

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

CONTRACT NO. 30001282

**SHORT TITLE OF WORK PROJECT:**

**Bull Run Supply Treatment Project  
Division of Work I  
Process Systems**

This contract is between the City of Portland, acting by and through its Elected Officials, hereafter called "City," and **Black & Veatch Corporation**, hereafter called Contractor. The City's Project Manager for this contract is **David Peters**.

**Effective Date and Duration**

This contract shall become effective on **June 25, 2010**. This contract shall expire, unless otherwise terminated or extended, on **December 31, 2014**.

**Consideration**

- (a) City agrees to pay Contractor a sum not to exceed **\$3,882,983** for accomplishment of the work.
- (b) Interim payments shall be made to Contractor according to the schedule identified in the STATEMENT OF THE WORK AND PAYMENT SCHEDULE.

**CONTRACTOR DATA AND CERTIFICATION**

Name (please print): Black and Veatch Corporation

Address: 4800 Meadows Road, Suite 200, Lake Oswego, OR 97035

Employer Identification Number (EIN) \_\_\_\_\_

[INDEPENDENT CONTRACTORS: DO NOT PROVIDE SOCIAL SECURITY NUMBER (SSN) – LEAVE BLANK IF NO EIN]

City of Portland Business License # 652440

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. Information not matching IRS records could subject you to 20 percent backup withholding.

**STANDARD CONTRACT PROVISIONS FOR  
PROFESSIONAL, TECHNICAL & EXPERT SERVICES (MANDATORY PROVISIONS)**

**1. Access to Records**

The Contractor shall maintain, and the City of Portland ("City") and its duly authorized representatives shall have access to the books, documents, papers, and records of the Contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts, and transcripts for a period of three years after final payment. Copies of applicable records shall be made available upon request. Payment for cost of copies is reimbursable by the City.

**2. Audits**

- (a) The City, either directly or through a designated representative, may conduct financial and performance audits of the billings and services specified in this agreement at any time in the course of the agreement and during the three (3) year period established by section 1, **Access to Records**. 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 General Accounting Office.
- (b) If an audit discloses that payments to the Contractor were in excess of the amount to which the Contractor was entitled, then the Contractor shall repay the amount of the excess to the City.
- (c) If any audit shows performance of services is not efficient in accordance with Government Auditing Standards, or that the program is not effective in accordance with Government Auditing Standards, the City may pursue remedies provided under section 5, **Early Termination of Agreement** and section 7, **Remedies**.

### 3. **Effective Date and Duration**

The passage of the contract expiration date (as recorded on reverse side) 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 cured.

### 4. **Order of Precedence**

This contract consists of the terms and conditions of this contract, the Request for Proposals (RFP) issued by the City, if any, and the Contractor's proposal in response to the RFP. In the event of any apparent or alleged conflict between these various documents, the following order of precedence shall apply to resolve the conflict: a) this contract's terms and conditions, b) the City's RFP, and c) the Contractor's proposal in response to the RFP.

### 5. **Early Termination of Agreement**

- (a) The City and the Contractor, by mutual written agreement, may terminate this Agreement at any time.
- (b) The City, on thirty (30) days written notice to the Contractor, may terminate this Agreement for any reason deemed appropriate in its sole discretion.
- (c) Either the City or the Contractor may terminate this Agreement in the event of a breach of the Agreement by the other. Prior to such termination, however, the party seeking the termination shall give to the other party written notice of the breach and of the party's intent to terminate. If the party has not entirely cured the breach within fifteen (15) days of the notice, then the party giving the notice may terminate the Agreement at any time thereafter by giving a written notice of termination.

### 6. **Payment on Early Termination**

- (a) In the event of termination under subsection 5(a) or 5(b), **Early Termination of Agreement** hereof, the City shall pay the Contractor for work performed in accordance with the Agreement prior to the termination date.
- (b) In the event of termination under subsection 5(c), **Early Termination of Agreement** hereof, by the Contractor due to a breach by the City, then the City shall pay the Contractor as provided in subsection (a) of this section.
- (c) In the event of termination under subsection 5(c), **Early Termination of Agreement** hereof, by the City due to a breach by the Contractor, then the City shall pay the Contractor as provided in subsection (a) of this section, subject to set off of excess costs, as provided for in section 7(a), **Remedies**.
- (d) In the event of early termination all of the Contractor's work product will become and remain property of the City.

### 7. **Remedies**

- (a) In the event of termination under subsection 5(c), **Early Termination of Agreement**, hereof, by the City due to a breach by the Contractor, then the City may complete the work either itself, by agreement with another contractor or by a combination thereof. In the event the cost of completing the work exceeds the remaining unpaid balance of the total compensation provided under this contract, then the Contractor shall pay to the City the amount of the reasonable excess.
- (b) The remedies provided to the City under section 5, **Early Termination of Agreement** and section 7, **Remedies** for a breach by the Contractor shall not be exclusive. The City also shall be entitled to any other equitable and legal remedies that are available.
- (c) In the event of breach of this Agreement by the City, then the Contractor's remedy shall be limited to termination of the Agreement and receipt of payment as provided in section 5(c), **Early Termination of Agreement** and section 6(b), **Payment on Early Termination** hereof.

### 8. **Subcontracts and Assignment**

Contractor 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 subcontractor, the Contractor shall remain obligated for full performance hereunder, and the City shall incur no obligation other than its obligations to the Contractor hereunder. The Contractor agrees that if subcontractors are employed in the performance of this Agreement, the Contractor and its subcontractors are subject to the requirements and sanctions of ORS Chapter 656, Workers' Compensation.

### 9. **Compliance with Applicable Law**

In connection with its activities under this Agreement, Contractor shall comply with all applicable federal, state and local laws and regulations including the City's Equal Benefits Ordinance and its administrative rules, all of which are incorporated by this reference. Failure to comply with the Ordinance permits the City to impose sanctions or require remedial actions as stated in Section 13.1 of the administrative rules. Contractor shall complete the INDEPENDENT CONTRACTOR CERTIFICATION STATEMENT, which is attached hereto and by this reference made a part hereof.

#### (a) **Indemnity - Claims for Other than Professional Liability**

Contractor shall defend, save, and hold harmless the City of Portland, its officers, agents, and employees, from all claims, suits, or actions of whatsoever nature, including intentional acts, resulting from or arising out of the activities of Contractor or its subcontractors, agents or employees under this agreement. Nothing in this section requires the Contractor or its insurer to indemnify the City for any claims or losses arising out of death, or bodily injury to persons, or property damage caused by the negligence of the City.

**(b) Indemnity - Claims for Professional Liability**

Contractor shall defend, save, and hold harmless the City of Portland, its officers, agents, and employees, from all claims, suits, or actions arising out of the professional negligent acts, errors or omissions of Contractor or its subcontractors and sub-consultants, agents or employees in performance of professional services under this agreement. Nothing in this section requires the Contractor or its insurer to indemnify the City for any claims or losses caused by the negligence of the City.

**(c) Indemnity - Standard of Care**

If Contractor's services involve engineering or consulting, the standard of care applicable to Contractor's service will be the degree of skill and diligence normally employed by professional engineers or consultants performing the same or similar services at the time such services are performed. Contractor will re-perform any services not meeting this standard without additional compensation.

**10. Insurance**

During the term of this contract Contractor shall maintain in force at its own expense, each insurance noted below:

- (a) Workers' Compensation insurance in compliance with ORS 656.017, which requires subject employers to provide Oregon workers' compensation coverage for all their subject workers (contractors with one or more employees, unless exempt under ORS 656.027).

- (b) ☒ Required and attached or Waived by City Attorney: \_\_\_\_\_

General Liability insurance with a combined single limit of not less than \$1,000,000 per occurrence for Bodily Injury and Property Damage. It shall include contractual liability coverage for the indemnity provided under this contract, and shall provide that City of Portland, and its agents, officers, and employees are Additional Insured but only with respect to the Contractor's services to be provided under this Contract:

- (c) ☒ Required and attached or Waived by City Attorney: \_\_\_\_\_

Automobile Liability insurance with a combined single limit of not less than \$1,000,000 per occurrence for Bodily Injury and Property Damage, including coverage for owned, hired, or nonowned vehicles, as applicable:

- (d) ☒ Required and attached or Waived by City Attorney: \_\_\_\_\_

Professional Liability insurance with a combined single limit of not less than \$2,000,000 per claim, incident, or occurrence. This is to cover damages caused by error, omission or negligent acts related to the professional services to be provided under this contract. If insurance coverage is provided on a "claims made" basis, the successful Proposer shall acquire a "tail" coverage or continue the same coverage for three years after completion of the contract, provided coverage is available and economically feasible. If such coverage is not available or economically feasible, contractor shall notify City immediately.

- (e) On all types of insurance. There shall be no cancellation, material change, reduction of limits, or intent not to renew the insurance coverage(s) without 30-days written notice from the Contractor or its insurer(s) to the City.

- (f) Certificates of insurance. As evidence of the insurance coverages required by this contract, the Contractor shall furnish acceptable insurance certificates to the City at the time contractor returns signed contracts. The certificate will specify all of the parties who are Additional Insured and will include the 30-day cancellation clause and 10-day non-payment clause that provides that the insurance shall not terminate or be cancelled without 30 days or 10 days written notice first being given to the City Auditor. Insuring companies or entities are subject to City acceptance. If requested, complete policy copies shall be provided to the City. The Contractor shall be financially responsible for all pertinent deductibles, self-insured retentions, and/or self-insurance.

**11. Ownership of Work Product**

All work products produced by the Contractor under this contract is the exclusive property of the City. "Work product" shall include but not be limited to research, reports, computer programs, manuals, drawings, recordings, photographs, artwork and any data or information in any form; the Contractor 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 Contractor 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. Contractor shall obtain such interests and execute all documents necessary to fully vest such rights in the City. Contractor 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 Contractor is an architect, the work product is the property of the Contractor-Architect, and by execution of this contract, the Contractor-Architect grants the City an exclusive and irrevocable license to use that work product.

**12. Nondiscrimination**

Contractor agrees to comply with all applicable requirements of federal and state civil rights and rehabilitation statutes, rules, and regulations. Contractor also shall comply with the Americans With Disabilities Act of 1990 (Pub L. No. 101-336) including Title II of that Act, ORS 659.425, and all regulations and administrative rules established pursuant to those laws.

**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 Contractor shall perform such additional work as may be necessary to correct errors in the work required under this contract without undue delays and without additional cost.

**17. Governing Law**

The provisions of this contract shall be construed in accordance with the provisions of the laws of the State of Oregon. 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 scope of work and contract amount, must be made by written amendment and approved by the Purchasing Agent 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 License**

The Contractor shall obtain a City of Portland business license as required by PCC 7.02 prior to beginning work under this Agreement. The Contractor shall provide a business license number in the space provided on page one of this Agreement. Additionally, the Contractor shall pay all fees or taxes due under the Business License Law and the Multnomah County Business Income Tax (MCC Chapter 12) during the full term of this contract. Failure to be in compliance may result in payments due under this contract to be withheld to satisfy amount due under the Business License Law and the Multnomah County Business Income Tax Law.

**20. Prohibited Interest**

- (a) No City officer or employee during his or her tenure or for one year thereafter shall have any interest, direct or indirect, in this Agreement or the proceeds thereof.
- (b) No City officer or employee who participated in the award of this Agreement shall be employed by the Contractor during the period of the Agreement.

**21. Payment to Vendors and Subcontractors**

The Contractor shall timely pay all suppliers, lessors and contractors providing it services, materials or equipment for carrying out its obligations under this Agreement. The Contractor shall not take or fail to take any action in a manner that causes the City or any materials that the Contractor provides hereunder to be subject to any claim or lien of any person without the City's prior written consent.

**Merger Clause**

THIS CONTRACT AND ATTACHED EXHIBITS CONSTITUTES THE ENTIRE AGREEMENT BETWEEN THE PARTIES. NO WAIVER, CONSENT, MODIFICATION, OR CHANGE OF TERMS OF THIS CONTRACT SHALL BIND EITHER PARTY UNLESS IN WRITING AND SIGNED BY BOTH PARTIES. SUCH WAIVER, CONSENT, MODIFICATION, OR CHANGE IF MADE, SHALL BE EFFECTIVE ONLY IN SPECIFIC INSTANCES AND FOR THE SPECIFIC PURPOSE GIVEN. THERE ARE NO UNDERSTANDINGS, AGREEMENTS, OR REPRESENTATIONS, ORAL OR WRITTEN, NOT SPECIFIED HEREIN REGARDING THIS CONTRACT. CONTRACTOR, BY THE SIGNATURE OF ITS AUTHORIZED REPRESENTATIVE, HEREBY ACKNOWLEDGES THAT HE OR SHE HAS READ THIS CONTRACT, UNDERSTANDS IT AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS.

**OPTIONAL PROVISIONS** (selected by City Project Manager)**22. Arbitration: / ☒ X / Not Applicable / ☐ / Applicable (consult with City Attorney's Office before finalizing as applicable)**

- (a) Any dispute arising out of or in connection with this Agreement, which is not settled by mutual agreement of the Contractor and the City within sixty (60) days of notification in writing by either party, shall be submitted to an arbitrator mutually agreed upon by the parties. In the event the parties cannot agree on the arbitrator, then the arbitrator shall be appointed by the Presiding Judge (Civil) of the Circuit Court of the State of Oregon for the County of Multnomah. The arbitrator shall be selected within thirty (30) days from the expiration of the sixty (60) day period following notification of the dispute. The arbitration, and any



litigation arising out of or in connection with this Agreement, shall be conducted in Portland, Oregon, shall be governed by the laws of the State of Oregon, and shall be as speedy as reasonably possible. The applicable arbitration rules for the Multnomah County courts shall apply unless the parties agree in writing to other rules. The arbitrator shall render a decision within forty-five (45) days of the first meeting with the Contractor and the City. Insofar as the Contractor and the City legally may do so, they agree to be bound by the decision of the arbitrator.

(b) Notwithstanding any dispute under this Agreement, whether before or during arbitration, the Contractor shall continue to perform its work pending resolution of a dispute, and the City shall make payments as required by the Agreement for undisputed portions of work.

**23. Progress Reports: / X / Applicable / \_\_\_ / Not Applicable**

The Contractor shall provide monthly progress reports to the Project Manager. If applicable, the STATEMENT OF THE WORK should list what information the Contractor must include in monthly progress reports.

**24. Contractor's Personnel: / X / Applicable / \_\_\_ / Not Applicable**

The Contractor shall assign the following personnel to do the work in the capacities designated: If applicable, list selected personnel in the STATEMENT OF THE WORK. The Contractor shall not change personnel assignments without the prior written consent of the City.

**25. Subcontractors: / X / Applicable / \_\_\_ / Not Applicable**

The City requires Contractors to use the Minority, Women and Emerging Small Business (M/W/ESB) subcontractors identified in their proposals, and as such the Contractor shall assign these subcontractors as listed in the STATEMENT OF THE WORK to perform work in the capacities designated. The Contractor shall not change subcontractor assignments without the prior written consent of the Purchasing Agent.

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## STATEMENT OF THE WORK AND PAYMENT SCHEDULE

### GENERAL BACKGROUND AND PROJECT OVERVIEW

The Portland City Council has directed the Portland Water Bureau (PWB) to design an ultraviolet (UV) light disinfection system for additional treatment of the drinking water from the Bull Run watershed. Specifically, the UV system would be designed to provide *Cryptosporidium* inactivation as required under the U.S. Environmental Protection Agency (EPA) Long Term 2 Enhanced Surface Water Treatment Rule (LT2). Should the City's attempts to seek a variance from the US EPA related to the LT2 Rule prove unsuccessful, this UV disinfection system shall be constructed. The Bull Run Supply Treatment project (BRST) will include UV light disinfection at Headworks and corrosion control process modifications at Lusted Hill.

