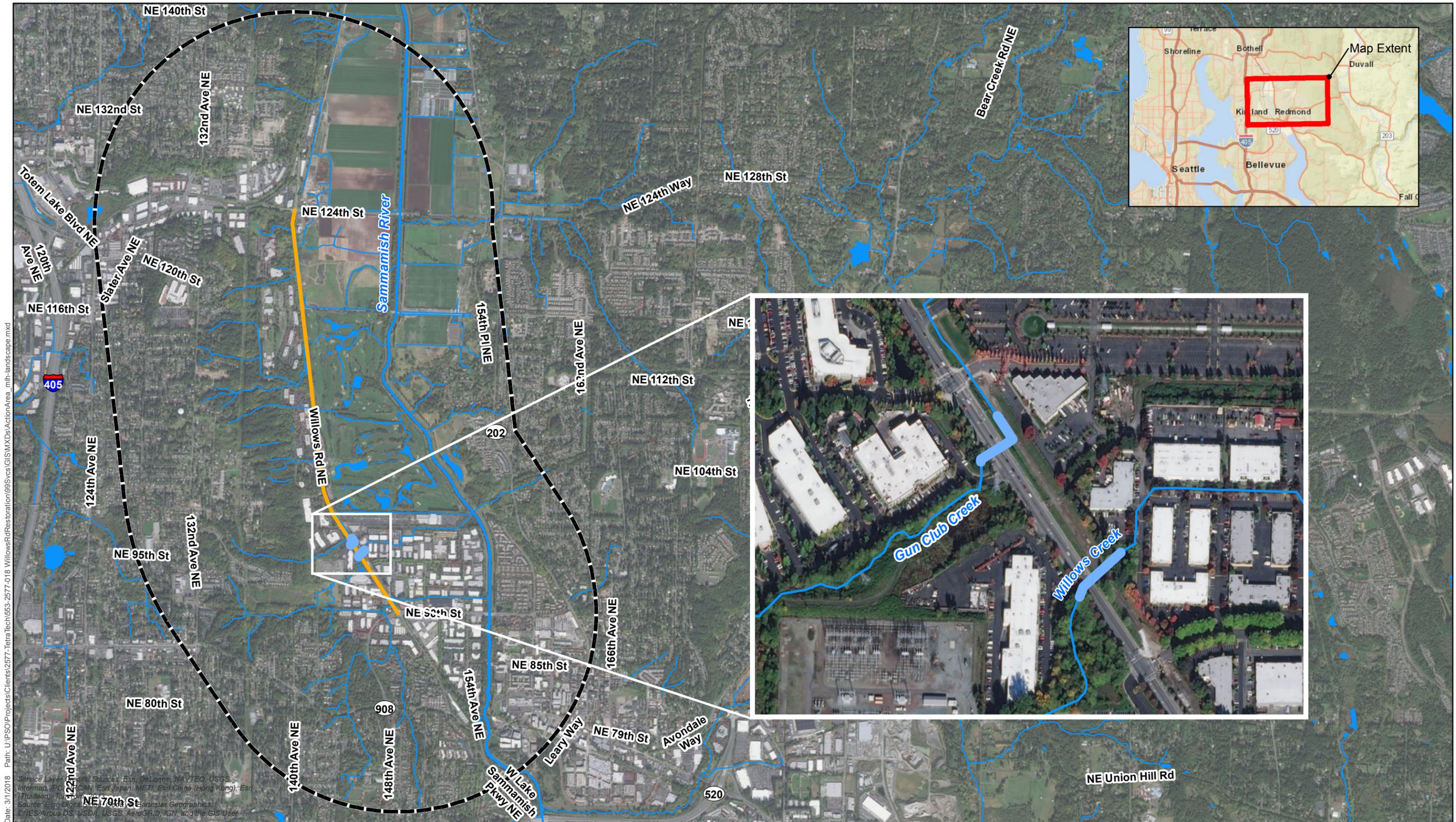
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15. Appendices:

- Appendix A – Project Vicinity Map and Action Area Map
- Appendix B – Project Drawings
- Appendix C – Site Photos
- Appendix D – Species List

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Appendix A
Project Vicinity and Action Area Maps



Date: 3/1/2018 Path: U:\PSOI\Projects\Clients\2577-TetraTech\553-2577-018-WillowsRdRestoration\99S\GIS\MapXDocs\ActionArea_mh-landscape.mxd
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Parametrix



- Project Corridor
- Stream
- Terrestrial Portion of the Action Area
- Aquatic Portion of the Action Area

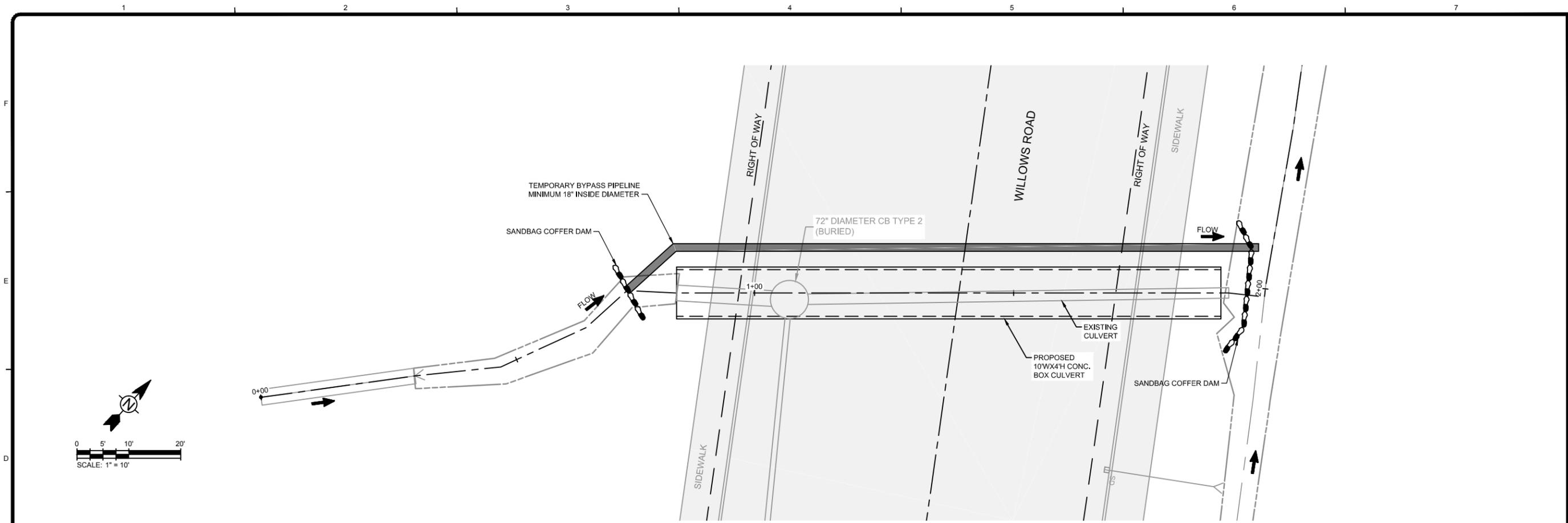
Figure 1. Project Vicinity and Action Area
Willows Road Restoration Project

Redmond, Washington

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Appendix B
Project Drawings

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GENERAL NOTES

1. ...
2. ...

