

**CITY COUNCIL AGENDA ITEM**  
CITY OF SHORELINE, WASHINGTON

<b>AGENDA TITLE:</b>	Authorizing the City Manager to Execute Professional Services Contract with Northwest Hydraulic Consultants, Inc., in the Amount of \$428,616 for the Lower Storm Creek Erosion Management Project
<b>DEPARTMENT:</b>	Public Works
<b>PRESENTED BY:</b>	John Featherstone, Surface Water Utility Manager
<b>ACTION:</b>	<input type="checkbox"/> Ordinance <input type="checkbox"/> Resolution <input checked="" type="checkbox"/> Motion <input type="checkbox"/> Discussion <input type="checkbox"/> Public Hearing

**PROBLEM/ISSUE STATEMENT:**

Staff is requesting City Council to authorize the City Manager to execute a contract with Northwest Hydraulic Consultants, Inc., (NHC) to provide engineering design, permitting support, and other support services needed for the Lower Storm Creek Erosion Management Project (Project). The Project will address an eroding reach of Storm Creek to manage erosion and mitigate landslide risk within a bluff-side area between 17<sup>th</sup> Place NW and the BNSF Railway.

**FINANCIAL IMPACT:**

The professional services contract amount is \$428,616. Funding for this contract will come from a combination of four sources:

- King County Flood Control District (KCFCD) Flood Reduction Grant (Contract #9559) allocates \$226,000 for design and permitting;
- Private property owner (PPO) project partners have provided \$20,000 to fund design and permitting; and
- City funding covers the remaining contract amount, which is evenly split between the Surface Water and Wastewater funds:
  - Surface Water Management Capital Fund: \$91,308
  - Wastewater Management Capital Fund: \$91,308.

**RECOMMENDATION**

Staff recommends that Council authorize the City Manager to execute an agreement with Northwest Hydraulic Consultants, Inc., in the amount of \$428,616 for professional services for the Lower Storm Creek Erosion Management Project.

Approved By:            City Manager **DT**    City Attorney **MK**

## **BACKGROUND**

Storm Creek has a 0.75 square mile basin area (about one-third within Edmonds, and the remainder in Shoreline) and outfalls to Puget Sound just south of Richmond Beach Saltwater Park. Land use is predominantly residential, with 40 to 50 percent estimated impervious surfacing. Starting at least thirty years ago, the pronounced channel down-cutting along the lowermost 300 feet of Storm Creek (between 17th Place NW and the BNSF railroad tracks) has progressively worsened over time. Around 1995, the Ronald Wastewater District (RWD) installed in-stream channel elevation control in the form of concrete-reinforced gabion baskets to protect an 8-inch diameter sanitary sewer main crossing under the creek in this reach.

A waterfall-like erosion “knickpoint” developed at the bottom of the westernmost RWD gabion structure (Gabion 1) around 2010. While the gabion has since protected the upstream channel grade, the 14-foot deep knickpoint is threatening the now-unstable gabion. For almost 100 linear feet downstream of the knickpoint, stream erosion has produced an extremely narrow “slot canyon” ravine (only a few feet wide) with vertical sidewalls ten to twenty or more feet tall, and a steep average channel grade (of around 30%).

The Innis Arden Club neighborhood homeowners’ association owns the narrow Reserve property through which Storm Creek flows at this location. For several years, the homeowners on both sides of the ravine have expressed concerns with ongoing and potential impacts of this erosion to their properties and other hazards and risks. The City of Shoreline evaluated the overall basin and specific erosion issues in 2012 under the Storm Creek Basin Plan, which can be found at the following link: [Storm Creek Basin Plan](#).

The Storm Creek Basin Plan findings on Lower Storm Creek erosion are found primarily in the Erosion in Lower Storm Creek Memorandum (Appendix A of the basin plan), which includes an analysis of geologic factors. Based on the Basin Plan’s recommendations, the City conducted annual Storm Creek topographic surveys around the knickpoint and Gabion 1 from 2014 to 2018 to confirm and monitor the extent and progression of the erosion.

In 2017-2018, as part of a cooperative effort between the City and Project Partners (the Innis Arden Club, the adjacent private property owners, and RWD), NHC was hired by Innis Arden and the private property owners to develop a high-level conceptual solution to “tightline” Storm Creek through the “slot canyon” erosion area. The tightline concept proposed using over 100 linear feet of 36-inch diameter pipe and three large manhole-type structures to convey streamflow through the erosion area, over 1,000 cubic yards of quarry spalls to fill the narrow ravine above the pipe, and full site restoration – including stream restoration improvements upstream and downstream of the new pipe, plantings, and other restoration work.

