



INFORMATIONAL MEMORANDUM

TO: **Transportation and Infrastructure Committee**
 FROM: **Henry Hash, Public Works Director** *H.H.*
 BY: **Mike Perfetti, Habitat Project Manager**
 CC: **Mayor Ekberg**
 DATE: **April 3, 2020**
 SUBJECT: **Gilliam Creek Fish Barrier Removal**
Project No. 99830105
Grant Application

ISSUE

Authorize the submittal of grant applications to Recreation and Conservation Office (RCO), the King County Flood Control District (Cooperative Watershed Management funds) and other future grants that become available for the Gilliam Creek Fish Barrier Removal Project.

BACKGROUND

The primary goals of the Gilliam Creek Fish Barrier Removal Project are to restore fish passage between Gilliam Creek and the Green River, restore salmon habitat, and maintain or improve flood protection. The current 108" flapgate would be removed and replaced with flood protection more suitable to fish passage.

DISCUSSION

In 2018, the City and NHC consultants completed three conceptual alternatives (see attached). Staff initially preferred Option 2, the middle-of-the road option, as it appeared to meet project goals within a reasonable budget. However, after review by both the State Fish Barrier Removal Board (FBRB) and the Salmon Recovery Funding Board (SRFB), both granting agencies indicated the willingness to only fund a modified version of Option 3, with a flood wall rather than a self-regulating tide gate.

	Estimated Design Cost	Estimated Construction Costs
Option 2	\$390,000	\$1,800,000
Option 3*	\$1,800,000	\$6,000,000

* Modified Option 3 has not been estimated

WRIA 9 has selected to support this project to support within its current cycle of allocated SRFB and CWM funds. Following the initial review, FBRB will be inviting select proponents to submit a grant application via RCO.

FISCAL IMPACT

A 15% match is required for the SRFB and FBRB grants. There is no match requirement for CWM. The intent is to use all grants to match one another, wherever possible. The Gilliam Creek Fish Barrier Removal Project currently has \$554,000 budgeted in design with \$324,000 in grant funding and \$229,000 in Surface Water funding.

RECOMMENDATION

Staff recommends seeking feasibility and design funding for modified Option 3, and Committee approval to submit grant applications for RCO, CWM, and other funding sources for the Gilliam Creek Fish Barrier Removal Project

Attachments: 2019 CIP, Pg. 99

Gilliam Creek Fish Barrier Removal Feasibility Analysis and Conceptual Design, NHC, 2018

CITY OF TUKWILA CAPITAL PROJECT SUMMARY

2019 to 2024

PROJECT: Gilliam Creek Fish Barrier Removal Project No. 99830105

DESCRIPTION: Construct fish passage improvements at existing flap gate location and replace/modify the flap gate which may include a self-regulating tide gate.

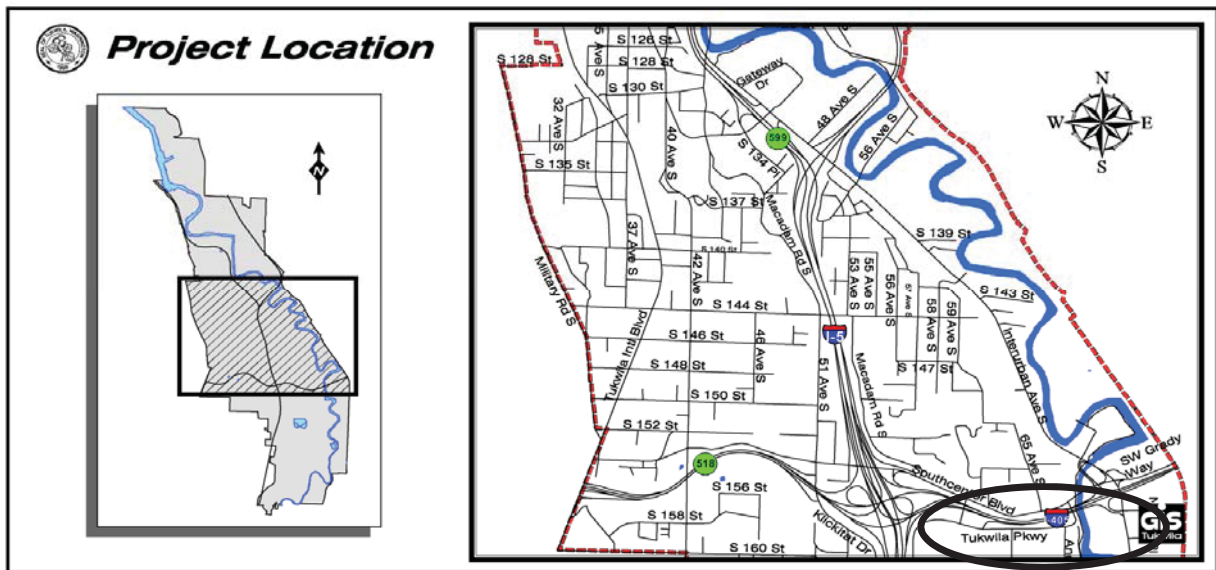
JUSTIFICATION: Enable fish access to lower Gilliam Creek under wider range of flow conditions.