LEGEND

TEMPORARY BYPASS PIPE

TEMPORARY BYPASS REQUIREMENTS

1. ...
2. ...

PRELIMINARY
2/14/18



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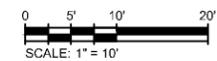
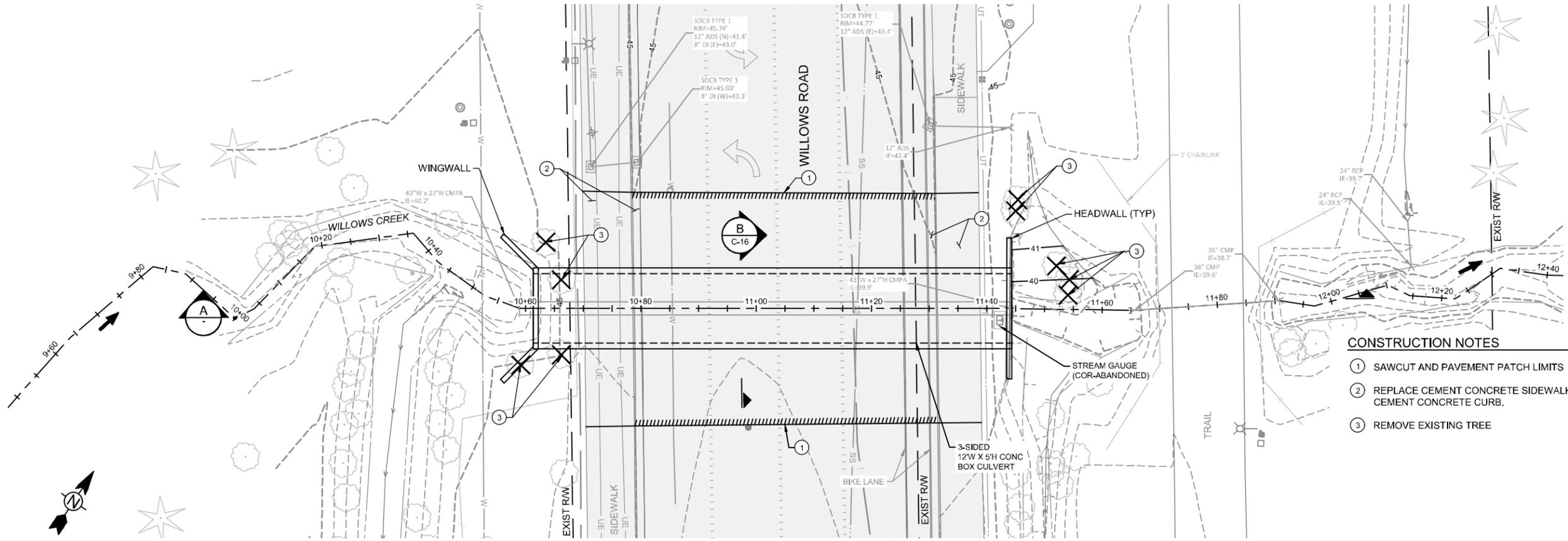
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SITE PREPARATION PLANS
TESC PLANS (CULVERTS)

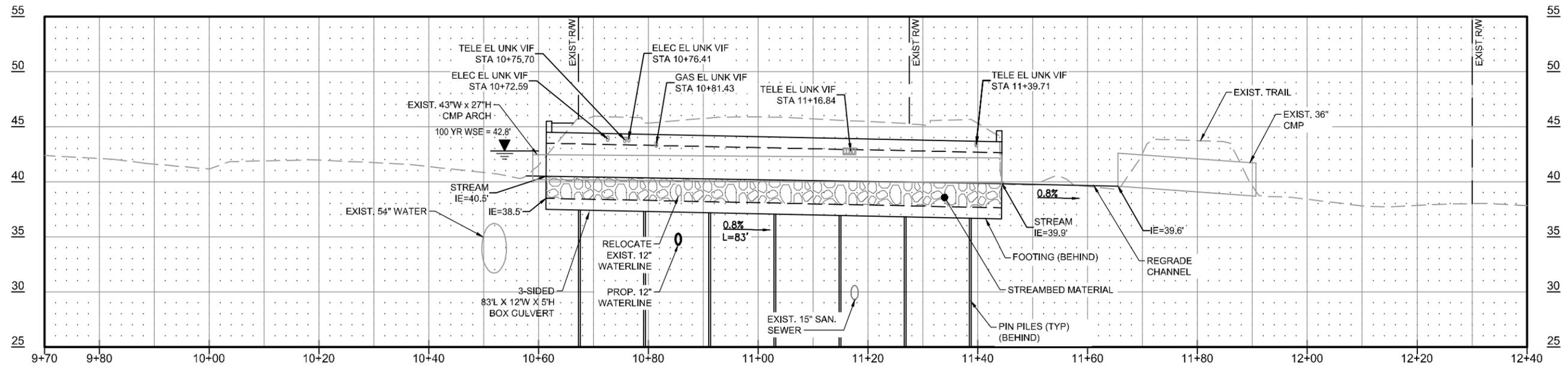
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- CONSTRUCTION NOTES**
- ① SAWCUT AND PAVEMENT PATCH LIMITS
 - ② REPLACE CEMENT CONCRETE SIDEWALK AND CEMENT CONCRETE CURB.
 - ③ REMOVE EXISTING TREE



A PROFILE WILLOWS CREEK
SCALE: HORIZ. 1" = 10' VERT. 1" = 5'

