



Gregory L. Geist  
Director

Board of County Commissioners  
Clackamas County

Members of the Board:

Amendment No. 1 to the Agreement between  
Water Environment Services and CH2M Hill Engineers, Inc., for Engineering Services for the  
Tri-City Water Resource Recovery Facility Willamette River Outfall

<b>Purpose/Outcomes</b>	Approval of contract amendment to increase the funding by \$449,849.00 for above project, extend the termination date to June 30, 2021 as well as add additional scope of services to complete Phase 1 of the project.
<b>Dollar Amount and Fiscal Impact</b>	This contract authorizes \$1,025,518.00 total for the period of May 16, 2019, through December 31, 2020.  WES requests the maximum be increased by \$449,849.00. The maximum compensation authorized under this contract shall be \$1,475,367.00
<b>Funding Source</b>	639-01-20100-481020-P632241
<b>Duration</b>	Through June 30, 2021
<b>Previous Board Action/Review</b>	Contract approval. BCC Agenda Item 051619 VI 1
<b>Performance Clackamas Alignment</b>	1. This project supports the WES Strategic Plan goal to provide properly functioning infrastructure that supports healthy streams and reduces flooding.  This project supports the County's Strategic Plan of building a strong infrastructure that delivers services to customers and honors, utilizes, promotes and invests in our natural resources.
<b>Council Review</b>	March 25, 2020, Amanda Keller
<b>Contact Person</b>	Jeff Stallard, ext. 4694

**BACKGROUND:**

Water Environment Services provides wastewater treatment to our service area in Clackamas County at the Tri-City Wastewater Resource Recovery Facility (TC WRRF). The District has identified the need for engineering consulting services to assist the District with the planning, permitting and design of a second outfall to convey treated wastewater from the TC WRRF to the Willamette River. Currently, peak wet weather flow to the TC WRRF is approaching the 75 MGD capacity of the existing plant outfall. Residential/commercial development and an expansion of I-205 are planned in the anticipated project area and are additional drivers for project development and schedule.

With this Amendment #1, The District is collecting geotechnical information which will be utilized to make constructability and design choices during the future phases of the project, as well as

inform the public outreach effort for public support of the project. The future phases of the project will include final design, permit application and construction services.

**PROCUREMENT PROCESS:**

This project was advertised in accordance with ORS and LCRB Rules on November 14, 2018 and closed on December 5, 2018. One proposal was received from CH2M Hill Engineers, Inc., and notice of intent to award after a full evaluation of the proposal was publicly posted on December 12, 2018. The negotiated total awarded contract through December 31, 2020 for the amount of \$1,025,518.00.

This Amendment #1 is to increase the maximum expenditure under the contract by \$449,849.00, extend the time to complete this phase of the project to June 30, 2021 and to add additional scope of services to the original scope.

Amendment #1 has been reviewed and approved by County Counsel.

**RECOMMENDATION:**

Staff recommends the Board approve Amendment #1 to add additional scope of services, funding of \$449,849.00 and time extension for services.

Respectfully submitted,

Greg Geist  
Director, WES

Placed on the \_\_\_\_\_ Agenda by the Procurement Division.

**AMENDMENT #1**  
**TO THE CONTRACT DOCUMENTS WITH CH2M HILL ENGINEERS, INC., FOR**  
**ENGINEERING SERVICES FOR THE TRI-CITY WATER RESOURCE RECOVERY**  
**FACILITY WILLAMETTE RIVER OUTFALL**  
**Contract #2693**

This Amendment #1 is entered into between **CH2M Hill Engineers, Inc.**, (“Contractor”) and Water Environment Services (“District”) and shall become part of the Contract documents entered into between both parties on **May 16, 2019** (“Contract”).

The Purpose of this Amendment #1 is to make the following changes to the Contract:

1. ARTICLE I, Section 1. **Effective Date and Duration** is hereby amended as follows:  
The Contract expiration date is hereby change from December 31, 2020 to **June 30, 2021**.
2. ARTICLE I, Section 2. **Scope of Work** is hereby amended as follows:  
District requires additional geotechnical services and more field for data collection in support of the development of engineering designs. In addition, Task 8 is hereby deleted as it is no longer necessary for the consultant to perform surveying services. The revisions to the Scope of Services for geotechnical investigation and related permitting services, in additions to the removal of the survey work, are reflected in the supplemental scope attached as **Exhibit H** and hereby incorporated by reference.
3. ARTICLE I, Section 3. **Consideration** is hereby amended as follows:

ORIGINAL CONTRACT	\$ 1,025,518.00
<u>AMENDMENT #1</u>	<u>\$ 449,849.00</u>
<b>TOTAL AMENDEDE CONTRACT</b>	<b>\$ 1,475,367.00</b>

Except as expressly amended above, all other terms and conditions of the Contract shall remain in full force and effect. By signature below, the parties agree to this Amendment #1, effective upon the date of the last signature below.

