

CITY OF PORTLAND  
AGREEMENT FOR PROFESSIONAL, TECHNICAL, OR EXPERT SERVICES

CONTRACT NUMBER 30007028

TITLE OF WORK PROJECT

**ON-SITE DESIGN SERVICES**  
**FOR THE BULL RUN FILTRATION PROJECT**

This Contract is between the City of Portland ("City," or "Bureau") and Stantec Consulting Services, Inc., hereafter called Consultant. The City's Project Manager for this Contract is Lyda Hakes.

**Effective Date and Duration**

This Contract shall become effective on November 1, 2019. This Contract shall expire, unless otherwise terminated or extended, on October 31, 2024.

**Consideration**

- (a) City Council Ordinance \_\_\_\_\_ authorized a not to exceed amount for the contract with Stantec Consulting Services, Inc. to be \$51,000,000. Funds are available in the FY 2019-20 Budget and will be requested in the FY 2020-21 through FY 2028-29 Budgets. City agrees to pay Consultant a sum not to exceed \$51,000,000 for accomplished and approved work as set forth in the attached Statement of the Work (Exhibit A) and Contract Budget Detail (Exhibit B). Prior to the expiration of the five-year term of the contract and upon Council's acceptance of the Water Bureau's report for recommending the acceptance of an additional five (5) year extension to the contract, the Chief Procurement Officer is authorized to execute an amendment to extend the term of the contract for the Project.
- (b) Interim payments shall be made to Consultant according to the schedule identified in the STATEMENT OF THE WORK AND PAYMENT SCHEDULE.

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**CONSULTANT DATA AND CERTIFICATION**

Name (print full legal name): Stantec Consulting Services, Inc.

Address: 601 SW Second Avenue, Suite 1400, Portland, OR 97204

City of Portland Business Tax Registration Number: 423988

Citizenship:    Nonresident alien     Yes                     No

Business Designation (check one):     Individual             Sole Proprietorship     Partnership     Corporation

Limited Liability Co (LLC)     Estate/Trust     Public Service Corp.     Government/Nonprofit

Payment information will be reported to the IRS under the name and taxpayer I.D. number provided above. Information must be provided prior to Contract approval.

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**TERMS AND CONDITIONS**

**1. Standard of Care**

Consultant shall perform all services under this Contract using that care, skill, and diligence that would ordinarily be used by similar professionals in this community in similar circumstances.

**2. Effect of Expiration**

Passage of the Contract expiration date shall not extinguish, prejudice, or limit either party's right to enforce this Contract with respect to any default or defect in performance that has not been corrected.

**3. Order of Precedence**

This Contract consists of these Terms and Conditions, the Statement of Work and Payment Schedule, and any exhibits that are attached. Any apparent or alleged conflict between these items will be resolved by using the following order of precedence: a) these Terms and Conditions; b) Statement of Work and Payment Schedule; and c) any exhibits attached to the Contract.

#### 4. Early Termination of Contract

- (a) The City may terminate this Contract for convenience at any time for any reason deemed appropriate in its sole discretion. Termination is effective immediately upon notice of termination given by the City.
- (b) Either party may terminate this Contract in the event of a material breach by the other party that is not cured. Before termination is permitted, the party seeking termination shall give the other party written notice of the breach, its intent to terminate, and fifteen (15) calendar days to cure the breach. If the breach is not cured within 15 calendar days, the party seeking termination may terminate immediately by giving written notice that the Contract is terminated.

#### 5. Remedies and Payment on Early Termination

- (a) If the City terminates pursuant to 4(a) above, the City shall pay the Consultant for work performed in accordance with the Contract prior to the termination date. No other costs or loss of anticipated profits shall be paid.
- (b) If the City terminates pursuant to 4(b) above, the City is entitled all remedies available at law or equity. In addition, Consultant shall pay the City all damages, costs, and sums incurred by the City as a result of the breach.
- (c) If the Consultant justifiably terminates the Contract pursuant to subsection 4(b), the Consultant's only remedy is payment for work prior to the termination. No other costs or loss of anticipated profits shall be paid.
- (d) If the City's termination under Section 4(b) was wrongful, the termination shall be automatically converted to one for convenience and the Consultant shall be paid as if the Contract was terminated under Section 4(a).
- (e) In the event of early termination, the Consultant's work product before the date of termination becomes property of the City.

#### 6. Assignment

Consultant shall not subcontract, assign, or transfer any of the work scheduled under this agreement, without the prior written consent of the City. Notwithstanding City approval of a subconsultant, the Consultant shall remain obligated for full performance hereunder, and the City shall incur no obligation other than its obligations to the Consultant hereunder. The Consultant agrees that if subconsultants are employed in the performance of this Agreement, the Consultant and its subconsultants are subject to the requirements and sanctions of ORS Chapter 656, Workers' Compensation.

#### 7. Compliance with Applicable Law

Consultant shall comply with all applicable federal, state, and local laws and regulations. Consultant agrees it currently is in compliance with all tax laws. Consultant shall comply with Title VI of the Civil Rights Act of 1964 and its corresponding regulations. In connection with its activities under this Contract, the Consultant shall comply with all applicable Grant Terms and conditions. This includes all terms and conditions contained in this Contract and, for a Contract involving a grant, the Grant Terms and Conditions.

#### 8. Indemnification for Property Damage and Personal Injury

Consultant shall indemnify, defend, and hold harmless the City, its officers, agents, and employees, from all claims, losses, damages, and costs (including reasonable attorney fees) for personal injury and property damage arising out of the intentional or negligent acts or omissions of the Consultant, its Subconsultants, suppliers, employees or agents in the performance of its services. Nothing in this paragraph requires the Consultant or its insurer to indemnify the City for claims of personal injury or property damage caused by the negligence of the City. This duty shall survive the expiration or termination of this Contract.

If, at the conclusion of a claim for which the City seeks indemnity from Consultant, whether the conclusion is by settlement, mediation, arbitration, or otherwise, it is determined that each of the City and Consultant are partially responsible for the claim, then the City shall reimburse Consultant a percentage of the defense costs incurred by Consultant in the same proportion as the City was deemed responsible for the claim, but only to the extent Consultant provided the sole defense of the City. For example, if at the conclusion of a claim, it is determined that the City is 20% responsible and Consultant is 50% responsible, the City shall reimburse Consultant for 20% costs of the defense costs incurred by Consultant, however, if the City also undertook its own defense, the City shall owe no defense costs to Consultant.

#### 9. Insurance

Consultant shall obtain and maintain in full force at Consultant expense, throughout the duration of the Contract and any warranty or extension periods, the required insurance identified below. The City reserves the right to require additional insurance coverage as required by statutory or legal changes to the maximum liability that may be imposed on Oregon cities during the term of the Contract.

- (a) Workers' Compensation insurance as required by ORS Chapter 656 and as it may be amended. Unless exempt under ORS Chapter 656, the Consultant and all subconsultants shall maintain coverage for all subject workers.

Required and attached //  Proof of exemption (i.e., completion of Workers' Compensation Insurance Statement)

- (b) General commercial liability (CGL) insurance covering bodily injury, personal injury, property damage, including coverage for independent consultant's protection (required if any work will be subcontracted), premises/operations, Contractual liability, products and completed operations, in per occurrence limit of not less than \$1,000,000, and aggregate limit of not less than \$2,000,000.

Required and attached //  Waived by Bureau Director or designee //  Reduce by Bureau Director or designee

- (c) Automobile liability insurance with coverage of not less than \$1,000,000 each accident, and an umbrella or excess liability coverage of \$2,000,000. The insurance shall include coverage for any auto or all owned, scheduled, hired and non-owned auto. This coverage may be combined with the commercial general liability insurance policy.

Required and attached //  Waived by Bureau Director or designee //  Reduce by Bureau Director or designee

- (d) Professional Liability and/or Errors & Omissions insurance to cover damages caused by negligent acts, errors or omissions related to the professional services, and performance of duties and responsibilities of the Consultant under this Contract in an amount with a combined single limit of not less than \$1,000,000 per occurrence and aggregate of \$3,000,000 for all claims per occurrence. In lieu of an occurrence based policy, Consultant may have claims-made policy in an amount not less than \$1,000,000 per claim and \$3,000,000 annual aggregate, if the Consultant obtains an extended reporting period or tail coverage for not less than three (3) years following the termination or expiration of the Contract.

Required and attached //  Waived by Bureau Director or designee //  Reduce by Bureau Director or designee

**Continuous Coverage; Notice of Cancellation:** The Consultant agrees to maintain continuous, uninterrupted coverage for the duration of the Contract. There shall be no termination, cancellation, material change, potential exhaustion of aggregate limits or non-renewal of coverage without thirty (30) calendar days written notice from Consultant to the City. If the insurance is canceled or terminated prior to completion of the Contract, Consultant shall immediately notify the City and provide a new policy with the same terms. Any failure to comply with this clause shall constitute a material breach of Contract and shall be grounds for immediate termination of this Contract.

**Additional Insured:** The liability insurance coverages, except Professional Liability, Errors and Omissions, or Workers' Compensation, shall be without prejudice to coverage otherwise existing, and shall name the City of Portland and its bureaus/divisions, officers, agents and employees as Additional Insureds, with respect to the Consultant's activities to be performed, or products or services to be provided. Coverage shall be primary and non-contributory with any other insurance and self-insurance. Notwithstanding the naming of additional insureds, the insurance shall protect each additional insured in the same manner as though a separate policy had been issued to each, but nothing herein shall operate to increase the insurer's liability as set forth elsewhere in the policy beyond the amount or amounts for which the insurer would have been liable if only one person or interest had been named as insured.

**Certificate(s) of Insurance:** Consultant shall provide proof of insurance through acceptable certificate(s) of insurance, including additional insured endorsement form(s) and all other relevant endorsements, to the City prior to the award of the Contract if required by the procurement documents (e.g., request for proposal), or at execution of Contract and prior to any commencement of work or delivery of goods or services under the Contract. The Certificate(s) will specify all of the parties who are endorsed on the policy as Additional Insureds (or Loss Payees). Insurance coverages required under this Contract shall be obtained from insurance companies acceptable to the City of Portland. The Consultant shall pay for all deductibles and premium. The City reserves the right to require, at any time, complete, certified copies of required insurance policies, including endorsements evidencing the required coverage.

**Subconsultant(s):** Consultant shall provide evidence that any subconsultant, if any, performing work or providing goods or service under the Contract has the same types and amounts of coverages as required herein or that the subconsultant is included under Consultant's policy.

#### **10. Ownership of Work Product**

All work product produced by the Consultant under this Contract is the exclusive property of the City. "Work Product" includes, but is not limited to: research, reports, computer programs, manuals, drawings, recordings, photographs, artwork and any data or information in any form. The Consultant and the City intend that such Work Product shall be deemed "work made for hire" of which the City shall be deemed the author. If for any reason a Work Product is deemed not to be a "work made for hire," the Consultant hereby irrevocably assigns and transfers to the City all right, title and interest in such work product, whether arising from copyright, patent, trademark, trade secret, or any other state or federal intellectual property law or doctrines. Consultant shall obtain such interests and execute all documents necessary to fully vest such rights in the City. Consultant waives all rights relating to work product, including any rights arising under 17 USC 106A, or any other rights of authorship, identification or approval, restriction or limitation on use or subsequent modifications. If the Consultant is an architect, the Work Product is the property of the Consultant-Architect, and by execution of this Contract, the Consultant-Architect grants the City an exclusive and irrevocable license to use that Work Product.

Notwithstanding the above, all pre-existing trademarks, services marks, patents, copyrights, trade secrets, and other proprietary rights of Consultant are and will remain the exclusive property of Consultant.

#### **11. EEO Certification**

The Consultant must be certified prior to Contract execution, as Equal Employment Opportunity Affirmative Action Employers as prescribed by Chapter 5.33.076 of the Code of the City of Portland.

**12. Equal Benefits**

Consultant must certify prior to Contract execution, that they do not discriminate by policy or practice in the provision of employee benefits between employees with domestic partners and employees with spouses as prescribed by Chapter 5.33.077 of the Code of the City of Portland.

**13. Successors in Interest**

The provisions of this Contract shall be binding upon and shall inure to the benefit of the parties hereto, and their respective successors and approved assigns.

**14. Severability**

The parties agree that if any term or provision of this Contract 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 Contract did not contain the particular term or provision held to be invalid.

**15. Waiver**

The failure of the City to enforce any provision of this Contract shall not constitute a waiver by the City of that or any other provision.

**16. Errors**

The Consultant shall promptly perform such additional services as may be necessary to correct services that do not meet the standards of Section 1 above or other items required by this Contract without undue delays and without additional cost.

**17. Governing Law/Venue**

The provisions of this Contract shall be interpreted, construed and enforced in accordance with, and governed by, the laws of the State of Oregon without reference to its conflict of laws provisions that might otherwise require the application of the law of any other jurisdiction. Any action or suits involving any question arising under this Contract must be brought in the appropriate court in Multnomah County Oregon.

**18. Amendments**

All changes to this Contract, including changes to the Statement of Work and Contract amount, must be made by written amendment and approved by the Chief Procurement Officer to be valid. Any amendment that increases the original Contract amount by more than 25% must be approved by the City Council to be valid.

**19. Business Tax Registration**

The Consultant shall obtain a City of Portland business tax registration number as required by PCC 7.02 prior to beginning work under this Contract.

**20. Prohibited Conduct**

The Consultant shall not hire any City employee who evaluated the proposals or authorized the award of this Contract for two years after the date the Contract was authorized without the express written permission of the City and provided the hiring is permitted by state law.

**21. Payment to Vendors and Subconsultants**

The Consultant shall timely pay all subconsultants and suppliers providing services or goods for this Contract.

**22. Access to Records**

The Consultant shall maintain all records relating to this Contract for three (3) years after final payment. The City may examine, audit and copy the Consultant's books, documents, papers, and records relating to this Contract at any time during this period upon reasonable notice. Copies of these records shall be made available upon request. Payment for the reasonable cost of requested copies shall be made by the City.

**23. Audits**

- (a) The City may conduct financial and performance audits of the billings and services specified in this Contract at any time in the course of the Contract and during the three (3) year period established by paragraph 22. Audits will be conducted in accordance with generally accepted auditing standards as promulgated in Government Auditing Standards by the Comptroller General of the United States Government Accountability Office.
- (b) If an audit discloses that payments to the Consultant exceed the amount to which the Consultant was entitled, the Consultant shall repay the amount of the excess to the City.

**24. Electronic Signatures**

The City and Consultant may conduct this transaction, including any Contract amendments, by electronic means, including the use of electronic signatures.

**25. Merger Clause**

This Contract encompasses the entire agreement of the parties, and supersedes all previous understandings and agreements between the parties, whether verbal or written.

**26. Dispute Resolution/Work Regardless of Disputes**

The parties shall participate in mediation to resolve disputes before conducting litigation. The mediation shall occur at a reasonable time after the conclusion of the Contract with a mediator jointly selected by the parties. Notwithstanding any dispute under this Contract, the Consultant shall continue to perform its work pending resolution of a dispute, and the City shall make payments as required by the Contract for undisputed portions of the work. In the event of litigation no attorney fees are recoverable. No different dispute resolution paragraph(s) in this Contract or any attachment hereto shall supersede or take precedence over this provision.

**27. Progress Reports:  Applicable /  Not Applicable**

If applicable, the Consultant shall provide monthly progress reports to the Project Manager as described in the Statement of the Work and Payment Schedule.

**28. Consultant's Personnel:  Applicable /  Not Applicable**

If applicable, the Consultant shall assign the personnel listed in the Statement of the Work and Payment Schedule for the work required by the Contract and shall not change personnel without the prior written consent of the City, which shall not be unreasonably withheld.

**29. Subconsultants**

The Consultant shall use the subconsultants identified in its proposals. The Consultant shall not change subconsultant's assignments without the prior written consent of the Chief Procurement Officer. The City will enforce all social equity Contracting and Disadvantaged, Minority, Women and Emerging Small Business (D/M/W/ESB) subcontracting commitments submitted by the Consultant in its proposals. Failure to use the identified D/M/W/ESB subconsultants without prior written consent is a material breach of contract.

For Contracts valued \$50,000 or more, the Consultant shall submit subconsultant payment and utilization information electronically, reporting ALL subconsultants employed in the performance of this agreement. More information on this process may be viewed on the City Procurement website at: <https://www.portlandoregon.gov/brrfs/75932>. Contact the PTE Contract Compliance Specialist for submission guidelines.

Subconsultants are responsible for meeting all requirements applicable to the Consultant under this contract, including compliance with City policies and all applicable federal, state, and local laws and regulations.

**30. Third Party Beneficiaries**

There are no third party beneficiaries to this Contract. Enforcement of this Contract is reserved to the parties.

**31. Conflict of Interest**

Consultant hereby certifies that, if applicable, its Contract proposal is made in good faith without fraud, collusion or connection of any kind with any other proposer of the same request for proposals or other City procurement solicitation(s), that the Consultant as a proposer has competed solely on its own behalf without connection or obligation to, any undisclosed person or firm. Consultant certifies that it is not a City official/employee or a business with which a City official/employee is associated, and that to the best of its knowledge, Consultant, its employee(s), its officer(s) or its director(s) is not a City official/employee or a relative of any City official/employee who: i) has responsibility in making decisions or ability to influence decision-making on the Contract or project to which this Contract pertains; ii) has or will participate in evaluation or management of the Contract; or iii) has or will have financial benefits in the Contract. Consultant understands that should it elect to employ any former City official/employee during the term of the Contract then that the former City official/Consultant employee must comply with applicable government ethics and conflicts of interest provisions in ORS Chapter 244, including but not limited to ORS 244.040(5) and ORS 244.047, and the City's Charter, Codes and administrative rules, including lobbying prohibitions under Portland City Code Section 2.12.080.

**32. Respectful Workplace Behavior**

The City of Portland is committed to a respectful work environment, free of harassment, discrimination and retaliation and other inappropriate conduct. Every individual has a right to work in a professional atmosphere where all individuals are treated with respect and dignity. The City's HR Rule 2.02 covers all employees with the City of Portland as well as consultants, vendors or consultants who provide services to the City of Portland. By signing this Contract/Agreement, the Consultant indicates compliance with all terms and conditions contained in this Contract including HR 2.02.

