EBRIGHT CREEK WETLAND HABITAT ENHANCEMENT

Location:	Ebright Creek (tributary to Lake Sammamish), King County, WA. WRIA #08.0149
Proposed Action:	Install wood and other natural habitat features to consolidate diffuse flows through the Pereyra wetland and create a single channel; remove non-native invasive vegetation and plant native riparian species.
Species Benefiting:	kokanee, coho, cutthroat trout

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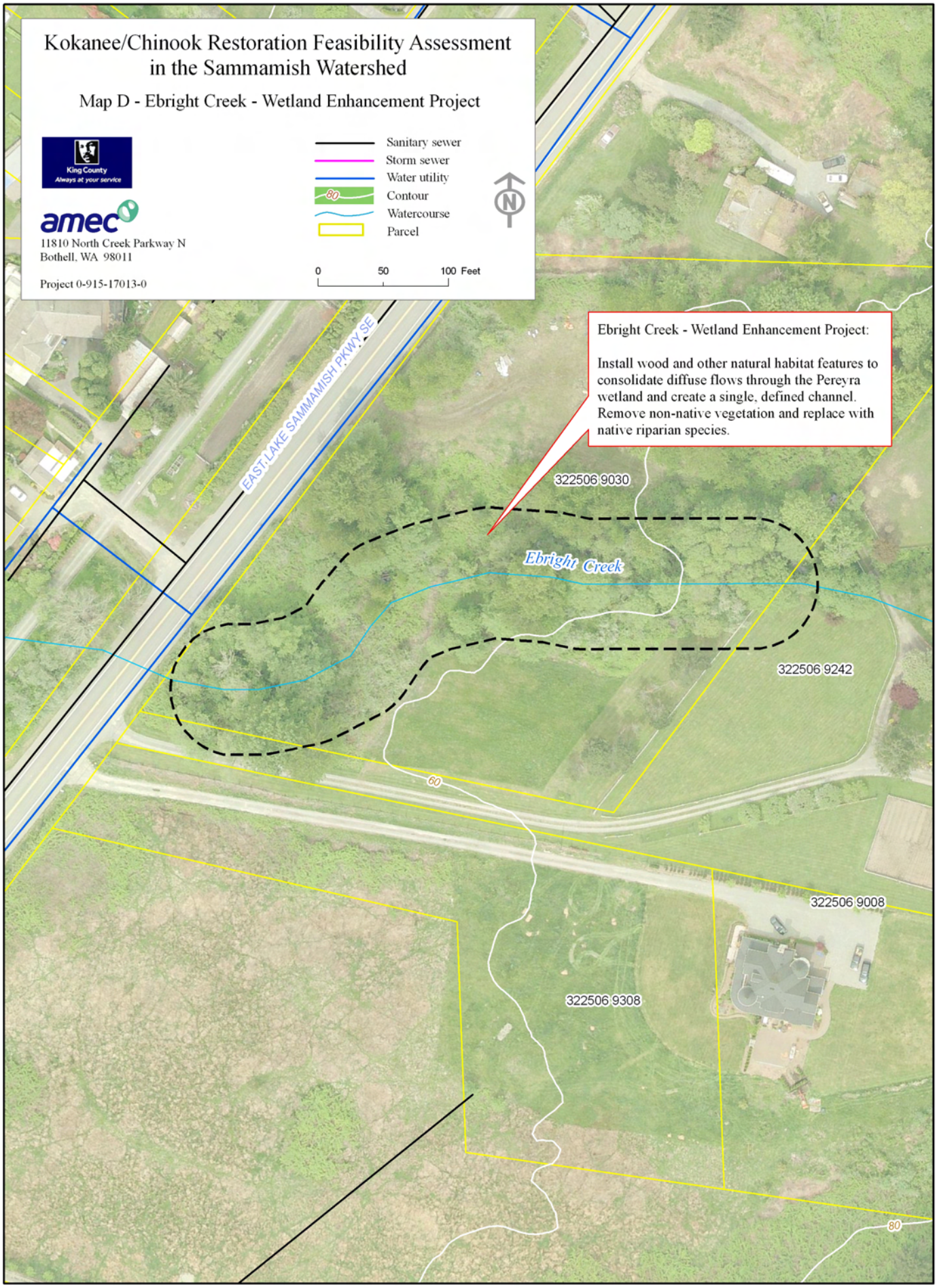
Kokanee/Chinook Restoration Feasibility Assessment in the Sammamish Watershed
Map D - Ebright Creek - Wetland Enhancement Project
King County
