

**Willamette Water Supply System
Board Meeting Agenda
Thursday, February 6, 2020 | 12:00 – 2:00 PM**

**Tualatin Valley Water District – Board Room
1850 SW 170th Avenue, Beaverton, OR 97003**

To prepare to address the Willamette Water Supply System Board, please fill out the Public Comment Form located on the table near the main door to the meeting room. **Assistive Listening Devices (ALD) are available upon request 48 hours prior to the day of the meeting by calling (503) 941-4580.** **All testimony is electronically recorded.**

BOARD LUNCH – 11:30 AM

REGULAR SESSION – 12:00 PM

CALL TO ORDER

1. GENERAL MANAGER'S REPORT – Dave Kraska

(Brief presentation on current activities relative to the WWSS Commission)

2. PUBLIC COMMENT

(This time is set aside for persons wishing to address the Board on items on the Consent Agenda, as well as matters not on the agenda. Additional public comment will be invited on agenda items as they are presented. Each person is limited to five minutes, unless an extension is granted by the Board. Should three or more people testify on the same topic, each person will be limited to three minutes.)

3. CONSENT AGENDA

(The entire Consent Agenda is normally considered in a single motion. Any Commissioner may request that an item be removed for separate consideration.)

- A. Approve the January 9, 2020 meeting minutes.

4. BUSINESS AGENDA

- A. Approve RES_1.0 Design, Bidding, and Services During Construction Contract – *Mike Britch*
- B. Adopt PLW_1.3 Resolution of Necessity – *Joelle Bennett*

5. INFORMATION ITEMS

- A. WWSP Baseline 5.0 Status Update – *David Kraska*
- B. Planned March Business Agenda items – *Joelle Bennett*
- C. The next Board meeting is scheduled on March 5, 2020, at Hillsboro Civic Center – Room 113B/C.

6. COMMUNICATIONS AND NON-AGENDA ITEMS

- A. None scheduled.

ADJOURNMENT

Willamette Water Supply System Commission

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Willamette Water Supply

Our Reliable Water

Safety Minute:

Preventing the Spread of Colds in the Office

1

5 Simple Tips (rules?)

1. Take care of yourself
 - Sleep
 - Exercise
 - Manage stress
 - Eat Right



Willamette Water Supply
Our Reliable Water

2

5 Simple Tips (rules?)

1. Take care of yourself
2. Wash your hands and don't touch your face
 - According to the Center for Disease Control, 80% of disease is spread by touch



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3

5 Simple Tips (rules?)

1. Take care of yourself
2. Wash your hands
3. Cover your nose and mouth
 - DON'T cough or sneeze into your hands
 - Use a tissue or crook of your elbow



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4

5 Simple Tips (rules?)

1. Take care of yourself
2. Wash your hands
3. Cover your nose and mouth
4. Disinfect surfaces you touch often
 - Again, wash hands often
 - Use disinfectant wipes in your area



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Our Reliable Water

5

5 Simple Tips (rules?)

1. Take care of yourself
2. Wash your hands
3. Cover your nose and mouth
4. Disinfect surfaces you touch
5. Encourage people who are ill to stay home
 - Including yourself
 - Offer to back each other up



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Our Reliable Water

6

5 Simple Tips (rules?)

1. Take care of yourself
2. Wash your hands
3. Cover your nose and mouth
4. Disinfect surfaces you touch often
5. Encourage sick people to stay home

7

Other interesting office health ideas

1. Get a flu shot
2. Keep a geranium at your desk
 - Crumpled leaves release phytoncides
3. Eat yogurt
 - Reduces susceptibility by 25%
4. Keep an ionizer at your desk

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MEMO

Date: February 6, 2020

To: Willamette Water Supply System Board of Commissioners

From: David Kraska, P.E., General Manager

Re: Willamette Water Supply System (WWSS) General Manager's Report

The following items will be covered during the report by the General Manager (GM):

- 1. Be Sure to Use Microphones** – Please remember to use your microphone whenever you are speaking, and to turn off your microphone when you are not speaking.
- 2. Safety Minute** – David Kraska will present today's safety minute.
- 3. Approvals and Procurements Forecast** – Attached to this GM report is the approvals and procurements forecast for January 2020 through March 2020. The forecast presents a view of WWSP activities that have recently been approved or are scheduled for approval over the next two months by either the WWSP Director, WWSS Committees, or the WWSS Board.

Noteworthy in this forecast is that we are continuing our annual rebaseline effort to update our overall Program budget and schedule, targeting approval by the WWSS Board in March. Part of our rebaseline effort includes identifying strategies for cost management at the Program level. This will be discussed further in the first information item. The forecast also lists various intergovernmental agreements that are in process, and contract change orders that are being negotiated.

- 4. Projects Planning, Permitting, and Communications Updates** – In December and January, numerous submittals were made to the City of Wilsonville, Clackamas County, and to the Bonneville Power Administration related to our Raw Water Facilities (RWF) Project. These applications are for various permits such as building, grading, mechanical, plumbing and electrical. We also made an application to the Oregon Health Authority for plan review of our RWF Project design. Numerous other permit applications are being made for many of our other pipeline projects as we progress design and get closer to starting construction on many of them.

GM Report to the WWSS Board of Commissioners

February 4, 2020

Page 2

- 5. Projects Design Status Updates** – Work continues on multiple design projects, including nine pipeline projects, the RWF project, the Water Treatment Plant, and the Distributed Controls System. Additionally, subject to WWSS Board approval of their design contract today, we anticipate giving notice to proceed to Black & Veatch to begin work on the terminal storage project (RES_1.0). This RES_1.0 contract is the last design consultant procurement for the WWSP.

- 6. Projects Construction Status Updates** – There are four projects actively under construction:
 1. PLM_1.1 – our raw water pipeline project in Wilsonville that extends from our RWF project to Wilsonville Road,
 2. PLM_1.2 – another raw water pipeline project being completed in partnership with the City of Wilsonville’s Garden Acres Road project,
 3. PLM_5.1 – a finished water pipeline project being completed in partnership with Washington County’s Roy Rogers Road project, and
 4. PLM_5.2 – a finished water pipeline project along SW Scholls Ferry and SW Tile Flat roads that we are working to complete in advance of development work in the area.

All projects remain on track and are progressing according to plan. As was presented in last month’s General Manager’s report, a portion of Tile Flat Road remains closed to enable construction of the part of PLM_5.2 that is within the existing right-of-way. Construction continues to proceed smoothly, and the few neighbor concerns have been addressed by the WWSP Communications Team and the on-site construction manager. The closure is permitted through February 16, and we are on track to finish on time.



Approvals and Procurement Forecast: January 2020 through March 2020

This report provides a three-month projection of (1) forthcoming actions under the WWSS Management Authority Matrix and (2) ongoing and forthcoming procurements.

a = Actual date
e = Email approval
FC = Finance Committee
LCRB = Local Contract Review Board
MC = Management Committee
N/A = Not applicable
OC = Operations Committee

Rec. = Recommendation
t = Tentative date
TBD = To be determined; sufficient information not available to project a date
Note: Dates in **red text** indicate meetings needed outside the normal meeting schedule

| Type | Description | Projected Action | Body/Position (projected action date) | | |
|---|--|------------------|---------------------------------------|------------------------------------|-------------|
| | | | Program Director | WWSS Committees | WWSS Board |
| Program Baseline or Related Plans | 1. WWSP Annual Rebaseline Schedule and Budget | Approve | N/A | MC: 2/20/2020 t FC & OC: TBD | 3/5/2020 t |
| | | Execute | N/A | N/A | N/A |
| Real Estate | 2. PLW_1.3 Resolution of Need | Approve | N/A | MC: 1/23/2020 | 2/6/2020 |
| | 3. PLM_4.3 Resolution of Need | Approve | N/A | MC: 2/20/2020 t | 3/5/2020 t |
| IGAs, MOUs, Permit Commitments, & Similar Agreements | 4. MPE_1.0 City of Beaverton (COB_1.0) Project Agreement (design only) | Approve | N/A | MC: 1/7/2020 a | 1/9/2020 a |
| | | Execute | Pending | N/A | N/A |
| | 5. PLW_1.3 Hagg Lane (Butternut Creek) Agreement Amendment | Approve | N/A | N/A | N/A |
| | | Execute | 2/28/2020 t | N/A | N/A |
| | 6. PLM_4.1 WCLUT Design IGA Amendment 2 | Approve | N/A | MC: 10/16/2019 a | 12/5/2019 a |
| | | Execute | 1/22/2020 t | N/A | N/A |
| | 7. PLM_4.2 WCLUT Design IGA Amendment 1 | Approve | N/A | MC: 10/16/2019 a | 12/5/2019 a |
| | | Execute | 1/22/2020 t | N/A | N/A |
| | 8. PLW_1.2 WCLUT Design IGA Amendment 1 | Approve | N/A | MC: 10/16/2019 a | 12/5/2019 a |
| | | Execute | 1/22/2020 t | N/A | N/A |
| 9. PLM_5.2 Metropolitan Land Group Developer Agreement | Approve | N/A | MC: 3/19/2020 t | 4/2/2020 t | |
| | Execute | 4/3/2020 t | N/A | N/A | |
| Contracts | 10. RES_1.0 Design, Bidding, and Services During Construction | Approve | N/A | MC: 1/23/2020 t | 2/6/2020 t |
| | | Execute | 2/7/2020 t | N/A | N/A |

| Type | Description | Projected Action | Body/Position (projected action date) | | | |
|---|--|---|---------------------------------------|------------------|------------------------------|--|
| | | | Program Director | WWSS Committees | WWSS Commission Board | |
| Contract Amendments and Change Orders (above Program Director's Authority) | 11. MPE_1.0 Design Amendment for City of Beaverton Pipeline (COB_1.0) Addition | Approve | N/A | N/A | 8/21/2019 a (Via WWSS MC) | |
| | | Execute | Pending | N/A | N/A | |
| | | <ul style="list-style-type: none"> Goal: Amend contract for final design and services during construction to add COB_1.0 project in accordance with project agreement Approximate value: \$1,558,884.40 Engineer: Brown and Caldwell | | | | |
| | 12. Program Regulatory Permitting and Related Consulting Services | Approve | N/A | MC:12/19/2019 a | 1/9/2020 a | |
| | | Execute | 1/15/2020 a | N/A | N/A | |
| | | <ul style="list-style-type: none"> Goal: Amend contract to provide professional services from January 2020 through February 2021 Approximate value: \$2.1M Consultant: David Evans and Associates, Inc. | | | | |
| | 13. PLM_1.2 Construction Contract Change Order to add Day Road Crossing | Approve | N/A | MC: 2/20/2020 t | 3/5/2020 t | |
| | | Execute | 3/6/2020 t (by Wilsonville) | N/A | N/A | |
| | | <ul style="list-style-type: none"> Goal: Change order to Construction contract to add Day Road Crossing (Wilsonville Contract) Value: \$2.0M Contractor: Moore Excavation | | | | |
| | 14. PLM_5.3 Design Amendment for Implementing Selected Alternative Alignment | Approve | N/A | MC: 2/20/2020 t | 3/5/2020 t | |
| | | Execute | 3/6/2020 t | N/A | N/A | |
| | | <ul style="list-style-type: none"> Goal: Amend contract for final design and services during construction to reflect realignment; Create additional bid package Value: \$1.3M Engineer: Jacobs | | | | |
| | 15. WTP_1.0 Design Amendment for Scope Modifications | Approve | N/A | MC: 2/20/2020 t | 3/5/2020 t | |
| | | Execute | 3/6/2020 t | N/A | N/A | |
| | | <ul style="list-style-type: none"> Goal: Amend contract for design services related to additional engineering services Value: TBD Engineer: CDM Smith | | | | |
| Local Contract Review Board (LCRB) Actions | 16. Findings for the Use of Alternative Contracting Methods for Construction of Selected Pipeline Packages | Approve | N/A | MC: 11/19/2019 a | 1/9/2020 a (as LCRB) | |
| | | Execute | N/A | N/A | N/A | |
| | <ul style="list-style-type: none"> Board action to initiate public comment period 12/5/2019 a | | | | | |

**Willamette Water Supply System Commission
Board Meeting Minutes
Thursday, January 9, 2020**

Commissioners present:

Tualatin Valley Water District (TVWD): Jim Duggan
Hillsboro: David Judah
Beaverton: Denny Doyle

Committee Members present:

TVWD: Tom Hickmann, Management Committee
Paul Matthews, Finance Committee
Hillsboro: Niki Iverson, Management Committee
Beaverton: David Donaldson, Management Committee
David Winship, Operations Committee

Managing Agency Administrative Staff present:

Dave Kraska, Willamette Water Supply Program (WWSP) Director; WWSS Commission General Manager
Joelle Bennett, WWSP Assistant Director
Bill Van Derveer, WWSP Manager
Clark Balfour, TVWD General Counsel
Justin Carlton, TVWD Finance and Operations Manager
Faye Branton, WWSP Administrative Assistant; WWSS Commission Recorder

Other Attendees:

Tommy Brooks, Cable Huston, LLP
Joel Cary, TVWD Water Resources Division Manager
Christina Walter, WWSP Permitting and Outreach Manager
Kelly Vorenkamp, WWSP Procurement and Contracts Administrator
Mark McConnell, TVWD Facilities

No members of the public were present.

CALL TO ORDER

Chairman Duggan called the regular Willamette Water Supply System (WWSS) Commission meeting to order at 12:04 p.m.

Chairman Duggan asked if any business or action needed to come before the Board as a follow up to the Executive Session.

Motion was made by Judah, seconded by Doyle to confirm the Commission's intent under Resolution WWSS-02-19 that acquisition of real property interests already underway for the WWSS shall be continued in the name of Tualatin Valley Water District, that the authority to make such acquisitions for an amount determined as just compensation was delegated to the Tualatin Valley Water District Board

of Commissioners for that purpose, and that Resolution WWSS-06-19 did not modify that authority, and to clarify the Commission's intent under Resolution WWSS-02-19 that Management Committee approval for acquisitions exceeding \$150,000 applied only to those acquisitions which were part of a negotiated transaction and not those being made pursuant to an offer for just compensation. The motion passed unanimously with Doyle, Duggan, and Judah, voting in favor.

1. GENERAL MANAGER'S REPORT

Mr. Kraska opened with a safety moment covering the risks of unnecessary flying objects (UFOs) in your vehicle during a sudden stop or collision, followed by the General Manager's report, which included an overview of the Approvals and Procurement Forecast; updates on projects planning, permitting, and communications; and status updates on the design and construction of projects.

2. PUBLIC COMMENT

There were no public comments.

3. CONSENT AGENDA

- A. Approve the December 5, 2019 meeting minutes.

Motion was made by Doyle seconded by Judah to approve the consent agenda as presented. The motion passed unanimously with Doyle, Duggan, and Judah, voting in favor.

4. PUBLIC HEARING

- A. Acting as the Local Contract Review Board, consider adopting Resolution No. WWSS-01-20 declaring an exemption from competitive bidding for certain Willamette Water Supply System water transmission pipeline projects and approving a best value construction contractor selection method. – *Staff Report – Dave Kraska*

Mr. Kraska presented the staff report requesting the Local Contract Review Board's adoption of Resolution No. WWSS-01-20.

Chairman Duggan opened the public hearing at 12:15 p.m.

There was no comment or public testimony.

Chairman Duggan closed the public hearing at 12:16 p.m.

Motion was made by Doyle seconded by Judah to adopt Resolution No. WWSS-01-20. The motion passed unanimously with Doyle, Duggan, and Judah, voting in favor.

5. BUSINESS AGENDA

- A. Consider approving a change order to the David Evans and Associates (DEA) contract in the amount of \$2,089,829 and extending the contract term through February 28, 2021 to

provide continued regulatory permitting and related consulting services for the Willamette Water Supply Program (WWSP). – *Staff Report – Christina Walter*

Ms. Walter presented the staff report requesting the Board’s approval of a change order to the David Evans and Associates (DEA) contract in the amount of \$2,089,829 and extending the contract term through February 28, 2021 to provide continued regulatory permitting and related consulting services for the Willamette Water Supply Program (WWSP).

Motion was made by Judah seconded by Doyle to approve a change order to the David Evans and Associates (DEA) contract in the amount of \$2,089,829 and extending the contract term through February 28, 2021 to provide continued regulatory permitting and related consulting services for the Willamette Water Supply Program (WWSP). The motion passed unanimously with Doyle, Duggan, and Judah, voting in favor.

- B.** Consider adopting Resolution No. WWSS-02-20, approving a project agreement between the City of Beaverton and the Willamette Water Supply System Commission for the design of S.W. Nimbus/Scholls Ferry to S.W. Beaverton-Hillsdale Highway Pipeline Project (COB_1.0). – *Staff Report – Dave Kraska*

Mr. Kraska presented the staff report requesting the Board’s adoption of Resolution No. WWSS-02-20.

Motion was made by Judah seconded by Doyle to adopt Resolution No. WWSS-02-20. The motion passed unanimously with Doyle, Duggan, and Judah, voting in favor.

6. INFORMATION ITEMS

- A.** Planned February Business Agenda items – *Joelle Bennett*

Ms. Bennett presented information on anticipated business agenda items for the February 6, 2020 WWSS Commission Board meeting, including recommendations for approval of RES_1.0 Design Contract, PLM_1.2 Construction Contract Change Order, and PLM_5.3 Design Contract Amendment.

- B.** The next Board meeting is scheduled on February 6, 2020, at Tualatin Valley Water District – Board Room.

7. COMMUNICATIONS AND NON-AGENDA ITEMS

- A.** None scheduled.

ADJOURNMENT

There being no further business, Chairman Duggan adjourned the meeting at 12:29 p.m.

James Duggan, Chair

Denny Doyle, Vice Chair

Willamette Water Supply System Commission

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STAFF REPORT

To: WWSS Board of Commissioners

From: David Kraska, P.E., WWSP Program Director, WWSS Commission General Manager

Date: February 6, 2020

Subject: Request Approval of Professional Services Agreement with Black & Veatch Corporation for RES_1.0 Design, Bidding Phase, and Services During Construction for the Willamette Water Supply Program

Requested Board Action:

Approve the Professional Services Agreement 2020-038 with Black & Veatch Corporation for RES_1.0 Design, Bidding Phase, and Services During Construction for the Willamette Water Supply Program.

Key Concepts:

- A Request for Proposal was published on October 23, 2019
- Two proposals were received and scored, interviews were held, and the selection committee agrees that Black & Veatch Corporation is the most advantageous to Owner
- Scope, fee, and terms and conditions of the agreement have been negotiated
- Notice to proceed is planned upon approval and execution of the professional service agreement

Background:

The reservoirs project (“RES_1.0”) includes two new pre-stressed concrete water reservoirs, each with capacity of 15 million gallons, located on the parcel east of the intersection of SW Grabhorn Road and SW Stone Creek Drive on Cooper Mountain, near the western edge of the City of Beaverton.

Budget Impact:

The budget for the contracted services is \$6,063,550.34 and the contract amount is \$6,162,361.24. Although the contract amount is slightly more than the corresponding budget, the contract can be accommodated within the overall RES_1.0 project budget. The table below provides additional detail on the distribution of costs within the contract.

| Task/Cost Category ¹ | Amount |
|---|---------------|
| Task 2.0 Project Management and Administration | \$845,165 |
| Task 4.0 Preliminary Design Report (including 30% design drawings) | \$943,963 |
| Task 5.0 60% Design | \$1,405,921 |
| Task 6.0 90% Design | \$732,086 |
| Task 7.0 100% Design | \$345,009 |
| Task 8.0 Delivery Approach and Early Work Package Alternatives ² | \$0 |
| Task 9.0 Geotechnical Exploration, Evaluation, and Design | \$556,857 |
| Task 10.0 Utility Location, Mapping, Surveying | \$102,635 |
| Task 11.0 Permitting/Land Use Support | \$72,158 |

| Task/Cost Category ¹ | Amount |
|--|---------------|
| Task 12.0 Right of Way Engineering/Drawings and Descriptions | \$6,338 |
| Task 13.0 Public Outreach Support | \$18,883 |
| Task 14.0 Coordination with Others | \$40,995 |
| Task 15.0 Services During Bid Phase | \$36,821 |
| Task 16.0 Engineering Services during Construction | \$692,830 |
| Lump Sum Other Direct Costs (ODCs) | \$38,801 |
| Invoiced ODCs Allowance | \$50,000 |
| Labor Escalation (Owner Controlled) | \$273,900 |
| Total | \$6,162,361 |

¹ Task 1 and 3 are not used in this contract.

² Task 8 is a placeholder for potential future use if needed.

Staff Contact Information:

David Kraska, P.E., WWSP Program Director; 503-941-4561; david.kraska@tvwd.org

Mike Britch, P.E., WWSP Engineering & Construction Manager; 503-941-4565; mike.britch@tvwd.org

Attachments:

1. Professional Services Agreement

Willamette Water Supply

Our Reliable Water

4A.2

PROFESSIONAL SERVICES AGREEMENT

WILLAMETTE WATER SUPPLY PROGRAM

**DESIGN, BIDDING PHASE, AND SERVICES DURING CONSTRUCTION
FOR
RES_1.0**

AGREEMENT NUMBER: 2020-038

**Between
Owner**

And

Black & Veatch Corporation

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THIS PROFESSIONAL SERVICES AGREEMENT ("Agreement") is effective on the date of the Agreement's execution by and between the Willamette Water Supply System Commission, formed by the Tualatin Valley Water District, the City of Hillsboro, and the City of Beaverton (hereafter, collectively referred to as "Owner"), and Black & Veatch Corporation ("Engineer"), whose principal place of business is located at 5885 Meadows Road, Suite 700, Lake Oswego, OR 97035. Each one of the above may be individually referred to as a "Party" and collectively referred to as the "Parties. "

RECITALS

Owner requires the services of an individual or entity with the particular training, ability, knowledge and experience possessed by Engineer for providing design, bidding phase, and services during construction for RES_1.0 of the Willamette Water Supply Program.

The Parties agree that Engineer shall provide Owner with such services subject to certain conditions.

The Parties agree to set forth the terms and conditions of their agreement in this Professional Services Agreement.

AGREEMENT

1. DEFINED TERMS

Wherever used in the Agreement (including the Exhibits, Appendices, and Attachments hereto) and printed with initial or all capital letters, the terms listed below have the meanings indicated, which are applicable to both the singular and plural thereof:

Addenda – Written or graphic instruments issued prior to the opening of Bids or Proposals that clarify, correct, or change the Bidding Documents.

Agreement – This Professional Services Agreement between Owner and Engineer, including those Exhibits, Appendices, or Attachments listed in Section 10 herein, and any duly executed written Amendments.

Agreement Price – The moneys payable by Owner to Engineer for Final Completion of the Work in accordance with the Professional Services Agreement Documents ("Agreement Documents").

Agreement Times – The dates stated in the Agreement Documents (Exhibit A – Statement of Work) to achieve completion of any segment identified in this Agreement as a milestone, and complete the Work as evidenced by final payment.

Amendment – A document signed by Owner and Engineer on or after the Effective Date of the Agreement which amends, supplements, modifies or cancels (other than termination as provided for in Section 28) herein. An Amendment for Professional Services may also authorize an addition, deletion or revision in Engineer's services, or an adjustment in compensation to be paid to Engineer or specific periods of time or specific dates for providing services.

Application for Payment – The form acceptable to Owner which is to be used by Engineer in requesting progress or final payments for completion of its Work and which is to be accompanied by such supporting documentation as is required by the Agreement.

Bidding Phase Work – Work identified in Exhibit A – Statement of Work, which includes, but is not limited to, preparation, responding to addenda questions and attending the pre-bid meeting during Owner’s solicitation of the Contractor.

Engineer – Engineer of Record responsible for performance of the Work as described in this Agreement.

Construction Phase – Work authorized by Owner for the Project commenced after Owner issues a Limited Notice to Proceed or Notice to Proceed to the Contractor.

Contractor – An individual or entity with whom Owner, or another entity working in conjunction with Owner, enters into a construction agreement. Multiple Contractors may be engaged by Owner, or such entities.

Correction Period – The time after Substantial Completion during which Contractor must correct, at no cost to Owner, any Defective Work, normally one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws and Regulations or by the terms of any applicable special guarantee or specific provision of the Agreement Documents.

Davis-Bacon and Related Acts – The Davis-Bacon Act (40 U.S.C.A. 276a to 276a-5) is federal law that governs the Minimum Wage rate to be paid to laborers and mechanics employed on federal public works projects.

Day – Means a calendar day of 24 hours.

Defective Work – Work that is unsatisfactory, faulty, or deficient, in that it does not conform to the standard of care or Agreement Documents.

Design Change Notification – Notification provided by Engineer to Owner within seven (7) Days of an occurrence that in the opinion of the Engineer a potential change to the Work that may or may not impact the Agreement Price or Agreement Times. Engineer shall provide supporting documentation within thirty (30) Days of submitting a Design Change Notification, or as mutually agreed to by Engineer and Owner. If Parties agree a change is justified, a Work Change Directive or Amendment will be issued by Owner. A Design Change Notification will not change the Agreement Price or the Agreement Times.

Design Phase Work – Work as defined by the Agreement Documents, which commences upon issuance by Owner of the Notice to Proceed, and includes, but is not limited to, Value Engineering, preparation of Drawings and Specifications, assistance with the permitting process, and field surveys, investigations, and tests.

Design Services – Design Phase Work, Bidding Phase Work, and Construction Phase Work, including, but not limited to, services related to the preparation of Drawings, Specifications, and other design submittals specified by the Agreement Documents and required to be performed by licensed design professionals, as well as services provided by or for licensed design professionals during Design Phase Work, and Construction Phase Work.

Drawings – That part of the Agreement Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings are not Drawings as so defined.

Effective Date of the Agreement – The date indicated in this Agreement on which it becomes effective.

Owner's Representative – A person designated in writing to act as Owner's representative with respect to Engineer's performance of the Work, including, but not limited to, an Owner's employee or a designated employee of Owner's program manager, Stantec Consulting Services, Inc. and its subconsultant Carollo Engineers, Inc. Such person shall have complete authority to transmit instructions, receive information, interpret and define Owner's policies, make decisions with respect to performance of the Work, and provide such other services as may be agreed upon.

Program Manager – Stantec Consulting Services, Inc. and its subconsultant, Carollo Engineers, Inc., retained by the Owner.

Project – The total construction of which the work to be performed under the contract documents may be the whole, or a part.

Request for Quote – Request issued by Owner to Engineer to provide a cost for providing additional work not included in the Agreement. Owner's acceptance of a proposed cost does not authorize Engineer to proceed or change the Agreement Times or Agreement Price.

Record Drawings – The Drawings as issued for construction on which Engineer, upon completion of the Work, has shown changes due to Addenda, Work Change Directives, Requests for Information, Design Clarifications, Change Orders, Amendments and other information which Engineer considers significant based on record documents furnished by Contractor to Owner and Engineer and which were annotated by Contractor to show changes made during construction.

Samples – Physical examples of materials, equipment, or workmanship that are representative of some portion of Work and which establish the standards by which such portion of the Work will be judged.

Shop Drawings – All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

Site – Lands or areas indicated in the Agreement Documents as being furnished by Owner upon which the Work is to be performed, rights-of-way and easements for access thereto and such other lands furnished by Owner which are designated for use of Contractor.

Specifications – That part of the Agreement Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

Subconsultant or Subcontractor – Any person or business entity employed to perform part of the Work under the control of the Engineer, including any supplier, distributor, or firm that furnishes supplies or services to Engineer.

Substantial Completion – The time at which the Work (or specified part thereof) has progressed to the point where, in the opinion of Owner and Engineer, the Work (or a specified

part thereof) is sufficiently complete, in accordance with the Agreement Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.

Willamette Water Supply System (WWSS) – Complete drinking water infrastructure system consisting of, but is not limited to the following components: raw water intake, raw water transmission pipeline, raw water pump station, new water treatment plant, finished water pump station, finished water transmission pipelines, terminal storage reservoir(s), associated controls, and appurtenances.

Work – The Design Services or the various separately identifiable parts thereof required to be provided under the Agreement Documents with respect to this Project. Work includes and is the result of performing or furnishing labor, services, and documentation necessary to complete the Design Services as required by the Agreement Documents.

Work Change Directive – A written directive issued on or after the Effective Date of the Agreement, signed to by both Parties authorizing an addition, deletion, or revision in the Work, under which the Work is to be performed. A Work Change Directive will not change the Agreement Price or the Agreement Times but is evidence that the Parties expect that the change directed or documented by a Work Change Directive shall be incorporated in a subsequently issued Amendment as to its effect, if any, on the Agreement Price or Agreement Times.

2. STANDARD OF CARE

Engineer agrees to perform the Work with the same degree of care, skill and diligence as is ordinarily possessed and exercised in the same profession under similar circumstances and shall ensure that its Subconsultants, if any, have the level of skill in the area commensurate with the requirements of the Work to be performed. In accordance with the forgoing standard of care, Engineer shall advise Owner when, in Engineer’s opinion, Work requested by Owner is not consistent with the project intent.

3. PERFORMANCE OF WORK

Engineer shall perform the work described in Exhibit A – Statement of Work (“Work”), the terms of which are incorporated by reference as though fully set forth, including providing such advice, recommendations and information as requested by Owner. Time is of the essence of this Agreement

4. AGREEMENT TIMES AND MILESTONES

This Agreement shall become effective on the date of the Agreement's execution by Owner. Unless earlier terminated, this Agreement shall remain in full force and effect until December 2, 2024 on which date it shall expire, unless extended by mutual consent of the Parties by way of written amendment to this Agreement.

The Work must be completed in accordance with the milestones, as described in Section 17 of Exhibit A – Statement of Work (“Agreement Times”), which Engineer has reviewed and determined to be reasonable. Engineer’s failure to achieve the Agreement Times, as set forth in Exhibit A – Statement of Work, may constitute a material breach of this Agreement.

Expiration of this Agreement shall not extinguish or prejudice Owner's rights to enforce the Agreement with respect to breach or default or defective performance that has not been cured.

The Work may commence no earlier than the date specified in the Notice to Proceed. Engineer may not be paid for costs incurred prior to the date specified in the Notice to Proceed, if not authorized in writing by Owner.

5. AGREEMENT PRICE

5.1. Owner shall pay Engineer for Work completed in accordance with this Agreement, inclusive of all costs, as set forth in Exhibit B – Engineer Fee and Rates (“Agreement Price”). The Agreement Price shall not exceed Six Million, One Hundred Sixty-Two Thousand, Three Hundred Sixty-One Dollars and Twenty-Four Cents (\$6,162,361.24) unless authorized by Owner in accordance with Section 9 of this Agreement.

5.2. Billing Rates

Engineer's staff labor shall be employee direct labor rate with a billing rate factor not exceeding three and one tenth (3.1) for a total billing rate (“Billing Rate”). The Billing Rates include all direct project costs associated with labor, profit, and, overhead expenses (including, but not limited to, taxes, insurance, office costs, all commuting expenses for project staff, telephones and cellular phones, computers, software, computer support, copiers, facsimiles, printers, other miscellaneous office costs, and other fringe benefits).

The Parties agree the Billing Rates shall be used during the entire term of the Agreement, including all Amendments; however, direct labor rates may be reviewed annually. Engineer shall submit in writing any proposed direct labor rate adjustments to Owner at least thirty (30) Days prior to the proposed effective date, with an explanation of why Engineer believes the proposed adjustments are reasonable, including a comparison to the Consumer Price Index West (CPI-West). Approval of any direct labor rate increases is at the sole discretion of Owner. Owner shall not unreasonably withhold approval of justified direct labor rate increases.

5.3. Subconsultant/Subcontractor Markups

Markups shall not exceed five percent (5%) for each Subconsultant/Subcontractor whose cost make up less than twenty-five percent (25%) or less of the Agreement Price. No markups shall be applied to Subconsultant's/Subcontractor's cost that is greater than twenty-five percent (25%) of the Agreement Price.

5.4. Lump Sum Other Direct Costs (ODCs)

Lump Sum ODCs shall be paid based on the percentage of work completed for this Agreement. Lump Sum ODCs include, but are not limited to local travel costs within fifty (50) miles of Owner's program management office (e.g., daily meals, mileage, parking, tolls, permits, and other like costs), courier services and mail/postage.

5.5. Invoiced Other Direct Costs

Invoiced ODCs shall be reimbursed at cost to Engineer without mark ups and include:

- Non-local travel (primary office located more than fifty (50) miles from Owner's program management office) for subject matter experts on a limited duration. Authorization for non-local travel expenses must be provided in writing by Owner prior Engineer making reservations and shall be in accordance with Exhibit H – Travel Reimbursement Policy;
 - Reproduction costs or printing services for specified design deliverables.
- 5.6.** It shall be the responsibility of the Engineer to efficiently manage labor, Subconsultant, and other resources in order to control costs, at or below the Agreement Price. Engineer agrees that the fee for each Task provided in Exhibit B – Engineer Fee and Rates shall not be exceeded or modified unless authorized by Owner via written Amendment. Reallocation of hours, fees, or costs between Tasks by Engineer without an Amendment, is not allowed.
- 5.7.** Accounting records of Engineer's personnel, Subconsultants, additional services, associated project costs, and other direct costs for this Agreement shall be kept in accordance with Sections 22 and 23 herein.