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**STATEMENT OF THE WORK  
AND PAYMENT SCHEDULE**

**OBJECTIVES**

The goal of the Bull Run Filtration Project (Project) is to develop and deliver a complex water treatment facility capable of complying with the Long Term 2 Enhanced Surface Water Treatment Rule. The Project will plan, design, and construct all treatment systems related to the Bull Run Supply including filtration, pre/post treatment systems, disinfection, and corrosion control. The On-site Design Services for the Bull Run Filtration Project will support the Portland Water Bureau (PWB or Water Bureau) with design engineering services for all on-site facilities. The Consultant's staff and their team of subconsultants (referred to collectively as Consultant) shall collaborate with the PWB, Brown & Caldwell, the on-site facilities Construction Manager/General Contractor (CM/GC), the off-site pipelines designer(s) and contractor(s), and other stakeholders. Consultant

shall provide project management for the on-site design services, geotechnical site investigation, on-site design, design quality management, assistance during construction, CM/GC support and interactions, assistance during commissioning and operations support, and other related services for the Project.

**GENERAL EXECUTION**

**PWB Activities**

The PWB Project Manager (PWB PM) will provide the Consultant a Notice to Proceed (NTP) stating the date the Consultant can begin work subject to the conditions of the Contract. The performance time of the Contract starts from the NTP date. PWB will provide overall Project direction and oversight and other specific services defined in the Consultant’s Statement of Work.

**Format of Deliverables**

Unless otherwise specified or approved by the PWB PM, all Project deliverables shall be submitted electronically in PDF format and a format appropriate to the product (e.g. documents in Word, spatial products as GIS shapefiles) along with twenty (20) hard copies.

**Exhibits**

Each of the Exhibits attached to this Contract, including, without limitation, the Statement of Work, Contract Budget, and Hourly Billing Rate Tables, are expressly incorporated herein and made part of this Contract. All references to this Contract, unless specified otherwise, shall include the Exhibits.

**STATEMENT OF WORK**

Consultant shall provide the services described in **Exhibit A – Statement of Work**.

**EXHIBITS**

- Exhibit A – Statement of Work
  - Attachment 1 – Preliminary Count of Drawings
- Exhibit B – Contract Budget Detail
- Exhibit C – Prime Consultant Hourly Billing Rate Table
- Exhibit C1 – Subconsultant Hourly Billing Rate Table
- Exhibit D – Baseline Design Schedule

**SCHEDULE OF WORK**

The Project Schedule consists of three major milestones defined below. The Consultant shall work closely with PWB and Brown & Caldwell, the on-site facilities CM/GC, and others to accomplish the project goals and deadlines. The Consultant shall provide the PWB PM a detailed Gantt chart schedule within one day of issuance of NTP in a format preapproved by the PWB PM.

Project Milestones	
Submit results and preliminary planning to OHA	November 30, 2020
Submit final construction plans and construction schedule to OHA	October 31, 2022
Water being served meets all surface water and Cryptosporidium treatment requirements	September 30, 2027

**CONSULTANT KEY PERSONNEL**

The Consultant shall assign the following key personnel to lead the work in the capacities designated below. No change in these assignments shall be made without written authorization from PWB via an amendment to the Contract that must be approved by the City Procurement Officer and the City Attorney’s Office.

Name	Company	Role on Project
Mark Graham	Stantec	Project Manager
Jude Grounds	Carollo Engineers	Project Engineer
Pete Kreft	Stantec	Senior Design Lead
Mike Price	Stantec	Senior Design Lead
Jeff McGraw	MWA Architects	Senior Design Lead
Jim Meyerhofer	Carollo Engineers	Senior Design Lead
Andrew Nishihara	Stantec	Task Lead
Ali Leeds	Carollo Engineers	Task Lead
Matt Huang	Carollo Engineers	Task Lead
Patrick Carlson	Carollo Engineers	Task Lead
Austin Peters	Carollo Engineers	Task Lead
Bill Carr	Carollo Engineers	Startup and Commissioning Lead
Qianru Deng	Carollo Engineers	Project Controls Lead
Jim Borchardt	Stantec	Independent Technical Reviewer
Reno Fiorante	Stantec	Independent Technical Reviewer
Tom Gillogly	Carollo Engineers	Independent Technical Reviewer

## SUBCONSULTANTS

The Consultant shall assign the following subconsultants listed below to perform work in the capacities designated. There is 20% of the total Contract dollars assigned to D/M/W/ESB subconsultants. Additional tasks for D/M/W/ESB subconsultants will be identified as the project progresses.

Firm	DMWESB Certification Type	Role on Project	Subcontract Amount (\$)
ABHT Structural	DBE, MBE #3230	Structural Engineering	1,581,000
Beaty Engineering	ESB #6818	Geotechnical Engineering	82,000
Benchmark Geolabs	ESB #11082	Geotechnical Lab	60,000
Carollo Engineers	None	Multi-Discipline Engineering	14,205,000
Cathodic Protection Engineering (CPE)	None	Corrosion Engineering	60,000
Elcon Associates	DBE, MBE #9251	Electrical and I&C Engineering	3,965,000
Emerio Design	DBE, MBE #5611	Civil Engineering	1,194,000
HK Electrical Engineers	None	Security	271,000
Lacamas Consulting	DBE, WBE #10286	Geological Engineering	100,000
Leland Saylor Associates	SDVBE #12004	Cost Estimating	868,000
McMillen Jacobs	None	Geotechnical Engineering	702,000
MWA Architects	None	Architecture	2,894,000
NNA Landscape Architecture	DBE, MBE, ESB # 11078	Landscape Architecture	1,051,000
Perimon Consulting Group	WBE, ESB # 10135	CAD/BIM	614,000
Strongwork Architecture	ESB # 10962	Architecture	722,000
Western States Soil Conservation	ESB #4914	Drilling	100,000

The City will enforce all social equity Contracting and Disadvantaged, Minority, Women and Emerging Small Business (D/M/W/ESB) subcontracting commitments submitted by the Consultant in its Proposal. For Contracts valued \$50,000 or more, the Consultant shall submit subconsultant payment and utilization information electronically, reporting ALL subconsultants employed in the performance of this agreement. More information on this process may be viewed on the City Procurement website at: <https://www.portlandoregon.gov/brfs/75932>. Contact the PTE Contract Compliance Specialist for submission guidelines.

### Subconsultant Reporting

The report shall include the following information:

- A. Date
- B. Contract number/Consultant's Name
- C. Project Title
- D. Contract Phase
- E. Contract Amount
- F. Subconsultant
- G. Subconsultant Name
- H. D/M/W/ESB Designation
- I. Role on Project under this Contract
- J. Original Subcontract Amount
- K. Amount Expended to Date
- L. Amount Remaining to be Paid
- M. Comment – include information on changes to work, if not utilizing subconsultant the reason why and when the subconsultant will be utilized.

## COMPENSATION

The maximum that the Consultant shall be paid on this Contract is **\$51,000,000** (hereafter the “not to exceed” amount). The breakdown of the “not to exceed” Contract Budget Detail amount is shown in Exhibit B, attached and hereby incorporated into this Contract. The budget provides a breakdown by Contract Tasks. The Consultant remains responsible if the estimate proves to be incorrect. Exceeding the “not to exceed” amount does not impose any liability on the City for additional payment. If work is completed before the “not to exceed” amount is reached, the Consultant’s compensation will be based on the Consultant’s bills previously submitted for acceptable work performed and approved. The Consultant is entitled to receive progress payments for its work pursuant to the Contract. The City will pay Consultant based on these invoices for acceptable work based on the Contract without additional compensation unless there is a change to the scope of work and an amendment to the Contract.

No-cost reallocation of funding between Contract tasks will be authorized only through an amendment to the Contract and provided the total “not to exceed” original Contract amount is not exceeded. A bimonthly report must be provided to PWB that includes any requested reallocation of task funds and details of the requested reallocation. A revised Contract Budget Detail must also be provided and submitted by the Consultant to the PWB PM and the PWB Contract Administration Branch (CAB) Representative via email at that time. A no-cost amendment will be required once the request is approved by PWB. All amendments to the Contract must be signed and approved by the approving authorities from both parties.

## HOURLY RATES

The Consultant shall be compensated in accordance with the hourly rates set forth in attached **Exhibit C – Prime Consultant Hourly Billing Rate Table**. In no way shall the cost of hours billed by the Consultant exceed the total Contract amount throughout the term of this Contract. The Water Bureau has authorized an annual rate increase of 2% for each year of this Contract. The first annual rate increase is estimated to be December 2020. **Subconsultant Hourly Billing Rates** are identified in **Exhibit C1**.

#### **SUBCONSULTANT COSTS**

Compensation for subconsultants shall be limited to the same restrictions imposed on the Consultant. Subconsultant services shall be billed at cost plus a 5% mark-up. Other Direct Expenses, as stated under *Standard Reimbursable Costs*, shall be billed at cost without mark-up. Allowable subconsultant services can only be marked-up once. For example, the Prime is not allowed to mark-up on a second-tier subconsultant's allowable expenses if it has already been marked-up by the Prime's subconsultant. Mark-up is not allowable when using intergovernmental resources to complete work and will not be accepted.

#### **STANDARD REIMBURSABLE COSTS**

The following costs shall be reimbursed without any mark-up: preapproved travel, including mileage (only travel beyond a 100-mile radius of Portland when specifically required by the Contract shall be reimbursed); daily per diem during travel and while to conduct work specifically associated to this Contract; document reproduction directly attributable to the Contract; preapproved food and non-alcoholic beverages for Project meetings directly attributable to the Contract; preapproved information technology equipment including computers, printers, and related equipment purchased by Consultant specifically for this Contract; and other preapproved reimbursable direct costs directly attributable to the Contract. There shall be no increased to any reimbursable(s) during the term of this Contract. The Consultant shall include a separate reimbursable line item on their submitted invoice(s) each month for applicable charges with all supporting documentation. This shall include any pre-approved travel and meals, while on approved travel (refer to Preapproval of Travel/Meals below).

#### **Travel**

It is the policy of the City that all travel shall be allowed only when the travel is essential to the normal discharge of the Consultant's responsibilities under the Contract. All travel must be for official City business only. All travel and lodging shall be conducted in the **most efficient and cost-effective manner**. Reimbursable direct costs include preapproved travel beyond a 100-mile radius of Portland. Travel shall be reimbursed as follows:

- **Airfare:** Itemized receipts are required, and reimbursement is based on actual expenses incurred. All Consultant representatives shall fly "coach class" unless Consultant personally pays the difference. One checked bag fee is permitted per flight.
- **Rail Travel:** Receipts are required, and reimbursement is based on actual expenses incurred. All Consultant representatives shall travel by "coach class" unless Consultant personally pays the difference. For overnight rail trips, reimbursement for sleeper accommodations is limited to one roomette per person. Bedrooms are allowed only when roomettes are not available, and Consultant must provide proof of no availability. Any upgraded travel requires Consultant to personally pay the difference.
- **Car rentals:** Itemized receipts are required, and reimbursement is based on actual expenses incurred. All Consultant representatives shall be limited to economy or compact-sized rental vehicles, unless there are three or more persons on official City business. Consultant shall pay the difference otherwise.
- **Taxis/Ride-sharing Services/Mass Transit/Parking/Tolls/Gas:** Receipts are required, and reimbursement is based on actual expenses incurred. Reimbursable tips are limited to 15%. Use of mass transit is strongly encouraged.
- **Private Vehicle Usage:** This is not authorized under this Contract. No gas expenses will be reimbursed for private vehicle usage under this Contract.
- **Meals:** Receipts are not required (but must be made available upon request or for an audit) and reimbursement is based on the U.S. General Services Administration's (GSA) Meal and Incidental Expenses (M&IE) rate and guidelines per the travel year and destination – <https://www.gsa.gov/travel/plan-book/per-diem-rates>.
- **Lodging:** Receipts are required, and reimbursement is based on GSA rates for the month and destination – <https://www.gsa.gov/travel/plan-book/per-diem-rates>. Expenses beyond the allowable GSA rates will NOT be reimbursed.

It is the responsibility of the Consultant to request and maintain in their possession itemized receipts for air, lodging, ground transportation, and registration fee (if any) expenses. Under no circumstance will the City reimburse the aforementioned expenses without a receipt.

**All travel shall be pre-approved in writing by the PWB PM with the Consultant providing an estimated total cost of the travel.** Reimbursements for travel shall include itemized receipts AND a summary page with the following information: employee name, travel purpose, travel to/from locations, dates of travel, and list of expenditures for airfare, lodging, ground transportation, registration fee, and daily per diem requested. Daily per diem must be listed per day to reflect the amount charged per day minus any deductions for provided meals.

When submitting invoices, the Consultant shall include supporting documentation they have received from the PWB PM authorizing travel/meals along with all travel and meal receipts. PWB will not pay Consultant or their subconsultants for overnight or extended parking costs.

#### **Preapproval of Travel/Meals**

All travel and meals must be preapproved by the PWB PM in writing. The Consultant is required to notify the PWB PM regarding all travel they anticipate, including any travel beyond a 100-mile radius of Portland and indicate why this travel would be necessary.



When requesting authorization for travel and meals, the Consultant shall include the estimated date/times when Key Personnel, either employed with the Consultant or as a subconsultant on the Contract, will be required to travel and how this is associated with the Contract as well as indicate the location and estimated costs for that travel. The Consultant shall include the purpose and reason why a local member would not be available to perform the work and why an alternate communication method could not be used. The Consultant shall provide the preapproved email or letter that authorized travel when submitting their monthly invoice for review and approval.

#### **Food and/or non-alcoholic beverages**

Food and/or beverages may be provided to participants at training sessions, meetings or conferences that are allowable activities and have been preapproved by the PWB PM in writing. In addition, the agenda, list of participants and approval from the PWB PM must be included as an attachment to the monthly invoice submitted for the scheduled event. Expenses incurred for food and/or beverages provided at training sessions, meetings, or conferences must satisfy the following three (3) tests:

Test 1: The cost of the food and/or beverages provided is considered to be reasonable in cost.\*

Test 2: The food and/or beverages provided are incidental to a work-related event.

Test 3: The food and/or beverages provided are not related directly to amusement and/or social events.

Any event where alcohol is being served is considered a social event and, therefore, costs associated with that event are not allowable. \*Reasonable in cost shall be defined as a price that is consistent with what a reasonable person would pay in the same or similar circumstances for the same business or for the same or similar item.

The Consultant and their subconsultants shall adhere to the following applicable definitions for food and beverages:

- Food and/or beverages retain their common meanings.
- Food and/or beverages are considered in the context of formal meals and in the context of refreshments served at short, intermittent breaks during an activity that supports the project under this Contract between the Consultant and the Water Bureau.
- Beverages do not include alcoholic drinks.

#### **Gratuity**

Gratuity for food, transportation, and other allowable expenses will be reimbursed at the maximum rate of 15%. Any additional tipping beyond 15% shall be paid by the Consultant.

**Personal expenditures or expenditures not related to the Contract are not eligible for reimbursement.**

#### **PROGRESS PAYMENTS**

Compensation to the Consultant shall be based on the following:

- Invoices submitted to the PWB Finance Department via email and includes the appropriate required information as outlined in the Contract and includes all supporting documentation relating to charges expressed on the invoice.
  - The invoice shall be emailed to [wbaps@portlandoregon.gov](mailto:wbaps@portlandoregon.gov).
- Detailed monthly Project Progress Reports submitted to the PWB PM as required.
  - The monthly Project Progress Report shall be emailed to the PWB PM.
- Monthly Utilization Reports (MUR). For Contracts valued \$50,000 or more, the Consultant shall submit subconsultant payment and utilization information electronically, reporting ALL subconsultants employed in the performance of this agreement. More information on this process may be viewed on the City Procurement website at: <https://www.portlandoregon.gov/brfs/75932>. Contact the City's Procurement Office's PTE Contract Compliance Specialist for submission guidelines.
  - The MUR shall be emailed to the PWB PM and the City Procurement Compliance Manager, [Paula.Wendorf@portlandoregon.gov](mailto:Paula.Wendorf@portlandoregon.gov).

The Consultant is required to follow Generally Accepted Accounting Principles (GAAP). Personal expenditures or expenditures not related to the Project or part of the Contract are not eligible for reimbursement. On or before the 15th of each month, the Consultant shall submit to the PWB Accounts Payable Department an invoice for work performed by the Consultant during the preceding month.

The Consultant shall enter all pertinent information below on their invoice in order for the City to review and authorize processing of invoices for payment. Invoices shall be emailed to: [wbaps@portlandoregon.gov](mailto:wbaps@portlandoregon.gov).

- A. Contract Number and Water Bureau's Project Title
- B. Invoice date
- C. Date range during which the services are being invoiced for work provided
- D. Invoice number that ends in a "##", which represents the correct invoice sequence of issue. The last invoice submitted on the Project must be clearly labeled "Final Invoice"
- E. PWB PM's name
- F. Original Contract total, not to exceed amount broken out by: Task and Subtask (as applicable)

- G. Reflect additional funds associated with a Contract amendment(s) and show the revised/current Contract amount
- H. Paid-to-date amount showing the amount submitted prior to the current invoice (regardless of payment status)
- I. Amount being invoiced for the current invoice
- J. Balance remaining on the Contract after receipt of payment for the current invoice
- K. Consultant shall describe all services performed with particularity and by whom it was performed (Consultant's individuals or subconsultant, labor category, direct labor rate, hours worked during the period) and shall itemize and explain all expenses for which reimbursement is claimed. If reimbursable expenses are authorized, identify by line item categories: 1) Travel Expenses, and 2) General Reimbursable Expenses. Note: Invoices for Basic Services under a specific Task shall be for completed Basic Services only and shall indicate the percentage of the total Basic Services for that Task that the amount invoiced represents
- L. The Consultant shall also attach photocopies of claimed reimbursable expenses, as applicable and preapproved authorization document from the PWB PM
- M. The Consultant shall stamp and approve all subconsultant invoices and note on subconsultant invoice what they are approving as "billable" under the Contract
- N. The billing from the Consultant must clearly roll up labor and reimbursable costs for the prime and subconsultants – matching the subconsultant invoices

*Prior to initial billing, the Consultant shall develop a billing format for approval by the City. Submission of the draft billing document shall be emailed to the PWB PM and CAB for final review and approval.*

**PAYMENT TERMS: Net 30 Days**

The City shall pay all amounts to which no dispute exists within 30 calendar days of receipt of the invoice. Payment of any bill, however, does not preclude the City from later determining that an error in payment was made and from withholding the disputed sum from the next progress payment until the dispute is resolved.