[Signature page follows]

**CH2M Hill Engineers, Inc.**  
2020 SW 4<sup>th</sup> Ave, Ste. 300  
Portland, Oregon 97021

25 March 2020

\_\_\_\_\_  
Authorized Signature                      Date  
Mark R. Johnson

\_\_\_\_\_  
Printed Name

**Water Environment Services**

\_\_\_\_\_  
Chair

\_\_\_\_\_  
Recording Secretary

\_\_\_\_\_  
Date

**Approved as to Form**

**APPROVED**  
*By Amanda Keller at 4:05 pm, Mar 25, 2020*

\_\_\_\_\_  
County Counsel    Date

**EXHIBIT H**  
**ADDITIONAL SCOPE OF WORK FOR GEOTECHNICAL INVESTIGATION AND RELATED PERMITTING**

# Tri-City Water Resources Recovery Facility Willamette River Outfall Project Phase 1 Scope of Work (Amendment 1 – Geotechnical Investigation and Related Permitting)

This Amendment 1 includes geotechnical services for the Tri-City Water Resources Recovery Facility (WRRF) Willamette River Outfall Project. Task Assignment 1 through 10 of the original scope of work (SOW) involves early assessment and data collection in support of the development of alternative engineering designs. Amendment 1 adds preparation of the geotechnical investigation to the approved scope of work. In addition, Amendment 1 modifies Tasks 2.2.2 in the original scope of work to account for work completed by WES Laboratory and modifies Task 4.2.2 in the original scope of work to respond to WES request for modeling the existing Outfall 001.

## **Task 1 – Project Management**

Jacobs shall provide continued project management services for Task 11 as described under Task 1 (see Original SOW).

## ***Task 2.2.2 – Background Willamette River and WRRF Effluent Chemistry Data (REDUCED)***

Background Willamette River chemistry and WRRF effluent chemistry data are required to define target design dilutions for water quality standards compliance. DEQ will require demonstration of compliance with water quality standards including antidegradation standards. To provide the key input data for the compliance evaluations, background river chemistry and water quality data, and WRRF effluent chemistry are required. To implement river sampling collections acceptable to DEQ, a concise project Quality Assurance Project Plan (QAPP) will be prepared to document specific field and laboratory methods, as well as quality assurance and quality control measures. These data collections will be used to document river conditions and provide the key data for use in the water quality compliance evaluation and reasonable potential analyses applied in this Conceptual Design and ~~required for~~ the engineering report prepared in Phase 2 of this project.

These river data collections and water quality monitoring have ~~will~~ included the following:

- Background Willamette River sampling for chemical analyses shall be conducted from the offshore end of the floating dock at Jon Strom Park. River water sampling methods shall employ clean metals sampling methods defined in a QAPP, and six, monthly sampling events shall be scheduled to occur during late spring-summer 2019. These surface water samples shall be analyzed for alkalinity, conductivity, hardness, pH, total suspended solids, total dissolved solids, dissolved organic carbon, dissolved calcium, magnesium, potassium, sodium, sulfate, and chloride; ammonia, nitrate-nitrite, total Kjeldahl nitrogen, orthophosphate, and total phosphorus; and total recoverable and dissolved metals (aluminum, arsenic, cadmium, chromium (+3), copper, lead, mercury (only total), nickel, selenium, silver, thallium, and zinc).
- Water quality monitoring program of the background Willamette River waters shall occur on the same date and at the same location as the water sampling during spring-summer 2019. Monthly measurements shall be conducted as vertical profile measurements collected prior to and immediately following water sample collections. A YSI Pro-DSS water quality instrument or

equivalent shall be used to measure and record river temperature, conductivity, pH, and dissolved oxygen (concentration and percent saturation).

#### **Deliverables**

- Tabular Summary of Background Willamette River Chemistry and Water Quality Data Collections included in the Willamette River Site Characteristics TM (Task 2.2.4) by Jacobs and applied in the reasonable potential analyses developed in the Willamette River Outfall Diffuser Siting Alternatives Evaluation TM (Task 3.4.2.1) by Jacobs.
- Quality Assurance Project Plan for Willamette River Sampling for Tri-City WRRF Willamette Effluent Pipeline and River Outfall Project – developed by WES Laboratory and reviewed by Jacobs.

#### **Assumptions**

- Tri-City WRRF effluent chemistry data have been developed in accordance with the current National Pollutant Discharge Elimination System (NPDES) permit monitoring requirements specified in Schedule B, and should include analytical chemistry results for total metals (semi-annual samplings), ammonia (three/week), other nutrients (weekly in dry season), total residual chlorine (daily), total and inorganic arsenic (quarterly), as well as priority pollutants (organic chemicals and pesticides) (three samplings) and PCBs (annual). If key effluent chemistry results are missing from data provided by WES, then Consultant may request that WES complete additional sampling and analyses to supplement the available effluent chemistry data.
- WES has ~~may~~ elected to perform sample collections and laboratory analyses of background Willamette River samples as defined in Task 2.2.2.

#### **Task 4.2.2 – River Outfall and Diffuser Conceptual Design (Amended)**

Jacobs shall develop and execute dilution modeling scenarios for the Tri-City WRRF existing Outfall 001 to represent high river and effluent flow discharge conditions when both the existing Outfall 001 and the new outfall diffuser are operating. Dilution modeling of the existing three 42-inch port outfall will be limited to future peak wet weather flow scenarios when the replacement outfall diffuser is operating and receives all effluent flow until a combination of effluent flow and river stage elevations necessitates diversion of effluent at the WRRF into the existing Outfall 001 for discharge to the Willamette River. The modeling will represent discharges from the existing Outfall 001, which consists of three 42-inch pipes, two open-ended and one with a 48-inch check valve installed.

