SHANNON & WILSON
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

July 11, 2022

SCHEDULE A-2 – SCOPE OF SERVICES

Ms. Logan Daniels
Snohomish County Parks & Recreation
6705 Puget Park Dr.
Snohomish, WA 98296

RE: REVISED ENGINEERING SERVICES PROPOSAL, RETAINING WALL ALONG 76TH PLACE WEST, NEW PICNIC SHELTER, ADDITIONAL ENVIRONMENTAL SERVICES AND PROJECT MANAGEMENT, MEADOWDALE BEACH PARK, EDMONDS, WASHINGTON

Dear Ms. Daniels:

This document presents our revised engineering services scope for Snohomish County Parks and Recreation's (County's) proposed retaining wall along 76th Place West, new picnic shelter and landslide protective barrier, additional environmental services and project coordination and management for the Meadowdale Beach Park Estuary Restoration Project in Edmonds, Washington. The purpose of these services is to provide:

- Topographic survey, geotechnical and structural design analyses, plans, and specifications to support design and construction of a proposed retaining wall.
- Geotechnical effort to support design and construction of a new picnic shelter and landslide protective barrier.
- Additional environmental sampling, testing and characterization of recent contamination encountered at the pedestrian bridge south abutment area and in the estuary area.
- Additional project management and coordination due to recent County project management personnel changes.

The services in this scope assume the new retaining wall and picnic shelter structure will be added to Strider Construction's current contract for estuary, railroad bridge, pedestrian bridge and walkway, and other park improvements construction, under a construction change directive, such that drawings and special provisions will be provided, but no other project specifications will be necessary.

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BACKGROUND INFORMATION

Cut Slope Instability

Meadowdale park vehicle access is via a gated entrance and road that extends from the northern terminus of 76th Place West, northward into the park, then winds down the southern valley sideslope into the lower park area. Approximately 20 feet north of the access gate, the cut slope along the east side of the road has experienced raveling and block failure, in which the very dense cut slope soil has detached from the slope and slid into the ditch along the road, causing several mature fir trees located at the top of the cut slope to become partially undermined. Continued raveling and block instability could further undermine one or more of those trees, increasing the risk of the trees falling onto the road and slope below. Based on road shoulder, ditch and cut slope geometry, previous experience with similar slopes, and discussions with you, we recommend constructing a cantilevered H-pile and concrete lagging wall to retain free-draining granular backfill between the wall and slope face. The backfill will provide confinement to mitigate continued slope raveling and block failure.

New Picnic Shelter and Landslide Protective Barrier

A structural evaluation indicated the existing picnic shelter was structurally deficient and in need of replacement. We understand the new shelter will be located north of the existing structure, near the intersection of the two foot trails adjacent to the wetlands and estuary. We anticipate an additional landslide protective barrier will be required for this structure.

Additional Environmental Sampling, Testing and Characterization

Recent occurrences of apparent environmental contamination within the pedestrian bridge south abutment and emanating from a pipe that daylights into the estuary excavation south of the stream channel require additional environmental sampling, testing and characterization. These services will be above and beyond the environmental services included in our current scope.

Additional Project Management, Coordination and Technical Assistance

Due to recent County project management personnel changes, we anticipate additional project management and coordination between the County, consultants, and BNSF will be necessary during planning and execution of complex work elements such as the BNSF

temporary shoring, bridge construction, estuary excavation, and other in-water work. We also anticipate additional technical assistance will be necessary for reviewing and responding to change order proposals, claims such as differing site conditions or delay, and other contract administration assistance.

SCOPE OF SERVICES

Retaining Wall

This scope of services includes slope area topographic survey, geotechnical and structural design analyses, plan and special provisions preparation, pre-construction support as necessary to execute a construction change directive under the existing contract, and construction observation and documentation services. As requested, Shannon & Wilson is providing these design services under a single proposal, with surveying and structural design subconsultants as necessary to augment our geotechnical services. We have organized our scope of services into six tasks as detailed in the following sections.

Picnic Shelter and Landslide Protective Barrier

This scope of services also includes geotechnical exploration, analyses, recommendations and reporting to support picnic shelter and landslide protective barrier design and construction.