STATUS: Analysis of lower Gilliam Creek is being conducted in 2018 to determine the best solution for fish passage and to address potential flooding.

MAINT. IMPACT: Expected to have an increase in monitoring/maintenance.

COMMENT: Grant proposals to State RCO and KC Flood Control District.

FINANCIAL (in \$000's)	Through		Estimated							BEYOND	TOTAL
	2017	2018	2019	2020	2021	2022	2023	2024			
EXPENSES											
Design	39	22		554						110	725
Land (R/W)											0
Monitoring								15	15	15	45
Const. Mgmt.					200	200				85	485
Construction					1,000	1,000				550	2,550
TOTAL EXPENSES	39	22	0	554	1,200	1,200	15	15	760	3,805	
FUND SOURCES											
Awarded Grant											0
Proposed Grant				325	1,020	1,020				500	2,865
Mitigation Actual											0
Mitigation Expected											0
City Oper. Revenue	39	22	0	229	180	180	15	15	260	940	
TOTAL SOURCES	39	22	0	554	1,200	1,200	15	15	760	3,805	



**GILLIAM CREEK FISH BARRIER REMOVAL
FEASIBILITY ANALYSIS AND CONCEPTUAL DESIGN**

Prepared for:

City of Tukwila
Washington

Prepared by:

Northwest Hydraulic Consultants Inc.
Tukwila, Washington

August 16, 2018

NHC Ref. No. 002002976

1 BACKGROUND

Gilliam Creek is a spring-fed creek that emerges from the City of Tukwila’s (City’s) hillside neighborhoods situated between I-5 and Sea-Tac Airport (Figure 1). It is an urban stream, flowing among a network of roadways past the commercial hub of Tukwila’s Southcenter Mall and into the Green River. The lower reach of the creek flows parallel to Interstate 405 before crossing under 66th Avenue S and discharging to the Green River through a 108-inch diameter top-hinge flap gate. Several species of anadromous fish, including Coho salmon, Chinook salmon, and sea-run cutthroat trout, are reported to make use of the lower reach of Gilliam Creek. Access for fish to Gilliam Creek is severely hampered by the flap gate (Photo 1) and splash pad. The City desired an alternatives analysis for the removal or modification of the flap gate to increase fish access into the creek, while maintaining or improving existing flood protection. Alternatives were to also address recreational, aesthetic, and educational opportunities associated with the adjacent Green River Trail and trailside park area, and constraints including adjacent commercial properties, local roads, and I-405.