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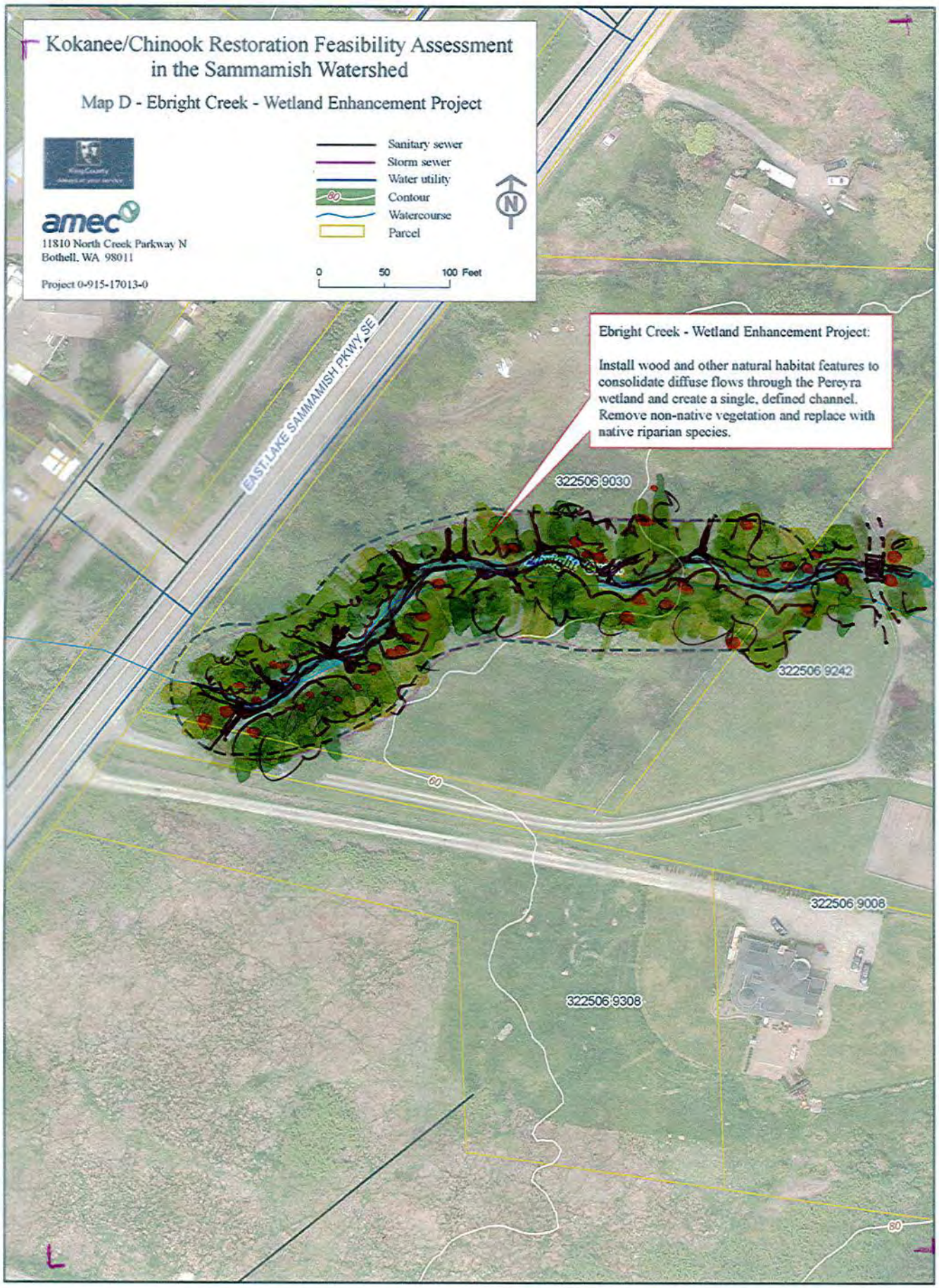
11810 North Creek Parkway N
Bothell, WA 98011
Project 0-915-17013-0
Sanitary sewer
Storm sewer
Water utility
Contour
Watercourse
Parcel
0
50
100 Feet
N
Ebright Creek - Wetland Enhancement Project:
Install wood and other natural habitat features to consolidate diffuse flows through the Pereyra wetland and create a single, defined channel. Remove non-native vegetation and replace with native riparian species.
EAST LAKE SAMMAMISH PKWY SE
322506 9030
Ebright Creek
322506 9242
60
322506 9008
322506 9308
80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SITE BACKGROUND