The Consultant shall make full payment to its subconsultants within 10 business days following receipt of any payment made by the City to the Consultant.

**ACH Payments**

It is the City's policy to pay its Consultant invoices via electronic funds transfers through the automated clearing house (ACH) network. To initiate payment of invoices, Consultant shall execute the City's standard ACH Vendor Payment Authorization Agreement.

Upon verification of the data provided, the Payment Authorization Agreement will authorize the City to deposit payment for services rendered directly into Consultant accounts with financial institutions. All payments shall be in United States currency.

**CONFIDENTIALITY AND NON-DISCLOSURE**

All deliverables under the Contract are considered confidential until and unless determined otherwise by the PWB. Final decisions about what is or is not confidential will be made by the PWB Chief Engineer and the PWB Operations Director.

**Confidential Information.** Consultant acknowledges that it and its employees, subconsultants or agents may, in the course of performing the Services under this Contract, be exposed to or acquire information that is confidential to PWB or PWB's clients. Any and all information of any form obtained by Consultant or its employees or agents in the performance of this Contract shall be deemed to be confidential information of PWB ("Confidential Information").

**Non-Disclosure.** Consultant agrees to hold Confidential Information in strict confidence, using at least the same degree of care that Consultant uses in maintaining the confidentiality of its own confidential information, and not to copy, reproduce, sell, assign, license, market, transfer or otherwise dispose of, give, or disclose.

The Consultant and its employees, subconsultants or agents shall be required to sign a Confidentiality/Non-Disclosure Agreement when required and directed by the PWB's PM. The PWB's PM will maintain signed Confidentiality/Non-Disclosure Agreements in the Project file for record.

WORKERS' COMPENSATION INSURANCE STATEMENT

IF YOUR FIRM HAS CURRENT WORKERS' COMPENSATION INSURANCE, CONSULTANT MUST SIGN HERE:

I, undersigned, am authorized to act on behalf of entity designated below, and I hereby certify that this entity has current Workers' Compensation Insurance.

Consultant Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Entity: \_\_\_\_\_

IF YOUR FIRM DOES NOT HAVE CURRENT WORKERS' COMPENSATION INSURANCE, CONSULTANT MUST COMPLETE THE FOLLOWING INDEPENDENT CONSULTANT CERTIFICATION STATEMENT:

As an independent Consultant, I certify that I meet the following standards:

1. The individual or business entity providing labor or services is registered under ORS Chapter 701, if the individual or business entity provides labor or services for which such registration is required;
2. Federal and state income tax returns in the name of the business or a business Schedule C or form Schedule F as part of the personal income tax return were filed for the previous year if the individual or business entity performed labor or services as an independent Consultant in the previous year; and
3. The individual or business entity represents to the public that the labor or services are to be provided by an independently established business. Except when an individual or business entity files a Schedule F as part of the personal income tax returns and the individual or business entity performs farm labor or services that are reportable on Schedule C, an individual or business entity is considered to be engaged in an independently established business when four or more of the following circumstances exist. Consultant: check four or more of the following:

- \_\_\_ A. The labor or services are primarily carried out at a location that is separate from the residence of an individual who performs the labor or services, or are primarily carried out in a specific portion of the residence, which portion is set aside as the location of the business;
- \_\_\_ B. Commercial advertising or business cards as is customary in operating similar businesses are purchased for the business, or the individual or business entity has a trade association membership;
- \_\_\_ C. Telephone listing and service are used for the business that is separate from the personal residence listing and service used by an individual who performs the labor or services;
- \_\_\_ D. Labor or services are performed only pursuant to written Contracts;
- \_\_\_ E. Labor or services are performed for two or more different persons within a period of one year; or
- \_\_\_ F. The individual or business entity assumes financial responsibility for defective workmanship or for service not provided as evidenced by the ownership of performance bonds, warranties, errors and omission insurance or liability insurance relating to the labor or services to be provided.

\_\_\_\_\_  
Consultant Signature

\_\_\_\_\_  
Date

FOR CITY USE ONLY

**PROJECT MANAGER-COMplete ONLY IF CONSULTANT DOES NOT HAVE WORKER'S COMPENSATION INSURANCE**  
ORS 670.600 Independent Consultant standards. As used in various provisions of ORS Chapters 316, 656, 657, and 701, an individual or business entity that performs labor or services for remuneration shall be considered to perform the labor or services as an "independent consultant" if the standards of this section are met. The Contracted work meets the following standards:

1. The individual or business entity providing the labor or services is free from direction and control over the means and manner of providing the labor or services, subject only to the right of the person for whom the labor or services are provided to specify the desired results;
2. The individual or business entity providing labor or services is responsible for obtaining all assumed business registrations or professional occupation licenses required by state law or local government ordinances for the individual or business entity to conduct the business;
3. The individual or business entity providing labor or services furnishes the tools or equipment necessary for performance of the Contracted labor or services;
4. The individual or business entity providing labor or services has the authority to hire and fire employees to perform the labor or services;
5. Payment for the labor or services is made upon completion of the performance of specific portions of the project or is made on the basis of an annual or periodic retainer.

\_\_\_\_\_  
City Project Manager Signature

\_\_\_\_\_  
Date

**CONSULTANT SIGNATURE:**

This Contract may be signed in two (2) or more counterparts, each of which shall be deemed an original, and which, when taken together, shall constitute one and the same Agreement.

The parties agree the City and Consultant may conduct this transaction, including any Contract amendments, by electronic means, including the use of electronic signatures.

I, the undersigned, agree to perform work outlined in this Contract in accordance to the STANDARD CONTRACT PROVISIONS, the terms and conditions, made part of this Contract by reference, and the STATEMENT OF THE WORK made part of this Contract by reference; hereby certify under penalty of perjury that I/my business am not/is not in violation of any Oregon tax laws; hereby certify that my business is certified as an Equal Employment Opportunity Affirmative Action Employer and is in compliance with the Equal Benefits Program as prescribed by Chapters 5.33.076 and 5.33.077 of Code of the City of Portland; and hereby certify I am an independent consultant as defined in ORS 670.600.

**Stantec Consulting Services, Inc.**

BY: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

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## GENERAL EXECUTION

### *Definitions and Abbreviations*

The following abbreviations and definitions are used throughout this document

**Table 1. Definitions of Terms and Abbreviations**

Term or Abbreviation	Definition
AACE	Association for the Advancement of Cost Engineering
ADA	Americans with Disabilities Act
AHJ	Authority Having Jurisdiction
BC	Brown and Caldwell
BCA	Business Case Analysis
BCOE	Biddability, Constructability, Operation, and Environmental
BDR	Basis of Design Report
BIM	Building Information Modeling
BRWTP	Bull Run Water Treatment Plant
CAD	Computer Aided Design
CFD	Computational Fluid Dynamics
CM/GC	Construction Manager/General Contractor
Consultant	Stantec and subconsultants comprising the on-site design consultant team
CSI	Construction Specifications Institute
DBE	Disadvantaged Business Enterprise
DBP	Disinfection By-Product
DPM	Design Production Manual
DQMP	Design Quality Management Plan
ESB	Emerging Small Business
GIS	Geographic Information System
GMP	Guaranteed Maximum Price
HAZOP	Hazard and Operability
HGL	Hydraulic Grade Line
HI	Hydraulic Institute
HMIS	Hazardous Materials Inventory Statement
HMMP	Hazardous Materials Management Plan
HVAC	Heating, Ventilation, and Air Conditioning
I&C	Instrumentation and Control



<b>Term or Abbreviation</b>	<b>Definition</b>
ITR	Independent Technical Reviewer
LCR	Lead and Copper Rule
LEED	Leadership in Energy and Environmental Design
LOD	Level of Development
LOS	Level of Service
LT2	Long Term 2 (Enhanced Surface Water Treatment Rule)
MBE	Minority Business Enterprise
MCC	Motor Control Center
MGD	Million Gallons per Day
NTP	Notice to Proceed
O&M	Operations & Maintenance
OHA	Oregon Health Authority
OPCC	Opinion of Probable Construction Cost
P&ID	Process and Instrumentation Diagram
PCO	Potential Change Order
PCW	Post-Consumer Waste
PDF	Portable Document Format
PDR	Project Definition Report
PE	Project Engineer
PLC	Programmable Logic Controller
PM	Project Manager
PMIS	Program Management Information System
PMO	Program Management Office
PMWP	Project Management Work Plan
PPE	Personal Protective Equipment
Program	All aspects of the Bull Run Filtration Project, including management, design, construction and commissioning of on-site and off-site facilities
Project	Planning, design, construction, startup and commissioning of the Bull Run Filtration facilities located on the filtration plant site
PE	Project Engineer
Project Team	Portland Water Bureau and Program Support Consultant (Brown and Caldwell and subconsultants)
PWB or Bureau	Portland Water Bureau
QA/QC	Quality Assurance/Quality Control

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<b>Term or Abbreviation</b>	<b>Definition</b>
RCD	Reliability-Centered Design
RCM	Reliability-Centered Maintenance
RFC	Request for Clarification
RFI	Request for Information
RFP	Request for Proposal
SCADA	Supervisory Control and Data Acquisition
SDVBE	Service-Disabled Veteran-Owned Business Enterprise
SOP	Standard Operating Procedure
SPCC	Spill Prevention, Control and Countermeasure
TESC	Temporary Erosion and Sediment Control
TM	Technical Memorandum
VDC	Virtual Design and Construction
VFD	Variable Frequency Drive
WBE	Women Business Enterprise
WIFIA	Water Infrastructure Finance and Innovation Act
WTP	Water Treatment Plant

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***Project Phasing***

The Project shall be organized into three phases, as shown in Table 2, with preliminary design performed during Phase 1, detailed design and support for early construction activities performed in Phase 2, and the balance of the construction, commissioning and operations support tasks performed in Phase 3. As each Phase nears completion, Portland Water Bureau (PWB) and Stantec Consulting (Consultant) shall review the scope, schedule and budget for the upcoming Phase and make adjustments as mutually agreeable. The work shall be authorized by an initial contract with a term not to exceed five years, and a second authorization shall extend the contract for a period not to exceed an additional five years.

**Table 2. Tasks by Phase**

<b>Phase</b>	<b>Tasks</b>
Phase 1 – Preliminary Design	Task 1. Project Management Task 2. Preliminary Design
Phase 2 – Detailed Design and Early Construction	Task 1. Project Management Task 3. Detailed Design Task 4. Construction & Commissioning Support (Early Construction)
Phase 3 – Construction, Commissioning and Operations Support	Task 1. Project Management Task 4. Construction & Commissioning Support Task 5. Operations Support

***Baseline Project Description***

This Statement of Work and the associated budget and schedule have been prepared based on the following anticipated project configuration. The treatment facility will be a conventional granular media filtration plant on a 90-acre site owned by PWB on Carpenter Lane located outside the Bull Run Watershed in unincorporated Multnomah County. Baseline project configuration design criteria are listed in Table 3.

**Table 3. Baseline Project Configuration and Design Criteria**

<b>Element or Design Criteria</b>	<b>Value</b>
Capacity	160 MGD Initial 240 MGD Ultimate
Water Treatment Process	Rapid mix Flocculation Sedimentation Ozonation High-Rate Granular Media Filtration Treated Water Storage Post-filtration Chlorine Disinfection Chloramination Corrosion Control
Residuals Treatment Process	Backwash Equalization and Clarification Solids Thickening Mechanical Dewatering Supplemental Sludge Drying Lagoons Filter to Waste Recycled Water Handling
Ancillary Facilities	Overflow Basin Stormwater Treatment and Storage Solar Panels
Operations and Maintenance Facilities	Administration Building (including operations, laboratory, and public space for tours/education) Chemical Building (including ozone generation) Solids Handling Building Maintenance Building Storage Warehouse

In accordance with the City’s Green Building Policy, the project will meet the US Green Building Council’s Leadership in Energy and Environmental Design (LEED) Building and Construction (BD+C) at the Gold level and/or achieve Living Building Challenge status for occupied spaces. In addition, the project will conform to Binding City Policy ENB-9.01 - Green Building Policy and other City sustainability and natural environment policy requirements in the following areas:

- Energy efficiency
- Commissioning
- Renewable energy
- Eco-roofs
- On-site stormwater management and Salmon-Safe best practices (per Salmon-Safe Inc.)
- Bird-friendly design
- Use of native and drought-tolerant plants
- Alternative transportation support
- Material reuse and recycling (minimum 85% waste diversion)
- Environmentally preferable, low-carbon and least-toxic products

Specific approaches to implementing these policies will be determined during Preliminary Design.

***Project Funding***

The Project is funded by the City of Portland. Although no federal funding has been accepted to date, additional Project funding may occur through the Water Infrastructure Finance and Innovation Act (WIFIA) Program, a federal program providing loans to qualifying water infrastructure projects. Detailed design and procurement documents will reflect requirements of funding sources, as defined during preliminary design.

***Project Schedule***

Oregon Health Authority (OHA) and PWB have entered into a bilateral compliance agreement establishing a compliance schedule for meeting the requirements of the Long Term 2 Enhanced Surface Water Treatment Rule (LT2). The compliance schedule gives PWB just under 10 years to plan, design, and construct a water treatment facility.

Key dates in the compliance schedule include:

- November 30, 2020: Submit pilot results and preliminary planning to OHA
- October 31, 2022: Submit final construction plans and construction schedule
- September 30, 2027: Water being served meets all surface water and *Cryptosporidium* treatment requirements

A baseline schedule for the planning, design and construction of the Project is provided as Exhibit D – Baseline Design Schedule. This schedule is subject to negotiated revisions through collaboration with the Consultant, Project Team, the on-site facilities Construction Manager/General Contractor (CM/GC), the off-site designer(s) and contractor(s), and other stakeholders.

Unless otherwise noted, activity durations described in this document refer to City working days.

### ***Project Organization***

PWB currently has a contract with Brown and Caldwell (BC) to act as the Program Management and Support Services consultant and together make up the Project Team. BC is providing PWB with project definition, pilot studies, project management, project controls, permitting, value engineering, Reliability-Centered Design (RCD), Operations & Maintenance (O&M) engagement, partnering facilitation, stakeholder engagement, community outreach, and other related support services for the Project. Consultant will collaborate with and report to the Project Team as described in this Statement of Work.

The Project will be delivered using a CM/GC procurement method, with the CM/GC for on-site facilities being under contract in early 2020. Off-site facilities will be designed and constructed under separate engineering and construction contracts.

### ***Format of Deliverables***

Unless otherwise specified or approved by the PWB Project Manager (PM), all deliverables (such as reports, draft documents, data, interim findings, drawings, schematics, training, meeting presentations, final drawings, and reports) shall be submitted electronically in Portable Document Format (PDF) format and a format appropriate to the product (e.g. documents in Word, spatial products as Geographic Information System [GIS] shapefiles). Unless otherwise specified by PWB, Consultant shall prioritize submitting applicable deliverables electronically, and any paper-based deliverables shall be printed double-sided and in bindings or report covers that are fully recyclable, preferably using materials containing post-consumer waste (PCW) recycled content.

### ***Meetings and Workshops***

Consultant shall coordinate workshops and meetings between the Consultant, PWB staff, and others as necessary for effective team coordination. Meetings may be held at Consultant Team's downtown Portland offices, PWB offices, or elsewhere as mutually agreed by Consultant and PWB. Where appropriate and mutually agreed, conference calls or web-based conferencing systems may be used, allowing some or all meeting attendees to participate remotely. Consultant shall prepare and distribute agendas and background materials at least seven calendar days in advance of meetings. Following the event, Consultant shall prepare and distribute draft meeting summaries no later than three days following meetings, PWB shall return comments within three days, and final meeting summaries shall be distributed no later than three days after receipt of PWB comments.

### ***PWB Reviews***

Unless otherwise noted, deliverables will be reviewed by PWB as follows:

- Design Milestone Submittals (Basis of Design Report [BDR], 30%, 60%, 90%, 100%): 30 business days
- Draft O&M Manuals: 30 business days
- Draft permit applications: 15 business days
- Technical Memorandums (TMs), other reports: 15 business days
- Meeting and workshop summaries: 3 business days

PWB will provide consolidated and tabulated comments in a format agreed upon by PWB and Consultant. Consultant shall provide an initial response to PWB comments within two weeks identifying comments to be incorporated, comments rejected (with a reason for rejection) and comments which require additional discussion. Consultant will provide a full response to all comments, including resolution of comments initially identified as requiring additional discussion, with the subsequent milestone deliverable.

## TASK 1. PROJECT MANAGEMENT

Project Management includes work associated with organization, control, monitoring, scheduling, invoice preparation, and all other activities inherent with the Consultant's management of in-house and subconsultant work.

### *Subtask 1.1 Project Coordination and Direction*

Consultant shall coordinate and direct the activities of Consultant (in-house and subconsultant) staff, and manage communications between Consultant staff and other parties, including the Project Team, the off-site design consultant team, and the construction teams for on-site and off-site facilities.

Consultant shall develop a Project Management Work Plan (PMWP) that describes the procedures that shall be used to manage project scope, schedule, budget and quality. A draft PMWP shall be distributed for PWB review within 10 days of Notice to Proceed (NTP). Approximately five days after delivering the draft, Consultant's PM shall meet with PWB to review it, then PWB shall return comments within 10 business days of receipt of the draft, and a final PMWP shall be delivered within 5 days of receipt of PWB comments. The PMWP shall be updated at significant project milestones, or if a significant change is made to the Project scope, schedule or budget.