6. PAYMENT

- 6.1.** Once each month, on or before the 10th Day of the month, Engineer shall prepare and submit a pay application in a manner acceptable to Owner's Representative for Work completed since the preceding payment period.
- 6.2.** Original invoices shall submitted through e-Builder in a format that cannot be altered.
- 6.3.** Each invoice shall include a Monthly Report, including performance curves showing, monthly and cumulative totals of man-hours, Subconsultant, and other actual costs, planned versus actual in accordance with Exhibit B – Engineer Fee and Rates.
- 6.4.** Owner's Representative within ten (10) Days of receipt of each invoice will indicate in writing their acceptance or return the invoice indicating in writing the reasons for refusing to accept the invoice.
- 6.5.** If Owner has a good-faith dispute regarding payment to Engineer, the Parties will use their best efforts to resolve the dispute between themselves. However, if such a dispute arises, Engineer may not stop or delay in any manner its Work pursuant to this Agreement. Owner is committed to paying invoices within the terms of the Agreement for undisputed amounts. Owner will not pay any late charges or service charges that may be incurred by Engineer or its Subconsultants due to late or disputed payments. Payment terms are Net 30 upon receipt of a complete and accurate invoice.
- 6.6.** Owner will provide a Quarterly Spend Report for Engineer to complete and submit (Exhibit F – Engineer Net Spend Report Template) which includes, at a minimum, the following information:
- Total amount spent by Engineer and each Subcontractor, Subconsultant, vendor, and supplier for the quarter;

- Subcontractor/Subconsultant name, address and type of service(s) provided;
- Other business attributes that may be required by Owner.

Owner will provide a quarterly template update to Engineer by the 15th day of the last month for each calendar quarter for the entire duration of this Agreement. Owner reserves the right to withhold payment, without incurring additional expense from Engineer, if Engineer fails to submit the report within fifteen (15) Days of the end of each calendar quarter.

7. ENGINEER REPRESENTATIONS

- 7.1.** Engineer has the authority to enter into and perform in accordance with this Agreement and that this Agreement, when executed and delivered, is a valid and binding obligation of Engineer that is enforceable in accordance with the terms and conditions.
- 7.2.** Engineer shall at all times provide qualified personnel under the supervision of a professional engineer, licensed or otherwise qualified by the State of Oregon to perform said services and as designated in Engineer's Proposal. Engineer is responsible for obtaining all business registrations or professional occupation licenses required by state or local law.
- 7.3.** Engineer represents that it is qualified and experienced in performing services for all aspects of the Work. Engineer shall use reasonable care to identify and resolve matters that may arise and which, while not specifically addressed in Exhibit A – Statement of Work, fall within the Engineer's standard of care. If Engineer believes that work is outside the scope, then provisions of Section 12.1 will apply.
- 7.4.** Engineer has thoroughly examined and carefully studied the Agreement Documents (including the Addenda) listed in Section 10 herein and the other related data identified in the Request for Proposal, including "technical data."
- 7.5.** Engineer may not rely upon information and data provided by Owner (unless specifically identified in writing by Owner), and must, as part of Engineer's standard of care, independently verify and validate such information and data is suitable for the intended use.
- 7.6.** Engineer represents that it has or will obtain and carefully study additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and underground facilities) for the Project. Engineer has considered, and will cause any additional examinations, investigations, explorations, tests, studies, or data that are necessary to thoroughly understand the geotechnical environment for the performance and furnishing the Work.

Engineer is entitled to rely upon the following Attachments, which are included in the Agreement Documents:

1. Attachment 15 – RES_1.0 Phase I Environmental Assessment (including any Phase II assessment performed)

2. Attachment 16 – Wetland and Waters Delineation

8. WATER INFRASTRUCTURE FINANCE AND INNOVATION ACT (WIFIA) REQUIREMENTS

During the performance of this contract, the engineer agrees as follows:

- 8.1. Engineer understands that the goods and services called for under this RFP are being funded with monies made available by the federal Water Infrastructure Finance and Innovation Act (“WIFIA”). Engineer agrees to comply with all applicable statutes, regulations, executive orders, and any additional terms and conditions imposed by the Environmental Protection Agency (“EPA”) in connection with WIFIA funding for the Project per Exhibit I.

9. CHANGES TO AGREEMENT

Neither this Agreement, including any of the Agreement Documents listed in the Section 10 herein, shall be waived, altered, modified, supplemented, extended or amended, in any manner whatsoever, except by written Amendment, executed by both Parties. Owner shall not be liable for payment of any additional work performed by Engineer not previously authorized in writing by Owner via Work Change Directive or Amendment.

10. AGREEMENT DOCUMENTS

The documents, which comprise the entire Agreement between Owner and Engineer concerning the Work, consist of the following, all of which are incorporated into and form the entire Agreement (attached or by reference) (“Agreement Documents”):

- 10.1. This Agreement;
- 10.2. Exhibit A – Statement of Work and Attachments
 - Attachment 1 WWSP Preliminary Design Technical Memorandum
 - LiDAR Data Usability Assessment (January 20, 2015)
 - Preliminary Geotechnical Analysis Memorandum (October 5, 2015)
 - Updated Seismic Hazards Assessment (March 11, 2016)
 - Hazardous Materials Corridor Study Report (March 22, 2016)
 - Geotechnical Data Report WWSP Preliminary Design Clackamas and Washington Counties, Oregon (March 22, 2016)
 - Preliminary Design Hydraulic Transient Analysis (April 25, 2016)
 - WWSP Preliminary Design Hydraulic Criteria - FINAL (May 06, 2016)
 - Updated Hydraulic Evaluation - FINAL (July 6, 2016)
 - Attachment 2 Pipeline Design Guide and Appendices
 - Pipeline Design Guide (March 31, 2017)
 - Pipeline Design Guide Errata (March 20, 2019)
 - Appendix A Design Guidelines (July 08, 2016)
 - Appendix B Standard Specifications- Division 1
 - Appendix B Standard Technical Specifications
 - Appendix C Standard Details (August 1, 2019)
 - Appendix C WWSP Cathodic Protection Standard Details (August 1, 2019)
 - Appendix D Preliminary Design Hydraulic Transient Analysis (July 11, 2016)
 - Appendix E Master Permit List (July 11, 2016)
 - Appendix F Preliminary Geotechnical Analysis Memorandum (October 5, 2015)
 - Attachment 03 WWSP PLM_5.3 30% Design Drawings (July 2019)

Attachment 04 WWSP Preliminary Design Drawings (July 8, 2016)
Attachment 05 Draft WWSP Pipeline Packaging Plan (May 2019)
Attachment 06 WWSP Preliminary Finish Water Hydraulics (January 23, 2018)
Attachment 07 WWSP Facilities Cost Estimating Guide (March 2018)
Attachment 08 Sample Legal Description
Attachment 09 RES_1.0 Final Basis of Design Report (August 10, 2018)
Attachment 10 RES_1.0 Site 3 Terminal Reservoir Preliminary Geotechnical Engineering Report (October, 2017)
Attachment 11 RES_1.0 Land Use Drawings (August 2018) and Approval
Attachment 12 WWSP Stormwater Management Plan (April 2017)
Attachment 13 Reservoir Facilities Soil Report- Custom Soil Resource Report for Washington County, Oregon (December 27, 2016)
Attachment 14 RES_1.0 Site 3 Terminal Reservoirs – Conceptual Cut Design TM
Attachment 15 RES_1.0 Phase I Environmental Site Assessment (October 4, 2017)
Attachment 16 RES_1.0 Wetland and Waters Delineation (September 13, 2017)
Attachment 17 WWSP Permitting Data Needs Table - RES_1.0 (September 2019)
Attachment 18 WWSS Biological Assessment (October 01, 2018)
Attachment 19 WWSS Joint Permit Application (July 2017)
Attachment 20 Draft WWSP Seismic Guidelines and Minimum Design Requirements (June 08, 2018)
SGMDR Errata (December 11, 2018)
Appendix A Probabilistic Seismic Hazard Analysis (August 03, 2017)
Appendix B Soil Spring Determination (May 07, 2018)
Appendix C Steel Coupon Test Results (March 16, 2018)
Appendix D Differential Settlement TM - Draft (May 07, 2018)
Appendix E MDR Checklist (May 28, 2018)
Appendix F Peer Review Comment Form
Attachment 21 WWSP SCADA & I&C Standards Manual
Exhibit B – Engineer Fee and Rates;
Exhibit C – Confidentiality Agreement;
Exhibit D – Engineer Solicitation Response and documentation submitted prior to execution of this Agreement;
Exhibit E – Not applicable
Exhibit F – Engineer Net Spend Report Template;
Exhibit G – Insurance Certificates;
Exhibit H – Travel Reimbursement Policy;
Exhibit I – WIFIA Program Requirements
Exhibit J – Sample AIS Step Certification Letter
Notice(s) to Proceed;
Amendments and Work Change Directives issued after the Effective Date of this Agreement not attached hereto.

In case of any inconsistency or conflict among the provisions of the Agreement and any other terms and conditions of any documents comprising the Agreement Documents, the provisions of the Agreement shall control. Concerning the Agreement Documents, the order of precedence shall be as follows: 1) Written Amendments; 2) Work Change Directives; 3) Statement of Work, 4) other Agreement Documents listed in Section 10.

11. USE OF DOCUMENTS

- 11.1.** Engineer's Work is the property of Owner and its assigns after payment to Engineer. Owner and Engineer agree that all original documents prepared by Engineer and its Subconsultants, in whatever form and/or stage of completion, for the Project are the sole and exclusive property of Owner and its assigns. Owner shall be furnished with such reproductions of the documents, including native file formats, as Owner may reasonably require. All such reproductions shall be the property of Owner who may use them without Engineer's permission for any proper purpose, including, but not limited to, additions to, expansion of or completion of the Project.

- 11.2.** Owner may make and retain copies of Documents for information and reference in connection with the use on the Project by Owner. Such Documents are not intended or represented to be suitable for use by Owner or others on any other Project. Any such reuse or modifications without written verification or adaptation by Engineer, as appropriate for the specific purpose intended, will be at Owner's sole risk and without liability or legal exposure to Engineer or to Engineer's Subconsultants.

12. COST CONTROL

- 12.1.** Potential scope and/or cost changes shall be detailed and documented by Engineer. Engineer shall provide Owner a Design Change Notice within seven (7) Days of an occurrence, when, in Engineer's opinion, the occurrence may result in changes to the Work, Agreement Price, or Agreement Times. Engineer shall provide supporting documentation within thirty (30) Days of submitting a Design Change Notification, or as mutually agreed to by Engineer and Owner. Owner will evaluate and either accept or deny requests within seven (7) Days. Cost reimbursement will not be granted for changes if Engineer did not provide written notice as described herein or for scope that reasonably should have been included by Engineer for a complete and comprehensive Project.

- 12.2.** Owner shall make decisions and carry out its other responsibilities in a timely manner so as not to delay the services of Engineer. Engineer shall provide Owner notice of critical decision dates and all requisite information to make an informed decision sufficiently in advance of such critical decision dates so that delays are avoided, recognizing that certain decisions may require public notice and/or a hearing.

- 12.3.** During the Construction Phase, Engineer shall not supervise, direct or have control over Contractor's work, nor shall Engineer have authority over or responsibility for the means, methods, techniques, sequences, or procedures of construction selected by Contractor, for safety precautions and programs incident to the Contractor's work in progress, nor for any failure of Contractor to comply with Laws and Regulations applicable to Contractor's furnishing and performing the Work.

- 12.4.** Engineer neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor's failure to furnish and perform the Work in accordance with the Agreement Documents.

- 12.5.** Engineer shall not be responsible for the acts or omissions of any Subcontractors, suppliers, agents or employees of Contractor or any other persons (except Engineer's

own employees, Subconsultants, agents and officers) at the Site furnishing or performing any of the Contractor's work; or for any decision made on interpretations or clarifications of the Agreement Documents given by Owner without consultation and advice of Engineer.

13. INDEPENDENT CONTRACTOR

- 13.1.** During the Term of this Agreement, Engineer shall act at all times as an independent contractor and shall have the responsibility for and control over the details and means of performing the Work. Engineer acknowledges it has the duty to provide continuous, adequate supervision of its personnel, Subconsultants and Subcontractors, if any. Nowhere in this Agreement shall it be construed or implied that Engineer or any of its Subconsultants, Subcontractors, affiliates, employees, agents, or representatives are employees, representatives, or agents of Owner. Engineer shall be subject to the direction of Owner only with respect to Exhibit A - Statement of Work and the general results required by this Agreement. Engineer acknowledges and agrees that it is not entitled to indemnification by the Owner or the provision of a defense under ORS 30.285 and waives any right thereto.
- 13.2.** Engineer shall not make any commitment nor incur any charge or expense in Owner's name, or binding on the Owner, without the prior written approval of Owner. Engineer shall be solely responsible for payment of salaries, wages, payroll taxes, unemployment benefits or any other form of compensation or benefits to Engineer or any of Engineer's employees, agents, Subconsultants, Subcontractors or other personnel performing, directly or indirectly, the Work specified herein. Further, it is expressly understood and agreed that neither Engineer nor Engineer's employees, agents, Subconsultants, Subcontractors or other personnel shall be entitled to any Owner's payroll, insurance, unemployment, Worker's Compensation, retirement or any other benefits whatsoever.

14. SUBCONTRACTOR AND SUBCONSULTANTS

- 14.1.** Engineer may retain Subcontractors and Subconsultants to carry out the Work outlined in this Agreement. Owner reserves the right to approve all Subcontractors and Subconsultants prior to their use by Engineer. There shall be no relationship, fiduciary or otherwise, between Owner and the Subcontractors and Subconsultants hired by Engineer. At all times, Engineer is and will remain fully responsible for the performance of its Subconsultants, Subcontractors, and suppliers.
- 14.2.** Engineer shall ensure all Work performed for Engineer by a Subcontractor or Subconsultant will be pursuant to an appropriate agreement between Engineer and the Subcontractor or supplier, which specifically binds the Subcontractor and Subconsultants to the applicable terms and conditions of this Agreement, including the confidentiality provisions, in writing.

Agreements between Engineer and Subconsultants, Subcontractors or suppliers will contain provisions whereby the Subconsultant, Subcontractor or supplier waives all rights against Owner, Engineer, Owner's consultants, and all other individuals or entities identified herein to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and Subcontractors of

each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subconsultant, Subcontractor or supplier, Engineer will obtain the same.

15. COMPLIANCE WITH APPLICABLE LAW

15.1. Generally

Engineer shall keep itself fully informed of and shall fully comply with all federal, state, regional, and local laws, rules, regulations, ordinances, and orders pertaining in any manner to this Agreement and the rules, regulations and orders of any agency or authority having jurisdiction over the Work under this Agreement or persons employed or engaged therein. Engineer shall pay all taxes, including federal, state, regional, county, and city taxes, and taxes of any other governmental entity, applicable to the services performed or materials provided under this Agreement. All permits, licenses, and fees necessary for prosecution and completion of the Work shall be secured and paid for by Engineer, unless otherwise specified by Owner.

The following paragraphs include, without limitation, the standard contract clauses that are required in every public contract in accordance with the Oregon Revised Statutes Chapter 279B and the provisions of ORS 279B.220, 279B.225, 279B.230 and 279B.235. As such, these paragraphs are applicable, to the extent they apply, to this Agreement. This Agreement shall include by reference any other standard contract clauses required by federal, state, and local laws, ordinances, and regulations.

15.2. Prompt Payment

Engineer shall promptly pay as due all of its obligations arising out of or in connection with the Work, including, but not limited to, payments (1) to all persons supplying to Engineer labor, equipment, services, or materials for the performance of the Work; (2) of all contributions or amounts due the Industrial Accident Fund from Engineer or any Subcontractor or Subcontractor incurred in the performance of the Work; and (3) to the Department of Revenue of all sums withheld from employees under ORS 316.167.

15.3. Hours of Labor

Engineer shall pay employees at least time and a half pay for all overtime in excess of forty (40) hours in any one (1) week and legal holidays described in ORS 279B.020, except for individuals who are excluded under ORS 653.010 to 653.261 or under 29 U.S.C. 201 to 209 from receiving overtime.

15.4. Workers' Compensation

All employers, including Engineer, that employ subject workers who work under this Agreement in the state of Oregon shall comply with ORS 656.017 and provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. Engineer shall ensure that each of its Subcontractors and Subconsultants comply with these requirements.

15.5. Prompt Payment for Medical Services

Engineer shall promptly make payment, as due, to any person, co-partnership, association, or

corporation furnishing medical, surgical, or hospital care services or other needed care and attention, incident to sickness or injury, to the employees of Engineer, of all sums that Engineer agrees to pay for the services and all moneys and sums that Engineer collected or deducted from the wages of employees under any law, contract, or agreement for the purpose of providing or paying for the services.

15.6. Compliance with Laws/Tax Laws

Engineer shall comply with all applicable federal, state, and local laws, statutes, codes, regulations, rules, orders, and rulings including, without limitation, those governing labor, materials, equipment, construction procedures, safety, health, sanitation, and the environment. Engineer agrees to indemnify, hold harmless, reimburse, and defend Owner from and against any penalties or liabilities arising out of violations of such obligations by Engineer or its Subcontractors, Subconsultants or suppliers at any tier. Engineer represents and warrants that it not delinquent in the filing or payment of any Oregon income taxes, Oregon personal property taxes, Oregon municipal taxes, or Oregon real property taxes and that it has otherwise complied with all Oregon tax laws and all tax laws of those Oregon municipalities to which Engineer is subject.

Without limiting the generality of the foregoing, Engineer expressly agrees to comply with the following laws, regulations and executive orders to the extent they are applicable to the Agreement: (i) Titles VI and VII of the Civil Rights Act of 1964, as amended; (ii) Section 503 and 504 of the Rehabilitation Act of 1973, as amended; (iii) the Americans with Disabilities Act of 1990, as amended; (iv) Executive Order 11246, as amended; (v) the Health Insurance Portability and Accountability Act of 1996; (vi) the Age Discrimination in Employment Act of 1967, as amended, and the Age Discrimination Act of 1975, as amended; (vii) the Vietnam Era Veterans Readjustment Assistance Act of 1974, as amended; (viii) ORS Chapter 659, as amended; (ix) all applicable regulations and administrative rules established pursuant to the foregoing laws: and (x) all other applicable requirements of federal, state and local rules and regulations., which are incorporated as required by law.

15.7. Recycled Materials

Engineer, in performance of the Work under this Agreement, shall use recycled paper as defined in ORS 279A.010 (1) (ee), recycled PETE products as defined in ORS 279A.010 (1) (ff), and other recycled plastic resin products to the maximum extent economically feasible.

15.8. Liens

Engineer shall not permit any lien or claim to be filed or prosecuted against the state or a county, school district, municipality, municipal corporation, or subdivision thereof on account of any labor or materials furnished.

16. INSURANCE

Engineer shall provide to Owner certificates of insurance prior to beginning any Work under the Agreement Documents and shall maintain in full force and effect for the term of this Agreement, at Engineer's expense; commercial general liability insurance, automobile liability insurance, and professional liability insurance as described in the table below.

| | |
|--|--|
| <u>Workers Compensation</u> | Statutory Limits for states where work is performed and/or where benefits can be claimed. |
| <u>Employers Liability</u> | \$1,000,000 – Each Occurrence \$1,000,000 – Disease: Each Employee \$1,000,000 – Disease: Policy Limit |
| <u>Commercial General Liability</u> <ul style="list-style-type: none"> Specifically including (or not excluding) and not limited to coverage for premises & operations, products & completed operations, contractual liability, independent contractors, offsite operations and storage | \$2,000,000 – Each Occurrence \$4,000,000 – Policy Aggregate |
| <u>Automobile Liability</u> <ul style="list-style-type: none"> All owned, hired, and non-owned vehicles. | \$1,000,000 – Each Occurrence, property damage / bodily injury Combined Single Limit (“CSL”) |
| <u>Umbrella or Excess Liability</u> Excess of the primary Commercial General Liability, Automobile Liability. | When required, in combination with the primary policy to meet the requirements for Commercial General Liability and/or Automobile Liability. |
| <u>Professional Liability</u> | \$2,000,000 – Each Occurrence (or claims made) \$4,000,000 – Policy Aggregate |
| <u>Other Requirements</u> | |
| <ul style="list-style-type: none"> Engineer shall require carrier(s) to provide (30) Days written notice to Owner prior to any cancellation, except for non-payment, which shall be the number of days for notice set forth in the policy. Engineer shall provide (30) Days written notice to Owner prior to any material reduction or modifications. Engineer’s insurance is primary and insurance held by Owner is excess and non-contributory. If Engineer does not comply with this provision, Owner may, in addition to any other remedies it may have, terminate this Agreement, subject to any provision of this Agreement. | |

16.1. Engineer shall name Willamette Water Supply System Commission, its members, officers, boards, agents and employees, Tualatin Valley Water District, its members, officers, boards, agents and employees, the City of Hillsboro, the Hillsboro Utilities Commission, its members, officers, boards, agents and employees, and the City of Beaverton, its members, officers, boards, agents and employees as named additional insureds on the automobile, general liability policies of insurance for Engineer's negligent acts. The policy shall be issued by a company authorized to do business or provide insurance in the State of Oregon and shall protect Engineer against liability for

contractual liability. Engineer shall provide Tualatin Valley Water District, City of Hillsboro, and City of Beaverton a copy of an endorsement of the policy(s) that demonstrates compliance with this Section 16.

- 16.2.** Owner prefers all insurance coverage to be written on an “occurrence” basis. But if any of the required liability insurance is on a “claims made” basis; “tail” coverage will be required at expiration of this Agreement and completion of all Work for a duration of twenty-four (24) months. Engineer shall furnish certification of “tail” coverage as described or continuous “claims made” liability coverage for twenty-four (24) months following Agreement expiration. Continuous “claims made” coverage will be acceptable in lieu of “tail” coverage provided its retroactive date is on or before the effective date of the Agreement. If Continuous “claims made” coverage is used, Engineer shall be required to keep the coverage in effect for a duration of not less than twenty (24) months from the expiration date of the Agreement. This will be a condition of the final acceptance of Work or services.

17. INDEMNIFICATION

Engineer shall indemnify and hold harmless Willamette Water Supply System Commission, its members, officers, boards, agents and employees, Tualatin Valley Water District, its members, officers, boards, agents and employees, the City of Hillsboro, its members, officers, boards, agents and employees, the City of Beaverton, its members, officers, boards, agents and employees, Stantec Consulting Services, Inc., its members, officers, boards, agents and employees, and Carollo Engineers, Inc., its members, officers, boards, agents and employees against all liability, claims, suits or actions of whatsoever nature, loss or expenses, fees (including, but not limited to, attorney, engineer, architect, other professionals and court costs) and against all claims, actions or judgments based upon or arising out of damage, injury or death to persons or property to the extent caused by any negligent act or omission by the Engineer. Engineer shall obtain similar indemnification for anyone acting on Engineer's behalf in connection with, or incidental to, this Agreement for the Work to be performed hereunder for that person or entity's negligence. Provided, however, that nothing herewith shall be construed to require indemnification of the Owner, Stantec Consulting Services, Inc., and its affiliates and subsidiaries and Carollo Engineers Inc. to the extent attributable to their own negligence. In addition, Engineer expressly agrees to indemnify and hold harmless Owner, their elected and appointed officials, officers, agents, employees and volunteers, Stantec Consulting Services, Inc., and Carollo Engineers, Inc., against all liability, claims, suits, actions, loss or expenses, including attorney fees, arising out of or related to any claims that the Work, the Work Product, or any other tangible or intangible items delivered to Owner by Engineer may be the subject of protection under any state or federal intellectual property law or doctrine, or the Owner's use thereof, infringes any patent, copyright, trade secret, trademark, trade dress, mask work, utility design or other proprietary right of any third party.

18. WARRANTIES

- 18.1.** Engineer shall be responsible for the technical accuracy, acts and omissions of Engineer's and its Subconsultant's services and documents resulting therefrom, and Owner shall not be responsible for discovering deficiencies therein. Owner and Engineer recognize that the work herein is a component of the Willamette Water Supply Program (“WWSP”), which will not be fully operational until June, 2026. Fully operational shall mean the WWSP is delivering finished water to Tualatin Valley Water

District, City of Hillsboro, and the City of Beaverton. The Parties agree that discovery of defects in design and construction maybe difficult to ascertain until the WWSP is fully operational. The Parties specifically agree, and waive any right to argue otherwise, that the statute of ultimate repose in ORS 12.135(2) shall apply to the Work so that the 10-year ultimate repose period shall commence from the date of substantial completion of construction. Further, upon request by Owner, Engineer agrees to execute a Tolling Agreement that includes terms to toll applicable statutes of limitation, provisions for termination and will not waive, release, or otherwise effect in any way any other obligations or rights of the Parties, whether arising under law, equity, contract, or otherwise.

- 18.2.** Following completion of Engineer's Work under this Agreement or construction of the facilities designed in whole or in part by Engineer and expiration of any tolling period, whichever is later, Engineer shall correct such deficiencies without additional compensation. Engineer's correction of such deficiencies shall not be an admission of Engineer's failure to meet the standard of care nor shall it affect the tolling of the statute of limitations to assure all components of the WWSP function as designed. If Engineer does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the corrective services performed by a third party, and all costs, losses, and damages arising out of or relating to such correction shall be paid by Engineer.
- 18.3.** In accordance with the applicable standard of care requirements of the Agreement Documents, Engineer represents that all Work will conform with the provisions of this Agreement, all Laws and Regulations, and standard of care. Engineer agrees to correct deficiencies in any Work performed by the Engineer, which do not meet requirements of the Agreement Documents or the Laws and Regulations.
- 18.4.** Engineer represents that it is the lawful licensee of any software programs or other proprietary materials used by Engineer in the performance of the Work called for in this Agreement and unless otherwise specified in the Agreement Documents has all rights necessary to grant to Owner any licenses necessary to use any equipment or intellectual property installed or specified by Engineer.

19. SUCCESSORS AND ASSIGNS

Each Party binds itself, and any partner, successor, executor, administrator, or assign to this Agreement. The Engineer shall not assign, or transfer any right, interest or obligation it has under this Agreement without the written consent of the Owner, which Owner may withhold in their sole discretion. Any attempted assignment or transfer for this Work without written consent of the Owner shall be void.

20. THIRD-PARTY BENEFICIARIES

There are no third-party beneficiaries.

21. CONFIDENTIALITY

Engineer shall agree to and sign the Owner's Confidentiality Agreement and shall have all Subcontractors and Subconsultants agree to and sign a Confidentiality Agreement for documents and work related to this Agreement.

22. RECORD KEEPING

Engineer shall maintain all fiscal records relating to this Agreement in accordance with generally accepted accounting principles for a minimum of three (3) years following final payment, except as required longer by law.

23. ACCESS TO RECORDS

Engineer agrees that Owner and their authorized representatives shall have access to all books, documents, papers and records of the Engineer that are directly related to the Agreement for the purpose of making any audit, examination, copies, excerpts and transcripts.

24. FOREIGN CONTRACTOR

If Engineer is not domiciled in or registered to do business in the State of Oregon, Engineer shall promptly provide to the Oregon Department of Revenue and the Oregon Corporation Division all information required by those agencies relative to this Agreement. Engineer shall demonstrate its legal capacity to perform these services in the State of Oregon prior to entering into this Agreement.

25. GOVERNING LAW; JURISDICTION; VENUE

This Agreement shall be governed and construed in accordance with the laws of the State of Oregon without resort to any other jurisdiction's conflict of laws, rules or doctrines. The venue shall lie in the Circuit Court of the State of Oregon for the County of Washington. If Federal jurisdiction and venue is established, venue shall lie in the United States District Court in Portland, Oregon. The Parties expressly consent to the personal jurisdiction of these courts.

26. OWNERSHIP OF WORK PRODUCT; LICENSE

All work products of Engineer that result from this Agreement ("Work Products") are the exclusive property of Owner after payment to Engineer. If any of the Work Products contain intellectual property of Engineer that is or could be protected by federal copyright, patent or trademark laws or state trade secret laws, Engineer hereby grants Owner a perpetual, royalty-free fully paid, non-exclusive and irrevocable license to copy, reproduce, deliver, publish, perform, dispose of, use and re-use, in whole or in part, and to authorize others to do so, all such Work Products and any other information, designs, plans, or information provided or delivered to Owner or produced by Engineer under this Agreement. The Parties expressly agree that all works produced pursuant to this Agreement are works specifically commissioned by Owner and that Engineer shall obtain written permission from Owner before publishing, displaying or using any Work or Work Products resulting from this Agreement. Any reuse or modification of Work Products for purposes other than those intended by Engineer shall be at the Owner's sole risk and without liability to Engineer.

All original written material and other documentation, including background data documentation, and staff work that is preliminary to final reports, originated and prepared for Owner under the Agreement Documents, shall be the exclusive property of Owner. Engineer will not use any written or other materials developed for Owner under the Agreement Documents in developing materials for others, except as may be specifically provided in writing to the contrary.

This Agreement shall not preclude Engineer from independently developing materials which may be similar to materials developed pursuant to the Agreement Documents.

27. CORRECTION OF ERRORS AND OMISSIONS

Owner shall have the right to disapprove any portion of Engineer's Work, including, but not limited to, Work associated with the design and construction documents, bidding phases, and any other design work or documents, which does not comply with the requirements of this Agreement.

In the event that Engineer's Work does not meet the standard of care and the requirements of the Agreement Documents. Engineer shall proceed when requested by the Owner with revisions to the design work or documents prepared for that Work to attempt to satisfy the Owner's objections. If said additional work is acceptable, the Owner will provide prompt written approval. Correction or completion of Work which does not comply with the requirements of this Agreement shall be made without adjustments to the compensation for Engineer's services provided for hereunder unless the revisions are made to Work previously approved for previous tasks, in which case, Engineer's compensation shall be adjusted. It is the intent of the Parties that Engineer shall promptly correct any defective, inaccurate or incomplete tasks, deliverables, services or other Work resulting from Engineer's negligent acts, errors or omissions, without additional cost to the Owner. The acceptance of Engineer's services by Owner shall not relieve Engineer from the obligation to correct subsequently discovered defects, inaccuracies or incompleteness resulting from the Engineer's negligent acts, errors or omissions.

28. TERMINATION

28.1. Termination for Cause

If Engineer materially breaches this Agreement, Owner will notify Engineer in writing and allow Engineer to cure any breach or to submit a plan to cure such breach within five (5) Days of such written notice. If Engineer's breach remains uncured five (5) Days following written notice of said breach by Owner, or Owner has not accepted Engineer's proposed plan to cure the breach within a reasonable time, Owner may immediately terminate this Agreement upon written notice specifying in writing the effective date thereof.

28.2. Termination for Convenience

Owner may terminate this Agreement at any time upon thirty (30) Days' written notice specifying the effective date thereof, if Owner determines that such termination is in Owner's best interest.

28.3. Termination Costs

After receipt of written notification that this Agreement has been terminated for convenience, Engineer shall incur no further costs other than reasonable termination costs associated with current activities related to this Agreement. In the event of termination, Engineer's sole and exclusive remedy shall be a claim for the sum designated for Work completed and accepted by Owner and related closeout costs, such as terminating contracts with Subcontractors and Subconsultants, less previous amounts paid and offset for any claim or claims which the Owner has against Engineer. If previous amounts paid to Engineer exceed the amount due to Engineer, Engineer shall pay any excess to Owner within thirty (30) Days of the termination effective date.

Owner shall only pay Engineer for Work completed and accepted by Owner up to the effective date of the notice to terminate for cause.

28.4. Ownership of Work Product

In the event of termination for either cause or convenience, all finished and unfinished deliverables prepared by Engineer pursuant to this Agreement shall become the sole property of Owner.

28.5. Right to Set-Off and Other Remedies

Termination shall not relieve Engineer from liability to Owner for damages sustained as the result of Engineer's breach of this Agreement; and Owner may withhold funds otherwise due under this Agreement or any other Agreement Owner may have with Engineer, regardless of subject matter, in lieu of such damages, until such time as the exact amount of damages, if any, has been determined.

If this Agreement is terminated for cause as provided herein and it is subsequently determined that Owner's termination of this Agreement for cause was improper, then the termination for cause shall be considered to be a termination for convenience and the procedures of this Agreement related to a termination for convenience shall apply.

29. SUSPENSION

At any time with or without cause, Owner may suspend the Work or any portion thereof, without liability for consequential or any other indirect damages, for a period of not more than ninety (90) consecutive Days by notice in writing to Engineer.

30. NOTICE

All legal notices, demands, or other documents or instruments required or permitted to be served upon either Party hereto shall be in writing and shall be deemed duly served when delivered in person or mailed by United States First Class mail, postage prepaid addressed to the Parties at the addresses stated below:

If to Owner:

Willamette Water Supply System Commission
David Kraska
General Manager
1850 SW 170th Avenue
Beaverton, Oregon 97003

If to Engineer:

David Carlson, Vice President
5885 Meadows Road, Suite 700
Lake Oswego, OR 97035

31. NON-APPROPRIATION OF FUNDS

The continuance of this Agreement is contingent upon the appropriation of funds by Owner to fulfill the requirements of the Agreement. If Owner fails to appropriate sufficient monies

to provide for the continuance of the Agreement, or if such appropriation is reduced to prevent the total appropriation for the year from exceeding revenues for that year, or for any other lawful purpose, and the effect of such reduction would provide insufficient monies for the continuation of the Agreement, the Agreement shall terminate on the date of the beginning of the first fiscal year for which the funds are not appropriated, unless sooner terminated under Section 28 herein.

32. ATTORNEY FEES

If a suit or action is filed to enforce any of the terms of this Agreement, the prevailing Party shall be entitled to recover from the other party, in addition to costs and disbursements provided by statute and expert witness fees, any such amount which a court, including any appellate court, may adjudge reasonable as attorney fees.

33. SEVERABILITY

The Parties agree that if any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the Parties shall be construed and enforced as if the Agreement did not contain the particular term or provision held to be invalid.

34. SURVIVAL OF COVENANTS

The covenants of this Agreement shall survive the expiration or termination of this Agreement, including, but not limited to compensation, payment, confidentiality, record keeping, access to records, insurance, warranties, dispute resolution, and indemnification.

