



INFORMATIONAL MEMORANDUM

TO: Transportation and Infrastructure Services Committee
FROM: Hari Ponnekanti, Public Works Director/ City Engineer
BY: Joshua Hopkins, Surface Water Project Manager
CC: Mayor Allan Ekberg
DATE: June 3, 2022
**SUBJECT: Gilliam Creek Fish Barrier Removal and Habitat Enhancement
Project No. 99830105
Engineering and Design Consultant Selection and Agreement**

ISSUE

Approve a contract with Otak to provide engineering and design services for the Gilliam Creek Fish Barrier Removal and Habitat Enhancement project in the amount of \$364,014.82.

BACKGROUND

The Gilliam Creek Fish Barrier Removal and Habitat Enhancement project was established as a City CIP project in 2019, it is a priority project with Water Resource Inventory (WRIA) 9 and the Salmon Recovery Fund Board. The primary goals of this project are to restore fish passage between Gilliam Creek and the Green River, enhance habitat, and maintain or improve flood protection. This contract will analyze three alternatives and establish the basis for developing a preferred alternative that will move forward to full design.

ANALYSIS

A Request for Proposals (RFP) for engineering and design services was advertised in the Daily Journal of Commerce and Seattle Times. Two firms submitted proposals. The proposals were scored according to predefined criteria by a selection committee. Otak’s proposal was the highest-ranking among committee members. The City has contracted with Otak for engineering and design services for the Riverton Creek Flap Gate Removal project and is currently under contract for the Stormwater Management Action Plan (SMAP). Staff have had positive experience and continue to be very satisfied with Otak’s work.

FISCAL IMPACT

Otak has provided a cost not to exceed \$364,014.82 to perform engineering and design services. The project costs are within the CIP 2021-2023 biennium budget. The City has also secured \$600,000.00 in grant funding from the King County Recreation and Conservation Office and King County Flood Control District. The received grants are sufficient to cover the costs of this contract.

	<u>Cost Estimate</u>		<u>2021-2023 Design Budget</u>
Design Contract	\$ 330,622.00	Grant Funding	\$600,000.00
Sales Tax (10.1%)	<u>33,392.82</u>		
Total	\$ 364,014.82		

RECOMMENDATION

Council is being asked to approve a consultant agreement with Otak in the amount of \$364,014.82 for engineering and design services for the Gilliam Creek Fish Barrier Removal and Habitat Enhancement project and consider this item on the Consent Agenda at the June 13, 2022, Special Council Meeting.

Attachments: 2021 CIP, page 85
Consultant Agreement & Exhibits

CITY OF TUKWILA CAPITAL PROJECT SUMMARY

2021 to 2026

PROJECT: Gilliam Creek Fish Barrier Removal Project No. 99830105

DESCRIPTION: Construct fish passage improvements at existing flap gate and restore salmonid habitat; replace flap gate which may include a self-regulating tide gate or flood wall.

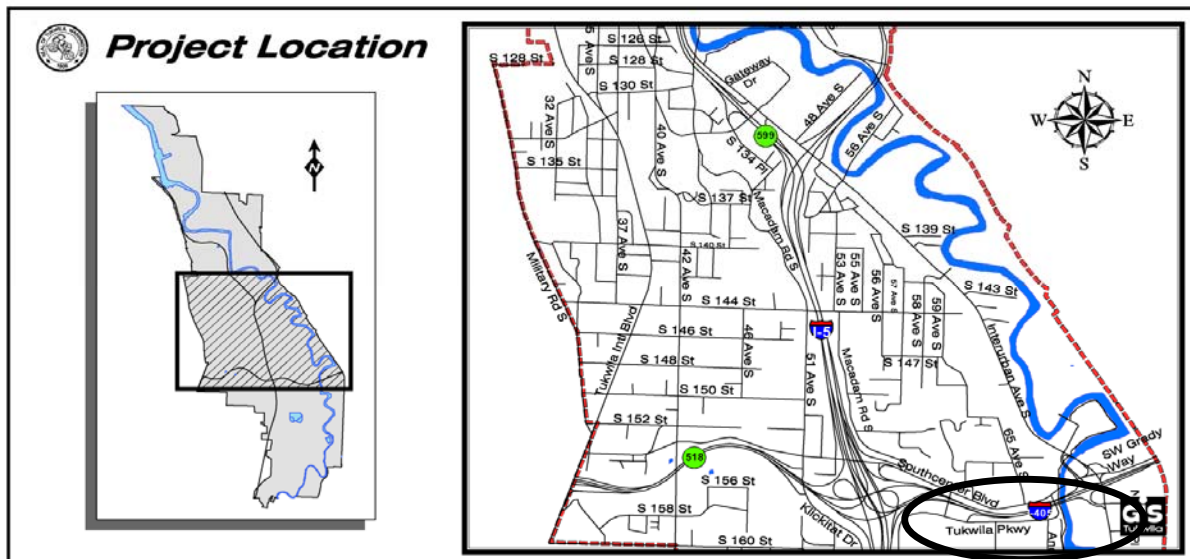
JUSTIFICATION: Enable fish access to lower Gilliam Creek under wider range of flow conditions; fish barrier per WDFW and City; WRIA 9 salmon habitat project.

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: Likely a shift in maintenance commitments with potential elimination of flapgate maintenance.

COMMENT: In 2020, SRFB listed as Project of Concern, WRIA pulling funding from this cycle; BA Fish Barrier Board - scored 63 of 94; outcomes yet to be determined; \$100K allocated in CWM via WRIA 9.

FINANCIAL (in \$000's)	Through		Estimated							BEYOND	TOTAL
	2019	2020	2021	2022	2023	2024	2025	2026			
EXPENSES											
Design	60		936	536	405						1,937
Land (R/W)											0
Monitoring											0
Const. Mgmt.						752	400				1,152
Construction						5,200	2,000				7,200
TOTAL EXPENSES	60	0	936	536	405	5,952	2,400	0	0	10,289	
FUND SOURCES											
Awarded Grant											0
Proposed Grant			708	350	258	4,760	1,000				7,076
Mitigation Actual											0
Mitigation Expected											0
City Oper. Revenue	60	0	228	186	147	1,192	1,400	0	0		3,213
TOTAL SOURCES	60	0	936	536	405	5,952	2,400	0	0	10,289	





PROFESSIONAL SERVICES AGREEMENT

(Includes consultants, architects, engineers, accountants, and other professional services)

THIS AGREEMENT is entered into between the City of Tukwila, Washington, hereinafter referred to as “the City”, and OTAK, Inc., hereinafter referred to as “the Consultant”, in consideration of the mutual benefits, terms, and conditions hereinafter specified.

1. **Project Designation.** The Consultant is retained by the City to perform engineering and design services in connection with the project titled Gilliam Creek Fish Barrier Removal and Habitat Enhancement.
2. **Scope of Services.** The Consultant agrees to perform the services, identified on Exhibit “A” attached hereto, including the provision of all labor, materials, equipment and supplies.
3. **Duration of Agreement; Time for Performance.** This Agreement shall be in full force and effect for a period commencing upon execution and ending March 31, 2023, unless sooner terminated under the provisions hereinafter specified. Work under this Agreement shall commence upon written notice by the City to the Consultant to proceed. The Consultant shall perform all services and provide all work product required pursuant to this Agreement no later than March 31, 2023 unless an extension of such time is granted in writing by the City.
4. **Payment.** The Consultant shall be paid by the City for completed work and for services rendered under this Agreement as follows:
 - A. Payment for the work provided by the Consultant shall be made as provided on Exhibit “B” attached hereto, provided that the total amount of payment to the Consultant shall not exceed \$330,622.00 without express written modification of the Agreement signed by the City.
 - B. The Consultant may submit vouchers to the City once per month during the progress of the work for partial payment for that portion of the project completed to date. Such vouchers will be checked by the City and, upon approval thereof, payment shall be made to the Consultant in the amount approved.
 - C. Final payment of any balance due the Consultant of the total contract price earned will be made promptly upon its ascertainment and verification by the City after the completion of the work under this Agreement and its acceptance by the City.
 - D. Payment as provided in this section shall be full compensation for work performed, services rendered, and for all materials, supplies, equipment and incidentals necessary to complete the work.
 - E. The Consultant’s records and accounts pertaining to this Agreement are to be kept available for inspection by representatives of the City and the state of Washington for a period of three (3) years after final payments. Copies shall be made available upon request.