The design at the Headworks site shall include the UV process facility; offices and supporting spaces; primary and emergency back-up power for the facility; and ancillary improvements. The UV process building shall contain the UV reactors, process piping, electrical room, instrumentation, controls and chlorination. This building or a separate building would house operations and maintenance personnel, and support functions including a control room, supervisor offices, a laboratory, lunchroom, restrooms, locker rooms, and maintenance shops.

The design at the Lusted Hill site shall include additional chemical feed facilities, modification of the laboratory areas, relocating energy sources such as propane and electrical equipment, and upgrades to the HVAC and septic systems.

The professional, technical and engineering services for the Project include design development of plans and specifications for a Design-Bid-Build construction contract. This scope of work includes all services and deliverables required by the Contractor for Division of Work I (DOW I), Process Systems division. There are two other Divisions of Work:

- Division of Work II (DOW II) which shall perform engineering services for geotechnical, structural, architectural, HVAC, plumbing, security, civil sitework, and building service electrical work.
- Division of Work III (DOW III) which shall perform program management, permitting support, and all other project support functions.

Construction Management services shall be retained by the Bureau if the project moves forward to construction.

All three (3) Contractors working on the BRST project shall work in conjunction with one another along with the PWB's Project Manager, with the PWB Project Team Leads and with other PWB staff in order to achieve the desired project outcome. These individuals shall make up the BRST Project Team.

Each DOW Contract shall have a team which consists of the PWB Project Team Lead, Contractor's Project Manager, and with other PWB and Contractor staff in order to achieve the desired project outcome. These individuals shall make up the DOW Team.

#### **SCOPE OF WORK FOR DOW I**

The following scope of work details the professional, technical, and engineering services that shall be provided by the DOW I Contractor for the Project. The scope of work has been organized into the following major tasks:

**Task 100 – Project Management**

**Task 200 – Preliminary Design / Design Issues Resolution**

**Task 300 – Final Design**

**Task 400 – Not Used**

**Task 500 – Bidding Assistance**

**Task 600 – Construction Assistance**

**Task 700 – Operating and Maintenance**

Each major task consists of a number of sub-tasks complete with sub-task objectives, activities, and deliverables. The Contractor shall complete the following:

#### **TASK 100: PROJECT MANAGEMENT**

Project management services are required to ensure that the engineering work is performed in an organized, systematic manner, using proven project management methods to plan, organize, coordinate, document, and control the work. The project management tasks include scheduling, cost accounting, quality control, and progress reporting.

Project management also includes planning, conducting, making presentations, and documenting regularly scheduled and special project meetings. These meetings include those with the DOW I Contractor project teams, BRST project team, and with other DOW Contractors. The DOW I Contractor shall actively coordinate with the BRST project team and the DOW II and DOW III Contractor and Sub-Contractors for the duration of the Project.

<b>Subtask 101</b>	<b>Project Management</b>	Plan, schedule, and coordinate all activities for DOW I Contractor work.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Work plan and internal project procedures manual.</li> <li>• Develop initial project schedule and provide regular monthly updates for DOW I design activities using a standard BRST Project Team format schedule to be incorporated into DOW III's overall Master Design Project Schedule.</li> <li>• Action Item Log.</li> <li>• Decision Log.</li> <li>• Internal Project Controls and monthly cost accounting update.</li> <li>• Monthly Progress Report.</li> <li>• Monthly Invoice.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• For combined DOW work meetings DOW III shall coordinate and consolidate minutes and action items.</li> <li>• DOW III shall manage the Master Design Project Schedule.</li> </ul>	

The Contractor's Project Manager shall: (1) coordinate, communicate, receive directions from, and support the BRST project team, and (2) plan, organize, monitor, and control the day to day project team activities. The Project Manager shall have the authority to make commitments for the DOW I Contractor. The Contractor's Project Manager shall informally meet weekly with the PWB's Project Team Lead, Chad Talbot, to coordinate the project.

**Activities/Deliverables:****The Contractor shall complete the following:**

- 101.01** Prepare project design work plan to include project goals and objectives, design approach, statement of work and deliverables, design project schedule, DOW I team organization and contact information, project procedures and DOW I work templates. Coordination with other DOW Contractors shall follow DOW III project standards, which shall be provided to all parties for reference.
- 101.02** Prepare detailed design project schedule for DOW I work elements (MS Project) showing each major task and sub-task including start and completion dates, major deliverables, and work requiring coordination with design disciplines and other DOW Contractors following DOW III project standards. The Contractor shall provide monthly updates to the overall master design project schedule.
- NOTE:** The DOW I design project schedule shall be combined by the DOW III Contractor with other Divisions of Work to produce an overall master design project schedule.
- 101.03** Develop and maintain a decision and action item log to capture and document decisions and both open and closed action items which arise from the regular meetings for coordination and work tracking. Open action items shall be reviewed with the PWB DOW I Project Lead on a weekly basis.
- 101.04** The Contractor shall implement cost accounting using the standardized work breakdown structure provided by the BRST project team. Planned and projected costs for each major task together with actual costs to-date shall be tracked and reported monthly in the monthly project report. The Contractor shall establish and maintain a cost accounting system for the project using their internal management information systems.
- 101.05** The Contractor shall prepare a monthly progress report. The monthly report shall contain the following information: activities completed during the reporting period, activities planned during the next reporting period, current design project schedule, percent billed and actual percent complete for each major sub-task and task to determine earned value, updated Work Breakdown Structure (if changed), and problems incurred or anticipated, including potential items not currently in the scope of work.

<b>Subtask 102</b>	<b>Partnering Sessions</b>	Participate and support partnering meetings.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>Signed Project Charter.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>Attendance and participation by DOW II, III and PWB. DOW III Contractor shall organize and facilitate.</li> </ul>	

The Contractor shall prepare for and attend three (3) Partnering Sessions with the BRST project team and other DOW Contractors. The partnering session shall include an overview of project goals and expectations, introductions of team members and responsibilities, review of the master design project schedule and an open forum for questions from team members. The purpose of the meeting is to establish trust within the overall BRST project team and to get commitments from teams as to the contributions they will be providing.

**Activities/Deliverables:****The Contractor shall complete the following:**

- 102.01** The Contractor shall have a time allowance for senior project staff and a representative from each sub-contractor to attend a full-day Partnering Session Workshop to be held at the start of the project with a goal of establishing the project charter.
- 102.02** The Contractor shall have a time allowance for senior project staff and a representative from each sub-contractor to attend a half-day Partnering Session Workshop to be held at the start of the 30 percent design phase.

- 102.03** The Contractor shall have an allowance for senior project staff attendance at a half-day Partnering Session Workshop between 60 percent and 90 percent design. The purpose of this session is to ensure that the goals and partnering commitments established in the initial partnering session are being met.

<b>Subtask 103</b>	<b>Meetings</b>	Prepare for and attend regularly scheduled coordination meetings.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Meeting agenda and meeting review material for each DOW I meeting.</li> <li>• Meeting minutes for each DOW I Regular Coordination Meetings, and focus meetings.</li> <li>• Contributions to DOW III for meeting notes for BRST project team coordination meetings.</li> <li>• Updates to the Action Item Log and Decision Log.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• For combined DOW work meetings, DOW III Contractor shall coordinate and consolidate minutes and action items.</li> </ul>	

The Contractor shall prepare for and attend project meetings to review the work in progress, keep BRST project team informed of the technical or project issues, receive and resolve comments. Contractor's staff and others will attend as necessary.

For meetings or workshops led by the DOW I Contractor, a formal agenda and other applicable review materials shall be submitted to the assigned PWB Lead by e-mail at least 3 business days prior to regular meeting or at least 5 business days prior to each workshop. For meetings or workshops led by DOW I Contractor, meeting or workshop minutes shall be prepared and submitted to the BRST project team within 7 days after the meeting or workshop.

#### **Activities/Deliverables:**

**The Contractor shall complete the following:**

- 103.01** The Contractor shall attend a Project Kick-off Meeting to discuss schedule, review task specific requirements, formalize contacts as well as review project procedure requirements. This workshop shall be led by DOW III Contractor and shall also include review of the evaluation criteria framework which will be used during Task 200 work.
- 103.02** The Contractor's Project Manager shall attend at least two (2) Project Coordination Meetings each month to review work assignments and other topics which may arise, to coordinate work and information with other DOW's, and to discuss technical issues.
- 103.03** The Contractor shall attend an orientation meeting for the training and orientation of DOW III project execution and management tools such as the project web site, CAD publishing protocols, 3D standards, etc. The meeting shall include a formal project CAD standard orientation and coordination meeting with all lead CAD personnel for 3D model.
- 103.04** The Contractor shall undertake all other required internal meetings necessary to coordinate and perform work between their sub-consultants and DOW Team members.

<b>Subtask 104</b>	<b>Change Management</b>	Implement change management system to track cost, schedule, or budget changes.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Regular updates to the Project Change Register.</li> <li>• Summary of register in each monthly progress report.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• DOW II, III and PWB</li> </ul>	

#### **Activities/Deliverables:**

**The Contractor shall complete the following:**

- 104.01** Throughout the design, the Contractor shall implement a cost, schedule, and budget control and change management system to identify, track, and document decisions, findings, and unforeseen conditions which affect contract budget. The system shall include reporting and updates to the BRST project team.

- 104.02** The Contractor shall maintain a Project Change Register for their work to track potential and actual changes to the capital cost, engineering cost, schedule or budget for the DOW I work. Summary of the register shall be included in the monthly progress report.
- 104.03** DOW III shall maintain a Master Project Change Register for all DOW's. The Contractor shall provide updates from the DOW I Project Change Register for incorporation into the Master Project Change register maintained by DOW III.

<b>Subtask 105</b>	<b>Risk Management</b>	Review and make updates as required to the Project Risk Register, and provide required process-mechanical, electrical, and instrumentation and control design work upon BRST project team direction.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>Monthly Updates to the Project Risk Register.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>DOW III shall maintain register and provide workflow procedures.</li> <li>DOW II, III and PWB shall all have input to assess magnitude of risk factors.</li> </ul>	

Consistent with the PWB adopted Project Workflow Process; Risk Management is broken down into two topics; Project-Specific Issues and Resource Concerns. Project Specific Issues might include any issue that affects scope, schedule or budget or any issues that negatively impact the completed project. Resource Concerns relate to any issues that concern staffing, equipment or budget that may adversely affect successful project completion.

**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 105.01** Review and make updates as required to the Project Master Risk Register. Any new project issues which affect project delivery shall be identified and added to the matrix. The Contractor shall provide monthly updates to the project's risk management matrix/register.

Some components of the project may or may not be implemented depending on the findings and decision from Task 200 work. The following optional work elements shall be provided by the Contractor upon written instruction from the PWB.

- 105.02** Prepare design for new chlorination storage facilities including process design, electrical design, emergency gas detection and instrumentation/control design for one of the following:
- New chlorine gas storage, evaporation, lifting systems, and chlorine scrubber system.
  - New on-site generation chlorination facilities including process power for sodium hypochlorite generation, salt saturator and storage, and electrical support infrastructure.
  - New bulk liquid hypochlorite storage.
- 105.03** Prepare detailed electrical design for a new electrical power feed which shall include plan sheets for 8 miles of new underground, electrical PGE feed along US Forest Service utility road assuming use of existing topographical survey files from BRST project team. Allow for up to two bridge crossings.
- 105.04** If Sub-task 105.03 is implemented, provide work to produce stand-alone construction package and provide bid support services.
- 105.05** If conduit inter-tie is within the building envelope, under-take designs for process-mechanical, electrical and instrumentation.

<b>Subtask 106</b>	<b>Quality Management Plan</b>	Prepare QA and QC plan for DOW I design efforts.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>QA/QC plan.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>Individual DOW QA/QC plans shall be coordinated by DOW III Contractor into a Design Quality Management Plan.</li> </ul>	

**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 106.01** The Contractor shall prepare an internal Quality Assurance/ Quality Control (QA/QC) plan for the work. The Contractor shall also perform internal QA/QC review of each major design deliverable including preliminary design technical memoranda (TM's) and detailed design submittals (30 percent, 60 percent, and 90 percent). QA/QC reviews shall be maintained in the Contractor's office as a project record.

**NOTE:** The QA/QC plan shall be incorporated into an overall project wide Design Quality Management Plan by the DOW III Contractor.

- 106.02** The Contractor shall report significant QA/QC concerns to the BRST project team.

<b>Subtask 107</b>	<b>BCOE Reviews</b>	Participate in the BCOE design reviews.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>DOW I Contractor shall provide input to DOW III for the bid-ability, constructability, operability, and environmental (BCOE) checklist at each milestone using a form provided by DOW III and PWB similar to Appendix D-2 of the PWB adopted Project Workflow Process Manual.</li> <li>DOW I reviewer shall provide review comments to DOW III during BCOE. Comments shall be recorded at each milestone on DOW III or PWB provided forms in accordance with Appendix D-1 of the PWB adopted Project Workflow Process Manual.</li> <li>DOW I shall document actions taken in subsequent work phases to address BCOE review comments.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>BCOE sessions shall be coordinated by DOW III Contractor and BRST Project Team.</li> <li>DOW III Contractor shall be responsible for facilitating the BCOE sessions, completing the checklists and compiling the comments into the forms.</li> </ul>	

**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 107.01** Provide one senior engineer for three full days during each of the 30 percent, 60 percent, 90 percent BCOE reviews performed at the PWB offices. Senior Engineer shall participate and make recommendations for the BCOE review.
- 107.02** Incorporate any changes or recommendation from the BCOE sessions together with the other design review comments.

<b>Subtask 108</b>	<b>Health and Safety</b>	Participate in PWB Health and Safety Standards
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>None.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>PWB to provide health and safety orientation.</li> </ul>	

**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 108.01** Provide allowance for up to two (2) hours training for Contractor's staff who shall work in the PWB offices to receive orientation regarding safety measures and protocols of the buildings. The Contractor shall provide allowance for any staff visiting either Headworks or Lusted Hill for safe work practice orientation at each of the work sites.

**TASK 200: PRELIMINARY DESIGN / DESIGN ISSUES RESOLUTION**

This task provides preliminary design to resolve outstanding project definition from the Basis of Design Report and the Value Engineering (VE) report.

The Contractor shall complete the work activities for the following subtasks including: Technical Memoranda (TM's) and workshops with BRST project team. Work products and deliverables include the final TMs and a Project Definition Report as described in Sub-task 210.

For each TM, the associated workshop shall include a presentation of the salient issues, and shall require BRST Project Team input and direction, with the objective to present the findings and to support decision making. The TM's shall utilize the evaluation criteria framework developed by DOW III Contractor review during task 103.01.

<b>Subtask 201</b>	<b>UV Process Design</b>	Develop and refine UV layout with selected UV reactor and equipment.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• TM-1 UV Layout Refinement.</li> <li>• UV Design Summary.</li> <li>• Updated 3D model and renderings of UV process-mechanical layout.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• PWB selection of layout option (separate header versus common header).</li> <li>• Stage 1 submittal and bid questionnaire from successful UV Supplier.</li> <li>• DOW III Contractor shall develop the evaluation criteria framework for TM development.</li> </ul>	

Based on the UV equipment selected for the Project, the Contractor shall update the related findings from the initial Basis of Design Report (BDR) to reflect the final UV technology and reactor configuration.