35. FORCE MAJEURE

Neither Owner nor Engineer shall be held responsible for delay or default caused by fire, flood, strikes, riot, acts of God, acts of government, or war where such cause was beyond, respectively, Owner's or Engineer's reasonable control.

36. WAIVER

The failure of Owner to enforce any provision of this Agreement shall not constitute a waiver by Owner of that or any other provision.

37. MERGER

This Agreement including exhibits, attachments, and documents incorporated by reference constitute the entire agreement between the Parties.

38. DISPUTE RESOLUTION

If a dispute arises between the Parties relating to this Agreement, the procedure below shall be followed as a condition precedent to litigation:

- A. The aggrieved party will notify the other party in writing describing the dispute and requested relief (Notice of Dispute). The Parties shall hold a meeting promptly, but in no event later than thirty (30) Days from the initial written Notice of Dispute, attended by persons with decision-making authority regarding the dispute, to attempt in good faith to negotiate a resolution of the dispute; provided, however, that no such meeting shall be deemed to vitiate or reduce the obligations and liabilities of the Parties

thereunder or be deemed a waiver by a party hereto of any remedies to which such party would otherwise be entitled thereunder unless otherwise agreed to by the Parties in writing.

- B. If, following thirty (30) Days of such meeting, the Parties have not succeeded in negotiating a resolution of the dispute, either Party may notify the other of its election to submit the dispute to non-binding mediation (“Election to Mediate”). The Parties shall exercise good faith efforts to select a mediator who is an Oregon member of the National Academy of Distinguished Neutrals or such other person as they mutually agree. The mediator shall be compensated equally by both Parties. Mediation will be conducted in Portland, Oregon, unless both Parties agree in writing otherwise. Both Parties agree to exercise good faith efforts to resolve disputes covered by this Section through this mediation process.
- C. Mediation shall be completed within sixty (60) Days from the date of Election to Mediate unless the parties agree otherwise. The Parties hereby expressly agree that no claim or dispute arising under the terms of this Agreement shall be resolved other than first through mediation and, only in the event said mediation efforts fail, through litigation. If a party requests mediation and the other party fails to respond within ten (10) Days of the Election to Mediate, or if the Parties fail to agree on a mediator within ten (10) Days of the Election to Mediate, or if mediation is completed within sixty (60) Days without resolution, then the aggrieved party may commence litigation and assert all claims under this Agreement.

39. DUTY TO DISCLOSE

For architectural/engineering agreements with a dollar value in excess of Two Hundred Fifty-Thousand Dollars (\$250,000.00), Engineer shall disclose to Owner at any time during the term of this Agreement; any debarment, criminal conviction, or civil penalty from a court or regulatory agency or civil judgment (“Sanctions”) against Engineer. Engineer shall provide an explanation as to why such actions, errors or omissions that form the basis for the sanctions do not have an adverse impact on Engineer’s responsibility and ability to perform the Work. Engineer shall also provide documentation of actions taken to assure that such actions, errors, or omissions will not recur.

40. ENTIRE AGREEMENT

This Agreement with all referenced exhibits, appendices or attachments represents the entire understanding of the Owner and Engineer as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered herein. This Agreement may not be modified or altered except by written amendment signed by both Parties.

41. COUNTERPARTS; COPIES OF SIGNATURES

This Agreement, Amendments, and Work Change Directives may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Executed signature pages may be delivered using pdf or similar file type transmitted via electronic mail, cloud-based server, e-signature technology or other similar electronic means.

IN WITNESS WHEREOF, the Parties have executed this Agreement effective the day and year first above written.

WILLAMETTE WATER SUPPLY SYSTEM COMMISSION

By: David Kraska
General Manager

Date: _____

ENGINEER

Black & Veatch Corporation

By: 
Vice President

Date: 1/27/20

EXHIBIT A – STATEMENT OF WORK (“SOW”)
Willamette Water Supply Program
RES_1.0 Design, Bidding Phase, and Services During Construction

1.0 Introduction

The Willamette Water Supply System (“WWSS”) Commission is an Oregon intergovernmental entity formed by Tualatin Valley Water District (“TVWD” or “District”), the City of Hillsboro (“Hillsboro”), and the City of Beaverton (“Beaverton”), collectively referred to as “Owner”. The WWSS Commission was formed to build the WWSS in response to planned growth in the TVWD, Hillsboro, and Beaverton service areas. The WWSS will provide an additional, resilient water supply for Washington County. When complete, the WWSS will be one of Oregon’s most seismically-resilient water systems—built to better withstand natural disasters, protect public health, and speed regional economic recovery through restoring critical services more quickly.

The Willamette River, one of Oregon’s largest rivers, is the WWSS’s new supply source. The raw water intake is located at the Willamette River Water Treatment Plant (“WRWTP”) in Wilsonville. From there, raw water will be pumped to the WWSS Water Treatment Plant, a new state-of-the-art water filtration plant where multiple treatment processes will produce high quality drinking water. Drinking water will be pumped to reservoir facilities on Cooper Mountain, then will be gravity-fed to additional storage and customers in the TVWD, Hillsboro, and Beaverton service areas. The new system will be completed by 2026. For additional history and information, visit www.ourreliablewater.org.

TVWD has been designated the Managing Agency for the WWSS Commission, and TVWD operates the Willamette Water Supply Program (“WWSP”) to plan, design, and construct the WWSS. References to the WWSS and WWSP may be interchangeable throughout the Statement of Work (“SOW”) and should be read in context.

The Owner is seeking a qualified engineering firm (“Engineer”) to perform detailed design, bid phase services, and engineering services during construction (“ESDC”).

1.1 Background

The focus of this SOW is the Reservoir (“RES_1.0”) project, which consists of two new pre-stressed concrete water reservoirs, each with capacity of 15 million gallons (MG), located on the parcel east of the intersection of SW Grabhorn Road and SW Stone Creek Drive on Cooper Mountain, near the western edge of the City of Beaverton. The RES_1.0 Conceptual Design documents are included as Attachment 9 through Attachment 16. These documents present the background for the layout of the reservoirs, preliminary drawings, Basis of Design, and preliminary geotechnical engineering report, etc. The RES_1.0 Conceptual Design documents should be consulted, along with other attachments to this SOW, as the Engineer develops the scope of work for their design and the associated construction.

Major RES_1.0 project elements include the following:

- Two American Water Works Association (“AWWA”) Standard D110 (Wire- and Strand-Wound, Circular Prestressed Concrete Water Tanks) circular pre-stressed concrete storage tanks, each with a nominal capacity of approximately 15 million gallons.
- Both tanks shall be constructed on grade and shall have the same dimensions (a finished floor elevation of 490 feet, an overflow elevation of 520 feet, and an inside diameter of approximately 300 feet).
- The maximum height of all structures including railing, antenna, etc. shall not exceed 60 feet above the final grade elevation.
- Both tanks shall have separate inlet and outlet pipes. The tanks shall have provisions for water quality sampling at various levels. An access bridge shall be provided to connect two tanks at the top.
- The need for a tank mixing system and the advantages and disadvantages of different types of mixing shall be evaluated by the Engineer, and if a decision is made by the Owner to implement, shall be designed by

the Engineer.

- Connection to the existing infrastructure (finished water pipeline) located along Grabhorn Road (requiring coordination with the pipeline project (PLM_5.3) and Washington County).
- Four vaults for 66" diameter finished water pipelines and appurtenances (e.g., valving and metering).
- Yard piping to allow parallel and/or series operation of the two tanks, if elected by WWSP.
- A building to house a chemical feed system, electrical, SCADA equipment, and for storage.
- Telemetry antenna.
- Combination guardrail/split rail fence along the north property line and security fencing around the site.
- Soil nail and rock bolt reinforcement wall at the north, east, and west of the site.
- Design of a site to the west of the reservoir site (west of SW Grabhorn Road) for use for construction activities (and restoration of the site after RES_1.0 construction is complete). Future provisions for a maintenance and storage building and for realignment of SW Grabhorn Road.
- Drainage and retention basin.
- Storm water retention, treatment, and conveyance.
- Site access roadways.
- Other ancillary features that support a fully operational reservoir storage facility as described in the RES_1.0 Conceptual Design Report.
- Development of construction implementation plan including recommendations on bid and award, construction schedule to include PLM 5.3 pipeline installation, and other coordination considerations.

Delivery Approach

The Owner is planning to combine the construction of RES_1.0 with the PLM_5.3 pipeline project in one package with the same contractor. The PLM_5.3 pipeline design consultant will design the 66" diameter finished water pipelines that will ultimately feed pumped finished water to the reservoir and accept the gravity flow out of the reservoir. PLM_5.3 30% Design Drawings are included as Attachment 3. Coordination will be required with the PLM_5.3 Design Consultant, Jacobs Engineering Group (Jacobs). Currently, the Owner plans to use the Design-Bid-Build approach to construct the combined project. The RES_1.0 Engineer shall combine the 100% PLM_5.3 design (as Schedule A) with the RES_1.0 design (as Schedule B) to create one construction bid package. The RES_1.0 Engineer shall be the lead Engineer during the bid phase, soliciting input and review by the PLM_5.3 engineer as required; coordination with and communications between Engineer and Jacobs shall go through the WWSP Project Manager. Bidding (as a Design-Bid-Build project) for PLM_5.3 and the RES_1.0 is currently planned to begin in 2021 with construction starting in fall 2021.

As part of this SOW, the Engineer is required to evaluate and provide a recommendation for the best construction delivery approach (Design-Bid-Build versus CM/GC) to fit the combined projects. Should the CM/GC method of construction delivery be recommended and implemented, the CM/GC Contractor may be involved in the review and commenting on design phase deliverables (likely starting between the 30% and 60% design submittals). Subsequent items in this scope may refer to contractor review during design, if the contractor is engaged and available.

SCADA Integration Delivery Approach

The Owner has contracted with a SCADA Design Firm (S&B, Inc.) for SCADA planning, design, integration, and, possibly, programming of the overall SCADA system. S&B, Inc. has developed and established instrumentation and controls (I&C) design standards and will be assisting with developing the program-wide control system architecture, design criteria, and communications standards for WWSP projects. The SCADA and I&C design standards for the WWSS are included as Attachment 21. The SCADA Design Firm will likely serve as integrators and programmers for the WWSP projects during the construction.

Security Integration Delivery Approach

The Owner has developed a Security Design Concept Report (DCR) which the RES_1.0 Design Consultant shall utilize for developing physical, electronic, operational, and cyber security to protect the asset(s) at the RES_1.0 site. The Security Design Concept Report (DCR) will be issued to the selected Engineer after Notice-to-Award. The content of this report shall be considered by the Engineer during final negotiations and incorporated into this Agreement.

Water Supply Integration Delivery Approach

The Owner has contracted with a Water Supply Integrator (Confluence Engineering Group, LLC) to provide water quality integration services. Confluence Engineering Group will evaluate the need for and provide performance recommendations for design of a chemical feed system at the reservoir site. This SOW assumes that a chemical feed system will be required.

RES_1.0 Design Contract Assumptions

The following general scope of work, project approach and budgeting assumptions shall apply:

- Operation of Tanks in Series. Under Subtask 4.4.5, Engineer will evaluate parallel and series operations alternatives for the tanks, develop pros and cons, and provide recommended layouts for series and parallel operation of the reservoirs, to be presented at the workshop. However, the design budget is based on the yard piping and vault layout for parallel operation of the two tanks as shown in the BODR. If operation in series is also elected, then an intertie pipeline and additional valve vault would be added and the design budget amended to include those project features needed.
- Required building storage areas, onsite and offsite, to be provided by WWSP four weeks after NTP. It is assumed that the onsite storage room does not require a bridge crane.
- Telemetry Antenna. Assumes that this requires a separate structure with its own foundation (not to be mounted on top of tank). Design of required foundation to be added later by amendment.
- Staging Area Layout will include future provisions for a maintenance and storage building and for realignment of SW Grabhorn Road based on: 1) WWSP to provide footprint size of storage facility and Washington County to provide road realignment plan and profile. Internal building layout and design of building is not included. Effort does however include review of auto turn for temporary staging site including parking / large vehicle passage.
- Stormwater Retention, Treatment, and Conveyance. Scope of work and budget assumptions shall be based on the August 2018 Concept Basis of Design Report drawings for stormwater and emergency overflow, as follows:
 - Stormwater will be routed from the retention pond through the gravity drain pipeline to the east edge of Grabhorn Road and discharged at the edge of the road.
 - Stormwater and emergency tank overflow (if any) will be routed from the retention pond through the onsite emergency overflow swale to the east edge of Grabhorn Road.
 - Emergency tank overflow (if any) is fully retained onsite in the retention basin; WWSP's SCADA will control the supply pumps at the WTP to prevent offsite discharge.
 - No offsite discharge modelling or design is provided with this scope of work.
 - The staging area site shall be restored to a natural condition such that post construction stormwater management isn't required.
 - During preliminary design, risk of damage to offsite properties due to discharges from the site needs to be considered by the Program and is not included in this scope of work. Addressing that risk would require a design scope amendment to add a risk analysis and modelling and design for one of the following options:
 - Modeling and design of an offsite conveyance channel south of the site for approximately one mile to McKernan Creek.
 - Modeling and design of offsite discharge through the existing tributary of McKernan Creek east of

the site.

- Design Efficiency. For efficiency of design the following project features shall be assumed to be identical for budgeting purposes:
 - D110 Tanks. Engineer will prepare the design for one tank and replicate that design for the second tank. The drawings will include a table listing the locations of inlets, outlets and hatches for both tanks.
 - Flowmeter Vault. The flowmeter vault that was designed for RWF_1.0 will be applied to RES_1.0. Both RES_1.0 meter vaults are assumed to be identical except for height of walls. The design will be checked for the taller of the two RES_1.0 vaults and applied to both. HVAC and lighting systems are not included.
 - Valve Vaults. Both RES_1.0 valve vaults are assumed to be identical except for height of walls. The design will be checked for the taller of the two RES_1.0 vaults and applied to both. HVAC systems are not included; power and lighting systems are included. Vaults will be rectangular, custom sized, and constructed using CIP concrete and will be fully buried with standard traffic rated hatches.
 - Emergency Standby Power: It is assumed that RES_1.0 will have a UPS system similar to RWF_1.0; however, the sizing requirements for emergency standby power will also be evaluated as part of Subtask 4.4.6. For purposes of the design budget, it is assumed that WWSP would use a trailer-mounted portable generator for which the design will include a receptacle for plug-in of the portable generator. If WWSP elects a permanent standby generator then the preliminary and final design of this system can be added by amendment.
 - Standard Drawings and Details for All Disciplines - Legends, Abbreviations, General Notes, Details, and Pipeline, Corrosion and other WWSP Details. These drawings for RES_1.0 will be taken from the RWF_1.0 drawing set and re-used / edited for RES_1.0. Additional WWSP standard details for railings, stairs, fall protection devices and fences shall be used as applicable.
 - Compressed air systems are not currently planned to be required.
- Demolition. Design includes one demolition drawing and a related specification section.
- Disinfection Building architecture and building materials are expected to be similar to those used for the RWF_1.0 electrical building. The building will be a CMU block rectangular building with a metal gable roof and no structural irregularities; similar to the layout in the basis of design report. The structural and architectural drawings produced for RWF_1.0 will be re-usable for RES_1.0.
- Access Bridge. The access bridge installed between tanks will be a fabricated aluminum manufactured gangway and detailed design will be performed by the bridge manufacturer using a performance specification; this item will be treated as a deferred submittal.

1.2 Scope of Work

The Engineer shall provide the detailed design, bidding phase services, and engineering services during construction for the RES_1.0 Project, in accordance with the Agreement Documents and as described in the following sections. The following sections describe the Owner's preliminary expectations of the Engineer for completing the Work. Nothing in the SOW relieves or reduces the Engineer's continuous and ongoing responsibility and duty to exercise the standard of care for the benefit of the Owner while completing the Work for this Agreement.

Communication with the public and media shall be coordinated with and through the Owner's Communications Team. Awards, abstracts, peer-reviewed papers, presentations, media articles, and other external communications generated by the Engineer that represent and/or reference the WWSP shall be submitted for review and approval in advance by the Owner's Communications Team.

Meetings will be generally held at the Owner's Program Management Office ("PMO"), located at 1500 NW Bethany Blvd., Suite 305, Beaverton or at the RES_1.0 Project Site during construction.

Draft site-specific health and safety plans shall be provided with the Project Management Plan. Updates for

specific, planned field work shall be provided for Owner to review and comment. No field work shall be performed prior to acceptance of site-specific health and safety plans.

The scope of services consists of the following main tasks, which are described in detail below:

- Section 01 – Introduction
- Section 02 – Project Management and Administration
- Section 03 – General Design Requirements
- Section 04 – Preliminary Design Report
- Section 05 – 60% Design
- Section 06 – 90% Design
- Section 07 – 100% Design
- Section 08 – Delivery Approach and Early Work Package Alternatives
- Section 09 – Geotechnical Exploration, Evaluation, and Design
- Section 10 – Utility Location, Mapping, and Surveying
- Section 11 – Permitting / Land Use Support
- Section 12 – Right of Way Engineering/Drawings and Descriptions
- Section 13 – Public Outreach Support
- Section 14 – Coordination with Others
- Section 15 – Services During Bid Phase
- Section 16 – Engineering Services during Construction
- Section 17 – Project Schedule
- Section 18 – Resource Requirements
- Section 19 – Key Personnel
- Section 20 – Communications

2.0 Project Management and Administration

The Engineer shall provide project management services to deliver the detailed design, bidding phase services, and engineering services during construction for RES_1.0 project within the established budget, in accordance with the schedule as described in Section 17.0, and in accordance with the Owner's Pipeline Design Guide ("Design Guide"), included as Attachment 02. These tasks include requirements for the Project Management Plan ("PMP") and associated implementation to include project meetings, monthly progress reports, project controls, quality management, invoicing, and other tasks, as detailed below, required for the management and administration of the Work.

Deliverables included in this statement of work shall be in conformance with the Design Guide and other applicable program documents and shall be electronically submitted through e-Builder (the Owner's document management system) for logging and tracking. In addition to the electronic submittals required for all deliverables, hard copies and electronic copies on flash drive shall be provided for design submittals (Preliminary Design, 60%, 90%, 100%) as indicated in Section 3.0. The Engineer shall submit design deliverable(s) in accordance with the Agreement Times as provided in the Owner's project Schedule (Table 17-1). Both the hard copy sets and electronic files (uploaded to e-Builder) shall be delivered to the Owner's office no later than 4:00 PM (Pacific Time) on the listed due date, to satisfy the Owner's milestone requirements.

The Engineer's Project Manager shall be responsible to manage the Engineer's staff, Subconsultants, internal quality assurance/quality control ("QA/QC"), and communications to be used by the Engineer for the duration of this Agreement, and shall be the primary Engineer's point of contact for the Owner.

2.1 Project Management

2.1.1 Project Management Plan

Prepare a Project Management Plan ("PMP") for review and acceptance by the Owner, detailing the Engineer's execution plan and procedures. A draft and final PMP shall be submitted to the Owner for review. The PMP shall be in accordance with the Design Guide.

In addition to the content required in the Design Guide, the Engineer shall include a section indicating the Engineer's Computer-Aided Drawing ("CAD") execution plan, defining the use of CAD on the RES_1.0 Project and detailing the processes used for executing CAD throughout the project lifecycle. The CAD Execution Plan shall, at a minimum, include the following sections:

- Project CAD objectives
- CAD process design/workflow, including the software (with version number) used at each stage of design and the sequence in which each software is used
- Collaboration procedures, including collaboration software (with version number)
- Technology infrastructure, including the software (with version number) used for each discipline
- File management procedures, including folder structure, naming and storage conventions
- CAD quality control procedures
- CAD standards
- Project deliverables

The PMP shall also include a section indicating the Engineer's approach to managing its Subconsultants, including communications protocols; lines of authority and responsibility; scope, schedule, and budget management; QA/QC responsibilities; and document and records management.

PMP shall be revised, as needed, throughout the project lifecycle to incorporate changes to the plan (e.g., new team members) and accommodate the various project phases.

Deliverables:

- Draft and Final PMP
- Updates to PMP at milestones

2.1.2 Project Management

Provide management and oversight of Engineer's in-house project personnel and Subconsultants over the anticipated duration of the project. This includes setup and monitoring of budgets, schedule, and personnel assignments; coordinating work activities; and ensuring that work not expressly contained within the scope of work is not performed without prior written authorization.

The Project Manager and Project Engineer will be responsible for proactively communicating with, meeting with (if required), and alerting the Program's Project Manager as early as possible of any emerging issues that could affect the project schedule, budget, or other project goals.

2.2 Health and Safety Plan

Engineer shall prepare a draft and final site-specific health and safety ("H&S") plan for acceptance by the Owner, covering field work to be performed by the Engineer, Subconsultant, and Subcontractor staff for each project design and construction phase. The Engineer shall ensure Subconsultant and Subcontractor (who perform field work) comply with these requirements. The Engineer shall comply with applicable federal, state, and local environmental, health, and safety legislation, regulations, and codes.

The Engineer shall provide a draft site-specific health and safety plan with the Project Management Plan. Updates for specific, planned field work shall be provided by the Engineer for the Owner to review and comment, to ensure compliance with overall WWSP safety goals.

The site-specific health and safety plan shall include identification of, and mitigation of, anticipated field work hazards as well as the following minimum elements, or stand-alone programs:

- Project Safety Rules
- Safety Responsibilities including designation of a Site Safety Point of Contact and Corporate Safety Point of Contact
- Drug, Alcohol, Tobacco Use, and Firearm Policy
- Personal Protective Equipment ("PPE") Use And Care
- Utility Clearance Plan
- Emergency Action Plan
- Field Work Traffic Control Plan
- Severe Weather Response Plan
- Subconsultant/Contractor Safety Management Plan
- Safety training requirements which shall include at a minimum:
 - Owner Safety orientation,
 - Occupational Safety and Health Administration ("OSHA") 10-hour construction safety training (or equivalent) for personnel who will be working in the field unescorted (e.g. Site safety officers, construction inspectors, geologists, drillers, or resident engineers), and
 - Applicable OSHA required training (such as confined space, competent person, rescue, hazard training, etc.)
- H&S incident reporting process which includes notification of the Owner of incidents (i.e., near miss

events), and allowance for the Owner to participate in incident investigation, identification of corrective actions, and sharing of lessons learned.

- Safety Incentivization program shall be developed that promotes leading indicators, such as hazard reporting; a program that recognizes lagging indicators (such as days without injury) shall not be used on the program.
- Activity/task/job hazard analysis ("JHA") for Site activities to be performed: work efforts requiring a JHA include major project activities such as Site tours, survey, geotechnical exploration, geophysical surveys, utility locating, biological assessments, construction observation, or other work; provide JHA(s) a minimum of one (1) week prior to the work for the Owner's review and comment; initial JHAs may need to be provided prior to delivery of the PMP.
- Identification of expected chemical hazards including designation of action levels and copies of safety data sheets for materials brought onto the Owner's project sites
- A process to perform Jobsite Safety Compliance Reviews such as safety inspections or audits.
- A process for tracking corrective actions (internally known as "Safelts") to completion.
- Requirement for tailgate safety meeting requirements.
- Requirement for personnel to have stop work authority and to acknowledge stop work authority of the Owner and program management personnel.

Before the start of construction, the Engineer shall update their site-specific Health and Safety Plan for acceptance by the Owner. The Engineer's H&S Plan shall be coordinated with the Contractor's H&S plan. Updates for specific, planned field work shall be provided by the Engineer for the Owner to review and comment, to ensure compliance with overall WWSS safety goals.

Deliverables:

- Draft and Final Health and Safety Plan for Design Phase
- Draft and Final Health and Safety Plan update for Construction Phase
- Work-specific submittals

2.3 Project Kickoff Meeting

The Engineer shall conduct and participate in one (1) half-day project kickoff meeting with the Owner. The Engineer shall prepare a draft agenda, presentation materials, and handouts and distribute to the Owner for review five (5) business days prior to the kickoff meeting. Meeting summaries shall be prepared and submitted in e-Builder for review by the Owner no later than one (1) week following the kickoff meeting. The purpose of the kick-off meeting shall be to conduct project team introductions, exchange information regarding staff roles and responsibilities, receive additional technical information not distributed during the procurement process, and review the project requirements including scope, schedule, and budget.

Assumptions:

- The Engineer's Principal-in-Charge, Project Manager, and Project Engineer shall attend the Kickoff Meeting

Deliverables:

- Draft agenda and meeting presentation materials and handouts
- Draft and final meeting summary

2.4 Design Progress Meetings

The Engineer shall conduct and participate in regular bi-weekly (one (1) every two (2) weeks) progress meetings with the Owner to update project design and schedule status, including the tracking and reporting of project trends (risk, safety, value engineering, and change logs), PLM_5.3 coordination, permitting and public outreach coordination, completion status, and other administrative and management issues. The Engineer shall prepare draft agenda and presentation materials and handouts and distribute to the Owner for

review five (5) business days prior to each scheduled meeting. Meeting summaries shall be prepared and submitted in e-Builder for review by the Owner no later than three (3) business days following the meeting. Other key personnel and subject matter experts shall be required to attend as necessary depending on subject matter and topics of meetings.

Assumptions:

- Progress meetings are expected to last up to two (2) hours but may occasionally last longer.
- The Engineer's Project Manager and Project Engineer shall be present. Additional technical staff may also attend when necessary according to the meeting agenda.
- PLM_5.3 design consultant shall participate in design progress meetings when requested for design interface coordination purposes.
- Meetings shall span twenty four (24) months, for a total of 48 meetings
- The Engineer's Project Manager shall participate in person or remotely in a one (1) hour WWSP Employer Safety Meetings at the PMO monthly during both design and construction.

Deliverables:

- Draft agenda and meeting presentation materials and handouts for design progress meetings
- Draft and final meeting summaries for design progress meetings

2.5 Construction Phase Progress Meetings

The Engineer shall attend regular and special Construction Phase progress meetings. The Owner will prepare agendas and meeting summaries and distribute to the attendees for review. Construction Phase progress meetings include the following:

- Pre-bid meeting
- Pre-construction meeting
- Coordination meetings with outside agencies
- Regular (weekly) construction progress meetings

The Engineer's personnel visiting the construction Site shall also attend contractor safety orientation during their first visit to the site.

Assumptions:

- The Engineer shall assume the contractor safety orientations will last one (1) hour Construction meetings will be at the construction project site
- Construction meetings are expected to typically last up to two (2) hours but may occasionally last longer
- One (1) pre-construction meeting to be attended by up to four (4) Engineer staff members
- One (1) attendee representing the Engineer is required at weekly construction progress meetings
- Attend one hundred and thirty five (135) regular weekly construction progress meetings
- Attend and lead forty (40) additional meetings for coordination with outside parties or special meetings pertaining to design-related issues, procurement, Site safety, start-up, training, operations, or maintenance related topics

Deliverables, for meetings organized by the Engineer (not including regular construction progress meetings), due within three (3) business days of each meeting:

- Draft agenda and meeting presentation materials and handouts
- Draft and final meeting summary

2.6 Application for Payment and Progress Reports

The Engineer shall prepare a monthly Application for Payment using e-Builder in accordance with the Agreement and Design Guide. The monthly Application for Payment shall be submitted with a completed Monthly Progress Report. Monthly Progress Reports shall be in conformance with Design Guide, Section 2.3. The monthly report should summarize the Work accomplished under major design tasks and subtasks or milestones completed in the prior month. Quarterly Spend Reports shall be prepared and provided as

described in Section 6 of the Agreement. For guidance on the required monthly change log, refer to the Agreement and Design Guide Section 2.4 for more information on change management. Value engineering and risk logs shall be updated on e-Builder each month and a statement indicating what updates were made shall be included on the progress report.

Deliverables:

- Monthly Progress Reports (including updated design change, value engineering, and risk logs) and Application for Payment
- Quarterly Spend Reports (See example in Exhibit F of the Agreement)
- Health and safety (H&S) metrics including incidents reported by type, H&S observations and suggestions (incentive program), training completed and percent trained (based on H&S Plan) and a list and status of corrective actions.

2.7 Document Management Training

The Engineer shall use e-Builder for document management and formal correspondence. See the Design Guide, Section 2.2 for additional information on Document Management. Assumptions:

- The Engineer’s Project Manager, Project Engineer, document controls lead, and backup controls team member shall attend training at the PMO
- Training requires four (4) hours on-site per attendee and will take place at the Owner’s office

2.8 Schedule Development and Monthly Update

The Engineer shall develop draft and final versions of the baseline project design schedule. The draft baseline design schedule shall be based on the work breakdown structure of this SOW and align with the Agreement Times described herein. The schedule shall be finalized by the Engineer following incorporation of responses to review comments received from the Owner on the draft schedule.

The Engineer shall then submit monthly design schedule updates to the Owner throughout the design to reflect work progress, identify variances from the baseline schedule, changes to the schedule, scope, or any other activities that may impact the Agreement Times. Changes to the Agreement Times must be approved in writing by the Owner as described in Section 10 of the Agreement. The design schedule shall be prepared using software compatible with Primavera P6 (Engineer will use MS Project).

A preliminary RES_1.0 phasing schedule (including design, construction, and commissioning and startup) has been developed by the Owner and includes known milestones developed in consideration of land use requirements, cash flow requirements, interfaces with other construction packages, and other factors. Based on development of the Engineer’s design schedule, review of available project information, and communications with stakeholders, the Engineer may identify or develop alternative approaches to implementing the phases of the RES_1.0 Project than what is reflected in the Owner’s phasing schedule, as a way to reduce risk or more efficiently meet the stakeholders’ schedules and constraints. The Engineer shall review and provide recommendations for changes to the Owner’s phasing schedule to most efficiently and effectively meet the required design and construction deliverable dates (e.g., proposing early equipment/material procurement (for long-lead items, including items requiring special seismic testing)).

Deliverables:

- Draft and Final Baseline Design Phase Schedule, in native (Primavera P6 compatible – MS Project) format and Adobe Acrobat® Portable Document Format (“PDF”)
- Monthly Schedule Updates submitted with Application for Payment, in native format and PDF

2.9 Design Change Log

The Engineer shall prepare and maintain a Design Change Log that identifies items that may significantly change design and/or construction costs from the previous deliverable. Log shall be maintained on e-Builder

utilizing Owner's standard template and updated and submitted monthly as part of the monthly progress report.

Deliverables:

- Design Change Log in Excel format and PDF

2.10 Seismic Resiliency Work Group Participation

The Owner has developed seismic resiliency design guidelines and minimum recommendations that shall be included in the Engineer's design. The Engineer shall review the Owner's seismic design guidelines and minimum recommendations, recommend additional guidelines and standards that would apply to this facility and integrate/interpret the seismic design approach into the RES_1.0 Project.

The Engineer shall attend and participate in an Owner-established seismic resiliency work group at the PMO or nearby location. The work group will consist of WWSP staff, consultants from various design packages, as well as other outside industry and subject matter experts. The purpose of the work group will be to discuss and review seismic resiliency related to the individual design sections, identify and discuss other necessary seismic resiliency aspects, and other topics relevant to the subject matter. Others will prepare agenda three (3) business days before and meeting summaries three (3) business days after meeting and make these documents available to the Engineer. The work group will also discuss and develop recommendations for more detailed seismic modeling efforts for critical areas.

Provide outline of Resiliency, Reliability, Redundancy, and Recovery TM for discussion along with the related scope from Section 4.4.9 and the associated requirements of the WWSP Seismic Guidelines and Minimum Design Requirements (SGMDR) at Seismic Resiliency Work Group meeting. This meeting is intended to focus on facilities and setting expectations around activities necessary to achieve Program seismic LOS goals and performance objectives. The discussion is intended to establish a plan related to how the seismic resiliency LOS goal and performance objectives will be met with the project, when the associated activities will take place, and by whom. This seismic resilience delivery plan shall be developed further for the Resiliency, Reliability, Redundancy, and Recovery Work shop and TM required as part of Section 4.4.9

Assumptions:

- Project Manager, Project Engineer, and Seismic Task Lead shall attend work group meetings
- Attend one (1) work group meeting, three (3) hours
- Other key team subject matter experts may need to attend depending on the issues that arise out of the work group discussions, and will be authorized in writing separately by the Owner if attendance is needed.
- Preparation of the following WWSP documents are also covered by this Subtask 2.10:
 - MDR Checklist; to be submitted at 60%, 90% and 100% deliverables. Sixteen manhours are budgeted for each submission; 48 manhours total for the MDR Checklist.
 - Seismic Qualifications Checklist; to be submitted 60%, 90% and 100% deliverables. Sixteen manhours are budgeted for each submission; 48 manhours total for the Seismic Qualifications Checklist.
- Seismic Peer Review. SGMDR Section 13.0 provides for seismic peer review of the project design. The effort required to coordinate, answer questions and emails, and to respond to comments in connection with the seismic peer review cannot be estimated in advance and will be authorized by WWSP on an events basis during the design phase of the contract.

Deliverables:

- Comments on the Owner's seismic resiliency guidelines and minimum recommendations
- Recommended additions to the Owner's seismic resiliency guidelines and minimum recommendations specific to the RES_1.0 Project
- Prepare one (1) presentation of seismic resiliency challenges specific to the RES_1.0 Project to support

work group meetings

- Review and comment on meeting agendas and summaries

2.11 Water Quality Work Group Participation

The Engineer shall attend and participate in one Owner-established water quality work group and two Water Supply Integration Project meetings during the design, construction, and startup at the PMO or nearby location. The work group will consist of Owner's staff, consultants from various design packages, as well as other outside industry and subject matter experts. The purpose of the work group will be to discuss and review potential changes in source water quality that may affect the WWSS; distribution water quality issues such as, maintenance of chlorine residuals, water age, distribution system operation concepts, and other topics relevant to the subject matter. An agenda will be prepared by others and distributed to the Engineer approximately three (3) business days before each meeting. Meeting summaries will be distributed to the Engineer for review approximately three (3) business days after each meeting. The Engineer shall also review of select sections of the draft Systems Integration Plan which will be prepared by others.