5. **Ownership and Use of Documents.** All documents, drawings, specifications and other materials produced by the Consultant in connection with the services rendered under this Agreement shall be the property of the City whether the project for which they are made is executed or not. The Consultant shall be permitted to retain copies, including reproducible copies, of drawings and specifications for information, reference and use in connection with the Consultant's endeavors. The Consultant shall not be responsible for any use of the said documents, drawings, specifications or other materials by the City on any project other than the project specified in this Agreement.
6. **Compliance with Laws.** The Consultant shall, in performing the services contemplated by this Agreement, faithfully observe and comply with all federal, state, and local laws, ordinances and regulations, applicable to the services rendered under this Agreement.
7. **Indemnification.** The Consultant shall defend, indemnify and hold the City, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or resulting from the acts, errors or omissions of the Consultant in performance of this Agreement, except for injuries and damages caused by the sole negligence of the City.

Should a court of competent jurisdiction determine that this Agreement is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Consultant and the City, its officers, officials, employees, and volunteers, the Consultant's liability hereunder shall be only to the extent of the Consultant's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the Consultant's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this Agreement.

8. **Insurance.** The Consultant shall procure and maintain for the duration of the Agreement, insurance against claims for injuries to persons or damage to property which may arise from or in connection with the performance of the work hereunder by the Consultant, its agents, representatives, or employees. Consultant's maintenance of insurance as required by the agreement shall not be construed to limit the liability of the Consultant to the coverage provided by such insurance, or otherwise limit the City's recourse to any remedy available at law or in equity.

A. **Minimum Amounts and Scope of Insurance.** Consultant shall obtain insurance of the types and with the limits described below:

1. **Automobile Liability** insurance with a minimum combined single limit for bodily injury and property damage of \$1,000,000 per accident. Automobile Liability insurance shall cover all owned, non-owned, hired and leased vehicles. Coverage shall be written on Insurance Services Office (ISO) form CA 00 01 or a substitute form providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage.
2. **Commercial General Liability** insurance with limits no less than \$2,000,000 each occurrence, \$2,000,000 general aggregate. Commercial General Liability insurance shall be at least as broad as ISO occurrence form CG 00 01 and shall cover liability arising from premises, operations, stop-gap independent contractors and personal injury and advertising injury. The City shall be named as an additional insured under the Consultant's Commercial General Liability insurance policy with respect to the work performed for the City using an additional insured endorsement at least as broad as ISO endorsement form CG 20 26.
3. **Workers' Compensation** coverage as required by the Industrial Insurance laws of the State of Washington.

4. **Professional Liability** with limits no less than \$2,000,000 per claim and \$2,000,000 policy aggregate limit. Professional Liability insurance shall be appropriate to the Consultant's profession.
- B. **Public Entity Full Availability of Contractor Limits.** If the Contractor maintains higher insurance limits than the minimums shown above, the Public Entity shall be insured for the full available limits of Commercial General and Excess or Umbrella liability maintained by the Contractor, irrespective of whether such limits maintained by the Contractor are greater than those required by this Contract or whether any certificate of insurance furnished to the Public Entity evidences limits of liability lower than those maintained by the Contractor.
- C. **Other Insurance Provision.** The Consultant's Automobile Liability and Commercial General Liability insurance policies are to contain, or be endorsed to contain that they shall be primary insurance with respect to the City. Any Insurance, self-insurance, or insurance pool coverage maintained by the City shall be excess of the Consultant's insurance and shall not be contributed or combined with it.
- D. **Acceptability of Insurers.** Insurance is to be placed with insurers with a current A.M. Best rating of not less than A:VII.
- E. **Verification of Coverage.** Consultant shall furnish the City with original certificates and a copy of the amendatory endorsements, including but not necessarily limited to the additional insured endorsement, evidencing the insurance requirements of the Contractor before commencement of the work. Upon request by the City, the Consultant shall furnish certified copies of all required insurance policies, including endorsements, required in this Agreement and evidence of all subcontractors' coverage.
- F. **Notice of Cancellation.** The Consultant shall provide the City with written notice of any policy cancellation, within two business days of their receipt of such notice.
- G. **Failure to Maintain Insurance.** Failure on the part of the Consultant to maintain the insurance as required shall constitute a material breach of contract, upon which the City may, after giving five business days notice to the Consultant to correct the breach, immediately terminate the contract or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the City on demand, or at the sole discretion of the City, offset against funds due the Consultant from the City.
9. **Independent Contractor.** The Consultant and the City agree that the Consultant is an independent contractor with respect to the services provided pursuant to this Agreement. Nothing in this Agreement shall be considered to create the relationship of employer and employee between the parties hereto. Neither the Consultant nor any employee of the Consultant shall be entitled to any benefits accorded City employees by virtue of the services provided under this Agreement. The City shall not be responsible for withholding or otherwise deducting federal income tax or social security or for contributing to the state industrial insurance program, otherwise assuming the duties of an employer with respect to the Consultant, or any employee of the Consultant.
10. **Covenant Against Contingent Fees.** The Consultant warrants that he has not employed or retained any company or person, other than a bonafide employee working solely for the Consultant, to solicit or secure this contract, and that he has not paid or agreed to pay any company or person, other than a bonafide employee working solely for the Consultant, any fee, commission, percentage, brokerage fee, gifts, or any other consideration contingent upon or resulting from the award or making of this contract. For breach or violation of this warrant, the City shall have the right to annul this contract without liability, or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift, or contingent fee.

11. **Discrimination Prohibited.** Contractor, with regard to the work performed by it under this Agreement, will not discriminate on the grounds of race, religion, creed, color, national origin, age, veteran status, sex, sexual orientation, gender identity, marital status, political affiliation, the presence of any disability, or any other protected class status under state or federal law, in the selection and retention of employees or procurement of materials or supplies.
12. **Assignment.** The Consultant shall not sublet or assign any of the services covered by this Agreement without the express written consent of the City.
13. **Non-Waiver.** Waiver by the City of any provision of this Agreement or any time limitation provided for in this Agreement shall not constitute a waiver of any other provision.
14. **Termination.**
 - A. The City reserves the right to terminate this Agreement at any time by giving ten (10) days written notice to the Consultant.
 - B. In the event of the death of a member, partner or officer of the Consultant, or any of its supervisory personnel assigned to the project, the surviving members of the Consultant hereby agree to complete the work under the terms of this Agreement, if requested to do so by the City. This section shall not be a bar to renegotiations of this Agreement between surviving members of the Consultant and the City, if the City so chooses.
15. **Applicable Law; Venue; Attorney's Fees.** This Agreement shall be subject to, and the Consultant shall at all times comply with, all applicable federal, state and local laws, regulations, and rules, including the provisions of the City of Tukwila Municipal Code and ordinances of the City of Tukwila. In the event any suit, arbitration, or other proceeding is instituted to enforce any term of this Agreement, the parties specifically understand and agree that venue shall be properly laid in King County, Washington. The prevailing party in any such action shall be entitled to its attorney's fees and costs of suit. Venue for any action arising from or related to this Agreement shall be exclusively in King County Superior Court.
16. **Severability and Survival.** If any term, condition or provision of this Agreement is declared void or unenforceable or limited in its application or effect, such event shall not affect any other provisions hereof and all other provisions shall remain fully enforceable. The provisions of this Agreement, which by their sense and context are reasonably intended to survive the completion, expiration or cancellation of this Agreement, shall survive termination of this Agreement.
17. **Notices.** Notices to the City of Tukwila shall be sent to the following address:

City Clerk
City of Tukwila
6200 Southcenter Boulevard
Tukwila, WA 98188

Notices to Consultant shall be sent to the following address:

Otak
11241 Willow Rd NE, Suite 200
Redmond, WA 98052
18. **Entire Agreement; Modification.** This Agreement, together with attachments or addenda, represents the entire and integrated Agreement between the City and the Consultant and supersedes all prior negotiations, representations, or agreements written or oral. No amendment or modification of this Agreement shall be of any force or effect unless it is in writing and signed by the parties.