Following the development of this concept solution, City staff, with the support of the Project Partners, applied for a competitive King County Flood Control District (KCFCD) Flood Reduction Grant on June 14, 2019. Notification of the grant offer was received on September 18, 2019, and Council authorized the \$225,000 grant agreement on

November 18, 2019. The staff report for this Council action can be found at the following link: [Motion to Authorize the City Manager to Obligate \\$225,000 in King County Flood Control District Flood Reduction Grant Funding for the Storm Creek Erosion Management Project.](#)

On June 24, 2020, the KCFCD Board approved an additional \$227,000 in funding for the Project under a 2019 Supplemental Flood Reduction Grant. On September 21, 2020, the Council authorized the grant amendment, increasing KCFCD grant funding for the Project to \$452,000. The staff report for this Council action can be found at the following link: [Authorizing the City Manager to Execute Amendment 1 to the King County Flood Control District Flood Reduction Grant Funding for the Storm Creek Erosion Management Project.](#)

Following the receipt of grant funding, the Project Partners worked to develop a funding agreement (Settlement Agreement) for the remaining cost of the Project not covered by grant funds. While the Agreement was negotiated with the Ronald Wastewater District as one of the Project Partners, after RWD was assumed by the City on April 30, 2021, they are not included as a party to the Agreement. Shoreline City Council authorized the City Manager to sign this funding partnership agreement on June 28, 2021. The Staff Report for this agenda item can be found here: [Authorizing the City Manager to Execute a Settlement Agreement and Release Related to the Storm Creek Erosion Management Project and Related Easement Agreements.](#)

The Settlement Agreement establishes the Project as the City's to manage through design, permitting, and construction, subject to typical City project requirements, standards, and best practices. Project Partner contributions include funding, easements, and feedback at key project milestones. The City's ability to award and advance this contract is dependent upon the arrangements set forth under the Settlement Agreement, which was fully executed by all parties as of August 10, 2021.

## **DISCUSSION**

### **Consultant Selection**

In August 2021, Staff solicited a Request for Qualifications (RFQ 10091) for a consultant team to provide engineering design, permitting, and other support services to create construction bid documents and support construction for the Project. Two qualified consultant teams submitted Statements of Qualifications (SOQs) prior to the September 14, 2021, deadline: Northwest Hydraulic Consultants, Inc., (NHC) and WSP USA. The SOQs were evaluated based on approach, experience and expertise, and additional insight of the consultant team, and the NHC team was selected as best-qualified firm for this work.

### **Scope of Work**

Staff developed a scope of work (Attachment A) and negotiated an agreement with NHC to provide engineering design and permitting services for this work in an amount of \$428,616 with the goal of having final permits and a design bid package by early 2023, with construction scheduled for the summer and fall of 2023. Professional services provided include civil and geotechnical engineering, environmental review, permitting support, hydrologic and hydraulic analysis, cultural resources, surveying, and

constructability review. The contract scope of work includes tasks for project management, site investigation, alternatives development and selection, preliminary design, final design and permitting, and construction support. A management reserve amount is included.

### **FINANCIAL IMPACT**

The professional services contract amount is \$428,616. Funding for this contract will come from a combination of four sources:

- King County Flood Control District (KCFCD) Flood Reduction Grant (Contract #9559) allocates \$226,000 for design and permitting;
- Private property owner (PPO) project partners have provided \$20,000 to fund design and permitting; and
- City funding covers the remaining contract amount, which is evenly split between the Surface Water and Wastewater funds:
  - Surface Water Management Capital Fund: \$91,308
  - Wastewater Management Capital Fund: \$91,308.

### **RECOMMENDATION**

Staff recommends that Council authorize the City Manager to execute an agreement with Northwest Hydraulic Consultants, Inc., in the amount of \$428,616 for professional services for the Lower Storm Creek Erosion Management Project.

### **ATTACHMENTS**

Attachment A: Contract #10091 Scope of Work

## LOWER STORM CREEK EROSION MANAGEMENT PROJECT

Northwest Hydraulic Consultants (NHC), with supporting subconsultants Shannon & Wilson, The Watershed Company, Cultural Resource Consultants (CRC), Parametrix, and Terra Firma Drilling (collectively referred to herein as the Consultant) has been selected as design consultant for the Lower Storm Creek Erosion Management Project for City of Shoreline.

Storm Creek has a 0.75 square mile basin area (about one-third within Edmonds, and the remainder in Shoreline), and outfalls to Puget Sound just south of Richmond Beach Saltwater Park. Land use is predominantly residential, with 40 to 50 percent estimated impervious surfacing.

In pre-developed historical conditions and until recent decades, Storm Creek descended the steep bluffs just inland of the Puget Sound shore in a near-vertical waterfall-like drop. Starting at least thirty years ago, pronounced channel down-cutting along the lowermost 300 feet of Storm Creek (from 17th Place NW to the BNSF railroad tracks) has been observed. Around 1995, the Ronald Wastewater District (RWD) installed in-stream channel elevation control in the form of concrete-reinforced gabion baskets at two locations in the Storm Creek channel west of 17th Place NW, to protect an 8-inch diameter sanitary sewer main crossing under the creek which had been previously exposed by creek down-cutting.

For a channel length of about 80 linear feet downstream of the nick point at the westernmost gabion grade control structure installed by RWD, stream downcutting has produced an extremely narrow ravine (only a few feet wide) with near vertical or overhanging sidewalls ten to twenty or more feet tall, and a steep average channel grade of approximately 30%.

For this project the Consultant will provide to the City of Shoreline (City) engineering design, permitting, and other support services to create construction bid documents and support construction to address the severe down-cutting erosion of the Storm Creek channel west of 17th Place NW with the primary objectives of ceasing downcutting and repairing the most severe erosion within the stream channel area.