Assumptions:

- Project Manager and Project Engineer shall attend work group meetings
- These meetings are in addition to the Engineer's evaluation of operational strategies and mixing systems required in Section 4.0 of this SOW.
- Attend up to three (3) work group meetings, three (3) hours each
- Other key team subject matter experts may need to attend depending on the issues that arise out of the work group discussions, and will be authorized in writing separately by the Owner if attendance is needed.

Deliverables:

- Review and comments on the Owner's Systems Integration Plan prepared by others
- Review and comment on meeting agendas and summaries

3.0 General Design Requirements

Work shall be prepared, reviewed, and revised in compliance with the Design Guide requirements.

The Engineer shall coordinate design work with the Owner and/or their respective consultants and others as described in Section 14.0.

Design criteria, calculations, Drawings, Specifications and details, and other work described in this SOW shall be the responsibility of the Engineer and those individuals who apply their seals to the construction contract documents. The Engineer shall follow applicable regulatory requirements, Federal, State and local laws, WIFIA Program requirements, environmental or other permit conditions, industry standards (e.g., AWWA standards, American Iron Steel (AIS), NSF/ANSI 60 and 61 standards), and applicable code requirements.

The Engineer shall design the RES_1.0 Project in strict accordance with anticipated and/or negotiated permit and land use approval conditions. The Engineer shall review the Owner's previously submitted permit documents (Joint Permit Application ("JPA") and Land Use Application) and resultant permits, when issued, and incorporate specific requirements into the Engineer's detailed design.

In compliance with the Owner's standards, at the completion of construction, Record Drawings shall be delivered to the Owner in Autodesk 2010 (or newer) electronic format. Standard Drawing borders will be provided by the Owner. Drawings shall be based on a D size (22" x 34") sheet. Drawings shall remain legible when printed at a reduced (11x17) size. The Owner's standard details shall be incorporated into the design Drawings, where applicable. The design detail shall be appropriate for a conventional bid and award of the construction contracts to a contractor. The Drawings produced for this SOW shall generally be organized as follows:

- General sheets – cover title sheet, location map, vicinity map, drawing index, design criteria, process flow diagrams, traffic haul route, legal description, plot plan, hydraulic profile, general notes, Site constraints, symbols, and abbreviations
- Demolition/Temporary Erosion and Sediment Control ("TESC") sheets – typical details, general and detailed demolition plans and site-specific details, excavation plans, temporary erosion control plans, details, and notes
- Civil sheets – typical details, Site plans (including existing) for reservoir site and staging site, survey bench marks, contractor staging areas, Site grading and paving plans, road profiles, overflow and stormwater drainage and control plans, drainage plan for staging area, yard piping plans and profiles, erosion and sediment control plans and details, retaining wall plans, construction/traffic management plans, ductbank plans and profiles, cathodic protection plans and details, vaults, fencing, gates, signage, and details
- Landscaping sheets – typical details, top soil and planting plans, irrigation plans, and details for reservoir site and staging site
- Architectural sheets – architectural design standards, code review data (as required by the fire agency having jurisdiction), life safety and egress information, typical details, plans, elevations, sections, schedules, and details for the RES_1.0 structures indicating appropriate building materials and finishing of exposed vertical concrete surfaces
- Structural sheets – structural design standards, general notes (including specific International Conference of Building Officials ("ICBO") Special Inspections and Structural Observation requirements), typical details, geotechnical, seismic, and structural design criteria; plans, sections, and details for the RES_1.0 structures; plans, sections, and details for ancillary structures and facilities
- Process sheets – general process symbols, abbreviations and general notes, piping and equipment schedules, typical details, plans, sections, and details for process equipment, piping, valves, cross

connection protection assemblies, chemical storage and distribution

- Mechanical sheets – general mechanical symbols, abbreviations, and general notes, piping and equipment schedules, typical details, plans, sections, and details for HVAC, plumbing, fire protection, and other miscellaneous systems
- Electrical sheets – symbols, abbreviations and general notes, typical details, electrical site plans showing widths of ducts banks and manhole dimensions, one-line diagrams, service load calculation table, panel schedules, conduit/cable schedules, luminaire schedule, manhole and handhole schedules, duct bank sections, power plans, and, lighting and grounding plans, special system riser diagrams, control schematics, equipment elevations, and details for equipment installation.
- Instrumentation and Control sheets – instrumentation symbols and abbreviations, tagging convention, overall system architecture schematics, process and instrumentation diagrams (“P&IDs”), typical details, control panel locations, input/output (“I/O”), fire alarm, communications, and security sheets.

Drawing submittals shall be initialed by the Project Engineer, draftsman, drawing checker, and Project Manager. Final Drawings shall be stamped by the Engineer.

The Engineer shall maintain (on e-Builder) a Revision Log indicating each issued Drawing and Specification (name and number) along with the current issued version, with issue date, nature of revision, and submittal with which it was issued (if applicable).

In addition to the electronic submission via e-Builder, the Engineer shall submit ten (10) hard copies of Drawings and Specifications at each design deliverable (Preliminary Design, 60%, 90%, 100% design documents, and draft and final permit documents) for review and comment by the Owner. Electronic copies shall be submitted by the Engineer in PDF. The electric files shall also be submitted to the Owner on a flash drive. Deliverables shall be 11×17 (half-size for Drawings) or 8½×11 (for Specifications, OPCC, technical memoranda, or reports). After the first submittal of each Specification, subsequent submittals shall be completed using the “track changes” feature so changes from the previous submittal can be easily identified. For the 100% design submittal all tracked changes shall be removed from the submitted Specifications.

All PDF documents, including Drawings, shall be word searchable and bookmarked.

The Engineer shall provide submittal documents for deliverables in native formats (i.e., Revit, MicroStation, AutoCAD/Civil 3D, ArcGIS, LiDAR, Microsoft Word, Microsoft Excel, etc.) for final submittals and when requested for permitting, Preliminary Design, 60%, or 90% submittals.

The deliverable review and approval schedule shall be incorporated into the project schedule, and shall comply with the process flow prescribed in the Design Guide. Comments will be provided by the Owner to the Engineer utilizing the Owner’s standard quality review form (“QRF”) following the Owner’s review of the Engineer’s deliverables in the time frame described in Section 2.2 of the Design Guide. The Owner will consider other methods proposed by the Engineer for collecting and consolidating review comments electronically.

The Engineer shall conduct Pre-submittal Informational Workshop and a Post-submittal Technical Review Workshop(s) with the Owner and other stakeholders for each major design milestone (Preliminary, 60%, and 90% design). For the 90% design submittal, separate Pre-submittal and Post-submittal workshops will be required for each construction package. A separate Post-submittal Technical Review Workshop for the security system shall be held with the Owner and other stakeholders for the 90% design milestone. At the Pre-submittal Informational Workshop, the Engineer shall review the content of the submittal with the review team to provide review and introduce the submittal content, summarize major changes since the last submittal, identify where gaps exist, and identify where the Engineer would like to focus the review. At the Post-submittal Technical Review Workshop, the Engineer shall go over the Engineer’s responses to the Owner’s

and Contractor's comments. Minor submittals, design issues, or technical memorandums are assumed to be reviewed during regular bi-weekly Progress Meetings, unless otherwise noted.

For each workshop, the Engineer shall prepare draft agenda and presentation materials and handouts and distribute to the Owner for review five (5) business days prior to each scheduled meeting. Meeting summaries shall be prepared and submitted in e-Builder for review by the Owner no later than three (3) business days following the meeting.

Assumptions:

- Pre-submittal Informational Review workshops are expected to last up to one (1) hour each and Post-submittal Technical Review workshops are expected to last up to three (3) hours each.
- The Engineer's Project Manager and Project Engineer shall be present.

Deliverables:

- Draft agenda and meeting presentation materials and handouts
- Draft and final meeting summaries

The Engineer shall prepare draft agenda and presentation materials and handouts and distribute to the Owner for review five (5) business days prior to each scheduled meeting. Meeting summaries shall be prepared and submitted in e-Builder for review by the Owner no later than three (3) business days following the meeting.

4.0 Preliminary Design Report (including 30% Design Drawings)

The Engineer shall review existing information, gather field data, prepare and complete analyses, conduct workshops, and summarize findings, analyses, and recommendations in a Preliminary Design Report (“PDR”), as described in this Section.

4.1 Review Existing Information

Within 21 calendar days of NTP, the Engineer shall thoroughly review previously prepared work products provided by the Owner (including the 30% PLM_5.3 design documents) and notify the Owner of the need to obtain clarifications, approvals for modifications, or any additional efforts by the Owner to make the products acceptable for incorporation into the detailed design.

The Engineer shall create an information request log and develop an information catalog to organize the requested information as it is submitted to the Engineer, with both stored on e-Builder. The catalog and log shall be updated as new information is requested or received so that documents are fully available to project team members and to streamline information dissemination. The Engineer shall notify the Owner immediately of any data gaps or design deficiencies identified in review of Conceptual Design work.

Deliverables:

- Updated Information Request Log submitted at each bi-weekly meeting

4.2 Gather Field Data

The Engineer shall immediately proceed, upon NTP, with gathering necessary field data for detailed design, such as survey, plats, zoning maps, electrical and telephone/telemetry poles and/or vaults, and utility locates and subsurface utility explorations (potholing). The Engineer shall coordinate with the Owner’s Permitting Team to obtain the necessary natural resource authorizations for investigations conducted in sensitive areas. The Engineer shall proceed with geotechnical investigations as early as possible. Preliminary design mapping data will be provided to the Engineer for reference purposes only, as the Owner’s current conceptual design mapping data are not suited for design purposes. Access shall be coordinated through the Owner.

Deliverables:

- Draft and Final Mapping and Survey Deliverables (per Section 10.0)

4.3 Associated Existing and Future Infrastructure

The Engineer shall evaluate existing and future infrastructure information for potable water supply, sanitary sewer, storm water, natural gas, telephone, telemetry, high-speed internet, fiber network, electric power, and other required utilities. The Engineer shall develop information and requirements for each utility in terms of utility provider, distance to nearest connection point, connection fees, materials of construction, sizing, and phasing. Analysis shall include plan to provide utilities required for the RES_1.0 design. The Engineer shall note that utility connections to existing utilities (gas, sewer, potable water, etc.) will likely be from Grabhorn Road.

The Engineer shall lead discussions with the local utilities regarding existing service capability and utility infrastructure related to plant requirements. A strategy for providing these utilities to the new facilities shall be developed. Meetings with the local utilities will be set up by the Owner, at the Engineer’s request.

With respect to power, the Engineer shall determine the availability of redundant power, if available, from a secondary feed on a separate grid system from the electric utility. The Engineer shall evaluate standby and uninterruptable power alternatives (as required to meet the level of service goals) and minimum loads required for the site. Facilities that are public (not owned by the WWSS) shall conform to the standards of the agency having jurisdiction.

Deliverables:

- Draft technical memorandum (“TM”) summarizing the results of this evaluation; WWSP shall review and provide comments, then Engineer will finalize and include the TM as an appendix to the PDR.

4.4 Workshops

4.4.1 General Approach

The Engineer shall conduct and participate in workshops with the Owner to facilitate agreement on project design criteria and other issues. The Engineer shall prepare draft agenda (including key decisions required as part of each workshop so Owner can ensure the correct representatives of the Owner are attending the meeting), presentation materials, and handouts and distribute to the Owner via e-Builder. Workshops will typically be held at the PMO.

It is expected that the Engineer will summarize the workshop topic(s), background, analyses, preliminary recommendations, etc. to serve as chapters, sections, and subsections of the PDR to facilitate review by the Owner and to serve to streamline the PDR development process.

The Owner has attempted to identify workshops that will be critical to completion of the design of the RES_1.0. The Engineer shall review the list of workshops, propose any additional workshops, and review the timing of the workshops and propose the appropriate time during the design to hold the workshop.

Assumptions:

- Workshops are expected to last up to four (4) hours each; some workshops can be combined at the request of Engineer with the concurrence of WWSP.
- The Engineer’s Project Manager and Project Engineer shall be present at each workshop. Other Engineer key personnel and subject matter experts shall be required to attend as necessary depending on subject matter and topics of meetings; such attendance may be via remote participation (WebEx) at Engineer’s discretion.
- The following workshops are expected, at a minimum:
 - Construction Delivery Approach Evaluation Workshop
 - Rock Excavation and Removal Plan and Soil Nail and Rock Bolt Reinforcement Wall Workshop
 - Chemical Feed System and Reservoir Mixing Workshop
 - Civil Design, Site Layout, and Corrosion Control Workshop
 - Electrical and Instrumentation and Control (“I&C”) Design Criteria Workshop
 - Security Design Criteria Workshop
 - Architectural Concepts and Landscape Design Criteria Workshop
 - Resiliency, Reliability, Redundancy, and Recovery Workshop
 - Procurement Plan Workshop
 - Operations and Maintenance Plan and Design Safety Review Plan Workshop
 - Preliminary Design Pre-submittal Informational Workshop (per Section 3.0)
 - Preliminary Design Post-submittal Technical Review Workshop (per Section 3.0)

Deliverables:

- Within two (2) weeks of the Engineer’s NTP, the Engineer shall supply a list of proposed workshops, including topic, proposed dates, attendees, and durations. The list shall align with Engineer’s overall project schedule.
- Agendas for each workshop submitted a minimum of four (4) business days prior to each workshop.
- Meeting notes within ten (5) business days following each workshop. Each workshop discussion and results shall be incorporated as section in the PDR.

4.4.2 Construction Delivery Approach Evaluation

The Owner has performed an evaluation of alternatives for the construction delivery approach, comparing the advantages and disadvantages of a traditional design-bid-build delivery versus a CM/GC delivery approach for

the RES_1.0 project in conjunction with PLM_5.3 project. The Owner's evaluation will be provided to Engineer for review and to recommend a preferred alternative. Within 45 days of NTP, the Engineer shall present the results of its review and recommendation at a regularly-scheduled design progress meeting.

4.4.3 Rock Excavation and Removal Plan and Soil Nail and Rock Bolt Reinforcing Wall Workshop

The Engineer shall review and summarize available published geotechnical data, and existing geotechnical engineering reports applicable to the RES_1.0 Project as well as geotechnical information generated as part of this SOW. The summary shall include geotechnical data, geotechnical design parameters/recommendations, and construction conditions/constraints and recommendations associated with the RES_1.0 Project.

Construction of the reservoirs and pipeline require excavation in basalt. The Engineer shall develop a Rock Excavation and Removal Plan including excavation method, haul route, rock reuse, and disposal.

The Engineer shall develop soil nail wall recommendations including minimum nail lengths for global stability, and soil/grout bond capacities. The recommendations will be documented as part of Task 9.5.

4.4.4 Chemical Feed System and Reservoir Mixing

The Owner's Water Supply Integration Design Firm is currently analyzing and evaluating Program-wide water quality and will provide recommendations related to the need for a chemical feed system at the RES_1.0 site at the end of 2019. It shall be assumed that a chemical addition system will be required. The Engineer shall:

1. Review water quality requirements and recommendations prepared by the Owner's Water Quality Integrator.
2. Provide alternatives for meeting the water quality requirements and advantages and disadvantages of each.
3. Obtain input from both the Owner and the Owner's Water Quality Integrator on the alternatives.
4. Develop chemical system design criteria, layouts, process flow diagrams, and other preliminary design requirements.

The Engineer shall also evaluate benefits to and alternatives for providing mixing at each reservoir and present alternatives and advantages and disadvantages of each. The Engineer shall develop design criteria, layouts, process flow diagrams, and other preliminary design requirements for the mixing system.

Engineer's CFD Modeling lead, chemical feed system engineer, and water quality specialist shall participate remotely (via WebEx).

4.4.5 Civil Design, Site Layout, and Corrosion Control

The Engineer shall further develop the major Site components of the reservoir site layout presented in the Conceptual Design Drawings in a configuration that takes into account site constraints, zoning and permitting setbacks and other requirements, staff access and parking, equipment maintenance, equipment removal/replacement, functional efficiency, chemical delivery access, hydraulics, quantity of rock excavation, construction access, piping and electrical conduit/duct bank corridors, storm water and overflow basin, safety, and Site compatibility. Specifically, the evaluation will be limited to further development of the following features: piping and appurtenances; reservoir operation in parallel and series; stormwater basin sizing and concepts; and staging area layout with the future access road re-alignment.

The Site layout shall also provide a facility that optimizes aesthetics and public appearance/acceptance and shall abide by the requirements of the approved land use submittal. Pros and cons and recommended layouts for series and parallel operation of the reservoirs shall be presented at the workshop.

The Engineer shall review operational scenarios for the RES_1.0 facilities, including normal operation, emergency scenarios, etc. Pros and cons and recommended layouts for series and parallel operation of the reservoirs shall be presented at the workshop.

The Engineer shall further develop the staging area site layout presented in the Conceptual Design Drawings for construction and post construction in a configuration that takes into account Site constraints, Site security, landscaping, environmental setbacks and other requirements, access and parking, quantity of rock excavation, construction access, storm water, safety, and Site compatibility. The post construction site layout shall also optimize aesthetics and public appearance/acceptance and shall abide by the requirements of the approved land use submittal. The post construction site layout shall incorporate provisions for a future maintenance and storage building. The Engineer shall work with operation staff to determine the size and layout for the future building, including balancing storage to be provided at the building on the reservoir site versus storage at the staging area site. The post-construction staging area layout will be included as a figure in the PDR.

Washington County has expressed an interest in improving SW Grabhorn Road, which may ultimately route this road through the reservoir staging area site. The Engineer shall coordinate with Washington County (through the Owner as part of Task 14.0) to incorporate future realignment of the SW Grabhorn Road with the proposed post construction staging area site layout. The basis for the proposed future realignment plan and profile is a sketch provided to Owner by Washington County; road design by Engineer is not included as part of the scope of work.

Excavation and backfill quantities shall be estimated for both sites.

Initial basemaps shall be available during the civil design and Site layout workshop (reference Section 10.0).

The Engineer shall develop a corrosion protection ("CP") strategy, which shall summarize methods of protection for RES_1.0 components (structures, piping (underground and exposed), equipment, structural steel, etc.) from corrosive soils, chemicals and chemical environments, and stray currents if available. Recommended materials of construction shall be listed for piping and equipment based on service. Where coatings are recommended, the Engineer shall provide recommendations for coating materials. In general, corrosion control shall be assumed to be provided through material, coating, and lining selection.

4.4.6 Electrical and I&C Design Criteria

The Engineer shall plan and design the electrical system including but not limited to service equipment, distribution equipment, standby power, uninterruptable power, lighting, and ductbanks. Consideration shall be given to electrical system resiliency and redundancy.

The Engineer shall plan and design instrumentation, local controls, and control panels, including a local control panel with network-connected programmable logic controllers (PLCs), and a fiber network connecting to the operator control stations in the WTP_1.0 main control room. Consideration shall be given to control system resiliency, including the need for looped on-Site networks or backup systems for communications and controls. Resilient or redundant monitoring and control systems shall be considered for critical elements of the facilities, including elements that are difficult to access/view.

As summarized in Section 1.0, the Owner's SCADA Design Firm has prepared program-wide instrumentation and control (I&C) system design criteria and standards included as Attachment 21, I&C system design roles and responsibilities shall be as follows:

- Development of Control Strategies: Engineer shall lead the effort to draft control narratives and develop control strategies most suitable for primary and alternative modes of facility operation and control. Based on its expert knowledge in similar process control systems, the Owner's SCADA Design Firm has developed a standard format and content requirements for control strategies and provide input to the Engineer to ensure that strategies are logical, optimized, and straightforward to both program and operate. A workshop shall be organized and scheduled by Engineer and held with the Owner's SCADA Design Firm and the Owner to obtain input and approval prior to finalization of control narratives for inclusion in the bid documents prepared by the Engineer.

- Telemetry Systems: Development of the standards and specifications for telemetry systems (including wired and wireless systems at the RES_1.0 and other WWSS facilities) will be led by the Owner's SCADA Design Firm and will be made available to the Engineer for use in the detailed design of such systems to be included in the bid documents prepared by the Engineer.
- Hardware Procurements/Installations: SCADA and instrumentation equipment and materials shall be specified by Engineer, in accordance with I&C standards developed by Owner's SCADA Design Firm. Owner's SCADA Design Firm will review and comment on draft equipment and materials Specifications during 60%, 90%, and 100% design submittal stages. The equipment and materials shall be procured and installed by the Contractor, through the respective construction contract documents prepared by Engineer.
- SCADA Development Software: The Owner's SCADA Design Firm has developed recommendations for SCADA software, necessary for a complete and functional SCADA system. The SCADA software packages shall be specified by the Engineer (in accordance with recommendations and standards provided by Owner's SCADA Design Firm), be purchased by the Contractor, and licensed to the Owner.
- Programming: Process area PLC and system-wide SCADA programming and system integration will be provided by Owner's SCADA Design Firm, based on information provided by Engineer (system architecture, P&ID diagrams, control narratives, and information submitted for any pre-purchased, packaged systems). The Owner's SCADA Design Firm's programmer and Engineer shall jointly review and collaborate with the Owner to ensure that the SCADA programming meets the functional intent of the control narratives and meets Owner's needs and preferences. Engineer shall not provide review of code, but shall provide review of draft SCADA screens and screen content during construction phase.
- Equipment and instrument tagging scheme will be provided by the Owner.

During the Preliminary Design Phase, Engineer shall coordinate with the Owner's SCADA Design Firm at a series of workshops. Initial assumptions for workshop attendance during preliminary design include:

Control Strategy Development Workshop: Engineer shall plan, participate, and document one (1) two-hour session to describe preliminary control narratives and develop preliminary control strategies (attended by Engineer's Project Manager, Project Engineer, and Lead I&C Engineer).

In preparation for Control Strategy Development Workshops, Engineer shall prepare preliminary control narratives for normal operations and for emergency events such as a process upset or power outage. Control narratives should also be developed for specific operations such as starting, increasing, decreasing, and stopping flow to/from the reservoirs, as well as procedures for manual and automatic input to the RES_1.0 historical data storage and retrieval systems. Control narratives shall include sections on summary and background, applicable equipment and proposed tag numbers, both local and remote "manual" and "automatic" control (as applicable), and specification of control logic, process and instrument set points, monitoring capabilities, alarms and alarm responses, and hard-wire or software interlock requirements. The control narratives shall consider interlocks and the ability and need to override them in an emergency, define power-down sequences in the event of a power outage or emergency, and consider operational priorities during emergency conditions.

4.4.7 Security Design Criteria

The Engineer shall also develop and design Site security systems, to be procured and installed by Contractor. It is anticipated that the fire alarm system (if required) would be designed and procured together with the mechanical, electrical and control systems. However, it is anticipated that the security system will be designed at the same time as the mechanical, electrical and control systems, but security system Drawings and Specifications will be packaged by Engineer into a separate, confidential set of documents, for limited

confidential bidding and procurement by the Contractor. Engineer shall organize and conduct one (1) two-hour workshop (attended by Engineer's Project Manager, Project Engineer, security or fire system lead, and Lead I&C Engineer) to coordinate security and fire alarm system components, control panels, conduits, cabling, embeds, pedestals, gate intercoms and operators, card readers, electric door hardware, etc. with the Owner, Owner's SCADA Design Firm, and Security Subject Matter Experts. Engineer shall design and include conduits needed for security and fire alarm system components in Engineer's electrical design Drawings, Specifications, and conduit schedules. It should be anticipated that close coordination and meetings will be required with the local fire authority for design of fire alarm system.

4.4.8 Architectural Concepts and Landscape Design Criteria

The Engineer (through its architect) shall establish an architectural program for RES_1.0 that shall create an attractive, functional, and economical facility, pleasing in appearance to neighbors, visitors, and staff, be durable and require minimal maintenance considering the local environmental conditions. All RES_1.0 structures and landscaping shall be consistent with approved land use application design concepts.

The building layout shown in the Basis of Design Report shall be reviewed and critiqued by Engineer. Engineer shall conduct a review workshop with the Owner to confirm of the building size, space requirements, building materials and finishes, maintenance requirements, safe spaces for extended operations during emergencies, code requirements, equal opportunity employment and ADA requirements, accommodations for plant operations and maintenance personnel, and district operations (emergency operations, storage, maintenance). For budgeting purposes, it is assumed that the building shall as shown in the land use permit documents and Basis of Design Report.

An architectural code analysis including Hazardous Area Designations shall be developed for all areas of the RES_1.0.

The Engineer shall provide Drawings and renderings indicating the architectural concepts.

The Engineer shall present and further develop the existing landscaping plans and details from Conceptual Design Land Use Permit Documents. The Engineer shall create an attractive, functional, and economical facility, pleasing in appearance to neighbors and required land use planting density. The Engineer shall select landscaping that blends with the facility architectural theme, utilizes native plants to the extent possible, matches the facility color scheme, is relatively low in terms of upkeep and water demand, and shall provide screening of the facility along with shade for buildings and parking. Minimizing maintenance requirements and abiding by approved land use application design shall be a primary objective in defining landscape design criteria.

The Engineer shall provide Drawings and renderings indicating the landscape concepts.

4.4.9 Resiliency, Reliability, Redundancy, and Recovery

The Engineer shall perform a resiliency, reliability, redundancy, and recovery analysis to systematically identify which components and equipment are critical to achieving the Program's seismic level of service (LOS) goals and performance objectives ("critical system"). This analysis shall consider risks to operations staff, the public, the Contractor, as well as potential damage to the "critical systems" resulting from a major seismic event or an area-wide power outage. The Engineer shall also consider other risks to resilience including site security, control system failures, and breaches in information technology ("IT"). The analysis and design shall consider the WWSP Seismic Guidelines and Minimum Design Requirements (SGMDR) included as Attachment 20. The Engineer shall review seismic design criteria and RES_1.0 equipment for compliance with Program-wide selected design earthquake. Both structural and nonstructural components identified as part of the "critical system" shall be designed for the full MCE_R , an importance factors of 1.5, and other requirements identified in the SGMDR.

For elements of the “critical system”, identify the following:

- Means by which required seismic resilience confirmation is expected to be achieved (e.g., seismic certification, calculations or other structural analysis, shake table testing, if additional component testing is required, or other means)
- Who will be responsible for seismic resilience confirmation (e.g., equipment vendor, Contractor, Design Consultant, other)
- When in the project is seismic resilience confirmation required, expected timeline, and short description of process or procedures necessary to achieve confirmation
- Recommended spare parts
- Recommended quantity of consumables associated operation (a minimum of five (5) days of consumables required). Identify of any consumables that might warrant additional storage amounts.

The Engineer shall develop appropriate mitigation strategies and recommendations to address identified risks. At a minimum, the analysis shall consider the following (also see the SGMDR):

- Design of components to have flexibility, minimize interdependency to the extent possible, and maintain diversity of operations
- Where redundancy of components, equipment, or systems is recommended
- Establishing specific seismic design criteria (forces, approaches, etc.) and associated seismic design requirements for vendor equipment
- How sloshing loads on the reservoir wall and roof will be considered as part of design
- Measures to prevent fall and movement hazards during an earthquake (e.g., lights, HVAC, equipment)
- How deflection/movement compatibility between components and providing movement flexibility in components as necessary will be accommodated as part of facility design
- Methods of maintaining comprehensive communications during a seismic event including battery backup systems
- Maximization of the use of natural lighting to the extent practicable. Provisions for abundant emergency lighting
- Provisions to allow easy disconnection and reconnection of equipment, piping, and cabling for repairs
- Items of equipment that are designed to “break free” during a seismic event
- Review of resiliency and repair timelines for off-site utilities with the respective agencies
- Recommendations for equipment sizes and vendors that are readily available for replacement
- Delivery or replacement lead times for equipment
- Strategy for spare parts
- Materials and necessary labor skill sets locally available for the operation of the facility after a natural disaster

The workshop is intended to focus on setting expectations around activities necessary to achieve Program seismic LOS goals and performance objectives. The discussion is intended to establish a plan related to how the seismic resiliency LOS goal and performance objectives will be met with the project, when the associated activities will take place, and by whom. This seismic resilience delivery plan shall be incorporated in to the Preliminary Design Report. Afterwards, the document shall also be updated at the 60% and 90% design submittals.

4.4.10 Procurement Plan

The Engineer shall prepare a list of equipment with long delivery time frames or where early definition of equipment vendor would inform the design and evaluate if any of the equipment procurement time periods (including analysis of the time required for seismic certification of equipment) could negatively affect the overall project schedule (design or construction). If any potential schedule risks are identified, the Engineer shall prepare recommendations to accelerate equipment procurement (including early procurement packages), if warranted for schedule maintenance. The Engineer shall also identify items of equipment that the Engineer recommends be sole-sourced and the reasons for doing so. When developing this list, the Engineer shall consider AIS requirements.

The Engineer shall also evaluate procurement strategy options for equipment that the Owner may want to pre-purchase (or pre-select) across the various Program projects (e.g., electrical gear, instrumentation, security equipment) Owner will assist with scope of other projects as well as current schedules for design, procurement, and construction of those projects.

4.4.11 Operation and Maintenance Plan and Design Safety Review Plan

The Engineer shall prepare an Operation and Maintenance Plan and Design Safety Review Plan for the RES_1.0 Project. The purpose of the Operations and Maintenance Plan is to develop interim pipe and equipment maintenance procedures during construction, plus long-term operation and maintenance of the plant facilities in the future. The plan is anticipated to contain the following information but not limited to:

Operation

- Operation of mechanical, instrumentation, and electrical equipment
- Testing, startup, and commissioning, including water management (e.g., volumes of water expected to be generated, wasting of off-spec water, bypassing, concepts for recycling/recirculating water), approach to startup
- Strategies for anticipated chemicals and dosages
- Anticipated staffing requirements
- Identification of tools and critical spare parts inventory necessary to support operations, meet level of service goals, and provide for plant resiliency (also consider lead time for spare parts)
- Including spare supports, brackets, and bracing as part of the construction documents
- Development of an operational emergency event checklist including condition assessment, action items, safety procedures, and other procedures

Maintenance

- Short-term management and maintenance of RES_1.0 facilities for the period between construction and WWSS startup to assure they perform as designed when the WWSS is operational
- Preliminary anticipated long-term maintenance schedule
- Identification of routine facilities maintenance activities

Seismic Recovery Strategy

- Preliminary list of actions and anticipated durations to implement following a major seismic event to keep RES_1.0 operational to meet WWSP criteria

Safety

- Equipment-specific hazardous energy isolation plans
- Job Hazard Analysis for each unique work activity

- Hazards that cannot be eliminated during design along with recommended controls

The Engineer shall prepare Design Safety Plan to identify how risks and hazards to construction, operation, and maintenance personnel shall be identified (including ensuring compliance with applicable laws, codes, regulations, standards, and Owner's safety preferences), ranked, controlled to eliminate the risk (or attain an acceptable risk level for risks that cannot be eliminated), documented, and controls incorporated into the design. Solutions shall utilize the hierarchy of controls (e.g., elimination, substitution, engineering control, administrative control, and PPE) and allow for early identification of safety risks to avoid the cost of retrofitting the constructed elements to address safety issues during operation.

In the Design Safety Plan, the Engineer shall establish procedures to be utilized throughout the design to ensure that review processes include input from the Engineer's Project Engineer, Safety Task Lead, Operation and Maintenance Task Lead, and Electrical Task Lead. The review processes shall also allow for input from the Owner's health and safety, maintenance, operation, facilities, and supervision personnel as well as the Contractor and other subject matter experts. The Engineer shall include safety risks as part of the Risk log to document all identified safety risks, their ranking, proposed controls, and final method of control utilized in the design.

4.5 CFD Models

CFD modeling will be performed to evaluate flow conditions, residence time and level of mixing within the proposed reservoirs by simulating three-dimensional fluid flow. To evaluate the performance of the reservoir in terms of mixing, and by proxy water quality, the CFD equivalent of a step dose tracer study will be performed.

A two-step modeling approach will be used. The first step consists of a steady state CFD model run that establishes initial flow conditions within the reservoir. The second step consists of a second model run where a conservative tracer is introduced at the inlet at a constant rate. The model computations for the second step are conducted in transient mode so that the model tracks the movement of the tracer through the reservoir. Although the second model is conducted in transient mode, a constant flow rate is used assuming the inflow and outflow are equal and that the water level in the tank does not fluctuate. In actuality, the tank will see fluctuations in water level as the incoming flow changes due to operations and the outgoing flow which would vary due to diurnal demand patterns; varying tank water level fluctuations will not be evaluated.

The model will include up to four scenarios that represent the combination of two different flow rates and two water levels within the tank. The two flow rates are anticipated to correspond to minimum and peak daily flows. Two water levels will be set to minimum and maximum operating levels.

The modeling effort will include one base model and up to two alternative reservoir configurations. The base model will consist of modeling the reservoir assuming typical inlet and outlet configuration within the tank. The other two alternatives will consist of evaluating the possibility of using diffusers at the inlet and/or outlet or adding a mechanical mixer to improve mixing in the reservoir. Up to two diffuser and/or mechanical mixer configurations will be evaluated. All four scenarios described above will be applied to the base model. Only two scenarios will be used to evaluate the two alternative configurations. The two scenarios to be modeled will be selected based on critical conditions identified from the base model run results. Once a preferred alternative has been identified, all four scenarios will be modeled to confirm performance of the selected configuration. The goal is that the preferred alternative results in a well-mixed tank (e.g. coefficient of variation CoV as close to 0.1 as possible within 0.25 times the hydraulic residence time or faster for the given flow condition).