#### Activities/Deliverables:

**The Contractor shall complete the following:**

- 201.01** Finalize header layout schematic based on selected UV Supplier and selected process layout by either separate conduit or common header. Develop UV reactor and process equipment layout refinements based on selected UV reactor size, and disinfection and hydraulic capacities. Layouts shall include major process piping and valve configurations.
- 201.02** Utilize Computational Fluid Dynamics (CFD) model (refer to Subtask 209) and investigate possible reduction in the inlet and outlet piping lengths for overall foot-print reduction. Also predict velocity conditions at inlet flow meter or possible location of flow meter downstream of reactor. Evaluate effect of selected UV reactor and associated inlet and outlet piping, valves and flow meters on the hydraulics. Provide final color figures which summarize design outcomes.
- 201.03** Incorporate mercury dispersion findings (refer to Sub-task 202).
- 201.04** Complete flow distribution and headloss calculations (refer to Sub-task 209).
- 201.05** Update layout and prepare 3D model incorporating selected UV reactor. Work is based on using model created from previous work. Figures and renderings shall be provided.
- 201.06** Define expansion provisions, redundancy requirements and operation, and access for operations and maintenance tasks.
- 201.07** Prepare equipment data sheets for mechanical (HVAC and plumbing/sumps), electrical, structural and issue as UV Design Summary.
- 201.08** Summarize support systems including cooling water circulation system, drains, off-line cleaning system, and lifting systems.
- 201.09** Present findings in **TM-1: UV Layout Refinement**
- 201.10** Conduct **Workshop 1: UV Layout and Selection**

<b>Subtask 202</b>	<b>Mercury Mitigation</b>	Develop mercury mitigation plan related to UV lamp and sleeve breakage and incorporate features into the basis of design.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• TM-2 Mercury Mitigation Plan</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• Stage 1 submittal and bid questionnaire from successful UV Supplier.</li> <li>• Mercury dispersion model (from task 209).</li> <li>• DOW III Contractor shall develop the evaluation criteria framework for TM development.</li> </ul>	

While lamp breakage and mercury release is a rare event, lamp breakage has been reported with operating UV systems and US EPA's Ultra Violet Disinfection Guidance Manual (UVDGM) does not answer key questions on mercury release. Using pilot scale studies on lamp breakage, mercury transport, containment, and mitigation, work will focus on prevention and detection of lamp breaks; fate and transport modeling; and capture and treatment of released mercury. Mercury management and containment strategies are dependent upon the UV equipment selected.

#### Activities/Deliverables:

The Contractor shall complete the following:

- 202.01** Evaluate the monitoring and detection of lamp breakage capabilities of PWB's selected UV Supplier. Evaluate benefits of using sensors that respond to sleeve breaks and moisture detection. Review Larson Inter-Tie schematic and emergency operation capabilities.
- 202.02** Calculate mercury release based upon selected UV reactor and lamp technology. Develop mercury dispersion model based on selected UV reactor and lamp, updated process layout, and three different conduit operation scenarios. Present results of mercury dispersion model showing dispersion in conduit (refer to Subtask 209).
- 202.03** Develop and finalize capture and containment concepts at Headworks downstream control points.
- Define UV reactor clean up strategy.
  - Interact with State and other stakeholders.
  - Develop preliminary operating procedures for mercury mitigation.
  - Provide Portland dispersion modeling software tool.
- 202.04** Develop conceptual mercury treatment (using MERCSORB, a sulfur impregnated Granular Activated Carbon (GAC)), and release requirements showing projected mercury levels and treatment volumes and time periods.
- 202.05** Present findings in **TM-2: Mercury Mitigation Plan**.
- 202.06** Conduct **Workshop 2: Mercury Mitigation**.

<b>Subtask 203</b>	<b>Electric Power Requirements and Reliability</b>	Review electric power requirements, quality and reliability at the Headworks site and assess impact on UV off-spec performance.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• TM-3 Electrical Power Requirements</li> <li>• UVCAT model results (as appendix to TM)</li> <li>• Preliminary Electrical Footprints and Layouts.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• Estimate of HVAC loads from DOW II Contractor</li> <li>• Details of new PGE service and service agreements from PWB</li> <li>• Power quality monitoring data from PWB.</li> <li>• Coordination meetings and input from PGE.</li> <li>• DOW III Contractor shall develop the evaluation criteria framework for TM development.</li> </ul>	

Evaluation of UV system backup power and redundancy will consider all types of power quality events and outages. Historically, Headworks outages have been reported to last up to 5 days. The impact of power quality on off spec performance is site specific, with important power quality events ranging in duration from half a voltage cycle up to many hours or days. The impact of these power quality events on UV disinfection depends on the sensitivity of the UV system.



**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 203.01** Conduct focus group meeting with BRST project team to review electrical issues, design criteria, and key background information pertaining to activities below.
- 203.02** Define power requirements for selected UV system and develop electrical loads and one-line diagram with footprint and elevations of major electrical equipment.
- 203.03** Electric utility coordination and evaluation and assessment of alternative power supply to Headworks site with considerations for:
- Number and location of electric power substation that utility could use to feed the site.
  - With utility, understand impacts, costs and construction scheduling for overhead power pole and line versus buried electrical utility service.
  - With utility, determine function, location and operation of any automatic throw-over equipment that may be required if utility employs feeds from multiple substations.
- 203.04** Conduct a power rate analysis with the utility to determine the most economical rate structure specific to the UV facility and Headworks site. This analysis would consider alternative methods for equipment purchase such as transformers, generators, and the type of power service.
- 203.05** Evaluate redundancy requirement for electric transformers and switchgear that feed the UV facility.
- 203.06** Use UVCAT software to quantify power quality impacts on reliability and resultant off-spec performance under three different power reliability scenarios.
- 203.07** Determine need for power conditioning and/or Uninterruptible Power Supply (UPS) for UV system and supervisory control and data acquisition (SCADA)/computer needs. Analysis to include:
- Review of historical Headworks power quality data.
  - Consult with electric utility to assess current and other data from other potential, alternate power stations.
  - Review UPS options for both essential, non-process loads and for UV disinfection process power. Options include rotating and static UPS systems such as double conversion UPS, flywheel, motor generator set, and battery backup.
  - Review topology for redundant UPS. As an example, one large, single UPS or separate UPS systems to supply UV and SCADA power.
  - Assess power continuity as part of the reliability evaluation.
- 203.08** Determine number, sizing and operations of emergency diesel generators based on selected UV Supplier. Investigate front-end cost and payment options for the standby generators. This evaluation shall also identify the site electric and equipment loads as well as length of service for which to provide standby power. Level of redundancy (i.e. number of generators) shall be evaluated and selected by BRST project team.
- 203.09** Finalize electrical one-line to include the emergency generator, transformers and switchgear definition.
- 203.10** Develop requirements for electrical room sizing, generator building sizing, transformer sizing and layout, and generator fuel storage requirements for spacial and siting coordination. Select electrical design criteria which account for the following issues:
- Reliability improvements with the electrical supply
  - Switchgear configuration for the primary source and standby generators.
  - Locating new switchgear and generator equipment indoors for reliability and long-term integrity of this equipment.
  - Revised layout of the electrical room resulting from the selected UV reactor equipment.

- Based upon selected UV equipment and supplier responses, prepare harmonic profile and mitigation plan including use of the K-rated Delta-Wye transformers and UPS system. Harmonic modeling shall be conducting using ETAP modeling software.
  - The number and size of backup generators.
- 203.11** Prepare an electrical site plan showing location of external electrical equipment including primary power duct banks, transformers, etc., to demonstrate siting coordination requirements.
- 203.12** Present findings in **TM-3: Electrical Power Requirements**.
- 203.13** Conduct **Workshop 3: Electrical Power Issues**.
- 203.14** Consider impact to site power requirements if on-site hypochlorite generation is used.
- 203.15** Perform assessment of off-site PGE power including comparison of new overhead versus underground supply. Consider reliability evaluation for buried conduits for power, controls, and communication and other alternatives for vulnerability reduction/protection.

<b>Subtask 204</b>	<b>UV Operations and Regulatory Support</b>	Define UV operations strategies, design point implementation and assist BRST project team with communicating UV design and operations plan to Department of Health Services (DHS) to obtain regulatory approvals.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• TM-4 UV Control Strategies and Off-Specification Measures</li> <li>• UVCAT model results (as appendix to TM)</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• PWB Operating procedures for the conduits.</li> <li>• DOW III Contractor shall develop the evaluation criteria framework for TM development.</li> </ul>	

#### Activities/Deliverables:

The Contractor shall complete the following:

- 204.01** Review existing control strategy for conduit flow control, chlorine feed control, and operation of the primary intake structure and other related facilities. Develop UV control strategies and dose monitoring in consideration of the existing operation of existing system.
- 204.02** Develop off-specification criteria, monitoring of off-specification conditions, required redundancy and instrument accuracy, and response plan to alarms. Develop response plan for electrical power failure including backup power operation.
- 204.03** Review validation report of selected UV Supplier's reactor and identify special operational protocols, if required.
- 204.04** Review overall system reliability based different UV reactor operation configurations (applicable for the separate conduit layout option).
- 204.05** Using UVCAT model, optimize Reduced Equivalent Dose (RED) bias and dose control algorithm by performing sensitivity analysis on flow and Ultra Violet Transmissivity (UVT) conditions, response time of selected UV system to an interruption in power and identify operating conditions with the highest probability of causing off-specification conditions.
- 204.06** Prepare supporting technical documentation for DHS permitting work by BRST project team.
- 204.07** Present findings in **TM-4: UV Operations and Control Strategy**
- 204.08** Conduct **Workshop 4: UV Control Philosophy and Operation Review** for BRST project team and other PWB stakeholders.

<b>Subtask 205</b>	<b>Chlorination Facilities at Headworks</b>	Develop preliminary design of new chlorine storage, chlorine feed and emergency gas scrubber system at Headworks to support building definition.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• TM-5 Chlorine System Improvements</li> <li>• Chlorine system building layouts (as appendix to TM)</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• Current chemical consumption, dosage trends, operational reporting and existing data and CT calculations from BRST project team CT data, calculation, and reporting.</li> <li>• Disinfection Bi-Products (DBP) sampling data from BRST project team.</li> <li>• Chlorine emergency response plan from BRST project team.</li> <li>• DOW III Contractor shall develop the evaluation criteria framework for TM development.</li> </ul>	

With the implementation of UV, operating set points for chlorine, ammonia, and possibly soda ash could be reduced. Most important is the chlorination flexibility to meet a range of operating conditions. For example, chlorine may need to achieve *Giardia* inactivation as a backup to UV disinfection. Also, chlorine residual must be sufficient for chloramination at Lusted Hill and establishing the proper residual throughout the distribution system.

#### Activities/Deliverables:

The Contractor shall complete the following:

- 205.01** Develop design criteria for chlorine system (flow rates, disinfection targets and CT requirements for *Giardia* and virus removal, dosage, storage volumes, service water requirements, and chlorine application points for each conduit system). Contact Time (CT) criteria shall be developed from existing data and calculations provided by the BRST project team. Determination of dosage shall also include consideration of the chloramine formation requirements at Lusted Hill and shall confirm ammonia dosage and feed requirements.
- 205.02** Evaluate redundancy requirements for chlorination system.
- 205.03** Evaluate the existing chlorine facilities for providing on going service as well as an option for relocation of the chlorine gas storage to the new UV facility.
- 205.04** Perform site visit and equipment audit. Arrange and attend follow-up meeting to understand and defined the chlorine standard operating procedures.
- 205.05** Establish design criteria for emergency gas scrubber system and develop sizing.
- 205.06** Prepare chlorine feed schematics.
- 205.07** Determine electrical power requirements.
- 205.08** Develop building/room sizing and preliminary general arrangement drawings for modified chlorine storage, feed, and scrubber systems.
- 205.09** Outline and address fire code and chlorine code regulations.
- 205.10** Finalize room layouts for selected chlorine feed and storage modifications.
- 205.11** Present findings in **TM-5: Chlorine System Improvements**
- 205.12** Conduct **Workshop 5: Chlorine Storage Modifications**
- 205.13** Estimate DBP formation potential at different seasonal temperature and dosage conditions, as well as current and future pH targets implemented at Lusted Hill.

- 205.14** Evaluate the use of bulk sodium hypochlorite and on-site generation of hypochlorite from a space requirement perspective. Provide layout of major equipment and building size for both options at Headworks, as well as electrical power requirements. Lifecycle costs for the two chlorination options shall be provided.

<b>Subtask 206</b>	<b>Corrosion Control at Lusted Hill</b>	Develop preliminary design for corrosion control chemical feed equipment and facilities at Lusted Hill.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• TM-6 Corrosion Control System</li> <li>• Preliminary Equipment Layouts</li> <li>• Corrosion Control system building layouts as appendix to TM</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• Building, HVAC loads from DOW II Contractor.</li> <li>• DOW III Contractor shall develop the evaluation criteria framework for TM development.</li> </ul>	

The proposed target pH of 9.0 to 9.5 and target alkalinity of 20 mg/L (as CaCO<sub>3</sub>) are driven by the revisions to the Lead and Copper Rule (LCR) to provide optimal corrosion control for Portland. During the fall and winter (when raw water alkalinity approaches 10 mg/L), soda ash addition alone can achieve the desired pH and alkalinity values.

However, when the raw water alkalinity is lower in the spring/summer, carbon dioxide is needed to lower the pH following alkalinity adjustments using soda ash. Assuming the lowest raw water pH and alkalinity, soda ash dosages between 16 to 20 mg/L and carbon dioxide dosages between 2 to 4 mg/L will be needed to achieve the treated water target pH and alkalinity targets.

#### **Activities/Deliverables:**

**The Contractor shall complete the following:**

- 206.01** Use water chemistry modeling software to confirm/define dosage design criteria for chemical feed systems including soda ash, caustic soda and carbon dioxide.
- 206.02** The Contractor shall evaluate the need to increase pH and alkalinity targets to meet corrosion optimization requirements. An initial review of the 1994 Corrosion Control Study and existing data indicates that the PWB may not be optimized with respect to corrosion control and would need to implement the recommended improvements of soda ash and carbon dioxide to meet the target pH and alkalinity. Data collected since the 1994 Corrosion Control Report shall be reviewed in detail, and findings and recommendations of the 1994 report shall be reviewed in light of the detailed review of new and recent data. The updated findings and recommendations shall be presented as part of TM-6.
- 206.03** Provide preliminary feed equipment selection and prepare chemical feed schematics.
- 206.04** Develop building/room sizing and preliminary general arrangement drawings for chemical feed and storage.
- 206.05** Provide technical information which can be used to define fire code and building code requirements.
- 206.06** Determine electrical power requirements.
- Review and update existing one-lines through field verification and site visit.
  - Prepare load model from historical power usage to determine demand factor.
  - Receive electric power demand and building load requirements from DOW II Contractor.
  - Update load model and one-line with new additional electrical loads.
  - Evaluate and define needs for standby power generation.
  - Determine electrical room and other special requirements.
- 206.07** Determine Instrumentation and Controls (I&C) requirements.
- 206.08** Present findings in **TM-6: Corrosion Control at Lusted Hill**.
- 206.09** Conduct **Workshop 6: Corrosion Control Facilities**.

- 206.10** Estimate beneficial effects of bulk hypochlorite instead of gaseous chlorine and update lifecycle cost evaluation of the alternative chlorination study (reference subtask 205.14).