DATED this _____ day of _____, 20_____.

CITY OF TUKWILA

CONSULTANT

Allan Ekberg, Mayor

By: Russell Gaston

Printed Name: Russell Gaston

Title: Principal

Attest/Authenticated:

Approved as to Form:

City Clerk, Christy O'Flaherty

Office of the City Attorney

EXHIBIT A

SCOPE OF WORK DESIGN/ENGINEERING SERVICES

City of Tukwila

Gilliam Creek Fish Barrier Removal and Habitat Enhancement Project

OTAK Project No. 20610

May 24, 2022

Introduction and Background

The City plans to develop fish passage improvements to Gilliam Creek at the confluence of Gilliam Creek and the Green River at River Mile (RM) 12.5. The site extends approximately 675 feet upstream along Gilliam Creek. The project will remove fish barriers and restore fish access to Gilliam Creek while maintaining or improving existing flood protection. This project will restore access and shoreline habitat as part of a watershed-wide effort to restore ESA-listed Chinook salmon and will be designed to allow juvenile fish access between the creek and the river, which are tidally influenced. Habitat enhancements will occur both upstream and downstream of the existing culvert. The project will also address recreational, aesthetic and educational opportunities and constraints associated with the adjacent Green River Trail and trailside park area. The project area is constrained by local roads, I-405, regional and local utilities and commercial land use.

SCHEDULE: The anticipated project schedule is to have notice to proceed in late June and preferred alternative selected in November 2022. If requested, during the Alternatives Analysis, Otak will prepare a scope amendment for 30% Design of the preferred alternative that will continue from December 2022 into early 2023.

The Scope of Services is described in detail in the following sections.

1.0 Project Management and Coordination

1.1 Coordination with City

Otak will coordinate with the City of Tukwila on a regular basis by phone and email to keep the City's project manager informed about project progress, project issues and schedule. Otak will assist in scheduling project related meetings, reviews, and other coordination activities needed to keep the project moving forward. Regular communication with the City will occur on a bi-weekly basis, and a status report will be provided to the City before each meeting summarizing the status of action items and deliverables.

1.2 Preparation of Work Plan

Otak will prepare a preliminary Work Plan prior to the project kickoff meeting. The Work Plan will define project goals and design criteria, communications, deliverables, and quality control requirements. A project schedule (MS Project) will be developed and maintained as part of the Plan. The Work Plan will be updated after the project kickoff meeting, subject to comments received. The Plan will include a Risk Register that will summarize key issues that are at risk of impacting the scope and schedule and the mitigation strategy.

1.3 Meetings

This scope assumes a total of four (4) one and a half-hour online meetings between the City and Otak attended by three (3) Otak staff. The purpose of these meetings will be to discuss Otak's initial recommendations and key project issues that will guide the design. The meetings included within this Task do not include individual meetings identified in subsequent tasks below.

1.4 Project Monitoring and Reporting

Project monitoring and reporting will include the coordination of design team members, internal project scheduling, and the preparation of a monthly progress report and a monthly billing statement.

TASK 1 DELIVERABLES

- Weekly project reports submitted to the City by email (electronic PDF file format)
- Work Plan
- Schedule Updates
- Meeting minutes for up to four key meetings during Phase I to clarify and document project decisions
- Monthly progress report and monthly invoice

TASK 1 ASSUMPTIONS

- The duration for Phase I of the project is assumed not to extend beyond March 31, 2023. Project management services for Phase II of the project will be added later under the Phase II scope.
- Project schedules and work plans will be updated every two weeks.

2.0 Intake Review

2.1 Data Review and Desktop Assessment

Otak will obtain and provide a desktop assessment and evaluation of all available information from the City regarding the existing levee system, stream, roadway, and outfall; including but not limited to GIS data, design calculations, connecting stormwater conveyance, as-built drawings, maintenance records, etc. Otak will also review the preliminary design work performed at the site by others including:

- Hydrologic Model electronic files
- Hydraulic Model electronic files (HEC-RAS)
- Topographic survey information including ACAD electronic files
- Environmental Assessment Memos

As described under Task 5 below, we assume that the previous Hydrologic Model, by others, will be adequate for design and will only require updates by Otak. If the files are not able to be imported by Otak for updating, the City will be notified of additional work required for full development of new modeling files.

2.2 Initial Site Visit

An initial site visit to the project will be conducted to visually verify the site conditions and issues identified through the desktop review. This visit will include meeting onsite with the City engineering staff and/or maintenance personnel to discuss their observations about the facilities on-site. Initial site visit will include review of site conditions such as:

- Condition of existing infrastructure such as the culvert, flap gate, headwalls, and roadway retaining wall
- Existing channel stability
- Adjacent private/public improvements that will require restoration if disturbed
- Construction access issues

- Surface evidence of existing underground utilities
- Existing topography

To maximize efficiency, we assume that the field visits and on-site meetings with City staff for this Task can be performed on the same day.

The site visit will be attended by up to four Otak staff including a Hydraulic Engineer, Structural Engineer, Wetland Ecologist, and Geomorphologist.

3.0 Environmental/Permitting Support

3.1 Wetland and Stream Delineation and Habitat Assessment Report

Otak will conduct wetland and stream delineations and stream habitat assessment within the identified project area from the Green River to the next culvert upstream of and west of 66th Avenue South. Stream habitat will be characterized to document baseline conditions to support restoration design and permitting pathways for regulatory compliance. The delineated wetland boundaries and ordinary high water (OHW) line will be marked with flagging or wire flag stakes as appropriate, and surveyed by Otak. The area for the wetland and OHW flagging will extend 150 feet upstream and downstream from the tide gate along the left bank of the Green River, and west of 66th Avenue South along Gilliam Creek up to the next culvert and between I-405 and Tukwila Boulevard.

Wetlands will be delineated using the Corps of Engineers Wetlands Delineation Manual (1987) as amended, and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains Valleys, and Coast Region (2010) as required by King County, WDFW, Ecology, and the Corps of Engineers. All delineated wetlands will be rated using the Washington State Wetland Rating System for Western Washington – 2014 Update (Ecology Publication No. 14-06-029) to classify wetlands and determine buffer widths per the City of Tukwila’s critical areas ordinance (TMC 18.45). The OHW line on the Green River and Gilliam Creek will be delineated in accordance with USACE Regulatory Guidance Letter 05-05 (Ordinary High Water Mark Identification) and Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State (Ecology 2016).

Stream habitat surveys will be conducted on Gilliam Creek to document existing conditions using methods modified from Timber, Fish, and Wildlife protocols (Schuett-Hames, et al. 1999). Quantitative and qualitative field measurements will be recorded to assess habitat unit complexity, wood quantity and dimensions, spawning gravel, pool quality, canopy cover, and channel geometry.

Otak will prepare a Wetland and Stream Delineation and Habitat Assessment Report in accordance with state and federal standards, including special flood hazard areas, wetlands, and fish and wildlife habitat conservation areas (FWHCAs).

3.2 Permitting and Environmental Review Memorandum

Otak will prepare a Permitting and Environmental Review Memorandum (PERM) based on the preliminary design for the project. The PERM will include a summary of existing conditions and describe anticipated impacts to regulated environmental areas. A regulatory compliance and permit strategy for local, state, and federal agencies will be developed to authorize future construction. The PERM will address scheduling implications and assess mitigation needs based on project impacts for mitigation planning prior to submitting applications. The PERM will also address strategies for compliance with the Endangered Species Act, Magnusson Stevens Fisheries Act, and Section 106 of the National Historic Preservation Act. Potential for a Fish Habitat Enhancement Project designation will be evaluated. This task includes coordinating with the USACE regarding the applicability of “Section 408” for work on federally authorized projects as required under the Rivers and Harbors Act of 1899.