It is assumed that the reservoir will operate in parallel with an identical reservoir. If it is later elected by WWSP to operate the tanks in series, a residence time distribution function will be developed for two tanks in

series based on the results of the 1-tank model. This analysis will be done using spreadsheet calculations instead of CFD.

Assumptions:

- The Engineer shall first prepare a computational fluid dynamic (“CFD”) model for one reservoir, for reservoir operation in parallel, and assuming the configuration of the second reservoir matches the first reservoir.
- If tank operation in series is later elected by WWSP, the RTD of one reservoir will be used in a spreadsheet calculation to define the RTD at the outlet of the second tank.
- The scope of work described above for Task 4.5 is budget-driven. If the above scope of work does not result in a mixing solution that meets or exceeds CoV of 0.10, then WWSP will consult with Engineer and may elect to authorize additional modeling effort.

Deliverables:

- CFD Modeling TM containing methodology, procedures, conclusions and recommendations, as well as all data and documentation acquired during the modeling

4.6 Preliminary Design Report (“PDR”)

The Engineer shall prepare a PDR that contains pertinent project Drawings, general arrangement Drawings showing equipment layouts, preliminary equipment list, electrical one-line diagrams, and other information as developed as part of the Preliminary Design. The PDR shall document decisions and assumptions required to efficiently progress the Work into detailed design. The Engineer shall use the workshops discussion and results as chapters, sections, and subsections for the PDR to facilitate review by the Owner and to serve to streamline the PDR development process.

In addition to the previously developed information that will serve as a basis for the PDR, the Engineer shall develop a list of regulations, codes, and standards (including the Owner’s Design Guidelines) that apply to the design of the RES_1.0 and that shall govern the final design, including but not limited to items such as Oregon Health Authority (“OHA”) requirements, local building codes, Americans with Disabilities Act (“ADA”) compliance (where applicable), fire-life safety, noise, lighting, traffic, parking, reliability, environmental, WIFIA Program requirements, and health and safety codes or regulations. The Engineer shall also provide discipline-specific design criteria for each discipline that apply to the design of the RES_1.0 and that will be utilized for the final design.

The RES_1.0 Project requires the use of OSSC 2019 (based on the 2018 IBC), ASCE 7-16, and other referenced codes and standards for the design. However, the local building code agency (Washington County) may currently utilize other codes and standards. Engineer shall design to the requirements of the more current codes and shall coordinate with the building code agency to provide calculations and other submittals per the requirements of their codes.

A draft report shall be prepared and submitted for review and comment. A final report shall be prepared that incorporates review comments. Responses to comments shall be submitted with the final PDR. Design of the RES_1.0 shall proceed based on the approved concepts and layouts established in the final PDR.

Deliverables:

- Draft and Final Preliminary Design Report
Preliminary Design Report - Table of Contents
 1. Introduction

2. Project Background and Description
3. Design Criteria and Relevant Requirements
4. Major Component Sizing, Initial Selections, and Power Requirements
5. Rock Excavation and Removal
6. Soil Nail and Rock Bolt Reinforcement Wall
7. Associated Existing and Future Infrastructure Evaluation
8. Water Quality, Reservoir Mixing, and Chemical Feed System
9. Civil Design and Site Layout (including yard piping)
10. Corrosion Control
11. Architectural Design Concepts
12. Landscape Concepts
13. Building Occupancy and Hazardous Area Designations
14. I&C Design Criteria
15. Electrical Design Criteria
16. Security Design Criteria
17. Procurement Plan
18. Resiliency, Reliability, Redundancy, and Recovery
19. Operation and Maintenance Plan
20. Design Safety Plan
21. Construction Delivery Approach
22. List of Regulations, Codes, and Standards
23. Discipline-Specific Design Criteria
24. Opinion of Probable Construction Cost (OPCC)

Appendices

1. Drawing list, per Design Guide Section 2.11. The Drawing list shall indicate the Drawings anticipated to be included in each design submittal, including the anticipated percent complete of each drawing.
 2. Construction Specifications Table of Contents, per the Design Guide, Section 4.0. The Specification list shall indicate the Specifications anticipated to be included in each design submittal
 3. Preliminary Control Narratives
 4. Preliminary Easement Needs
 5. Draft Geotechnical Data Report
 6. Preliminary Equipment List
 7. Updated Design Change Log
- 30% Drawings
 - General Drawings
 - Cover
 - Location and Vicinity Map
 - List of Drawings
 - Symbols, Abbreviations, and General Notes
 - Design Criteria
 - Hydraulic Profile
 - Pipe Schedule
 - Site Key Plan
 - 3D Models (of individual structures), if project utilizes 3D modeling
 - Civil Drawings
 - Symbols, Abbreviations, and General Notes
 - Updated Site Basemap (with any new survey and utility research data)
 - Existing Site Plan (including wetland boundaries and natural areas to be protected)
 - Site Plan
 - Grading, Paving, and Drainage Plan

- Erosion and Sediment Control Plan
- Erosion and Sediment Control Details
- Mapping and Surveying Plan and Base Map, per Section 10.0
- Utility Location Plan (including connections off-site), per Section 10.0
- Instrumentation
 - Symbols, Abbreviations, and General Notes
 - P&IDs (near complete process portion for processes and ancillary facilities)
- Structural
 - Symbols, Abbreviations, and General Notes
 - Foundation, Main Levels, and Framing Plans
 - Major Sections
- Mechanical
 - Symbols, Abbreviations, and General Notes
 - Plans
 - Sections
- Landscaping
 - Symbols, Abbreviations, and General Notes
 - Site Overall Plan
 - Focus Area Plans, Materials, and Renderings
 - Site Security and Screening Overall Plan, Materials, and Renderings
 - Planting Overall Plan and Area Plans
 - Planting Details
 - Irrigation Area Plans
 - Irrigation Details
 - Hardscape and Materials Details
- Architectural
 - Symbols, Abbreviations, and General Notes
 - Site Overall Plan and Renderings
 - Floor Plans, Materials, Context, Elevations, and Renderings (for buildings)
 - Architectural Elevation – East/West
 - Architectural Elevation – North/South
 - Process
 - Plans and Sections (of process areas)
- Electrical
 - Symbols, Abbreviations, and General Notes
 - One-Line Diagrams and Equipment Elevations
 - Site Plan (showing major ductbank corridors and generator locations)
 - Power Plan (Showing location of major electrical equipment)
- Standard Details, identify the Owner’s standard details that the Engineer plans to use as well as the Engineer’s own standard details
- Naming conventions for all tagging (equipment, electrical, instrumentation, piping, etc.) shall be included in the 30% Drawings

4.7 Opinion of Probable Construction Cost (OPCC)

The Engineer shall prepare an OPCC for the RES_1.0 in conjunction with the Preliminary Design submittal and the 60%, 90%, and 100% submittals, using estimating software, the Engineer’s historical database, equipment vendor proposals and cut sheets, and major commercially available cost databases. The Engineer shall follow the principles and guidelines of the Association for the Advancement of Cost Engineering (“AACE”) and the Engineer’s standard estimating procedures. The OPCCs shall be in conformance with the WWSP Facilities Cost Estimating Guide, Attachment 7. Each cost estimate shall be in current dollars, reflect the construction phasing approach, projected to the midpoint of the Construction Phase, and be organized by facility.

The Engineer shall submit a Basis of Estimate Report, the estimate, and back-up. Highlight any concerns or issues relating to the estimating processes that may impact the RES_1.0 Project's final design and delivery.

After the OPCC comments are received from the Owner, the Engineer shall respond to the Owner's review comments and submit comment responses back to the Owner.

Within one (1) week of the Engineer's submittal of comment responses to the Owner's OPCC comments, the Engineer shall participate in a workshop with the Owner and to agree on the disposition of each comment response. The Engineer shall prepare draft agenda, presentation materials, handouts, and prepare meeting summaries and distribute to the Owner. Workshops will be held at the PMO. After the OPCC review workshop, the Engineer shall finalize the estimate within three (3) business days.

Assumptions:

- No workshop will be held for the 100% OPCC.
- Workshops will typically last up to two (2) hours
- The Engineer's Project Manager, Project Engineer, and Lead Estimator shall be present at each workshop.

Deliverables:

- Basis of Estimate Report, OPCC, and relevant back-up documents, draft with each draft submittal and final with each final Submittal
- Responses to Owner's OPCC review comments for each submittal within one (1) week of receipt of Owner's comments
- Agenda, presentation materials, and handouts for each OPCC workshop submitted at least three (3) business days prior to the workshop.
- Design OPCC workshop summary, submitted within three (3) business days following each workshop
- OPCC for PLM_5.3 is not included.

4.8 Value Engineering and Constructability Workshops

The Engineer shall participate in a value engineering ("VE") and constructability workshop after the 60% design milestone. The Owner will facilitate the workshop attended by the Engineer, and the Owner's staff. The Engineer shall assist the Owner with conducting the VE and constructability reviews by making recommendations for team participants, reviewing proposed agenda, furnishing background materials, and preparing meeting summaries.

The Engineer shall make a presentation at the beginning of each workshop regarding project background, status, and proposed design. Following the conclusion of each workshop, the Engineer shall review VE and constructability proposals, update the VE/constructability Proposal log, and offer guidance to the Owner regarding suitability for application to the RES_1.0 Project.

The Engineer's Project Manager, Project Engineer, and up to four (4) subject matter experts (defined by the Owner) shall attend the VE/constructability workshops. The workshop to last four hours and be located at the Owner's PMO. The Engineer shall develop an OPCC for each VE and constructability alternative and document the OPCC of accepted VE/constructability recommendations.

Assumption:

- Fee for 60% Design VE and Constructability Workshop shall be included under this task item.

Deliverables:

- Introductory presentations and supporting material consisting of Site plans, process flow diagrams and P&IDs, and mechanical and structural Drawings, submitted at least three (3) business days prior to the workshop
- VE and Constructability Workshop summary, submitted within three (3) business days following each workshop
- Updated VE/Constructability Log

5.0 60% Design

5.1 60% Drawings and Specifications

Prepare 60% complete design Drawings and Specifications meeting the requirements of this Section and Sections 1.0, 2.0, and 5.0 of the Design Guide. The Owner will review and comment on the Preliminary Design deliverable, which will result in changes to be incorporated into the 60% design deliverable by the Engineer.

5.2 Final Control Narratives

Update and finalize control narratives developed under the Preliminary Design Phase, including any changes in process systems or equipment. Assume one (1) two-hour workshop will be planned and conducted by Engineer to coordinate with SCADA Design Firm, Owner, and Contractor to finalize control narratives and P&IDs.

5.3 Traffic Control Plans

In coordination with the PLM_5.3 engineer, the Engineer shall prepare traffic control Drawings and Specifications for construction of the RES_1.0 and PLM_5.3 projects, which conform to applicable standards of the Manual on Uniform Traffic Control Devices, and incorporate the Owner and agency plan, specification, and drawing review comments. The Engineer shall provide support to the Owner during preparation and submittal of the permit applications.

The traffic control Drawings and Specifications shall be prepared by a certified traffic professional engineer. The Engineer shall include drawings in the plan showing phases of the RES_1.0 Project, a list of posted speed limits throughout the RES_1.0 Project, and traffic control measures to be employed at the RES_1.0 Project site. Traffic control Drawings are required for work which will impact traffic on public, private roadways or driveways, including vehicle, bicycle, and pedestrian traffic. Drawings and Specifications shall include detailed information on lane closure restrictions and accommodations for users including businesses, residents, bicycles, pedestrians, transit, emergency services, garbage collectors, and school buses. In the case of any full closures, detour routes shall be identified. Drawing should also address access and traffic control requirements for vehicles crossing between the staging site and RES_1.0 site, and accessing both sites from the roadway.

The Engineer shall inspect and document all public roads providing access to the construction sites to document the pre-construction road conditions.

- Traffic Control Plan Drawings - As required by the local jurisdiction, Drawings illustrating traffic control shall be developed and included in the construction packages.
- Haul Route Drawings - As required by the local jurisdiction, Drawings illustrating required haul routes shall be developed and included in construction package.

The Contractor will be responsible for obtaining traffic control permits.

5.4 Not Used

5.5 Safety by Design Workshop

The Engineer will conduct a four hour workshop to review and discuss potential improvements to the design to address operational and maintenance issues (primarily usability, maintainability, operability, and health and safety). The primary focus will be on operator access for normal maintenance and for emergency response. Engineer will guide the workshop discussion using a slidepack consisting of 2D drawing plans and sections.

At least one week prior to the workshop, the Engineer shall issue a slide pack of general arrangement Drawings

which shall be utilized by the Engineer during the workshop.

Assumptions:

- The Engineer shall provide a facilitator to lead the workshop) and a scribe (to record all information generated at the workshop. The Engineer’s Project Engineer and lead tank designer shall participate, as appropriate.
- Owner’s staff will participate in the workshop, including Design and Project Managers, Health and Safety Managers, and Operations and Maintenance Leads.
- The Engineer shall assume a half-day workshop with Owner’s staff to walk through all reservoir areas to agree on changes required to the design and associated action items for each area.

Deliverables:

- Workshop meeting notes with action items to be tracked for inclusion in the design.
- A slide pack of general arrangement Drawings to be utilized during the workshop.

5.6 Pipe Design Analysis

The Engineer shall provide pipe stress analysis or strain-based pipe design for larger diameter piping and all critical piping. Show pipe support locations on Drawings. In general, large diameter piping is defined as piping having a nominal diameter of greater than or equal to a nominal diameter of 24 inches.

The list of critical systems and services shall be reviewed and updated in conjunction with Level of Service goal discussion with the Owner during the Preliminary Design.

Where pipe couplings and joint stiffness and axial capacity are used for design, provide basis for coupling spring coefficients used in design and provide means to verify construction will meet design intent.

Where friction is used to restrain pipes (such as u-bolts), specify maximum design capacity based on friction coefficient, clamping force, and pipe weight. Provide means to verify construction will meet design intent.

For small diameter pipe and appurtenances, and non-critical pipe, the Engineer shall base piping design on prescriptive design (maximum loads that correspond to support spacing based on pipe size and maximum deflections for each pipe, material, joint, and coupling type) and utilize Specifications, pipe support applicability tables, and standard details to convey the design to the Contractor.

Pipe supports designed using the prescriptive design method shall be designed for allowable loads, maximum spacing, height above base plate, distance from supporting walls, and bracing requirements. Limits of the design (maximum pipe size, maximum support loading, maximum number of pipes per support, distance between supports, etc.) shall be clearly indicated in the documents used to convey pipe system design to the Contractor. Supporting calculations shall be provided to the Owner for all prescriptive designs.

Deliverables:

- Pipe stress analysis calculations and report for all large diameter and critical piping systems
- Calculations and Specifications, applicability tables, and standard details for small piping systems

5.7 Grading, Erosion, and Storm water Quality Control Plans

Using early guidance and templates (including the conceptual plans in the Willamette Water Supply System Storm water Management Plan and strategy presented in the Storm water Management Plan (April 2017) and land use application (November 2018)) provided by the Owner, the Engineer shall prepare grading, erosion, and storm water quality control plans, including drainage calculations, and grading, erosion, and sediment control measures on Drawings signed and sealed by a registered professional engineer in the State of Oregon, using Washington County and Oregon Department of Environmental Quality Standard Drawings and Details. The plans shall be designed in accordance with anticipated and/or negotiated permit conditions, and in

coordination with the Owner's Permitting Team.

The Owner and/or Contractor will be responsible for obtaining grading, erosion, and storm water permits.

A drainage analysis report shall be prepared by the Engineer showing that any additional impervious areas resulting from the proposed work will not impact surrounding properties negatively.

Deliverable:

- Erosion and Sediment Control Plans, submitted with 60%, 90% and 100% Design Milestone Deliverables

5.8 Security System

Engineer shall develop a separate, confidential set of Drawings and Specifications depicting the RES_1.0 site and the Site's security system in conformance with the Owner's Security Design Concepts Report which will be provided to the Engineer after NTP. Conduct a workshop with the Owner during the 60% Design Phase to present security strategies, equipment, materials, configuration, and intended operation, specific to the Site and building plans developed during the 60% submittal effort. Provide initial set of security system documents prior to workshop, then incorporate workshop feedback and comments into separate set of 60% complete security system documents. A separate Post-submittal Technical Review Workshop for the security system shall be held with the Owner and other stakeholders for the 90% design milestone.

Deliverable:

- Security system Drawings and Specifications, submitted with 60%, 90% and 100% Design Phase deliverables

5.9 Workshops

Additional workshops required during the 60% detailed Design Phase include:

- A two-hour 60% Security System Development Workshop (per Section 5.9)
-
- A half-day safety by design workshop (Section 5.5)
- A one-hour 60% Pre-submittal Informational Workshop (per Section 3.0)
- A three-hour 60% Post-submittal Technical Review Workshop (per Section 3.0)
- A four-hour VE and Constructability Workshop (per Section 4.7)

5.10 Deliverables

Deliverables required during the 60% detailed Design Phase include:

- Draft Design Data Handbook, per Design Guide
 - This Handbook shall be a comprehensive compilation of the calculations for all disciplines
 - Where applicable, the Engineer shall prepare a preliminary short circuit study to ensure that the specified equipment can withstand the available fault current (can survive a short circuit condition).
 - The Handbook shall include cut sheets and specifications used in the design and selection of equipment for the RES_1.0 Project.
 - Include pipe calculations and assumptions including: size, wall thickness, bedding and backfill material, trench cross-section, lining, coating, cover requirements, pressure (design and test), and joint and fitting design, Final Geotechnical Design Report per Section 9.5.
- Final Control Narratives (per Section 5.3)
- Final Easements needs (per Section 11.0)
- Final Geotechnical Design Report (per Section 9.5)
- Updated list of RES_1.0 equipment list (with electrical loads, and including building loads)
- Draft Traffic Control Plans
- Safety by Design Workshop documentation
- Draft Erosion and Sediment Control Plans for Permit Application
- 60% Drawings
 - Prepared, reviewed, and revised in compliance with the Design Guide.
 - Updated Drawing list. The Drawing list shall indicate the Drawings anticipated to be included in each

- design submittal.
- Updates of Drawings submitted in the 30% detailed design set
- General notes, abbreviations, and symbols for all disciplines
- Standard details for all disciplines
- Project specific details
- Demolition Drawings
- Construction staging/storage areas
- Paving plans and road profiles
- Yard piping profiles
- Grading and drainage plans
- Tree protection and removal plans
- Process piping and utility piping plans
- Minor civil structures
- Traffic control plans
- Landscaping plans
- Mechanical plans and section (partially annotated)
- Structural plans and sections (partially annotated)
- Architectural plans, elevations, and details
- Partially completed architectural schedules
- Building HVAC plans and schedules
- Building plumbing plans
- Building fire protection and fire alarm plans
- Electrical area classification plans
- Control schematic diagrams
- Luminaire schedule
- Electrical plans
- RES_1.0 SCADA and network diagrams
- Final P&IDs
- 60% Specifications, including Divisions 1 through 49 as well as control strategies
 - The RES_1.0 Engineer is responsible for providing Divisions 1 Specifications to cover both the RES_1.0 and the PLM_5.3 projects. The PLM_5.3 engineer will review and comment on Divisions 1 Specifications prepared by the Engineer.
 - Prepared, reviewed, and revised in compliance with the Design Guide
 - Updated Specifications list per the Design Guide, Section 4.0. The Specifications list shall indicate the Specifications anticipated to be included in each design submittal.
 - The Engineer will not be responsible for preparing the Front end documents (Division 0), however, the Engineer shall assist with development of the bid forms and milestones
 - The Engineer shall provide a list of all specified manufacturers verified to be compliant with AIS.
- 60% Security System Drawings and Specifications (separate package for confidential bidding by Contractor)
- Updated Value Engineering and Constructability Proposal Log
- Updated Design Change Log
- Resiliency, Reliability, Redundancy, and Recovery TM, revised draft

6.0 90% Design

6.1 90% Drawings and Specifications

The Engineer shall prepare 90% complete design Drawings and Specifications meeting the requirements of this Section and Sections 1.0, 2.0, and 5.0 of the Design Guide. The Owner will review and comment on the 60% design deliverable, which will result in changes to be incorporated into the 90% design deliverable by the Engineer.

6.2 Workshops

Additional workshops required during the 90% detailed Design Phase include:

- A two-hour 90% Pre-submittal Informational Workshop (per Section 3.0)
- A two-hour 90% Post-submittal Technical Review Workshop (per Section 3.0)
- A two-hour 90% Security System Post-submittal Workshop (per Section 5.9)

6.3 Deliverables

Deliverables required during the 90% detailed Design Phase include:

- Updated Design Data Handbook, per Design Guide
- Updated list of RES_1.0 equipment
- 90% Design Drawings
 - Prepared, reviewed, and revised in compliance with the Design Guide
 - Updated Drawing list
 - Final Grading, Erosion, and Stormwater Quality Controls Plans, per Section 5.8
 - Final electrical power, grounding, and lighting plans showing the location of major electrical equipment and all mechanical and process loads, final grounding design layout and connections to electrical equipment, final lighting plans, and conduit/circuit routing between electrical equipment and loads.
 - Draft cathodic protection system design
- 90% Specifications, Divisions 1 through 49 as well as control strategies, as applicable
 - The RES_1.0 Engineer is responsible for providing Divisions 1 Specifications to cover both the RES_1.0 and the PLM_5.3 projects. The PLM_5.3 engineer will review and comment on Divisions 1 Specifications prepared by the Engineer.
 - Prepared, reviewed, and revised in compliance with the Design Guide
 - Updated Specifications list
 - The Engineer will not be responsible for preparing the Front end documents (Division 0), however, the Engineer shall assist with development of the bid forms and milestones
 - The Engineer shall provide an updated list of all specified manufacturers verified to be compliant with AIS.
- 90% Design Drawings – Security System
 - Prepared, reviewed, and revised in compliance with the Design Guide
 - Updated Drawing list
- 90% Specifications – Security System
 - Prepared, reviewed, and revised in compliance with the Design Guide
 - Updated Specifications list
 - The Engineer will not be responsible for preparing the Front end documents (Division 0)
- Draft Construction Submittal Register
 - Submit a Construction Submittal Register as an Excel Spreadsheet including anticipated submittals that the Engineer deems necessary for review prior to and during construction. The Engineer shall incorporate submittals required for the PLM_5.3 construction (as provided by the PLM_5.3 engineer) into their submittal register.

- Updated Design Change Log
-
- Updated Value Engineering and Constructability Proposal Log
- Resiliency, Reliability, Redundancy, and Recovery TM, final

7.0 100% Design

The Owner will be reviewing and commenting on the 90% design deliverables that will result in changes that need to be incorporated into the 100% design deliverable by the Engineer. Prior to printing the 100% Design Documents, provide a single 100% interim design check set to verify to the satisfaction of the Owner that 90% review comments have been fully addressed and implemented into the 100% Design. If 100% draft design document back-check finds documents are not complete, another 100% design document (or portions thereof as determined by the Owner) shall be reissued at no additional cost to the Owner to include any non-addressed back-check items.

All 100% final design documents shall be signed and sealed by a registered professional engineer per Oregon law. The 100% design deliverable shall include:

- One (1) electronic file set (signed and sealed in accordance with Oregon State Board of Examiners for Engineering and Land Surveying requirements) in PDF format (high resolution, 22"x34" PDFsize).
- Five (5) 11x17 (half-size for Drawings) and 8½x11 (for Specifications) hard copy sets of 100% Design (Bid Ready) Deliverables) (signed and sealed in accordance with Oregon State Board of Examiners for Engineering and Land Surveying requirements)

7.1 Deliverables

- Final Design Data Handbook, per Design Guide
- 100% Design Drawings
 - Prepared, reviewed, and revised in compliance with the Design Guide
 - Final grading, erosion, and storm water quality controls plans, per Section 5.8
 - Final cathodic protection system design
- 100% Specifications, including Divisions 1 through 49 as well as control strategies, as applicable
 - Prepared, reviewed, and revised in compliance with the Design Guide
- 100% Design Drawings – Security System
 - Prepared, reviewed, and revised in compliance with the Design Guide
- 100% Specifications – Security System
 - Prepared, reviewed, and revised in compliance with the Design Guide
- Updated Construction Submittal Register
- Updated Value Engineering and Constructability Proposal Log
- Updated Design Change Log

8.0 Delivery Approach and Early Work Package Alternatives

8.1 CM/GC Construction Delivery Approach

If CM/GC is selected as the construction delivery approach, then WWSP will authorize the following services by Engineer under 8.1 as an amendment to the scope of services:

- The Engineer shall review and comment on draft documents for the procurement of the CM/GC Contractor prepared by the Owner.
- NTP for the CM/GC Contractor is anticipated to occur between the Preliminary Design submittal and 60% Design Submittal. The CM/GC Contractor will then be involved throughout the remainder of the detailed design.
- The Engineer shall participate in a two (2) hour project kick-off meeting facilitated by the Owner. The Engineer shall review a draft agenda distributed by the CM/GC Contractor prior to the kick-off meeting.
- The CM/GC Contractor will participate in regular bi-weekly meetings as needed after their NTP to allow the Engineer to solicit input related to procurement, constructability, construction sequencing, cost estimating, or other project elements as needed.
- The CM/GC Contractor will prepare the OPCC at the 60%, 90%, and 100% detailed design. These OPCCs will be deleted from the Engineer's scope. Engineer shall review (prices, quantities, scope, and other items as identified by the WWSP Facilities Cost Estimating Guide) and comment on the OPCC prepared by the CM/GC Contractor at the 60%, 90%, and 100% detailed design.
- The CM/GC Contractor will prepare the construction, commissioning, and startup schedule at the 60%, 90%, and 100% detailed design. These schedules will be deleted from the Engineer's scope. The Engineer shall review (activities, durations, and logic) and comment on the schedules prepared by the CM/GC Contractor at the 60%, 90%, and 100% detailed design.
- The Engineer shall review and comment on the Commissioning and Startup Plan prepared by the CM/GC Contractor at the 60%, 90%, and 100% detailed design.
- The Engineer shall support the CM/GC Contractor's OPCC, Schedule, and Commissioning and Startup Plan development by verifying and clarifying scope of work as requested, providing equipment cut sheets obtained during design, reviewing Drawings, Specifications, and other design materials with the CM/GC Contractor, etc.
- The CM/GC Contractor will develop an OPCC for each VE alternative and document the OPCC of accepted VE recommendations. The Engineer shall review (prices, quantities, scope, and other items as identified by the WWSP Facilities Cost Estimating Guide) and comment on the OPCC prepared by the CM/GC Contractor for each VE alternative.
- Even though GMP development and construction will be facilitated by the CM/GC Contractor, design detail shall be appropriate for a conventional bid and award of the construction contracts to a contractor.
- The Engineer shall provide assistance reviewing the design documents with the Owner and the CM/GC Contractor during guaranteed maximum price ("GMP") development for the RES_1.0 Project. The 100% design documents shall establish the final documents for the CM/GC Contractor GMP development. The Engineer shall support the Owner's Procurement Team and provide assistance.

8.2 Early Construction Package

The Owner may elect to complete construction in two (2) phases. Phase 1 will likely include site clearing and grubbing, drilling, blasting, excavation and crushing of rock. Phase 2 will likely include yard piping, structural

concrete, mechanical/electrical/I&C/security work, and landscaping

If WWSP elects to complete construction in two phases, then WWSP will authorize the following services by Engineer under 8.2 as an amendment to the scope of services:

- The CM/GC Contractor will be responsible for preparing a procurement plan for each Construction Phase. The CM/GC Contractor will recommend packaging of the 100% design deliverable for each of the two (2) Construction Phases. The Engineer shall review and provide comment on the CM/GC Contractor procurement plan. The Engineer shall be responsible for packaging the 100% design deliverable for each of the two (2) construction phases.
- The Engineer shall participate in the CM/GC Contractor's procurement planning throughout design by maintaining a current list indicating which of the Engineer's design documents (Drawings and Specifications) are required by the CM/GC Contractor at the 100% design submittal for each of the two (2) Construction Phases.
- Final components of the construction phasing will be developed by the CM/GC Contractor as the design progresses.

9.0 Geotechnical Exploration, Evaluation, and Design

The Engineer shall perform the geotechnical exploration, evaluation, and design for RES_1.0 in accordance with the Design Guide and as specified herein; in the event of a conflict, this SOW prevails.

Geotechnical exploration shall be utilized to develop geotechnical-related design criteria and design recommendations for construction practices, earthwork Specifications, rock cut and structural design.

The Engineer shall review available published geotechnical data and existing geotechnical engineering reports applicable to the RES_1.0 Project. The reports shall include geotechnical data, geotechnical design parameters/recommendations, and construction conditions/constraints and recommendations associated with the RES_1.0 Project.

The Engineer shall advance borings, obtain soil and rock samples, construct observation wells and/or piezometers, conduct geophysical surveys, and do other field work and laboratory tests as necessary to obtain sufficient subsurface information to make detailed design and construction recommendations for the RES_1.0 Project including open cut pipeline and duct bank, roadways, tank structure, and new facilities. The subsurface information shall also be used in preparation of a Geotechnical Data Report and Geotechnical Design Report. Soils shall be classified using the Unified Soil Classification System. Rock shall be classified per the Oregon Department of Transportation Soil and Rock Classification Manual. Prior to field work, the Engineer shall provide a field subsurface exploration plan showing the geotechnical field explorations and laboratory testing program for the design efforts.

The Engineer shall coordinate with the Owner's Real Estate Team to obtain written permission to enter property of property owners, public or private, prior to entering said property or performing any work. Additionally, if the Engineer's work requires alterations to the property (removal of trees, shrubbery, disturbance of landscaping, digging of holes, etc.) or if any of the Engineer's activities will permanently disturb or alter the appearance or aesthetics of said property, the Engineer shall coordinate with the Owner's Real Estate Team to obtain written permission from private or public property owners to make such alterations or undertake such activities before entering said property to perform any work. Any work that requires the removal of trees, or occurs in or adjacent to sensitive or aquatic areas, or areas where Endangered Species Act-listed species are known to occur, shall be coordinated with the Owner's Permitting Team.

Field work shall be performed by the Engineer in consideration of public safety, per industry standards, utility location requirements, and in accordance with environmental permits and regulations, traffic control guidelines (if applicable), and guidelines outlined in the various city, county, state, and Federal requirements applicable to the specific project location.

9.1 Field Subsurface Exploration Plan

A field subsurface exploration plan shall be developed and submitted for review and comment. The field subsurface exploration plan shall include, at a minimum, the following:

- Utility location procedures
- Background and Purpose of Field Subsurface Exploration Plan
- Location and Depth of Test Pits and Boreholes.
- Wells and/or Piezometers with depths, design, and monitoring frequencies
- Field Testing, Classification, and Sampling Procedures
- Sample Transport and Laboratory Test Plan and Procedures
- Backfill and Hole Abandonment Procedures including for wells and piezometers

- Spill Control and Prevention
- Disposal of Drill Fluid and Cuttings
- Project Health and Safety
- Pedestrian, bicycle, and vehicle traffic Control and Site Access
- Schedule of Work and Planned Work Hours

Draft Field Subsurface Exploration Plan shall be submitted for review and approval at least thirty (30) Days prior to the onset of field activities. Comments shall be addressed, and a Final Subsurface Exploration Plan shall be submitted at least one (1) week prior to onset of field activities.

Deliverables:

- Draft and Final Field Subsurface Exploration Plan

9.2 Subsurface Exploration

Locate subsurface explorations at regular intervals across the Site to be developed and at planned major facility locations. Identify anticipated changes in geology, groundwater, or other subsurface conditions that could impact design or construction, and tailor the explorations to identify these changes and transitions. Subsurface explorations shall consist of boreholes. At least one (1) borehole shall be located at each major project element. The Engineer shall conduct the investigations necessary to support the Engineer’s design and provide sufficient information for construction.

Assumptions:

For this proposal, the Engineer shall develop a program assuming subsurface explorations using geotechnical borings and test pits at intervals recommended by the Engineer. Explorations shall extend at least 10 feet below the deepest foundation element. Where shallow bedrock (less than 10 feet deep from ground surface) is identified by borings, test pits and geophysics testing shall be included to assess the trench stability, groundwater seepage, and bedrock rippability. The Engineer shall complete a sufficient number of explorations during the Preliminary Design to support the design, since the preferred facility locations and pipeline will generally be known before the exploration program begins.

The planned exploration program shall assume the site clearing and access road building will be conducted by the geotechnical engineer prior to the drilling and probing and borings will be made with mud rotary and rock coring drilling techniques. Recovery of disturbed samples such as with the Standard Penetration Test shall be taken at 5-foot intervals. Recovery of undisturbed soil samples, if present, may also be obtained with Shelby tubes. Recovery of rock core will be continuous using wireline methods.

Work includes logging boreholes and collecting representative samples for laboratory testing. Work also includes performing Site reconnaissance, gathering and reviewing available data on geology and producing wells, laboratory testing, and geological/geotechnical support for schematic design efforts.

Work includes staking of locations of exploratory boreholes and conducting a survey to identify and locate underground utilities at the exploratory boreholes. Exploratory boreholes shall be noted on the reports and Drawings using the following naming convention:

- Boreholes– RES_1.0-B-XX
- Test pits – RES_1.0-TP-XX
- Geophysics testing – RES_1.0-GP-XX

Additional assumptions consist of the following:

- RES_1.0 exploration program shall be developed by the Engineer as described in the Exploration Plan. The Engineer shall be responsible for geotechnical exploration-related permits and fees, if applicable.