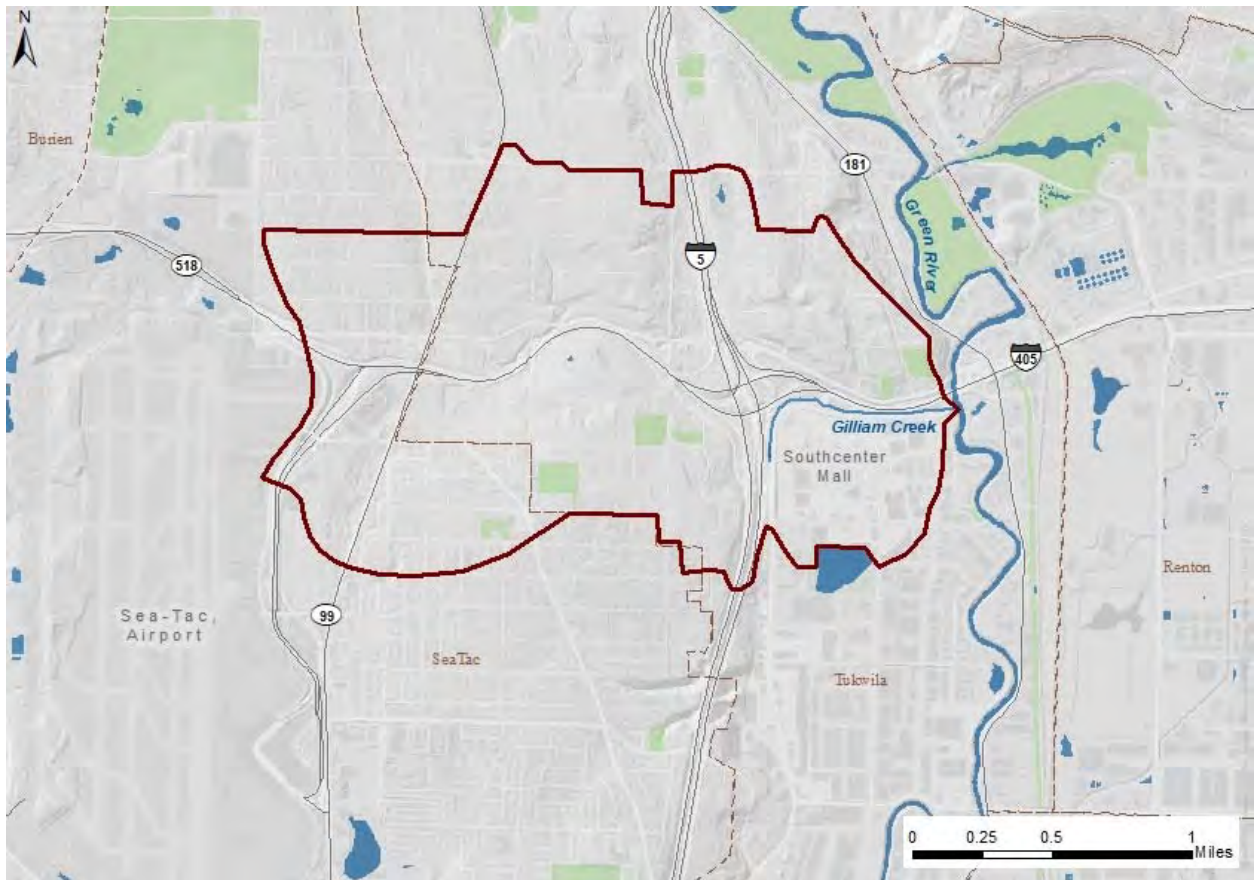


Figure 1. Location map (approximate watershed boundary shown with dark red line).



Photo 1. Existing Gilliam Creek flap gate, wing walls, and splash pad.

Millions of juvenile Chinook salmon pass by the mouth of Gilliam Creek each spring. These fish originate at the State’s Soos Creek hatchery, as well as from natural production throughout the Green River Basin: the hatchery alone releases approximately 300,000 yearling and 3.2 million subyearling Chinook salmon each year. Estuarine habitats are important to juvenile Chinook in part as a transition zone between fresh and salt water, but also as rearing habitat where significant growth occurs. However, Duwamish (Green River) Estuary habitat has been largely eliminated to make way for urbanization and industrialization of the Seattle Metropolitan Area. Without available estuary habitat, smaller creeks and creek mouths, including Gilliam Creek, take on an added significance and importance for rearing juvenile Chinook. In recent years, research has indicated a strong propensity for juvenile Chinook salmon to enter and rear at the mouths and in lowermost sections of small streams. This is true both for small streams leading to larger freshwater environments such as Lake Washington (Tabor et al., 2006), as well as those discharging directly into Puget Sound (Beamer et al., 2013).

The greatest opportunity for assisting with the recovery of listed fish species at Gilliam Creek is to increase short-term rearing opportunities for downstream-migrant juvenile Chinook salmon by improving access to existing habitat as well as improving habitat quality.



Photo 5. Trash rack and debris at the inlet of the 66th Avenue S culvert.



Photo 6. Looking upstream from near the 66th Avenue S culvert inlet.



Figure 4. Option 2 Daylight at Trail vignette.



Figure 5. Option 3 Daylight at 66th Avenue S vignette.

3.3 Permitting

Each design option was evaluated based on which city, state, or federal permits might be required, as well as Tribe consultation, and for each agency whether the specific design aspects of the project will benefit or make more complete the permitting process. This assessment is tabulated in Table 2 and Table 3.