30% SUBMITTAL
NOT FOR CONSTRUCTION



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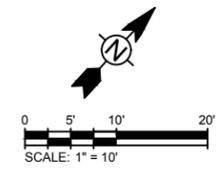
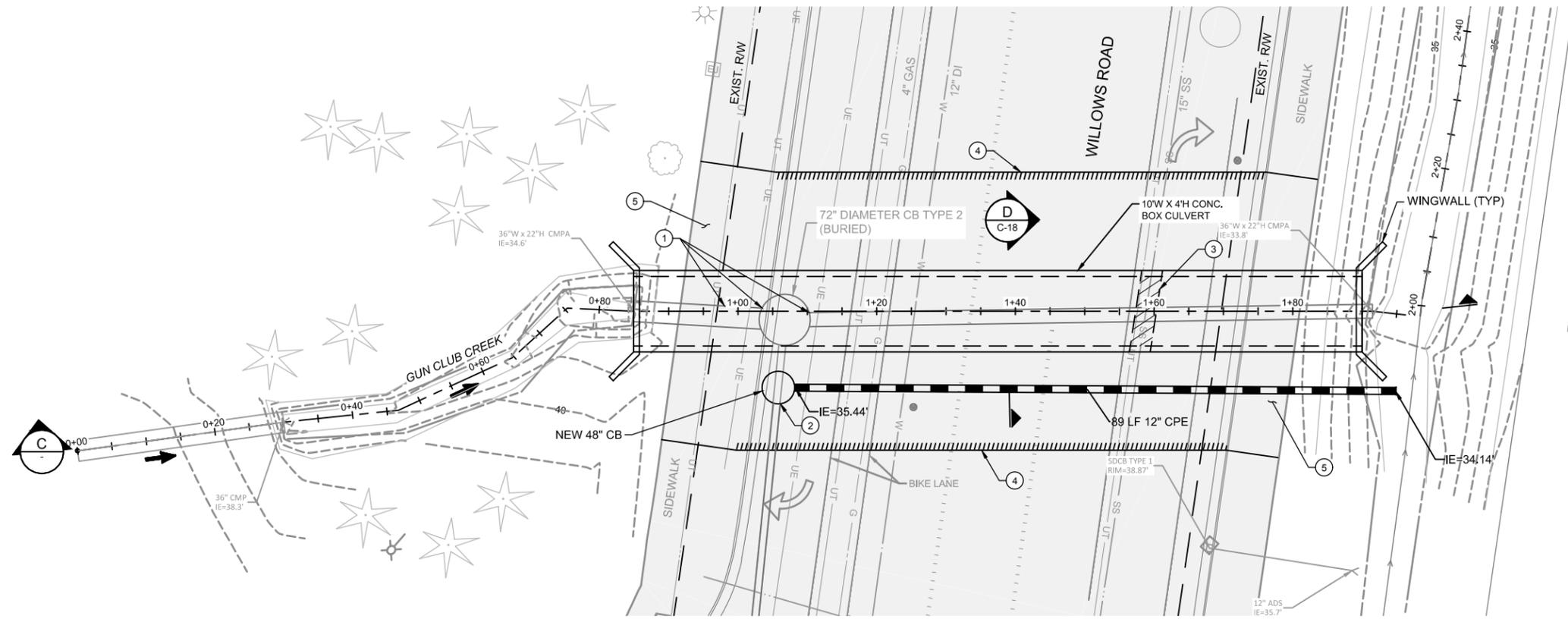
CITY OF REDMOND
WILLOWS ROAD RESTORATION
**WILLOWS CREEK CULVERT
PLAN AND PROFILE**

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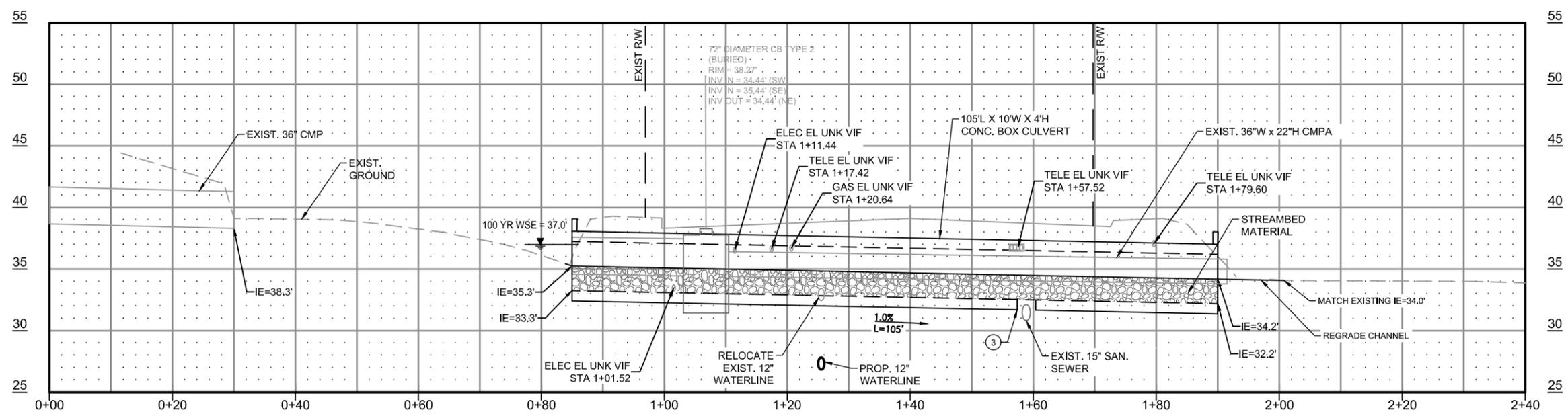
C-13

Bar Measures 1 inch

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- CONSTRUCTION NOTES**
- ① REMOVE EXIST. CB AND CULVERT
 - ② CONNECT EXIST. SD TO NEW 48" CB.
 - ③ PROVIDE 3' WIDE BLOCK OUT IN CULVERT BASE TO STRADDLE SEWER. CLOSE BLOCK-OUT WITH COMMERCIAL CONCRETE AFTER CULVERT PLACEMENT.
 - ④ SAWCUT AND PAVEMENT PATCH LIMITS.
 - ⑤ REPLACE CEMENT CONCRETE SIDEWALK AND CEMENT CONCRETE CURB.