Ebright Creek is a perennial stream that enters Lake Sammamish along its eastern shore. The project site is on an undeveloped 3.6 acre private residential lot adjacent to the East Lake Sammamish (ELS) Parkway and consists of two acres of wooded wetland where the flow splits into multiple small channels and diffuses across the wetland, becoming sheet flow under high discharge conditions. Immediately upstream of the site, a high priority project to remove a fish passage barrier has been proposed (see Project E). Above the existing man-made barrier, the creek winds up through second-growth forest until reaching the Sammamish Plateau, whereupon it continues to the headwaters in a relatively undeveloped tract of low-density residential area. Downstream of the project site, the creek flows under the ELS Parkway and Trail via twin 36 inch diameter culverts, and then flows approximately 250 feet along a meadow/forest edge to the lake. Annual spawning surveys have shown the ELS parkway culvert to be passable by kokanee and the patio culvert to be a fish passage barrier (Hans Berge, personal communication).

This site has evolved in recent years due to fluvial processes and episodic events. High winter flows several years ago led to a substantial landslide in the Ebright Creek canyon upstream, blocking flow for several days (Wally Pereyra, personal communication). Continued rain over the following months transported a large quantity of gravel and other debris downstream, which aggraded in the lower-gradient wetland reach. This caused the stream to fan out and form several small, shallow rivulets and sheet flow through the wetland before reconsolidating and passing through the ELS Parkway culvert. Before this event, this wetland area represented the primary spawning habitat for kokanee in Ebright Creek. After the event, most of the kokanee spawning occurred in the short reach between the wetland and the barrier culvert. Over time, the creek has begun to carve a more defined channel out of the gravel deposits, but the rate at which high quality spawning habitat will be restored naturally is unknown, especially considering the establishment of non-native invasive riparian plants, which can retard this process.

IMPORTANCE FOR KOKANEE AND/OR CHINOOK POPULATIONS

Ebright Creek is one of the three most significant kokanee streams in the Sammamish Basin because it still receives a natural spawning run of the late-run kokanee. Kokanee escapement in Ebright Creek from 1996 to 2007 averaged 224 spawners, with a range from 15 to 1,063 kokanee per year (Jackson 2008).

Ebright Creek is also a part of the emergency supplementation program. Kokanee broodstock are collected from the creek during the winter spawning period, and the fry are released back into the creek in the spring. The lower section of the creek is currently accessible to spawning kokanee,

contains good spawning substrate and is the most likely to be used by spawning kokanee. The project reach will play an integral role in recovering the late-run kokanee population.

LIMITING FACTORS

The bed load material carried by Ebright Creek has aggraded in the reach above the ELS parkway and created a low gradient area. Stream flow that enters from the single channel upstream diffuses into multiple smaller channels, and in some cases, flows as sheet flow. This diffusion creates areas where the creek is too shallow for upstream migrating kokanee to navigate, and may also lead to stranding of downstream migrating salmonid fry.