<b>Subtask 207</b>	<b>Instrumentation &amp; Controls at Headworks / Lusted Hill</b>	Develop preliminary design of instrumentation and controls at Headworks and Lusted Hill.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• TM-7 SCADA, Instrumentation and Controls</li> <li>• TM-8 Principles of Automation (SUPPLEMENTAL)</li> <li>• Preliminary Control Architecture for Headworks and Lusted Hill</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• System wide (TELVENT) hardware data and planned architecture changes</li> <li>• DOW II Contractor shall provide a communication basis of design for the City of Portland network, telephone, and security requirements.</li> <li>• DOW III Contractor shall develop the evaluation criteria framework for TM development.</li> </ul>	

The first work track is the development of the instrumentation, controls, and communication at the Headworks and Lusted Hill project sites required for the implementation of the treatment improvements with industry standard reliability.

#### Activities/Deliverables:

**The Contractor shall complete the following:**

- 207.01** Review relevant facilities, existing data and user needs / requirements from the BDR.
- 207.02** Conduct **Workshop 7A: SCADA/Controls User and Communication Needs.** This workshop shall facilitate definition of the user requirements for the plant control system. Workshop shall confirm results of previous BDR, verify SCADA system architecture requirements, and identify any additional requirements.
- 207.03** Conduct **Workshop 7B: Principles of Automation.** This workshop shall introduce control strategies and guiding principles for the selection and design of operator controls, status display annunciation, redundancy, make/model preference of instruments or devices, plant floor communication standards, OIT standards, data reporting and historization standards, degree of automation, and manual/backup capabilities for total outage / disaster recovery. The workshop findings shall be summarized and presented in TM-8 Principles of Automation.
- 207.04** Conduct **Workshop 7C: P&ID Education.** This workshop shall aid the BRST project team in interpretation of design submittal drawings. Provide P&ID Standards Document reflecting PWB preferences to ensure P&ID submittals are consistent from each team member. This workshop shall also confirm Piping and Instrumentation Diagram (P&ID) standards for depicting control with the objective of allowing P&ID review to be comprehensive and efficient.
- 207.05** Develop SCADA communication and controls architecture for Headworks and Lusted Hill sites. Conduct detailed field investigation and documentation of existing communications system focusing on systems needed to support integration of UV control systems with the wide area PWB SCADA system. Reviews shall include the following communication links: Headworks to Lusted Hill, Lusted Hill to WCC, and WCC to Headworks. Remote Terminal Unit (RTU) communications are not expected to have any issues, but will be noted if encountered. Any constraints on the ability of the existing systems to support redundancy and alternate control centers shall be identified. Develop conceptual integration design of Headworks and Lusted Hill controls with PWB-wide SCADA system. Develop overall Headworks control system block diagram to denote how each controller at the Dam 2 and Headworks facility should be interfaced to the plant control system.
- 207.06** Facilitate vendor demonstrations at PWB offices for SCADA equipment and software to be used at Headworks / Lusted Hill.
- 207.07** Finalize SCADA system (communication between Headworks and Lusted Hill only) architecture and update control system block diagram.
- 207.08** Working with PWB "Facilities" design engineer and BRST project team, finalize control room space requirement for operations and control rooms at both Headworks and Lusted Hill locations.

- 207.09** Develop transitional planning, phasing and detail control system architecture required to support UV systems and minimize disruption of ongoing operations.
- 207.10** Develop system reporting requirements.
- 207.11** Prepare TM-7: SCADA and Controls.
- 207.12** Conduct detailed review meeting with selected UV Supplier for coordination and define controls requirements.
- 207.13** Develop the selection criteria for the plant control system at Headworks that meets PWB procurement guidelines and standards. Options include the following.
- Evaluated bids based on submittals from vendors and/or system integrators with scoring to include technical aspects as well as price.
  - Low bid with bidders required to meet certain gateway requirements.
  - Strictly low bid.
  - Evaluated bids with price revealed only after a selection is made.
  - Other options that may be identified after discussion with PWB procurement staff.
- 207.14** Facilitate plant control system evaluation. The Contractor shall arrange a demonstration of one vendor's plant control system product selected by BRST project team at an existing installation site. Coordination and attendance at site visits shall be provided.
- 207.15** Qwest is the telecommunications provider for the Headworks. With Qwest and BRST project team, identify reliability statistics for the microwave network serving the Headworks facility. Work with Qwest and BRST project team to identify options for communication links between Headworks and Lusted Hill and between Lusted Hill and WCC with communication speeds allowing Lusted Hill to act as backup control center. The microwave communications has several channels (SCADA communication to RTU'S; SCADA communication to operator workstations at Headworks; City of Portland network (for email and Internet access); telephone; and security (CCTV monitoring). Therefore, communication and coordination with DOW II Contractor shall be included to ensure a communication system is provided to meet all communication needs. This assumes DOW II Contractor shall provide a communication basis of design for the City of Portland network, telephone, and security requirements.

<b>Subtask 208</b>	<b>Integrated Process and Operating Descriptions</b>	Prepare preliminary operating descriptions for UV disinfection system and corrosion control chemical feed systems.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Preliminary Operating Descriptions for each major process system</li> <li>• Framework and approach for operator training (UV and corrosion control systems )</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• None.</li> </ul>	

**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 208.01** Summarize treatment objectives and process design criteria.
- 208.02** Incorporate regulatory requirements and guidelines (refer to Subtask 204).
- 208.03** Summarize controls, monitoring, recording and reporting capabilities planned.
- 208.04** Describe normal startup and shutdown procedures.
- 208.05** Define emergency procedures and off-specification conditions.

- 208.06** With BRST project team and PWB operations, prepare a program framework and approach for operator training of UV and corrosion control systems.
- 208.07** Prepare operations descriptions incorporating the activities of this subtask for the following equipment and processes:
- Valves and actuators
  - Instrumentation
  - Flow meters and flow control
  - UV reactors and cleaning operations
  - UV disinfection monitoring and control
  - Chlorine feed at Headworks
  - Chemical feeder operations at Lusted Hill
  - pH control at Lusted Hill
  - Updated chlorine (CT) disinfection monitoring and reporting at Lusted Hill
  - Electric power service
  - Standby power generation and emergency systems

<b>Subtask 209</b>	<b>Modeling</b>	Provide computational fluid dynamic (CFD), flow distribution, process hydraulic, and mercury dispersion model.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• UV system CFD model</li> <li>• Hydraulic flow distribution and headloss calculation model</li> <li>• Mercury release flow dispersion model per conduit.</li> <li>• Physical Space Models</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• None</li> </ul>	

**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 209.01** Conduct CFD modeling of UV reactors and inlet and outlet piping in support of Subtasks 201 and 202. Boundary conditions shall be at the inlet header and the outlet header.
- 209.02** Conduct hydraulic and flow distribution modeling in support of Subtask 201. Limits of the model would be from the diversion pool to the planned inter-tie at Headworks.
- 209.03** Prepare hydraulic profile for Headworks including UV system in support of Subtask 201.
- 209.04** Conduct mercury dispersion model in support of Subtask 202 for existing Conduits 2, 3 and 4.
- 209.05** As an early deliverable, create physical space model for the UV process area, chlorine feed, storage, and scrubber, process valve space, electrical room, emergency generators, transformers, and any other major space functions at the site. Spatial blocks shall be used by DOW II Contractor for physical space fatal flaw analysis.

<b>Subtask 210</b>	<b>Finalize Project Definition Report</b>	Communicate updated basis of design for UV and corrosion control facilities and finalize TMs. Coordinate final site layout and facilities to be constructed at Headworks and Lusted Hill with BRST project team.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Updated 3D model</li> <li>• Updated DOW I Project Definition Report</li> <li>• Finalized TM 1 through 7</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• DOW II Contractor incorporation of DOW I Contractor Task 200 deliverables.</li> </ul>	

**Activities/Deliverables:**

The Contractor shall complete the following:

- 210.01** Finalize TMs 1 through 7 incorporating comments and decisions from workshops and BRST project team reviews.
- 210.02** Consolidate all design decisions, TM findings, and design criteria for DOW I work into a DOW I Project Definition Report with an executive summary.
- 210.03** Update 3D model for UV area of Headworks.
- 210.04** Attend **Workshop 8: Final Building Definition** with BRST project team and other DOW Contractors. Workshop 8 is led and facilitated by DOW II Contractor.

<b>Subtask 211</b>	<b>UV Procurement Review &amp; Evaluation Support</b>	Communicate updated basis of design for UV and corrosion control facilities and finalize TMs. Coordinate final site layout and facilities to be constructed at Headworks and Lusted Hill with BRST project team.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>O&amp;M Present worth and capital cost detailed estimates.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>None.</li> </ul>	

**Activities/Deliverables:**

The Contractor shall complete the following:

- 211.01** Develop presentation and attend technical review workshops and follow-up meetings with the BRST project team.
- 211.02** Provide engineering support for evaluation of each proposal received from manufacturers including development of footprint and building costs, other related capital cost, calculation of annual operation and maintenance costs. This shall include preliminary evaluation of the validation report or proposed validation protocol to assess completeness and applicability. Also includes additional analysis to evaluate proposed exceptions, cost adders, or cost deducts to equalize proposal comparison. Activities include:
- Receive vender proposals.
  - Review proposals and organize cost, qualifications and technical information.
  - Prepare capital cost data for building, and electrical power.
  - Make cursory review of validation report (or validation protocol) for the purposes of verification of the required validation envelop.
  - Prepare summary document of proposal information in memorandum format.
  - Presentation of summary memo BRST project team to review and discuss proposal information including costs, qualifications, and technical information.
  - BRST project team to fill out evaluation forms with scores and assessment.
  - Attend and participate in evaluation workshop(s) as required to support proposal selection (UV manufacturer, UV reactor, system configuration, exceptions or additions.)
  - Following BRST project team decision for selection of UV equipment and configuration, assist in finalizing summary recommendation report.

**TASK 300: FINAL DESIGN**

Final design consists of preparation of construction plans (drawings) and specifications for the construction of the UV disinfection facilities at the Headworks site and the corrosion control facilities at the Lusted Hill site. It is assumed that the two facilities will be designed with two separate sets of construction documents by two separate construction contracts and general contractors. Final design for DOW I Contractor includes only the process mechanical, instrumentation, and electrical engineering disciplines. Structural, architectural, civil and design work of other disciplines shall be conducted by BRST project team through separate divisions of work. The progression of final project design shall include preparation, submittal and review at 30%, 60%, 90%, 95% and final design milestones.



## **CAD COORDINATION**

The process-mechanical design and electrical layout design shall perform design work in 3D using Bentley MicroStation platform. Models shall use a project coordinate system for model integration. Construction drawings shall be produced from 3D model. The Contractor shall perform standard details and installation details in both MicroStation and AutoCAD format and convert to MicroStation by the 100 percent design submittal. P&ID drawings shall be developed using AutoCAD and convert to MicroStation at the end of the project.

## **PROCESS-MECHANICAL DESIGN**

General requirements for the process-mechanical design shall include all process system at Headworks and Lusted Hill, based on the findings and decisions from Preliminary Design. The Contractor's overall general work for each system shall include:

- Develop process-mechanical equipment lists, unit process / system design briefs, and process functional specifications (operating descriptions) for each major unit process / system. Design of pipe support system is provided and shall be based on standard details and commercial pipe support system.
- Prepare equipment data sheets.
- Maintain design calculations and active design criteria for each design brief.
- Coordination - Allow for coordination interface with support disciplines of DOW II Contractor (civil, structural, HVAC and plumbing):
  - a) Coordination with yard piping shall be made at 3 feet beyond the building wall or at the footing limits.
  - b) Coordination of pipe support loads with structural elements with DOW II Contractor.
  - c) Coordination of stairs, platforms, and mezzanines for operation and maintenance access to process equipment with DOW II Contractor.
  - d) Coordination for layout of in-floor, small diameter pipe trenches with DOW II Contractor.
  - e) Coordination for floor drainage and area sumps with DOW II Contractor.
  - f) Provide review and recommendations for building systems such as bridge crane design criteria and operational/maintenance access (doors, etc) with DOW II Contractor.
  - g) Coordination for other building services (review of process area lighting and receptacles) with DOW II Contractor.
- Headworks – General arrangement drawings, plans, sections and details of UV reactors, process piping, isolation and control valves, flow meters, other related equipment, final design criteria, and hydraulic profile for the site. Also includes relocated chlorine feed equipment. Routing of chlorine solution piping, service water piping, and design of chlorine injection diffuser. Includes P&IDs for UV reactors, control valves, flow meters, modified chlorine feed and application points.
- Lusted Hill – Design of new soda ash chemical storage and feed system and new carbon dioxide storage and feed system including equipment general arrangement layouts, plans and sections. Routing and design of chemical solution piping, service water piping, and design of chemical injection diffusers. Includes P&IDs for chemical storage and feeder equipment, process overview drawing showing existing and new application points and related process instrumentation.
- Division 11 specifications including steel pipe, miscellaneous piping, process valves, process pumps, the soda ash storage and feed system, and carbon dioxide storage and feed system, chlorine feeder equipment, and off-line chemical cleaning system (if applicable).

## **ELECTRICAL DESIGN**

The Contractor's general requirements for the Headworks and Lusted Hill electrical work include:

- Coordination - Coordination with DOW II Contractor shall be based on providing 480 volt, 3 phase power supply to an MCC or distribution panel sized and designed by DOW II. Design of electrical power service to HVAC, plumbing, building services, lighting, telephone, and security systems shall be designed by DOW II Contractor.

- Headworks - Detailed electrical design shall include work starting from the new PGE power supply transformer to the power distribution for the entire site. Areas include the emergency generator, the UV UPS system (if applicable), power conditioning equipment, and the UPS system for the plant control system.
- Lusted Hill - Detailed electrical design shall include work to provide power from the existing electrical facilities to the new chemical feed systems and UPS systems related to the plant control system and future system wide SCADA disaster recovery center.
- Work products shall include electrical one-line diagrams, electrical room MCC and panel general arrangement, emergency generator building electrical equipment general arrangement, electrical location drawings for conduit and cable tray, panel drawings, building grounding, MCC and switchgear drawings, cable schedule and duct details, and Division 16 specifications.

### **INSTRUMENTATION AND CONTROL DESIGN**

The Contractor's general requirements for the instrumentation and control work include:

- Control system architecture and control block diagram for Headworks site.
- Control system architecture and control block diagram for Lusted Hill site.
- Define UPS power requirements for the plant control systems at both sites (i.e. connected load and duration).
- SCADA communication system requirements and communication plan for communication with the system wide SCADA system.
- Selection of on-line analytical and other instrumentation.
- Instrument schedule and Input/Output (IO) list and completion of P&ID instrument and control design.
- Division 13 and 16 specifications.
- Telephone, WAN, CCTV, and security systems are by DOW II Contractor.
- All HVAC and plumbing controls are by DOW II Contractor.

Subtask 301	30% Design Submittal Package	Delivery 30 package for BRST project team review.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• 30 % Plans – P&amp;ID's, General Arrangement Drawings, and Initial Electrical Drawings.</li> <li>• Initial list of Division 11, 13, and 16 specification.</li> <li>• Draft of major equipment specifications.</li> <li>• List of required Division 1 specifications.</li> <li>• Permitting issue matrix for Oregon Department of Health for treatment (LT2 and LCR).</li> <li>• Updates to Project Definition Report from Task 210.</li> <li>• Updates to operating descriptions per Task 208.</li> <li>• Participate in development of construction cost estimate.</li> <li>• Updates to project schedule per Task 101.</li> <li>• 3D model for process-mechanical layouts.</li> <li>• 3D model for electrical layouts.</li> <li>• Pre-Workshop presentation and presentation handout material.</li> <li>• Post-Workshop presentation of resolution or response plan to Category 1 comments.</li> <li>• Comment Response Report for all comments.</li> <li>• Attendance at workshops.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• Division 0 and 1 specifications by BRST project team and DOW III Contractor.</li> <li>• Permits and permit coordination with Oregon Department of Health by BRST project team and DOW III Contractor.</li> <li>• Connected load and physical sizing of DOW II Contractor's MCC.</li> <li>• Task 200 Decision completed and frozen.</li> <li>• P&amp;ID's for all major equipment frozen (e.g. excluding minor isolation valves) at 30 % design.</li> <li>• For Design Review Workshop, DOW III shall coordinate and consolidate minutes and action items.</li> </ul>	

**Activities/Deliverables:****The Contractor shall complete the following:**

- 301.01** Headworks and Lusted Hill Sites - Prepare and submit 30% plans and specifications, and other technical information as required to assist BRST project team in preparing permitting requirements.