Dilution modeling scenarios will be logically developed to represent plausible effluent flow and river stage conditions and consistent with DEQ's Regulatory Mixing Zone Internal Management Directive (RMZ-IMD) guidance, while recognizing that the RMZ-IMD is focused on dry season scenarios. DEQ will require that peak wet weather events when both the new outfall diffuser and existing Outfall 001 are discharging be represented with dilution modeling cases to be protective of water quality and minimize plume overlap. The dilution modeling scenarios for the existing Outfall 001 will represent a range of high river and effluent flow discharge conditions when both the existing Outfall 001 and the new outfall diffuser are operating. The objective of the dilution modeling of Outfall 001 is to document discharge dilutions under high river and effluent flow conditions for evaluation of compliance with Oregon Water Quality Standards.

The activities under this task shall include the following:

- Develop modeling scenarios to represent high river stages (5-year, 10-year, and 25-year river floods) and peak wet season effluent flow conditions when the existing Outfall 001 will need to be operated to supplement the discharge capacity of the new outfall diffuser. Effluent flow scenarios shall represent peak wet season events - daily maximum and average event flows for projected 2025, 2040, and buildout flows.
- Dilution modeling will be performed using the CORMIX1 model to represent the upstream 48-inch check valve discharge and to represent the two downstream 42-inch open-ended ports as a single 60-inch port. The basis for model selection and application was developed in the 2012 TCWRRF Outfall Remediation Report by CH2M HILL and it was reviewed by the consultant's senior modeling expert and documented in the 2012 report. Because CORMIX1 and CORMIX2 models cannot model two side-by-side 42-inch ports and because these 42-inch ports are only 3 feet apart, one 59.5-inch port (equivalent port area) should be used to represent two side-by-side 42-inch ports in CORMIX1.
- Modeling scenario inputs and dilution model results will be summarized in the technical memorandum in tables, figures, and text discussion. Develop a plot of the discharge plumes from the existing Outfall 001 and the new outfall diffuser for representative model scenarios.
- Prepare a section in the Outfall and Diffuser Conceptual Draft Design TM on combined discharges from the existing Outfall 001 and the new outfall diffuser.

#### **Deliverables**

- Modeling results and discussion will be added to the Draft Outfall and Diffuser Conceptual Design TM and final TM addressing WES comments.

#### **Task 4.2.2 – Conceptual Design Report (Amended)**

##### ***Anti-degradation Preliminary Review***

Oregon's antidegradation rule is specified in Oregon Water Quality Standards - OAR 340-041-0004 and this rule states that waterbodies may not be degraded except as authorized by the rule. DEQ has interpreted degradation as a measurable change in water quality away from conditions unimpacted by anthropogenic sources. The Tri-Cities WWTF outfall improvements are being implemented to meet state water quality standards and the outfall diffuser is being designed to allow for future use with increased treatment plant discharge volumes. This preliminary review of compliance with Oregon's antidegradation rule will be developed in accordance with the *Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications* (DEQ, March 2001). The evaluations will include effects or changes to temperature, dissolved oxygen, and toxic pollutants concentrations in the Willamette River. Tables will be developed to summarize water quality compliance in accordance with anti-degradation rule.

#### **Task 8 – Initial Topographic Field Surveys (REMOVED)**

~~The purpose of this task is to perform targeted mapping and field data collection as needed to support the preliminary design of the selected effluent pipeline and outfall route. Consultant shall:~~

- ~~• Request utility locates 48 hours prior to field survey work. Locates for predesign survey require requests to be made 10 days prior.~~
- ~~• Establish survey control network.~~



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- ~~Conduct preliminary topographic survey and mapping of the selected alignment as well as critical features that may drive the alignment changes or inform alignment/cost decisions.~~
- ~~Survey locations of wetland boundaries, Ordinary High Water Marks (OHWM), geotechnical features and archaeological flagging and pits, and other areas of interest identified as part of other tasks.~~
- ~~Detailed topographic information within the final pipeline construction corridor.~~

**Deliverables**

- ~~Control survey mapping with station locations, descriptions, and coordinates.~~
- ~~Topographic based map.~~
- ~~Electronic files and detailed survey mapping.~~

**Assumptions**

- ~~The survey task assumes a 50-foot corridor along the entire pipeline alignment and a duration of 10 days of field work and 3 days of data process in the office.~~
- ~~Right of entry for field survey will be coordinated with property owners by WES staff as needed.~~

**Task 11 – Geotechnical Investigation**

The purpose of this task is to perform targeted geotechnical investigations to support the outfall alternatives analysis and final design.

**Task 11.1 – Subsurface Investigation**

This task consists of a geotechnical field exploration consisting of two over-water geotechnical borings, nine on-land geotechnical borings to be advanced along the proposed outfall alignment, and five additional borings within the former Rossman Landfill. Over-water borings will be advanced with a drill rig loaded on a barge on the Willamette River to investigate subsurface conditions along the river bottom. The obtained subsurface data will be used to evaluate alternative construction methods for the outfall. The data will also be used to design pipe and diffuser supports and evaluate slope stability of the riverbed topography. On-land borings will be advanced with a combination of traditional rubber-tire truck and rubber-tracked drill rigs.