C PROFILE GUN CLUB CREEK
SCALE: HORIZONTAL 1" = 10' VERTICAL 1" = 5'

30% SUBMITTAL
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CITY OF REDMOND
WILLOWS ROAD RESTORATION
**GUN CLUB CREEK
CULVERT PLAN AND PROFILE**

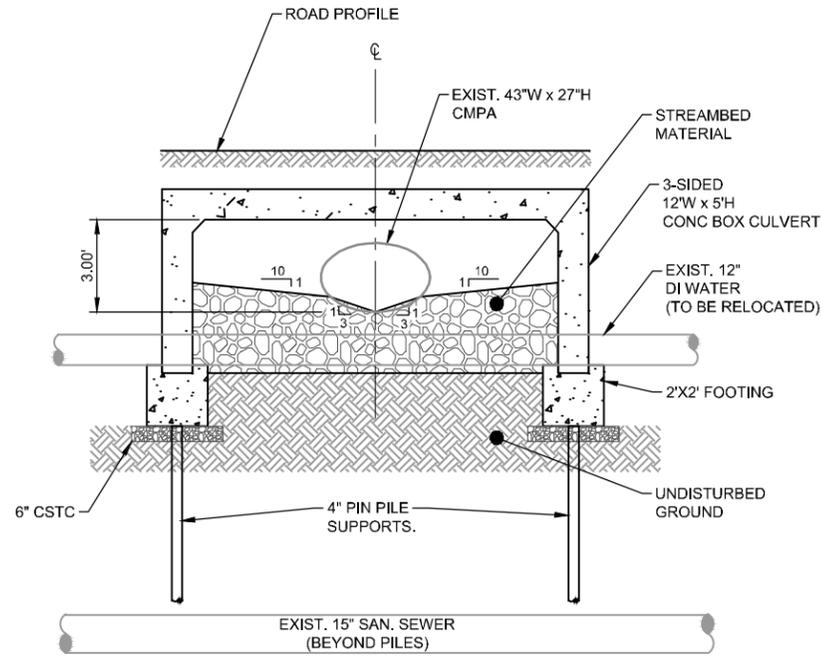
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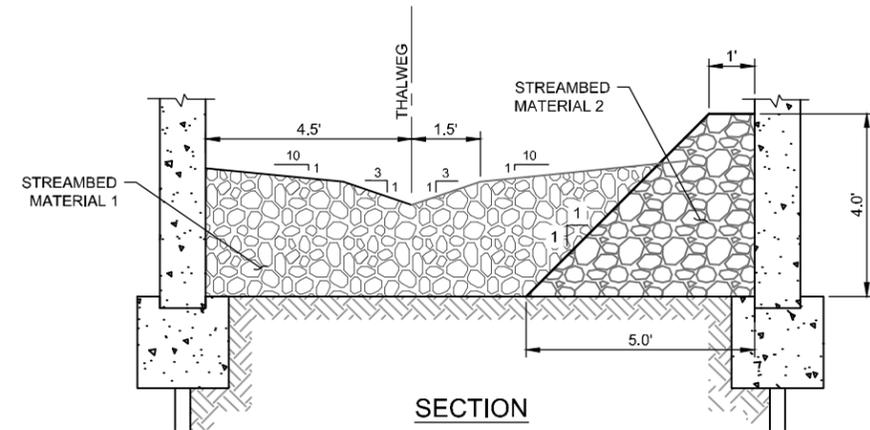
Bar Measures 1 inch

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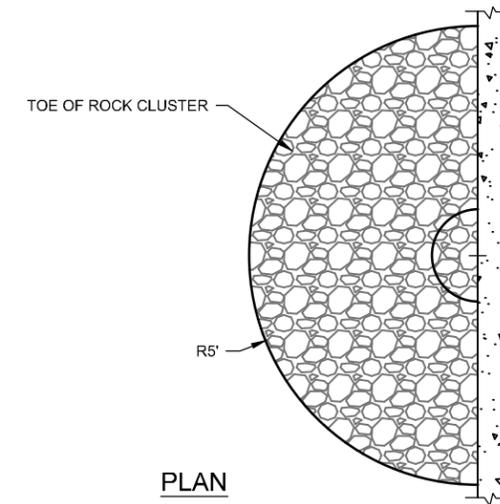
3/16/2018 10:13:58 AM - P:\100-RCE-137723 - WILLOWS ROAD\CADD\SHEETFILES\137723 C-16 CULVERT DETAILS.DWG - FORCIER, ADAM



B CULVERT SECTION
C-13 SCALE: 1" = 3'

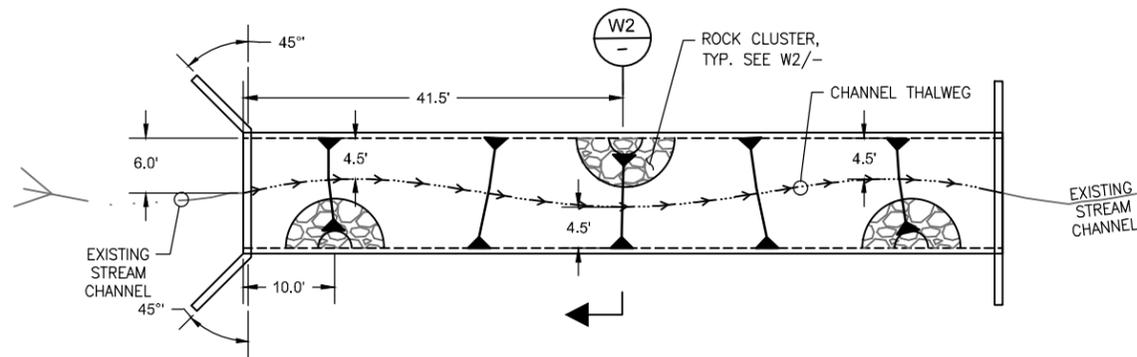


SECTION



PLAN

W2 ROCK CLUSTER DETAIL
SCALE: 1" = 2'



W1 WINGWALL PLAN AND STREAMBED PLAN
SCALE: 1" = 10'