3.4 Cost Estimates

Table 1 summarizes the planning level cost estimates for the three alternatives. Cost for the floodplain restoration upstream of 66th Avenue S is the same for all options and is listed as so in the table; however, the design concept is slightly different at 66th Avenue S for the flow control structure there in Option 3. Since that flow control is necessary regardless of whether the upstream floodplain is restored or not, the cost of that structure is lumped with the main Option 3 cost. All three options assume a 30% contingency cost.

Table 1. Summary of cost estimates (rounded to two significant digits).

Option 1 – Retrofit Existing Culvert	Estimated Cost
Main project cost	\$ 290,000
Floodplain restoration upstream of 66 th Avenue S	\$ 270,000
Total for concept design	\$ 560,000
Option 2 – Daylight at Trail	Estimated Cost
Main project cost	\$ 1,000,000
Floodplain restoration upstream of 66 th Avenue S	\$ 270,000
Total for concept design	\$ 1,300,000
Option 3 – Daylight at 66th Avenue S	Estimated Cost
Main project cost	\$ 5,700,000
Floodplain restoration upstream of 66 th Avenue S	\$ 270,000
Total for concept design	\$ 6,000,000

4 EVALUATION

The project alternatives were evaluated with their ability to meet the five metrics established for the project (Section 3.1) and are summarized in Table 4.

5 SUMMARY

Gilliam Creek is a spring-fed creek that emerges from the City’s hillside neighborhoods. Several species of anadromous fish, including Coho salmon, Chinook salmon, and sea-run cutthroat trout, are reported to make use of the lower reach of Gilliam Creek and millions of juvenile Chinook salmon pass by the mouth of Gilliam Creek annually. However, fish access to Gilliam Creek is severely hampered by a flap gate and splash pad at the confluence with the Green River.

Option 1 is the simplest of the three, retrofitting the existing flap gate with an SRT, that would significantly increase the time duration of a connection between Gilliam Creek and the Green River. A roughened channel between the MTR and the Green River would also improve accessibility to Gilliam Creek. Option 2 is similar in design to Option 1, except adds an approximate 20’ bridge crossing over the creek and replaces approximately 30 feet of the existing culvert with a roughened channel, v. Option 1 where the roughened channel is added at the end of the existing culvert. Both Options 1 and 2 include approximately 300’ of restored stream channel and floodplain upstream of 66th Avenue S. The third option, the most complex of the three, includes this same restored floodplain area, replaces the entire existing culvert, and reroutes the creek through both a new bridge crossing underneath 66th Avenue S and through new additional added habitat in a widened Green River overbank area.