A high-level conceptual solution to “tightline” Storm Creek through the narrow ravine erosion area was developed by the Consultant in 2017-2018 as part of a cooperative effort between the City and Project Partners (the Innis Arden Club, the adjacent private property owners, and RWD). The tightline concept includes over 100 linear feet of 36-inch diameter pipe and three large manhole-type structures to convey streamflow through the erosion area, over 1,000 cubic yards of quarry spalls to fill the narrow ravine above the pipe, and full site restoration – including stream restoration improvements upstream and downstream of the new pipe, plantings, and other restoration work. This concept will be used as a starting point for further design development and changes as needed to permit and construct a long-term solution to address existing and future Storm Creek channel down-cutting west of 17th Place NW.

## **1 Project management and coordination**

### **1.1 General project management services**

The Consultant will provide project management services through the life of the project including:

- Maintain a project cloud site for document storage.
- Coordinate and guide day-to-day project activities.
- Subcontract with and manage project subconsultants.
- Develop detailed design and permitting schedule
- Perform regular schedule updates and financial status summaries.
- Prepare monthly invoices
- Prepare monthly status reports.

### **1.2 Coordination Meetings**

The following regular coordination meetings are scoped for the project, all meetings to be scheduled and facilitated by NHC:

- Up to forty project meetings will be held (typically bi-weekly) either remotely or in person to discuss progress, issues, risk and mitigation, schedule, next steps and addresses any questions. These will generally last from half an hour to an hour.

#### **Assumptions**

- Project duration is assumed to be 24 months for this scope of work.
- Design review meetings scoped in other tasks

#### **City Responsibilities**

- Participation in meetings.
- Identifying and providing contact information for other parties to select meetings, such as tribal representatives and agencies.
- Providing meeting space for in-person meetings subject to COVID-19 guidance

#### **Deliverables**

- Bulleted notes from check-in project team meetings will be provided in an email.
- Other meeting notes will be provided in draft and final form as an MS word document.

### **1.3 Document and Data Collection and Project Sharing**

NHC shall create a secured electronic project website to allow a single point of storage for all project documents. Website login information shall be distributed to all Consultant and City staff involved in the project. Consultant will collate and load all available information onto the site. City will similarly load any information available that is requested by the Consultant or that the City notes the Consultant does not possess.

#### **Assumptions**

- Types of documents may include, but are not limited to, design deliverables identified in

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- subsequent tasks of this scope, meeting notes or summaries
- Website will be a OneDrive site accessible via a web browser.
- City will provide document control guidance to facilitate compatibility with City conventions and preferences for file naming and organization.

**City Responsibilities**

- Upload relevant information to website

**Deliverables**

- Secure project website (City and Consultant will communicate on file naming and organization on the project website to facilitate compatibility with City conventions and preferences for file naming and organization)

**2 Site Investigation**

The site investigation is intended to gather technical information needed to develop and evaluate a list of alternatives to protect the project site.

**2.1 Site Visit and Kick-off Meeting**

Select members of the Consultant team will conduct a site visit with City staff. The purpose of the visit is to acquaint the project team with the site. After the site visit the Consultant team and City staff will hold a project kickoff meeting either on the same day as the site visit or via video conference. The purpose of the meeting will be to make full introductions, define roles for all City and Consultant team members, debrief from the site visit, and prepare a list of key analysis, design and permitting issues that must be addressed.

**Assumptions**

- Consultant and City will work together to coordinate agenda, date, staff and others attending, and meeting location.
- Between 6 and 10 Consultant and Sub-Consultant staff will attend.

**City Responsibilities**

- Provide appropriate staff for site visit and kickoff meeting
- Review meeting summary provided by Consultant
- City to invite Project Partners to meeting

**Deliverables**

- Summary of kick off meeting and site visit as annotated agenda

**2.2 Survey and Environmental Fieldwork**

The Consultant will conduct one site visit (separate from that in Task 2.1) to delineate, and flag stream OHWM where accessible within the project area. During the site visit, the Consultant will also flag or estimate off-site marine shoreline OHWM or MHHW and verify lack of wetlands within the project area. Wetland and stream determination methods will be consistent with the

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definition(s) and requirements of local, state, and federal agencies. The Consultant will also inventory and flag significant trees within the project area.

The Consultant will prepare a field sketch that indicates the location(s) of delineation and tree flags for use by surveyors.

Survey and mapping shall be conducted to develop site-scale topographic and planimetric mapping. The extents of the various survey areas are shown in Figure 1. Mapping limits will extend from approximately 100 feet upstream of 17th Pl. NW downstream to the line of the mean high tide below the railroad. Lateral limits will extend to 25 feet beyond the creek channel top of bank. Mapping will include location of the house and improvements nearest to the top of bank for the parcel to the north and the house and all improvements for the parcel to the south. Heavy erosion areas will be mapped utilizing high-definition terrestrial LiDAR and image based modeling. Survey crews will need to be within the narrow channel to capture features not visible from above. Mapping of the railroad will be limited to what can be obtained remotely using terrestrial based LiDAR from outside the railroad right of way. Consultant shall produce a composite base map of the project area to produce a surface suitable for hydraulic modeling and erosion management design. Planimetric mapping will include property lines, Right-of-Way, locate conifer trees 8" and larger in diameter and deciduous trees 12" and larger in diameter, wetland delineation and OHWM, and utilities in the project area. All mapping will be on NAD83/11 horizontal datum and NAVD 88 vertical datum. Contours will be at 1' contour intervals per national map standards. All survey will be incorporated into a CAD basemap.