- Surface evidence of existing underground utilities
- Existing topography

To maximize efficiency, we assume that the field visits and on-site meetings with City staff for this Task can be performed on the same day.

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3.3 Impacts Assessment for Mitigation Planning

Otak will prepare an impacts assessment based on the preferred alternative and a conceptual mitigation/restoration plan to satisfy regulatory requirements regarding no net loss of resource functions. The project design is anticipated to include stream restoration components that will be compatible with special flood hazard area standards. The conceptual mitigation plan will include a restoration analysis per permitting requirements, and is intended for internal planning purposes only. The conceptual mitigation plan will be prepared as a technical memorandum; permit application drawings are not included in this task.

On-site mitigation opportunities will be identified in the tributary corridor for the conceptual mitigation plan.

Construction in-water work methods will be incorporated, such as timing restrictions and work area isolation to minimize potential adverse impacts to aquatic resources in the tributary. The conceptual mitigation plan will document avoidance and minimization measures taken during development of the preliminary design to reduce project impacts to wetland and stream habitats.

3.4 Geomorphic Assessment

3.4.1 Background Data Collection and Review

Otak personnel will review available data and information and perform a field assessment to document existing geomorphic conditions and collect field measurements at the road crossing, in the immediate area upstream and downstream of the crossing. A suitable reference reach is not anticipated at the site due to the modified channel conditions. Otak will collect bankfull width measurements. Due to tidal influence and the tide gate at the River, the natural conditions tidal prism, and tidal channel development width will be considered when recommending a channel width.

Prior to the site geomorphic field assessment (Task 3.4.2), Otak personnel will compile and review available data and background information applicable to the crossing site. This may include information such as historical aerial photographs, Government Land Office (GLO) maps, LiDAR imaging, surficial geology, FEMA flood maps, DNR hydrography information, topographic survey, and soils information.

3.4.2 Geomorphic Field Assessment

A geomorphic field assessment will be conducted by Otak personnel. This assessment includes qualitative and/or quantitative evaluations of: bed material (type), particle size distribution (pebble counts), sediment transport setting, channel morphology, large woody material (LWM) occurrence, channel migration potential, riparian conditions, bankfull widths, beaver activity and man-made channel alterations/constraints and hydraulic controls. In addition, the reference reach will be field located, if applicable. Conditions will be evaluated upstream and downstream of the crossing, and within the reference reach.

This field data will be used to inform the:

- Bed material characteristics
- Channel geometry dimensions and bed slope
- Channel morphology
- Reach-scale channel processes including sediment sources, deposition and erosion
- Relative abundance of large and small woody material and their effects on channel stability and planform

The field conditions and assessment will be summarized in the Geomorphic Assessment Memorandum (Task 3.4.4).

3.4.3 Bankfull Width Memorandum

Otak will collect up to ten bankfull width (BFW) measurements within the project site during the geomorphic field assessment. The BFWs will be flagged in the field for subsequent location and measurement confirmation with

the agencies and Tribes. Upon completion of the field BFW collections, a draft memorandum will be prepared summarizing the BFW locations and field measurements. This memorandum will serve as the basis for the BFW site concurrence meeting and will be provided to the agencies and Tribes prior to the site visit.

Otak will facilitate the on-site meeting with the agencies and Tribes (See Task 9.2). Review and agreement of BFWs will occur during this on-site meeting. The BFW agreed upon by the agencies and Tribes during the on-site field concurrence meeting will be presented in the final BFW memorandum and incorporated into the fish passage and habitat enhancement design.

3.4.4 Geomorphic Assessment Memorandum

Otak will prepare a draft geomorphic assessment memorandum. This memorandum will summarize the existing geomorphic conditions at the site, based on the background data review and field data collection. In addition, this memorandum will provide the geomorphic recommendations to support the structure design including recommended bed material sizing, channel dimensions and planform, bed slope and large woody material. The final BFW memorandum will be attached as an appendix to this memorandum.

TASK 3.4 DELIVERABLES

- Bankfull Width Memorandum (Draft and Final, electronic PDF file format)
- Geomorphic Assessment Memorandum (Draft and Final, electronic PDF file format)

TASK 3.4 ASSUMPTIONS

- The City will request right-of-entry from property owners to perform the required field work along the tributary/stream.
- Two Otak personnel will conduct a one-day site assessment of the project area.
- Up to ten BFWs will be flagged for concurrence by the Agencies and Tribes during an on-site meeting.
- It is assumed that pebble counts will not apply due to the sand or silt dominated reaches, and streambed materials will be documented visually and photographed.
- City will provide one list of consolidated comments on the draft Geomorphic Assessment memorandum that will be addressed and incorporated into the final memorandum.

3.5 Cultural Resources (Subconsultant – Cultural Resource Consultants)

As a subconsultant to Otak, Cultural Resource Consultants (CRC), will prepare a Cultural Resources Assessment with the following components:

- CRC will conduct a search of site files recorded at Washington Department of Archaeology and Historic Preservation (DAHP); review of relevant correspondence between the project proponent, stakeholders and DAHP; and, review of pertinent environmental, archaeological, ethnographic and historical information appropriate to the project area from a variety of available resources.
- CRC will contact the cultural resources staff of tribes that may have an interest in the project area. This communication is intended to inform the cultural resources assessment and does not constitute government-to-government consultation.
- CRC will provide a field investigation of the project location for identification of archaeological and historical resources and, if necessary, excavation of shovel test probes or other exploratory excavations in environments that might contain buried archaeological deposits. Field methods will be consistent with DAHP guidelines.
- CRC will monitor during geotechnical explorations (two borings anticipated) in order to observe subsurface conditions near the proposed culvert removal.

- CRC will document and record archaeological and historic sites within the project area, including preparation of Washington State archaeological and/or historic site(s) forms. Documentation will be consistent with DAHP standards.
- CRC will prepare a technical memo describing background research, field methods, results of investigations, and management recommendations. The report will provide supporting documentation of findings, including maps and photographs, and will conform to DAHP reporting standards. Report and support materials will be provided electronically.

TASK 3 DELIVERABLES

- Wetland and Stream Delineation and Habitat Assessment Report (Draft and Final, electronic PDF file format)
- Permitting and Environmental Review Memorandum (PERM) (Draft and Final, electronic PDF file format)
- Site meeting with WDFW, Tribes, City of Tukwila, and Otak for bankfull widths and coordination, and responses to agency and tribal comments
- Memorandum documenting site meeting notes (electronic PDF file format)
- Impacts Assessment and Conceptual Mitigation Plan Memorandum (Draft and Final, electronic PDF file format)
- Cultural Resources Assessment Memorandum (Draft and Final, electronic PDF file format)

TASK 3 ASSUMPTIONS

- A final Critical Areas Report (CAR) per TMC 18.45.040 with baseline conditions, project impacts, and mitigation plan will not be completed as a part of this scope since this would be completed closer to 60 percent design.
- The City will request right-of-entry from property owners to perform the required field work.
- Documentation for compliance with the Endangered Species Act is not included in this Scope of Services.
- A SEPA Checklist for SEPA compliance is not included in this Scope of Services.
- The JARPA form or figures preparation is not included in this Scope of Services.
- This task assumes one round of review comments by the City prior to Otak finalizing the delineation and habitat assessment report, PERM, impacts and mitigation plan memorandum.
- The Impacts Assessment and Conceptual Mitigation Plan will be prepared for one design alternative, identified as the preferred alternative.
- A mitigation plan for permit applications is not included in this Scope of Services.