The riparian zone in this reach is choked with non-native invasive plants such as Himalayan blackberry, Japanese knotweed, reed canary grass, and morning glory, which further aggravates the problem. The root systems of these species can grow densely within the channel(s) and retain gravel and finer sediments that would otherwise be flushed downstream.

PROPOSED ACTION

The objective of this project is to create a channel migration zone that will allow the creek to adjust more naturally to sediment inputs, but will encourage the creek to remain consolidated in a single channel, thereby improving kokanee passage success and reducing stranding. This will be achieved by excavating a small channel and flood plain bench, and installing natural anchor points along its length to promote the formation and retention of scour pools and to retain spawning-size gravels for adult kokanee salmon. Non-native plants will be removed and native riparian species will be replanted along the banks and floodplain.

Further project scoping and design work should include an assessment of the extent and rate of the channel re-establishing itself on its own through the aggrading reach and the effectiveness of human intervention to stabilize and expedite that process.

EXPECTED BENEFITS

The project will provide the following benefits: 1) increase the amount of available spawning habitat within the project area; 2) improve upstream passage to high quality spawning habitat above the project area in conjunction with the barrier removal project;; and 3) replace non-native invasive species with native riparian species that will support the natural aquatic and riparian ecological functions and hydro-geomorphology of the creek. Furthermore, this project will realize efficiencies in design and implementation by linking it with the high priority Ebright Creek kokanee passage restoration project and it will further establish an effective cooperative partnership with a landowner that supports kokanee conservation.

SELECTION CRITERIA SCORING MATRIX RESULTS

Category	Basic Question	Scoring Question	Score	Justification
Location	In which stream and reach is the project located? What is the historical and current significance for kokanee and/or Chinook?	What is the historical and current significance of the site for **kokanee**?	10	One of the 3 most important streams for kokanee; documented historical and current spawning; focus of supplementation efforts.
		What is the historical and current significance of the site for **Chinook**?	3	Unlikely to be used by Chinook for spawning; may be some use of the mouth of the creek by juveniles.
Limiting Factors	Would the project address specific limiting factors?	How well does the project address factors limiting **kokanee**?	7	Low gradient, braided channels and sheet flow through this reach may limit upstream kokanee passage and lead to stranding.
		How well does the project address factors limiting **Chinook**?	1	Chinook are not known to use this stream
Watershed Context and Condition	Is project success dependent on conditions elsewhere in the watershed?	Do surrounding land uses and/or management strategies lead to constraints (or opportunities) for the proposed restoration? Examples: water quality, sediment, flow regime, fish access, riparian vegetation	7	Immediately upstream of this reach is the barrier removal project. Downstream passage is not currently blocked but goes through parallel culverts under ELS parkway
		Who owns project area and is long-term protection ensured?	8	Private ownership, supportive of project
		Who owns neighboring parcels? What land uses occur upstream and/or downstream that could be affected by restoration? What risks do those uses pose to the site now and in the future?	7	Neighboring parcels are also privately owned. No guarantee of future protection
Costs	How expensive will proposed action be? What is the likelihood for funding?	What is the order of magnitude cost estimate?	8	Rough estimate of total project cost =$50-$100K
		Are matching funds available?	6	Local groups and/or landowner contributions may be available.
		Are specific grants or appropriations in mind that would be likely to fund this type of project?	6	Yes, these types of stream habitat enhancements have been funded in the past.
Socio-Political	What other considerations will determine feasibility of implementation?	Does the project have public support and/or support from the local jurisdiction?	6	This project would be an add-on to the high priority barrier removal which is well known amongst KWG members and city reps.
		Does the project have landowner support?	10	Yes. Landowner (Wally Pereyra) has been supportive of the idea.
		Does the project utilize or create public access?	2	No. Project is on private property

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