The PMWP shall include the following sections, with figures, logs and tables indicated:

- Project Charter
- On-Site Design Team
  - Organization chart
  - Roles and responsibilities
  - Contact information
- Scope of Work
  - Work Breakdown Structure
  - List of meetings and workshops
  - List of deliverables, including responsibilities and due dates
- Financial Management
  - Budget
  - Design and construction cost control
- Project Schedule
- Change Management
  - Change Log
- Risk Management
  - Risk Register
- Quality Management
  - Quality Management Plan
- Communications and Knowledge
  - Document Control Procedures
  - Lines of Communication
- Health and Safety
  - Project-specific Health and Safety Plan

Project coordination meetings will include the following:

- Half-day kickoff meetings at the start of each Phase (Preliminary Design, Detailed Design and Construction)
- Full-day initial site visit and area tour
- Weekly Project coordination meetings, two hours in duration, at the Project Office, attended by the Consultant PM and Project Engineer (PE)
- Weekly internal design team coordination meetings, lasting up to 2 hours, conducted at Consultant's office using a web-based conference to allow participation by remote staff.
- Other meetings with Project Team as requested (up to two additional 2-hour meetings per month)
- Project close-out meeting

Technical meetings will be coordinated and budgeted under each technical activity.

### *Assumptions*

- Design schedule and budget will be provided to PWB in Primavera P6. The schedule will be cost- and resource-loaded to meet standards established by the Project Team and documented in the PMWP.

- Project management and control plans will incorporate the Program Management Information System (PMIS) managed by BC.

*Consultant Activities*

- Prepare, maintain and update PMWP and sub-plans
- Implement PMWP and sub-plans
- Manage Consultant team access to PWB’s file sharing site for exchange of electronic documents
- Coordinate kickoff meetings with Project Team at the beginning of each Phase (Preliminary Design, Detailed Design, Construction)
- Attend weekly Project management meetings (up to 2 hours, attended by PM and PE)
- Attend weekly Program coordination meetings (up to 2 hours, attended by PM, PE and 1 other Consultant team member)
- Attend 2 program collaboration meetings per month (up to 2 hours, attended by PM, PE and up to 3 other Consultant team members)
- Assist in preparation for and attend quarterly Executive Briefings (attended by PM and PE)

*Deliverables*

- Draft and Final PMWP
- Updates to PMWP at Project milestones
- Meeting agendas and summaries
- Input to monthly Progress report regarding Change Management and Risk Management

**Subtask 1.2 Project Controls**

Consultant shall gather, process and report information about the status of the Project and forecast future performance. Project control activities will be directed by the PMWP and standards established by the Project Team.

*Activities*

- Maintain document management system
- Develop schedule, budget and earned value tracking and reporting procedures
- Prepare monthly project controls reports, including schedule progress, earned value, actual cost, and cash flow projection
- Prepare monthly invoices and subconsultant utilization reports

*Assumptions*

- PWB will review monthly invoices and progress reports
- PWB will provide timely notification to Consultant of any concerns
- Project Team will coordinate activities and schedules of Consultant and other Program participants
- Project schedule will be re-baselined twice: following completion of Preliminary Design and Detailed Design

*Deliverables*

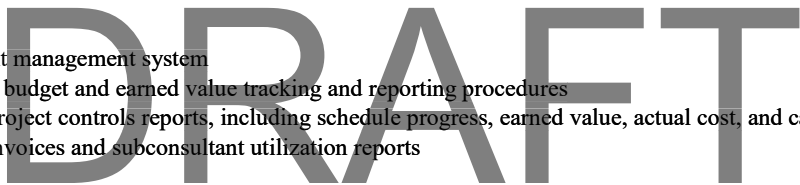
- Monthly invoices (payment requests) and project reports

**Subtask 1.3 Quality Management**

Consultant shall prepare a plan for assuring the quality of the work produced by the Consultant, including appropriate activity initiation, execution, and review steps. The Design Quality Management Plan (DQMP) shall be coordinated with the Bull Run Treatment Program Quality Management Plan, the PMWP and included in PMWP submittals. The DQMP shall include quality assurance/quality control (QA/QC) procedures for each major category of work product, including technical memoranda and a DQMP for contract documents. Quality management procedures for construction-phase activities shall be added to the DQMP when the PMWP and DQMP are updated prior to initiation of construction. The DQMP shall include procedures for electronic review of deliverables using SharePoint, Bluebeam or other software platforms as mutually determined by Consultant and Project Team.

A Consultant Quality Manager shall lead development and implementation of the DQMP. The Consultant shall review project activities and work products for compliance with the DQMP and prepare a monthly report on project quality as part of the project status report. The Consultant shall coordinate Independent Technical Reviewer (ITR) and Discipline Reviewer comments at each design milestone.

Budget for implementation of the DQMP shall be included within each task, and actual QA/QC costs shall be tracked.



### *Assumptions*

- PWB will review DQMP for conformance with PWB quality expectations
- Consultant will follow Program QA/QC procedures and use QA/QC forms and templates provided by the Project Team

### *Deliverables*

- Draft and Final DQMP
- Purchase of up to \$15,000 in software to support electronic reviews
- Four minor DQMP Updates: at start of 30%, 60% 90% Designs and at start of Task 4 Construction & Commissioning Support
- Participation in up to four quality audits conducted by the Project Team
- Monthly quality reports

## **TASK 2. PRELIMINARY DESIGN**

Consultant shall review existing information, gather field data, prepare and complete analyses, conduct workshops, and summarize findings, analyses, and recommendations in a BDR, as described in this section.

### ***Subtask 2.1 Information Gathering***

Consultant shall thoroughly review previously-prepared work products provided by PWB – including the Project Definition Report (PDR) and preliminary geotechnical investigations – and notify PWB of the need to obtain clarifications, approvals for modifications, or any additional efforts by the PWB to make the products acceptable for incorporation into the detailed design.

Consultant shall create an information request log and develop an information catalog to organize the requested information as it is submitted to the Consultant. 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. Consultant shall notify PWB immediately of any data gaps or design deficiencies identified in review of preliminary planning work.

### *Consultant Activities*

- Review previously-prepared work products
- Review interim versions and the final draft PDR
- Establish and maintain Information Request Log

### *Assumptions*

- PWB will provide information within two weeks of receiving a request
- PWB will perform topographic surveying
- Consultant shall be entitled to reasonably rely upon the information and data provided by PWB or obtained from generally acceptable sources within the industry without independent verification except to the extent such verification is expressly included in the Statement of Work

### *Deliverables*

- Information Request Log

### ***Subtask 2.2 Geotechnical Field Exploration and Testing***

Consultant shall proceed with geotechnical investigations as early as possible, but only after the Site plan layout has been established (likely after the Civil and Site Planning Workshop).

Consultant shall conduct the following activities to gather the necessary geotechnical information for design and construction:

- Review available geotechnical exploration results at the site conducted during the planning phase of the project, as described in Subtask 2.1
- Review available geological, seismic and landslide maps to access the preliminary geotechnical conditions and potential geohazards at the site
- Conduct preliminary seismic hazards analyses to assess the landslide, soil liquefaction and lateral spreading risk potentials and affected areas on the site
- Identify data gaps and develop a supplemental geotechnical exploration program based on the data review and site layout concepts/alternatives. The supplemental geotechnical exploration program will consist of up to:

- 15 soil borings to a depth of 100' for each boring
- 15 Cone Penetration Tests to a depth of 100' for each test
- One (1) shear wave velocity measurement using down hole suspension logging technique
- Conduct laboratory testing on soil samples collected from the supplemental geotechnical exploration program. The laboratory tests will consist of up to:
  - 200 soil moisture content tests
  - 30 gradation tests
  - 30 Atterberg Limits tests
  - Two (2) cyclic shear tests (including post cyclic consolidation and shear testing) on undisturbed soil samples
  - Four (4) corrosivity tests
  - Two (2) Proctor compaction tests
- Summarize the geotechnical review, data collection and subsurface conditions into a Geotechnical Data Report

*Consultant Activities*

- Perform site geotechnical and field exploration and testing

*Assumptions*

- PWB to obtain access permits (if needed) for geotechnical explorations
- Explorations do not include environmental assessments, and the site is assumed to be clean regarding contaminated and hazardous materials

*Deliverables*

- Draft and Final Geotechnical Work Plan and Health & Safety Plan for the Supplemental Explorations
- Geotechnical Work Plan Review Workshop
- Draft and Final Geotechnical Data and Engineering Report
- Geotechnical Reports Review Workshop

***Subtask 2.3 Outreach and Equity Support***

Consultant shall support equity, public outreach and public involvement efforts led or approved by the Project Team, such as providing technical information and attending public meetings.

*Assumptions*

- Up to 520 hours of support shall be provided for generation of materials and meeting attendance as requested

*Deliverables*

- Technical content for public information and outreach materials

***Subtask 2.4 Property and Permitting Support***

Consultant shall support permitting process led by the Project Team. As part of the BDR, Consultant shall note land use permitting impacts on the design and identify anticipated building and construction permitting requirements for the Project. For each building and construction permit, Consultant shall provide to the Project Team: the status of each permit, the permitting agency, contact information, a preliminary cost estimate for each permit (fees and preparation time), and schedule for delivering the required permitting to meet the timeline for start of construction. The schedule shall include time allowed for PWB review, permit submission deadlines, anticipated meeting requirements, time required by the jurisdictional authority for review and public comment, and float time to address public comment and additional submittals that may be required of the permitting agency, as well as identifying the predecessors for each permit in the schedule.

As required in the Project Team's Permitting Plan, Consultant shall provide information, submissions, corrections and additions requested by Project Team to obtain reviews and permits.

*Assumptions*

- PWB shall pay all permit fees and assessments
- Permitting activities will be led by the Project Team, and include cultural, environmental, land use, traffic and other technical evaluations



### *Deliverables*

- Table of building and construction permitting requirements for use by Project Team in updating the Permitting TM
- Technical information for permit applications
- Input to Draft and Final Permitting Memorandum and subsequent updates

### ***Subtask 2.5 Pilot Testing Support***

Consultant shall review the draft pilot plant study work plan and provide comments for any suggested changes to the plant setup, operating, and testing scenarios to ensure the objectives of the pilot plant study will support the final design decision process. Consultant will review periodic status reports prepared by the Project Team, provide ongoing advice and comments, and will review the draft reports prior to delivery to OHA.

### *Assumptions*

- PWB will involve Consultant in the review of pilot testing results which may have significant bearing on the water treatment plant (WTP) design
- One representative from the Consultant will participate in monthly pilot testing status calls

### *Deliverables*

- Pilot Test Plan Review and Recommendations Technical Memorandum
- Comments on pilot data, status updates and draft reports provided to OHA

### ***Subtask 2.6 Basis of Design Workshops***

#### *2.6.1 Workshop Planning*

Consultant shall conduct and participate in workshops with the Project Team to facilitate agreement on Basis of Design criteria and other key design issues. Consultant shall prepare draft agenda (including key decisions required as part of each workshop so PWB can ensure the correct representatives of the PWB staff are attending the meeting), presentation materials, and handouts for distribution to the PWB staff. Workshops will typically be held at the PWB Program Management Office (PMO), Interstate facility, or other PWB Portland offices.

Draft and final meeting minutes shall be prepared by the Consultant to summarize the workshop topic(s), background, discussion, analyses, preliminary recommendations, etc. It is expected that the Consultant will use submitted meeting minutes to support chapters, sections, and subsections of the BDR to facilitate review by PWB and to serve to streamline the BDR development process.

The following workshops are assumed to be critical to completion of the design of the WTP:

- Workshops are expected to last up to four (4) hours.
- Consultant's PM and PE shall be present at each workshop. Other Consultant key personnel and subject matter experts shall be required to attend, as necessary, depending on the topic of the meeting.
- The following workshop topics are anticipated. Workshop topics may be combined into a single workshop or separated into multiple workshops. Three additional workshops may be held, with topics to be determined based on project needs:

1. Preliminary Finished Water Quality and Level of Service (LOS) Goals Workshop
2. Process Design Criteria Workshop
- 3-11. Unit Process Design Workshops (9)
12. Flow and Mass Balance Workshop
13. Site Utilization Workshop I
14. Plant and System Hydraulics Workshop
15. Civil Design Workshop
16. Electrical Design Criteria Workshop
17. Instrumentation and Control (I&C) Design Criteria Workshops
- 18-19. Sustainability and Architectural Concepts Workshops (2)
20. Landscape and Design Criteria Workshop
21. Site Utilization Workshop II
22. Resiliency, Reliability, Redundancy, and Recovery Workshop
23. Corrosion Control Workshop
24. Procurement Plan Workshop
25. Operations and Maintenance Plan Workshop

- 26. Design Safety Plan Workshop
- 27. Reliability-Centered Design Workshop
- 28. Final Site Utilization and Constructability Workshop
- 29-31. Additional Workshops (if needed)

*Consultant Activities*

- Plan and prepare for all Basis of Design Workshops; coordinate these efforts with Project Team leadership

*Assumptions*

- PWB will return comments on meeting minutes within 6 business days

*Deliverables*

- Within two weeks of the PWB’s NTP, the Consultant shall supply a schedule of proposed workshops, including topic, key decisions, proposed dates, attendees, and durations. The list shall align with the Consultant’s overall project schedule.
- Draft and Final Business Case Analysis (BCA) Process TM
- Agendas for each workshop submitted a minimum of 4 business days prior to each workshop
- Draft meeting minutes for each workshop submitted within 2 business days following each workshop
- Final meeting minutes for each workshop submitted within 3 business days following PWB comments on draft minutes

2.6.2 Workshop Descriptions

**Workshop 1. Preliminary Finished Water Quality and Level of Service (LOS) Goals**

Consultant shall collaborate with the Project Team to establish the guiding principles for developing, evaluating, and comparing alternatives throughout the preliminary design process. Draft goals for finished water quality, including the decision to meet Partnership for Safe Water goals, shall be confirmed. Draft LOS goals shall also be determined, including identification of design catastrophic event(s) of concern, followed by recovery time, production goals and water quality goals following the design events. These goals will be reviewed and revised, as needed, to keep the project within the overall affordability target.

**Workshop 2. Process Design Criteria**

Consultant shall confirm the recommended treatment capacity (current design and future build-out), phasing, and process treatment train size. Consultant shall also finalize the recommended treatment process, optimizing the preliminary recommendations provided in the PDR. A process flow diagram shall be created and shall be updated to include items such as water quality/process sample points, chemical dosage points, etc. as design progresses. Consideration shall be made for normal operation and operation during emergency conditions.

**Workshops 3 through 11. Unit Process Design**

Consultant shall evaluate sizing, configuration, reliability/redundancy, and optimal implementation of each unit process. BCAs shall be provided for each recommendation, based on an evaluation process to be developed in collaboration with PWB. The criteria to be evaluated in the BCAs for each process area alternative shall be reviewed and agreed upon with PWB staff, and may include:

- Safety considerations
- Planning-level lifecycle cost (capital and O&M costs)
- Initial and future space requirements (footprint and vertical space impacts)
- Operability and history of operations experience
- System reliability, maintenance needs and risk of unscheduled maintenance
- Noise/dust/light/vibration or other public nuisance risk
- Environmental or permitting impacts
- Sustainability
- Constructability and risk of schedule impacts
- Fabrication or construction quality risk
- Procurement complexities or risk
- Waste removal requirements
- Resiliency

Consultant shall develop a preliminary list of design criteria (capacities, flows, number of trains, volumes, dimensions, detention times, horsepower, velocities, loading rates, etc.) for each treatment process and associated ancillary facilities at the Bull Run Water Treatment Plant (BRWTP). Design considerations shall accommodate/lay the foundation for expansion to the ultimate build-out

capacity. A design criteria document shall be created to capture the design criteria for unit processes and ancillary facilities.

To support process selection and design criteria development, Consultant shall use a dynamic simulation model (Blue PlanIt®) to evaluate unit process and portions of the project. This model will be further developed during detailed design.

Consultant shall develop an equipment list, including name, type of equipment, installation location, equipment number, drive type (for rotating equipment), actuator type (for valves and gates), key design criteria (size, dimensions, capacity, etc.), power requirement, specification section, Process and Instrumentation Diagrams (P&IDs) Drawing reference, and whether the item is critical with respect to the LOS goals.

The following process Workshops shall be conducted by Consultant as part of this task:

- A. Flow Split, Metering, and Mixing Design Criteria
- B. Flocculation and Sedimentation Design Criteria
- C. Ozone Design Criteria
- D. Filtration Design Criteria
- E. Disinfection Design Criteria
- F. Finished Water Pumping, Surge Control, and Storage Design Criteria
- G. Chemical Delivery, Storage and Feed Design Criteria
- H. Residuals Design Criteria
- I. Ancillary Facilities Design Criteria (including utility, plant, and fire water; instrument air and utility air; etc.)

At the start of the Unit Process Design Workshops, Consultant shall develop a list of equipment including sizing and power requirements for the treatment facilities. This list shall be stored on e-Builder and, as the workshops and subsequent design progresses, the list shall be updated by Consultant to reflect the latest equipment sizing and power requirements. In addition to process equipment loads, loads shall be estimated and included for the proposed buildings lighting, heating, ventilation, air conditioning (HVAC), etc.

Consultant shall prepare preliminary P&IDs for the major design components. The preliminary P&IDs shall be limited to process portions of the P&ID. ~~The process portions include the tanks, piping and process equipment, with associated valves, instruments, chemical feed points, etc., but shall not include: control logic or interconnections at the motor control center (MCC), local control panel or plant distributed control, or Supervisory Control and Data Acquisition (SCADA) level (these levels shall be populated on the P&IDs after the unit process design workshop phase).~~

#### **Workshop 12. Flow and Mass Balance**

Once the individual unit process design criteria have been developed, a flow balance and a mass balance shall be developed that includes liquid and solids process streams at the plant. Based on source water quality and anticipated finished water quality, recommendations shall be developed for chemical addition, including dose ranges and application points. Flow and mass balance calculations shall be submitted in native formats for review.