4.0 Topographic Survey and Basemap

4.1 Topographic Surveying and Mapping

Otak will provide topographic surveying and mapping within the project area and adjacent areas to the extents as shown on the figure in Attachment A. Within the Gilliam Creek channel area outside of the roadways, east of 66th Ave S and north of Tukwila Parkway and south of I-405, Otak will review and utilize recent WSDOT electronic survey data and incorporate into the project basemap. We assume that the WSDOT data will be adequate for topography within the channel area described above and will not require supplemental survey shots by Otak.

If the WSDOT files are not suitable for full topography within the Gilliam Creek channel area described above, the City will be notified of additional work required for full development of survey and basemap preparation within this area.

Wetland and ordinary high water flags placed by Otak in Task 3 will be surveyed.

The topographic survey requirements include the following:

- Vertical Datum: NAVD 88
- Horizontal Datum: State Plane Coordinates (Washington North Zone, NAD 83/91 adjustment)
- Contours at a maximum interval of 1'
- TIN surface
- Road centerline alignment
- Surface features:
 - Ditch centerline
 - Top/Toe of slopes
 - Channel thalweg
 - Top of bank
 - Toe of bank
 - Culvert invert elevations
 - Catch basins with pipe inverts and diameters
 - Location of all utilities and junction boxes in the project area
 - Utility poles
 - Edge of asphalt
 - Edge of gravel
 - Edge of concrete
 - Road centerline
 - Road striping
 - Vegetation including trees, shrubs, and planters.
 - Rockeries and retaining walls
 - Fences
 - Driveways
 - Mailboxes
 - Signs

Mapping shall be consistent with City of Tukwila Infrastructure Design and Construction standards.

4.2 Right-of-way Survey

Otak will prepare a right-of-way survey file based on property records review and field monuments. Property lines for those properties within the vicinity of the project will be researched. The Record of Survey and a lot closure report documenting all dimensions shown on the survey will be submitted to the City for review prior to recording. The following Items are required on the Survey:

- Found Monuments-Section/Plat/Road
- Descriptions of monuments
- Monuments looked for but not found
- Section subdivision if applicable
- Existing right-of-way centerline
- Existing right-of-way lines
- Outline and deed number for existing right-of-way deeds
- Survey note stating the history that established the right-of-way
- References
- Road name

- Road log number
- Right-of-way width
- Parcel lines of adjoining parcels (based on King County tax parcel lines unless otherwise noted)
- Name and auditor's file number of adjoining plats
- Parcel number of adjoining platted lots

TASK 4 DELIVERABLES

- Topographic Base Map (Scale 1" = 20 feet) with one-foot contour intervals (AutoCAD DWG file format)
- Existing Right-of-way CAD file (AutoCAD file format)

TASK 4 ASSUMPTIONS

- The extents of topographic survey and mapping for the stream and adjacent infrastructure are shown on Attachment A. The extents include the shoulder area of I-405 north of Gilliam Creek and west of 66th Ave A. and the 66th Ave S. roadway as indicated. The extents also include the southeast corner of the intersection of 66th Ave S. and Andover Park E and a portion of the parking lot on private property at 90 Andover Park E (Holiday Inn Express Hotel).
- The City will obtain right-of-entry for the parcels for the area of survey.

5.0 Hydrology and Hydraulics

5.1 Hydrologic Analyses

Otak will review the hydrology in the existing HSPF (Hydrologic Simulation Program Fortran) model provided by the City for Gilliam Creek at the project site location. It is assumed that the existing model includes all inputs needed for modeling the proposed stream system including precipitation, sub-catchment areas, and land use associated with the existing conditions. Otak will import the HSPF model into the Western Washington Hydrologic Model (WWHM2012) to produce a continuous time series of runoff data from the drainage basin. The continuous time series of runoff and associated peak rates will become the hydrologic input for the hydraulic analyses to be performed.

A climate resiliency calculation will be performed for the flow frequency results from the HSPF modeling effort in order to determine possible future flows for the study site. The WDFW Designing Climate Change-Resilient Culverts tool will be used to estimate the scaling factor to apply to the 100-year return period flow.

5.2 Hydrologic Documentation

Otak will prepare documentation for the hydrologic analysis that will be included in the Hydrologic and Hydraulic (H&H) memorandum. The final H&H memorandum shall be sealed by a Professional Engineer licensed in the State of Washington. The hydrologic documentation will follow the following outline:

- Annual peak flow analysis for return periods ranging from the 2-year to the 500-year.
- Seasonal peak flow analysis for a two-month (July 1 to August 31), and a three-month (July 1 to September 30) period for the purposes of determining construction bypass flows.
- Flow duration curves at select locations.
- Climate Resiliency calculation for the study site.
- Electronic files for:
 - Hydrologic models

- GIS files
- Survey files
- Model schematics

5.3 Hydraulic Modeling

5.3.1 Alternatives Analysis Modeling

A previous hydraulic analysis was conducted by others to evaluate fish passage performance of Conceptual Option 1 (Retrofit Flapgate in-place) The analysis was run utilizing the one-dimensional HEC-RAS hydraulic model for a 13-year period with observed river and simulated local inflow. A statistical analysis was performed during critical fish passage durations to account for interaction of Gilliam Creek and the Green River.

Otak will review the existing one-dimensional HEC-RAS model for the existing and proposed conditions from conceptual design, provided by the City. It is assumed that the statistical analysis to determine critical flow conditions for fish passage assessment will not be available.

Otak will perform a statistical analysis of the time series data from the NHC hydraulic analysis to develop the joint probability of flows in Gilliam Creek and stages on the Green River. This will provide a range of plausible flow scenarios for the hydraulic analysis of Riverton Creek at the confluence.

Otak will develop a proposed conditions model for an additional two proposed conceptual alternatives for comparison. The results of the models in regard to fish passage criteria will be presented in the Alternatives Analysis Matrix under Task 6.

5.3.2 Preferred Alternative Modeling

Once the preferred alternative is selected and full site topographic survey has been completed for the upstream reach and the confluence with the Green River under Task 4.2, an existing conditions model will be developed using the Federal Highway Administration (FHWA) and U.S. Bureau of Reclamation's SRH-2D software (2020). A proposed conditions model for the preferred alternative will also be developed in SRH-2D.

Steady-state inflow boundary conditions will be used based on HSPF modeled peak flows or flow duration curves, and the models will be run over a long enough simulation time to establish steady-state hydraulic grade lines.

Due to the influence of tidal conditions, downstream boundary conditions including a high tide and a low tide condition will be evaluated as a part of the hydraulic model. The evaluation will also include an estimated sea level rise downstream condition to provide an evaluation of resiliency for climate change.

The evaluation of the hydraulic conditions from existing to proposed conditions will include the change in water surface elevations, depths, velocities, shear stresses, potential upstream and downstream impacts from improving conveyance. The proposed water surface elevations will be used to establish the minimum height for the culvert replacement based on freeboard and debris clearance. The velocity results will be used to inform the design about potential fish-passage conditions, stream channel stability, and wood structure placement for the stream improvements.

A stable channel analysis will be performed following accepted methods in WDFW Water Crossing Design guidelines and habitat restoration guidelines. Using results from the hydraulic analysis, Otak will perform calculations to understand the vertical and lateral stability of the existing channel and how the stability might be affected by the proposed design. Incipient motion calculations will be performed to identify the range of flows over

which the bed material will be mobile. The reach-average stream power from the existing and proposed conditions hydraulic model results will be compared to understand potential areas of erosion or sediment deposition in the stream channel post-project.

The results of the analysis will be used to evaluate the width of the crossing structure following guidance in the WDFW WCDG's for fish-passable structures and Appendix D for Tidally Influenced Crossings.

The WSDOT Log Metrics Calculator spreadsheet will be used to compare the proposed wood design to target wood volumes. Wood stability calculations will be performed using the USFS Computational Design Tool for Evaluating the Stability of Large Wood Structures, version 1.2. The preliminary wood stability calculations will be submitted with the 30% PS&E.

Scour calculations will be performed at the culvert crossing for the design event (100-year flow), and check event (500-year flow), in accordance with the FHWA Hydraulic Engineering Circular (HEC) 18, Evaluating Scour at Bridges.