- Explorations in this SOW shall not include night drilling,
- Either vibrating wire or standpipe piezometers (depth of installation as determined by the Engineer) shall be installed in up to 25 percent of the rotary borings; if standpipe piezometers are installed, it is assumed abandonment will be performed by the Contractor as part of their construction contract and shall be indicated by the Engineer in the contract documents.
- Exploration-related right of way (“ROW”) and access coordination and approvals to access private properties are the responsibility of the Owner. On County streets, exploration permits and fees shall be obtained by the Engineer, if applicable. Appropriate traffic control plans shall be included in the Exploration Plan and traffic control during exploration provided by the Engineer, if applicable.
- Survey of borehole locations and elevations following geotechnical field work in accordance with the Exploration Plan shall be provided by the Engineer and incorporated into the base maps for each section.
- Samples obtained during the exploration program shall be stored by the Engineer through construction. After construction, samples shall be transferred or disposed of as directed by the Owner.
- The Engineer shall assume:
 - twenty (20) boreholes to depths ranging from twenty (20) to seventy-five (75) feet with a total drilling footage of 650 feet,
 - encountering basalt bedrock at depths of 10 feet or less
 - ten (10) test pits to a depth of fifteen (15) feet (excavated by HITACHI ZX135 tracked excavator, or similar, with rock teeth), and
 - three (3) geophysics lines (seismic refraction) with a total length of approximately 1,500 feet.

9.3 Laboratory Testing Program

Laboratory testing program shall consist of performing classification and engineering laboratory testing of the type and number as required to obtain sufficient information to prepare the geotechnical reports and support the design. The report shall state the standards used for laboratory tests.

Laboratory program shall consider the following tests, with actual tests determined during and after the exploration program:

- Consolidation properties of the soil
- Expansion
- Classification of soil materials in accordance with the Unified Soil Classification System (i.e., Atterberg limits and grain size)
- Sieve and hydrometer analysis including oversized particles if applicable
- Permeability
- Unconfined Compressive strength of soil
- Triaxial Compression (if necessary)
- Direct Shear
- Moisture content and dry density
- Compaction
- Abrasivity testing of granular soils
- Point load and Unconfined Compressive Strength of rock
- Abrasion resistance of rock
- Perform laboratory testing for corrosion on at least one (1) sample of soil from each boring along the

pipeline alignment. The laboratory testing of each soil sample shall include the following:

- pH
- Resistivity (ohm-centimeter)
- Redox (millivolts, positive or negative)
- Sulfides (positive, negative, or trace)
- Chlorides (parts per million)
- Sulfates (parts per million)
- Soil samples shall be taken from depths at which buried piping and concrete structures will be placed. As necessary, multiple samples from various depths in specific borings shall be taken to provide sufficient data for evaluating the corrosivity of soils through which structures might extend.
- Provide data from laboratory testing data of samples of materials for corrosion from potential tank excavation borrow locations that are being considered for use as a source for backfill around piping and concrete structures. Assumes borrow locations will be from the tank excavation areas. As a minimum, test each material sample for the same suite of tests outlined for the pipeline alignment testing.
- In areas visually noted to be stained or otherwise suspected of hydrocarbon impact, perform environmental laboratory test for volatile (Environmental Protection Agency (“EPA”) 8260) and semi-volatile (EPA 8270) compounds in soil samples.
- Draft and Final Field Subsurface Exploration Plan

9.4 Geotechnical Data Report

The Geotechnical Data Report (“GDR”) shall include information collected from: aerial photograph interpretation, geophysics, and rotary boreholes, Site investigations, detailed 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 reservoir and pipeline design, construction, and performance. The GDR shall be submitted to the Owner for review at the Preliminary Design milestone.

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
- Geology and Geologic Hazards
- Field Exploration and Laboratory Testing Results
- Subsurface Conditions
- References

Deliverables:

- Draft and Final Geotechnical Data Report

9.5 Geotechnical Design Report

The Geotechnical Design Report shall include specific design and construction recommendations. The Engineer shall submit a draft report to the Owner for the review and comment at the Preliminary Design milestone. The final Geotechnical Design Report shall incorporate changes associated with these comments and shall be submitted at the 60% design milestone. For design values, indicate if they are allowable design values or ultimate values.

The report shall 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, including the effects of surcharge and static and seismic loading conditions.
- Passive soil pressures resisting lateral forces:
 - Provide ultimate value and recommended allowable (design) value with assumed safety factor, and the displacement required to mobilize the ultimate value.
- Coefficient of friction between concrete and native rock and soils and base materials. Provide ultimate value and recommended allowable (design) value with assumed factor of safety.
- Friction value between soil and side walls, considering presence of required backfill materials. Provide ultimate value and recommended allowable (design) value with assumed factor of safety.
- Recommendations for E' of trench backfill, native soils, and composite E' for flexible pipe design
- Shallow foundation (spread or mat footings) recommendations including allowable bearing pressure and embedment depths; and anticipated immediate and long-term foundation settlement for the recommended foundation system under a range of applied pressures
- Expected total and differential settlement of proposed facilities
- Loading, allowable stresses, 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
- Soil nail wall recommendations including minimum nail lengths for global stability, and soil/grout bond capacities
- Rock wall and support recommendations including cut slope angle, support type and spacing requirements and rock/grout bond capacities.
- Rock mass characterization
- Assessment of rock rippability, and recommended excavation methods
- Rock trenching and support requirements
- Blasting evaluation and construction criteria
- Up to 2 pavement structural sections for either AC or PCC
- Cut and fill slope requirements

- Recommendations for suitable structural and general fill requirements
- Summary of seismically induced geotechnical hazards
- Recommendations for seismic connections between pipes/conduits and structures
- Other geotechnical construction considerations, as appropriate
- Shoring or other temporary construction earthwork considerations (for cost estimating and planning – not for design)
- Suitability of excavated rock for reuse on Site (as pipe zone backfill, sub-base, etc.)
- Deliverables: Draft and Final Geotechnical Design Report

9.6 Geologic Hazards Study

Evaluate geologic and seismic hazards based on ground motions resulting from a design earthquake with a 2,475-year recurrence period, and current (as required by the building official for permit approval) national and local building codes and requirements including:

- International Building Code (“IBC” 2018)
- Oregon Structural Specialty Code (“OSSC” 2019)
- American Society of Civil Engineers (“ASCE”) Minimum Design Loads for Buildings and Other Structures (ASCE 7-16)
- National Earthquake Hazards Reduction Program Recommended Seismic Provisions for New Buildings and Other Structures (Federal Emergency Management Agency (“FEMA”) P-750)
- OSSC 1803.3.2, for Risk Type III and IV Structures.

Base assessment on the specific soils data generated during the field exploration and published literature. The assessment shall include or reference the site specific PSHA for the project for the following items:

- Regional and Site geologic conditions
- Site surface (topographic) and subsurface (soil) conditions
- Description of the faults; and the Cascadia Subduction Zone
- Location of faults and closest distance from the pipeline alignment
- Potential for ground rupture
- Potential for liquefaction
- Potential seismic-induced settlement including liquefaction and seismically-induced settlement
- Potential for static and seismic slope failure.
- The potential for liquefaction and soil strength loss evaluated for the maximum considered earthquake ground motions.
- An assessment of the potential consequences of liquefaction and soil strength loss, including:
 - Estimation of total and differential settlement
 - Lateral soil movement
 - Lateral soil loads on foundations
 - Reduction in foundation soil bearing capacity and lateral soil reaction (passive resistance)
 - Soil down drag and reduction in axial and lateral soil reactions for pile foundations.
 - Increases in lateral soil pressures.
- Discussion of liquefaction and soil strength loss mitigation measures, if applicable.

- Evaluation of other potential seismic hazards and their effects such as liquefaction induced ground spreading and loss of bearing pressures, increased lateral earth pressures, and fine-grained soils (silts and clays) softening

The Engineer shall submit this content as part of the Geotechnical Design Report. The draft report shall meet the requirements of the OSSC.

9.7 Fault Location Study

In the Geotechnical Design Report, the Engineer shall provide a summary of previous fault study work prepared for the Owner as it relates to the RES_1.0 Site.

9.8 Site-Specific Seismic Response Spectra

Provide a smoothed, elastic horizontal and vertical design seismic response spectra developed for the specific project site. The ground motions shall be based on the site specific PSHA developed for the northern portion of the WWSP project. The scope of work assumes that the site response modeling will not be necessary and the tank will be founded on site class B/C boundary subgrade. Horizontal and vertical response spectra curves shall be provided with percent damping and periods as required by the Engineer to perform the analysis. The Engineer shall submit the site specific spectra as part of the Geotechnical Design Report.

9.9 Review and Development of Earthwork Specifications and Design Drawings

Provide general geotechnical Drawing and Specifications development and review at the 60%, 90% and 100% design milestones. Review for conformance to the geotechnical report recommendations. Review for code and regulation requirements. Specific geotechnical design elements include:

- Earthwork
- Temporary Shoring
- Blasting
- Soil Nail Walls
- Rock Cut Support

Deliverable:

- Specifications and design Drawing review comments (using Owner’s standard form)

9.10 Review of Geotechnical Data for Rock Blasting

Once the Engineer’s geotechnical exploration plan is completed, the Engineer shall summarize data as it relates to the rock drilling/blast effort and recommend any additional data that would be beneficial to further quantify the rock quality and/or quantities.

Deliverable:

- TM with summary of rock data and engineering recommendations

10.0 Utility Location, Mapping, and Surveying

Utility location work performed shall conform to Section 3.1 of the Design Guide.

The Engineer shall coordinate with local agencies, municipalities, and Oregon Utility Notification Center (“OUNC”) through the Owner for surveying and utility location work required for each project. The Owner will obtain rights of access and environmental permits. The Engineer shall provide technical support necessary to secure permits as required to accomplish this utility location work. A minimum of four (4) weeks advance notice by the Engineer shall be provided to the Owner for rights of access.

The Engineer shall contact Oregon Utility Notification Center (“OUNC”) Call: 1-800-332-2344 (or 811) to request field marking of utilities along pipeline and duct bank alignments and within the project area. Private

utility locating services shall be provided by the Engineer outside of OUNC.

The Engineer shall obtain and use the most current aerial LiDAR and topographic mapping information, along with the utility information developed as part of the design effort to develop mapping per requirements Section 3.2 of Design Guide.

The Engineer shall review available existing utility drawings and applicable data. Prepare and submit a Utility Location Plan describing the approach, methodologies, and procedures for locating existing utilities. Perform potholing services (up to 10 potholes on RES_1.0 are assumed) to define exact location and characteristics of specific utilities where these utilities cross any proposed pipeline or utility alignments or are within the limits of excavation. The Engineer shall coordinate with the utility owner through the Owner, to receive any required approvals prior to potholing. These potholes shall be performed using vacuum type potholing methods (vacuum excavation). The Engineer shall adjust the CAD layering system, if required, based on information obtained from the potholing results.

Field work shall be performed by the Engineer in consideration of public safety, per industry standards, and in accordance with environmental permits and regulations, traffic control guidelines, and guidelines outlined in the various city, state, county, and Federal requirements applicable to the specific project location.

10.1 Mapping and Survey

Prepare and submit a Mapping and Surveying Plan describing the approach methodologies and procedures for conducting mapping and field surveying as well as a health and safety plan for field work. Prepare and submit a CAD Mapping and Survey Base Map. CAD layers, digital mapping, and surveying data shall be in accordance with the Design Guide. Mapping and survey data shall be incorporated into the design Drawings. Provide Drawing sets containing information for each utility at the Preliminary Design, 60%, 90% levels of completion for review per the deliverable list in Sections 4, 5, and 6. The Owner has set a program-wide control network for consistency and continuity to horizontal and vertical coordinate values for projects associated with the Program; the Engineer shall use the datum provided by the Owner.

At a minimum, the Engineer shall:

- Provide survey for locations associated with utilities potholing.
- Verify survey control (through field survey) mapping data provided by others.
- Locate with Global Positioning System existing Permanent Reference Monuments along the property and section corners within the project area sufficient to establish control for RES_1.0.
- Establish a bench run along the project's west property line, setting benchmarks at two-hundred (200)-foot intervals to provide control for the field location and for later as-built locations.
- Profile adjacent roadway centerlines at approximately one-hundred (100)-foot intervals. Locate approximate high and low points of centerline roadways. Collect topographic information for the entire RES_1.0 Project, from boundary to boundary and field verify elevation data at an interval recommended by the Engineer to account for any issues caused by vegetation or inaccuracies in aerial topographic data.
- Locate the following existing features for RES_1.0, including but not limited to:
 - Edge of pavement
 - Curbs and sidewalks
 - Trees 6" and greater that are beyond the footprint identified in the Land Use permit and need to be removed
 - Catch basins and inlets (including type, basin invert, pipe sizes and inverts, pipe material)
 - Existing manholes, storm and sanitary sewers (including type, manhole invert, pipe sizes and inverts)

- Existing pipeline (including valve covers, valve type, hydrants, and blow-offs)
- Power and communication lines (including power poles, overhead lines, guy wires and appurtenances)
- Power and communication manholes and vaults
- Centerline, width and material of roadway, elevation of road and any break in roadway grade
- Right-of-way line
- Prepare a base map showing existing topographic features for RES_1.0. The completed base map shall show information collected as detailed above and shall also include:
 - Topographic information
 - Benchmarks and monuments
 - Rights of way
 - Easements on or adjacent to the project site
 - Lot lines, lot numbers, street address of buildings
 - Alignment/roadway centerline with profile elevations
 - Edge of pavement
 - Curbs and sidewalks
 - Proposed location of future Blake Road right of way, per the Owner's ALTA survey and map
 - Driveways
 - Wetlands and other sensitive areas (previous work to be incorporated into new basemap)
- In addition to the above, deliverables shall include the following for the field survey services the Engineer is providing for RES_1.0:
 - A digital American Standard Code for Information Interchange ("ASCII") comma delimited point file in P,N,E,Z,D format for project control, and topographic data collection surveys
 - Hard copy of control point recovery, perpetuation and referencing notes
 - Record of Survey documents pertaining to surveyed points
 - CAD drawings of survey control points, monuments and other layout information
 - One (1) bound copy of field notes

Assumptions:

- Survey will cover Tax Lot 1S23600200 and the adjacent streets.
- Owner will provide Preliminary Title Report for Tax Lot 1S23600200.
- Owner will provide a recent ALTA survey of the property, if available.
- Engineer will engage a qualified firm to fly the site for LiDAR acquisition.
- A private utility locator will be engaged to locate utilities outside of public right of way. Assumed this may take up to 2 days.
- All existing monuments within the project limits will be recovered and tied.
- It is assumed that no Record of Survey will need to be filed with the Washington County Surveyor's office since DEA has surveyed the property in 2017.
- WWSP will coordinate with the utility owners for the potholing.
- Field Duration Assumptions:
 - Four (4) days to establish site control and tie to the Program's control network.
 - One (1) day to run levels.
 - Ten (10) days to complete the topographic survey.

- Two (2) days to tie potholes.
- One (1) day to tie wetlands.

Deliverables:

- Mapping and Survey Deliverables, submitted after initial survey is complete and updated with additional survey and utility research data for the civil design and Site plan workshop, Preliminary Design, 60%, and 90% Design Milestone Deliverable

11.0 Permitting / Land Use Support

11.1 General Permitting Support

The Owner has obtained the permits required to secure the project footprint, such as the Clean Water Act (“CWA”) and Oregon Removal-Fill Law Joint Permit Application, the Endangered Species Act (“ESA”) Section 7 Biological Opinion, Oregon Department of Environmental Quality (“DEQ”) CWA Section 401 Water Quality Certification (which includes DEQ approval of the Owner’s Storm water Management Plan), and Washington County Special Use and Development Review permits. To meet the permit application submittal timeline, the Owner developed draft drawings, figures, and narratives for these permit applications.

The Engineer shall work closely with the Owner’s Permitting Team for the following tasks as needed:

- Permit modification by the Engineer
 - Review Owner-prepared draft figures/drawings, maps, and calculations from Joint Permit Application, Biological Assessment, and land use application.
 - Provide updated and final figures/Drawings, maps, and calculations for use in updated permit application submittals. Figures/Drawings, maps and calculations shall be in accordance with requirements as listed in the Program Permitting Data Needs Table - RES_1.0 (Attachment 17) for resource crossings only and shall be submitted at 90% Design.
 - Review Owner-prepared narrative descriptions of the RES_1.0 for use in updated permit application submittals.
 - Incorporate and demonstrate consistency with permit requirements, conditions, and specifications into the design of RES_1.0 facilities.
- Contractor permitting support by the Engineer
 - Prepare figures, maps, Drawings, and calculations to support the development of the traffic control, building, plumbing, electrical and other trade permits applications
 - The Contractor will be responsible for obtaining traffic control and building, plumbing, and electrical or other trade permits.
- Other:
 - Provide up to four (4) sets of written responses to the Owner and agency review comments and incorporate the Owner and agency review comments into the design documents.
 - Attend up to eight (8) regulatory agency meetings to discuss information requirements and construction methods.

The Engineer shall support the Owner’s Permitting Team during design for construction-related permits as needed. Construction and post-construction permits will be obtained by the Contractor.

Assumptions:

- Engineer shall attend eight (8) regulatory agency meetings, two (2) hours each and located in Washington County

Deliverables:

- Draft and final figures/Drawings, maps, and calculations for use in updated permit application submittals as required by Attachment 17– Program Permitting Data Needs Table -RES_1.0
- Draft and final written responses to agency questions

11.2 Tree Protection and Removal Plans

The Engineer shall complete survey and field work to locate trees to be protected during construction. The Engineer shall develop tree protection and removal plans/design into RES_1.0 design Drawings and

Specifications. The Owner's Permitting Team will support the Engineer by identifying tree protection requirements of land use conditions.

Deliverables:

- Tree Protection and Removal Plans, submitted with 60%, 90% and 100% Design Milestone Deliverables.

12.0 Right of Way Engineering/Drawings and Descriptions

The Engineer shall coordinate with the Owner's Real Estate Team to identify the status of access to properties through rights-of-entry ("ROE") already obtained and the need for any additional ROEs for completion of design. The Owner's Real Estate Team will obtain ROEs for private property. No additional ROEs are anticipated for this project.

The Owner's Real Estate Team has secured property rights for the RES_1.0 Project as shown on the Conceptual Design Drawings. The Engineer shall confirm that all work can occur within the limits of previously acquired property. If, during design, it is determined that the acquired property is of insufficient area or configuration, a contract change shall be processed, allocating fee for the Engineer to identify additional needed properties for the RES_1.0 Project and provide Drawings and Descriptions to the Owner's Real Estate Team as follows:

- Preliminary Design: Provide a list of required permanent easements, temporary easements, slope easements, and any fee acquisitions, including location and size. Identify easement and property acquisition definitions, and provide a draft of the necessary right of way Drawings and descriptions to the Owner's Real Estate Team. Details of the map shall include areas of parcels to be acquired, tax lot ID numbers, and property owner names. These maps shall be used to retain appraisers and create acquisition plans. ROW acquisition can typically be accomplished in approximately one (1) year, employing statutory requirements for ROW acquisition by public entity, and must be built into the overall project schedule.
- 60% Design: Provide final ROW mapping and Drawings and Descriptions for each parcel identified as necessary for construction in the format provided in the Attachment 17. Identify and assign a Professional Land Surveyor, registered in the State of Oregon, to review and approve the Drawings and Legal Descriptions (see sample in Attachment 8).

Assumptions:

- No additional easements are anticipated for this project. Assume confirmation and coordination effort only. If additional property is needed a contract change will be implemented to sufficiently fund this task for the necessary effort.
- Include the Owner's Real Estate Team representative in project team meetings to facilitate efforts related to ROEs and easement acquisition

Deliverables:

- Draft and final right of way mapping, Drawings, and legal descriptions for RES_1.0

13.0 Public Outreach Support

The Engineer shall be required to coordinate with the Owner's Communications Team to assist the Owner in public outreach activities and, when requested, prepare supplemental information for and attend public meetings regarding the RES_1.0 Project. The Engineer shall assume total of ninety (90) hours for public outreach.

Coordination with Outreach Team will occur during regular bi-weekly progress meetings defined in Section 2.4. The Engineer shall work with the Owner's Communications Team to prepare materials for RES_1.0 that may include:

- Presentation boards and slides
- Project content and project material review
- Project content to include in meeting flyers and handouts
- Project content to include in mailings

Deliverables:

- Outreach materials
- Public meeting attendance
- Record and provide documentation of interactions with members of the public in the field through e-Builder. The Engineer and their Subconsultants/Subcontractors shall provide the Owner's Communications Team the following information about the interaction: date, time, name, contact information, any other descriptive information about the interaction.

14.0 Coordination with Others

The Engineer shall be required to incorporate work performed by others into their respective project designs and to coordinate with other consultants to verify project interface points and conditions. Some coordination may be required at meetings that are in addition to the bi-weekly project coordination meeting defined in Section 2.4 or meetings included in other sections of this SOW. The expected effort is described below.

Table 14-1 Expected Coordination

| Parties | Expected Number of Meetings | Duration of Each Meeting (hours) |
|--|-----------------------------|----------------------------------|
| WWSP PLM_5.3 Design Consultant | 6 | 2 |
| RES_1.0 / PLM_5.3 Contract Integration Workshops | 4 | 4 |
| Washington County | 4 | 2 |
| PGE – Power supply for RES_1.0 Project | 3 | 2 |
| Metro | 2 | 2 |
| Other existing and planned utility providers as applicable | 4 | 1 |

Where coordination meetings are being led by the Engineer, the Engineer shall prepare draft agenda, presentation materials, and handouts and distribute to the Owner. The Engineer shall prepare and submit meeting summaries for all coordination meetings attended by the Engineer.

Assumptions:

- Coordination meetings will typically last up to two (2) hours
- The Engineer’s Project Engineer, and appropriate discipline lead shall be present at each meeting

Deliverables:

- Agenda, presentation materials, and handouts for Engineer-led meetings, submitted at least five (5) business days prior to the meeting
- Meeting summaries for each coordination meeting, submitted within three (3) business days following each meeting

15.0 Services During Bid Phase

The 100% design documents shall establish the final bid items, milestones, and Contractor's schedule of values for construction. The Owner's Procurement Team will coordinate responsibilities of the RES_1.0 Engineer and the PLM_5.3 engineer during the bid phase. The Engineer shall support the Owner's Procurement Team and provide assistance, including the following services and deliverables related to the RES_1.0 project:

- The Engineer shall assist Owner in the preparation of technical responses to Contractors questions in the form of addenda
- The Engineer shall review the bid summary and evaluation prepared by Owner and prepare an independent assessment of bid prices
- The Engineer shall incorporate Addenda and executed Agreement documents and provide Conformed Documents as follows:
 - One (1) electronic file set in Adobe Acrobat® Portable Document Format (PDF),
 - Fourteen (14) 11×17 (half-size for Drawings) and 8½×11 (for Specifications) hard copy sets. Six (6) of the drawings sets should be 3-hole punched, in binders, single sided, with the holes protected (11 x 17 reinforced 3 hole paper, holes on 11" side). Acceptable products are GSDirect.net and 11 x 1.com (HOLMB-7533) or similar product. 11 x 17 binders to be slant D locking. Eight (8) of the sets should be the same as above without hole protection.
 - Three (3) 22×34 (full-size) hard copy Drawings,
 - One (1) electronic file set in AutoCAD format, and
 - One (1) electronic file set in ArcGIS format (when applicable).

Assumptions:

- Four (4) Addenda
- Up to 16 hours of effort associated with review of bids and technical assistance during bid
- Printing costs included with invoiced ODCs

Deliverables:

- Addenda responses to bidders' technical questions, submitted through e-Builder
- Conformed construction documents (incorporating Addenda)

16.0 Engineering Services during Construction

The Engineer shall provide services during construction for the Construction Phase for RES_1.0 (the security system construction is assumed to be part of the construction package). The Owner will provide construction management (administration and oversight), day-to-day inspection services, materials testing, coordination between the RES_1.0 and PLM_5.3 projects, and contract administration. The Engineer's tasks include the following:

16.1 Submittals

The Engineer shall review submittals and Shop Drawings and provide review comments through e-Builder. Unless otherwise authorized by the Owner, the Engineer shall promptly review submittals and provide written comments and recommended submittal review action within a maximum of twenty one (21) Days of notification that submittal is available for review. The term submittal used herein includes technical submittals, Shop Drawings, Samples, operations and maintenance manuals, product data, and other required Contractor data or plans.

The Engineer shall review Shop Drawings for compliance with technical specifications and American Iron and Steel (AIS) requirements.

The Engineer's Rock Excavation/Blasting Task Lead shall review the Contractor's excavation/blasting plans

Assumptions:

- Four hundred (400) submittal reviews, including re-reviews. Each submittal review is assumed to require an average of 3 manhours of effort. The budget therefore includes 1200 manhours of effort.
- Submittals shall be managed through e-Builder

Deliverables:

- Submittal review comments, within the turnaround time indicated herein

16.2 Requests for Information

The Engineer shall provide written responses to the Contractor's Requests for Information ("RFIs") through e-Builder. The Engineer shall provide written responses within five (5) business days of notification that an RFI is available for review. The Engineer shall notify Owner within three (3) business days if additional time will be required for response.

Assumptions:

- A total of two hundred (200) RFIs. Each RFI review is assumed to require an average of 2 manhours of effort. The budget therefore includes 400 manhours of effort. Revised Drawings resulting from RFIs shall be maintained by the Engineer in CAD and PDF formats. Cloud and delta notations shall be applied to revised Drawings. Engineer shall update underlying electronic model to reflect revisions.
- Revised Specifications shall be issued in PDF format with the latest revision date in the footer. Cloud and delta notations shall be applied to revised wording in the Specifications
- RFIs shall be managed through e-Builder

Deliverables:

- Written responses to RFIs within five (5) business days of notification that the RFI is available for review
- Revised Drawings and Specifications in PDF and CAD format (when required to adequately answer RFI)
- Updates to the Record Drawings and Specifications on e-Builder within five (5) business days of returning the RFI response

16.3 Design Clarifications and Resolution of Construction Issues

The Engineer shall prepare revised Drawings, Specifications, and summary description for Design Clarifications. Design Clarifications shall include design corrections, design changes due to unforeseen

circumstances, Owner-requested additions or changes, resolution of gaps or conflicts, resolution of more complex Contractor questions, and accepted on-going Contractor VE or constructability suggestions as well as resolution of construction issues and Contractor deficiencies. Revised documents shall include “clouds” showing where changes have been made, and sequential “delta” revision numbers. Design Clarifications shall provide a summary page description of the change to the construction contract documents as the cover sheet. The Engineer shall maintain updated versions of drawings and specifications in CAD format during construction. These shall include all revisions provided by the Engineer in Design Clarifications, responses to RFIs or other construction correspondence involving Engineer. Contemporaneous versions of all drawings shall be provided in PDF format by Engineer and maintained by the Engineer in Owner’s e-Builder system.

Drawings and Specifications that are revised by Design Clarifications shall be re-issued with the Design Clarification for the Contractor’s use.

Assumptions:

- A total of fifty (50) Design Clarifications. The corresponding level of effort assumed is itemized in Exhibit B2.
- Revised Drawings resulting from Design Clarifications shall be maintained by the Engineer in CAD and PDF formats. Cloud and delta notations shall be applied to revised Drawings.
- Revised Specifications shall be issued in PDF format with the latest revision date in the footer. Cloud and delta notations shall be applied to revised wording in the Specifications
- Design Clarifications shall be managed through e-Builder Deliverables:
- Design Clarifications with revised Drawings and Specifications in PDF and CAD format
- The Engineer shall maintain an up-to-date version of the full set of Drawings and Specifications on e-Builder

16.4 Site Observations

During construction, the Engineer shall plan for one trip in a week to the Site by the Engineer’s representative, with four (4) hours at the Site for each trip. The Engineer’s observation of the Work is not intended to be an exhaustive observation or inspection of work performed by the Contractor. The Engineer shall observe the general quality of the Work, review items of concern with the Owner’s construction management staff, and address any specific items of work that are brought to the attention of the Engineer by the Contractor or the Owner.

The Engineer staff must check in and check out with the project’s construction management staff before and after each Site visit.

The Engineer shall inspect and certify that all public roads used to access the construction sites have been returned to their pre-construction condition or better.

Assumptions:

- Site observation shall be conducted in conjunction with construction progress meetings per Section 2.5
- In addition to the site observations done in conjunction with the construction progress meetings, the Engineer shall assume an additional one hundred and twenty (120) hours each for site visits by the Engineer’s discipline leads and geotechnical Subconsultant for Site observations at key points during the construction.
- The corresponding level of effort assumed is itemized in Exhibit B2.
- Draft and final Site observation reports to be provided to the Owner via e-Builder

Deliverables:

- Comments on Owner’s Site observation reports to be provided within two (2) business days of receipt
- Draft and final Site visit reports provided within three (3) business days of the Site observation or receipt of Owner’s comments, respectively

16.5 Change Order Support

The Engineer shall support the Owner as requested with evaluation of change orders, potential change orders, value engineering proposals during construction, Contractor notices, differing site conditions, and other construction-related items. The Engineer shall review notices and correspondences issued by the Contractor and advise the Owner on the validity, significance, and impact on safety of the Contractor's request as requested by the Owner.

The Owner's construction management staff has primary responsibility for evaluation of and responses to Contractor-issued notices and correspondence.

Assumptions:

- Evaluate five (5) value engineering proposals from the Contractor during construction. The corresponding level of effort assumed is itemized in Exhibit B2.
- Review and provide written responses for twenty (20) change order-related issues. Draft responses shall be reviewed by the Owner's CM staff and final responses shall be uploaded by the Engineer to e-Builder.
- Review and provide written responses for five (5) Contractor notices of delay or differing site conditions during construction.

Deliverables:

- VE proposal evaluations
- Written memoranda to the Owner with responses to key design-related items identified in Contractor correspondence

16.6 Testing, Commissioning, Startup, and Closeout

The Engineer shall provide support during the Contractor's testing, startup, and closeout activities.

- The Engineer shall review and provide written comments on the acceptability of the technical aspects of the Contractor's testing procedures and test results.
- The Engineer shall attend two (2) commissioning and startup workshops led by the Contractor. The Engineer shall provide input to identify and help resolve technical issues in an effort to help develop the Contractor's commissioning and startup plan.
- The Engineer shall review and provide written comments on the Contractor's pre-commissioning and commissioning plans.
- The Engineer shall train Owner's personnel, the Contractor, and other interested parties on the intended operation of the RES_1.0 in advance of commissioning and startup.
- The Engineer shall participate in overall WWSS system-level commissioning and startup led by the WTP_1.0 CM/GC contractor as it relates to RES_1.0 project. The overall Transmission System Startup and Commissioning is anticipated to occur between March 2025 and December 2025
- The Engineer's shall attend pre-commissioning activities and provide a summary of the testing.
- The Engineer shall participate in Site walks near the completion of each of Construction of the RES_1.0 Project for the purposes of providing assistance to Owner's construction management staff with identifying deficiencies in the Work and developing of preliminary deficiency and final punch lists.
- Upon completion of the final punch list work by the Contractor and validation by the Owner, the Engineer shall provide signoff of project completion of the work, to the extent that the Engineer was present for observations and to the extent that such conditions are reasonably observable as a result of non-intrusive inspection.
- The Engineer shall prepare a single, combined set of Record Drawings and Specifications and updated electronic model or other native files of the final construction using the latest revised Specifications and Drawing versions maintained by the Engineer along with Drawing and Specification markups of construction changes and utility locations provided by the Contractor and the Owner from the construction.
- The Engineer shall submit draft Record Drawings meeting the requirements of the Design Guide within

sixty (60) Days after receipt of the Contractor's as-built drawings for the Owner's review and comment.

- The Engineer shall submit final Record Drawings addressing the Owner's comments within thirty (30) Days of receipt of the Owner's comments.
- The Engineer shall participate in Site walks near the completion of the one (1) year warranty period for the RES_1.0 Project for the purposes of providing assistance to Owner's construction management staff with identifying warranty issues.

Assumptions:

- Testing and commissioning workshops led by the Contractor will be 2 hours each at the Owner's office and shall be attended by the Engineer's Project Manager and Project Engineer.
- Engineer shall provide one (1) day of training to Owner's personnel on the intended operation of the RES_1.0. Engineer shall utilize available documentation (Drawings, 3D models, vendor O&M information, control strategies, electronic operation and maintenance (eO&M) manual, etc.) as training aids. Training shall be held at the RES_1.0 Project site. Submit training documentation one (1) week in advance of the date of training. The Engineer shall videotape all training sessions and provide the digital video on flash drive to the Owner within one week of each training session.
- The project Engineer and Project Manager shall attend pre-commissioning activities. Provide up to eighty (80) hours, combined, for this effort.
- On-Site representative and additional discipline engineer of the Engineer shall spend up to twenty (20) hours performing Site walks for deficiency and punch lists.
- The Contractor will provide survey data of the final facilities, pipeline and appurtenance locations.
- The Contractor will provide one (1) set of as-built drawings, which will be relied upon by the Engineer for accuracy. The Contractor shall also provide electronic survey and CAD files for the Engineer's use. The Engineer shall not be responsible for missing or incomplete information. If the Engineer identifies missing or incomplete information, the Engineer shall notify the Owner.
- The Engineer shall deliver one (1) draft and one (1) final Record Set of Drawings and Specifications in PDF and CAD format, as described in the Design Guide
- The discipline engineers of the Engineer shall spend a total of eight (8) hours performing Site walks for warranty lists.
- The corresponding level of effort assumed is itemized in Exhibit B2.

Deliverables:

- Written review comments for the Contractor's testing procedures and test results
- Written review comments on the Contractor's pre-commissioning and commissioning plans
- Documentation used as training aids for training the Owner on the intended operation of the RES_1.0
- Written summary of pre-commissioning activities in each process area
- Preliminary deficiency list based upon Site walk
- Final punch list based upon final Site walk
- Written acceptance of completed work
- Other documentation necessary for permit closeout
- Draft and final Record Drawings and Specifications
- Warranty list based upon Site walk

16.7 As-Needed Claims Support

The Engineer shall provide as-needed support to the Owner for review and evaluation of Contractor claims or disputes. Support may include review of project records, preparation of Drawings and exhibits, and participation in meetings to assist with preparation of a response. The Engineer shall perform this task only when directed, in writing, by the Owner.