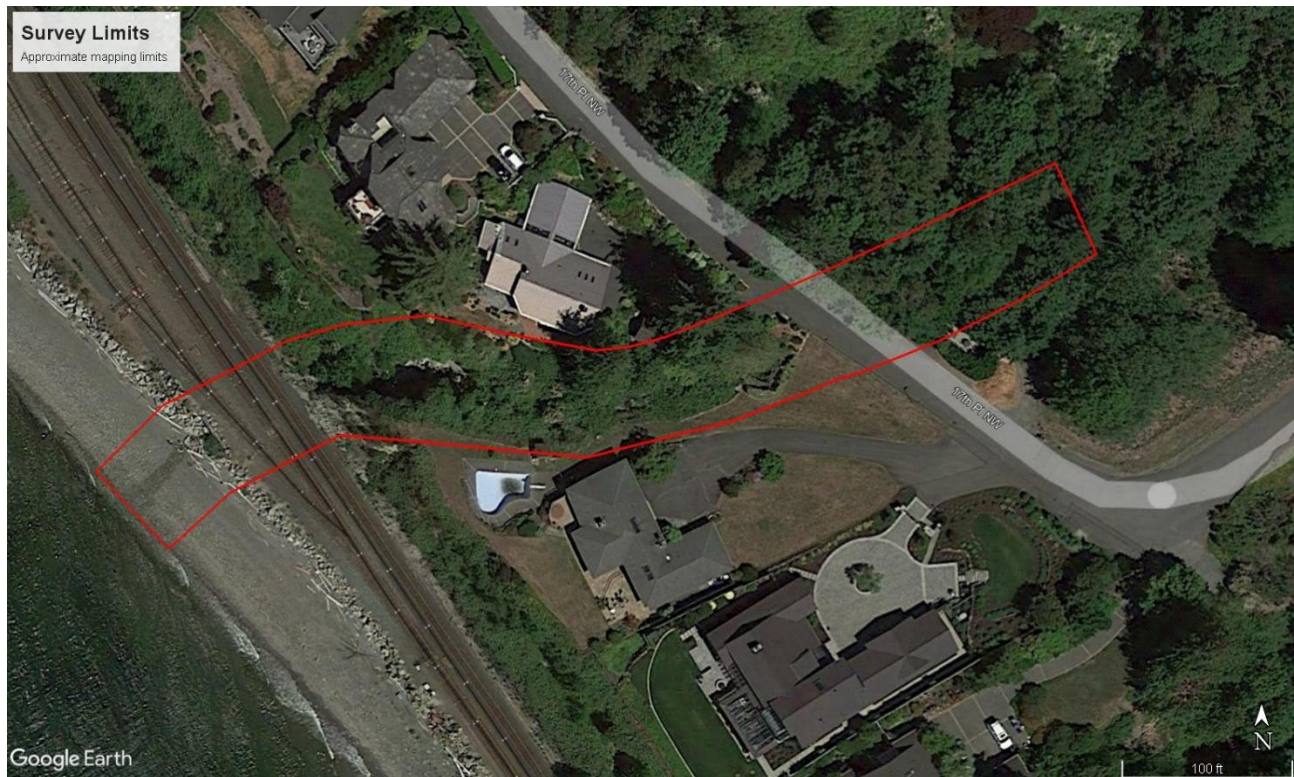


Figure 1. Approximate survey mapping limits of topographic survey

### Assumptions



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- Parametrix will have reasonable access to all areas requiring surveys.
- Utility locates will be limited to visible utilities in the project area. City of Shoreline will call in utility locates prior to field surveys if additional utility survey is required.
- Parametrix will be provided a key map showing all wetland and OHWM delineation flagging.
- Parametrix is assuming coordination with the railroad for access and flaggers will not be required, or will be coordinated by others.
- Property corners of both developed properties. will be marked during the course of this survey. Corners that fall within the creek erosion area or in inaccessible areas will be marked with a reference point. A Record of Survey showing all corners set will be created and recorded with King County.
- Trees will be noted as deciduous or conifer. Trees flagged and identified will be located and the identifier noted.
- No jurisdictional wetlands are present and no delineation, flagging, classification or reporting is required.
- Inaccessible areas of Storm Creek are present and such areas may not be accessible for OHWM delineation. In such cases, the OHWM will be estimated.
- Consultant will use the access forms provided by the City needed to access the Innis Arden Club-owned reserve property.
- Consultant will coordinate with BNSF to gain access to the outlet portion of the site, this effort is limited to 10 hours. Additional unforeseen BNSF permits, fees, training, or other requirements are not included in this scope, and Consultant will communicate to the City any impacts to schedule or scope that may result in coordination with BNSF.

***City Responsibilities***

- Provide right of entry and forms necessary to access Innis Arden Club-owned reserve property.

***Deliverables***

- Methods, health and safety plan for City approval prior to commencing survey activities.
- Composite site scale CAD Basemap depicting topography and planimetrics including property lines Composite site scale topographic surface (CAD)

**2.3 Hydrologic and Hydraulic Analyses**

Consultant will update and refine the 2010 HSPF hydrologic model of the Storm Creek Basin developed by NHC. The 2010 model, which incorporates a very simple representation of the basin, was used to derive approximate estimates of the relative increase in peak flows in Storm Creek resulting from land development. The model was not calibrated, and it includes no stream channel routing elements.