5.4 Hydraulic Documentation

Otak will prepare hydraulic documentation that summarizes the findings and conclusions from the hydraulic analysis completed in Task 5.3. The hydraulic documentation will be included in the H&H memorandum described in Task 5.2. The memorandum will summarize the following topics:

- Hydrologic flow rates used in the hydraulic analyses
- Hydraulic conditions including water surface elevations, depths, and flow velocities under existing and proposed conditions
- Tidal conditions and boundary conditions from the influence of the tide gate system, and river
- Estimated sea level rise effects at the crossing structure
- Potential impacts to upstream and downstream properties, including changes to flows, velocities, and water surface elevations
- Channel stability calculations
- Potential areas of channel erosion, sediment deposition
- Calculated scour depths at the culvert crossing (100-year, and 500-year event)

A draft and final H&H memorandum will be submitted to the City. The final H&H memorandum shall be sealed by a Professional Engineer licensed in the State of Washington. The final H&H memorandum will be included with the Project Design Report.

TASK 5 DELIVERABLES

- Hydrologic and Hydraulic Memorandum (Draft and Final, electronic PDF file format)
- Hydrologic Model electronic files (WWHM or similar HSPF format), supporting GIS data files
- Hydraulic Model files (SRH-2D electronic file format)

TASK 5 ASSUMPTIONS

- An F-Table will be developed at the drainage subbasin scale for routing flows within the stream channel. It is assumed that no other F-Tables will be required or developed for routing flows through detention structures upstream of the site.
- SRH-2D software will be used for development of the 30% hydraulic model.

- The model domain will extend approximately 680' upstream from existing culvert inlet and 50' downstream of existing culvert outlet based on topographic survey data.
- Velocities and stream power will be used to perform a qualitative assessment of potential erosion and deposition under proposed conditions, and no quantitative sediment transport calculations will be performed.

6.0 Alternatives Analysis

6.1 Alternatives Development and Comparison

Engineering estimates of anticipated construction costs will be prepared at the conceptual alternatives level. Estimates will be prepared using historical unit prices from similar projects, other current cost data, and recent City projects.

Otak will develop up to three alternative concepts for the culvert replacement. Information collected from the desktop review and field assessment for targeted fish species, fish access, and potential habitat gain will be used to develop the potential alternatives for the stream crossings and habitat improvements. The proposed alternatives will follow guidelines from the WDFW Water Crossing Design Guidelines for fish-passage structures and Appendix D for Tidally Influenced Crossings where appropriate. The alternative concepts will include:

- Description of each alternative
- An Alternative matrix with evaluation criteria
- A preliminary exhibit for each alternative, showing the stream horizontal alignment and vertical profile
- Planning level cost estimate

The evaluation criteria for the Alternative matrix will include fish passage and habitat, flood protection, structure type and size, potential utility relocation, construction considerations such as sequencing and temporary road bypass, opportunity for park and educational features, environmental impacts and permitting, and cost. A recommendation will be provided for the preferred alternative.

A site visit during this task is estimated to verify field conditions related to the proposed solution elements. The site visit will be attended by up to five Otak staff.

The hydraulic modeling to assess the effects of the solutions will be performed under Task 5.3.1.

Otak will submit the comparison matrix and conceptual drawings to the City for review and will then hold a meeting at the City to review. Otak will provide a recommended alternative and through discussions with the City, a preferred alternative will be selected. The preferred alternative will be advanced to 30% Design after approval of a future Scope Amendment for final design.

6.2 Alternatives Cost Estimation

Engineering estimates of anticipated construction costs will be prepared for each of the conceptual alternatives to a planning level. Estimates will be prepared using historical unit prices from similar projects, other current cost data, and recent City projects.

TASK 6.0 DELIVERABLES

- Conceptual plans and details for up to three alternatives (pdf)
- Alternatives Comparison Matrix (pdf)
- Planning Level Cost Est for each Alternative (pdf)

TASK 6.0 ASSUMPTIONS

- Alternatives are required to be in compliance with the 2021 King County Surface Water Design Manual as adopted by the City of Tukwila.
- Alternatives are required to be in compliance with the City of Tukwila Infrastructure Design and Construction Standards.
- The three alternatives will be similar to preliminary work by others:
 - Option 1 Culvert only (structures: head wall, wing wall, assess impact to existing roadway wall)
 - Option 2 Road Culvert & Trail Bridge (structures: culvert head wall, culvert wing wall, assess impact to existing roadway wall, trail bridge Type Size & Location, TS&L)
 - Option 3 Road Bridge & Trail Bridge (structures: assess impact to existing roadway wall, road bridge TS&L). Assumes Trail Bridge TS&L from Option 2 mostly, if not completely, applicable.
- If the Alternatives vary significantly from the conceptual options, by others, such as moving the levee back, a request will be made for authorization of management reserve funds to increase the Alternatives Analysis scope.

7.0 Geotechnical Services (Landau Associates, Inc.)

7.1 Phase 1 Geotechnical Investigation

The geotechnical subconsultant Scope of Services is included in Attachment B.

8.0 Utility Coordination

8.1 Franchise Utility Coordination

Otak will request as-built drawings and use data collected from the utility locates and topographic survey to verify the location of existing facilities. Otak will prepare a spreadsheet/matrix summarizing utility conflict locations and actions to be taken. Permit requirements for each location will be included in the matrix. This document will be updated whenever new information becomes available to assure that all utility coordination activities are tracked. Otak will also prepare a Comprehensive Utility Coordination Plan to show all existing and proposed utilities within the Corridor.

Otak will begin communications with franchise utility companies (power, gas, telecommunications, water and sewer, etc.) following the selection of a preferred concept alternative by the City, to verify locations of existing facilities and to discuss any potential relocation requirements, cost, schedule and recommendations on location of new facilities. It is anticipated that up to three (3) utility coordination meetings will occur with franchise or City utilities that are determined to have conflicts or require relocation.

TASK 8.1 DELIVERABLES

- Utility Coordination Plan
- Utility Coordination Tracking Matrix

TASK 8.1 ASSUMPTIONS

- Design of relocated utilities will be at franchise utility's expense and is not included in this scope.
- Potholing of utilities to verify the underground location is not included in this scope but is recommended to be performed after 30% design.

9.0 Stakeholder Engagement

9.1 Stakeholder Engagement Plan

Otak will develop a draft strategy at the outset of the project that includes the purpose and objectives to be achieved by the engagement, the entities to be engaged and informed during the project, activities and a timeline for engagement that aligns with the project schedule and key milestones, and specific responsibilities for engagement. The engagement plan will follow the “Informed Consent” model for community engagement. The community and stakeholder engagement lead and project manager will meet with City of Tukwila staff to review and discuss the strategy. After beginning the alternatives analysis under Task 6.0 and identifying the potential extent of improvements, Otak will then finalize the strategy based on input from City staff.

This scope assumes a total of two (2) one and a half-hour online meetings between the City and Otak attended by two (2) Otak staff. The purpose of these meetings will be to discuss Otak’s initial recommendations and key stakeholder issues that will guide the design.

9.2 Agency and Stakeholder Coordination

At the City’s request, Otak will support the City in coordination with agencies, tribal representatives, and stakeholders to address project designs and respond to comments. Otak will review and provide available information from previous data collected at the site to as requested.

As part of this task, Otak will participate in an on-site meeting with representatives from the City of Tukwila, WDFW, Tribal representatives, and Otak to review the project goals, components, and habitat restoration benefits, and perform bankfull width measurements.

Otak will coordinate with the City, WDFW and the Tribes to identify any potential reference reaches or appropriate bankfull width measurement locations. Otak will prepare memoranda to document site meeting notes. Otak will prepare email correspondence and memoranda to respond to comments received from the Tribes and agencies. As the level of effort for comment responses and coordination cannot be quantified at this time, a total level of effort of 40 hours of staff time is assumed for this scope task.

Otak will attend up to four meetings with the WSDOT Design team working on Gilliam Creek Crossing Improvements upstream.