Task 1: Project Management/Administration

This task includes our internal project management and administration effort, including contract and subcontract administration, progress reporting, and monthly invoicing. We have included additional effort for anticipated additional coordination and project management due County project management personnel changes. We anticipate about 20 hours per month additional effort over the next four months.

Task 2: Topographic Survey

Duane Hartman and Associates (DHA), under subcontract to Shannon & Wilson, will conduct a site and slope survey throughout the wall area and extending beyond the wall limits as necessary to support geotechnical and structural design. The survey area will measure approximately 80 feet wide (measured parallel to the road), 40 feet tall (upslope from the road shoulder and ditch), and will include the road surface, west shoulder and break in slope, east shoulder and ditch, cut slope, and natural slope above the cut slope

break line. The survey will include all trees greater than 8 inches DBH for use in identifying trees that will need to be removed during construction, if any. DHA will provide a topographic surface in Microstation format for use in design.

Task 3: Geotechnical Explorations, Analyses and Reporting

We will complete geotechnical analyses and present our results in a geotechnical engineering report. Detailed scope items will include:

Retaining Wall

- Develop geotechnical soil parameters based on existing borings completed for this project and specified wall backfill materials.
- Develop a lateral earth pressure (LEP) diagram for the proposed wall.
- Develop LPILE parameters for use in evaluating wall deflection and required embedment depth.

Picnic Shelter and Landslide Protective Barrier

We will provide geotechnical design recommendations to support design and construction of the new picnic shelter and associated landslide protective barrier. Services included in this task are:

- Observe two or more test pit excavations near the proposed picnic shelter location.
- Complete bearing capacity and settlement analyses.
- Complete debris flow dynamic thrust estimate analysis for proposed landslide protective barrier for new picnic shelter.
- Develop geotechnical foundation recommendations.

We will prepare a geotechnical letter report that presents all pertinent site data, analyses and results. The report will include our geotechnical engineering analyses, retaining wall picnic shelter and landslide protective barrier recommendations, and construction considerations.

Task 4: Wall Structural Analyses, Plans and Special Provisions

Hanson Professional Services (Hanson), under subcontract to Shannon & Wilson, will provide structural analyses, and will prepare wall plans, special provisions, and bill of materials as necessary for the contractor to provide wall construction cost. Hanson's

analyses will be based upon the topographic survey and geotechnical design analyses described above. Hanson's deliverables include:

- Wall design calculations
- Wall construction quantities
- General Notes & List of Sheets
- Wall Plan and Elevation Drawings
- Wall Typical Sections
- Wall Construction Special Provisions

Hanson's scope includes 10%, 100% and Final plan deliverables for County review and comment. We have included effort in this task to coordinate with Hanson regarding wall layout and details, and to review drawings and special provisions prior to submitting to the County.

Task 5: Pre-Construction Support

This task includes effort to assist the County in obtaining construction cost and schedule, and preparing a construction change directive under the existing project contract. Detail scope items will include:

- Participate in up to four one-hour meetings with the County and Strider to answer questions discuss construction details.
- Review Strider's change order cost proposal.
- Assist the County in preparing the construction change directive.
- Provide building permit assistance.
- Provide pre-construction wall staking.

Task 6: Construction Observation and Documentation

We will provide full-time construction observation and documentation, including as-built drawings, during wall construction and backfill placement. For cost estimating purposes, we have assumed the wall construction duration will be three weeks.

Task 7: Additional Environmental Sampling, Testing and Characterization

Recent occurrences of suspected oil sheen within the estuary excavation and pedestrian bridge south abutment area will require additional environmental sampling, testing and characterization for proper disposal. This sampling and testing will exceed the number of tests and level of effort included in our current scope. We have included effort to coordinate and observe environmental explorations to delineate the contamination source(s) and collect up to 20 additional water and/or soil samples for environmental testing and characterization. We have included costs for 15 tests at the standard 7-day turnaround time, and 5 tests at an expedited 48-hour turnaround time.

SCHEDULE

Once we receive Notice to Proceed (NTP), we will schedule the surveying subcontractor and begin executing subcontract agreements. We will provide the LEP diagram and LPile parameters to Hanson within two weeks of NTP.