The following assumptions will be adopted in updating/refining the 2010 model:

- The 2010 watershed delineation will be reviewed and refined using available topographic data and storm drainage infrastructure maps.
- Soil types and their spatial coverage will be determined from available mapping.
- Land cover data (effective impervious area, grass, and forest) will be updated to reflect current conditions based on recent imagery.

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- Rainfall input to the model will be provided by long-term hourly rainfall data from SeaTac Airport with appropriate scaling to transpose data to the Storm Creek basin.
- The model will rely on regional HPSF model parameter estimates.
- The model will not include stormwater detention facilities, culverts, or stream channel routing elements and may therefore provide a conservative estimate of peak flows.

To the extent that suitable data are available, the HSPF model will be validated to flows monitored at the project site. HSPF model outputs will be used to develop flood design flows for the project. Consultant will provide future conditions design flows based on guidance developed by WSDOT.

We will develop a PC-SWMM model of Storm Creek from the 17<sup>th</sup> Place NW crossing to the beach for use in analyzing project alternatives. If a high flow event occurs during model development, we will survey any available high-water marks and validate the hydrologic and PC-SWMM models.

#### ***Assumptions***

- Consultant will survey up to two high water events for model validation
- City will provide flow data to Consultant for HSPF model validation. Model validation is contingent upon capturing a flood flow during Winter 2021-2022. Flow data gathered through March of 2022 will be used for validation.
- One consolidated set of comments on the draft Hydrology/hydraulics technical memorandum will be incorporated into the final version.

#### ***City Responsibilities***

- Review and comment on Hydrology/hydraulics technical memorandum

#### ***Deliverables***

- Draft and final Hydrology/hydraulics technical memoranda

## **2.4 Cultural Resources Assessment**

Consultant will provide the following project components as part of this cultural resources assessment.

### **2.4.1 Background Research**

Consultant will conduct a search on Washington Department of Archaeology and Historic Preservation's (DAHP) WISAARD system to identify recorded historic built environment, historic register listed properties, archaeological sites, cemeteries, and previously completed cultural resources assessment in proximity to the project location. Consultant will review pertinent environmental, archaeological, ethnographic, and historical information appropriate to the project location from a variety of available resources. The goal of background research is to provide contextual information regarding the natural environment and cultural use of the project location, identify recorded cultural resources, and determine the potential for as-yet unrecorded cultural resources to be encountered during proposed project actions.

### **2.4.2 Tribal Contact**

Consultant will contact the cultural resources staff of tribes that may have an interest in or information regarding the project location. This communication is intended to inform the cultural

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resources assessment and does not constitute government-to- government consultation. Copies of this correspondence and received responses will be included as an attachment in the cultural resources assessment.

### **2.4.3 Field Investigations**

Consultant will conduct field investigations of the project location to identify archaeological and historical resources. Investigation will include pedestrian survey and subsurface excavation in amenable environments that have the potential to contain buried archaeological deposits. Methods will be consistent with DAHP guidelines.

### **2.4.4 Documentation of Findings**

Consultant will document and record identified archaeological and historic sites within the project location on DAHP archaeological and/or historic site(s) forms. All identified resources will be photo-documented and recorded in the field. Archaeological materials or deposits will be documented and reburied, if appropriate, within the find location. Cultural resources will be evaluated for significance following local, state, and/or national significance as appropriate based on the project's regulatory nexus. Documentation will be consistent with DAHP standards and will be completed on DAHP's WISAARD system.

### **2.4.5 Cultural Resources Assessment Report**

Consultant 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 and the appropriate requirements based on the regulatory nexus. Report and support materials will be provided electronically in PDF format. An inadvertent discovery protocol and primary contacts will be provided as an attachment in the assessment. Consultant will assist the City in submitting the cultural resources assessment and any associated documentation to DAHP, via their WISAARD system.

#### **Assumptions**

- This scope assumes that no more than one (1) archaeological site or historic site will be identified and recorded.
- This scope assumes that no more than two (2) shovel probes will be excavated in amenable locations lacking steep slopes, hardened surfaces, buried utilities or other obstructions.
- This scope does not include additional services for impact mitigation regarding archaeological or historic sites.
- This scope assumes that one round of consolidated comments on the draft deliverables will be addressed.

#### **City Responsibilities**

- N/A

#### **Deliverables**

- Draft and final archaeological or historic inventory form and Cultural Resources Assessment Report to be provided electronically as PDFs.

## **2.5 Environmental Review**

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The Consultant will classify Storm Creek according to City of Shoreline regulations.

The Consultant will prepare a delineation report that summarizes findings and details applicable local, state, and federal implications of findings.

The Consultant will prepare a stream delineation map figure to accompany the report.

The Consultant will prepare a tree inventory and assessment/retention report.

**Assumptions**

- Deliverables will be provided as PDF files.

**City Responsibilities**

- N/A

**Deliverables**

- Stream Delineation sketch
- Stream Delineation report and figure
- Tree Inventory Report

**2.6 Geotechnical Engineering Support**

The Consultant will conduct reconnaissance (separate from Task 2.1) to evaluate erosion, sloughing and scour zones. We will evaluate slope stability for equipment access. Analyses will be performed to evaluate soil anchor designs, fill material types and other design issues.

