
EAST FORK ISSAQUAH CREEK THIRD AVE NE & NE CREEK WAY

Location:	East Fork of Issaquah Creek (tributary to Issaquah Creek), City of Issaquah, King County, WA. WRIA 8.
Proposed Action:	Install a log weir to create a plunge pool and locally dissipate the energy of high flows. Reconnect flood plain, create side channel habitat, and soften armored banks where possible to slow flood flows and improve habitat.
Species Benefiting:	Chinook, kokanee, coho, cutthroat



Kokanee/Chinook Restoration Feasibility Assessment in the Sammamish Watershed

Map K - East Fork Issaquah Creek - Third Ave NE and NE Creek Way Habitat Enhancement Project



11810 North Creek Parkway N
Bothell, WA 98011

Project 0-915-17013-0

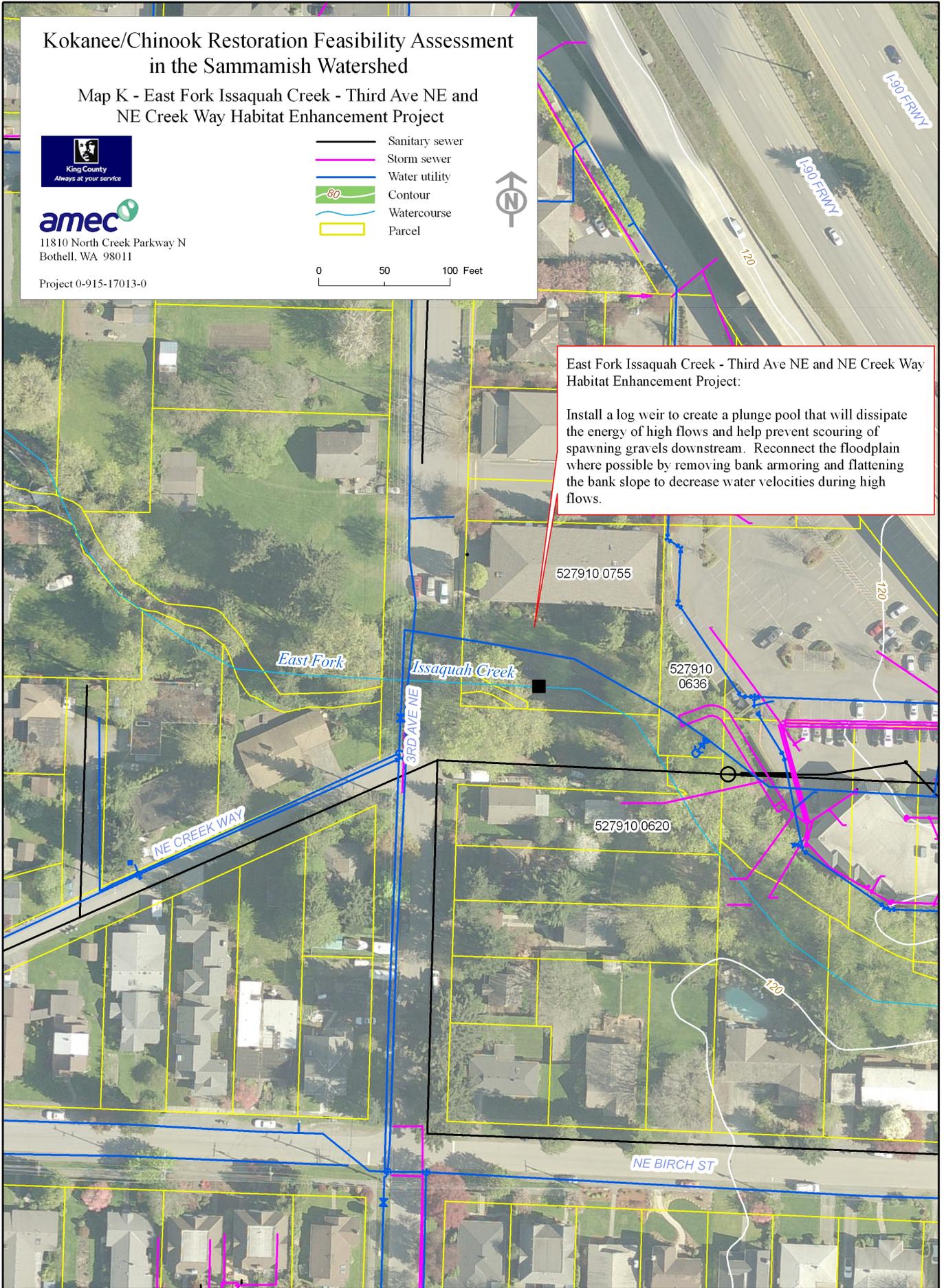
- Sanitary sewer
- Storm sewer
- Water utility
- Contour
- Watercourse
- Parcel



0 50 100 Feet

East Fork Issaquah Creek - Third Ave NE and NE Creek Way Habitat Enhancement Project:

Install a log weir to create a plunge pool that will dissipate the energy of high flows and help prevent scouring of spawning gravels downstream. Reconnect the floodplain where possible by removing bank armoring and flattening the bank slope to decrease water velocities during high flows.