ASSUMPTIONS

The following assumptions apply:

- The retaining wall will be cantilevered and no permanent ground anchors are necessary.
- Anchor QEA will incorporate our picnic shelter foundation recommendations into the drawings they prepare.
- Strider Construction will provide an excavator and operator to dig the picnic shelter test pits at no cost to Shannon & Wilson.
- If needed, Strider Construction will provide an excavator and operator to dig test pits in and around areas of suspected contamination at no cost to Shannon & Wilson.
- This scope and fee will be authorized under an amendment to our current contract.

FEE ESTIMATE

We are prepared to undertake the work described above on a time and materials basis under the terms and conditions of our current contract. Our estimated fee for the scope of services described above is $189,280. An itemized labor effort and cost table is enclosed as *Schedule B-2 – Compensation*, and an itemized table of other direct costs is enclosed as *Schedule C-2 - Expenses*. Invoices for payment will be submitted to you as our client.

CLOSING

Shannon & Wilson has prepared the enclosure, "Important Information About Your Geotechnical/Environmental Proposal," to assist you and others in understanding the use and limitations of our proposal.

We appreciate the opportunity to submit this proposal and look forward to working with you on this project. If you have any questions regarding this proposal, please contact me at (206) 695-6915 or tyler.stephens@shanwil.com.

Sincerely,

SHANNON & WILSON

Tyler Stephens, PE
Senior Associate

TJS/tjs

Enc. Schedule B-2 (REVISED): Compensation
Schedule C-2 (REVISED): Expenses
Important Information About Your Geotechnical/Environmental Proposal

SCHEDULE B-2 (REVISED) - COMPENSATION
76TH PLACE WEST RETAINING WALL, NEW PICNIC SHELTER
ADDITIONAL ENVIRONMENTAL TESTING AND PROJECT COORDINATION
MEADOWDALE BEACH PARK AND ESTUARY RESTORATION PROJECT

	HOURS						DOLLARS						
STAFF GRADE/FUNCTION	PIC	PM	Sr. GEOL	ENG	CAD	CLR	PIC	PM	Sr. GEOL	ENG	CAD	CLR	
CONTRACT HOURLY RATE BY STAFF	VP	Sr. Associate	Sr Prof 1	Prof IV	Sr. Tech Svcs	Tech Svcs I	$275	$225	$180	$135	$140	$130	TOTAL
TASKS/SUBTASKS													
1.0 PROJECT MANAGEMENT/ADMINISTRATION AND QUALITY CONTROL													
Coordination between project team and subcontractors		12.0		4.0				$2,700		$540			$3,240
Additional Team / BNSF Coordination and Technical Assistance due to County Project Management Change July 2022		120.0		40.0				$27,000		$5,400			$32,400
Subcontract Execution		4.0		4.0				$900		$540			$1,440
Project Accounting and Administration		12.0				12.0		$2,700				$1,560	$4,260
2.0 TOPOGRAPHIC SURVEY													
Coordinate, Receive and Distribute Topographic Survey		2.0		2.0				$450		$270			$720
3.0 GEOTECHNICAL EXPLORATIONS, ANALYSES AND REPORT													
Retaining Wall													
Estimate Soil Engineering Properties		1.0		2.0				$225		$270			$495
Lateral Earth Pressure Analyses	1	2.0		12.0	2.0		$275	$450		$1,620	$280		$2,625
LPILE Parameters Recommendations		1.0		4.0				$225		$540			$765
Picnic Shelter													
Observe Test Pit Excavation		1.0		6.0				$225		$810			$1,035
Bearing Capacity and Settlement Analyses		1.0		6.0				$225		$810			$1,035
Debris Flow Dynamic Thrust Analysis, Sliding and Overturning Analysis for Landslide Protective Barrier		8.0		24.0				$1,800		$3,240			$5,040
Geotechnical Letter Report													
Draft Report	2.0	16.0		40.0	2.0	1.0	$550	$3,600		$5,400	$280	$130	$9,960
Final Report	1.0	6.0		12.0			$275	$1,350		$1,620			$3,245
Meetings													
Project Kickoff Meeting	1.0	1.0		1.0			$275	$225		$135			$635
Draft Report Team Meeting	1.0	1.0		1.0			$275	$225		$135			$635
4.0 RETAINING WALL PLANS AND SPECIFICATIONS													
Wall Plans and Specifications													
10% Conceptual Plans	4.0	8.0		8.0			$1,100	$1,800		$1,080			$3,980
100% Plans and Specifications	2.0	12.0		16.0			$550	$2,700		$2,160			$5,410
Final Plans and Specifications	1.0	4.0		4.0			$275	$900		$540			$1,715
Plans and Specifications Review Meetings													
10% Conceptual Plans	1.0	1.0		1.0			$275	$225		$135			$635
100% Plans and Specifications	1.0	1.0		1.0			$275	$225		$135			$635
Final Plans and Specifications	1.0	1.0		1.0			$275	$225		$135			$635
5.0 PRECONSTRUCTION SUPPORT													
Review Retaining Wall Drawings and Special Provisions with Contractor (four one-hour meetings)		4.0		4.0				$900		$540			$1,440
Review Picnic Shelter Drawings and Special Provisions with Contractor (four one-hour meetings)		4.0		4.0				$900		$540			$1,440
Review Contractor Retaining Wall Change Order Proposal (Cost)		2.0		2.0				$450		$270			$720
Review Contractor Picnic Shelter Change Order Proposal (Cost)		2.0		2.0				$450		$270			$720
Prepare Retaining Wall Construction Change Directive		1.0		2.0				$225		$270			$495
Prepare Picnic Shelter Construction Change Directive		1.0		2.0				$225		$270			$495
Building Permit Support		2.0						$450					$450
6.0 CONSTRUCTION OBSERVATION AND DOCUMENTATION													
Submittal and Shop Drawing Review		8.0		8.0				$1,800		$1,080			$2,880
Construction Observation and Documentation (Three week duration)		16.0		150.0				$3,600		$20,250			$23,850
As-Built Drawings		1.0		4.0				$225		$540			$765
7.0 ADDITIONAL ENVIRONMENTAL SAMPLING, TESTING, CHARACTERIZATION													
Additional Sampling and Testing	4.0	10.0		40.0			$1,100	$2,250		$5,400			$8,750
Test Results Summary and Disposal Profiling	4.0	10.0		40.0			$1,100	$2,250		$5,400			$8,750
Additional Field Observation		16.0		80.0				$3,600		$10,800			$14,400
TOTAL	***16.0***	***292.0***		***527.0***	***4.0***	***13.0***	***$ 6,600***	***$ 65,700***	***$ -***	***$ 71,145***	***$ 560***	***$ 1,690***	***$ 145,695***