**Assumptions**

- One full day will be spent in the field
- No ground disturbance will occur

**City Responsibilities**

- Secure access through private properties.

**Deliverables**

- Geotechnical Letter with recommendations.

**2.7 Constructability Review**

During the Task 2.1 site visit, the Consultant will consider constructability issues, considerations for staging and access, and provide a written assessment of observations to include in the alternatives and design development.

**Assumptions**

- Observations will occur during one site visit.

**City Responsibilities**

- Secure access through private properties.

#### ***Deliverables***

- Documentation of constructability considerations.

### **3 Alternatives Analysis**

#### **3.1 Alternatives Development**

The goal of the alternatives analysis is to determine a consensus preferred alternative that will be developed into a preliminary design. We will initiate this task by developing a complete list of project objectives, each with a measurement metric, in concert with the City. Consultant will coordinate, attend and provide a post-meeting debrief for one on-site pre-alternatives design meeting with agencies (including but not limited to WDFW and USACE), City of Shoreline permitting and tribes. We will then use the results of the preliminary technical analysis and pre-alternatives design meeting to develop a series of three alternatives that appear to meet project objectives.

The identified alternatives will include a brief description of the component actions, high level cost estimates, concept level design drawings and sketches showing extents and approximate geometry, and description of anticipated impacts on habitat processes, long term maintenance, mitigated and unmitigated risks, and permitting needs.

The Consultant will prepare (2) two color, oblique renderings of each alternative design for use in community engagement, and public workshops. Renderings may be hand sketched.

#### ***Assumptions***

- Renderings will be prepared to represent each alternative concept once determined.
- Anticipated alternatives include the previously identified tightline concept and an open-channel concept.
- Consultant will lead outreach and engagement with agencies for the pre-alternatives design meeting.

#### ***City Responsibilities***

- Participate in development of project objectives and measurement metrics.

#### ***Deliverables***

- One set of two draft and final renderings will be prepared. Renderings will be furnished in 11" x 17" PDF format.
- One set of concept design drawings in 11x17 PDF format.
- Memo discussing alternatives development.
- Presentation materials discussing concept plans, construction impacts, cost estimates, and color renderings will be developed to allow discussion of the alternatives with stakeholders.

#### **3.2 Alternatives Analysis**

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- Consultant will use hydraulic model to determine hydraulic characteristics of each alternative.
- Consultant will assess and score each alternative with respect the site objectives and design parameters.

**Assumptions**

- N/A

**City Responsibilities**

- N/A

**Deliverables**

- Draft Alternatives Analysis memorandum summarizing development of design concepts, selection criteria, and evaluation of alternatives

**3.3 Preferred Alternative Selection**

Consultant and City shall hold a design workshop to evaluate the alternatives. Consultant shall provide a scoring matrix spreadsheet to assist in the evaluation, with each alternative ranked against the site objectives and design parameters. The workshop outcome will be selection of a preferred design.

**Assumptions**

- Design workshop will take two hours

**City Responsibilities**

- Actively participate in the design
- Invite other stakeholders that may wish to participate
- Review draft deliverable

**Deliverables**

- Design Review meeting notes will summarize meeting content not noted otherwise in plan or document markups.
- Final Alternatives Analysis memorandum including selection of the preferred alternative.

**4 Preliminary Design**

At the preliminary design phase, the overall project footprint should be fixed, all major project elements shown, hydraulic structures sized, and quantities and extent of key materials such as rock and pipe known. If permits are to be submitted on this plan set, measurements of fill below ordinary high water mark and other required permit metrics will be developed. The plans should include preliminary TESC and water management (bypass) methods. Accompanying the plans will be a list of the special provisions that will be required to be developed, Basis of Design Report (BODR), and a construction cost estimate.

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Consultant will coordinate, attend, and provide a debrief for up to three virtual meetings to share preliminary design with agencies and tribes.

**Assumptions**

- Plans will be delivered as 11x17 pdfs and AutoCAD 2020
- Plans will use City standard format.

**City Responsibilities**

- Review of plans and documents
- City project manager is responsible for distribution of documents and collation of comments from other City reviewers and Project Partners.

**Deliverables**

- Preliminary Design Plans (PDF)
- Concept Design OPCC (Spreadsheet)
- Draft Basis of Design Report

**5 Final Design and Permitting****5.1 Permitting****City of Shoreline**

**Shoreline Permit.** Much of the project area is located within City of Shoreline’s shoreline jurisdiction (within 200 horizontal feet of the Puget Sound ordinary high water mark) and will be subject to the City’s Shoreline Master Program. SMC 20.240.276.D requires a shoreline variance to authorize the alteration of streams within shoreline jurisdiction. The Consultant will prepare a shoreline variance permit package for submittal to the City, including critical area worksheet, JARPA, mailing labels/list/map, and shoreline variance criteria narrative. In addition, pursuant to SMC 20.230.081, the project may require a shoreline conditional use permit (SCUP). The Consultant will prepare a SCUP application package for submittal to the City. Following City of Shoreline approval for the shoreline variance and SCUP, the Consultant will coordinate with the Dept. of Ecology on review of the applications, as needed.

**SEPA Checklist.** Consultant will prepare a State Environmental Policy Act Checklist for submittal to the City of Shoreline.