#### **Workshop 13. Site Utilization I**

Consultant shall collaborate with PWB engineering and operations staff to develop preliminary site utilization strategies for the Filtration plant site, based on Workshop decisions and recommendations to date. Siting considerations at this early Utilization Workshop include but are not limited to: campus versus compact layout, build-out expansion strategy, primary and ancillary process proximity and adjacencies, site accessibility, good neighbor strategies and overall security. These preliminary utilization concepts will inform future decisions and will be further refined during Site Utilization Workshop II.

#### **Workshop 14. Plant and System Hydraulics**

Consultant shall develop plant hydraulics, both gravity and pumped, as well as perform computational fluid dynamics (CFD) modeling for key processes, as detailed below. Work shall be coordinated with off-site design team providing hydraulic analysis for existing and proposed conduits.

##### **Gravity Hydraulics**

Consultant shall review Program assumptions and calculations used to establish hydraulic conditions upstream and downstream of the treatment site and notify the Project Team of any concerns or ideas for better optimizing the overall system hydraulics. The Project Team shall review and address Consultant's concerns and ideas, incorporating the results into the final PDR.

Consultant shall prepare calculations and develop plant hydraulic profiles (main process, wash water, and solids handling) that include the minimum plant flow, the initial design capacity, and the future build-out capacity. Consultant shall set basin slab, operating, and overflow elevations for processes (including future processes) to ensure adequate gravity flow throughout the plant's main treatment, backwash, and residuals processes. Consultant shall design to minimize head loss through the treatment processes and shall develop methods of effectively controlling and splitting the flows among the various process basins without the need for

additional/intermediate pumping. An analysis shall be conducted in coordination with the CM/GC Contractor, and the recommended hydraulic profiles shall be designed in coordination with the CM/GC Contractor to optimize the amount of excavation required at the site. Consultant shall coordinate the analysis of optimum BRWTP elevation with their geotechnical investigations, site layout, hydraulic requirements, and Consultant's and CM/GC Contractor's opinions of probable lifecycle cost to determine recommended site layout and gravity hydraulic profiles.

### **Pumped Hydraulics**

Consultant shall prepare calculations required to develop pumped system hydraulics (backwash, waste wash water, finished water [if required], solids handling, etc.). Consultant shall develop system curves and pump curves to define operating conditions for all pumped systems at the plant.

Consultant shall establish design criteria for anticipated and potential pumping scenarios and shall consider design provisions for pump shut-off head control and transient surge protection, where required, to protect piping and equipment. At a minimum, the following items shall be considered:

- maximum, minimum, and normal range operating conditions
- assumptions and operational requirements related to construction, startup and commissioning
- flow control
- isolation valves
- line filling and draining/dewatering and surge associated with maximum velocity conditions
- valve closing time or operations, line rupture, startup, pump loss of power, emergency operations, or other events that would generate surge conditions in the pipe or appurtenances
- air vacuum/release valve sizing and placement, and blow-off (or drain) valve sizing and placement requirements
- options for future expansion of pump stations including space for future pumps, initial installation of larger pumps where additional stages or larger impellers can be added in the future, etc.
- life cycle analysis of pumping costs that balance capital, operating, and total cost

### **CFD Models**

Consultant shall prepare preliminary CFD models for the ozone injection and contact basin (ozone contactor), and the chlorine injection and contact basin (chlorine contactor). Each CFD analysis shall evaluate a single basin at minimum and maximum flow conditions. The ozone contactor CFD analysis shall evaluate the velocity distribution across the width of the basin, residence time (for CT calculations) through the contact basin, and ozone diffusion. Note the ozone diffusion shall not account for the ozone to water transfer; ozone shall be introduced as a discrete phase to evaluate the extent of carryover. The chlorine contactor CFD analysis shall evaluate chlorine mixing performance and residence time through the contact basin.

### **Workshop 15. Civil Design**

Consultant shall identify preliminary site civil constraints, including: site security, landscaping, environmental setbacks and other requirements, design and layout of primary and secondary access roadways, staff access and parking, public parking, equipment maintenance, equipment removal/replacement, functional efficiency, chemical delivery access, plant and system hydraulics, excavation, future expansion, construction access, piping and electrical conduit/duct bank corridors, proper routing, collection, and treatment of stormwater, septic and sewer systems, plant overflow collection, safety, and site compatibility.

Excavation and backfill quantities shall be estimated for the site.

### **Workshop 16. Electrical Design Criteria**

Consultant shall develop electrical design criteria and electrical distribution and standby power philosophy in accordance with PWB standards, including approach to redundancy. The design approach shall be depicted in single-line schematic drawings to, and including, the MCC level. A main-tie-main, split bus arrangement shall be utilized down to the MCC (480 V) level.

Consultant shall develop overall Site electrical plan that is coordinated with the electrical utility provider, including substation and main switchgear locations, any overhead power transmission lines, and the main and standby electrical duct bank corridors.

If major pipelines and duct banks are located in parallel alignments, Consultant shall evaluate potential for electromagnetic interference of the electrical on the pipelines (e.g., corrosion) and mitigation approaches. Consultant shall evaluate the potential for interference of electrical wires on adjacent control wiring and provide mitigation approaches. Consultant shall provide recommendations for systems and components that need to be powered by emergency power systems. Transition to the standby power source (or redundant power sources as applicable) shall be automatic in the event of failure of the primary power source.

### **Workshop 17. Instrumentation and Control (I&C) Design Criteria**

Consultant shall plan and design instrumentation, local controls, process area control panels, and a main control room at the BRWTP, including a system of local control panels with network-connected programmable logic controllers (PLCs) at each major

process area, and a fiber network connecting the process areas to operator control stations in the main control room in the Administration Building. 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. Design criteria will conform to current PWB standards.

#### **Workshops 18-19. Sustainability and Architectural Concepts**

Consultant (through its architect) shall establish an architectural building program for the WTP 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.

Consultant shall utilize benchmark data and a job-shadow process with current operations, maintenance and laboratory personnel to verify work requirements, daily routines and adjacencies to other facilities. This process shall identify customized facilities versus industry standard facilities in a flexible work environment. This approach shall typically last approximately two days per facility and shall be conducted at two facilities to be selected in collaboration with PWB and Consultant.

Consultant shall review with PWB options for sizes of buildings, space requirements, building materials and finishes, maintenance requirements, safe spaces and facilities (showers, kitchen, sleep areas, etc.) for extended operations during emergencies, code requirements, Equal Employment Opportunity and Americans with Disabilities Act (ADA) requirements, the type of accommodations for plant personnel (administration, operation, storage, laboratory, dual-purpose facilities, and maintenance), district operations (emergency operations, warehousing, maintenance, laboratory), and public areas (emergency facilities, interpretive displays, public tour routes inside the plant fence, public access outside the plant fence [including items such as parks, restrooms, trails, etc.]). Security between the WTP and public spaces shall be considered.

Consultant shall present an overview of the Envision and LEED certification process and collaborate with PWB to determine the overall project sustainability certification strategy. Consultant shall consider renewable energy sources and sustainable design concepts to determine where PWB can best implement sustainable solutions while meeting their business and economic objectives. Consultant shall establish the sustainable design guidelines for the design process and determine potential funding opportunities (e.g. Energy Trust of Oregon) for the sustainable solutions.

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

Consultant shall develop a Hazardous Materials Management Plan (HMMP), a Hazardous Materials Inventory Statement (HMIS), and a Spill Prevention, Control and Countermeasure (SPCC) plan for the WTP facility.

Consultant shall provide Drawings and renderings indicating the architectural concepts.

#### **Workshop 20. Landscape and Design Criteria**

Consultant shall establish landscaping design criteria for the WTP that shall create an attractive, functional, and economical facility, pleasing in appearance to neighbors, visitors, and staff. Consultant 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 shall be a primary objective in defining landscape design criteria. Consultant shall provide drawings and renderings indicating the landscape concepts.

#### **Workshop 21. Site Utilization II**

Consultant shall collaborate with PWB engineering and operations staff to advance the preliminary site utilization strategies established during the Site Utilization Workshop I, based on the evolving Workshop decisions and recommendations to date. Siting considerations at this mid-point Utilization Workshop include but are not limited to: a review of previous recommendations, while accommodating recommendations from recent related workshops. These revised utilization concepts will inform future decisions and will be finalized during the Final Site Utilization and Constructability Workshop.

#### **Workshop 22. Resiliency, Reliability, Redundancy and Recovery**

Consultant shall perform a resiliency, reliability, redundancy, and recovery analysis to systematically identify which components, equipment, and systems are critical to achieving PWB's LOS goals and performance objectives (critical system). This analysis shall consider and be coordinated with related unit process selection activities identified in other scope activities and in consideration of degraded raw water quality. Consultant shall consider risks to operations staff, the public, the CM/GC Contractor, as well as potential damage to the "critical systems" resulting from a major seismic event or other design catastrophe (e.g. an area-wide power outage). Consultant shall also consider other risks to resilience including site security, control system failures, and breaches in information technology (IT). Consultant shall review design criteria and specified equipment for compliance with

Program-wide selected design earthquake.

**Workshop 23. Corrosion Control**

Consultant shall develop a corrosion protection (CP) strategy, which shall summarize methods of protection for WTP components (structures, underground and exposed piping, equipment, structural steel, etc.) from corrosive soils, process streams (including treatment chemicals), and stray currents. Recommended materials of construction shall be listed for piping and equipment based on service. Where coatings are recommended, Consultant shall provide recommendations for coating materials. In general, corrosion control shall be assumed to be provided through material, coating, and lining selection. Treated water corrosion control is not included in this strategy.

**Workshop 24. Procurement Plan**

Consultant 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 could negatively affect the overall project schedule (design or construction). If any potential schedule risks are identified, Consultant shall prepare recommendations to accelerate equipment procurement (including early procurement packages), if warranted for schedule maintenance. Consultant shall also identify items of equipment, if any, that Consultant recommends be sole-sourced and the reasons for doing so.

**Workshop 25. Operations and Maintenance Plan**

Consultant shall prepare an Operation and Maintenance Plan for the WTP project. The purpose of the plan is to develop long-term operation and maintenance of the WTP facilities in the future. The plan is anticipated to contain the following information:

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 sequential startup
- Strategies for anticipated chemicals and dosages, clarification and filtration flow rates, process loading rates, residuals handling strategies for anticipated operating conditions
- Anticipated staffing requirements, including FTEs and certification levels
- Process optimization after startup
- Identification of tools and critical spare parts inventory necessary to support operations, meet LOS goals, and provide for plant resiliency (also consider lead time for spare parts)
- Development of an operational emergency event checklist including condition assessment, action items, safety procedures, and other procedures

Maintenance

- Short-term management and maintenance of WTP facilities for the period between construction and WTP startup to assure they perform as designed when the WTP 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 WTP operational to meet PWB 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

**Workshop 26. Design Safety Plan**

Consultant shall prepare a 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 PWB'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 Personal Protective Equipment [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, Consultant shall establish procedures to be utilized throughout the design to ensure that review processes include input from Consultant's Process Area Task leads, Safety Task Lead, Operation and Maintenance Task Lead, and Electrical

Task Lead. The review processes shall also allow for input from Project Team health and safety, maintenance, operation, facilities, and supervision personnel as well as the CM/GC Contractor and other subject matter experts. Consultant 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.

**Workshop 27.** Reliability-Centered Design Workshop

As determined in collaboration with the Project Team, this workshop may be held as a precursor to the RCD workshops identified in Subtask 3.3.3.

**Workshop 28.** Final Site Utilization and Constructability

Consultant shall collaborate with Project Team engineering and operations staff and the CM/GC Contractor to finalize the overall site utilization strategies established during the Site Utilization Workshops I and II. Final siting considerations include but are not limited to: a review of previous recommendations, constructability, staging and storage, as well as incorporating any good neighbor policies. The final utilization plan will serve as the final site plan moving into detailed design.

**Workshops 29 through 31.** Additional Workshops

As determined in collaboration with the Project Team, Consultant may lead up to three additional workshops to explore additional design topics, go more deeply into topics covered in a previous workshop, or complete discussion of a topic which could not be addressed in the workshop(s) allocated for that topic.

***Subtask 2.7 Cost Estimating***

During development of preliminary design alternatives, Consultant shall provide planning-level cost estimates to assist in alternative evaluations.

Based on the project configuration defined in the BDR, Consultant shall prepare an opinion of probable construction cost (OPCC).

Following completion of the draft OPCC, Consultant shall lead a workshop with the Project Team to review estimating assumptions, compare the BDR OPCC against prior estimating efforts, and discuss implications of the OPCC for the project configuration and ongoing design efforts. Reconciliation of the Consultant OPCC and the CM/GC estimate will be performed, using a workshop and preparation of a reconciliation report.

*Assumptions*

- Work shall be performed in accordance with the Association for the Advancement of Cost Engineering (AACE) guidelines, project-specific estimating policies, and standard Consultant estimating procedures. The BDR shall conform to AACE Class 5 guidelines.

*Deliverables*

- Draft and Final OPCC TM
- Reconciliation Workshop (approximately 3 hours)
- CM/GC Reconciliation Report
- Agenda, background material and summary for OPCC review meeting

***Subtask 2.8 Basis of Design Report***

Consultant shall conduct preliminary design analyses and prepare a BDR that contains raw water quality and finished water treatment goals (as defined in the PDR and modified throughout the Workshop process), process and discipline design criteria, overall process flow schematic, hydraulic profile, site layout, building layout, general arrangement drawings showing equipment layouts of each process area, preliminary equipment list, electrical one-line diagrams, and other information as developed as part of the Preliminary Design. The BDR shall document decisions and assumptions required to efficiently progress the work into detailed design. Consultant shall use previously submitted Workshop meeting minutes to serve as the foundation for chapters, sections, and subsections for the BDR to facilitate review by PWB and to serve to streamline the BDR development process.

In addition to the previously developed information that will serve as a basis for the BDR, Consultant shall develop a list of regulations, codes, and standards (including PWB's Design Guidelines) that apply to the design of the WTP and that shall govern the final design, including but not limited to items such as OHA requirements, local building codes, ADA compliance, fire-life safety, noise, lighting, traffic, parking, reliability, environmental, and health and safety codes or regulations. Consultant shall also provide discipline-specific design criteria for each discipline that apply to the design of the WTP and that will be utilized for the

final design. Consultant shall document sustainability goals.

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 BDR. Design of the WTP shall proceed based on the approved concepts and layouts established in the final BDR. PWB shall submit final BDR to OHA for review and comment and incorporate any comments received into the 30% Detailed Design.

*Deliverables:*

- Blue PlanIt® Models
- Draft and Final BDR

BDR Table of Contents

- A. Introduction
- B. Project Background and Description
- C. Plant Capacity, Operations and LOS Goals
- D. Raw Water Quality and Regulatory Compliance
- E. Treatment Process Recommendations
- F. Discipline Design Criteria and Relevant Requirements
  - Major Process Component Sizing, Initial Selections, and Power Requirements
  - Mass Balance, Flow Balance, and Plant Hydraulics
  - Associated Existing and Future Infrastructure Evaluation
  - Civil Design and Site Layout
  - Architectural and Landscape Concept
  - Building Occupancy and Hazardous Area Designations
  - I&C Design Criteria
  - Electrical Design Criteria
  - List of Regulations, Codes, and Standards
  - Corrosion Control
- G. Project Implementation Plan
  - Procurement Plan
  - Resiliency, Reliability, Redundancy, and Recovery
  - Design Safety Plan
  - Operation and Maintenance Plan
  - Traffic Impact Study
  - OPCC

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Appendices

- H. Drawing list. The Drawing list shall indicate the drawings anticipated to be included in each design submittal, including the land use submittal, and the anticipated percent complete of each drawing.
- I. Construction Specifications Table of Contents. The Specification list shall indicate the Specifications anticipated to be included in each design submittal.
- J. Draft Geotechnical Design Report
- K. Draft and Final Geotechnical Data Report

### TASK 3. DETAILED DESIGN

Consultant shall prepare contract documents consisting of design drawings and specifications based upon the schedule, design criteria and bid packages established in the BDR. All design work shall be conducted under the responsible charge of engineers or architects registered in the State of Oregon. Design team coordination (including weekly internal-to-Consultant discipline coordination conference calls) and QA/QC efforts associated with design are also included in this task. Work shall be coordinated with Authority Having Jurisdiction (AHJ), City of Portland and PWB standards and guidelines. Contract documents shall be developed as described below:

Contract Drawings. Final record drawings (subtask 4.6) shall be provided per the Program Computer Aided Design/Building Information Modeling (CAD/BIM) Guidelines and in accordance with PWB's CAD/BIM standards and workspace environment in effect when detailed design is initiated. A Project-specific CAD/BIM Design Guide shall be developed incorporating PWB's current CAD/BIM Manual and approved by PWB prior to initiating detailed design drawings. The drawings shall generally be organized as follows, and as indicated in **Attachment 1 — Preliminary Count of Drawings.**

- *General sheets* – cover title sheet, location map, vicinity map, drawing index, design criteria, legal description, plot plan, general notes, elevation datum, symbols and abbreviations
- *Visualizations (3D models)* – entire site, individual structures (3D content shall be compatible and able to be manipulated with Adobe Acrobat Reader)



- *Demolition/TESC sheets* – demolition plans and details, temporary erosion and sediment control (TESC) plans, details and notes
- *Civil sheets* – survey benchmarks, site plan, contractor staging areas, grading and paving plans, erosion and sediment control plans, storm drainage plans, yard piping (plans and profiles), fencing, and on-site septic systems
- *Architectural sheets* – code compliance, design standards, general notes, and plans, sections and details for new building
- *Landscaping sheets* – typical details, hardscaping, topsoil and planting plans, irrigation plans and details
- *Structural sheets* – structural design standards, general notes, geotechnical, seismic and structural design criteria; special inspection and testing; plans, sections, and details for buildings and structures
- *Mechanical sheets* – general mechanical symbols, abbreviations and general notes, piping and equipment schedules, plans, sections, and details for piping, valves, pumps (recirculation and drain), HVAC and plumbing, cross connection protection assemblies, and other miscellaneous corrosion system requirements
- *Electrical sheets* – symbols, abbreviations and general notes, electrical site plan, single line diagram, service load calculation table, panel schedules, conduit schedules, and all power and lighting plans, schematics, and details for equipment
- *Instrumentation and Control sheets* – instrumentation symbols and abbreviations, P&ID schematics, SCADA details, control panel elevations, Input/Output (I/O), loop and point to point drawings, and schematics, telemetry and security (including door and hatch alarms, cameras and access card readers, panels and details)

**Contract Specifications.** Consultant will prepare detailed technical specifications for the Project, developing Sections (or Divisions) 2-43 following the 2004 MasterFormat Construction Specifications Institute (CSI) specification format. Consultant shall prepare “stand alone” specifications, including general and supplemental conditions (if needed), bidding instructions, Division 1 in CSI format, etc., incorporating requirements from the PWB standard Class 100 specifications and Supplemental General Requirements 007200 as modified for CM/GC contract, as required. When appropriate, Consultant shall incorporate applicable City of Portland Standard Specifications. Specifications will be provided in Microsoft Word and PDF format. Electronic files shall be fully editable without protections, except for documents submitted under protection of a digital engineer or architect seal.