It is anticipated that the two over-water borings will be drilled to a depths of approximately 100 feet below the mudline while the eleven on-land mud rotary borings will be advanced to depths of approximately 30 and 100 feet below ground surface (bgs). Up to five on-land mud rotary borings will have piezometers installed for groundwater monitoring.

Soil samples will be obtained in all explorations for laboratory testing. The locations of each boring will be temporarily recorded with hand held GPS by Jacobs field staff, then surveyed by WES subcontractor for the land borings and added to the base map. Soil samples will be collected at approximately five-foot intervals using split-spoon samplers in accordance with ASTM D1586 and thin-walled Shelby tube samplers in accordance with ASTM D1587. It is not anticipated that rock will be encountered during drilling. Borings will be abandoned upon completion of the drilling according to State Department of Water Resources regulations.

A Jacobs engineer will provide continuous observation and logging of the borings. Soil samples from the borings will be examined and visually classified in accordance with standard procedures described in ASTM D2488, *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*, which uses the Unified Soil Classification System (USCS) guidelines. The visual classification of soils allows for convenient and consistent soil comparison using a standard method for describing the soil.

Laboratory testing will be conducted on select soil samples obtained from the borings. Testing of representative soil samples at each boring is anticipated to consist primarily of general index property tests (e.g., grain size, fines content, and Atterberg Limits). Other testing that may be completed includes consolidation testing and shear strength testing. Actual testing will be determined during and after the exploration program is complete.

A Jacobs engineer and the drilling subcontractor will access the over-water borings via barge and skiff boat. Access to the shoreline property may be required. Jacobs will request utility locates clearance as required by state regulations and visit the shoreline property of the site in advance of the borings to observe any surface monuments or other indications of existing utilities.

Drilling along the proposed outfall, in locations where environmental sampling will be conducted, and drilling within the Rossman Landfill will be conducted with a direct push technology or similar drill rig. Subsurface sampling will be conducted for contaminants at two geotechnical borings along the proposed outfall alignment and at the five borings within the former Rossman landfill: two locations in the area of contamination, two locations downgradient, and one location upgradient of the area of contamination.

Soil samples will be collected at 5-foot intervals using split-spoon samplers, lexan liners, or similar. Samples will be screened for volatile organic compounds (VOCs) at each depth interval using a Multi-RAE gas sensor capable of detecting methane, lower explosive limits (LEL), oxygen levels, and VOCs. The first analytical sample will be collected for laboratory analysis at any encountered refuse, locations where visual observations or field screening indicates the presence of contamination, or at depth of 15 feet below ground surface (bgs). A second soil sample will be collected at the total depth of the borehole, which will extend to the water table. Depth to groundwater at the landfill ranges from 25 to 35 feet bgs (URS Rossman Landfill Remedial Action Plan, 2000). Perched water has been reported at 5 to 10 feet bgs and water in this zone will not be sampled.

Discrete soil samples will be submitted for analysis to an accredited laboratory. Two Jacobs environmental staff will be on-site to collect samples and submit them for laboratory analysis. Field staff will note sheen, odors, texture, color of soil, and geology at each sample depth.

Based on a review of the Rossman Landfill documentation, there are several potential contaminants of concern. As a result, soil samples will be analyzed for the following:

Potential Contaminant for Analysis	Analytical Test Method		
Metals:	EPA Method 6010B/7470A		
arsenic		iron	selenium
barium		lead	silver
cadmium		manganese	vanadium
chromium		mercury	zinc
copper		nickel	
VOCs	EPA Method 8260		
SVOCs	EPA Method 8270D		
PCBs (Aroclors)	EPA Method 8082A		

TPH- GRO	NWTPH-GRO
TPH- DRO	NWTPH-DRO
TPH- MO	TPH-MO
Notes: PCBs = polychlorinated biphenyls VOCs = volatile organic compounds SVOCs = semi-volatile organic compounds	TPH-DRO = total petroleum hydrocarbons diesel range organics TPH-GRO = total petroleum hydrocarbons gasoline range organics TPH-MO = total petroleum hydrocarbons motor oil organics

### Deliverables

- Health and Safety Plan for subsurface investigation field work including soil sampling.
- Work Plan with Field Sampling Plan for submittal to DEQ for approval.
- Exploration Logs, laboratory test results, and piezometer readings.