Notes:

CAD = Computer-aided Drafting
CLR = Clerical
GEOL = Geologist
ENG = Engineer
LS = lump sum
OPCC = opinion of probable construction cost
PIC = Principal-in-Charge
PM = Project Manager
TECH = Technical

SHANNON & WILSON, INC.

SCHEDULE C-2 (REVISED) - EXPENSES
76TH PLACE WEST RETAINING WALL, NEW PICNIC SHELTER
ADDITIONAL ENVIRONMENTAL TESTING AND PROJECT COORDINATION
MEADOWDALE BEACH PARK AND ESTUARY RESTORATION PROJECT

OTHER DIRECT COSTS					
Mileage (40 round trip site visits)	1,500	EA	$0.58	$	870
Subcontractor: DHA (topographic site survey, Pile Construction Layout)	1	LS	$5,140	$	5,140
Subcontractor: Hanson (Structural design, wall drawings and specifications, Construction Support)	1	LS	$24,700	$	24,700
Environmental Laboratory Tests - Standard Turnaround (7 days)	15	EA	$505	$	7,575
Environmental Laboratory Tests - Expedited Turnaround (2 days)	5	EA	$1,010	$	5,050
Copies, Reprographics	1	LS	$250	$	250
SUBTOTAL				***$***	***43,585***

SHANNON & WILSON
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Attachment to and part of Proposal: 21-1-22288-
P Date: July 11, 2022
To: Ms. Logan Daniels
Snohomish County Parks & Recreation

Important Information About Your Geotechnical/Environmental Proposal

More construction problems are caused by site subsurface conditions than any other factor. The following suggestions and observations are offered to help you manage your risks.

HAVE REALISTIC EXPECTATIONS.