MARK	DATE	DESCRIPTION	BY

CITY OF REDMOND
WILLOWS ROAD RESTORATION
WILLOWS CREEK
CULVERT DETAILS

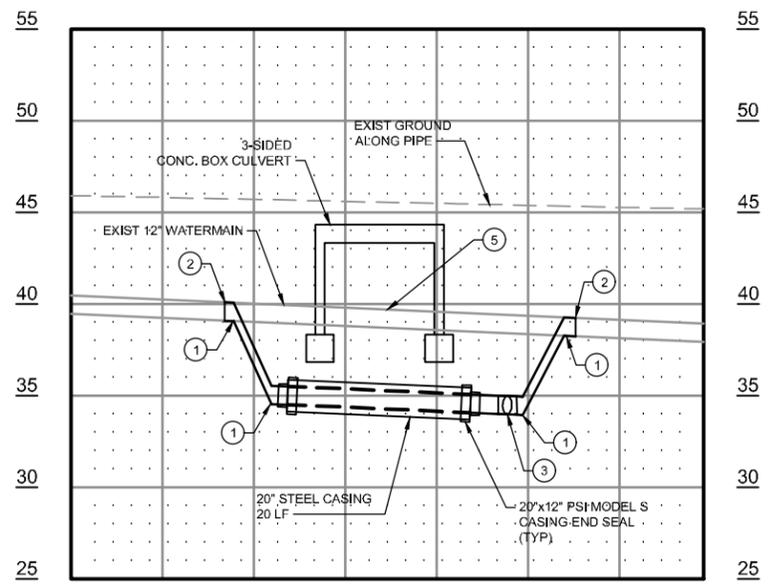
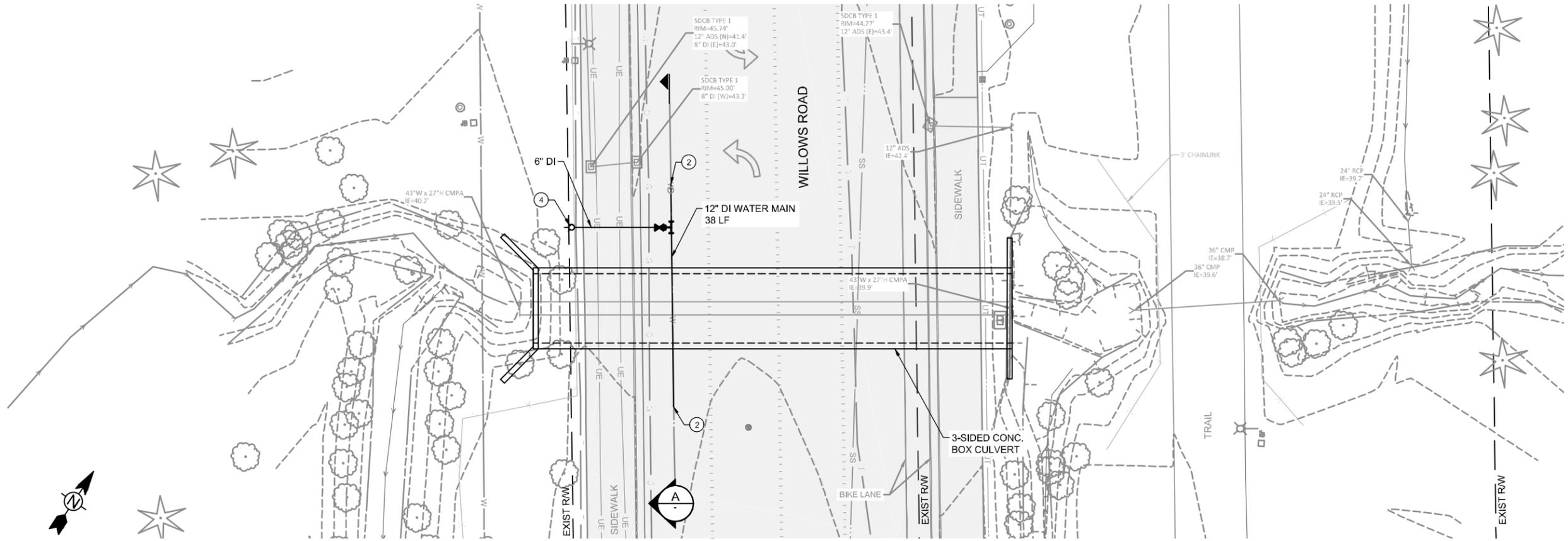
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C-16

30% SUBMITTAL
NOT FOR CONSTRUCTION



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A WATER LINE PROFILE AT WILLOWS CREEK
 SCALE: HORIZ. 1" = 10' VERT. 1" = 5'

CONSTRUCTION NOTES

- ① 45° BEND
ROTATE VERTICAL
- ② CONNECT TO EXISTING 12" DI PIPE
- ③ 12" TEE TO FIRE HYDRANT BLOWOFF
- ④ FIRE HYDRANT BLOWOFF
COR STD DETAIL 713
PAINT HYDRANT BLUE.
- ⑤ REMOVE EXIST PIPE IN CONFLICT WITH CULVERT
CONSTRUCTION.

TETRA TECH
 www.tetra-tech.com
 1420 5TH AVE., SUITE 650
 SEATTLE, WASHINGTON 98101
 TEL 206.728.9655

MARK	DATE	DESCRIPTION	BY

CITY OF REDMOND
 WILLOWS ROAD RESTORATION
 WILLOWS CREEK
 WATER UTILITY
 PLAN AND PROFILE

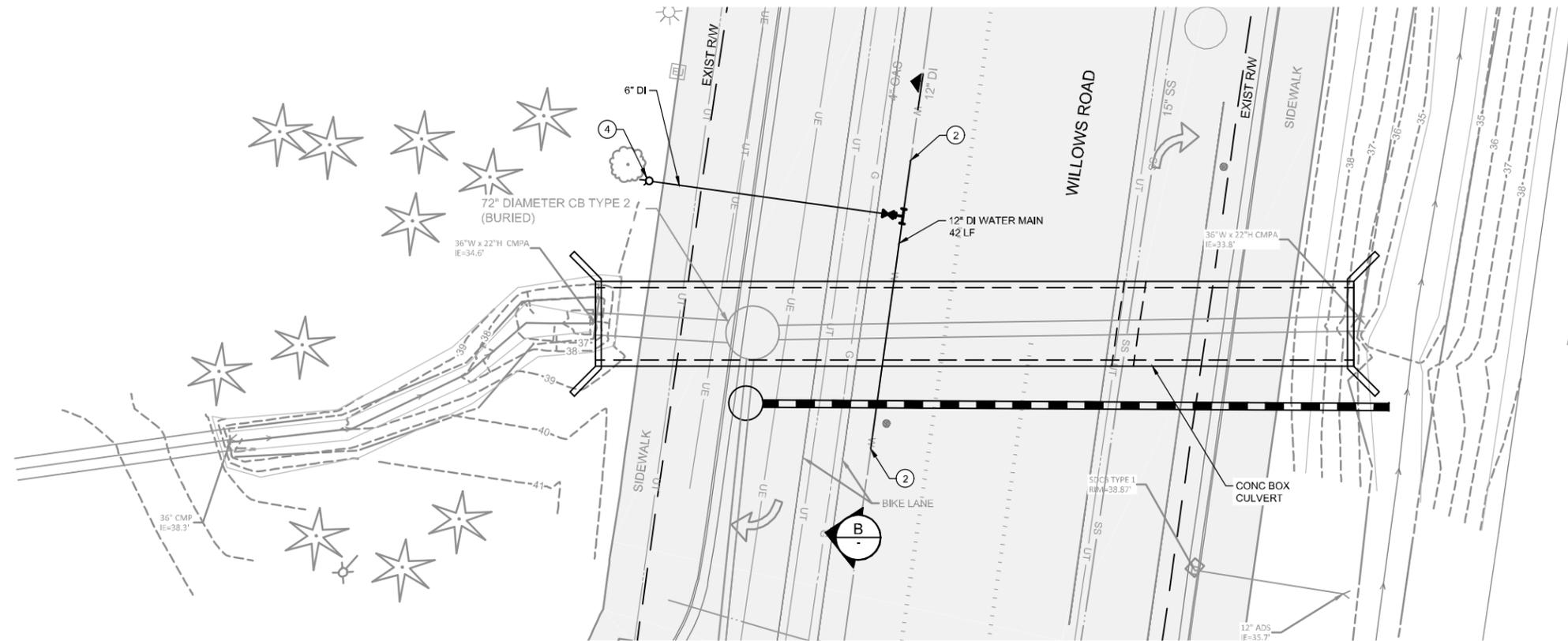
Project No.: 100-RCE-T37723
 Designed By:
 Drawn By:
 Checked By:

WA-01



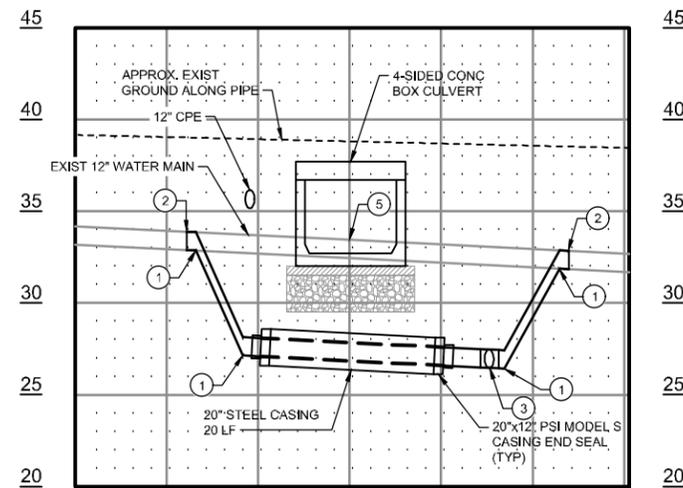
30% SUBMITTAL
 NOT FOR CONSTRUCTION

3/16/2018 10:07:15 AM - P:\100-RCE-137723 - WILLOWS ROAD\CD\SHEETFILES\137723 WA-01 WATER SEWER UTILITY PLAN AND PROFILE.DWG - FORCIER, ADAM



CONSTRUCTION NOTES

- ① 45° BEND
ROTATE VERTICAL
- ② CONNECT TO EXISTING 12" DI PIPE
- ③ 12" TEE TO FIRE HYDRANT BLOWOFF
- ④ FIRE HYDRANT BLOWOFF
COR STD DETAIL 713
PAINT HYDRANT BLUE
- ⑤ REMOVE EXIST PIPE IN CONFLICT WITH CULVERT
CONSTRUCTION



B WATER LINE PROFILE AT GUN CLUB CREEK
SCALE: HORIZ. 1" = 10' VERT. 1" = 5'



www.tetrattech.com
1420 5TH AVE, SUITE 650
SEATTLE, WASHINGTON 98101
TEL 206.728.9655

MARK	DATE	DESCRIPTION	BY

CITY OF REDMOND
WILLOWS ROAD RESTORATION
GUN CLUB CREEK
WATER UTILITY
PLAN AND PROFILE

Project No.: 100-RCE-137723
Designed By:
Drawn By:
Checked By:

WA-02

30% SUBMITTAL
NOT FOR CONSTRUCTION



DRAFT

**Appendix C
Site Photos**



Photo 1: Gun Club Creek looking east (downstream) as the stream enters the culvert to be removed/replaced beneath Willows Road (01/2018).



Photo 2: Downstream end of Gun Club Creek culvert looking upstream as it passes under Willows Road, looking west (01/2018).



Photo 3: Gun Club Creek looking southwest toward Willows Road. Typical cross section and vegetation along Willows Road (01/2018).



Photo 4: Gun Club Creek looking downstream on north side of intersection of Willows Road and the Overlake Church Parking Lot. From this point the stream flows approximately 0.65 miles to its confluence with the left bank of the Sammamish River (01/2018).



Photo 5: Willows Creek looking downstream (East) at culvert beneath Willows Road (01/2018).



Photo 6: Willows Creek immediately upstream of Willows Road culvert looking west (01/2018).



Photo 7: Willows Creek looking upstream (west) as the stream flows out of the culvert to be replaced under Willows Road (01/2018).



Photo 8: Looking downstream from culvert under Willows Road at the existing squashed culvert beneath the Redmond Central Connector Trail. This culvert is approximately 15 feet downstream of the culvert proposed for removal/replacement (01/2018).



Photo 9: Willows Creek farther downstream of the Willows Creek Crossing as it flows through a manufacturing park (01/2018).



Photo 10: Gun Club Creek's fine sediment conditions on east side of Willows Road (01/2018).



Photo 11: Vegetation Conditions in Gun Club Creek as it parallels Willows Road on the east (01/2018).



Photo 12: Higher gradient and coarse cobble substrate typify the channel condition of Gun Club Creek west of Willows Road and lawn grasses dominate the riparian corridor with some scattered ornamental pines (01/2018).



Photo 13: Willows Creek dominated by sand and very fine gravel upstream of Willows Road culvert with some patchy areas of gravel and cobble, particularly at culvert inlet (01/2018).



Photo 14: Looking upstream at Willows Creek and the culvert proposed for replacement under Willows Road. Photo taken from the existing squashed culvert beneath the Redmond Central Connector Trail, which is approximately 15 feet downstream of the culvert proposed for removal/replacement (01/2018).