Electrical drawings and specifications to be submitted include:

- Site electrical plan
- One-line Diagrams
- Switchgear Elevations
- Electrical Drawing Floor Plan
- Table of Contents for Division 16 specifications

Process-mechanical drawings and specifications to be submitted include:

- General arrangement drawings (plans) and sections of all major process areas
- P&ID's
- Table of contents for Division 11 specifications
- Draft of major process equipment specifications

Instrumentation and Control drawings and specifications to be submitted include:

- Plant control architecture drawing
- Table of contents for Division 13 specifications

- 301.02** Prepare and submit construction cost information (quotations for major equipment and material take-offs) for use in construction cost estimate for Division 11, 13 and Division 16 work using DOW III Contractor format.

- 301.03** Provide one electronic copy of 30 percent plans and specifications. Electronic documents shall be provided in PDF format, except at least two or more drawings of each type shall provided in original native MicroStation, AutoCAD or equal format.

- 301.04** Provide update to the Project Definition Report.

- 301.05** Attend BCOE review meeting and provide review comments during the meeting. The Contractor shall provide one senior reviewer for BCOE review per Task 107.

- 301.06** Conduct and coordinate internal quality control program prior to submittal per Task 106.

- 301.07** Prepare a presentation with handout material, attend, and co-facilitate "Pre" Design Review Workshop. The presentation shall include highlights of outstanding issues, decisions required by BRST project team, and areas for requested design review input. The workshop is to assist BRST project team in the understanding of design review issues and shall lead the discussion of the drawings and specifications.

- 301.08** Prepare and submit an electronic comment form standardized to the project requirements by DOW III Contractor. Both internal and client comments shall be maintained.

- 301.09** Prepare a presentation with handout material, attend, and co-facilitate "Post" Design Review Workshop. The focus of the workshop is to present a resolution, response plan, or alternative development to address all Category 1 comments.

- 301.10** Provide response for each comment. Comment review and response shall interface with the project change register for capital and engineering cost control. The Contractor shall provide a consolidated Comment Response Report for all BRST project team comments provided on the form.

<b>Subtask 302</b>	<b>Value Engineering</b>	Provide technical documentation and presentation material to support a Value Engineering Workshop, and provide subject matter expert for VE participation.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• VE Presentation of all process, electrical and instrumentation work performed at the time of the VE session.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• None.</li> </ul>	

One Value Engineering workshop shall be held at the 30 percent design package. The Contractor shall provide one subject matter expert for the VE panel and shall prepare a presentation of the DOW I work synopsis. The Contractor assumes there will be one Value Engineering workshop held in combination with the 30 percent submittal package.

**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 302.01** Prepare short presentation for VE Team describing process, electrical and instrumentation elements of the project work being reviewed.
- 302.02** Respond to questions from VE Team during their work.
- 302.03** Review each short listed value proposition related to process, electrical and instrumentation/controls and prepare responses to the VE recommendations. Responses shall include validation of costs.
- 302.04** Provide one subject matter expert for the VE Panel participation for a total of four (4) days. The expert shall be approved by the PWB's Project Manager.

<b>Subtask 303</b>	<b>60% Design Submittal Package</b>	Delivery 60 package for BRST project team review.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• 60 % Plans – Plans and Sections, major electrical equipment power plans, one-lines, control architecture, conduit duct banks and all major equipment and pipe alignments.</li> <li>• Draft of Division 11, 13, and 16 specifications.</li> <li>• Updates to Project Definition Report from Task 210.</li> <li>• Updates to operating descriptions per Task 208.</li> <li>• Participate in development of construction cost estimate.</li> <li>• Updates to project schedule per Task 101.</li> <li>• 3D model for process-mechanical layouts.</li> <li>• 3D model for electrical layouts.</li> <li>• Pre-Workshop presentation and presentation handout material.</li> <li>• Post-Workshop presentation of resolution or response plan to Category 1 comments.</li> <li>• Comment Response Report for all comments.</li> <li>• Attendance at workshops.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• Final versions of Division 0 and 1 available for incorporation into DOW I Contractors technical specifications between 60% and 90%.</li> <li>• BRST project shall freeze all major equipment and major pipeline alignments following 60 percent design review.</li> <li>• Building footprint and foundation frozen by DOW II Contractor at 60 percent.</li> <li>• Connected load and physical sizing of DOW II Contractor's MCC frozen at 60 percent.</li> <li>• For Design Review Workshop, DOW III shall coordinate and consolidate minutes and action items.</li> </ul>	

**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 303.01** Headworks and Lusted Hill Sites - Prepare and submit 60 percent plans and specifications, and other technical information as required to assist BRST project team in preparing permitting requirements.

Electrical submittal products include:

- Progress electrical site plan
- Updated one-lines
- Electrical power distribution plans
- Cable tray layouts
- Electrical room layouts and sections
- 60% Division 16 specifications
- Grounding plan

Process-mechanical drawings and specifications to be submitted include:

- Plans and sections for all process areas
- Enlarged plans and details for major process areas
- Final updates to P&ID's
- 60 percent Division 11 specifications

Instrumentation and Control drawings and specifications to be submitted include:

- Updated plant control architecture drawing
- Instrument device schedule, control panel schedule, and preliminary I/O list
- 60 percent Division 13 specifications

- 303.02** Update construction cost information (quotations for major equipment and material take-offs) for use in construction cost estimate for CSI Master Format Division 11, 13 and Division 16 work using DOW III Contractor format.
- 303.03** Provide one electronic copy of 60 percent plans and specifications. Electronic documents shall be provided in PDF format except at least two or more drawings of each type shall provided in original native format, if not already provided in 30 percent.
- 303.04** Provide update to the Project Definition Report.
- 303.05** Attend BCOE review meeting and provide review comments during the meeting. The Contractor shall provide one senior reviewer for BCOE review per Task 107.
- 303.06** Conduct and coordinate internal quality control program prior to submittal per Task 106.
- 303.07** Prepare a presentation with handout material, attend, and co-facilitate "Pre" Design Review Workshop. The presentation shall include highlights of outstanding issues, decisions required by BRST project team, and areas for requested design review input. The workshop is to assist BRST project team in the understanding of design review issues and shall lead the discussion of the drawings and specifications.
- 303.08** Prepare and submit an electronic comment form standardized to the project requirements by DOW III Contractor. Both internal and client comments shall be maintained.
- 303.09** Prepare a presentation with handout material, attend, and co-facilitate "Post" Design Review Workshop. The focus of the workshop is to present a resolution, response plan, or alternative development to address all Category 1 comments.
- 303.10** Provide responses for each comment. Comment review and response shall interface with the project change register for capital and engineering cost control. The Contractor shall provide a consolidated Comment Response Report for all BRST project team comments provided on the form.

<b>Subtask 304</b>	<b>90% Design Submittal Package</b>	Delivery 90 package for BRST project team review.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• 90 % Plans – All drawings except final cable schedules.</li> <li>• Final version of all Division 11, 13, and 16 specifications.</li> <li>• Final update to Project Definition Report from Task 210.</li> <li>• Final update to operating descriptions per Task 208.</li> <li>• Final update to construction cost estimate.</li> <li>• Final update to project schedule per Task 101.</li> <li>• 3D model for process-mechanical layouts.</li> <li>• 3D model for electrical layouts.</li> <li>• Pre-Workshop presentation and presentation handout material.</li> <li>• Post-Workshop presentation of resolution or response plan to Category 1 comments.</li> <li>• Comment Response Report for all comments.</li> <li>• Attendance at workshops.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• For Design Review Workshop, DOW III shall coordinate and consolidate minutes and action items.</li> </ul>	

### Activities/Deliverables:

The Contractor shall complete the following:

- 304.01** Headworks and Lusted Hill Sites - Prepare and submit 90 percent plans and specifications, and other technical information as required to assist BRST project team in preparing permitting requirements.
- 304.02** Update construction cost information (quotations for major equipment and material take-offs) for use in construction cost estimate for Division 11, 13 and Division 16 work using DOW III Contractor format.
- 304.03** Provide one electronic copy of 90 percent plans and specifications. Electronic documents shall be provided in PDF format except at least two or more drawings of each type shall provided in original native format, if not already provided in 30 percent.
- 304.04** Provide update to the Project Definition Report.
- 304.05** Attend BCOE review meeting and provide review comments during the meeting. The Contractor shall provide one senior reviewer for BCOE review per Task 107.
- 304.06** Conduct and coordinate internal quality control program prior to submittal per Task 106.
- 304.07** Prepare a presentation with handout material, attend, and co-facilitate "Pre" Design Review Workshop. The presentation shall include highlights of outstanding issues, decisions required by BRST project team, and areas for requested design review input. The workshop is to assist BRST project team in the understanding of design review issues and shall lead the discussion of the drawings and specifications.
- 304.08** Prepare and submit an electronic comment form standardized to the project requirements by DOW III Contractor. Both internal and client comments shall be maintained.
- 304.09** Prepare a presentation with handout material, attend, and co-facilitate "Post" Design Review Workshop. The focus of the workshop is to present a resolution, response plan, or alternative development to address all Category 1 comments.
- 304.10** Provide response for each comment. Comment review and response shall interface with the project change register for capital and engineering cost control. The Contractor shall provide a consolidate Comment Response Report for all BRST project team comments provided on the form.

<b>Subtask 305</b>	<b>95% Design Submittal Package</b>	Delivery of a 95 percent "Back-Check" bid package for BRST project team review.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• 95% Plans and Specifications.</li> <li>• Updates to construction cost estimate.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• None</li> </ul>	

**Activities/Deliverables:**

The Contractor shall complete the following:

- 305.01** Prepare and submit 95 percent plans and specifications, and other technical information as required to assist BRST project team in a final back-check of the 90 percent review comments. Provide one electronic copy of 95 percent plans and specifications. Update construction cost information.

<b>Subtask 306</b>	<b>Final Design 100% Submittal</b>	Final bid package.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• One signed, final full-size original plan set with one electronic copy of the plans with all reference files for both projects.</li> <li>• One signed unbound, original set of final specifications with dividers and covers for both projects.</li> <li>• One electronic copy (PDF on compact disks) of final plans and specifications.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• None.</li> </ul>	

**Activities/Deliverables:**

The Contractor shall complete the following:

- 306.01** Headworks and Lusted Hill Sites - Prepare and submit signed and sealed, 100 percent plans and specifications, and other technical information as required to assist BRST project team in preparing permitting requirements.
- 306.02** Update construction cost information for Division 11, 13, and Division 16 work using DOW III Contractor format
- 306.03** Update equipment data sheets.
- 306.04** Finalize operating descriptions and control narratives and update deliverables of Subtask 208.
- 306.05** Finalize program and approach for operator training of UV and corrosion control systems

**TASK 500: BIDDING ASSISTANCE**

The Contractor shall provide technical support throughout the bid period.

**SUBTASK 501: PRE-CONSTRUCTION CONFERENCE**

The Contractor shall attend two (2) pre-bid meetings (one at each site) and answer questions from potential PWB Construction Contractors. No minutes shall be taken.

**SUBTASK 502: ENGINEERING SUPPORT**

The Contractor shall prepare written responses to questions or clarification requests during the bid period, assist BRST Project Team in preparation of addenda, and provide bid evaluation and report for the electrical, process, and instrumentation and control portions of the bid work.

**TASK 600: CONSTRUCTION ASSISTANCE**

This task's efforts shall be negotiated between the Contractor and the PWB Project Manager. Fees are not reflected in the attached Exhibit A, Compensation Detail.

**TASK 700: OPERATING AND MAINTENANCE**

BRST project team shall develop and implement a coordinated, interactive, and PWB approved electronic Operations and Maintenance (O&M) manual system.

<b>Subtask 701</b>	<b>O&amp;M Manuals</b>	Support the development of an electronic O&M manual system.
<b>Deliverables</b>	• Summaries of O&M issues based on updated operating descriptions..	
<b>Dependencies</b>	• DOW III Contractor shall manage and coordinate work.	

The Contractor shall support the work under this task by addressing the general facility operation in the operating descriptions (see Task 208), by identifying appropriate content for the manual system, and by participating in reviews. This effort is a time allowance.

**NOTE:** DOW III shall manage, coordinate, and perform Task 700.

Since final equipment selection, sizing, and operation may change during bidding, construction, and commissioning, and since actual PWB approved Standard Operating Procedures shall be developed at that time, final O&M content for the system shall be accumulated at that time and not during design.

**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 701.01** Provide O&M manual related data and facilitate review of pre-selected UV equipment supplier's technical submittals with BRST project team and DOW III Contractor from an O&M manual perspective.
- 701.02** Attend meeting with DOW III Contractor to understand technical specification requirements related to O&M manual data and to coordinate the implementation of those requirements in the technical specifications.
- 701.03** Provide summary of O&M requirements based on updated operating descriptions (see Task 208) at the design milestones (30/60/90 and 100) as necessary.
- 701.04** With BRST project team and DOW III Contractor, provide recommendations on content and format details O&M manual for the following unit processes:
- Headworks process systems
  - Lusted Hill process systems
  - Electrical standby power and UPS systems

**CONTRACTOR PERSONNEL**

The Contractor shall assign the following personnel to do the work in the capacities designated:

<b>NAME</b>	<b>ROLE ON PROJECT</b>
Tim Phelan	Project Manager
Michelle Cheek	Project Engineering Coordinator
Robert Hulsey	Project Advisor
Bryan Townsend	UV Process Specialist
Dan C. Gay	Process Mechanical/Chemical Systems Design
Wayne Gresh	Corrosion Control/Chlorination Leader
Steve Kerr	I&C Design Engineer
Dan Meyer	QA/QC and BCOE Leader
Jeff S. Miller	SCADA/I&C Leader
David Roberts	SCADA Systems Expert
Catherine Spencer	Corrosion Control Process
Ed Voght	Chemical Systems



## SUBCONTRACTORS

The Contractor shall assign the following subcontractors to perform work in the capacities designated:

NAME	ROLE ON PROJECT
Carollo Engineers	Process Systems Project Partner
AECOM	Chlorination Process Design/Coordination assistance
R. Hawley Consulting	Operation and SCADA Historical Knowledge
C3MG Cost Management	Cost Management
Alcantar & Associates	3-D Drafting Lanier Consulting, LLC
Lanier Consulting, LLC	Administration Support

The City will enforce all diversity in workforce and Minority, Women and Emerging Small Business (M/W/ESB) subcontracting commitments submitted by the Contractor in its Proposal. For contracts valued \$100,000 or more, the Contractor shall submit a Monthly Subconsultant Payment and Utilization Report (MUR), made part of this contract by reference, reporting ALL subcontractors employed in the performance of this agreement. An electronic copy of the MUR may be obtained at: <http://www.portlandonline.com/shared/cfm/image.cfm?id=119851>.