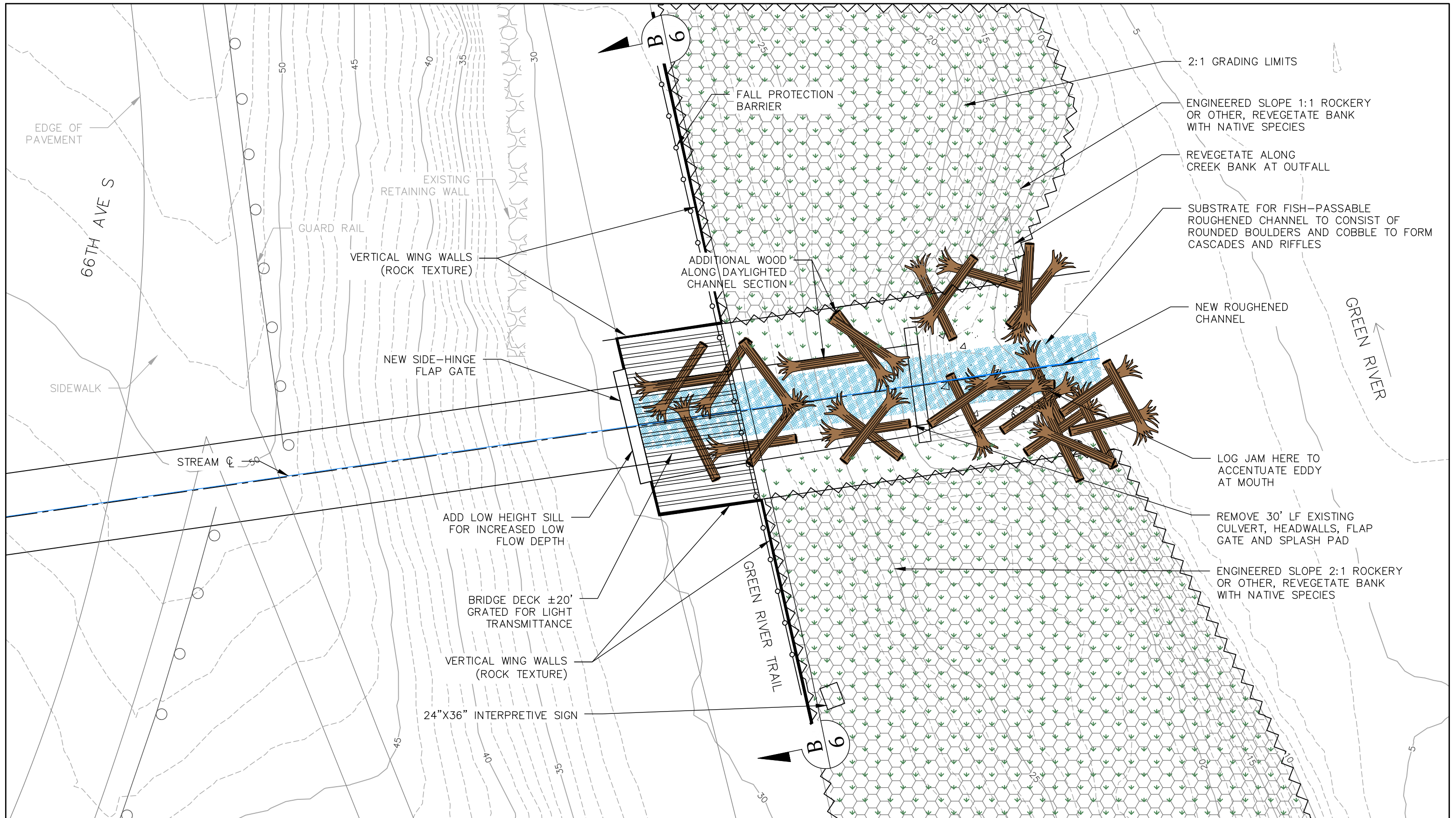
All three options meet the five evaluation criteria (Table 5). Options 1 and 2 are similar in how they meet the objectives, except Option 2 includes more aesthetic and educational features. Option 3, compared to Options 1 and 2, provides much more fish friendly access to Gilliam Creek including complete replacement of the existing culvert with a restored channel, adding additional habitat along the bank of the Green River, and creating a much more aesthetic environment for trail users.

Table 5. Simplified evaluation of how options meet objectives

Objectives	Concept Design*		
	Option 1 Retrofit Existing	Option 2 Daylight at Trail	Option 3 Daylight at 66th
Improve fish passage into Gilliam Creek	G	G	E
Improve Green River and/or Gilliam Creek fish habitat	G	G	E
Maintain or improve flood protection	E	E	E
Add aesthetic, recreational and educational features	F	G	E
Limit permitting complexity	G	G	G

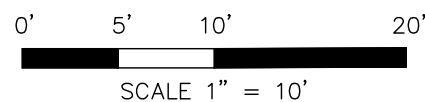
*Assumes all options include the restored channel and floodplain upstream of 66th Avenue S.

Relative simplified ranking: E Excellent G Good F Fair



CITY OF TUKWILA
 6300 SOUTHCENTER BLVD. SUITE 100
 TUKWILA, WA 98188

nhc
 northwest hydraulic consultants
 12787 gateway drive south
 tukwila, washington 98168-3308
 phone: (206) 241-6000
 fax: (206) 439-2420