**Construction Permit(s).** Consultant will coordinate and submit a Building Permit and/or Clearing and Grading Permit. This includes preparation of a Stormwater Pollution Prevention Plan.

**US Army Corps of Engineers**

Consultant will prepare and submit application materials and documentation to ensure compliance with Section 404 of the Clean Water Act, including:

- **JARPA.** Consultant will complete a Joint Aquatic Resources Permit Application for submittal to the Corps in order to obtain a Section 404 authorization.
- **Biological Evaluation.** Consultant will prepare a Biological Evaluation that will demonstrate compliance with the Endangered Species Act (ESA) for activities within

jurisdictional streams.

- 8 ½ x 11” Formatted Plans. Consultant will format plans for submittal to meet Corps of Engineers standards.

#### **WA Dept. of Ecology**

Consultant will prepare and submit application materials and documentation to ensure compliance with Section 401 of the Clean Water Act and the Coastal Zone Management Consistency Act, including:

- Pre-Filing Request. Contractor will complete and submit a Pre-Filing Request to Ecology.
- JARPA. Contractor will utilize the JARPA form describe above to apply for an Individual Water Quality Certification and Coastal Zone Management Consistency Determination.
- Water Quality Monitoring Plan. Contractor will prepare a plan that will account for temporary water quality impacts resulting from construction of the project.

#### **WA Dept. of Fish and Wildlife (WDFW)**

Consultant will apply for a Hydraulic Project Approval from WDFW.

#### **Response to Comments**

Following submittal of permit applications described above, Consultant will respond as necessary to questions/comments from the City, agencies, tribes (Muckleshoot, Snoqualmie, Suquamish and Tulalip), or other stakeholders and will revise permit documentation, as necessary. Tribes are anticipated to provide comments to the Clean Water Act 404 permit submittal.

#### ***Assumptions***

- Because a shoreline variance is necessary to authorize stream alterations within shoreline jurisdiction, it is assumed that separate critical areas permitting is not needed.
- It is assumed that all required City permits can be approved administratively. Coordination/attendance at a hearing examiner, planning commission, or other judicial hearing is not included.
- Approval of permits is not guaranteed.
- Response to comments effort is limited to a total of 20 staff hours.
- Responses to comments outside of those outlined above would be considered out of scope.
- Tribes will be contacted through the permit review process through SEPA at the City level and by the Corps.

#### ***City Responsibilities***

- The City will coordinate and hold the required Neighborhood Meeting. The Consultant will attend the meeting to answer questions, as needed.
- City project manager is responsible for distribution of documents and collation of comments from other City reviewers and project partners including private property owners and the Innis Arden Club
- City will contact tribes for SEPA review.



***Deliverables***

- Shoreline Variance Criteria Narrative (draft and final)
- Critical Area Worksheet (draft and final)
- Mailing Labels/List/Map (draft and final)
- SCUP Application (draft and final)
- SCUP Criteria Narrative (draft and final)
- SEPA Checklist (draft and final)
- JARPA (draft and final)
- Biological Evaluation (draft and final)
- SWPPP (draft and final)
- Pre-Filing Request (draft and final)
- Water Quality Monitoring Plan (draft and final)

**5.2 *Plans, Specifications, and Estimates***

The Consultant will provide 60%, 90%, and 100% design packages for the project. Drawings and cost estimates will be developed at each phase. Special provisions/specifications will be identified at 60% and full specifications package provided at 90% and 100%. The Basis of Design Report will be updated at 60% and finalized at 90%. The 100% package will be produced as a draft and final version.

Easement documents, including legal descriptions and exhibit maps, will be created for permanent and construction easements based on property boundaries at the 60% and 100% design phases.

***Assumptions***

- 2-hour comment resolution meetings for the 60%, 90%, and 100% (draft) deliverables
- We are assuming that there will be no need for easements across or within the railroad right of way. We are allowing for the creation of up to 6 easement documents over the course of the project. We have included a total of 2 separate iterations of these easements over 2 phases of the project (60% and 100%). We have not included the cost for staking of the easements within this scope.

***City Responsibilities***

- Provide one set of consolidated review comments on each deliverable. Format will be Track Changes for MSWord documents and Adobe markup's on PDF's.
- City project manager is responsible for distribution of documents and collation of comments from other City reviewers and project partners including private property owners and the Innis Arden Club

***Deliverables***

- 60% plans, draft specifications, cost estimate, and easement documents
- 60% comment responses
- 90% plans, full specifications, cost estimate with calculations
- 90% comment responses
- 100% plans, full specifications, cost estimate with calculations (draft and final), and easement

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- documents
- 100% (draft) comment responses

## 6 Construction Support

When requested, the Consultant will support the City through construction. We anticipate tasks may include submittal and RFI reviews, construction meetings, and observation and active construction involvement working through the City for specialized items.

### ***Assumptions***

- Activities performed by Consultant under this task may vary and will be performed on an as-needed basis up to the task allowance.
- All Consultant responses, observations and recommendations will be routed through the City's construction manager.
- Review responses will be provided within 7-calendar days of written request

### ***City Responsibilities***

- Provide construction management services.

### ***Deliverables***

- Construction observation notes
- RFI responses

## 7 Management Reserve

Additional effort or scope may be necessary to achieve the objectives of the project. Consultant will submit a written request outlining additional requested budget. Consultant may utilize additional funds only with explicit authorization from the City.