## COMPENSATION

Contractor shall be paid the not to exceed amount of **\$3,882,983**. The Contractor shall be paid based on its hourly rates, costs incurred in paying its subcontractors, if any, plus any authorized expenses, as set forth in more detail in the attached Exhibit A, Compensation Detail. The "not to exceed amount" is the maximum amount of compensation due the Contractor for all the work required by the contract. Errors in estimating the number of hours necessary to perform the work is the sole responsibility of the Contractor.

### Multiplier Information

The multiplier applied to salaries shall not exceed 3.1. The multiplier shall include the following non-reimbursable expenses: fringe benefits, payroll bonuses, autos and other defined perquisites, telecommunications, facsimile services, overhead expenses including but not limited to local and long distance telephone, parking, delivery/courier, general business and professional liability insurance, advertising costs, postage, internal copying, lease of office equipment, mileage and other local travel costs, information technology (including computer time and CAD services and other related highly specialized equipment), all other direct costs not identified as reimbursable, other indirect costs and profit.

### Standard Reimbursable Costs

The following costs will be reimbursed without mark-up:

- Out-of-Town Travel. Travel (transportation, lodging and per diem) of Contractor and/or experts when specified in the contract or requested by PWB, directly attributed to specific tasks and when to a location outside a 100 mile radius of Contractor's project office. Travel costs will be reimbursed in accordance with the City's Travel Expense Guidelines, which are based on the General Services Administration (GSA) per diem rates.
- Photocopying/Reproduction Costs. Reproduction of required drawings, reports, specifications, bidding documents, in excess of the number required as part of the contract excluding the cost of reproduction for Contractor's or sub's own use.

### Sub-consultant Costs

Compensation for sub-consultants shall be limited to the same restrictions imposed on the Contractor. The maximum markup on sub-consultant services shall not exceed 5%.

### Adjustment of Hourly Rates Due to Inflation

Annual adjustment of hourly rates will be considered upon written request from the Contractor. Approval of a request for rate increases is solely within the City's discretion and under no circumstances is the City obligated to approve such a request.

Rate increases are subject to the following limitations:

- No increases will be granted before the one-year anniversary of the contract;
- No more than one increase shall be granted per contract year;
- Rate increases may not exceed the then-current average inflation rate for the Portland Metropolitan Area (as determined from the US Department of Labor statistics and certified by the City of Portland Auditor);
- Rate increases shall not be retroactive.

Other than the impact of inflation as described above, hourly rates may not be increased.

#### **PAYMENT TERMS: Net 30 Days**

#### **Hourly Rates**

The Contractor shall be reimbursed in accordance with the rates listed on the attached Exhibit A, Compensation Detail.

#### **Progress Payments**

On or before the 15<sup>th</sup> of each month, the Contractor shall submit to the Water Bureau's Accounts Payable an invoice for work performed by the Contractor during the preceding month. The invoice shall contain the City's Contract Number and set out all items for payment including, but not limited to: the name of the individual, labor category, direct labor rate, hours worked during the period, tasks performed, and the percentage of work successfully completed for each task. The Contractor shall provide written explanation of deviations from the contract fees and provide measures of correction as necessary to ensure that the project remains on budget. The Contractor shall also attach photocopies of claimed reimbursable expenses. The City's Project Manager shall stamp and approve all subconsultant invoices and note on the subconsultant invoice what they are approving as "billable" under the contract. The billing from the prime should clearly roll up labor and reimbursable costs for the prime and subconsultants – matching the subconsultant invoices. Prior to initial billing, the Contractor shall develop a billing format for approval by the City. Invoices shall either be e-mailed to: [wb.accountspayablesection@ci.portland.or.us](mailto:wb.accountspayablesection@ci.portland.or.us) (this is the preferred method) or sent to:

City of Portland Water Bureau  
Attn: Portland Water Bureau Accounts Payable  
1120 SW 5<sup>th</sup> Avenue, Room 609  
Portland, OR 97204

The City shall pay all amounts to which no dispute exists within 30 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 Contractor shall make full payment to its subcontractors within 10 business days following receipt of any payment made by the Bureau to Contractor.

## INDEPENDENT CONTRACTOR CERTIFICATION STATEMENT

## SECTION A

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

Contractor Signature

Date 4-27-10

Entity

Black &amp; Veatch Corporation

**If entity does not have Workers' Compensation Insurance, City Project Manager and Contractor complete the remainder of this form.**

## SECTION B

**ORS 670.600 Independent contractor 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 contractor" 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

## SECTION C

Independent contractor certifies he/she meets 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 contractor 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. Contractor 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.

Contractor Signature

Date

**CONTRACTOR 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 Contractor 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 Chapter 3.100 of Code of the City of Portland; and hereby certify I am an independent contractor as defined in ORS 670.600.

**Black & Veatch Corporation**

BY: Dan W Meyer Date: 4-27-10

Name: Dan W Meyer

Title: Vice President


**APPROVED AS TO FORM**

Amela Meng  
CITY ATTORNEY  
5/3/10

Contract No. \_\_\_\_\_

Contract Title: Bull Run Supply Treatment Project – Division of Work I – Process Systems

## CITY OF PORTLAND SIGNATURES:

By:   
Bureau DirectorDate: 05.11.2010By: \_\_\_\_\_  
Purchasing Agent

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

By: \_\_\_\_\_  
Elected Official


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

Approved:

By: \_\_\_\_\_  
Office of City Auditor

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

Approved as to Form:

By:   
Office of City Attorney **CITY ATTORNEY**  
5/3/10

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

Exhibit A

DOW I Services - Bull Run Supply Treatment Project			B&V - CAROLLO KEY TEAM MEMBER LABOR HOURS																			SUBCONSULTANTS and M/W/ESB HOURS						Subconsultant Markup	Reimburseable Costs	TOTAL ESTIMATED COSTS			
			Tim Phelan Project Manager	Michelle Cheek DOW I Coordinator	Bryant Bench UV Process/Off-Spec	Wayne Gresh Corrosion Control/C12	Harold Wright UV Process	Bryan Townsend UV Process	Mark Heath UV Equipment	Bob Hulsey/Catherine Spencer Project Advisor	Bob Elmstad Project Advisor	Anthony Morroni Elec Power Reliability	Chris Carvalho Electrical Lead	Jeff Miller SCADA Systems	Steve Kerr Instrumentation Lead	Ed Wicklein CFD/HGL Modeling	Dan Meyer BCOE Participant	Gary Neun Operations	QA/QC Team Members	Project Engineers	Designers/Technicians	Clerical/WPs	Total Labor Hours	Total Labor Costs	Alcantar Associates Drafting Assistance	AECOM Corrosion/Chlorine Assistance	R. Hawley Consulting SCADA Oversight				C3MG, Inc. Cost Estimating	Lanier Consulting, LLC Project Administration	Total Subconsultant Services
SOW Subtask	Proposal Task	TASK DESCRIPTION																															
Task 100 - Project Management																																	
101	100	Project Management	392	80						8	8							80	40	104	712	\$126,640						380	\$39,900	\$2,764	\$12,000	\$181,304	
102	none	Partnering Sessions	16	16	16	16						10	10	10										12	12	12	12	16	\$9,120	\$995	\$7,100	\$42,475	
103	101	Meeting Attendance	125	92	4	4							2	2				4	16	4	253	\$46,295	16	6		4	10	\$4,510	\$368	\$5,000	\$56,173		
104	none	Change Management (included in 106)																															
105	none	105.01 - Risk Management (fee included in 106)																															
	none	On-Site Generation OR Chlorine Storage	48	120	80	64				40		64	200	200	240			120	320	240	80	1,816	\$306,400	300		24	80	40	\$44,940	\$8,085	\$10,000	\$369,425	
	none	Off-Site PGE Supply Design	48	40	40	80						100	200					80	200	120	20	928	\$173,520	160	170		60	40	\$69,300	\$8,305	\$8,000	\$259,125	
	none	Off-Site PGE Supply Tender	24	40	24	24						24	72					24	80	80	40	432	\$73,920	40	48		60	24	\$21,700	\$3,017	\$10,000	\$108,637	
	none	Headworks Intertie within Building	24	80	40							24	80	24	80			40	48	80	40	560	\$92,920	140			40	24	\$20,420	\$3,089	\$4,000	\$120,429	
106	106	Design Quality QA/QC Management Plan	40	120																20	180	\$28,400					90	\$9,450	\$518		\$38,368		
107	107	BCOE Design Review														72						72	\$21,600						\$0	\$0	\$3,900	\$25,500	
108	none	Health and Safety	2	2	2	2							1									11	\$2,050		1				\$250	\$826		\$3,126	
Subtotal			719	590	206	190	0	0	0	48	18	222	565	236	320	0	82	0	264	732	578	316	5,086	\$897,005	668	237	36	196	660	\$219,590	\$27,966	\$60,000	\$1,204,561
Task 200 - Design Issue Resolution (Preliminary Design)																																	
201	110	UV Process Design	120	140	40	8			16				16	16					40	84		488	\$84,580	120				20	\$12,300	\$1,829	\$3,000	\$101,709	
202	114	Mercury Mitigation	40	12	40		40					16							24	8		180	\$35,120						\$0	\$1,119	\$1,500	\$37,739	
203	113	Electric Power Requirements	26	24	4							46	88						96	80	16	380	\$65,350	60					\$5,100	\$2,397	\$2,750	\$75,597	
204	116	UV Operations and Reg Support (Design Point Evaluations)	28	20	12		28	4	8											4		104	\$19,120			8		2	\$1,290	\$529	\$500	\$21,439	
205	111	Chlorination Design	48	68	16	42				20	8							8	24	24	8	266	\$48,210	64	194		32	\$57,300	\$3,330	\$2,400	\$111,240		
206	112	Corrosion Control at Lusted Hill	58	128		86				52	4		24					24	80	112	28	596	\$101,140	50	48		8	\$17,090	\$1,886	\$1,400	\$121,516		
207	115	I&C/SCADA Controls	57	72	12	12								258	224			32	24	32	20	743	\$122,115	20		110		\$16,550	\$1,203	\$6,750	\$146,618		
208	118	Process/Operational Descriptions	61	62			40	24		2					60			1	44	8	40	342	\$51,585			28	1	\$3,885	\$846	\$5,000	\$61,316		
209	117	Process Modeling	24	6	12	2	8	4	4			4	12	4	4	80						164	\$28,330		8			\$2,000	\$1,104	\$1,500	\$32,934		
209	none	Provide UV Space Model (DOW I support)																				0	\$0					\$0	\$0	\$0	\$0		
210	120	Design Memos (Updates to BDR)	60	60	20	20	40	40		8	24	8	40	40		40	16		80	80		120	696	\$122,320			190	\$19,950	\$3,254	\$1,000	\$146,524		
211	none	UV Procurement Development Support	40	8	40	4	40	76		8		16	16					16				8	272	\$48,840					\$0	\$1,080	\$2,137	\$52,057	
Subtotal			562	600	196	174	196	148	28	90	36	90	180	334	288	128	16	0	145	428	352	240	4,231	\$726,710	314	250	146	0	253	\$135,465	\$18,575	\$27,937	\$908,687
Task 300 - Detailed Design																																	
301	210	30% Design Submittal Package	307	384	96	96	64	56	68	8	72	48	204	128	240	48	28		120	208	312	28	2,515	\$439,365	824	8	40	160	64	\$108,160	\$13,338	\$5,500	\$566,363
302	211	Value Engineering	40	60	24	24	16	16		4	12	24		34							20	274	\$51,080						\$0	\$895	\$1,500	\$53,475	
302	none	Value Engineering - Panel Expert	2															40				42	\$10,430				2	\$210	\$11	\$2,000	\$12,651		
303	212	60% Design Submittal Package	163	204	44	44						4	100	54	100		28		170	200	300	80	1,491	\$255,705	820	8	16	48	\$78,900	\$7,420	\$3,000	\$345,025	
303	none	Workshop Support	4	20	8	8						4	8	8					8	12	8	88	\$14,960	4			4	\$760	\$343	\$1,000	\$17,063		
304	214	90% Design Submittal Package	123	124	44	44						4	160	54	50		28		280	200	300	80	1,491	\$269,105	590	20	16	48	\$62,350	\$7,192	\$3,000	\$341,647	
304	none	Workshop Support	4	20	8	8						4	8	8					8	12	8	88	\$14,960	4			4	\$760	\$343	\$1,000	\$17,063		
305	none	95% Design Submittal Package	4	8	8	8													12	36	8	84	\$12,840	36			16	\$4,740	\$510	\$3,000	\$21,090		
306	216	Final Design 100% Submittal	100	120	40	40	40	40	40				100	20	40				20	230	200	140	1,170	\$182,800	350			20	\$31,850	\$5,555	\$3,000	\$223,205	
Subtotal			747	940	272	272	120	112	108	12																							

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

**CONTRACT NO. 30001284**

**SHORT TITLE OF WORK PROJECT:  
Bull Run Supply Treatment Project  
Division of Work II  
Facilities**

This contract is between the City of Portland, acting by and through its Elected Officials, hereafter called "City," and Michael Willis Architects, hereafter called Contractor. The City's Project Manager for this contract is David Peters.

**Effective Date and Duration**

This contract shall become effective on June 25, 2010. This contract shall expire, unless otherwise terminated or extended, on December 31, 2014.

**Consideration**

- (a) City agrees to pay Contractor a sum not to exceed \$4,337,852 for accomplishment of the work.
- (b) Interim payments shall be made to Contractor according to the schedule identified in the STATEMENT OF THE WORK AND PAYMENT SCHEDULE.

**CONTRACTOR DATA AND CERTIFICATION**

Name (please print): Michael Willis Architects

Address: 70 NW Couch Street, Suite 401, Portland, OR 97209

Employer Identification Number (EIN) 943-07-0035

**[INDEPENDENT CONTRACTORS: DO NOT PROVIDE SOCIAL SECURITY NUMBER (SSN) – LEAVE BLANK IF NO EIN]**

City of Portland Business License # 649234

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. Information not matching IRS records could subject you to 20 percent backup withholding.

**STANDARD CONTRACT PROVISIONS FOR  
PROFESSIONAL, TECHNICAL & EXPERT SERVICES (MANDATORY PROVISIONS)**

**1. Access to Records**

The Contractor shall maintain, and the City of Portland ("City") and its duly authorized representatives shall have access to the books, documents, papers, and records of the Contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts, and transcripts for a period of three years after final payment. Copies of applicable records shall be made available upon request. Payment for cost of copies is reimbursable by the City.

**2. Audits**

- (a) The City, either directly or through a designated representative, may conduct financial and performance audits of the billings and services specified in this agreement at any time in the course of the agreement and during the three (3) year period established by section 1, **Access to Records**. 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 General Accounting Office.
- (b) If an audit discloses that payments to the Contractor were in excess of the amount to which the Contractor was entitled, then the Contractor shall repay the amount of the excess to the City.
- (c) If any audit shows performance of services is not efficient in accordance with Government Auditing Standards, or that the program is not effective in accordance with Government Auditing Standards, the City may pursue remedies provided under section 5, **Early Termination of Agreement** and section 7, **Remedies**.

**(b) Indemnity - Claims for Professional Liability**

Contractor shall defend, save, and hold harmless the City of Portland, its officers, agents, and employees, from all claims, suits, or actions arising out of the professional negligent acts, errors or omissions of Contractor or its subcontractors and sub-consultants, agents or employees in performance of professional services under this agreement. Nothing in this section requires the Contractor or its insurer to indemnify the City for any claims or losses caused by the negligence of the City.