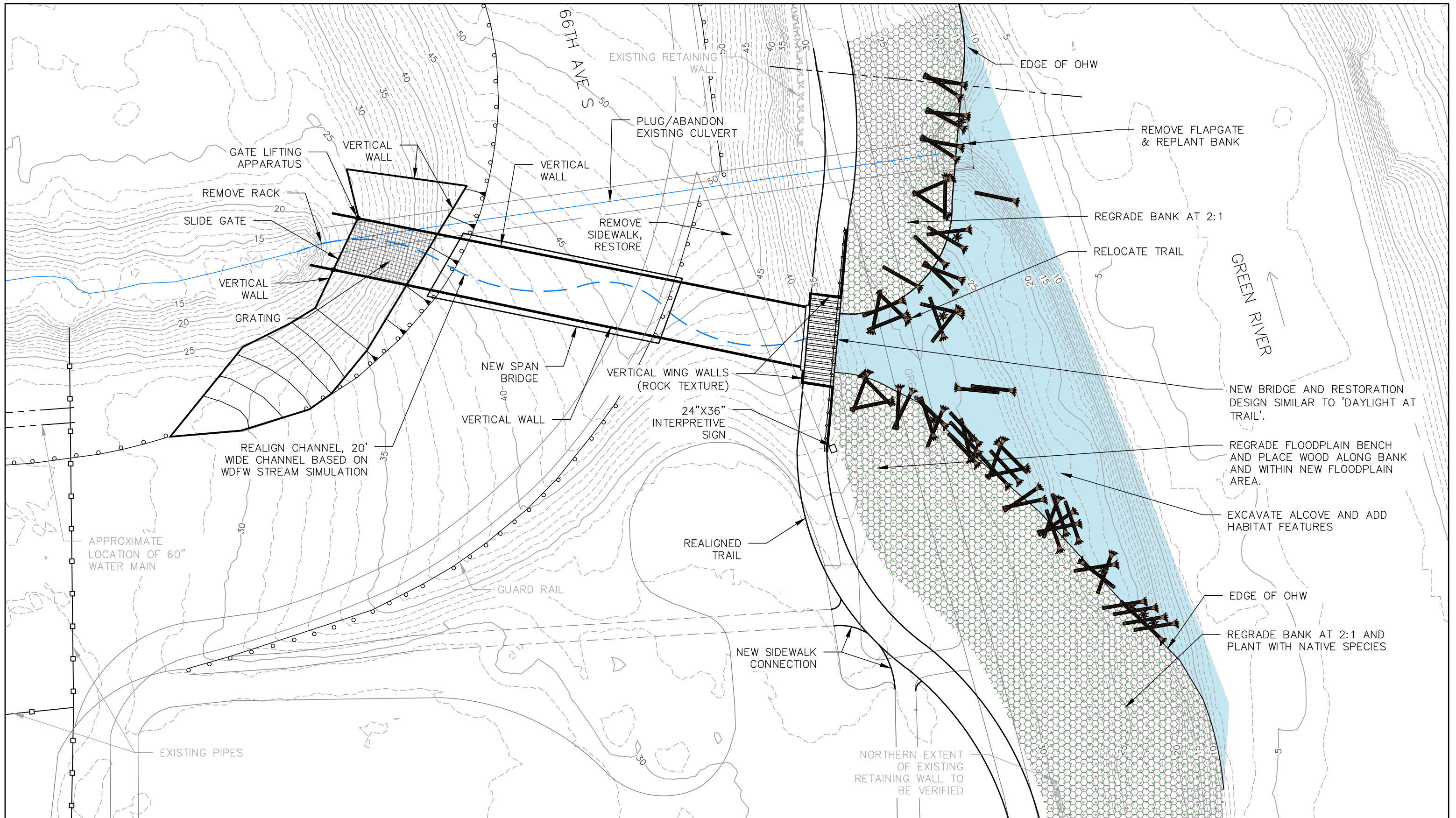


Job: 2002976
 Rev: 7
 Drft: MAO
 Chkd:
 Date: 15Aug18

GILLIAM CREEK FISH BARRIER REMOVAL

OPTION 2: DAYLIGHT AT TRAIL
CONCEPT DESIGN

SHEET 2
 26



CITY OF TUKWILA
 6300 SOUTHCENTER BLVD. SUITE 100
 TUKWILA, WA 98188

nhc
 northwest hydraulic consultants
 12787 gateway drive south
 tukwila, washington 98168-3308
 phone: (206) 241-6000
 fax: (206) 439-2420