### Assumptions for Geotechnical drilling

- Subconsultant costs for drilling are based on assumed drilling depths. Driller costs may increase based on unforeseen issues in the field. Should drilling be delayed beyond the period of quote coverage, revised quotes will be requested prior to drilling.
- No rock coring is anticipated for the over-water or on-land borings.
- Drill cuttings and investigation derived waste (IDW) will be drummed and disposed of off-site.
- WES shall coordinate and obtain any necessary right of entry agreements.
- Jacobs will request public utility locates 5-10 business days prior to the start of work and complete a site visit (by land) to review boring locations for surface indications of existing utilities.
- WES shall assist with utility locates by providing mapping and supporting locates activities for the existing outfall, existing force main, and other WES utilities located near proposed boring locations.
- Jacobs shall obtain traffic control services for borings where required and shall coordinate with traffic control subcontractor to create applicable traffic control plans.
- Soil encountered during the over-water field exploration will be free of environmental contamination requiring special monitoring, handling, testing, or disposal. Any soil collected with visible oil contamination will be stored for landfill disposal.
- Borings advanced within the Rossman Landfill will be abandoned using a cement bentonite grout and no additional repair of the landfill cover or containment system will be necessary.
- Drill rods will be decontaminated after drilling borings within the Rossman Landfill and along the proposed outfall alignment where environmental sampling will occur. Drill rods will not need to be decontaminated between over-water borings.
- Up to \$11,500 is included for testing, handling and disposal of IDW drums. This assumes that a total of two drums would be generated at the two Rossman landfill borings.
- In soil, foundation, groundwater, and other subsurface investigations, the actual characteristics may vary significantly between successive test points and sample intervals and at locations other than where observations, exploration, and investigations have been made. Because of the inherent uncertainties in subsurface evaluations, changed or unanticipated underground conditions may occur that could affect total project cost and/or execution. These conditions and cost/execution effects are not the responsibility of Jacobs. The purpose of these investigations are to inform pipeline and diffuser design for the alignment within the Willamette River and to inform the basis of design of the overland pipeline and trenchless crossing(s).

- Permits for drilling will be obtained by Jacobs (included in Permitting, Task 11.8) and drilling cannot proceed until permits are obtained.
- Current scope does not include removal of piezometers. It is anticipated that they will be removed as part of the construction contract.

#### **Additional Assumptions for Environmental Sampling**

- Up to 15 discrete soil samples, including one duplicate, will be submitted for laboratory analysis for the constituents listed above.
- Water samples will not be required, and wells / piezometers will not be installed.
- Borings will terminate at a maximum depth of 35 feet bgs, or the top of the water table, whichever is shallower. Perched water at 5 to 10 feet bgs is not considered groundwater.
- Laboratory results will be returned within 30 days of sample delivery to the lab.
- A work plan will be developed by Jacobs for environmental sampling within the landfill for approval by DEQ. Work will not proceed until the work plan is approved.
- Work Plan assumes one round of comments by WES and one round of comments from DEQ.
- Should DEQ request modifications to the sampling during work plan review, additional costs may be incurred.
- Drums of IDW generated from the Rossman Landfill borings and from the two borings along the outfall alignment where environmental sampling is conducted will be stored on WES property until environmental testing can be completed to determine disposal requirements.
- IDW from environmental borings are non-hazardous.
- Jacobs will coordinate for off-site disposal of IDW on behalf of WES.
- Investigation field efforts within the landfill will be completed within 3 days, with 2 staff members.
- Level D personal protection equipment will be adequate for all field activities.

#### **Task 11.2 – Geotechnical Data Report**

Jacobs will develop a Geotechnical Data Report (GDR) which shall include information collected from: aerial photograph interpretation, site investigations, geologic mapping, piezometers, results of field and laboratory testing. The GDR shall also include geologic and seismic setting, groundwater measurements, and other geotechnical data associated with outfall design and construction. The Draft GDR shall be submitted to Owners for review.

The Final GDR shall be signed and sealed by a Professional Engineer or Geologist, registered in the state of Oregon, and generally is organized to include the following:

- Introduction
- Project and Site Conditions
- Regional Geology
- Field Exploration and Laboratory Testing Results
- Subsurface Conditions
- References

#### **Deliverables**

- One draft Geotechnical Data Report will be submitted to the District for review. The Geotechnical Data Report will include an exploration location plan, laboratory test results, final typed exploration logs, summary of findings, and a description of the general site geology.

- A Final Geotechnical Data Report will incorporate review comments from the draft.

#### **Assumptions**

- WES will provide one, consolidated set of review comments to the draft Geotechnical Data Report.

#### **Task 11.3 – Not Used**

#### **Task 11.4 – Geotechnical Recommendations Report**

Jacobs will develop a Geotechnical Recommendations Report to analyze the geotechnical findings from the Geotechnical Data Report. This task includes reviewing field data and performing and documenting geotechnical analyses including preliminary soil stability and outfall pipeline design and installation methods. The Geotechnical Recommendations Report will summarize recommendations for the preliminary design along the proposed outfall alignment from the Tri-City WWTP along Hwy 205 to the proposed outfall location in the Willamette River, specifically at the Hwy 99E crossing, Oregon State Park crossing, and diffuser location. Jacobs will submit a draft report to Owners for the review and comment.

The final report will be signed and sealed by a Professional Engineer and, if necessary, a Professional Geologist, registered in the state of Oregon with the expertise commensurate with the report content.