**BIM Models.** Consultant shall provide BIM models at each milestone deliverable in a format established prior to initiation of detailed design that is consistent with Program requirements for 4D/5D BIM and use by CM/GC for construction planning and cost estimating.

**Engineering Calculations.** Consultant shall prepare design calculations documenting the analyses leading to the information incorporated into the Contract Documents. Calculations shall be initiated by the author, discipline lead (if not the author), and by the person checking the design calculations before they are submitted for PWB’s review. Stamped calculations shall be provided in PDF format.

Stormwater design shall be based on the most current rules and best management practices defined by the Oregon Department of Environmental Quality and other AHJ.

**Deliverable Format.** Consultant shall provide four hard copies of specifications, ½ sized (11” × 17) plan sets, and all other design milestone submittal documents; one full size plan set (22” × 34), and one electronic copy with all reference files for the various design reviews. Electronic documents will be provided in a format suitable for consolidated electronic review by Project Team and CM/GC staff.

Final Plans and Specifications shall include one original full-sized reproducible plan set sealed by the responsible engineer or architect, one unbound set of specifications and permitting documentation with attachments, appendices, dividers and cover sealed by the responsible engineer.

**Design Milestone Workshops.** At each milestone deliverable, Consultant shall facilitate a workshop to present and discuss the contents of the design. Consultant’s presentation materials shall focus on key questions and decisions and include 3D renderings of facilities to facilitate review by PWB staff.

### ***Subtask 3.1 Design Management***

Consultant shall provide technical oversight and direction for detailed design. Implement DQMP and coordinate overall technical efforts.

At the start of detailed design, Consultant shall prepare a Design Production Manual (DPM). The DPM will define the design production workflow including anticipated content (primarily drawings, specifications and calculations), by discipline, for each milestone deliverable. The DPM will incorporate the CAD/BIM Manual and City and Program standards. The design manual will include a description of the document and review comment management procedures to be employed.

The DPM will include a schedule of technical collaboration meetings that cover major design topics. Meetings will be held

approximately every two weeks, with agenda and background materials provided one week in advance. Meetings may cover multiple topics, and meeting attendance will vary based on the topic(s) covered. Additional technical focus meetings will be scheduled as needed to coordinate specific technical issues.

As part of this Subtask, Consultant shall support PWB efforts to adapt Project design standards into PWB standards, as requested.

#### *Assumptions*

- Up to 50 technical collaboration meetings will be held on a regular schedule, approximately every two weeks during detailed design. Meetings will last up to 3 hours.
- Consultant attendance at technical collaboration meetings will include PM, PE, and up to four additional Consultant staff.
- Up to 20 technical focus meetings will be held lasting up to 2 hours. Up to three consultant staff will attend technical focus meetings.
- Up to 200 hours of support will be provided for adaptation of Project design standards into PWB standards. Support may include document review, meetings, and development of materials to address gaps and overlap between PWB's current standards and Project standards.

#### *Deliverables*

- Draft and Final Design Production Manual
- Schedule of technical collaboration meetings
- Agenda, background materials and summaries for technical collaboration meetings
- Agenda, background materials and summaries for technical focus meetings

### ***Subtask 3.2 Program Collaboration***

#### *3.2.1 Pilot Testing Support*

Consultant shall support ongoing pilot testing, including corrosion control pilot testing, during detailed design to support design optimization and establish plant operation procedures and strategies.

#### *Assumptions*

- Consultant will not be directly involved in pilot plant operations
- Consultant will review monthly status reports and comment as appropriate
- Consultant shall participate in up to 20 meetings, lasting up to 2 hours each, with up to 4 Consultant staff attending

#### *Deliverables*

- Review comments and recommendations

#### *3.2.2 Public Outreach and Involvement*

Consultant shall support public outreach and involvement efforts led by the Project Team, provide technical information, and attend public meetings as requested.

#### *Assumptions*

- Up to 1,150 hours of support shall be provided for generation of materials and meeting attendance during Detailed Design

#### *Deliverables*

- Technical content for public information and outreach materials

#### *3.2.3 Property and Permitting Support*

Consultant shall support permitting process led by Project Team, including building, construction and land use permitting. At each design milestone, Consultant shall provide information for updates to the permitting memorandum prepared during Preliminary Design with status and cost estimate for each permit and an updated schedule and predecessors for each permit. Consultant shall identify delays and actions required/taken to meet the timeline for start of construction. Consultant shall provide complete applications and required documentation to be submitted with the applications for permits required for the Project.

As described in the Permitting Plan, Consultant shall provide information, submissions, corrections and additions requested by the Project Team to obtain reviews and permits

#### *Assumptions*

- PWB shall pay all permit fees and assessments
- Permitting activities will be led by the Project Team
- Land use permitting applications will require drawings in a format different from that used for construction drawings

*Deliverables*

- Technical information for permit applications
- Permitting Memorandum updates at milestone deliverables

3.2.4 Regulatory Negotiation Support

Consultant shall support discussions with OHA and other agencies to obtain operating permits for the new facility. Specific topics for negotiation may include corrosion control strategy or disinfection credit for use of ozone prior to filtration.

*Assumptions*

- Project Team will lead negotiations with regulatory agencies

*Deliverables*

- Up to four 20-page TMs supporting facility design and operation which specifically address regulatory compliance questions
- Attendance at up to 20 meetings with PWB or regulatory agencies

3.2.5 CM/GC Coordination

Consultant shall collaborate with CM/GC during detailed design. Activities will include:

- Assisting CM/GC with development of a strategy for construction phasing and coordination
- Reconciling Consultant-prepared OPCC with CM/GC Estimates
- Participating in Construction Optimization meetings following 30%, 60% and 90% deliverables
- Construction Schedule Coordination
  - 5D BIM/Synchro File Management

*Assumptions*

- CM/GC will define construction sequencing
- Consultant will provide up to 300 hours of CAD/BIM to modify design models

*Deliverables*

- Input into Phasing and Coordination Strategy TM prepared by CM/GC
- Electronic design models for use in 5D BIM/Synchro work

***Subtask 3.3 Design Preparation and Support***

3.3.1 Value Engineering

Consultant shall participate in a value engineering (VE) process led by the Project Team.

*Assumptions*

- Consultant will participate in one VE workshop following completion of the BDR
- Up to six Consultant Team members will participate in VE workshop

*Deliverables*

- Information packet for VE Workshop Participants
- Responses to Preliminary VE Recommendations

3.3.2 Establish CAD/BIM Standards

Prior to initiating detailed design, Consultant shall establish a detailed plan for the development of electronic models and design drawings. The plan will define software used by each discipline, data exchange and extraction procedures, and drawing production procedures. Electronic file formats to be provided at each milestone deliverable will be defined.

*Assumptions*

- Consultant may select BIM authoring tools
- Facilities will be modeled to a 350 Level of Development (LOD 350) as defined by the Building Information Modeling Protocol Form G202-2017
- Final deliverables will conform to PWB standards
- BIM content exchanges will be compatible with virtual design and construction (VDC) data and file format requirements established by the Project Team

*Deliverables*

- Draft and Final CAD/BIM Management Plan

3.3.3 Reliability-Centered Design (RCD)

Consultant shall participate in a RCD process facilitated by the Project Team. Primary consultant engagement in this process will be through a series of workshops to identify critical assets from the P&IDs and control strategies and identify and document appropriate levels of redundancy, critical equipment spares and parts inventory requirements, strategic maintenance activities, and instrument and control needs.

*Assumptions*

- Up to ten Consultant staff will participate in up to five 3-day RCD workshops

*Deliverables*

- Participation in RCD Workshops
- Review and provide comments on RCD TM

3.3.4 Hydraulic Evaluations

Consultant shall finalize hydraulic evaluations begun during preliminary design and perform the following hydraulic evaluations of the overall treatment process and individual unit processes.

- Open-channel and closed-conduit hydraulic calculations to establish treatment plant hydraulic grade lines (HGL) for anticipated operating conditions.
- CFD modeling of individual unit processes, to evaluate flow distribution, local velocities, and hydraulic residence time
  - Flocculation and sedimentation basins and connecting channels
  - Ozone contact basin
  - Clearwell

*Assumptions*

- Hydraulic calculations will be performed using proprietary and/or commercial software
- Final model will be provided in native format and converted to Excel for delivery to PWB
- Pump stations will be designed to meet Hydraulic Institute (HI) standards
- Physical modeling will not be required to meet HI standards
- No inlet or outlet pumping will be required

*Deliverables*

- Overall plant HGL calculations at each design milestone deliverable
- Draft and final CFD modeling reports based on basin geometry approved in 60% design
- Final process hydraulic model in native format and in Excel

3.3.5 Process Model

Consultant shall develop a dynamic simulation model of the proposed treatment process. This model will be used to support process design and optimization decisions and other planning and design activities involving topics such as resiliency, redundancy and operations.

*Assumptions*

- Process modeling will be performed using proprietary Blue Plan-it® software

*Deliverables*

- Model outputs for use in workshops and reports
- Functioning facility process model at the end of design

- Software and five years of license renewal allowing PWB to operate process model

### 3.3.6 Supplemental Topographic Surveying

Additional topographic surveying useful to support detailed design may be requested by Consultant. As requested by PWB, Consultant survey resources may be used to perform surveying and mapping.

#### *Assumptions*

- Up to 200 hours of Consultant survey support may be provided

#### *Deliverables*

- Updates to site maps

### 3.3.7 Geotechnical Engineering Analysis and Design

Based on the geotechnical field explorations and laboratory testing results, Consultant will conduct geotechnical engineering analyses to provide design and construction recommendations for the site development, structural foundation, seismic hazards mitigation and ground improvement. The geotechnical analyses and design recommendations include the following:

- Assess soil seismic profile (site classification) and parameters in accordance with the 2014 Oregon Structure Specialty Code to support structural design
- Conduct site-specific site response analyses to assess the soil amplification effect on the site and provide site-specific seismic response spectrum for the structural design
- Evaluate the liquefaction potential, and liquefaction induced effects such as seismic-induced settlements, lateral spreading, and potential reduction in soil bearing capacity
- Conduct dynamic soil modeling (using FLAC) to analyze the horizontal and vertical ground deformations for the potential seismic landslide and lateral spreading
- Identify set-back requirement/zone to avoid significant ground deformation hazards
- Develop mitigation strategies, including ground improvement or deep foundations to mitigate the seismic ground deformation hazards
- Evaluate static and seismic soil bearing capacity, subgrade modulus and total and differential settlements for the proposed foundation
- Provide recommendations and design criteria for the preferred foundation (i.e. shallow or deep foundation) or ground improvement to mitigate seismic hazard
- Conduct soil/pipe interaction modeling to investigate the ground deformation induced stress/strain in the major yard piping and connections to structures
- Provide design recommendations for the major yard piping to mitigate seismic ground deformation hazards
- Provide static and seismic lateral earth pressure recommendations for the embedded wall of the proposed structure
- Provide lateral load resistance recommendations, including passive earth pressure and coefficient of friction
- Provide recommendations for shoring and dewatering of the deep excavation
- Provide recommendations for site preparation, grading, drainage, and wet-weather earthwork procedures
- Provide engineered fill recommendations for the foundation or ground improvement and compaction criteria

During detailed design, additional geotechnical investigations and evaluations may be provided to support detailed design of new features or facilities. Specific designs may be provided for:

- Ground improvement
- Special foundations
- Seismic piping and pipe connections
- Slope stabilization
- Dewatering
- Slopes, excavation and shoring

#### *Deliverables*

- Landslide Hazard Evaluation and Mitigation Approach TM
- Seismic Hazards Evaluation and Mitigation Approach TM
- Ground Improvement and Foundation Evaluation TM
- Soil/Pipe/Structure Interaction Modeling TM
- Geotechnical Engineering Report
- Up to 3 Supplemental Geotechnical TMs

### 3.3.8 Sustainability

Consultant shall implement the recommendations for enhancing the sustainability of the design, construction and operation of the facility that were made during the Preliminary Design Phase and documented in the BDR.

#### *Assumptions*

- LEED certification shall be obtained for the operations and administration building
- Envision certification shall be obtained for the overall Project

#### *Deliverables*

- Draft and final applications for LEED certification of design
- Draft and final applications for Envision certification of design

### 3.3.9 O&M Documentation

Consultant will support the Project Team in O&M manual preparation during facility design. Considerations for Reliability-Centered Maintenance (RCM) will be part of the O&M manual with contributions from the equipment manufacturers.

#### *Activities*

- Collaborate with the Project Team and CM/GC in defining a format for the electronic O&M manual
- Define requirements related to O&M manual development for inclusion in construction specifications

#### *Assumptions*

- The Project Team will develop and implement the electronic O&M manual content, with Consultant work based on Consultant's design

#### *Deliverables*

- Process operation documentation and standard operating procedures (SOP) to be included in the electronic O&M manual
- Equipment data in electronic format for import to PWB asset management and maintenance management systems

### ***Subtask 3.4 Initial Design—30% Submittal***

Detailed design drawings shall conform to the Project-specific CAD/BIM Design Guide, developed under Subtask 3.3.2. Plans prepared for the 30% submittal will include a preliminary site plan (including grading, stormwater and sanitary layouts), process and building facilities footprints, at least one elevation view of each structure, draft process schematic, draft P&IDs, preliminary electrical diagram, equipment list, proposed conduit and pipe alignments, pipe sizes, and connections to existing pipe. Specifications shall include a proposed list of specifications sections and a draft of those sections that are most important to the project. All initial and subsequent specifications development shall be consistent with PWB construction management practice and shall incorporate construction quality management requirements accordingly.

Consultant shall prepare a Design Memorandum which describes any changes to design assumptions and criteria, description of resolved and outstanding issues, and a discussion of field work, investigations, and shut-down operations. Consultant will provide an updated design schedule and identify delays and actions required or taken to meet the timeline for the start of construction.

Consultant shall provide instrumentation and process narratives (control strategies and plain-language description of plant operation and control) to supplement P&IDs for treatment processes and the utility water pump station.

#### *Deliverables*

- Background material, agenda and summary for Electrical/I&C Kickoff Meeting
- 30% Plans
- 30% Specifications
- 30% Design Memorandum
- Instrumentation and Process Narratives
- Background material, agenda and summary for 30% Milestone Workshop

### ***Subtask 3.5 Intermediate Design—60% Submittal***

Plans prepared for the 60% submittal shall include a final site plan, elevation views, slope stability and retaining structures, process schematic, I&C, electrical diagram, final conduit and pipe alignments, plan and profile, utilities required for the Project, and all appurtenances. Provide tabulated comments and responses to 30% plan set. Incorporate approved RCD recommendations.

Specifications shall include complete Table of Contents with a complete list of sections, complete Special Provisions/Conditions, complete General Requirements, and a draft of the technical specification sections unique to Project scope. Specifications shall be consistent with design elements as shown on the drawings. Provide tabulated comments and responses to 30% specifications.

Consultant shall conduct a detailed Hazard and Operability (HAZOP) Study, evaluating safeguards to prevent, control or mitigate hazards and major operability issues.

Consultant shall prepare a 60% Design Memorandum which describes any changes to design assumptions and criteria, description of resolved and outstanding issues, and a discussion of field work, investigations, and shut-down operations. Consultant shall provide an updated design schedule and identify delays and actions required or taken to meet the timeline for the start of construction.

#### *Deliverables*

- Responses to PWB comments on 30% submittal
- Background material, agenda and summary for HAZOP Workshop
- Draft and Final HAZOP Study TM
- Initial Asset Register
- 60% Plans
- 60% Specifications
- 60% Design Memorandum
- Background material, agenda and summary for 60% Milestone Workshop

#### ***Subtask 3.6 Second Intermediate Design and BCOE Review—90% Submittal***

Consultant shall prepare plans and specifications for Biddability, Constructability, Operation, and Environmental (BCOE) review. Plans shall be complete in all respects including all engineering details and be consistent with specifications. Provide tabulated comments and responses to 60% plan set. 90% plans are 100% complete and ready to be stamped and signed for submittal to permitting agencies. Specifications shall be complete and shall be consistent with design elements as shown on the drawings.

Consultant shall prepare a 90% Design Memorandum which describes any changes to design assumptions and criteria, description of resolved and outstanding issues, and a discussion of field work, investigations, and shut-down operations. Consultant shall provide an updated design schedule and identify delays and actions required or taken to meet the timeline for the start of construction.

#### *Deliverables*

- Responses to PWB comments on 60% submittal
- 90% Plans
- 90% Specifications
- 90% Design Memorandum
- Background material, agenda and summary for 90% Milestone Workshop

#### ***Subtask 3.7 Final Design—100% Submittal***

Final Design documents shall incorporate permitting agency comments and other comments received from PWB on 90% submittal. Consultant shall provide one signed, full sized original plan set, one electronic copy of CAD files with all reference files, one signed, unbound original of specifications, and one electronic copy of specifications, attachments and appendices as a PDF on a USB flash drive.