If you have never before dealt with geotechnical or environmental issues, you should recognize that site exploration identifies actual subsurface conditions at those points where samples are taken, at the time they are taken. The data derived are extrapolated by the consultant, who then applies judgment to render an opinion about overall subsurface conditions; their reaction to construction activity; appropriate design of foundations, slopes, impoundments, and recovery wells; and other construction and/or remediation elements. Even under optimal circumstances, actual conditions may differ from those inferred to exist, because no consultant, no matter how qualified, and no subsurface program, no matter how comprehensive, can reveal what is hidden by earth, rock, and time.

DEVELOP THE SUBSURFACE EXPLORATION PLAN WITH CARE.

The nature of subsurface explorations—the types, quantities, and locations of procedures used—in large measure determines the effectiveness of the geotechnical/environmental report and the design based upon it. The more comprehensive a subsurface exploration and testing program, the more information it provides to the consultant, helping to reduce the risk of unanticipated conditions and the attendant risk of costly delays and disputes. Even the cost of subsurface construction may be lowered.

Developing a proper subsurface exploration plan is a basic element of geotechnical/environmental design that should be accomplished jointly by the consultant and the client (or designated professional representatives). This helps the parties involved recognize mutual concerns and makes the client aware of the technical options available. Clients who develop a subsurface exploration plan without the involvement and concurrence of a consultant may be required to assume responsibility and liability for the plan's adequacy.

READ GENERAL CONDITIONS CAREFULLY.

Most consultants include standard general contract conditions in their proposals. One of the general conditions most commonly employed is to limit the consulting firm's liability. Known as a "risk allocation" or "limitation of liability," this approach helps prevent problems at the beginning and establishes a fair and reasonable framework for handling them should they arise.

Various other elements of general conditions delineate your consultant's responsibilities. These are used to help eliminate confusion and misunderstandings, thereby helping all parties recognize who is responsible for different tasks. In all cases, read your consultant's general conditions carefully and ask any questions you may have.

HAVE YOUR CONSULTANT WORK WITH OTHER DESIGN PROFESSIONALS.

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a consultant's report. To help avoid misinterpretations, retain your consultant to work with other project design professionals who are affected by the geotechnical/environmental report. This allows a consultant to explain report implications to design professionals affected by them, and to review their plans and specifications so that issues can be dealt with adequately. Although some other design professionals may be familiar with geotechnical/environmental concerns, none knows as much about them as a competent consultant.

OBTAIN CONSTRUCTION MONITORING SERVICES.

Most experienced clients also retain their consultant to serve during the construction phase of their projects. Involvement during the construction phase is particularly important because this permits the consultant to be on hand quickly to evaluate unanticipated conditions, conduct additional tests if required, and when necessary, recommend alternative solutions to problems. The consultant can also monitor the geotechnical/environmental work performed by contractors. It is essential to recognize that the construction recommendations included in a report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site.

Because actual subsurface conditions can be discerned only during earthwork and/or drilling, design consultants need to observe those conditions in order to provide their recommendations. Only the consultant who prepares the report is fully familiar with the background information needed to determine whether or not the report's recommendations are valid. The consultant submitting the report cannot assume responsibility or liability for the adequacy of preliminary recommendations if another party is retained to observe construction.

REALIZE THAT ENVIRONMENTAL ISSUES MAY NOT HAVE BEEN ADDRESSED.

If you have requested only a geotechnical engineering proposal, it will not include services needed to evaluate the likelihood of contamination by hazardous materials or other pollutants. Given the liabilities involved, it is prudent practice to always have a site reviewed from an environmental viewpoint. A consultant cannot be responsible for failing to detect contaminants when the services needed to perform that function are not being provided.

ONE OF THE OBLIGATIONS OF YOUR CONSULTANT IS TO PROTECT THE SAFETY, PROPERTY, AND WELFARE OF THE PUBLIC.

A geotechnical/environmental investigation will sometimes disclose the existence of conditions that may endanger the safety, health, property, or welfare of the public. Your consultant may be obligated under rules of professional conduct, or statutory or common law, to notify you and others of these conditions.

RELY ON YOUR CONSULTANT FOR ADDITIONAL ASSISTANCE.

Your consulting firm is familiar with several techniques and approaches that can be used to help reduce risk exposure for all parties to a construction project, from design through construction. Ask your consultant, not only about geotechnical and environmental issues, but others as well, to learn about approaches that may be of genuine benefit.

The preceding paragraphs are based on information provided by the GBA, Silver Spring, Maryland