SITE BACKGROUND

The East Fork of Issaquah Creek flows from West Tiger Mountain down along the Interstate 90 corridor and then into the City of Issaquah, where it joins the mainstem of Issaquah Creek. Within the city, the creek flows under the junction of E Sunset Way and I-90 and then northwest through high-density residential and urban areas. In this reach, the channel is constricted between armored banks which were installed to protect infrastructure and private property from flood damage. Bank armor consists of a mix of rip rap, gabions, or concrete, and the channel substrate is embedded coarse cobble and gravel. Suitable spawning gravels apparently are not retained in the channel because the constrictions caused by the bank armoring and the lack of connected floodplain areas cause high flow velocities in the creek during storm events. The development of impervious areas within the basin could cause higher peak streamflows during storms, which would also flush smaller gravels downstream.

Third Avenue NE crosses the East Fork via a small footbridge near the eastern terminus of NE Creek Way. Upstream of this bridge, the creek runs between residential backyards on the left bank and office and apartment buildings on the right bank. On both sides of the creek, the riparian zone consists of landscaped lawns that extend down to the rip rap banks. The stream bed consists primarily of large cobble substrate.

This reach has been referred to as Reach 2 in the WRIA 8 Chinook Recovery Plan and as project sites 51 through 55 in the City of Issaquah Stream and Riparian Areas Restoration Plan (The Watershed Company, 2006).

IMPORTANCE FOR KOKANEE AND/OR CHINOOK POPULATIONS

The East Fork of Issaquah Creek is used by both wild and straying hatchery origin Chinook salmon for spawning and rearing.

Kokanee are not known to currently use the creek, although spawner surveys have been limited in recent years. Historically, the Issaquah Creek watershed supported the early run of kokanee, but this run is now believed to be extinct. The upper reaches of this watershed still hold promise as potential kokanee restoration sites, especially if developed in conjunction with the emergency supplementation program, which could provide a source of local origin fry.

Coho salmon and cutthroat trout would also benefit from efforts to restore the stream to a more natural morphology.

LIMITING FACTORS

The problems within the short project reach are typical of the rest of the East Fork below I-90: the creek is highly constrained by armored banks, has no connection to the floodplain, and has very little in-channel structure or pool habitat. The flashy nature of the creek's hydrograph causes spawning gravel to be scoured out and transported downstream, leaving a stream bed composed of boulder and cobble size substrates, with finer sandy sediments getting embedded in between the coarser materials during low flow periods.

PROPOSED ACTION

This project will install in-stream habitat features to increase roughness and dissipate energy of high flows and create pool habitat that allows upstream migrating fish to rest and recover between long riffle sections. Where possible, bank armoring will be removed and replaced with natural features such as large wood matrices or boulders that will increase habitat complexity.

We propose installing a log weir and plunge pool upstream of the footbridge. The weir would be V-shaped with the narrow part upstream and the two arms extending at angles toward the banks. At low flow the thalweg would continue straight along its current course between the two log structures. During high flow events, the stream would flow across an increasingly large portion of the logs and drop into a plunge pool, thus allowing the inertia to be redirected down into the stream bed and reduce the bank erosional forces downstream. The weir drop would be designed according to fish passage criteria (10" drop maximum for kokanee). With property acquisitions, side channels upstream or downstream of the weir could be created, which would provide refuge under high flows and rearing areas under low flow conditions.

Banks impacted by construction and where landowner support is available will be planted with native riparian species to provide shade and cover for both adult and juvenile salmonids.

EXPECTED BENEFITS

This project is one of many that is needed to address the limiting factors on the East Fork Issaquah Creek. It will provide localized slower water velocities during high flows and help retain fine gravels at the project site. It will improve habitat diversity, allowing adults a place to rest during upstream migration and juveniles a foraging area and a refuge from predators.

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 ?	6	Used historically by early-run kokanee
		What is the historical and current significance of the site for Chinook ?	10	EF is tributary to the primary Chinook stream in the Sammamish Basin
Limiting Factors	Would the project address specific limiting factors?	How well does the project address factors limiting kokanee ?	5	Limited info on what is currently limiting kokanee in Issaquah Creek.
		How well does the project address factors limiting Chinook ?	9	Project would create pools, retain spawning gravels, and dissipate energy of scouring flows
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	8	Site is on a heavily impacted reach; benefits will be mostly local
		Who owns project area and is long-term protection ensured?	5	Private business - unknown level of support
		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?	6	Private residential - unknown level of support
Costs	How expensive will proposed action be? What is the likelihood for funding?	What is the order of magnitude cost estimate?	8	Rough estimate: \$90K, depending on size of reach
		Are matching funds available?	3	Maybe, but none at this time
		Are specific grants or appropriations in mind that would be likely to fund this type of project?	7	Local landowner partnership or recovery funding
Socio-Political	What other considerations will determine feasibility of implementation?	Does the project have public support and/or support from the local jurisdiction?	7	East Fork projects supported in recovery plan but not specific locations
		Does the project have landowner support?	3	Landowners not yet contacted
		Does the project utilize or create public access?	2	No, but could be a demonstration project - visible from public footbridge