To demonstrate the ability to convert the final as-built electronic drawings to a MicroStation format meeting PWB CAD/BIM standards, Consultant shall perform one conversion of each type of electronic file used in the design into a format compliant with PWB CAD/BIM Standards.

Consultant shall prepare a 100% Design Memorandum which describes any changes to design assumptions and criteria, description of resolved and outstanding issues, and a discussion of field work, investigations, and shut-down operations.

After PWB backcheck of 100% Deliverable, Consultant shall provide revised documents as needed to compile sets of documents for external distribution.

#### *Deliverables*

- Compiled set of documents for PWB backcheck

- 100% Plans
- 100% Specifications
- 100% Design Memorandum
- Sample of file conversion to meet PWB CAD/BIM standards

### ***Subtask 3.8 Early Work Package***

To accelerate the overall construction schedule, Consultant will coordinate with CM/GC and Project Team to accelerate design of portions of the project that can be advanced to bid-ready status with minimal risk that changes will be required after further development of other portions of the design. Early 90% and 100% submittals will be prepared for design elements included in the Early Work Package, each conforming to the descriptions above.

At the beginning of 30% design, Consultant will lead a workshop for the Project Team and CM/GC to define elements of the project that can be accelerated and document the recommendations in a technical memorandum.

#### *Assumptions*

- Early work may include large diameter piping, mass grading and excavation, and ground improvements

#### *Deliverables*

- Agenda, background materials and summary for Early Work Workshop
- Draft and Final Early Work Definition TMs
- 90% Early Work Design Package
- 100% Early Work Design Package

### ***Subtask 3.9 Cost Estimating***

Based on the project configuration included in each milestone deliverable, Consultant shall prepare an OPCC.

Following completion of each draft OPCC, Consultant shall lead a workshop with the Project Team to review estimating assumptions, compare the OPCC against prior estimating efforts, and discuss implications of the OPCC for the project configuration and ongoing design efforts. Consultant shall meet with the CM/GC to reconcile estimates and prepare final milestone OPCC incorporating reconciliation and Project Team comments.

Consultant shall support Project Team evaluation of the Early Work Guaranteed Maximum Price (GMP) by preparing an OPCC for the work included in the Early Work Package.

#### *Assumptions*

- Work shall be performed in accordance with the AACE guidelines, project-specific estimating policies, and standard Consultant estimating procedures
- The 30% OPCC shall conform to AACE Class 4 guidelines
- The 60% OPCC shall conform to AACE Class 3 guidelines
- The 90% OPCC shall conform to AACE Class 2 guidelines
- The Early Work Package OPCC shall conform to AACE Class 2 guidelines
- The 100% OPCC shall conform to AACE Class 2 guidelines

#### *Deliverables*

- Draft and Final OPCC TMs for each milestone deliverable and for the Early Work Package (1 @ 30%; 2 @ 60, 90 & 100%)
- Agenda, background material and summary for OPCC review meeting
- Agenda, background material and summary for OPCC reconciliation meeting with Project Team and CM/GC
- Participation in up to four GMP review meetings

### ***Subtask 3.10 Assistance during Bidding***

Consultant shall support PWB and the CM/GC in identifying and preparing work packages for bidding by the CM/GC. Consultant shall review bidding strategy and bid package separation proposed by CM/GC.

During bidding, consultant shall provide responses to requests for clarification or information from bidders or the CM/GC. Consultant shall prepare addenda to the bid documents as required.



#### *Assumptions*

- CM/GC will conduct competitive bidding process for up to 10 major packages (>\$1M) and up to 20 minor packages (<\$1M)

#### *Deliverables*

- Comments on proposed bid package separation and bidding strategy
- Responses to Request for Information (RFI)
- Addenda to Contract drawings

## **TASK 4. CONSTRUCTION & COMMISSIONING SUPPORT**

During construction, Consultant shall both protect PWB's interests and collaborate effectively with the Project Team and the CM/GC in advancing construction of the new facilities. Specific activities shall include reviewing RFIs, submittals and change orders.

### ***Subtask 4.1 General Coordination***

Consultant shall provide overall coordination of staff and subconsultant technical services during construction. Roles and responsibilities during construction will be defined in the Construction-Phase update to the PMWP.

### ***Subtask 4.2 Office Support***

#### *4.2.1 Submittal/Shop Drawing Reviews*

Consultant shall receive and log shop drawings, material samples, and other submittals transmitted to Consultant from PWB and review them for conformance to the intent of the Contract Documents. Consultant shall compile written comments and return shop drawings to the PWB upon completion of the review process. Consultant shall maintain a shop drawing submittal file/tracking system. Consultant shall evaluate substitution(s) and 'or equal(s)' proposed by the Contractor during construction and provide recommendations to PWB for final approval.

#### *Assumptions*

- Up to 1,800 initial submittals and 1,200 re-submittals will be reviewed
- Average submittal review effort will be ten hours per initial submittal and five hours per resubmittal
- Submittals will be reviewed for completeness by CM/GC prior to review by Consultant
- Consultant shall return submittals within 15 calendar days of receipt. Large or complex submittals may require longer review times, and Consultant shall notify Project Team within 5 days of submittal receipt if and how much additional time will be required
- Consultant staff will attend up to 15 two-day factory acceptance tests

#### *Deliverables*

- Submittal review comments
- Monthly submittal tracking status report
- Factory acceptance testing reports

#### *4.2.2 Address RFCs/RFIs*

Provide requested clarification and interpretation of the contract plans and specifications. Receive, log and provide written response to all formal Requests for Clarification (RFCs) and RFIs received from the Contractor via the PWB.

#### *Assumptions*

- Up to 1,800 RFCs/RFIs will be reviewed
- Average RFI response effort will be 5 hours per RFI
- Consultant shall return RFIs within 10 business days of receipt. Large or complex RFIs may require longer review times, and Consultant shall notify Project Team within 5 days of submittal receipt if and how much additional time will be required

#### *Deliverables*

- RFI responses
- Monthly RFI tracking status report

#### 4.2.3 Issue Design Change Notifications

Provide design change notification, as required, to accommodate Engineer and/or PWB changes in the field.

#### 4.2.4 Address Potential Change Orders

Provide requested review and input to PWB regarding potential change orders (PCOs). If requested, prepare Request for Proposals (RFP) for work considered beyond the GMP.

#### *Assumptions*

- Up to 50 PCOs will be reviewed, requiring an average of 16 hours each
- Up to 20 RFPs and associated Change Orders will be prepared and reviewed, requiring an average of 24 hours per RFP Change Order

#### *Deliverables*

- Responses to PCOs
- RFPs

#### 4.2.5 Sustainability

Consultant shall monitor implementation of sustainability objectives during construction and compile documentation for final applications for certification.

#### *Assumptions*

- LEED certification shall be obtained for the operations and administration building
- Envision certification shall be obtained for the overall Project

#### *Deliverables*

- Draft and final applications for LEED certification of construction
- Draft and final applications for Envision certification of construction

### ***Subtask 4.3 On-Site Support***

#### 4.3.1. Engineering Observation and Coordination

Consultant shall provide a full-time engineer's representative on-site during construction. Consultant shall schedule and provide an experienced and qualified design Engineer of Record to periodically visit the construction site to assess the progress and quality of the assigned aspects of the work. Based on information and observation obtained during such visits, the Consultant shall determine if the work is proceeding in accordance with the contract documents. Written reports shall be provided to the PWB, noting observations and recommendations based on the site visits.

#### *Deliverables*

- Engineer of Record Observation reports

#### 4.3.2. Meetings and Site Visits

Appropriate staff shall attend meetings, including the pre-construction conference, weekly construction progress meetings, and other meetings, as requested.

#### *Deliverables*

- Site visit reports
- Meeting summaries

#### 4.3.3. Subcontractor Selection Support

Assist the CM/GC and the PWB during selection of subcontractors.

#### 4.3.4. Prepare Punch List

Perform an initial and final review and inspection of the construction work and prepare an initial and final list of items to be corrected (i.e. Punch List).

*Deliverables*

- Punch List

4.3.5. Claims and Change Order Assistance

As requested, Consultant shall provide timely assistance in the evaluation and preparation of any RFPs directed to the CM/GC for work outside of the GMP and/or responses to construction claims.

*Deliverables*

- Special Inspection Reports
- Punch List Items and Completion Reports

***Subtask 4.4 Startup, Testing & Commissioning Assistance***

Startup and commissioning of the new facilities will be performed by the CM/GC and PWB, with support from Consultant as follows. Consultant shall lead development of a Commissioning Plan. The plan shall be developed in collaboration with the CM/GC, and will be implemented by the CM/GC, with the Consultant's support. The plan shall include the following:

- Field Test Plan
- Field Test Reports
- Functional Acceptance Test Plans for all major components
- Functional Acceptance Test reports and commentary
- Process Narrative
- Operational Readiness Test Plan
- Operational Readiness Test Report(s)
- Revised Control Narrative

Consultant shall provide on-site support during startup and commissioning and shall summarize the issues that emerged and their resolution in a Commissioning Memorandum/Report.

*Assumptions*

- Commissioning plan development shall begin no later than twelve months prior to anticipated initiation of commissioning activities

*Deliverables*

- Commissioning Plan
- Commissioning Report

***Subtask 4.5 Training Assistance***

Consultant shall provide training in overall plant operation and operation of individual treatment process prior to startup of the new facilities. Consultant shall prepare an overall lesson plan for the training six months ahead of the scheduled initiation of startup activities. For each training module, Consultant shall prepare training materials consisting of background materials, workshop reference materials, a presentation, and a learning assessment. Training will include classroom and field components, covering both theoretical and practical application of each treatment process.

*Assumptions*

- Sixteen training modules will be developed
- Training modules will average three hours in duration and one module will be presented each week
- Each training module will be presented twice during the same week
- Training presentations will be videotaped by Consultant, but video production will be by others or an optional service of Consultant
- Consultant will obtain approval for operators to receive Continuing Education Units for participation in training

*Deliverables*

- Overall lesson plan
- Workshop materials

#### ***Subtask 4.6 Record Drawings***

Based on data furnished by the CM/GC, Consultant shall prepare as-built drawings in MicroStation conforming to PWB standards. An initial set of record drawings shall be provided in PDF format for PWB review. Final Record Drawings shall include 1 original and 12 copies (1/2 sized plan sets), one full size set of plans on Mylar, plus one compiled electronic version (PDF), as well as one electronic copy (DGN) with all models and reference files for all record drawings.

#### *Deliverables*

- Preliminary and Final As-Built Drawings and Specifications

## **TASK 5. OPERATIONS SUPPORT**

Consultant shall provide ongoing operational support for the first year of operation of the new facilities, as requested by PWB. Support services shall include site visits, training, and an inspection of new facilities prior to the expiration of the construction warranty to identify any potential warranty claims. During Phase 4, formal project management will be limited, and invoices and progress reports shall be submitted for only those months during which support was requested.

#### ***Subtask 5.1 Process Optimization***

Provide up to 4,000 hours of training and support for process optimization, as requested by PWB.

#### *Potential Deliverables*

- Tracer Studies: Consultant shall provide tracer study assistance for chlorine and ozone contact basins, in compliance with OHA requirements.
- Training Refresher: Operations staff can get ‘training fatigue’ during the intense months of designer and vendor provided training prior to plant startup. Training refresher courses shall be provided to help remind operations staff of key information that may have been forgotten.
- Standard Operating Procedures: Consultant shall work with PWB staff to develop SOPs, or succinct summaries of operations activities, around key process areas.
- Process Control Strategies: Consultant shall work with PWB staff to develop process control strategies, which will provide operational targets for key water quality parameters and provide processes-controlled guidance for overall treatment optimization.
- Chemical Selection and Procurement: Consultant shall provide assistance in selecting all process chemicals (specifically filter aid, primary and secondary coagulant, coagulant aids and dewatering polymers), and shall assist the PWB procurement in developing standard chemical procurement documents.
- Design Intent Interpretation: Consultant shall provide operational support in interpreting the design intent of various aspects of the design (e.g. optimal Variable Frequency Drive [VFD] usage, desired filtration rates during low flow conditions, etc.).
- Solids Management and Disposal: Consultant shall work with PWB staff to optimize the overall solids handling strategy at the plant, including optimization of percent solids vs. pounds of polymer per ton, staging and storage, as well disposal options. Opportunities for beneficial re-use shall also be considered.
- Distribution System Water Quality: Consultant shall assist the PWB staff in monitoring impacts on the distribution system water quality following start-up and commissioning of the plant, including chlorine residual stability, Disinfection By-Product (DBP) production and Lead and Copper Rule (LCR) compliance.
- Process Optimization: Consultant shall assist PWB staff in optimizing the overall treatment process, including: alternative coagulant studies (at the bench-, pilot- and full-scale), filter optimization (for turbidity and particle removal, including media coring, solids retention analysis, backwash turbidity profiles) and biological filter studies (including ATP training).
- Partnership for Safe Water Compliance Support: Consultant shall assist PWB in meeting the goals of the Partnership for Safe Water.

#### ***Subtask 5.2 As-Needed Troubleshooting***

Provide up to 1,000 hours of effort in response to requests for support in troubleshooting equipment or treatment processes as requested by PWB.

#### *Potential Deliverables*

- Inspection and observation reports
- Operation recommendations and reports

### ***Subtask 5.3 Warranty Support & Inspection***

Provide up to 400 hours of support for warranty claims as requested by PWB. Conduct a comprehensive inspection of the facility during the 11<sup>th</sup> month after substantial completion, to identify potential construction deficiencies or equipment issues that can be corrected under the construction or equipment warranties.

#### *Potential Deliverables*

- Inspection and observation reports
- Warranty inspection observations, reports and recommendations

### ***Subtask 5.4 Operations Support Project Management***

Provide overall management and coordination of Consultant efforts. Prepare invoices and progress reports describing services requested and performed during billing period.

#### *Potential Deliverables*

- Invoices and progress reports

## **TASK 6. MANAGEMENT RESERVE**

The Consultant and PWB PM shall coordinate those tasks and shall agree in writing to the deliverable and completion requirements. No work under Task 6 shall begin until a written amendment, approved by all authorized parties, has been signed. The PWB PM shall contact the PWB Contract Administration Branch to coordinate this action. A revised budget detail shall be required and included with amendments to this Contract when funds are being reallocated, added or decreased.

Potential management reserve deliverables include, but are not limited to:

- Additional permitting support
- Procurement delays
- Unforeseen circumstances / acts of god
- Easement and property acquisition assistance
- Unforeseen geotechnical
- Archeological
- Federal permitting nexus
- Additional GMP negotiations support
- Off-ramp support / developing bid packages
- Additional support for off-site infrastructure
- Additional grant research/funding support
- Additional community outreach support
- Additional operations support
- WIFIA compliance support / cyber security
- Additional site visits to similar WTPs

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## Attachment 1 - Preliminary Count of Drawings

Area	Estimated Number of Drawings by Discipline										Total
	General	Civil	Landscape Arch.	Arch.	Structural	Process Mech.	Building Mech.	I&C	Electrical		
00 General	24	33	11	67	26	28	16	50	90	345	
01 Site	-	142	59	8	5	20	2	15	16	267	
02 Inlet & Flash Mix	-	-	-	4	5	4	5	5	6	29	
03 Flocculation	-	-	-	9	22	16	2	4	8	61	
04 Sedimentation	-	-	-	4	22	31	3	6	8	74	
05 Ozone	-	-	-	4	26	25	6	8	14	83	
06 Filters	-	-	-	13	32	47	6	20	28	146	
07 Clearwell	-	-	-	4	18	12	-	4	8	46	
08 Backwash/ Effluent PS	-	-	-	7	12	20	9	8	10	66	
09 Lagoons & Return PS	-	-	-	-	10	8	-	7	6	31	
10 Washwater EQ Basin	-	-	-	-	7	11	-	2	2	22	
11 WW Clarifier	-	-	-	-	3	10	-	2	2	17	
12 Thickener	-	-	-	-	4	7	-	2	2	15	
13 Sludge Blending Tank	-	-	-	-	4	7	-	2	2	15	
14 Thickened Sludge PS	-	-	-	-	2	5	3	2	9	21	
15 Mechanical Dewatering	-	-	-	15	12	12	6	11	19	75	
16 Return EQ Basin	-	-	-	-	2	3	-	1	2	8	
17 Return EQ Pump Station	-	-	-	6	5	7	5	2	7	32	
18 Overflow Basin & PS	-	-	-	-	4	7	-	2	7	20	
19 Ozone Building	-	-	-	8	10	15	4	20	21	78	
20 Chemical Building	-	-	-	15	20	30	8	40	23	136	
21 Maintenance Building	-	-	-	13	20	-	8	-	9	50	
22 Admin/Ops Building	-	-	-	30	20	-	16	2	22	90	
23 Vehicle Storage Building	-	-	-	10	10	-	4	-	7	31	
24 Solar Array	-	-	-	-	4	-	-	-	19	23	
25 Electrical Buildings (2)	-	-	-	10	10	-	4	-	11	35	
26 Access Structures (5)	-	-	-	-	6	-	4	-	14	24	
27 Generator	-	-	-	-	4	-	4	-	17	25	
<b>Total</b>	<b>24</b>	<b>175</b>	<b>70</b>	<b>227</b>	<b>325</b>	<b>325</b>	<b>115</b>	<b>215</b>	<b>389</b>	<b>1,865</b>	

Note: Drawing count does not include point-to-point drawings.