TASK 9.0 DELIVERABLES

- Draft Stakeholder Engagement Plan (pdf)
- Final Stakeholder Engagement Plan (pdf)

TASK 9.0 ASSUMPTIONS

- The City will provide title reports and property owner information for key properties identified through the alternatives analysis.
- The City will provide any available information from past discussions with property owners in the project area regarding the flooding issues.

Management Reserve

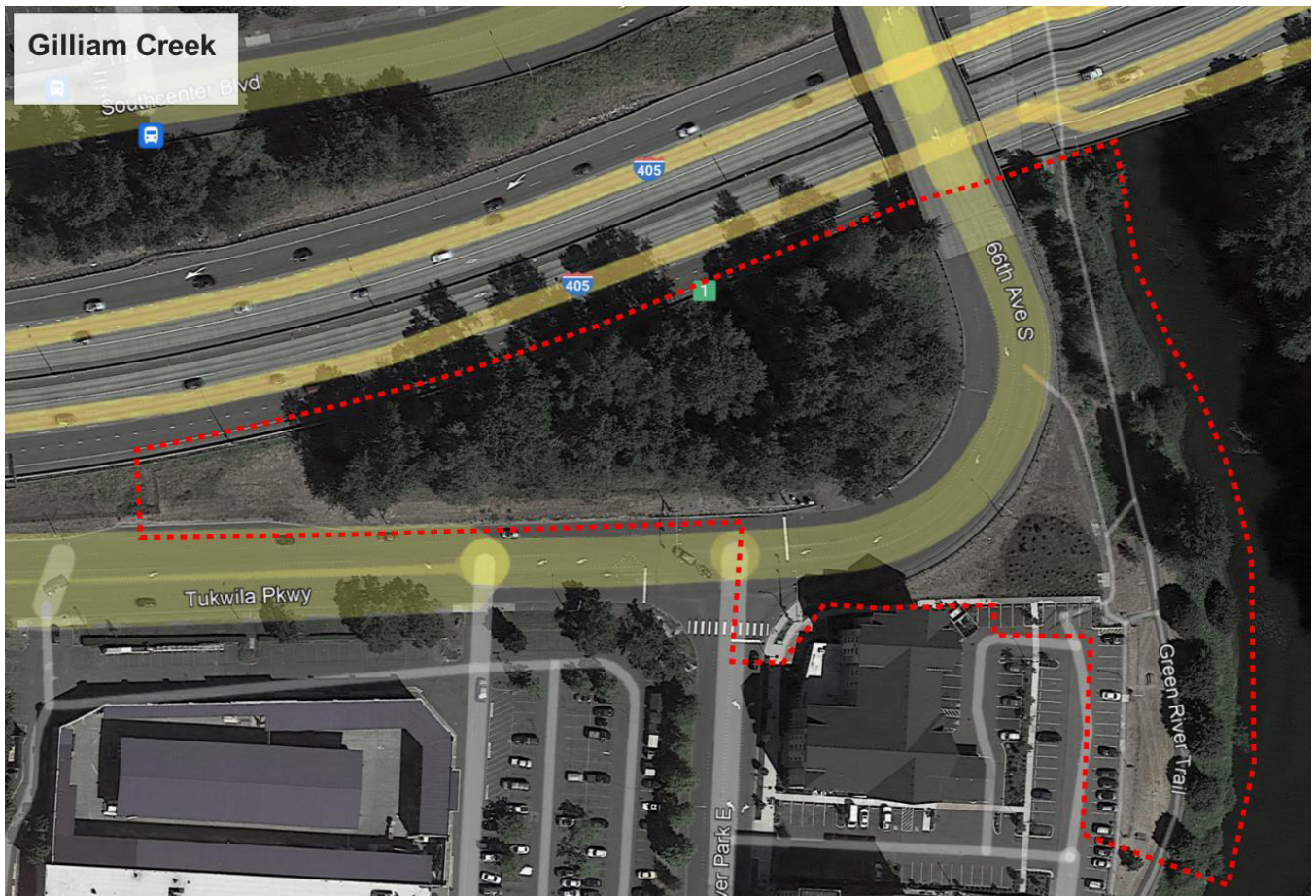
If directed by the City, consultant will provide services needed to assist the City for unforeseen tasks related to this project that were not specifically addressed in this scope of work. When requested by the City, the consultant will provide a scope and budget for the task identified by the City. The consultant will not proceed with the task until written authorization has been provided by the City. The allotted amount for this task is \$15,000.

Direct Expenses

Direct expenses to be submitted for reimbursement include:

- Mileage/Travel for site investigations and meetings
- Postage and Courier
- Private Utility Locate Service for Survey
- Traffic Control Plan and Flagging for Survey
- Lodging and Meals for Survey Crew
- Other Misc. Expenses

Attachment A – Survey Extents



May 4, 2022

Otak, Inc.
2828 Colby Ave., Ste 401
Everett, WA 98201

Attn: Mr. Tyson Hounsel, PE, Project Manager and Puget Sound Water Resources Manager

Transmitted via email to: *tyson.hounsel@otak.com*

**Re: Proposal for Preliminary Geotechnical Engineering Services
Gilliam Creek Fish Passage Improvements
Tukwila, Washington**

Dear Mr. Hounsel:

Landau Associates, Inc. (Landau) is pleased to submit this proposal for preliminary geotechnical engineering services in support of the Gilliam Creek Fish Passage Improvements project in Tukwila, Washington.

This proposal has been prepared with information provided by Otak, Inc. (project civil engineer).

Project Understanding

The City of Tukwila (City, project owner) proposes to improve fish passage along the lower reach of Gilliam Creek, where the creek runs parallel to Interstate 405 (site). At the site, the creek flows through a 108-inch-diameter culvert beneath 66th Avenue South and the Green River Trail before converging with the Green River. Immediately upstream of this confluence, the culvert is fitted with a top-hinge flap gate with wing walls and a concrete splash pad. These features have been identified as barriers to fish passage. The design team has been asked to evaluate the following options for improving fish passage:

- Option 1. Retrofit the flap gate and replace the splash pad with a roughened channel. The culvert beneath 66th Avenue South and the Green River Trail would remain in place.
- Option 2. Daylight Gilliam Creek beneath the Green River Trail. The culvert beneath 66th Avenue South would be shortened; a bridge would be added; and the flap gate would be replaced.
- Option 3. Abandon the existing Gilliam Creek culvert and replace with a daylighted reach beneath 66th Avenue South. The downstream portion of the creek would be moved to an expanded habitat and refuge area on the west bank of the Green River.

Proposed Scope of Services

Landau proposes to assess subsurface soil and groundwater conditions at the site. Findings will be used to select a preferred design option. Landau's proposed scope of services includes the following tasks.

Phase 1. Geotechnical Desktop Study

Landau will review existing geologic and geotechnical information for the site and the surrounding area. Possible resources include data collected during previous subsurface investigations by others, geologic and topographic maps, and as-built drawings of area structures and roadways. Phase 1 findings will be summarized in an email.

Phase 2. Preliminary Geotechnical Engineering Services

Following completion of Phase 1, geotechnical findings will be reviewed at a charter meeting, and the options for fish passage improvement will be updated.

During Phase 2, Landau will complete a geotechnical field investigation, laboratory testing, and preliminary engineering analyses. Findings will be used by Otak to develop rough order of magnitude cost estimates for the design options.

Field Investigation Activities

Prior to beginning the field investigation, Landau will prepare a geotechnical exploration plan for Otak's review and approval. Landau will mark exploration locations in the field and contact the Washington Utilities Coordinating Council's "One Call" locating service.

Explorations will be located in the shoulder or within a travel lane of 66th Avenue South. As such, temporary lane closures will be required during fieldwork. Landau will prepare a traffic control plan and obtain a right-of-way use permit from the City. Landau will also subcontract traffic control services, including flaggers and warning signs.