The report shall be generally organized to include the following:

- Introduction
- Project and Site Description
- Field Exploration and Laboratory Tests
- Engineering Properties for each Geologic Unit
- Geotechnical Engineering Analysis, including the Conclusions and Recommendations outlined in the following subsections:
  - Recommendations for Design
  - Recommendations for Construction
- Limitations
- References

Include in the Geotechnical Design Report, analysis, conclusions and recommendations for the following as applicable:

- Lateral earth pressures
- Coefficient of friction between concrete and native soils and base materials
- Expected total and differential settlement of proposed facilities
- Shallow foundation (spread or mat footings) recommendations including allowable bearing pressure and embedment depths
- Loading and adjacent movement criteria for shoring
- Dewatering criteria
- Minimum cover over pipe for various loading conditions and to prevent floatation of pipe in high groundwater areas
- Cut and fill slope requirements
- Recommendations for suitable structural and general fill requirements

#### **Deliverables**

- One Draft Geotechnical Recommendations Report will be submitted for review.
- A Final Geotechnical Recommendations Report will incorporate comments from the review.

**Assumptions**

- WES will provide one, consolidated set of review comments to the draft Geotechnical Data Report.

**Task 11.5 – Trenchless Alternatives Analysis Technical Memorandum**

Jacobs will prepare a Trenchless Alternatives Analysis Technical Memorandum and will include a detailed description of considered construction methods for trenchless drives. The memorandum shall summarize subsurface conditions and present a profile for each trenchless drive section, consider different alignment alternatives and provide a cost estimate for each alternative, summarizing geotechnical and environmental constraints, review likely applicable trenchless methods, evaluate the application of trenchless methods including construction issues and risks, present preliminary recommendations for trenchless drive methodology and equipment, evaluate ground loss and settlement, and make recommendations for backfill and grouting requirements, construction access, and staging and easement requirements, both permanent and temporary.

**Deliverables**

- One Draft Trenchless Alternatives Analysis Technical Memorandum for review.
- A Final Trenchless Alternatives Analysis Technical Memorandum will incorporate comments from review.

**Task 11.6 – Environmental Sampling Technical Memorandum**

Jacobs will prepare a Summary Technical Memorandum with a description of the work completed. The memorandum will include a discussion of field activities, a high-level summary and interpretation of the results including recommendations for treatment of contaminated material, if applicable.

**Assumptions**

- WES will provide one consolidated set of review comments to the draft Technical Memorandum
- The Technical Memorandum will be submitted by Jacobs to DEQ on behalf of WES, following incorporation of WES comments.
- Resolution of DEQ comments, if any are provided, is not included in our costs.
- Costs include one 4-hour meeting with WES to discuss results and implications for remediation activities.

**Deliverables**

- One Draft Summary Technical Memorandum for review.
- A Final Summary Technical Memorandum will incorporate comments from review.

**Task 11.7 – Permits for Borings**

Jacobs will develop, complete, submit, and monitor the following permit applications to conduct geotechnical exploration:

- Permit Applications for Wetland Removal-Fill – Prepare application for Corps CWA Section 10/404 Nationwide Permit, and for DSL General Authorization.
- Endangered Species Act – Prepare SLOPES Action Implementation Form and Action Completion Form.
- Cultural Resources – Prepare Inadvertent Discovery Plan/Monitoring Plan.
- Marine Safety Zone/Notice to Mariners – Coordinate with US Coast Guard and Oregon State Marine Board, and prepare Marine Safety Plan.

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- CWA Section 401 Water Quality Certification – Monitor and respond to comments during application review, and coordinate with DEQ.
- Short Term Access Agreement – Prepare application for a temporary construction easement from DSL for in-water work.
- Miscellaneous Permit or Permit to Occupy or Perform Operations Upon a State Highway – Coordinate with ODOT, and prepare application and legal description for encroachments in State right of way.
- Development Permit – Applicable Oregon City Municipal Code (OCMC) sections may include: 17.34, 17.39, 17.42, 17.44, 17.48, 17.49, and 17.50 for Development Permit. Conduct a pre-application meeting with Oregon City and prepare applications for land use, Floodplain Development and Geologic Hazard permits. The Geologic Hazard permit application shall be certified by a registered engineer. One meeting with Oregon City shall be held to coordinate submission of the Development Permit applications.
- Erosion and Sediment Control Permit – Applicable OCMC section is 17.47.060 for the Erosion and Sediment Control permit. Prepare application, including erosion and sediment control plan, and submit to Oregon City.
- Public Works Permit – Applicable OCMC section is 13.04.030 for the Public Works permit. Prepare application, traffic control plan, and rehabilitation plan for work in Oregon City right of way.

**Deliverables**

- Permit applications for the identified permits listed in this section.

**Assumptions**

- Up to 40 hours are included for permit monitoring and responding to agency questions for all permits listed in task 11.8.
- Permit application fees will be paid by WES, or by Jacobs and reimbursed.
- No Section 408 properties will be affected.
- No wetland delineation is required and no wetland impacts.
- No stream functional assessment is required.
- Marine Mammal Protection Act permit not required.
- Project qualifies for Endangered Species Act (ESA) SLOPES Programmatic B.O.
- No ESA terrestrial endangered or threatened species will be encountered.
- No tribal consultation/SHPO coordination is required.
- Archaeology/historic resources will not be encountered and survey/report not required.
- USCG will publish marine safety plan in Federal Register.
- DEQ standard Section 401 conditions for NWP apply.
- NPDES Construction Stormwater Discharge 1200-C Permit is not required.
- Land survey and easement recordation are not required for the DSL Short Term Access Agreement.
- Only Oregon City Type 1 land use permits will be needed.
- Willamette Greenway Development permit is not required.
- Natural Resources Overlay District permit is not required.
- Geologic Hazard/Assessment/Report is not required for the Geotech Development Report.
- No neighborhood association meetings, public notices, hearings, or appeals are anticipated or included.
- WES will provide insurance and performance security, if required by property owners for permission to access or perform work on their property. Examples of coverage that might be

requested are: Commercial General Liability (indemnity) insurance, Premises Environmental Liability insurance, Pollution and Legal Liability.