**EXHIBIT B - CONTRACT BUDGET DETAIL**

Task/Activity Description	Stantec					Subconsultants						
	Hours	Labor	ODCs	Sub Markup	Total	ABHT*	Beaty*	Benchmark*	Carollo	CPE	Elcon*	Emerio*
<b>Task 1 - Project Management</b>	<b>22,243</b>	<b>4,022,100</b>	<b>30,500</b>	<b>55,400</b>	<b>4,108,000</b>	<b>34,000</b>	<b>2,000</b>	<b>-</b>	<b>805,000</b>	<b>1,000</b>	<b>86,000</b>	<b>25,000</b>
1.1 Project Coordination and Direction	17,685	3,314,100	20,000	43,900	3,378,000	34,000	2,000	-	575,000	1,000	86,000	25,000
1.2 Project Controls	4,401	673,000	-	10,000	683,000	-	-	-	200,000	-	-	-
1.3 Quality Management	157	35,000	10,500	1,500	47,000	-	-	-	30,000	-	-	-
<b>Task 2 - Preliminary Design</b>	<b>3,967</b>	<b>810,900</b>	<b>61,000</b>	<b>133,100</b>	<b>1,005,000</b>	<b>42,000</b>	<b>-</b>	<b>60,000</b>	<b>1,244,000</b>	<b>7,000</b>	<b>138,000</b>	<b>49,000</b>
2.1 Information Gathering	207	46,000	2,350	4,650	53,000	5,000	-	-	40,000	2,000	16,000	5,000
2.2 Geotechnical Field Exploration and Testing	76	13,900	450	29,650	44,000	4,000	-	60,000	12,000	-	-	-
2.3 Outreach and Equity Support	215	44,000	1,700	2,300	48,000	-	-	-	23,000	-	-	2,000
2.4 Property and Permitting Support	158	32,000	4,300	3,700	40,000	-	-	-	16,000	-	-	2,000
2.5 Pilot Testing Support	71	16,000	1,050	950	18,000	-	-	-	19,000	-	-	-
2.6 Basis of Design Workshops	1,855	378,000	20,500	43,500	442,000	15,000	-	-	583,000	2,000	56,000	20,000
2.7 Cost Estimating	66	13,000	850	4,150	18,000	-	-	-	8,000	-	-	-
2.8 Basis of Design Report	1,319	268,000	29,800	44,200	342,000	18,000	-	-	543,000	3,000	66,000	20,000
<b>Task 3 - Detailed Design</b>	<b>36,441</b>	<b>7,295,250</b>	<b>98,300</b>	<b>783,450</b>	<b>8,177,000</b>	<b>905,000</b>	<b>80,000</b>	<b>-</b>	<b>6,966,000</b>	<b>32,000</b>	<b>2,777,000</b>	<b>839,000</b>
3.1 Design Management	1,434	293,000	1,050	36,950	331,000	-	-	-	564,000	-	-	-
3.2 Program Collaboration	1,906	313,000	5,400	24,600	343,000	61,000	-	-	301,000	2,000	45,000	22,000
3.3 Design Preparation and Support	1,647	332,000	4,700	26,300	363,000	7,000	-	-	376,000	-	3,000	2,000
3.4 Initial Design - 30% Submittal	7,630	1,546,250	23,100	150,650	1,720,000	206,000	20,000	-	1,414,000	8,000	438,000	207,000
3.5 Intermediate Design - 60% Submittal	10,653	2,158,000	26,450	227,550	2,412,000	289,000	30,000	-	1,973,000	10,000	992,000	250,000
3.6 Second Intermediate Design and BCOE Review - 90% Submittal	7,849	1,581,000	16,000	174,000	1,771,000	206,000	20,000	-	1,416,000	8,000	923,000	207,000
3.7 Final Design - 100% Submittal	4,770	961,000	16,700	93,300	1,071,000	124,000	10,000	-	854,000	4,000	354,000	94,000
3.8 Early Work Package	189	38,000	1,950	8,050	48,000	5,000	-	-	36,000	-	9,000	53,000
3.9 Cost Estimating	30	6,000	950	38,050	45,000	1,000	-	-	4,000	-	2,000	1,000
3.10 Assistance During Bidding	333	67,000	2,000	4,000	73,000	6,000	-	-	28,000	-	11,000	3,000
<b>Task 4 - Construction and Commissioning Support</b>	<b>23,633</b>	<b>4,752,600</b>	<b>102,100</b>	<b>433,300</b>	<b>5,288,000</b>	<b>600,000</b>	<b>-</b>	<b>-</b>	<b>4,860,000</b>	<b>20,000</b>	<b>947,000</b>	<b>281,000</b>
4.1 General Coordination	1,806	347,000	2,300	10,700	360,000	-	-	-	214,000	-	-	-
4.2 Office Support	12,542	2,532,600	4,100	238,300	2,775,000	329,000	-	-	2,509,000	12,000	569,000	171,000
4.3 On-Site Support	5,216	1,074,000	17,600	117,400	1,209,000	190,000	-	-	1,402,000	5,000	225,000	68,000
4.4 Startup and Commissioning Assistance	395	71,000	5,100	4,900	81,000	-	-	-	85,000	-	7,000	-
4.5 Training Assistance	589	106,000	7,350	6,650	120,000	-	-	-	127,000	-	6,000	-
4.6 Record Drawings	3,085	622,000	65,650	55,350	743,000	81,000	-	-	523,000	3,000	140,000	42,000
<b>Task 5 - Operations Support</b>	<b>1,224</b>	<b>245,000</b>	<b>34,800</b>	<b>18,200</b>	<b>298,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>330,000</b>	<b>-</b>	<b>17,000</b>	<b>-</b>
5.1 Process Optimization	693	139,000	26,850	10,150	176,000	-	-	-	203,000	-	-	-
5.2 As-Needed Troubleshooting	327	65,000	5,300	5,700	76,000	-	-	-	90,000	-	12,000	-
5.3 Warranty Support and Inspection	123	25,000	1,750	2,250	29,000	-	-	-	35,000	-	5,000	-
5.4 Operation Support Project Management	81	16,000	900	100	17,000	-	-	-	2,000	-	-	-
<b>Task 6 - Management Reserve</b>												
<b>Project Total</b>	<b>87,508</b>	<b>17,125,850</b>	<b>326,700</b>	<b>1,423,450</b>	<b>18,876,000</b>	<b>1,581,000</b>	<b>82,000</b>	<b>60,000</b>	<b>14,205,000</b>	<b>60,000</b>	<b>3,965,000</b>	<b>1,194,000</b>

**EXHIBIT B - CONTRACT BUDGET DETAIL**

Task/Activity Description	Subconsultants									Project Total
	HKEE	Lacamas*	Leland Saylor*	McMillen Jacobs	MWA	NNA*	Perimon*	Strongwork*	Western States*	
<b>Task 1 - Project Management</b>	6,000	-	19,000	16,000	62,000	23,000	13,000	16,000	-	5,216,000
1.1 Project Coordination and Direction	6,000	-	19,000	16,000	62,000	23,000	13,000	16,000	-	4,256,000
1.2 Project Controls	-	-	-	-	-	-	-	-	-	883,000
1.3 Quality Management	-	-	-	-	-	-	-	-	-	77,000
<b>Task 2 - Preliminary Design</b>	9,000	100,000	77,000	352,000	248,000	127,000	47,000	62,000	100,000	3,667,000
2.1 Information Gathering	1,000	-	2,000	5,000	8,000	2,000	5,000	2,000	-	146,000
2.2 Geotechnical Field Exploration and Testing	-	100,000	-	317,000	-	-	-	-	100,000	637,000
2.3 Outreach and Equity Support	-	-	-	-	12,000	5,000	1,000	3,000	-	94,000
2.4 Property and Permitting Support	-	-	-	-	12,000	40,000	1,000	3,000	-	114,000
2.5 Pilot Testing Support	-	-	-	-	-	-	-	-	-	37,000
2.6 Basis of Design Workshops	4,000	-	-	15,000	108,000	20,000	20,000	27,000	-	1,312,000
2.7 Cost Estimating	-	-	75,000	-	-	-	-	-	-	101,000
2.8 Basis of Design Report	4,000	-	-	15,000	108,000	60,000	20,000	27,000	-	1,226,000
<b>Task 3 - Detailed Design</b>	156,000	-	752,000	165,000	1,578,000	546,000	479,000	394,000	-	23,846,000
3.1 Design Management	-	-	-	-	-	-	175,000	-	-	1,070,000
3.2 Program Collaboration	1,000	-	4,000	7,000	20,000	20,000	4,000	5,000	-	835,000
3.3 Design Preparation and Support	-	-	-	6,000	6,000	2,000	122,000	2,000	-	889,000
3.4 Initial Design - 30% Submittal	38,000	-	-	44,000	382,000	129,000	32,000	95,000	-	4,733,000
3.5 Intermediate Design - 60% Submittal	54,000	-	-	60,000	534,000	181,000	44,000	134,000	-	6,963,000
3.6 Second Intermediate Design and BCOE Review - 90% Submittal	38,000	-	-	24,000	382,000	129,000	32,000	95,000	-	5,251,000
3.7 Final Design - 100% Submittal	23,000	-	-	19,000	230,000	77,000	20,000	57,000	-	2,937,000
3.8 Early Work Package	1,000	-	-	2,000	10,000	3,000	40,000	2,000	-	209,000
3.9 Cost Estimating	-	-	748,000	1,000	2,000	1,000	-	1,000	-	806,000
3.10 Assistance During Bidding	1,000	-	-	2,000	12,000	4,000	10,000	3,000	-	153,000
<b>Task 4 - Construction and Commissioning Support</b>	100,000	-	20,000	169,000	1,006,000	338,000	75,000	250,000	-	13,954,000
4.1 General Coordination	-	-	-	-	-	-	-	-	-	574,000
4.2 Office Support	61,000	-	20,000	103,000	609,000	206,000	25,000	152,000	-	7,541,000
4.3 On-Site Support	24,000	-	-	41,000	242,000	81,000	10,000	60,000	-	3,557,000
4.4 Startup and Commissioning Assistance	-	-	-	-	5,000	-	-	1,000	-	179,000
4.5 Training Assistance	-	-	-	-	-	-	-	-	-	253,000
4.6 Record Drawings	15,000	-	-	25,000	150,000	51,000	40,000	37,000	-	1,850,000
<b>Task 5 - Operations Support</b>	-	-	-	-	-	17,000	-	-	-	662,000
5.1 Process Optimization	-	-	-	-	-	-	-	-	-	379,000
5.2 As-Needed Troubleshooting	-	-	-	-	-	12,000	-	-	-	190,000
5.3 Warranty Support and Inspection	-	-	-	-	-	5,000	-	-	-	74,000
5.4 Operation Support Project Management	-	-	-	-	-	-	-	-	-	19,000
<b>Task 6 - Management Reserve</b>	-	-	-	-	-	-	-	-	-	3,655,000
<b>Project Total</b>	<b>271,000</b>	<b>100,000</b>	<b>868,000</b>	<b>702,000</b>	<b>2,894,000</b>	<b>1,051,000</b>	<b>614,000</b>	<b>722,000</b>	<b>100,000</b>	<b>51,000,000</b>



## EXHIBIT C - PRIME CONSULTANT HOURLY BILLING RATE TABLE

### Stantec Consulting Services Inc.

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Professional/PM 7	270.30	275.71	281.22	286.84	292.58
Professional/PM 6	270.30	275.71	281.22	286.84	292.58
Professional/PM 5	234.60	239.29	244.08	248.96	253.94
Professional/PM 4	204.00	208.08	212.24	216.49	220.82
Professional/PM 3	178.50	182.07	185.71	189.43	193.21
Professional/PM 2	153.00	156.06	159.18	162.36	165.61
Professional 1	127.50	130.05	132.65	135.30	138.01
Technical 6	204.00	208.08	212.24	216.49	220.82
Technical 5	178.50	182.07	185.71	189.43	193.21
Technical 4	163.20	166.46	169.79	173.19	176.65
Technical 3	153.00	156.06	159.18	162.36	165.61
Technical 2	132.60	135.25	137.96	140.72	143.53
Technical 1	112.20	114.44	116.73	119.07	121.45
Paraprofessional 4	153.00	156.06	159.18	162.36	165.61
Paraprofessional 3	122.40	124.85	127.34	129.89	132.49
Paraprofessional 2	102.00	104.04	106.12	108.24	110.41
Paraprofessional 1	81.60	83.23	84.90	86.59	88.33
Paraprofessional 0	51.00	52.02	53.06	54.12	55.20

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## EXHIBIT C1 - SUBCONSULTANT HOURLY BILLING RATE TABLE

### ABHT Structural Engineers

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Principal	224.40	228.89	233.47	238.14	242.90
Principal	224.40	228.89	233.47	238.14	242.90
Associate/PM	173.40	176.87	180.41	184.01	187.69
Design Engineer	158.10	161.26	164.49	167.78	171.13
REVIT/BIM	127.50	130.05	132.65	135.30	138.01
Business Manager/Admin	102.00	104.04	106.12	108.24	110.41

### Beatty Engineering, LLC

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Principal	275.40	280.91	286.53	292.26	298.10

### Carollo Engineers, Inc.

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Senior Professional	270.30	275.71	281.22	286.84	292.58
Principal	234.60	239.29	244.08	248.96	253.94
Lead Project Professional	204.00	208.08	212.24	216.49	220.82
Project Professional	178.50	182.07	185.71	189.43	193.21
Professional	163.20	166.46	169.79	173.19	176.65
Assistant Profesional	127.50	130.05	132.65	135.30	138.01
Senior Technicians	188.70	192.47	196.32	200.25	204.25
Technicians	129.54	132.13	134.77	137.47	140.22
Document Processing/Clerical	102.00	104.04	106.12	108.24	110.41

### Cathodic Protection Engineering, inc.

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Professional Engineer	161.16	164.38	167.67	171.02	174.44

### Elcon

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Principal	224.40	228.89	233.47	238.14	242.90
Project Manager	171.36	174.79	178.28	181.85	185.49
BIM Manager	153.00	156.06	159.18	162.36	165.61
Senior Engineer	149.94	152.94	156.00	159.12	162.30
Revit Designer	138.72	141.49	144.32	147.21	150.15
Engineer	132.60	135.25	137.96	140.72	143.53
Senior Designer II	132.60	135.25	137.96	140.72	143.53
Senior Designer I	128.72	131.30	133.92	136.60	139.33
Technician II	128.72	131.30	133.92	136.60	139.33
Designer	124.85	127.34	129.89	132.49	135.14
Technician I	94.25	96.13	98.06	100.02	102.02
Administration	80.07	81.67	83.30	84.97	86.67

## EXHIBIT C1 - SUBCONSULTANT HOURLY BILLING RATE TABLE

### Emerio Design

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Project Manager	180.54	184.15	187.83	191.59	195.42
Project Engineer	121.38	123.81	126.28	128.81	131.39
Designer	98.94	100.92	102.94	105.00	107.10
Junior Designer	85.68	87.39	89.14	90.92	92.74
Project Coordinator	78.54	80.11	81.71	83.35	85.01

### HK Electrical Engineering

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Principal	241.74	246.57	251.51	256.54	261.67
Project Manager	218.28	222.65	227.10	231.64	236.27
Engineer	190.74	194.55	198.45	202.41	206.46
Designer	154.02	157.10	160.24	163.45	166.72
Drafting	132.60	135.25	137.96	140.72	143.53
Typing	84.66	86.35	88.08	89.84	91.64

### Lacamas Consulting, PLLC

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Principal	173.40	176.87	180.41	184.01	187.69

### McMillan Jacobs Associates

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Principal	270.30	275.71	281.22	286.84	292.58
Senior Associate	219.30	223.69	228.16	232.72	237.38
Lead Associate	197.88	201.84	205.87	209.99	214.19
Associate	170.34	173.75	177.22	180.77	184.38
Senior Project Engineer	154.02	157.10	160.24	163.45	166.72
Senior Project Engineer	146.88	149.82	152.81	155.87	158.99
Senior Engineering Geologist	146.88	149.82	152.81	155.87	158.99
Project Engineer	123.42	125.89	128.41	130.97	133.59
Project Engineer	122.40	124.85	127.34	129.89	132.49
Senior Staff Geologist	91.80	93.64	95.51	97.42	99.37
Senior Staff Geologist	100.98	103.00	105.06	107.16	109.30
Staff Engineer	92.82	94.68	96.57	98.50	100.47
Senior Drafter	121.38	123.81	126.28	128.81	131.39
Admin	89.76	91.56	93.39	95.25	97.16

## EXHIBIT C1 - SUBCONSULTANT HOURLY BILLING RATE TABLE

### MWA Architects

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Principal in Charge	255.00	260.10	265.30	270.61	276.02
Lead Design Architect	183.60	187.27	191.02	194.84	198.73
Director	163.20	166.46	169.79	173.19	176.65
Senior Interior Designer	132.60	135.25	137.96	140.72	143.53
Specifications + QA/QC	147.90	150.86	153.88	156.95	160.09
Architect 3	142.80	145.66	148.57	151.54	154.57
Architect 2	132.60	135.25	137.96	140.72	143.53
Architect 1	117.30	119.65	122.04	124.48	126.97
Design Staff 3	127.50	130.05	132.65	135.30	138.01
Senior CADD Tech	107.10	109.24	111.43	113.66	115.93
Project Accountant	122.40	124.85	127.34	129.89	132.49
Graphic Designer	96.90	98.84	100.81	102.83	104.89
Administration	86.70	88.43	90.20	92.01	93.85

### NNA Landscape Architecture

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Principal	153.00	156.06	159.18	162.36	165.61
Landscape Architect	112.20	114.44	116.73	119.07	121.45
Landscape Designer	83.64	85.31	87.02	88.76	90.53

### Perimon CAD Group

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Principal	150.96	153.98	157.06	160.20	163.40
Technician III	117.30	119.65	122.04	124.48	126.97
Technician II	103.02	105.08	107.18	109.33	111.51
Technician I	89.76	91.56	93.39	95.25	97.16

### Leland Saylor Associates

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Managing Estimator	198.90	202.88	206.94	211.07	215.30
Senior Electrical Estimator	178.50	182.07	185.71	189.43	193.21
Senior Mechanical Estimator	178.50	182.07	185.71	189.43	193.21
Senior Estimator	173.40	176.87	180.41	184.01	187.69
Technical Services	110.16	112.36	114.61	116.90	119.24

### Strongwork Architecture LLC

Classification	Nov 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023
Project Manager	142.80	145.66	148.57	151.54	154.57
Design Staff 2	117.30	119.65	122.04	124.48	126.97