**(c) Indemnity - Standard of Care**

If Contractor's services involve engineering or consulting, the standard of care applicable to Contractor's service will be the degree of skill and diligence normally employed by professional engineers or consultants performing the same or similar services at the time such services are performed. Contractor will re-perform any services not meeting this standard without additional compensation.

**10. Insurance**

During the term of this contract Contractor shall maintain in force at its own expense, each insurance noted below:

- (a) Workers' Compensation insurance in compliance with ORS 656.017, which requires subject employers to provide Oregon workers' compensation coverage for all their subject workers (contractors with one or more employees, unless exempt under ORS 656.027).

- (b) ☒ Required and attached or ☐ Waived by City Attorney: \_\_\_\_\_

General Liability insurance with a combined single limit of not less than \$1,000,000 per occurrence for Bodily Injury and Property Damage. It shall include contractual liability coverage for the indemnity provided under this contract, and shall provide that City of Portland, and its agents, officers, and employees are Additional Insured but only with respect to the Contractor's services to be provided under this Contract:

- (c) ☒ Required and attached or ☐ Waived by City Attorney: \_\_\_\_\_

Automobile Liability insurance with a combined single limit of not less than \$1,000,000 per occurrence for Bodily Injury and Property Damage, including coverage for owned, hired, or nonowned vehicles, as applicable:

- (d) ☒ Required and attached or ☐ Waived by City Attorney: \_\_\_\_\_

Professional Liability insurance with a combined single limit of not less than \$2,000,000 per claim, incident, or occurrence. This is to cover damages caused by error, omission or negligent acts related to the professional services to be provided under this contract. If insurance coverage is provided on a "claims made" basis, the successful Proposer shall acquire a "tail" coverage or continue the same coverage for three years after completion of the contract, provided coverage is available and economically feasible. If such coverage is not available or economically feasible, contractor shall notify City immediately.

- (e) On all types of insurance. There shall be no cancellation, material change, reduction of limits, or intent not to renew the insurance coverage(s) without 30-days written notice from the Contractor or its insurer(s) to the City.
- (f) Certificates of insurance. As evidence of the insurance coverages required by this contract, the Contractor shall furnish acceptable insurance certificates to the City at the time contractor returns signed contracts. The certificate will specify all of the parties who are Additional Insured and will include the 30-day cancellation clause and 10-day non-payment clause that provides that the insurance shall not terminate or be cancelled without 30 days or 10 days written notice first being given to the City Auditor. Insuring companies or entities are subject to City acceptance. If requested, complete policy copies shall be provided to the City. The Contractor shall be financially responsible for all pertinent deductibles, self-insured retentions, and/or self-insurance.

**11. Ownership of Work Product**

All work products produced by the Contractor under this contract is the exclusive property of the City. "Work product" shall include but not be limited to research, reports, computer programs, manuals, drawings, recordings, photographs, artwork and any data or information in any form; the Contractor 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 Contractor 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. Contractor shall obtain such interests and execute all documents necessary to fully vest such rights in the City. Contractor 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 Contractor is an architect, the work product is the property of the Contractor-Architect, and by execution of this contract, the Contractor-Architect grants the City an exclusive and irrevocable license to use that work product.

**12. Nondiscrimination**

Contractor agrees to comply with all applicable requirements of federal and state civil rights and rehabilitation statutes, rules, and regulations. Contractor also shall comply with the Americans With Disabilities Act of 1990 (Pub L. No. 101-336) including Title II of that Act, ORS 659.425, and all regulations and administrative rules established pursuant to those laws.



**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 Contractor shall perform such additional work as may be necessary to correct errors in the work required under this contract without undue delays and without additional cost.

**17. Governing Law**

The provisions of this contract shall be construed in accordance with the provisions of the laws of the State of Oregon. 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 scope of work and contract amount, must be made by written amendment and approved by the Purchasing Agent 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 License**

The Contractor shall obtain a City of Portland business license as required by PCC 7.02 prior to beginning work under this Agreement. The Contractor shall provide a business license number in the space provided on page one of this Agreement. Additionally, the Contractor shall pay all fees or taxes due under the Business License Law and the Multnomah County Business Income Tax (MCC Chapter 12) during the full term of this contract. Failure to be in compliance may result in payments due under this contract to be withheld to satisfy amount due under the Business License Law and the Multnomah County Business Income Tax Law.

**20. Prohibited Interest**

(a) No City officer or employee during his or her tenure or for one year thereafter shall have any interest, direct or indirect, in this Agreement or the proceeds thereof.

(b) No City officer or employee who participated in the award of this Agreement shall be employed by the Contractor during the period of the Agreement.

**21. Payment to Vendors and Subcontractors**

The Contractor shall timely pay all suppliers, lessors and contractors providing it services, materials or equipment for carrying out its obligations under this Agreement. The Contractor shall not take or fail to take any action in a manner that causes the City or any materials that the Contractor provides hereunder to be subject to any claim or lien of any person without the City's prior written consent.

**Merger Clause**

THIS CONTRACT AND ATTACHED EXHIBITS CONSTITUTES THE ENTIRE AGREEMENT BETWEEN THE PARTIES. NO WAIVER, CONSENT, MODIFICATION, OR CHANGE OF TERMS OF THIS CONTRACT SHALL BIND EITHER PARTY UNLESS IN WRITING AND SIGNED BY BOTH PARTIES. SUCH WAIVER, CONSENT, MODIFICATION, OR CHANGE IF MADE, SHALL BE EFFECTIVE ONLY IN SPECIFIC INSTANCES AND FOR THE SPECIFIC PURPOSE GIVEN. THERE ARE NO UNDERSTANDINGS, AGREEMENTS, OR REPRESENTATIONS, ORAL OR WRITTEN, NOT SPECIFIED HEREIN REGARDING THIS CONTRACT. CONTRACTOR, BY THE SIGNATURE OF ITS AUTHORIZED REPRESENTATIVE, HEREBY ACKNOWLEDGES THAT HE OR SHE HAS READ THIS CONTRACT, UNDERSTANDS IT AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS.

**OPTIONAL PROVISIONS (selected by City Project Manager)****22. Arbitration: / X / Not Applicable /     / Applicable (consult with City Attorney's Office before finalizing as applicable)**

(a) Any dispute arising out of or in connection with this Agreement, which is not settled by mutual agreement of the Contractor and the City within sixty (60) days of notification in writing by either party, shall be submitted to an arbitrator mutually agreed upon by the parties. In the event the parties cannot agree on the arbitrator, then the arbitrator shall be appointed by the Presiding Judge (Civil) of the Circuit Court of the State of Oregon for the County of Multnomah. The arbitrator shall be selected within thirty (30) days from the expiration of the sixty (60) day period following notification of the dispute. The arbitration, and any

litigation arising out of or in connection with this Agreement, shall be conducted in Portland, Oregon, shall be governed by the laws of the State of Oregon, and shall be as speedy as reasonably possible. The applicable arbitration rules for the Multnomah County courts shall apply unless the parties agree in writing to other rules. The arbitrator shall render a decision within forty-five (45) days of the first meeting with the Contractor and the City. Insofar as the Contractor and the City legally may do so, they agree to be bound by the decision of the arbitrator.

(b) Notwithstanding any dispute under this Agreement, whether before or during arbitration, the Contractor shall continue to perform its work pending resolution of a dispute, and the City shall make payments as required by the Agreement for undisputed portions of work.

**23. Progress Reports: /\_X\_/ Applicable /\_\_\_/ Not Applicable**

The Contractor shall provide monthly progress reports to the Project Manager. If applicable, the STATEMENT OF THE WORK should list what information the Contractor must include in monthly progress reports.

**24. Contractor's Personnel: /\_X\_/ Applicable /\_\_\_/ Not Applicable**

The Contractor shall assign the following personnel to do the work in the capacities designated: If applicable, list selected personnel in the STATEMENT OF THE WORK. The Contractor shall not change personnel assignments without the prior written consent of the City.

**25. Subcontractors: /\_X\_/ Applicable /\_\_\_/ Not Applicable**

The City requires Contractors to use the Minority, Women and Emerging Small Business (M/W/ESB) subcontractors identified in their proposals, and as such the Contractor shall assign these subcontractors as listed in the STATEMENT OF THE WORK to perform work in the capacities designated. The Contractor shall not change subcontractor assignments without the prior written consent of the Purchasing Agent.

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**STATEMENT OF THE WORK  
AND PAYMENT SCHEDULE**

**General Background and Project Overview**

The Portland City Council has directed the Portland Water Bureau (PWB) to design an ultraviolet (UV) light disinfection system for treating the drinking water from the Bull Run watershed. Should the City's attempts to seek a variance prove unsuccessful, this UV disinfection system will be constructed. The Bull Run Supply Treatment project (BRST) shall include ultraviolet light disinfection at Headworks and corrosion control process modifications at Lusted Hill.

The UV disinfection portion of the Bull Run Supply Treatment Project shall be located at the Headworks site. The project design shall include a UV light disinfection process facility; offices and supporting spaces; and primary and emergency back-up power for the facility. The process facility shall be within a building and shall contain the UV reactors, process piping, instrumentation, controls and chlorination. That building or an additional building needs to be provided to house operations and maintenance personnel, and support functions including a control room, supervisor offices, a laboratory, lunchroom, restrooms, locker rooms, and maintenance shops.

Corrosion control shall continue to be located at Lusted Hill. Currently, ammonia and caustic soda are added at the Lusted Hill facility which is housed in a pre-engineered structure that is over twenty (20) years old. Improvements are necessary to improve the working conditions at this facility. The required modifications include additional chemical feed facilities, modification of the laboratory areas, relocating energy sources such as propane and electrical equipment, and upgrades to the HVAC and septic systems.

The BRST Project includes all required disciplines of design including mechanical, piping, electrical, instrumentation and controls; offices for operations, maintenance, and other support functions; and power supply including emergency back-up power for the facilities.

The professional, technical and engineering services for the Project includes designing and developing plans and specifications for a Design-Bid-Build construction contract for UV water treatment facilities and corrosion control systems including the associated building structures and support systems. This scope of work includes all work and deliverables required from the Contractor for Division of Work II (DOW II), Facilities.

There are two other Divisions of Work:

- Division of Work I (DOW I) shall perform engineering services for the process systems including the UV disinfection and corrosion control design work, and the components inside the building(s).
- Division of Work III (DOW III) shall support the PWB with project management support activities including coordination, technical standards, scheduling, etc.

Construction management services shall be retained by the Bureau if the project moves forward to construction.

All three (3) Contractors working on the BRST project shall work in conjunction with one another along with the PWB's Project Manager, PWB Project Team Leads and PWB staff in order to achieve the desired project outcome. These individuals shall make up the BRST Project Team.

Each DOW Contract shall have a team which consists of the PWB Project Team Lead, Contractor's Project Manager, and with other PWB and Contractor staff in order to achieve the desired project outcome. These individuals shall make up the DOW Team.

### Scope of Work for DOW II

The following scope of work details the professional, technical, and engineering services to be provided by the DOW II Contractor for the Project. The scope of work has been organized into the following major tasks:

**Task 100 – Project Management**

**Task 200 – Design and Issues Resolution**

**Task 300 – Final Design**

**Task 400 – *Not Used***

**Task 500 – Bidding Assistance**

**Task 600 – Construction Assistance**

**Task 700 – O&M Manuals**

Each major task consists of a number of subtasks including the subtask objectives, activities, deliverables, and dependencies.

### **TASK 100: PROJECT MANAGEMENT**

Project management services are required to ensure that the engineering design work shall be performed in an organized, systematic manner, using proven project management methods to plan, organize, coordinate, document, and control the work. The project management tasks include scheduling, cost accounting, quality control, and progress reporting.

Project management also includes planning, conducting, making presentations, and documenting regularly scheduled and special project meetings. These meetings include those with the BRST Project Team and other DOW Contractors. The Contractor shall actively coordinate with the BRST Project Team and the DOW II and DOW III Contractors and Sub-Contractors for the duration of the project.

<b>Subtask 101</b>	<b>Scheduling and Project Controls</b>	Plan, schedule and coordinate all design activities for DOW II work
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Work Plan and Internal Project Procedures Manual</li> <li>• Develop and continuously update schedule for DOW II design activities using a standard BRST Project Team format, schedule to be incorporated into DOW III's overall Master Design Project Schedule.</li> <li>• Action Item Log</li> <li>• Decision Log</li> <li>• Internal project controls</li> <li>• Monthly Invoice</li> <li>• Monthly Fee Spending Matrix</li> <li>• Monthly Progress Report</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• DOW III Master Design Project Schedule</li> <li>• DOW III shall coordinate and consolidate minutes and action items.</li> </ul>	

The Contractor's Project Manager shall (1) coordinate, communicate, receive directions from, and support the BRST project team, and (2) plan, organize, monitor, and control the day to day project team activities. The Project Manager shall have the authority to make commitments for the DOW II Contractor. The Contractor's Project Manager shall informally meet weekly with the PWB's Project Team Lead, Luanne Zoller to coordinate the project.

**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 101.01** Prepare project design Work Plan to include project goals and objectives, design approach, statement of work and deliverables, Design Project Schedule, DOW II team organization and contact information, Project Procedures and DOW II work templates. Coordination between DOW I and DOW III shall follow DOW III Project Standards, which shall be provided to all parties for reference.
- 101.02** Prepare detailed Design Project Schedule for the Contractor's work elements (MS Project) showing each major task and sub-task including start/completion dates, major deliverables, and work requiring coordination with design disciplines and other DOW Contractors following the DOW III project standards. The Contractor shall provide monthly updates to the overall Master Design Project Schedule.
- NOTE:** The DOW II Design Project Schedule shall be combined by the DOW III with other Divisions of Work to produce an overall Master Design Project Schedule. DOW III shall maintain the shared Master Design Project Schedule.
- 101.03** Develop and maintain a Decision and Action Log to capture and document decisions and both open and closed action items which arise from the regular meetings for coordination and work tracking. Open action items shall be reviewed with the PWB's Project Lead on a weekly basis.
- 101.04** The Contractor shall prepare Monthly Progress Reports. The monthly report shall contain the following information: activities completed during the reporting period, activities planned during the next reporting period, current Design Project Schedule, percent billed and actual percent complete for each major task to determine earned value, updated Work Breakdown Structure (WBS) if changed, and problems incurred or anticipated, including potential items not currently within this Scope of Work.

<b>Subtask 102</b>	<b>Partnering Sessions</b>	<b>Participate and support Partnering Sessions</b>
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>Signed Project Charter</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>Attendance and participation at the Partnering Sessions by DOW I, III and PWB. DOW III Contractor shall organize and facilitate.</li> </ul>	

The Contractor shall prepare for and attend three (3) Partnering Sessions with the BRST project team and other DOW Contractors. The partnering session would include an overview of project goals and expectations, introductions of team members and responsibilities, review of the Master Design Project Schedule and an open forum for questions from team members. The purpose of this meeting is to establish trust within the overall BRST project team and to get commitments from team members as to the contributions they will be providing.

**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 102.01** Prepare for and attend a full-day Partnering Session with the PWB, DOW I and DOW III team members. It is expected that all sub-contractors shall participate in this initial partnering session to establish the Project Charter.
- 102.02** Participate in an additional half-day partnering session to be held at the start of the 30% design phase which shall include all DOW Contractors, all sub-contractors, and PWB.
- 102.03** Participate in an additional half-day partnering session to be held between the 60% and 90% design phase which shall include only the DOW Contractors and PWB. The purpose of this session is to ensure that the goals and partnering commitments established in the initial partnering session are being met.