Assumptions:

- Assume a total of eighty (80) hours total for Project Engineer and Project

Manager Deliverables:

- To be requested by the Owner

16.8 Electronic O&M

The Engineer shall support development of the Owner's RES_1.0 Electronic Operations and Maintenance Manual ("eO&M") Guidance Document led by the Owner. The Engineer shall furnish final control strategies, develop process descriptions, develop training materials, and review and comment on the draft eO&M manual of the eO&M in coordination with the Operation and Maintenance Plan in Section 4.4.11 The Engineer shall assume eighty (80) hours for efforts related to supporting development of the Owner's eO&M.

16.9 Asset Management

The Owner will need to effectively manage and maintain the RES_1.0 systems and equipment to maximize useful service life and to prevent operation failures. In order to address this need, the Owner will select and implement a Computerized Maintenance Management System ("CMMS") to support ongoing maintenance for their water supply system. To support the asset management ("AM") efforts, Engineer shall provide the following:

- Develop a spreadsheet or other commonly used database platform with the selected CMMS vendor to enable the Owner's WTP CM/GC Contractor to initially populate CMMS database with the equipment inventory for the reservoir based on data developed during construction. The inventory shall use consistent asset identification and naming conventions and shall include CMMS-ready asset attributes data.

Assumptions:

- The Owner's WTP CM/GC Contractor will provide an electronic spreadsheet or database to properly inventory all reservoir equipment and spare parts to be managed by CMMS.

Deliverables:

- Spreadsheet or database for reservoir equipment and parts

17.0 Project Schedule

The following Owner's schedule milestones (Agreement Times) have been established for RES_1.0.

Table 17-1 Owner RES_1.0 Project Schedule

| Task/Deliverable Description | Completion Date ⁽¹⁾ |
|---|---------------------------------------|
| RES_1.0 NTP ⁽²⁾ | 02/07/20 |
| Conduct Kickoff Meeting | With 14 calendar days of NTP |
| Submit Draft Project Management Plan and H&S Plan | Within 28 calendar days of NTP |
| Complete Construction Delivery Approach Evaluation Recommendation | Within 45 calendar days of NTP |
| Submit Preliminary Design Deliverables | 06/19/20 |
| Draft Geotechnical Design Report | 07/22/20 |
| Preliminary Design Complete | 07/24/20 |
| Submit 60% Design Deliverables | 11/09/20 |
| VE Workshop #2 | 11/19/20 |
| 60% Design Complete | 12/10/20 |
| Submit 90% Design Deliverables | 02/23/21 |
| 90% Design Complete | 03/30/21 |
| Submit 100% Design Deliverables | 05/27/21 |
| 100% Design Complete, including Signed and Sealed Design Documents | 06/18/21 |
| Construction Limited NTP (Anticipated) | 09/03/21 |
| Construction NTP (Anticipated) | 12/06/21 |
| Construction Substantial Completion | 09/05/24 |
| RWF_1.0 Startup and Commissioning Complete (Anticipated) | 12/31/24 |
| WTP_1.0 Startup and Commissioning Complete (Anticipated) | 03/25/25 |
| Transmission System Startup and Commissioning Complete (Anticipated) | 12/31/25 |
| Deliverables shall meet requirements per Section 3.0. The Owner will provide consolidated and adjudicated comments within twenty-one Days following receipt of deliverables | |
| (1) In the event NTP is issued early, dates listed above may be adjusted accordingly at the Owner's discretion. | |

18.0 Resource Requirements

The Engineer is responsible for providing the necessary personnel, material, software, and equipment to perform the Work described herein in accordance with the Agreement Documents.

19.0 Key Personnel

The Engineer's personnel listed below are considered essential to the Work being performed hereunder. No substitution of key personnel or Subconsultants shall be made by the Engineer without written consent from the Owner. The Owner reserves the right to require replacement of key personnel at the sole discretion of the Owner.

Table 19-1 Engineer's Key Personnel

| Name | Title |
|------------------------|--|
| David Carlson | Principal-in-Charge |
| Paul Kneitz | Project Manager |
| Jeff Lindgren | Project Engineer |
| Paul Kneitz | Seismic Task Lead |
| Jeff Lindgren | Site Civil Task Lead |
| Andrew Truman | Electrical Task Lead |
| Jeff Miller | Instrumentation and Controls Task Lead |
| Phil Rishel | Architectural Task Lead |
| Andrew Holder | Landscaping Task Lead |
| Nick Robertson | Structural Task Lead |
| Jeff McMullen | Mechanical Task Lead |
| Scott Schlechter | Geotechnical Task Lead |
| Randy Cantrell | Building Mechanical Task Lead |
| Jerry Wallace | Rock Excavation/Blasting Task Lead |
| James Stupfel | Regulatory Lead (Environmental) |
| Dave Clements | QA/QC Task Lead |
| Kirk Johnson | Estimating Task Lead |
| Paul Kneitz | Value Engineering and Constructability Task Lead |
| Paul Kneitz | Reliability and Recovery Task Lead |
| Ari Copeland | Operations and Maintenance Task Lead |
| Ari Copeland | Commissioning and Startup Task Lead |
| Elizabeth Rodgers | Safety Task Lead |
| Susan McCarty | CAD Task Lead |
| Pablo Gonzales-Quesada | CFD Modeling Lead |
| Steve Gray | Scheduling/Document Controls Lead |

STAFF REPORT

To: Board of Commissioners

From: Dave Kraska, P.E., Willamette Water Supply System General Manager

Date: February 6, 2020

Subject: Update to Resolution Declaring Public Necessity to Acquire Permanent and Temporary Construction Easements Over, Upon, Under, and Through Tax Lot 1S2140002404 for Pipeline Section PLW_1.3 for the Willamette Water Supply System

Requested Board Action:

Consider adopting an updated resolution declaring public necessity to acquire permanent and temporary construction easements over, upon, under, and through Tax Lot 1S2140002404 (the Property) for pipeline section PLW_1.3 for the Willamette Water Supply System (WWSS).

Key Concepts:

The WWSS includes a section of pipeline along the future SW Cornelius Pass Road from SW Kinnaman Road to SW Rosedale Road, within the area known as South Hillsboro, and along SW Rosedale Road and SW 209th Avenue to the intersection of SW 209th Avenue and SW Farmington Road.

- The Willamette Water Supply Program (WWSP) has progressed the design of this pipeline section to enable identification of property requirements for construction and long-term operation and maintenance of the pipeline.
- Although some of this property may become City of Hillsboro or Washington County right of way (ROW) in the future, the WWSS Commission must acquire the property now to enable its construction in advance of private development projects in the same area.
- WWSP has considered various alignments and alternatives and has determined that the identified route will be located in a manner that will be most compatible with the greatest public good and the least private injury to property owners.
- This resolution declares the public need for the property interests and enables the WWSS Commission's agents, including the WWSP team, to begin negotiating with respective property interest holders.
- This updated resolution incorporates design changes affecting the property interests needed on the Property for the pipeline section PLW_1.3 of the WWSS.

Background:

The pipeline alignment for PLW_1.3 includes both unincorporated Washington County and the City of Hillsboro. The project area is shown in the attached map. PLW_1.3 will be located within the current and future ROW for the Cornelius Pass Road extension between SW Kinnaman Road and SW Rosedale Road. This portion of the project will be 66-inch diameter welded steel pipe.

The remainder of the alignment is along SW Rosedale Road and SW 209th Avenue, connecting to the future TVWD facility at the intersection of SW 209th Avenue and SW Farmington Road. This portion of the project will be 30-inch welded steel pipe and is in public ROW.

The Property is located adjacent to Butternut Creek, a creek which the WWSS pipeline will pass below utilizing trenchless construction methods. The design has continued to develop since approval of the original Resolution WWSS-04-19 and subsequent WWSS-08-19. Additional necessary design changes have modified the easement interests needed on the Property.

Resolution Summary

The WWSS Commission has authority to acquire real property for the WWSS. The pipeline section PLW_1.3 requires the acquisition of several temporary and permanent easements on private property. The PLW_1.3 pipeline alignment was selected through an extensive alternatives evaluation, and the preferred location was selected based upon the best interests of the public and the least private injury to private property owners. The resolution enables the initiation of the property acquisition process, including negotiations with the Property owner and any other applicable interest holders.

This updated resolution incorporates design changes necessary to accommodate the location and operation of pipeline section PLW_1.3, which modify the easement interests needed on the Property.

Budget Impact:

The WWSP real estate team has completed an estimate that represents, in the professional judgment of the real estate team, the budget-level cost required to acquire easements needed for PLW_1.3. Funds for purchase of these easements are included in the WWSP baseline budget.

Staff Contact Information:

Dave Kraska, WWSS General Manager, 503-941-4561, david.kraska@tvwd.org
Clark Balfour, General Counsel, 503-848-3061, clark.balfour@tvwd.org

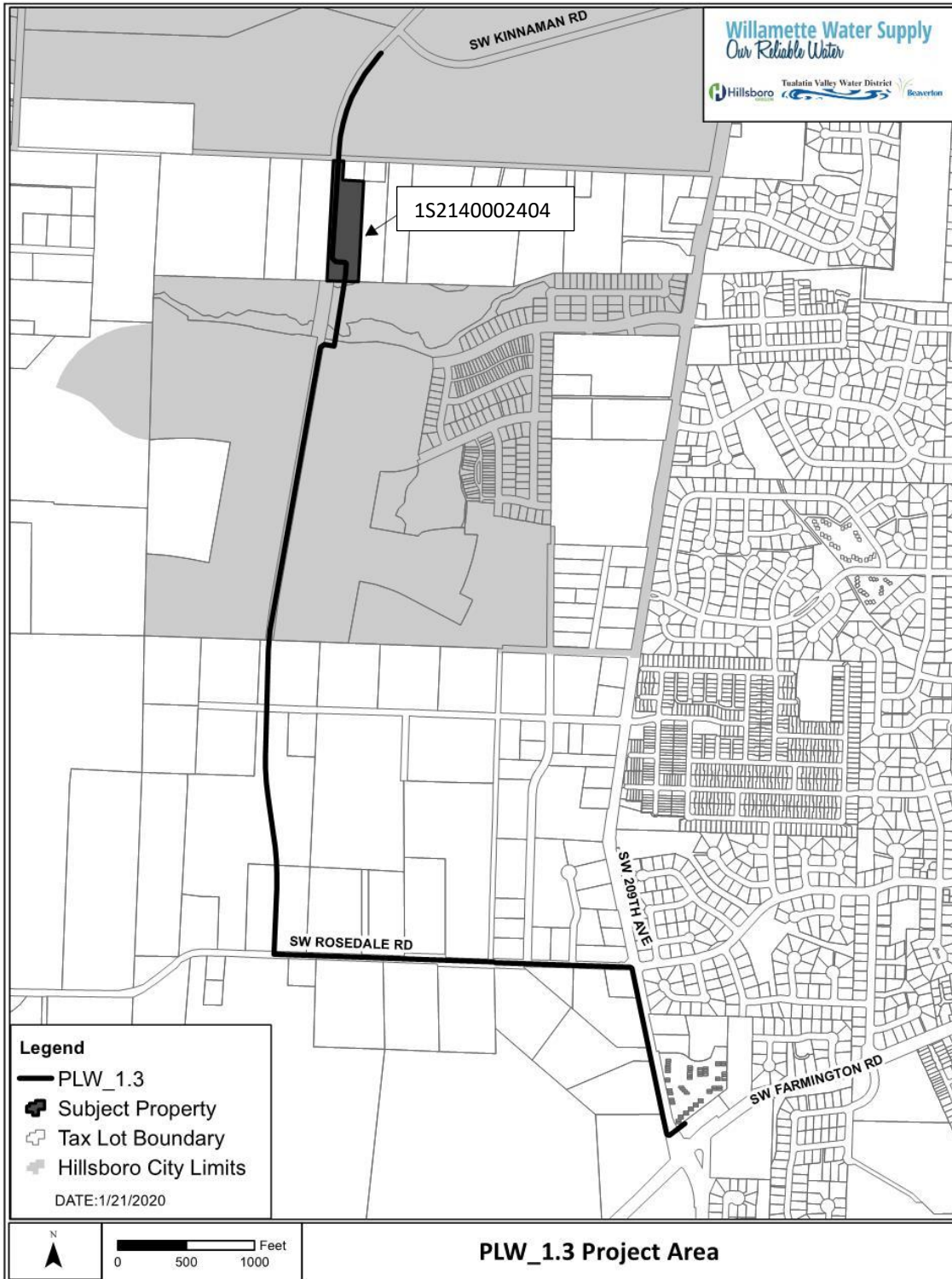
Attachments:

Project area map

Proposed Resolution

Exhibit 1: Easement Interests (including Exhibit A Legal Descriptions and Exhibit B Acquisition Maps)

Project area map:



RESOLUTION NO. WWSS-03-20

UPDATE TO RESOLUTION WWSS-02-19 DECLARING PUBLIC NECESSITY TO ACQUIRE PERMANENT AND TEMPORARY CONSTRUCTION EASEMENTS OVER, UPON, UNDER AND THROUGH TAX LOT 1S2140002404 FOR PIPELINE SECTION PLW_1.3 FOR THE WILLAMETTE WATER SUPPLY SYSTEM.

WHEREAS, the above-entitled matter came before the Willamette Water Supply System Commission (WWSS Commission) at its regular meeting on October 3, 2019; and,

WHEREAS, the Willamette Water Supply System Intergovernmental Agreement (Agreement) between Tualatin Valley Water District (TVWD), the City of Hillsboro (Hillsboro), and the City of Beaverton (Beaverton) (collectively, Members) created the WWSS Commission, an ORS Chapter 190 intergovernmental entity, effective July 1, 2019, to exercise the powers and duties set forth in the Agreement; and,

WHEREAS, pursuant to the Agreement, TVWD has been designated as the Managing Agency of the WWSS Commission; and,

WHEREAS, the Willamette Water Supply System (WWSS) includes, but is not limited to, an expanded and improved water intake on the Willamette River in the City of Wilsonville currently owned by TVWD and the City of Wilsonville, along with a new raw water pipeline, potable water treatment plant, finished water pipelines, pumping, storage, and other necessary water system facilities to enable the WWSS to utilize existing water rights to provide water system ownership and reliability to the Members' water system users; and,

WHEREAS, the WWSS Commission has been delegated authority by its Members under the Agreement and ORS Chapter 190, pursuant to City Charters, ORS 223.005 to 223.105, ORS 264.240 and Oregon Revised Statutes Chapter 35 to acquire real property by purchase or through eminent domain proceedings; and,

WHEREAS, on August 6, 2019, the WWSS Commission approved Resolution No. WWSS-04-19 declaring public necessity to acquire certain permanent and temporary construction easements for pipeline section PLW_1.3 of the WWSS by the power of eminent domain; and,

WHEREAS, Resolution No. WWSS-04-19 also declared that certain permanent and temporary construction easements on private property, including Tax Lot 1S2140002404 (the Property), are necessary for the location of pipeline section PLW_1.3, and that such use was planned and located in a manner that was most compatible with the greatest public benefit and the least private injury; and,

WHEREAS, Resolution No. WWSS-08-19 reaffirmed public necessity to acquire easements on private property for the location and operation of pipeline section PLW_1.3;

WHEREAS, subsequent to the approval of Resolution Nos. WWSS-04-19 and WWSS-08-19, various design changes were necessary for the location and operation of pipeline section PLW_1.3, which have modified the property interests needed on the Property; and,

WHEREAS, the WWSS Commission reaffirms that it is necessary for the economic well-being, public health, safety and welfare of the WWSS Commission, and the public served by its Members through the WWSS, to acquire fee title to certain real property, as well as necessary rights-of-way, easements, and other property interests, in order to design, construct, locate, operate, and implement the WWSS; and,

WHEREAS, the WWSS Commission also has determined that permanent and temporary construction easements on the Property are necessary for the construction, location, and operation of the WWSS, and in particular, the water pipeline and related water system facilities for the pipeline section PLW_1.3, and that such use is planned and located in a manner that is most compatible with the greatest public benefit and the least private injury; and,

WHEREAS, such permanent and temporary construction easements on the Property are preliminarily described on Exhibit A and depicted for illustration purposes only on Exhibit B attached hereto and incorporated by reference, with final legal descriptions and easement documents as determined by TVWD staff, including the Willamette Water Supply Program (WWSP) and its consultants, as the Managing Agency, on behalf of the WWSS Commission, to be reasonably necessary to accommodate the design and operation of the WWSS (the Easement Interests); and,

WHEREAS, the WWSS Commission finds that declaration by resolution to acquire the Easement Interests for the WWSS is necessary and being so advised.

NOW, THEREFORE, BE IT RESOLVED BY THE WILLAMETTE WATER SUPPLY SYSTEM COMMISSION THAT:

Section 1: The above recitals shall form an integral part of this resolution and shall have the same force and effect as if fully stated herein. Except as expressly updated herein with respect to the Property and respective Easement Interests, Resolution No. WWSS-08-19 (and to the extent still applicable, Resolution No. WWSS-04-19) remain in full force and effect.

Section 2: It is necessary for the preservation of economic well-being, public health, safety and welfare of the public served by the Members and the WWSS that the WWSS Commission commence the acquisition process for the Easement Interests through exercise of the power of eminent domain.

Section 3: TVWD staff, including the WWSP, and counsel are authorized to retain real estate appraisers, negotiators, and other consultants, with said appraisals to be prepared under the auspices of WWSS Commission counsel, for initiation of proceedings as described below.

Section 4: TVWD staff, including WWSP, consultants, and counsel, are authorized to negotiate in good faith necessary agreements to acquire the Easement Interests on behalf of and in the name of the WWSS Commission and to pay just compensation and applicable compensable damages in accordance with applicable law, including to the extent just compensable and applicable compensable damages are equal to or greater than \$150,000, without necessity of approval by the WWSS Management Committee or further approval by the WWSS Commission.

Section 5: TVWD staff, including WWSP, and counsel, are authorized to file complaints in condemnation, on behalf of and in the name of the WWSS Commission, and to take other steps as they determine necessary as the Managing Agency, and to prosecute to final determination such actions to acquire title to the Easement Interests if negotiations fail.

Section 6: Upon the trial of any suit or action instituted to acquire the Easement Interests, counsel acting for and on behalf of the WWSS Commission are authorized to make such stipulation, agreement or admission as in their judgment may be for the best interest of the WWSS Commission and to take possession of the Easement Interests at such time as appropriate in their judgment without necessity of further WWSS Commission approval.

Approved and adopted at a regular meeting held on the 6th day of February 2020.

James Duggan, Chair

Denny Doyle, Vice Chair



16552_WWSP_PLW 1.3_LD13

1/10/2020

CJM

VANCOUVER OFFICE

1325 SE Tech Center Drive, Suite 140 • Vancouver, WA 98683
 360.695.3411 • info@mackaysposito.com

**EXHIBIT A-1
 PERMANENT EASEMENT**

**WILLAMETTE WATER SUPPLY
 JANUARY 10, 2020**

**PLW 1.3
 TAX MAP NO. 1S2140002404**

A STRIP OF LAND LYING IN THE NORTHWEST QUARTER OF SECTION 14, TOWNSHIP 1 SOUTH, RANGE 2 WEST, WILLAMETTE MERIDIAN, WASHINGTON COUNTY, OREGON, AND BEING A PORTION OF THAT TRACT OF LAND DESCRIBED IN BARGAIN AND SALE DEED TO THE NEAL MCINNIS FAMILY TRUST PER DOCUMENT NO. 2007-063203, WASHINGTON COUNTY DEED RECORDS, AND BEING ALL THAT PORTION OF SAID TRACT DESCRIBED BELOW:

ACQUISITION CENTERLINE:

COMMENCING AT A 5/8 INCH IRON ROD AT AN ANGLE POINT IN THE CENTERLINE OF S.W. ROSEDALE ROAD IDENTIFIED AS STATION 24+41.79 AS SHOWN ON SURVEY NO. 33400, WASHINGTON COUNTY SURVEY RECORDS, WHICH BEARS SOUTH 87° 57' 35" EAST FROM A 5/8 INCH IRON ROD IDENTIFIED AS STATION 46+75.41 ON SAID SURVEY NO. 33400; THENCE NORTH 87° 57' 35" WEST ALONG THE CENTERLINE OF S.W. ROSEDALE ROAD 1601.28 FEET TO ACQUISITION CENTERLINE STATION 0+00;

THENCE NORTH 02° 27' 01" EAST 491.30 FEET TO STATION 4+91.30;
 THENCE NORTH 00° 53' 11" EAST 100.00 FEET TO STATION 5+91.30;
 THENCE NORTH 02° 14' 29" WEST 100.00 FEET TO STATION 6+91.30;
 THENCE NORTH 05° 22' 10" WEST 100.00 FEET TO STATION 7+91.30;
 THENCE NORTH 07° 53' 32" WEST 100.00 FEET TO STATION 8+91.30;
 THENCE NORTH 08° 06' 56" WEST 276.35 FEET TO STATION 11+67.65;
 THENCE NORTH 06° 29' 42" WEST 100.00 FEET TO STATION 12+67.65;
 THENCE NORTH 03° 15' 14" WEST 100.00 FEET TO STATION 13+67.65;
 THENCE NORTH 00° 01' 54" WEST 98.83 FEET TO STATION 14+66.48;
 THENCE NORTH 01° 34' 13" EAST 762.01 FEET TO STATION 22+28.49;
 THENCE NORTH 05° 02' 08" EAST 146.88 FEET TO STATION 23+75.37;
 THENCE NORTH 10° 03' 47" EAST 2099.60 FEET TO STATION 44+74.97;
 THENCE NORTH 55° 03' 47" EAST 35.35 FEET TO STATION 45+10.32;
 THENCE SOUTH 79° 56' 13" EAST 71.50 FEET TO STATION 45+81.82;
 THENCE NORTH 09° 48' 35" EAST 485.09 FEET TO STATION 50+66.91;
 THENCE NORTH 03° 27' 49" EAST 122.96 FEET TO STATION 51+89.87;
 THENCE NORTH 41° 33' 50" WEST 14.13 FEET TO STATION 52+04.00;
 THENCE NORTH 86° 35' 28" WEST 69.65 FEET TO STATION 52+73.65;

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THENCE NORTH 38° 46' 28" EAST 79.09 FEET TO STATION 68+74.02;
THENCE NORTH 43° 49' 55" EAST 10.00 FEET TO STATION 68+84.02 AND THE POINT OF TERMINUS.

SAID EASEMENT BEING DELINEATED BY THE FOLLOWING STATIONS AND OFFSETS FROM THE ACQUISITION CENTERLINE DESCRIBED ABOVE.

PERMANENT EASEMENT

| | |
|---------------------------|---|
| STATION TO STATION | EASTERLY OFFSET DISTANCE FROM CENTERLINE |
| 50+25.00 TO 60+25.00 | 15.00 FEET |

| | |
|---------------------------|---|
| STATION TO STATION | WESTERLY OFFSET DISTANCE FROM CENTERLINE |
| 50+25.00 TO 60+25.00 | 15.00 FEET |

BEARINGS ARE BASED ON SURVEY NO. 33400, WASHINGTON COUNTY SURVEY RECORDS.

CONTAINING 28,078 SQUARE FEET, MORE OR LESS.

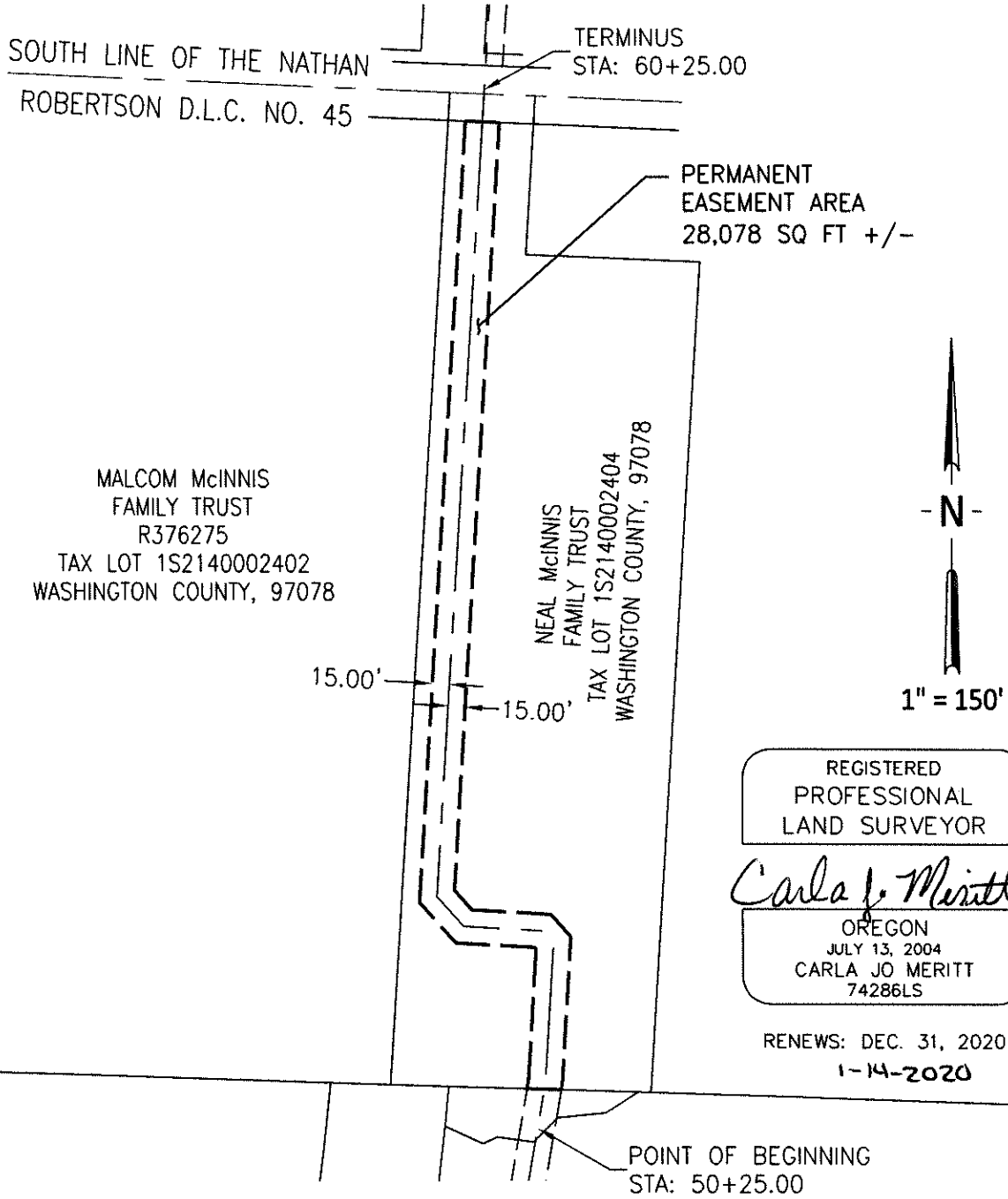


RENEWS: DEC. 31, 2020

1-14-2020

EXHIBIT B-1

SKETCH TO ACCOMPANY LEGAL DESCRIPTION



REGISTERED PROFESSIONAL LAND SURVEYOR

Carla J. Meritt

OREGON
JULY 13, 2004
CARLA JO MERITT
74286LS

RENEWS: DEC. 31, 2020
1-14-2020

MackKay  Sposito

ENERGY PUBLIC WORKS LAND DEVELOPMENT
www.mackkaysposito.com

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EXHIBIT A-2
TEMPORARY CONSTRUCTION EASEMENT

WILLAMETTE WATER SUPPLY
JANUARY 10, 2020

PLW 1.3
TAX MAP NO. 1S2140002404

A STRIP OF LAND LYING IN THE NORTHWEST QUARTER OF SECTION 14, TOWNSHIP 1 SOUTH, RANGE 2 WEST, WILLAMETTE MERIDIAN, WASHINGTON COUNTY, OREGON, AND BEING A PORTION OF THAT TRACT OF LAND DESCRIBED IN BARGAIN AND SALE DEED TO THE NEAL MCINNIS FAMILY TRUST PER DOCUMENT NO. 2007-063203, WASHINGTON COUNTY DEED RECORDS, AND BEING ALL THAT PORTION OF SAID TRACT DESCRIBED BELOW:

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 THENCE NORTH 43° 49' 55" EAST 10.00 FEET TO STATION 68+84.02 AND THE POINT OF TERMINUS.

SAID EASEMENT BEING DELINEATED BY THE FOLLOWING STATIONS AND OFFSETS FROM THE ACQUISITION CENTERLINE DESCRIBED ABOVE.

TEMPORARY CONSTRUCTION EASEMENT

| STATION TO STATION | EASTERLY OFFSET DISTANCE FROM CENTERLINE |
|---------------------------|---|
| 50+25.00 TO 51+89.87 | 53.00 FEET |
| 51+89.87 TO 53+34.14 | 53.00 FEET IN A STRAIGHT LINE TO 157.65 FEET |
| 53+34.14 TO 53+34.02 | 157.65 FEET IN A STRAIGHT LINE TO 25.00 FEET |
| 53+34.02 TO 60+25.00 | 25.00 FEET |

| STATION TO STATION | WESTERLY OFFSET DISTANCE FROM CENTERLINE |
|---------------------------|---|
| 50+51.41 TO 53+07.68 | 62.63 FEET IN A STRAIGHT LINE TO 72.06 FEET |
| 53+07.68 TO 53+08.99 | 72.06 FEET IN A STRAIGHT LINE TO 50.00 FEET |
| 53+08.99 TO 60+25.00 | 50.00 FEET |

EXCEPTING THEREFROM THAT PERMANENT EASEMENT FOR WATER LINES, FIXTURES AND FACILITIES CONCURRENTLY ACQUIRED FOR THIS PROJECT.

ALSO EXCEPTING THEREFROM THAT SLOPE EASEMENT CONCURRENTLY ACQUIRED FOR THIS PROJECT.

BEARINGS ARE BASED ON SURVEY NO. 33400, WASHINGTON COUNTY SURVEY RECORDS.

CONTAINING 35,368 SQUARE FEET, MORE OR LESS.

REGISTERED
 PROFESSIONAL
 LAND SURVEYOR

Carla Jo Meritt

OREGON
 JULY 13, 2004
 CARLA JO MERITT
 74286LS

RENEWS: DEC. 31, 2020

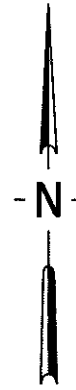
1-14-2020

EXHIBIT B-2

SKETCH TO ACCOMPANY LEGAL DESCRIPTION

SOUTH LINE OF THE NATHAN
ROBERTSON D.L.C. NO. 45

TERMINUS
STA: 60+25.00



1" = 150'

TEMPORARY
CONSTRUCTION EASEMENT
35,368 SQ FT +/-

REGISTERED
PROFESSIONAL
LAND SURVEYOR

Carla Jo Meritt

OREGON
JULY 13, 2004
CARLA JO MERITT
74286LS

RENEWS: DEC. 31, 2020
1-14-2020

MALCOM McINNIS
FAMILY TRUST
TAX LOT 1S2140002402
WASHINGTON COUNTY, 97078

NEAL McINNIS
FAMILY TRUST
2007-063203
TAX LOT 1S2140002404
WASHINGTON COUNTY, 97078

50.00'

25.00'

STA: 53+34.02
OFFSET: 25.00 R

STA: 53+08.99
OFFSET: 50.00 L

STA: 53+34.14
OFFSET: 157.65 R

STA: 53+07.68
OFFSET: 72.06 L

STA: 51+89.87
OFFSET: 53.00 R

STA: 50+51.41
OFFSET: 62.63 L

TEMPORARY
CONSTRUCTION
EASEMENT AREA

53.00'

POINT OF BEGINNING
STA: 50+25.00

MackKay  Sposito

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PORTLAND: (503) 289-6726
FAX (360) 695-0833

**EXHIBIT A-3
PERMANENT SLOPE EASEMENT**

**WILLAMETTE WATER SUPPLY
JANUARY 10, 2020**

**PLW 1.3
TAX MAP NO. 1S2140002404**

A STRIP OF LAND LYING IN THE NORTHWEST QUARTER OF SECTION 14, TOWNSHIP 1 SOUTH, RANGE 2 WEST, WILLAMETTE MERIDIAN, WASHINGTON COUNTY, OREGON, AND BEING A PORTION OF THAT TRACT OF LAND DESCRIBED IN BARGAIN AND SALE DEED TO THE NEAL MCINNIS FAMILY TRUST PER DOCUMENT NO. 2007-063203, WASHINGTON COUNTY DEED RECORDS, AND BEING ALL THAT PORTION OF SAID TRACT DESCRIBED BELOW:

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SAID EASEMENT BEING DELINEATED BY THE FOLLOWING STATIONS AND OFFSETS FROM THE ACQUISITION CENTERLINE DESCRIBED ABOVE.