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**Appendix D
Species List**



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
Phone: (360) 753-9440 Fax: (360) 753-9405
<http://www.fws.gov/wafwo/>

In Reply Refer To:

January 14, 2018

Consultation Code: 01EWF00-2018-SLI-0480

Event Code: 01EWF00-2018-E-00860

Project Name: Willows Road NE 90th Street to NE 124th Street

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated and proposed critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. The species list is currently compiled at the county level. Additional information is available from the Washington Department of Fish and Wildlife, Priority Habitats and Species website: <http://wdfw.wa.gov/mapping/phs/> or at our office website: http://www.fws.gov/wafwo/species_new.html. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether or not the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species, and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). You may visit our website at <http://www.fws.gov/pacific/eagle/for> information on disturbance or take of the species and information on how to get a permit and what current guidelines and regulations are. Some projects affecting these species may require development of an eagle conservation plan: (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Also be aware that all marine mammals are protected under the Marine Mammal Protection Act (MMPA). The MMPA prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas. The importation of marine mammals and marine mammal products into the U.S. is also prohibited. More information can be found on the MMPA website: <http://www.nmfs.noaa.gov/pr/laws/mmpa/>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Related website:

National Marine Fisheries Service: http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

Attachment(s):

- Official Species List
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Washington Fish And Wildlife Office

510 Desmond Drive Se, Suite 102

Lacey, WA 98503-1263

(360) 753-9440

Project Summary

Consultation Code: 01EWF00-2018-SLI-0480

Event Code: 01EWF00-2018-E-00860

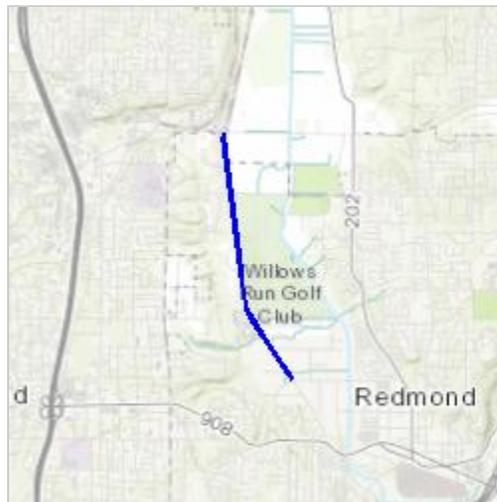
Project Name: Willows Road NE 90th Street to NE 124th Street

Project Type: TRANSPORTATION

Project Description: Repaving existing roadway including replacement of two culverts that convey Willow Creek and Gun Club Creek. No new impervious surface proposed.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/47.69672133260308N122.15180081213484W>



Counties: King, WA

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
North American Wolverine <i>Gulo gulo luscus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Marbled Murrelet <i>Brachyramphus marmoratus</i> Population: U.S.A. (CA, OR, WA) There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Streaked Horned Lark <i>Eremophila alpestris strigata</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7268	Threatened
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is proposed critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

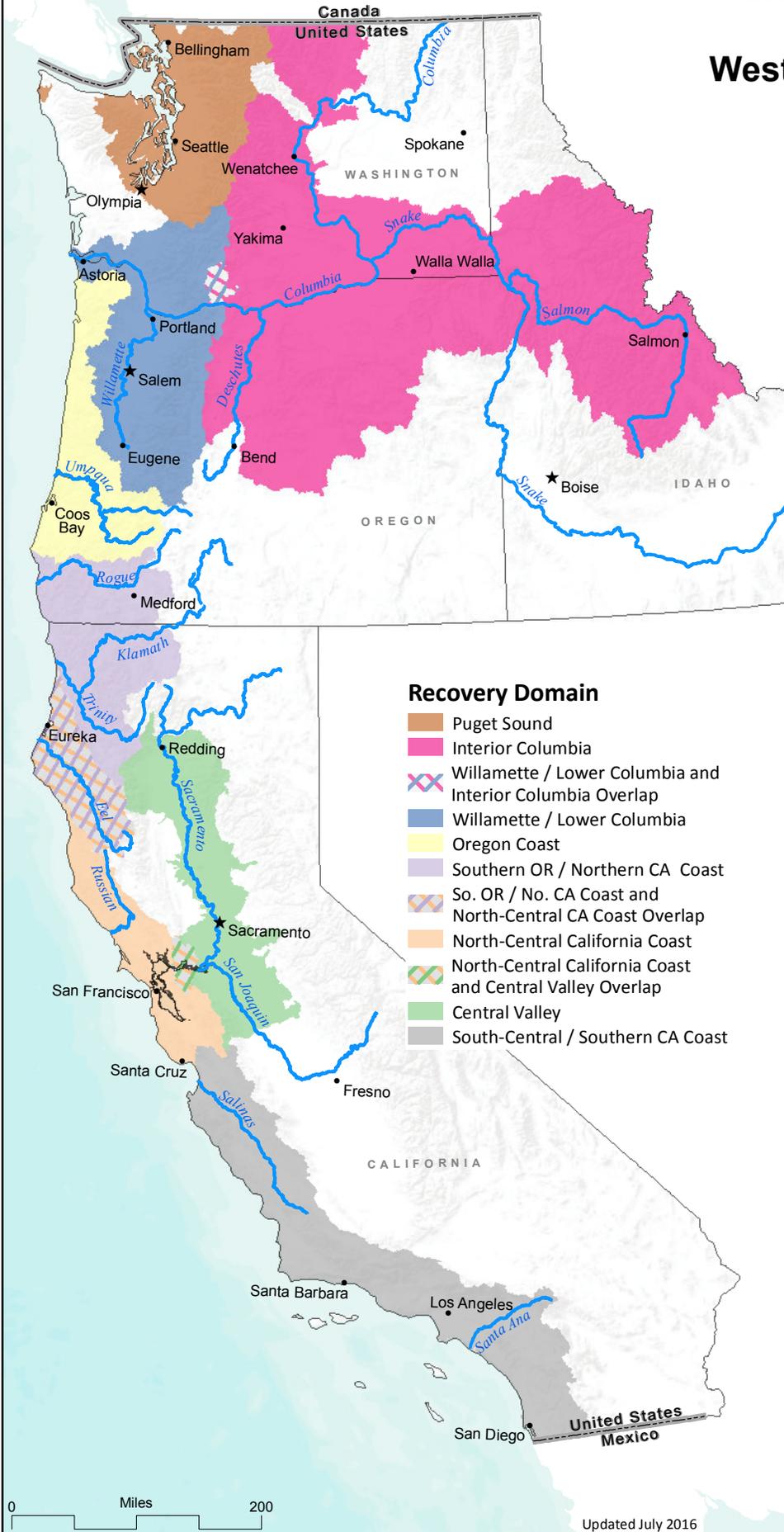
Fishes

NAME	STATUS
Bull Trout <i>Salvelinus confluentus</i> Population: U.S.A., conterminous, lower 48 states There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8212	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Status of ESA Listings & Critical Habitat Designations for West Coast Salmon & Steelhead