### **Task 12 – Public Involvement Support**

The purpose of the public involvement program is to inform the general public about the Tri-City Water Resource Recovery Facility Outfall and Effluent Pipeline Project purpose, need and benefits; and provide opportunity for impacted, interested stakeholders to provide input that informs the permitting, design and mitigation process. Throughout the project related engagement efforts, we will also aim to accomplish WES' communication goals.

In conjunction with early outreach efforts, we will also facilitate the creation of the Oregon City Ballot Measure language and messaging.

#### **Task 12.1 Public Involvement and Outreach Plan**

Work collaboratively with WES to develop a Public Involvement and Outreach Plan that outlines the communications goals, key messages and tasks to be accomplished as part of this Project.

##### **Deliverable**

- Public Involvement and Outreach Plan

##### **Roles**

- Lead Planning Design: JLA
- WES Lead: Shelly
- PGA Lead: Todd

#### **Task 12.2 Ballot Measure language and communication**

Work collaboratively with WES on defining the ballot measure messaging and stakeholder engagement around the ballot measure.

##### **Deliverables**

- Ballot Measure language and Involvement and Outreach Plan specific to the measure
- Liaison with Secretary of State's Office

##### **Roles**

- Lead: WES (Shelly)
- Content: JLA
- Advisory/Communication Outlets: PGA (Todd)

#### **Task 12.3 Stakeholder Database and Project Communications**

Develop and maintain a database of key stakeholders and interested parties generated through contacts provided by WES, the website contact form, and attendance at meetings and events. This list will be used to mail or e-mail pertinent project updates, including meeting invitations.

##### **Deliverable**

- Stakeholder database/ mailing list

##### **Roles**



- Lead: JLA
- Support: WES (Shelly)

#### **Task 12.4 Informational Fact Sheet and Frequently Asked Questions**

At the outset of the project, develop an **informational fact sheet** to include a project overview, project schedule and contact information. After conducting meetings with key stakeholders, develop a frequently asked questions (**FAQ**) sheet based upon the questions, comments and concerns that are raised. The informational fact sheet will be shared during meetings with key stakeholders and at tabling events. Both will be available on the Project website.

##### **Deliverables**

- Informational fact sheet
- F.A.Q. sheet

##### **Roles**

- Lead: JLA
- Advisory: PGA (Todd) and WES (Shelly)

#### **Task 12.5 Targeted Stakeholder Engagement**

Work collaboratively with WES to identify the most impacted and interested stakeholders with whom to conduct interviews and assist with creation of interview questions. The purpose of these interviews is to provide an opportunity for stakeholders to ask questions and to provide input on outreach efforts, including possible future public engagement opportunities, advice on alignment and design options and permitting/mitigation efforts. Possible stakeholders to interview include Willamette River Keepers, neighborhood associations, business associations, schools, and environmental groups and tribes.

##### **Assumptions**

- WES staff will conduct interviews.

##### **Deliverable**

- Lists of recommendations, contact information and strategy for engagement.

##### **Roles**

- Lead: WES (Shelly)
- Advisory/Support: JLA

#### **Task 12.6 Project Website**

A project website will be developed and created in conjunction with WES. The website will include a project overview, timeline, frequently-asked questions, contact information, contact us form, and an educational video.

##### **Deliverable**

- Website.

##### **Roles**

- Lead: JLA
- Advisory/Support: PGA (Todd)

### **Task 12.7 Educational Video**

Work collaboratively with WES to create an educational overview video to convey the project purpose, need and benefits. The video may also communicate how various project challenges will be mitigated, such as wildlife habitat, construction methods, etc. The video will be hosted on the project website and shared at community meetings and at tabling events.

#### **Deliverable**

- Educational overview video.

#### **Roles**

- Lead: JLA
- Support: PGA (Todd)

### **Task 12.8 Newsletter Articles**

Two newsletter articles will be prepared for publication.

#### **Deliverable**

- Newsletter articles (up to two for Oregon City).

#### **Roles**

- Lead: JLA
- Support: PGA (Todd)

### **Task 12.9 Open Houses/Public Meetings**

Up to two public meetings will be conducted in conjunction with ballot measure process.

#### **Assumptions**

- WES will schedule and coordinate.
- JLA will produce informational materials, attend and document each of these meetings.

#### **Deliverables**

- Up to two public meetings.
- Meeting agendas, sign in sheets, comment forms, handouts, and informational displays.
- Meeting summaries.