Initially, the hollow-stem auger drilling method will be used to advance two borings. When the borings encounter the groundwater table, drilling will be paused for up to 30 minutes to allow groundwater to equalize. The borings will then be advanced using the mud rotary drilling method. One boring will be advanced to a maximum depth of 80 feet (ft) below ground surface (bgs), and the other boring will be advanced to a maximum depth of 120 ft bgs. If bedrock is encountered, a core barrel will be used to extend the borings by as much as 10 ft, or to the maximum depths noted above. Landau also will advance as many as six hand auger borings upstream of the culvert.

Landau personnel will monitor the borings, collect representative soil samples, and maintain detailed logs of the subsurface soil and groundwater conditions observed. The standard penetration test (SPT) procedure will be used to obtain soil samples at 2½- or 5-ft intervals. SPT samples will not be obtained from the interval at which coring is used to penetrate bedrock.

Excess soil cuttings will be disposed of off site. Upon completion of drilling and sampling, the explorations will be decommissioned in accordance with the requirements in Washington

Administrative Code Chapter 173-160. The pavement at each exploration location will be patched with fast-setting concrete.

Geotechnical Laboratory Testing

Soil samples obtained from the borings will be transported to Landau's geotechnical laboratory for further examination and testing. Landau anticipates that its laboratory testing program will include 12 index tests (grain size analyses or Atterberg limits determinations) and 6 moisture content determinations. Soil samples will be retained for 30 days following submittal of the final geotechnical engineering report. Samples will then be disposed of, unless other arrangements are made.

Preliminary Geotechnical Engineering and Reporting

The results of Landau's field investigation, laboratory testing, and engineering analyses will be summarized in a preliminary geotechnical report. The report will also include:

- a site plan showing the locations of the field explorations.
- summary boring logs and the results of laboratory testing.
- a general description of site geology.
- a discussion of near-surface soil and groundwater conditions observed at the site.
- recommended seismic design parameters that accord with the American Association of State Highway and Transportation Officials' 2020 *LRFD* (Load and Resistance Factor Design) *Bridge Design Specifications*.
- a soil liquefaction assessment, including estimates of liquefaction-induced settlement at ground surface.
- preliminary recommendations for foundation support of the replacement culvert, including bearing resistances at the service, strength, and extreme limit states; axial and uplift capacities for deep foundations; estimated downdrag loads on deep foundation elements; and recommended L-pile input parameters, as applicable.
- recommendations regarding static and dynamic lateral earth pressures on buried walls, including estimated lateral spreading loads on culvert wing walls, if applicable.
- recommendations for final design services.

Landau will prepare a draft report for the design team's review and comment. Upon receipt, comments will be addressed, and Landau will issue a final report, signed and sealed by the project engineer.

Assumptions

Landau made the following assumptions when preparing this scope of services and cost estimate:

- Otak will provide Landau with a project base map in AutoCAD® format.
- Temporary lane closures will be required during fieldwork.

- The City will issue a right-of-way use permit at no cost to Landau.
- The asphalt concrete pavement at the proposed exploration locations is not underlain by Portland cement concrete (i.e., no concrete coring will be required).
- The City will allow Landau to patch pavement at the boring locations with fast-setting concrete.
- Soil cuttings will be drummed and disposed of off site.
- If required, permits pertaining to explorations in wetland areas or within stream buffers will be obtained by others at no cost to Landau.
- All public and private utilities at the proposed exploration locations can be identified via a One-Call locate request. No vacuum excavation will be required.
- Landau will not be responsible for damage to unmarked (or mismarked) utilities.
- If required, right-of-entry permits will be obtained by others.
- The hand auger borings can be completed in 10 hours, including travel time.
- The field investigation can be completed during standard business hours (i.e., no weekend, holiday, or nighttime drilling will be required).
- If necessary, Landau will evaluate as many as two deep foundation alternatives.
- Additional geotechnical engineering services will be required to support final design of the proposed improvements.
- Information regarding the infiltration characteristics of site soil is not needed, and infiltration testing and analyses are not included in this scope of services.
- Chemical analysis will not be performed on soil samples collected from the explorations.

Cost Estimate

Services will be provided on a time-and-materials basis in accordance with the rates presented in Landau's 2022 Compensation Schedule (attached). Landau proposes to provide its services for a fee of \$48,680, as detailed in Table 1 (attached). Landau will not exceed its budget without Otak's written authorization.

Authorization

To authorize Landau's services, please develop a subconsultant agreement, consistent with previous agreements between Otak and Landau.

Closing

We appreciate the opportunity to submit this proposal and anticipate its favorable review. If you have questions or comments, please contact Sean Gertz at 206.631.8680 or at sgertz@landauinc.com.

LANDAU ASSOCIATES, INC.



Sean Gertz, PE
Senior Engineer



Steven R. Wright, PE
Principal

SMG/SRW/mcs

2022-0194

[\\EDMDATA02\PROPOSALS\C_TUKWILA\2022-02_GILLIAM CREEK FISH PASSAGE\PROPOSAL\GILLIAM CREEK FISH PASSAGE IMPROVEMENTS PROPOSAL FOR GEOTECHNICAL SERVICES 5.4.2022.DOCX]

Attachments: 2022 Compensation Schedule
Table 1. Budget Breakdown

COMPENSATION SCHEDULE – 2022



Personnel Labor	Hourly Rate
Senior Principal	305
Principal	285
Senior Associate	265
Associate	240
Senior	215
Senior Project	195
Project	175
GIS Analyst / CAD Designer	175
Senior Staff	160
Staff / Senior Technician II	145
Data Specialist	145
CAD / GIS Technician	135
Project Coordinator	125
Assistant / Senior Technician I	115
Technician	100
Support Staff	85

Expert professional testimony or the preparation thereof for court, deposition, declaration, arbitration, or public testimony is charged at 1.5 times the hourly rate.

Rates apply to all labor, including overtime.

Equipment

Field, laboratory, and office equipment used in the direct performance of authorized work is charged at unit rates. A rate schedule will be provided on request.

Subcontractor Services and Other Expenses

Subcontractor billing and other project expenses incurred in the direct performance of authorized routine services will normally be charged at a rate of cost plus a twelve percent (12%) handling charge. A higher handling charge for technical subconsultants and for high-risk field operations may be negotiated on an individual project basis; similarly, a lower handling charge may be negotiated on projects requiring disproportionately high subconsultant involvement.

Invoices

Invoices for Landau Associates' services will be issued monthly. Interest of 1½ percent per month (but not exceeding the maximum rate allowable by law) will be payable on any amounts not paid within 30 days.

Term

Unless otherwise agreed, Landau Associates reserves the right to make reasonable adjustments to our compensation rates over time (e.g., long-term continuing projects).

Table 1.
Budget Breakdown
Gilliam Creek Fish Passage Improvements
Tukwila, Washington

Scope Items	Principal	Senior	Staff	CAD	Project Coordinator	Totals	Total Labor Costs
LABOR COSTS							
Preliminary Geotechnical Engineering Services							
Desktop Study	1	4	4			9	\$1,725
Project Management		14			10	24	\$4,260
Utility Locates, Proposed Exploration Plan, Field Coordination	1	2	14			17	\$2,745
Right of Way Permit Coordination		2	8			10	\$1,590
Field Investigation		2	20			22	\$3,330
Preliminary Geotechnical Engineering Services	5	12	24			41	\$7,485
Draft Report	6	16	24	2	4	52	\$9,400
Final Report	2	4	6	1	2	15	\$2,685
Task Total	15	56	100	3	16	190	\$33,220
Rate by Position	\$285.00	\$215.00	\$145.00	\$135.00	\$125.00		
Total – Labor Cost	\$4,275	\$12,040	\$14,500	\$405	\$2,000	\$33,220	
DIRECT COSTS							
Holocene Drilling						\$12,524	
Traffic Control Subcontractor						\$1,700	
Laboratory Testing						\$1,170	
Field Equipment/Mileage						\$67	
Total – Direct Costs						\$15,460	
Total						\$48,680	