- Recovery Domain**
- Puget Sound
 - Interior Columbia
 - Willamette / Lower Columbia and Interior Columbia Overlap
 - Willamette / Lower Columbia
 - Oregon Coast
 - Southern OR / Northern CA Coast
 - So. OR / No. CA Coast and North-Central CA Coast Overlap
 - North-Central California Coast
 - North-Central California Coast and Central Valley Overlap
 - Central Valley
 - South-Central / Southern CA Coast

Evolutionarily Significant Unit / Distinct Population Segment	ESA Status	Date of ESA Listing	Date of CH Designation
Puget Sound Recovery Domain			
Hood Canal Summer-run Chum Salmon	T	3/25/1999	9/2/2005
Ozette Lake Sockeye Salmon	T	3/25/1999	9/2/2005
Puget Sound Chinook Salmon	T	3/24/1999	9/2/2005
Puget Sound Steelhead	T	5/11/2007	2/24/2016

Interior Columbia Recovery Domain			
Middle Columbia River Steelhead	T	3/25/1999 1/5/2006	9/2/2005
Snake River Fall-run Chinook Salmon	T	4/22/1992	12/28/1993
Snake River Spring / Summer-run Chinook Salmon	T	4/22/1992	10/25/1999
Snake River Sockeye Salmon	E	11/20/1991	12/28/1993
Snake River Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Upper Columbia River Spring-run Chinook Salmon	E	3/24/1999	9/2/2005
Upper Columbia River Steelhead	T	8/18/1997 1/5/2006	9/2/2005

Willamette / Lower Columbia Recovery Domain			
Columbia River Chum Salmon	T	3/25/1999	9/2/2005
Lower Columbia River Chinook Salmon	T	3/24/1999	9/2/2005
Lower Columbia River Coho Salmon	T	6/28/2005	2/24/2016
Lower Columbia River Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Upper Willamette River Chinook Salmon	T	3/24/1999	9/2/2005
Upper Willamette River Steelhead	T	3/25/1999 1/5/2006	9/2/2005

Oregon Coast Recovery Domain			
Oregon Coast Coho Salmon	T	2/11/2008	2/11/2008

Southern Oregon / Northern California Coast Recovery Domain			
Southern OR / Northern CA Coasts Coho Salmon	T	5/6/1997	5/5/1999

North-Central California Coast Recovery Domain			
California Coastal Chinook Salmon	T	9/16/1999	9/2/2005
Central California Coast Coho Salmon	E	10/31/1996 (T) 6/28/2005 (E) 4/2/2012 (RE)	5/5/1999
Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Northern California Steelhead	T	6/7/2000 1/5/2006	9/2/2005

Central Valley Recovery Domain			
California Central Valley Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Central Valley Spring-run Chinook Salmon	T	9/16/1999	9/2/2005
Sacramento River Winter-run Chinook Salmon	E	11/5/1990 (T) 1/4/1994 (E)	6/16/1993

South-Central / Southern California Coast Recovery Domain			
South-Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Southern California Steelhead	E	8/18/1997 5/1/2002 (RE) 1/5/2006	9/2/2005

ESA = Endangered Species Act, CH = Critical Habitat, RE = Range Extension
E = Endangered, T = Threatened

Critical Habitat Rules Cited

- 2/24/2016 (81 FR 9252) Final Critical Habitat Designation for Puget Sound Steelhead and Lower Columbia River Coho Salmon
- 2/11/2008 (73 FR 7816) Final Critical Habitat Designation for Oregon Coast Coho Salmon
- 9/2/2005 (70 FR 52630) Final Critical Habitat Designation for 12 ESU's of Salmon and Steelhead in WA, OR, and ID
- 9/2/2005 (70 FR 52488) Final Critical Habitat Designation for 7 ESU's of Salmon and Steelhead in CA
- 10/25/1999 (64 FR 57399) Revised Critical Habitat Designation for Snake River Spring/Summer-run Chinook Salmon
- 5/5/1999 (64 FR 24049) Final Critical Habitat Designation for Central CA Coast and Southern OR/Northern CA Coast Coho Salmon
- 12/28/1993 (58 FR 68543) Final Critical Habitat Designation for Snake River Chinook and Sockeye Salmon
- 6/16/1993 (58 FR 33212) Final Critical Habitat Designation for Sacramento River Winter-run Chinook Salmon

ESA Listing Rules Cited

- 4/2/2012 (77 FR 19552) Final Range Extension for Endangered Central California Coast Coho Salmon
- 2/11/2008 (73 FR 7816) Final ESA Listing for Oregon Coast Coho Salmon
- 5/11/2007 (72 FR 26722) Final ESA Listing for Puget Sound Steelhead
- 1/5/2006 (71 FR 5248) Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead
- 6/28/2005 (70 FR 37160) Final ESA Listing for 16 ESU's of West Coast Salmon
- 5/1/2002 (67 FR 21586) Range Extension for Endangered Steelhead in Southern California
- 6/7/2000 (65 FR 36074) Final ESA Listing for Northern California Steelhead
- 9/16/1999 (64 FR 50394) Final ESA Listing for Two Chinook Salmon ESUs in California
- 3/25/1999 (64 FR 14508) Final ESA Listing for Hood River Canal Summer-run and Columbia River Chum Salmon
- 3/25/1999 (64 FR 14517) Final ESA Listing for Middle Columbia River and Upper Willamette River Steelhead
- 3/25/1999 (64 FR 14528) Final ESA Listing for Ozette Lake Sockeye Salmon
- 3/24/1999 (64 FR 14308) Final ESA Listing for 4 ESU's of Chinook Salmon
- 3/19/1998 (63 FR 13347) Final ESA Listing for Lower Columbia River and Central Valley Steelhead
- 8/18/1997 (62 FR 43937) Final ESA Listing for 5 ESU's of Steelhead
- 5/6/1997 (62 FR 24588) Final ESA Listing for Southern Oregon / Northern California Coast Coho Salmon
- 10/31/1996 (61 FR 56138) Final ESA Listing for Central California Coast Coho Salmon
- 1/4/1994 (59 FR 222) Final ESA Listing for Sacramento River Winter-run Chinook Salmon
- 4/22/1992 (57 FR 14653) Final ESA Listing for Snake River Spring/summer-run and Snake River Fall Chinook Salmon
- 11/20/1991 (56 FR 58619) Final ESA Listing for Snake River Sockeye Salmon
- 11/5/1990 (55 FR 46515) Final ESA Listing for Sacramento River Winter-run Chinook Salmon