PERMANENT SLOPE EASEMENT

| STATION TO STATION | EASTERLY OFFSET DISTANCE FROM CENTERLINE |
|---------------------------|---|
| 50+62.38 TO 50+77.77 | 34.83 FEET IN A STRAIGHT LINE TO 53.00 FEET |
| 50+77.77 TO 50+83.86 | 53.00 FEET |
| 50+83.86 TO 51+20.26 | 53.00 FEET IN A STRAIGHT LINE TO 47.27 FEET |
| 51+20.26 TO 51+68.14 | 47.27 FEET IN A STRAIGHT LINE TO 38.19 FEET |
| 51+68.14 TO 51+77.90 | 38.19 FEET IN A STRAIGHT LINE TO 34.62 FEET |
| 51+77.90 TO 51+89.87 | 34.62 FEET IN A STRAIGHT LINE TO 15.00 FEET |

| STATION TO STATION | WESTERLY OFFSET DISTANCE FROM CENTERLINE |
|---------------------------|---|
| 50+54.03 TO 50+74.29 | 18.26 FEET IN A STRAIGHT LINE TO 37.90 FEET |
| 50+74.29 TO 50+86.44 | 37.90 FEET IN A STRAIGHT LINE TO 42.59 FEET |
| 50+86.44 TO 50+92.69 | 42.59 FEET IN A STRAIGHT LINE TO 42.49 FEET |
| 50+92.69 TO 51+70.51 | 42.49 FEET IN A STRAIGHT LINE TO 26.49 FEET |
| 51+70.51 TO 52+16.51 | 26.49 FEET IN A STRAIGHT LINE TO 15.00 FEET |

EXCEPTING THEREFROM THAT PERMANENT EASEMENT FOR WATER LINES, FIXTURES AND FACILITIES CONCURRENTLY ACQUIRED FOR THIS PROJECT.

BEARINGS ARE BASED ON SURVEY NO. 33400, WASHINGTON COUNTY SURVEY RECORDS.

CONTAINING 6,026 SQUARE FEET, MORE OR LESS.

REGISTERED
 PROFESSIONAL
 LAND SURVEYOR

Carla Jo Meritt

OREGON
 JULY 13, 2004
 CARLA JO MERITT
 74286LS

RENEWS: DEC. 31, 2020

1-14-2020

EXHIBIT B-3

SKETCH TO ACCOMPANY LEGAL DESCRIPTION

SOUTH LINE OF THE NATHAN

ROBERTSON D.L.C. NO. 45

REGISTERED
PROFESSIONAL
LAND SURVEYOR

Carla J. Meritt

OREGON
JULY 13, 2004
CARLA JO MERITT
74286LS

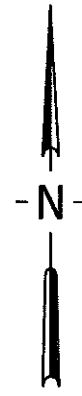
RENEWALS: DEC. 31, 2020
1-14-2020

MALCOM McINNIS
FAMILY TRUST
TAX LOT 1S2140002402
WASHINGTON COUNTY, 97078

50.00'

NEAL McINNIS
FAMILY TRUST
2007-063203
TAX LOT 1S2140002404
WASHINGTON COUNTY, 97078

25.00'



1" = 150'

SLOPE EASEMENT
6,026 SQ FT +/-

- STA: 52+16.51
OFFSET: 15.00 L
- STA: 51+70.51
OFFSET: 26.49 L
- STA: 50+92.69
OFFSET: 42.49 L
- STA: 50+86.44
OFFSET: 42.59 L
- STA: 50+74.29
OFFSET: 37.90 L

- STA: 51+89.87
OFFSET: 15.00 R
- STA: 51+77.90
OFFSET: 34.62 R
- STA: 51+68.14
OFFSET: 38.19 R
- STA: 51+20.26
OFFSET: 47.27 R
- STA: 50+83.86
OFFSET: 53.00 R
- STA: 50+77.77
OFFSET: 53.00 R

STA: 50+54.03
OFFSET: 18.26 L

STA: 50+62.38
OFFSET: 34.83 R

SLOPE EASEMENT AREA

MackKay  **Sposito**

ENERGY PUBLIC WORKS LAND DEVELOPMENT
www.mackkaysposito.com

1325 SE TECH CENTER DRIVE, SUITE 140
VANCOUVER, WA 98683
VANCOUVER: (360) 695-3411
PORTLAND: (503) 289-6726
FAX (360) 695-0833

Willamette Water Supply System Commission

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STAFF REPORT

To: Willamette Water Supply System Board of Commissioners
From: David Kraska, P.E., Willamette Water Supply System General Manager
Date: February 6, 2020
Subject: WWSP Baseline 5.0 Status Update

Key Concepts:

- Each year WWSP prepares an updated estimate to complete the WWSP.
- Baseline 5.0 was prepared in December 2019 and reviewed by the WWSS Committees in January 2020.
- This status report provides a summary of the Baseline development and feedback received to date.

Background:

Each year the WWSS, through the Managing Agency, prepares a Baseline Budget and Schedule per Article 6.6 of the WWSS IGA. TVWD is currently preparing a draft of the Annual Work Plan and associated budget to address those duties that are expected to be required in FY 2020-2021. The Annual Work Plan and associated budget includes a rigorous review by the partners and WWSS Committees before it comes before the Board of Commissioners for approval.

The Annual Work Plan includes the following main tasks:

1. General Administration
2. Capital Projects Management
3. Annual Work Plan and Budget Development
4. Finance Administration
5. Operations Committee Administration
6. Management Committee Administration
7. Administer WWSS Board of Commissioners Meetings
8. Contingency

A required step in the Annual Work Plan development process is receiving input from the WWSS Partners on the annual budget and projected cash flow for completion of the WWSP efforts. Estimated WWSP costs through completion of the Program are included in the Capital Projects Management category through the annual Baseline process. On January 16, 2020 the WWSS Management Committee, Finance Committee, and Operations Committee met to review and discuss the Baseline 5.0 forecast.

WWSP staff and the Committees reviewed the various project costs changes that are included in the Baseline 5.0 which includes a 3.4% net increase in total estimated Program cost. This increase is due to: project changes, addition of ancillary projects (COB_1.0, changes to MPE_1.0), a new state tax (gross receipts tax), construction and real estate market conditions, and schedule adjustments to accommodate opportunity project partner needs.

Based on feedback received at the January 16, 2020 meeting and the subsequent Management Committee meeting (January 23, 2020) WWSP staff are developing options to (1) manage overall WWSS cost uncertainty for all partners, and (2) address cashflow constraints identified by Hillsboro. In addition, the Finance Committee is refining the approach to cost shares calculations.

WWSP staff are preparing a strategy that addresses the feedback by providing a suite of options to reduce and/or defer cost. Changes will be reviewed by the Management Committee and incorporated into Baseline 5.1 and the associated cost management options will be provided to the Board for adoption at the March Board of Commissioners meeting.

Budget Impact:

Budget impacts will be evaluated and included with the recommendation for adoption for Baseline 5.1.

Staff Contact Information:

Dave Kraska, P.E., WWSS General Manager, 503-941-4561, david.kraska@tvwd.org

Attachments:

None.

5A.2

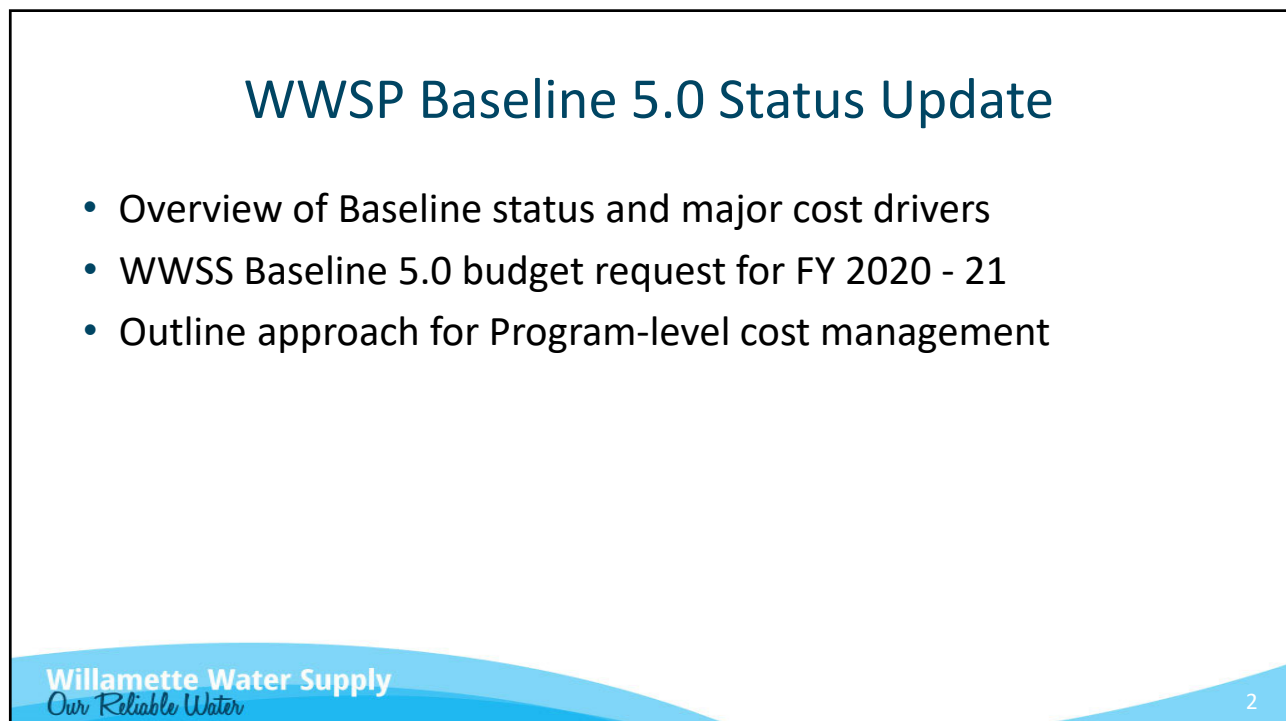


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WWSP Baseline 5.0 Status Update

February 6, 2020

1



WWSP Baseline 5.0 Status Update

- Overview of Baseline status and major cost drivers
- WWSS Baseline 5.0 budget request for FY 2020 - 21
- Outline approach for Program-level cost management

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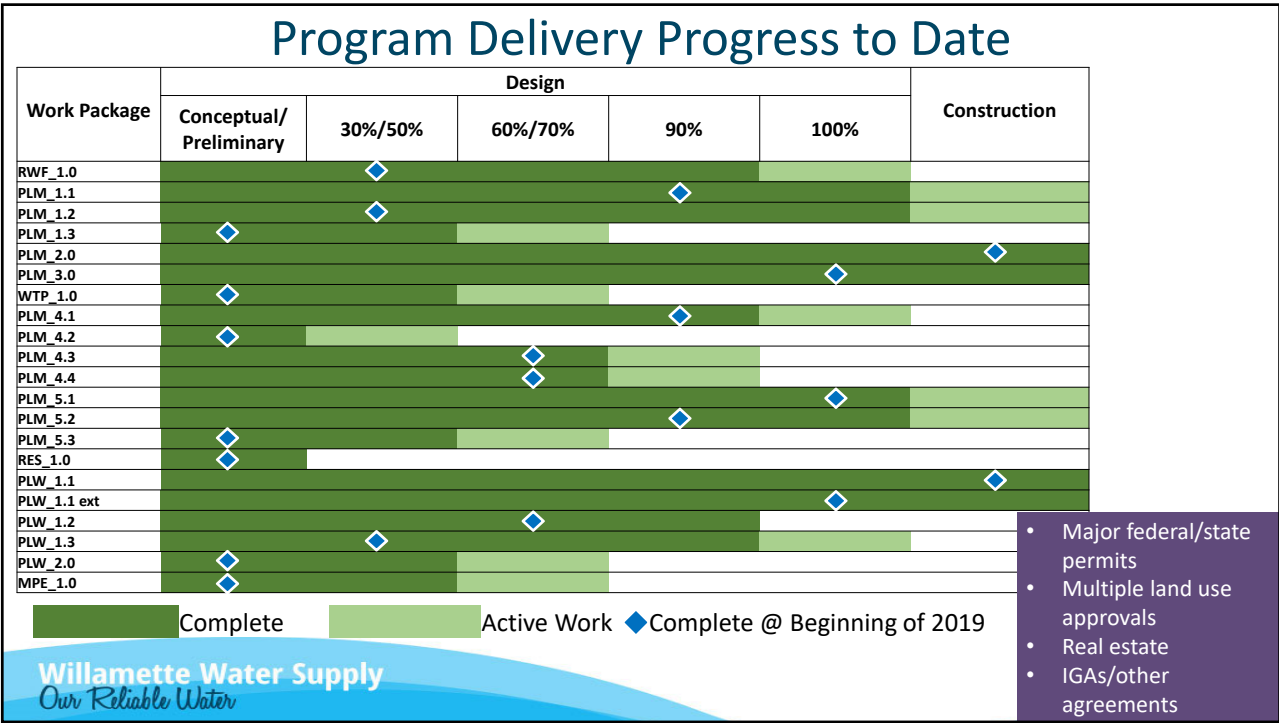
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2

OVERVIEW OF BASELINE STATUS AND MAJOR COST DRIVERS

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3



4

Re-baseline Milestones Schedule

February 7th

- Distribute Baseline 5.1

February 20th

- Management Committee Approval

March 5th

- WWSS Board Adoption as part of the FY 2020-21 Proposed Budget

5

Baseline Summary

| | Current | Baseline 5.0 | Change |
|-------------------------|-------------------------|-------------------------|----------------------|
| WWSS Projects | \$ 910,565,495 | \$ 941,551,612 | \$ 30,986,117 |
| Ancillary Projects | 106,026,157 | 128,003,776 | 21,977,620 |
| System Wide | 156,316,106 | 151,275,899 | (5,040,206) |
| WWSS Real Estate | 50,441,611 | 52,689,691 | 2,248,080 |
| WWSS Management Reserve | 41,629,045 | 13,452,861 | (28,176,184) |
| Total | \$ 1,264,978,414 | \$ 1,286,973,840 | \$ 21,995,426 |

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WWSS Projects Summary

| | Current | Baseline 5.0 | Change |
|-------------------------|-------------------------|-------------------------|----------------------|
| WWSS Projects | \$ 910,565,495 | \$ 941,551,612 | \$ 30,986,117 |
| Ancillary Projects | 106,026,157 | 128,003,776 | 21,977,620 |
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| WWSS Management Reserve | 41,629,045 | 13,452,861 | (28,176,184) |
| Total | \$ 1,264,978,414 | \$ 1,286,973,840 | \$ 21,995,426 |

7

WTP_1.0

\$32,562,668 increase



Budget Changes Due to:

- Project definition represents the 30% OPCC (with subsequent modifications to refine the 30% design concept)
 - Increase from treatment plant concept represented in the predesign

Value-Based Decisions Related to Cost:

- 72 mgd re-rate capability
- Disinfection strategy
- Seismic design approach
- Standby power

8

PLM_4.0

\$2,408,688 increase:

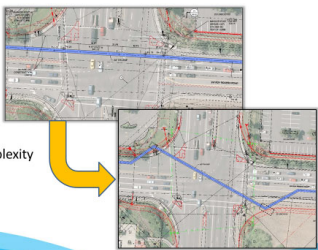
PLM_4.1 Hwy99 Crossing

Open Cut

- 250 LF of Open Cut
- Extensive Traffic Control
- Limited work hours

Re-Baseline Alignment

- 270 LF of Trenchless
- Minimizes traffic control complexity
- Allows for normal work hours



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Budget Changes Due to:

- PLM 4.1 change from open cut construction to trenchless construction driven by Washington Co.
- Delays to project due to Washington Co. lead (escalation cost to WWSP)

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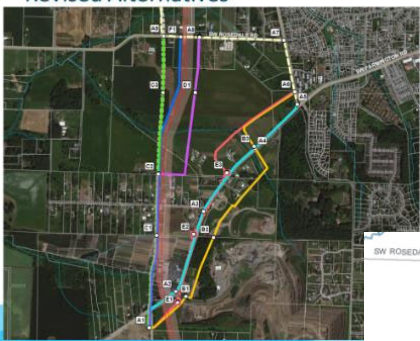
9

9

PLM_5.0

\$7,755,506 decrease:

Revised Alternatives



Budget Changes Due to:

- Alignment change (avoids extensive seismic mitigation along Farmington Rd)
- Reduces pipeline length



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PLW_1.0

\$4,921,868 decrease:



Budget Changes Due to:

- Alignment change in PLM_5.0
- Reduction in pipe size for TVWD turnout at 209th & Farmington (~ 4,000 ft)
- TVWD 209th & Farmington Chemical Feed Facility removed from budget

PLW_2.0

\$7,216,797 increase:

Beaverton Creek – Open Cut Resource Crossing

- Geotechnical and seismic constraints for depth
- Open cut constructability concerns; high groundwater, unstable soils, wetland resources
- Creek bypass limitations; short in-water work window
- Traffic control for construction and materials/equipment delivery
- Limited construction access
- Protection of existing facilities and utilities
- Vibration and noise sensitive neighbors
- New assisted living development



Rock Creek – Open Cut Resource Crossing

- Geotechnical and seismic constraints
- Open cut constructability concerns
- Wetlands surrounding pipe alignment
- Non-negotiable 50' easement
- Creek bypass limitations; short in-water work window
- Limited construction access
- Protection of existing facilities and utilities
- Increased safety considerations for public park
- Trenchless crossing under TriMet light rail tracks



Budget Changes Due to:

- Dewatering and wet water work associated with pipe installation with two deep creek installations
- 400' of additional pipe due to minor alignment changes, including the indirect alignment through Orenco Woods Nature Park

Ancillary Projects Summary

| | Current | Baseline 5.0 | Change |
|---------------------------|-------------------------|-------------------------|----------------------|
| WWSS Projects | \$ 910,565,495 | \$ 941,551,612 | \$ 30,986,117 |
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| System Wide | 156,316,106 | 151,275,899 | (5,040,206) |
| WWSS Real Estate | 50,441,611 | 52,689,691 | 2,248,080 |
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| Total | \$ 1,264,978,414 | \$ 1,286,973,840 | \$ 21,995,426 |

13

MPE_1.0

\$6,064,686 increase:

MPE_1.0 - OR217 Trenchless Crossings

Baseline Alignment

- 270 LF of Trenchless
- 1 Trenchless drive
- 1,900 LF of Open Cut

Re-Baseline Alignment

- 780 LF of Trenchless
- 3 Trenchless drives
- 1,300 LF of Open Cut
- Avoids remediation site
- Avoids constructability and traffic complexities on Cascade



Budget Changes Due to:

- Complexity associated with Hwy 217 crossings
- Addition of the Metzger Turnout for TVWD
- Complexity associated with the Beaverton-Hillsdale tie-in

14

COB_1.0

\$15,804,280 increase:

- Nimbus to Beaverton-Hillsdale Hwy

Budget Changes Due to:

- The budget was added to the Baseline with an OPCC cost estimate

City of Beaverton 16" Pipeline Project

COB_1.0 Project Scope

- 16,780 LF of 16" DIP
- 29 Existing Main connections
- 18 Service connections
- 4 Trenchless crossings



System Wide Summary

| | Current | Baseline 5.0 | Change |
|-------------------------|-------------------------|-------------------------|----------------------|
| WWSS Projects | \$ 910,565,495 | \$ 941,551,612 | \$ 30,986,117 |
| Ancillary Projects | 106,026,157 | 128,003,776 | 21,977,620 |
| System Wide | 156,316,106 | 151,275,899 | (5,040,206) |
| WWSS Real Estate | 50,441,611 | 52,689,691 | 2,248,080 |
| WWSS Management Reserve | 41,629,045 | 13,452,861 | (28,176,184) |
| Total | \$ 1,264,978,414 | \$ 1,286,973,840 | \$ 21,995,426 |

Real Estate Summary

| | Current | Baseline 5.0 | Change |
|-------------------------|-------------------------|-------------------------|----------------------|
| WWSS Projects | \$ 910,565,495 | \$ 941,551,612 | \$ 30,986,117 |
| Ancillary Projects | 106,026,157 | 128,003,776 | 21,977,620 |
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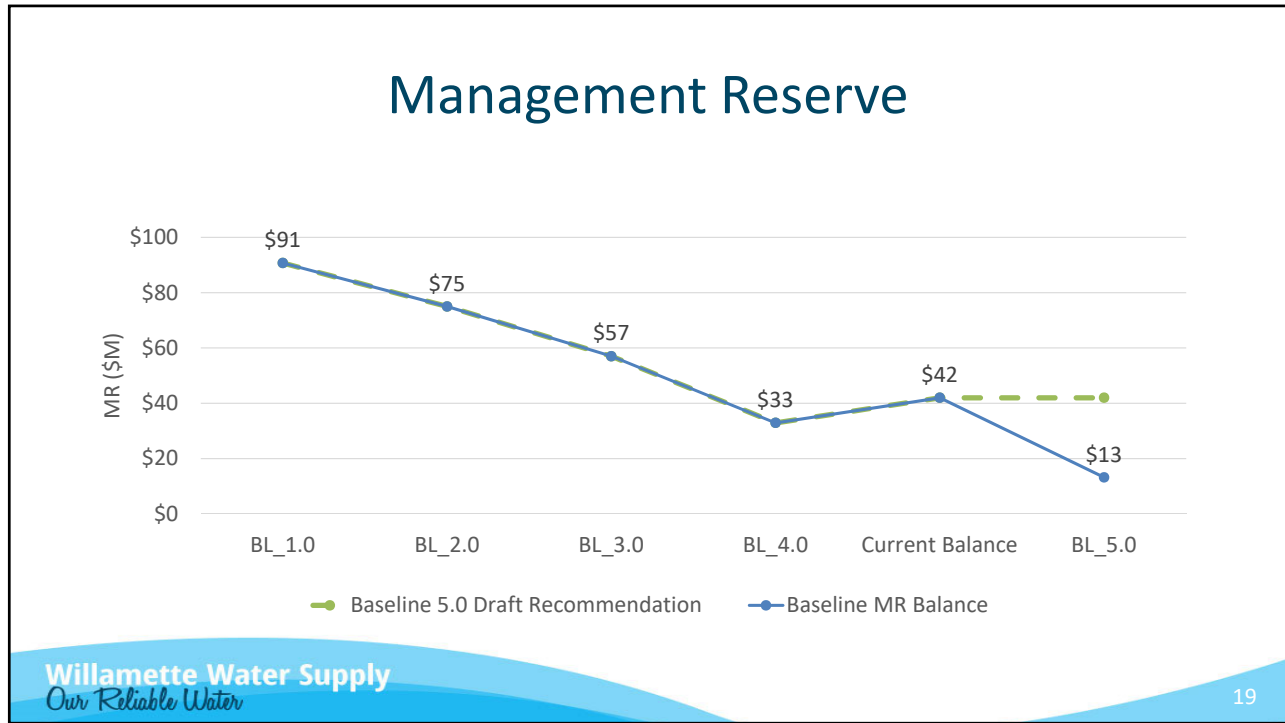
17

Management Reserve Summary

| | Current | Baseline 5.0 | Change |
|--------------------------------|--------------------------|----------------------------|----------------------------|
| WWSS Projects | \$ 910,565,495 | \$ 941,551,612 | \$ 30,986,117 |
| Ancillary Projects | 106,026,157 | 128,003,776 | 21,977,620 |
| System Wide | 156,316,106 | 151,275,899 | (5,040,206) |
| WWSS Real Estate | 50,441,611 | 52,689,691 | 2,248,080 |
| WWSS Management Reserve | <u>41,629,045</u> | <u>* 13,452,861</u> | <u>(28,176,184)</u> |
| Total | \$ 1,264,978,414 | \$ 1,286,973,840 | \$ 21,995,426 |

*Does not include the WTP property sale @ \$4.25 million resulting in a revised MR balance of \$17.7 million

18



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BASELINE 5.0 FY 2020 – 21 BUDGET REQUEST

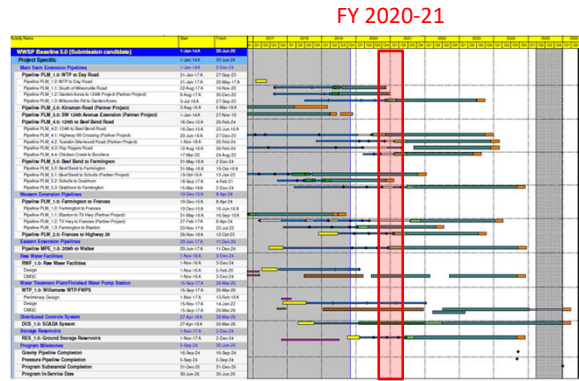
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Program Work Planned for FY 2020-21

- Implement
 - WWSS IGA
 - WIFIA compliance program
 - Safety program
 - Communications and outreach program
- Continue acquisitions
 - Real estate
 - Permits and land use approvals
- Progress design on 11 projects
- Advance 13 construction projects
- Plan
 - Water supply integration
 - Commissioning and start-up
 - Operations



FY 2020-21 Requested Budget

| <u>Party</u> | FY 2020-21 Budget |
|--------------|--------------------------|
| Beaverton | \$ 7,661,764 |
| Hillsboro | 51,133,745 |
| TVWD | 62,987,588 |
| WIF | 3,894,698 |
| Total | \$ 125,677,794 |

OUTLINE APPROACH FOR PROGRAM-LEVEL COST MANAGEMENT

23

Current Status and Path Forward

- Hillsboro has indicated they cannot approve Baseline 5.0
 - Focus on WWSS WTP and Terminal Storage ownership as primary causes
- WWSS Management Committee (Tom, Niki, COB)
 - Define desired outcome
- WWSP Team
 - Investigate cost management at Program level
 - Adjust timing of construction projects
 - Defer PLW_2.0
 - Defer second RES_1.0 tank
 - Identify potential WTP_1.0 cost reductions
 - Evaluate financing strategies
 - Others

- Evaluate risks and consequences
- Define implementation requirements
- Enable informed decision-making

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WWSS WTP Opinion of Probable Construction Cost (OPCC) Progression

| | Date | OPCC | |
|-----------------------------|---------------|---------|---------------|
| 30% OPCC | March 2019 | \$266 M | |
| 30% OPCC (after Value Eng.) | May 2019 | \$228 M | |
| 30% OPCC (Baseline 5.0) | December 2019 | \$235 M | |
| Mid-60% OPCC Draft | 11/4/2019 | \$307 M | } Δ = +\$33 M |
| Mid-60% OPCC Draft Update 1 | 11/22/2019 | \$288 M | |
| Mid-60% OPCC Draft Update 2 | 12/11/2019 | \$275 M | |
| Mid-60% OPCC Final | 1/14/2020 | \$268 M | |

OPCC values in current dollars on the submittal date

25

Current Status of WWSS WTP OPCC

- Validation of the OPCC Completed (WWSP and CDM Smith)
 - Scope and quantities (focus on concrete, piping, electrical)
 - Unit costs and labor rates
 - Build-up of general conditions and project contingency
 - Estimate of permitting costs
- Reviewing Sundt risk analysis
- Mid-60% OPCC progression has been logged

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Potential Opportunities for Cost Changes

Maintain Flexibility to Reduce and Defer WWSS Costs

- Identify WTP_1.0 elements that can be bid as “add alternates” (constructed or deleted based on bids)
- Preserve option to defer construction of one of the RES_1.0 terminal storage reservoirs
- Preserve option to delay construction of PLW_2.0

Enables continuing Program-level cost management

Reduce WWSS Estimated Cost

- Redesign the WTP_1.0 to a new budget target

Not reversible by 2026

WWSP Evaluating Opportunities to Enable Informed Decision-making by the WWSS Board

| Cost, Cashflow, & Finance | Level of Service | Communications & Commitments | Permitting | Schedule |
|---|--|---|--|---|
| <ul style="list-style-type: none"> • How does the opportunity impact the Program cost and financing? <ul style="list-style-type: none"> ○ Capital costs (annual and total Program) ○ Operational costs (types, increases or decreases) ○ Funding (WIFIA funding impacts) ○ Cost distribution (impacts characterized by partner) | <ul style="list-style-type: none"> • How does the opportunity impact the Program LOS goals? <ul style="list-style-type: none"> ○ Public health protection (finished water quality) ○ Reliability (emergency response, raw water quality) ○ Capacity (allowance or 72-mgd re-rate, 60-mgd base capacity) | <ul style="list-style-type: none"> • How does the opportunity change public narrative? | <ul style="list-style-type: none"> • Does the opportunity require modifications to existing permits or new permits? | <ul style="list-style-type: none"> • Does the opportunity modify the schedule or completion of the Program by June 30, 2026? |

All WWSS Partners Need to Agree on Cost Control Opportunities Recommended to the Board

- Cost impacts
 - design/other contract amendments
 - annual spend
 - projected operational cost impacts
 - capital project escalation
 - distribution among partners
- Accept any impacts partner funding plans
- Program changes
 - capacity, level of service, in-service date
- Communications plan to the public and any affected entities is supported and consistent
- Permitting impacts do not affect Program in any unacceptable ways

Recommended Strategy

- WWSP to identify and evaluate potential opportunities
- WWSS Management Committee to agree on recommended opportunities
- Finish in time to respond to Partner budget schedules
 - WWSS MC to select opportunities at its February 20, 2020 meeting
- Anticipate WWSS Board make contingent approval of Baseline 5.1
 - Contingency: Board to require preservation and implementation of recommended opportunities in the future if necessary to meet defined financial constraints
 - Enables timely approval of budget for next fiscal year (which is below the budget in the approved Baseline 4.1)

QUESTIONS

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STAFF REPORT

To: Willamette Water Supply System Board of Commissioners
From: David Kraska, P.E., Willamette Water Supply System General Manager
Date: February 6, 2020
Subject: Anticipated Business Agenda Items for the March 5, 2020, Meeting of the Willamette Water Supply System Board of Commissioners

Key Concepts:

The March Willamette Water Supply System (WWSS) Commission Board meeting agenda is anticipated to include staff recommendations to approve the following business agenda items:

1. PLM_1.2 construction contract change order
2. PLM_5.3 design contract amendment
3. PLM_4.3 Resolution of Public Necessity
4. WTP_1.0 design contract amendment

Background:

The following actions are anticipated business agenda items for the March 5, 2020 meeting of the WWSS Board of Commissioners. Due to the dynamic nature of the WWSS work, request for approval of some items may be delayed or new items may emerge on the business agenda next month. WWSS staff strive to provide preliminary information one month prior to requesting action, and a full staff report describing the recommended action during the appropriate month.

1. PLM_1.2 Construction Contract Change Order Approval Recommendation

The Wilsonville Area Pipeline Project (PLM_1.0) is being delivered in three phases. The Garden Acres Road pipeline (PLM_1.2) is a partnership project with the City of Wilsonville that is already in construction. As originally contracted, the pipeline work and road work have the same extents. This approach left approximately 480 feet of WWSS pipeline un-contracted in the area between the PLM_1.2 project and the already-constructed PLM_3.0 project. The recently completed design for the Day Road crossing area includes a trenchless crossing of the road as well as open-cut pipe installation to connect to PLM_1.2 and PLM_3.0. Planned options for completing this portion of pipeline were to add it to PLM_1.2 or, as a backup option, include it with future construction of PLM_1.3.

WWSP staff recommend adding the Day Road crossing to PLM_1.2 and WWSP has Wilsonville's agreement on making this change to Wilsonville's contract. The expected value of the change likely exceeds \$500,000, which will therefore require Board approval. The change order details are under development and will be finalized by the March Board meeting.

2. PLM_5.3 Design Contract Amendment Approval Recommendation

The Scholls Ferry Road Area Pipeline Project (PLM_5.0) engineering design has been under contract with CH2M Hill Engineers, Inc. (now Jacobs Engineering Group) since 2016. Since initiating the project, it has been divided into three phases to allow for partnership with Washington County along Roy Rogers Road

and avoidance of developer work along Scholls Ferry and Tile Flat Roads. The final piece of PLM_5.0 is called PLM_5.3 and it extends from Tile Flat and Grabhorn Roads in the South Cooper Mountain area, up Cooper Mountain to the RES_1.0 project, down Cooper Mountain to the west, and connects with PLW_1.3 pipeline in South Hillsboro area.

During early design work of PLM_5.3, significant seismic hazards were discovered in the Farmington Road area. The cost of mitigating the seismic hazards was estimated to be very high (on the order of \$10 million) and prompted the design team to consider options to realign the pipeline to avoid the hazards, a lower cost option. The contract amendment, currently under development, accounts for the phasing of PLM_5.0's design from one to three phases and additional engineering services necessary to develop the new PLM_5.3 preferred alignment.

At the March WWSS Board meeting, WWSP staff will present the revised pipeline alignment and resulting design contract amendment, with a recommendation to the Board to approve the contract amendment.

3. PLM_4.3 Resolution of Public Necessity Approval Recommendation

The WWSS includes a section of pipeline along Roy Rogers Road from Sherwood city limits to approximately 2,700 feet north of Beef Bend Road (PLM_4.3), in unincorporated Washington County. The WWSP has progressed the design of this pipeline section to enable identification of property requirements for construction and long-term operation and maintenance of the pipeline. The pipeline alignment was selected through an extensive alternatives evaluation, and the preferred location was selected based upon the best interests of the public and the least private injury to private property owners. The proposed resolution will enable the initiation of the property acquisition process, including negotiations with the Property owner and other applicable interest holders.

At the March WWSS Board meeting, WWSP staff will present the project area and easement needs, with a recommendation to the Board to approve the Resolution of Public Necessity to allow WWSP staff to begin the process acquire permanent and temporary construction easements for PLM_4.3.

4. WTP_1.0 Design Contract Amendment Approval Recommendation

The WTP_1.0 team is currently negotiating a design contract amendment with CDM Smith, Inc., related to additional engineering services. The exact scope of the requested change is still in development and may be within the General Manager's approval authority. Should the change be within the General Manager's approval authority, this item will not return to the Board for action.

Budget Impact:

No budgetary impact. The funds for these efforts are included in the WWSP Baseline budget.

Staff Contact Information:

Dave Kraska, P.E., WWSS General Manager, 503-941-4561, david.kraska@tvwd.org

Joelle Bennett, P.E., WWSP Assistant Program Director, 503-941-4577, joelle.bennett@tvwd.org

Page 3 of 3

February 6, 2020

Anticipated Business Agenda Items for the March 6, 2020, Meeting of the Willamette Water Supply System Board of Commissioners

Attachments:

None.