#### **Roles**

- Lead: WES (Shelly)
- Logistics and Support: JLA
- Communication Outlets: PGA (Todd)
- BCC Involvement: PGA (Todd)

Tri City Water Resource Recovery Facility (WRRF) Willamette River Outfall  
 Clackamas County, Water Environmental Services (WES)  
 Level of Effort Estimate

Task No.	Task/Subtask	Labor Hrs	Jacobs Labor Costs	Jacobs Expenses	Public Involvement	Drilling	Disposal of IDW	Utility Locating	Traffic Control	Environmental Laboratory Testing	Testing	Total Subs	Top Task Summary
					JLA	Western States Soil Conservation, Inc		APS Utility Locate	COAT Flagging		Benchmark GeoLabs, LLC		
<b>1.0</b>	<b>Project Management</b>	120	\$ 22,198	\$ -	-	-	-	-	-	-	-	\$ -	\$ 22,198
<b>2.0</b>	<b>Data Collection, Review and Analysis</b>	(16)	\$ (3,664)	\$ (2,500)	-	-	-	-	-	(15,938)	-	\$ (16,735)	\$ (22,899)
2.2.2	Background Willamette River and WRRF Effluent Chemistry Data	(16)	\$ (3,664)	\$ (2,500)	-	-	-	-	-	\$ (15,938)	-	\$ (16,735)	\$ (22,899)
<b>4.0</b>	<b>Conceptual Design</b>	106	24,158	-	-	-	-	-	-	-	-	\$ -	\$ 24,158
4.2.2	River Outfall and Diffuser Design	70	\$ 15,914									\$ -	\$ 15,914
4.6	Conceptual Design Report (Antidegradation Amendment)	36	\$ 8,244									\$ -	\$ 8,244
<b>5.0</b>	<b>Environmental and Other Permitting</b>	92	\$ 20,732		-	-	-	-	-	-	-	\$ -	\$ 20,732
5.4	Environmental Permits and Approvals Strategy for Preferred Routing Alternative	92	\$ 20,732		-	-	-	-	-	-	-	\$ -	\$ 20,732
<b>8.0</b>	<b>Initial Topographic Field Surveys</b>	(194)	\$ (30,605)		-	-	-	-	-	-	-	\$ -	\$ (30,605)
		(194)	\$ (30,605)		-	-	-	-	-	-	-	\$ -	\$ (30,605)
<b>11.0</b>	<b>Geotechnical Investigations</b>	1,288	\$ 196,901	\$ 17,909	\$ -	\$ 127,000	\$ 3,500	\$ 2,000	\$ 6,800	\$ 8,000	\$ 20,500	\$ 176,190	\$ 391,000
11.1	Subsurface Investigation	570	\$ 75,511	\$ 15,300		\$ 127,000	\$ 3,500	\$ 2,000	\$ 6,800	\$ 8,000	\$ 20,500	\$ 176,190	\$ 267,001
11.2	Geotechnical Data Report	118	\$ 18,589									\$ -	\$ 18,589
11.3	Not Used	-	\$ -									\$ -	\$ -
11.4	Geotechnical Recocomendations Report	172	\$ 30,485									\$ -	\$ 30,485
11.5	Trenchless Alternatives Analysis Technical Memorandum	112	\$ 20,136									\$ -	\$ 20,136
11.6	Environmental Sampling TM	118	\$ 15,272									\$ -	\$ 15,272
11.7	Permits for Boring	198	\$ 36,907	\$ 2,609								\$ -	\$ 39,516
<b>12.0</b>	<b>Public Involvement Support</b>	56	\$ 13,544	\$ -	\$ 49,584	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 52,063	\$ 65,607
12.1	Public Involvement & Outreach Plan	2	\$ 458		\$ 2,005							\$ 2,105	\$ 2,563
12.2	Ballot Measure language and communication	26	\$ 6,314		\$ 6,767							\$ 7,105	\$ 13,419
12.3	Stakeholder database and project communications	2	\$ 458		\$ 3,504							\$ 3,679	\$ 4,137
12.4	Informational fact sheet and FAQ	2	\$ 458		\$ 4,957							\$ 5,205	\$ 5,663
12.5	Targeted Stakeholder Engagement	2	\$ 458		\$ 4,631							\$ 4,863	\$ 5,321
12.6	Project website	8	\$ 2,012		\$ 5,565							\$ 5,843	\$ 7,855
12.7	Educational Video	8	\$ 2,012		\$ 5,250							\$ 5,513	\$ 7,525
12.8	Newsletter Articles	2	\$ 458		\$ 2,341							\$ 2,458	\$ 2,916
12.9	Press Releases	2	\$ 458		\$ 1,885							\$ 1,979	\$ 2,437
12.10	Open houses and public meetings	2	\$ 458		\$ 12,679							\$ 13,313	\$ 13,771
	<b>Total Staff Labor hours</b>	1,606	243,263	15,409	49,584	127,000	3,500	2,000	6,800	(7,938)	20,500	211,518	470,190
	2020 Labor Rates												
	<b>Total Staff Labor(\$)</b>		\$ 243,263	\$ 15,409	\$ 49,584	\$ 127,000	\$ 3,500	\$ 2,000	\$ 6,800	\$ (7,938)	\$ 20,500	\$ 211,518	\$ 470,190