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**8 Cost Estimate**

The estimated cost to complete the described task work is detailed in the following table.

LABOR CATEGORIES	NHC		The Watershed Co.		Shannon & Wilson		Terra Firma Drilling		Cultural Resource Consultants		Parametrix		Total Cost
	Total Hours	Total Cost	Total Hours	Total Cost	Total Hours	Total Cost	Total Hours	Total Cost	Total Hours	Total Cost	Total Hours	Total Cost	
<b>1 PM, Coordination, Objectives</b>													
1.1 General Project Management Services	72	\$14,220	16	\$3,120	4	\$1,040	0	\$0	0	\$0	0	\$0	\$ 18,380
1.2 Coordination Meetings	80	\$15,200	50	\$8,930	8	\$2,080	6	\$600	8	\$795	0	\$0	\$ 27,605
1.3 Document and Data Sharing	4	\$760	16	\$2,430	0	\$0	0	\$0	0	\$0	0	\$0	\$ 3,190
<b>2 Site Investigation</b>													
2.1 Site Visit and Kick-off Meeting	12	\$2,280	16	\$2,400	8	\$2,080	4	\$400	2	\$234	0	\$0	\$ 7,394
2.2 Survey and Environmental Fieldwork	0	\$0	18	\$2,340	10	\$2,600	0	\$0	0	\$0	325	\$42,187	\$ 47,127
2.3 Hydrologic and Hydraulic Analyses	246	\$44,460	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	\$ 44,460
2.4 Cultural Resources Assessment	0	\$0	0	\$0	0	\$0	0	\$0	49	\$4,377	0	\$0	\$ 4,377
2.5 Environmental Review	0	\$0	42	\$5,020	0	\$0	0	\$0	0	\$0	0	\$0	\$ 5,020
2.6 Geotechnical Engineering Support	0	\$0	0	\$0	92	\$15,560	0	\$0	0	\$0	0	\$0	\$ 15,560
2.7 Constructability Review	0	\$0	0	\$0	0	\$0	4	\$400	0	\$0	0	\$0	\$ 400
<b>3 Alternatives Development and Selection</b>													
3.1 Alternatives Development	71	\$11,345	60	\$9,550	4	\$1,040	2	\$200	4	\$397	0	\$0	\$ 22,532
3.2 Analysis of Preferred Alternative	36	\$6,060	8	\$1,100	0	\$0	2	\$200	0	\$0	0	\$0	\$ 7,360
3.3 Preferred Alternative Selection	60	\$9,540	8	\$1,330	0	\$0	2	\$200	0	\$0	0	\$0	\$ 11,070
<b>4 Preliminary Design</b>													
4.1 Design Plans	186	\$32,260	24	\$4,080	0	\$0	0	\$0	0	\$0	0	\$0	\$ 36,340
4.2 Documentation	64	\$9,520	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	\$ 9,520
<b>5 Final Design and Permitting</b>													
5.1 Permitting	26	\$5,330	0	\$0	0	\$0	0	\$0	4	\$397	0	\$0	\$ 5,727
5.1.1 City of Shoreline	0	\$0	65	\$10,190	0	\$0	0	\$0	0	\$0	0	\$0	\$ 10,190
5.1.2 Corps of Engineers	0	\$0	83	\$11,020	0	\$0	0	\$0	0	\$0	0	\$0	\$ 11,020
5.1.3 Dept. of Ecology	0	\$0	45	\$5,830	0	\$0	0	\$0	0	\$0	0	\$0	\$ 5,830
5.1.4 WDFW	0	\$0	11	\$1,760	0	\$0	0	\$0	0	\$0	0	\$0	\$ 1,760
5.1.5 Comments response	0	\$0	20	\$3,200	0	\$0	0	\$0	0	\$0	0	\$0	\$ 3,200
5.2.1 60% PS&E	177	\$29,745	27	\$3,460	4	\$1,040	4	\$400	0	\$0	29	\$4,442	\$ 39,087
5.2.2 90% PS&E	55	\$8,935	20	\$2,660	2	\$520	4	\$400	0	\$0	0	\$0	\$ 12,515
5.2.3 100% PS&E	31	\$5,335	12	\$1,560	2	\$520	0	\$0	0	\$0	29	\$4,442	\$ 11,857
<b>6 Construction Support</b>													
Task Limit		\$12,000		\$8,000		\$10,000							\$ 30,000
<b>7 Management Reserve</b>													
Task Limit													\$ 35,000
<b>Total Hours</b>	<b>1,120</b>		<b>541</b>		<b>134</b>		<b>28</b>		<b>67</b>		<b>383</b>		
<b>Total Labor Fee</b>		<b>\$206,990</b>		<b>\$87,980</b>		<b>\$36,480</b>		<b>\$2,800</b>		<b>\$6,200</b>		<b>\$51,072</b>	<b>\$ 426,522</b>
<b>Direct Charges</b>													
Mileage and Field Supplies		\$ 137		\$ 200		\$ 100		\$ 100		\$ 17		\$ 1,541	\$ 2,094
<b>Total Fee</b>		<b>\$207,127</b>		<b>\$88,180</b>		<b>\$36,580</b>		<b>\$2,900</b>		<b>\$6,217</b>		<b>\$52,613</b>	<b>\$428,616</b>