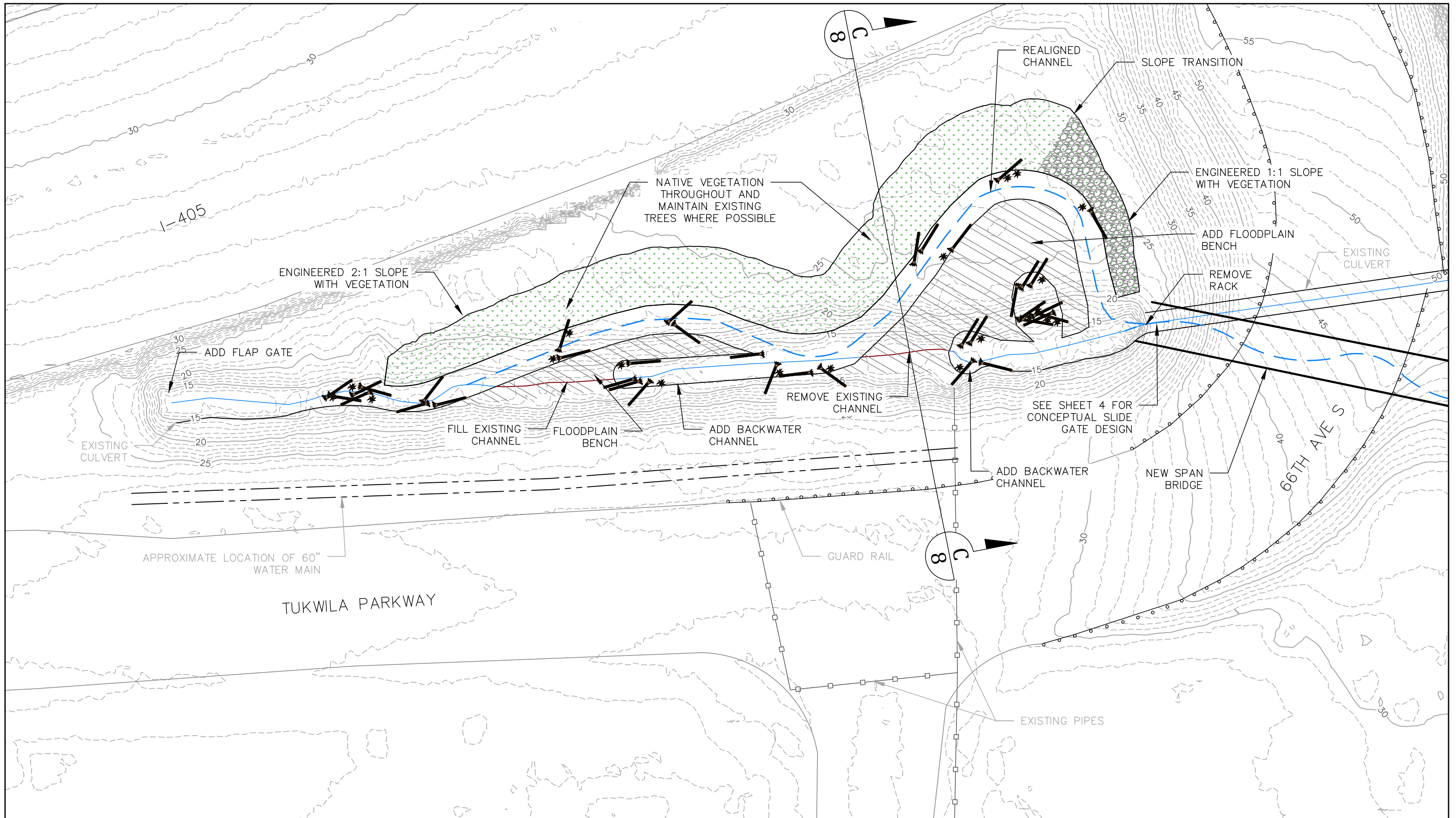
0' 15' 30' 60'
 SCALE 1" = 30'

Job: 2002976
 Rev: 7
 Drft: MAO
 Chkd:
 Date: 15Aug18

GILLIAM CREEK FISH BARRIER REMOVAL

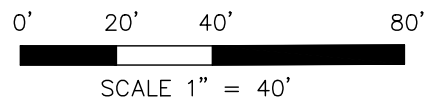
OPTION 3: DAYLIGHT AT 66TH AVE
 CONCEPT DESIGN

SHEET 4
 26



CITY OF TUKWILA
 6300 SOUTHCENTER BLVD. SUITE 100
 TUKWILA, WA 98188

nhc
 northwest hydraulic consultants
 12787 gateway drive south
 tukwila, washington 98168-3308
 phone: (206) 241-6000
 fax: (206) 439-2420



Job: 2002976
 Rev: 7
 Drft: MAO
 Chkd:
 Date: 15Aug18

GILLIAM CREEK FISH BARRIER REMOVAL
 OPTION 3: FLOODPLAIN RESTORATION
 (WITH NEW SPAN BRIDGE FOR
 DAYLIGHT AT 66TH ALTERNATIVE)

SHEET 7
 27