<b>Subtask 103</b>	<b>Meetings</b>	Prepare for and attend regularly scheduled coordination meetings.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Meeting agenda and meeting review material for each DOW II meeting.</li> <li>• Meeting minutes for regular DOW II coordination meetings and focus meetings.</li> <li>• Contributions to DOW III for meeting notes for BRST project team coordination meetings.</li> <li>• Updated Action Item Log.</li> <li>• Updated Decision Log.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• DOW III to provide agenda and minutes for Project Kick-off Meeting, Project Coordination Meetings, and Training Meetings.</li> </ul>	

The Contractor shall prepare for and attend project meetings to review the work in progress, keep BRST project team informed of the technical or project issues, receive and resolve comments. The Contractor's staff and others shall attend as necessary.

For meetings or workshops led by the Contractor, a formal agenda and other applicable review materials shall be submitted to the assigned PWB Team Lead by e-mail at least 3 business days prior to regular meeting or at least 5 business days prior to each workshop. For meetings or workshops led by the Contractor, meeting or workshop minutes shall be prepared and submitted to the BRST project team within 7 days after the meeting or workshop.

#### Activities/Deliverables:

The Contractor shall complete the following:

- 103.01** Contractor's Project Managers shall attend a Project Kick-off Meeting to discuss schedule, review task specific requirements as well as review project procedure requirements. This meeting shall include the Contractor, their sub-contractors and PWB. This workshop led by DOW III Contractor, shall also include review of the evaluation criteria framework which shall be used during Task 200 work.
- 103.02** Contractor's Project Managers shall attend bi-weekly Project Coordination Meetings to review work assignments and other related topics which may arise, to coordinate work and information with other DOW's and to discuss technical issues.
- 103.03** The Contractor shall attend Project Training Sessions including an orientation meeting for the training and orientation of DOW III project execution and management tools such as the project web site, CAD publishing protocols, 3D standards, etc. The meeting shall include a formal project CAD standard orientation and coordination meeting with all lead CAD personnel for the design
- 103.04** The Contractor shall undertake all other required internal meetings necessary to coordinate and perform work between their sub-contractors and DOW team members.

<b>Subtask 104</b>	<b>Change Management</b>	Implement Change Management System to track cost, schedule, or budget changes.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Updated Project Change Register.</li> <li>• Change Management Documentation as required by Project Workflow Process Manual.</li> <li>• Summary of register in each monthly progress report.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• DOW I, III and PWB.</li> </ul>	

#### Activities/Deliverables:

The Contractor shall complete the following:

- 104.01** Implement a cost, schedule, and budget control and Change Management System to identify, track, and document decisions, findings, and unforeseen conditions which affect contract budget throughout the design. The system shall include reporting and updates to DOW I, DOW III and PWB.

**104.02** Maintain a Project Change Register for their work to track potential and actual changes to the capital cost, engineering cost, schedule or budget for the Contractor's work. Summary of the Register shall be included in the Monthly Progress Report.

**104.03** Maintain a Master Project Change Register for all divisions of work. The Contractor shall provide updates from the Contractor's Project Change Register for incorporation into the Master Project Change Register maintained by DOW III.

<b>Subtask 105</b>	<b>Risk Management</b>	Review and provide input into the Project Risk Register
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>Monthly updates and input to the Risk Register for the project or more frequently as required.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>DOW III shall develop and maintain the overall Project Risk Register.</li> <li>DOW I, III and PWB shall all have input to assess magnitude of risk factors.</li> </ul>	

Consistent with the PWB adopted Project Workflow Process; Risk Management is broken down into two topics; Project-Specific Issues and Resource Concerns. Project Specific Issues might include any issue that affects scope, schedule or budget or any issues that negatively impact the completed project. Resource Concerns relate to any issues that concern staffing, equipment or budget that may adversely affect successful project completion.

#### Activities/Deliverables:

The Contractor shall complete the following:

**105.01** DOW II shall review and make updates as required to the Project Risk Register. Any new project issues which affect project delivery shall be identified and added to the Matrix. The DOW II shall provide monthly updates to the project's risk management matrix/register.

<b>Subtask 106</b>	<b>Quality Management</b>	Prepare a QA/QC plan for DOW II design efforts.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>QA/QC Plan.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>Individual DOW QA/QC plans shall be coordinated by DOW III Contractor into a Design Quality Management Plan.</li> </ul>	

#### Activities/Deliverables

The Contractor shall complete the following:

**106.01** Prepare an internal Quality Assurance/Quality Control (QA/QC) plan for the work. The Contractor shall also perform internal QA/QC review of each major design deliverable including preliminary design Technical Memoranda (TM's) and detailed design submittals (30/60/90%). QA/QC reviews shall be maintained in the DOW I Contractor offices as project record.

**NOTE:** The QA/QC plan shall be incorporated into an overall project wide Design Quality Management Plan by DOW III.

**106.02** DOW I Contractor shall report significant QA/QC concerns to the BRST project team.

<b>Subtask 107</b>	<b>BCOE Reviews</b>	Participation by Principal Level Reviewer at each of the project design milestones.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>Contractor shall provide input to DOW III for the bid-ability, constructability, operability, and environmental (BCOE) checklist at each milestone using a form provided by DOW III and PWB similar to Appendix D-2 of the PWB adopted Project Workflow Process Manual.</li> <li>Contractor shall provide review comments to DOW III during BCOE. Comments shall be recorded at each milestone on DOW III or PWB provided forms in accordance with Appendix D-1 of the PWB adopted Project Workflow Process Manual.</li> <li>Contractor shall document in a BCOE Memorandum actions taken in subsequent work phases to address BCOE review comments.</li> </ul>	

<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• PWB and DOW III to establish specific protocol for BCOE reviews.</li> <li>• DOW III Contractor shall be responsible for facilitating the BCOE sessions, completing the checklists and compiling the comments into the forms.</li> </ul>
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**Activities/Deliverables:**

**The Contractor shall complete the following:**

**107.01** Provide one Senior Reviewer, for (3) full days during each of the 30 percent, 60 percent, 90 percent BCOE reviews performed at the PWB offices. Senior Reviewer shall participate in each of the (3) review workshops and make recommendations for the BCOE review.

**107.02** The Contractor shall incorporate any changes or recommendation from the BCOE sessions.

<b>Subtask 108</b>	<b>Health and Safety Plan</b>	<b>Participate in PWB Health and Safety Standards</b>
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• None</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• PWB to provide health and safety orientation.</li> </ul>	

**Activities/Deliverables:**

**The Contractor shall complete the following:**

**108.01** Provide a time allowance for up to two (2) hours training for Contractor's staff who shall work in the PWB Offices to receive orientation regarding safety measures and protocols of the buildings. The Contractor shall provide a time allowance for any staff visiting either Headworks or Lusted Hill for safe work practice orientation at each of the work sites.

**TASK 200: DESIGN AND ISSUES RESOLUTION**

This task provides a preliminary design effort to resolve outstanding project definition from the Basis of Design Report and the Value Engineering (VE) report. The Contractor shall complete the work activities for the following subtasks including: TM's and workshops with PWB and project team members. Work products and deliverables include the final TMs and a Project Design Definition Summary memorandum. This memorandum shall consolidate all design decisions, TM findings, and design criteria for DOW II work into a DOW II Project Design Definition Summary.

Some components of the project may or may not be implemented depending on the findings and decision from Task 200 work. The work elements categorized as Risk Factor Mitigation shall be provided by the Contractor upon written instruction from the PWB.

<b>Subtask 201</b>	<b>Site Utilities -Existing Conditions</b>	Identify, map and confirm location of existing site utilities at Headworks site.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Comprehensive as-built drawing of existing site utilities.</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• PWB existing as-built information.</li> <li>• Potholing activities by PWB as needed.</li> <li>• Utility Research: The Contractor shall rely on utility record information to be provided. It is assumed the utility record information will have been incorporated into the survey base mapping by the survey sub DOW II.</li> </ul>	

The Contractor shall work with PWB to identify the location of existing site utilities at the Headworks site. Identifying locations and determining whether or not the utilities are "live" or can be removed will be critical to locating the proposed new facilities as well as allowing for future expansion work.

**Activities/Deliverables:**

The Contractor shall complete the following:

**CIVIL**

- 201.01** Modify PWB's existing site plan and generate a revised site plan and an as-built drawing of existing site utilities for the Headworks site based on existing as-built documentation provided by PWB.
- 201.02** Facilitate a **Site Utilities Workshop** with PWB senior staff with a working knowledge of the Headworks site and the Contractor's staff members to review and confirm information shown on PWB's existing site plan.
- 201.03** Create a list of items to be confirmed in the field based on discussions at the workshop. Potholing and/or field confirmation will be provided by PWB.
- 201.04** Provide as-built information to DOW III to create a 3D Microstation model of existing site utilities and conduits for incorporation into the 3D Microstation design model.

<b>Subtask 202</b>	<b>Building Programming</b>	Identify and determine building programming requirements.
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Building Programming Spreadsheet for each facility</li> <li>• Building Design Narratives</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• UV Equipment Selection by PWB</li> <li>• UV Process Design Layout by DOW I.</li> <li>• Chlorine Feed Requirements by DOW I.</li> <li>• Operations Building program requirements to be confirmed by PWB.</li> <li>• Chlorine Storage size requirements by DOW I.</li> </ul>	

Building Programming shall define the specific building requirements for the facilities at both Headworks and Lusted Hill sites. Building requirements would include size, required spaces, occupancy requirements and types of mechanical and electrical systems. At Headworks, DOW II shall coordinate with the Contractor and PWB to define specific building requirements for the UV process building, operations building, maintenance building, and the generator enclosure building. At Lusted Hill, The Contractor shall coordinate with DOW I and PWB to define specific building requirements for additions to the existing building for corrosion control process expansion, lab improvements and storage space additions. The Contractor shall also coordinate with DOW I and PWB to determine the requirements for the Disaster Recovery Facility.

**Activities/Deliverables:**

The Contractor shall complete the following:

- 202.01** Participate in a **Building Definition Workshop** facilitated by DOW I for the UV Process building and Operations building.
- 202.02** Facilitate a **Workshop** to determine the requirements for a Disaster Recovery Facility at Lusted Hill.
- 202.03** Create a Building Programming Excel spreadsheet for each building with a list of required rooms and specific descriptions for each including: room size, wall and floor finish requirements, equipment to be accommodated in each room and description of room function. This document shall correspond with the Building Narrative document and shall be incorporated into a Technical Memorandum.
- 202.04** Create a Building Narrative document for each building which shall describe the proposed building construction type, code requirements and proposed building systems including Structural, HVAC, Plumbing, Fire Protection, Electrical, Lighting, Security and Communications. This document shall also describe proposed exterior and interior Architectural finishes. This material shall be incorporated into the Technical Memorandum.



<b>Subtask 203</b>	<b>Initial Site Layout</b>	Determine location and footprint of buildings, conduits and site utilities
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Site Plan for Headworks</li> <li>• Site Plan for Lusted Hill</li> <li>• Physical Model of Existing Headworks Site</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• DOW I Workshops to establish process layouts and requirements.</li> <li>• Topographic and Design Survey to be provided to the Contractor by PWB.</li> <li>• Potholing: Potholing excavation services may be warranted to confirm the position of existing underground utilities, the proposed alignment, and points of connection to existing facilities. It is assumed that these services shall be provided by others. The Contractor shall identify locations to be potholed related to facilities being designed by DOW II.</li> </ul>	

The Contractor shall provide initial (20%) 'worst case scenario' site plans for each site based on determination of the existing site utilities as-built as noted in subtask 201, initial programming discussions and output from DOW I Workshops regarding 'Selection of the UV Layout', 'Mercury Mitigation', 'UV Off-Spec & Electrical Reliability', 'Chlorine Feed and Storage Modifications' and 'Corrosion Control Facilities'.

#### Activities/Deliverables:

The Contractor shall complete the following:

#### ARCHITECTURAL

- 203.01** Facilitate a **Site Planning Workshop** after building requirements have been defined and DOW I Workshops listed above have been completed. This workshop shall include all three DOWs and PWB to establish locations for required facilities and design parameters for both sites.
- 203.02** Generate a physical model of existing site topography and structures to be used in the Site Planning Workshop.

#### CIVIL

- 203.03** Based on the Site Planning Workshop, the Contractor shall provide an initial site plan for Headworks including locations and footprints for the UV process building, operations building, chlorine storage and feed facilities, generator enclosure building, maintenance facilities and location and routing of conduits 2, 3, 4, and 5 (future). The initial Site Plan shall also show proposed site utilities routing.
- 203.04** Determine strategy and design requirements for maintaining site utilities (utility water) throughout construction and including the future demolition of the existing Headgate structure and Screen House #3 (SH#3).
- 203.05** Based on the Site Planning Workshop, the Contractor shall provide an initial site plan for the Lusted Hill facilities including location and footprint of expanded Corrosion Control Facility and Disaster Recovery Facility. The initial site plan shall also show proposed site utilities routing.

#### CONDUIT DESIGN

- 203.06** Develop a list of current and future conduit criteria such as Conduit 5, Flow meters, etc.
- 203.07** Meet with PWB staff to agree on the conduit criteria and the number of conduit alternatives to receive preliminary evaluation.
- 203.08** Complete a preliminary evaluation comparing alternatives to conduit criteria (assume 7 figures).
- 203.09** Meet with PWB staff to agree on three final conduit alternatives to receive additional evaluation.

- 203.10 Evaluate the three alternatives, develop preliminary costs and confirm they are constructible (assume 3 figures).
- 203.11 Provide a technical memorandum to document options for horizontal and vertical alignments of the conduits. The TM shall evaluate options and limits for the conduit tie-in points, define possible future expansions including Conduit #5, a Secondary Intake Structure (SIS) and relocation of the south tower Howell Bunker valve and the pressure reducing valve (PRV) Vault; screening characteristics of the PRV; defining limits of work regarding SH#3 Intake Structure removal/filling, 108" removal/filling and SH#3 removal; sizing of conduits from Primary Intake Structure (PIS) to the UV Facility; propose final locations for the new flow meters and chlorine diffusers; options to meet fish flow requirements; and define current and future utility corridors throughout the Headworks site.
- 203.12 The Contractor shall meet with PWB and their sub-contractors to finalize the 'best' conduit layout with horizontal and vertical alignments.

#### ELECTRICAL

- 203.13 Determine strategy and design requirements for maintaining electrical site utilities throughout construction and including the future demolition of the existing Headgate structure and Screen House #3.

Subtask 204	Geotechnical Investigations
Deliverables	<ul style="list-style-type: none"> <li>• Appropriate Laboratory Testing.</li> <li>• Geotechnical Data Report.</li> <li>• Geotechnical Design Recommendation Report.</li> </ul>
Dependencies	<ul style="list-style-type: none"> <li>• Coordination with PWB Operations personnel on design, maintenance, and operations requirements.</li> <li>• Coordination with O&amp;M format as developed by DOW III.</li> </ul>

The Contractor shall provide geotechnical investigations and recommendations regarding the location and foundation design requirements for buildings, conduits and other major site utilities.

#### Activities/Deliverables:

The Contractor shall complete the following:

- 204.01 The Contractor's geotechnical team shall attend meetings related to planning and execution of the work in sub-task items 204.02 through 204.10, approximately ten meetings.
- 204.02 At Headworks: the Contractor shall conduct explorations that shall characterize this site for both design and construction purposes. Due to presence of gravels and cobbles in the landslide debris, The Contractor anticipates using rotosonic drilling techniques which produces a continuous large diameter sample (6-inch diameter), with in-place strength measurements (SPT N-values) and five or more boreholes would be completed with 2-inch PVC piezometers for water level reading and in-place constant head permeability testing.
- For layout of explorations it is assumed the UV Treatment location will be at Site B as described in the Basis of Design Report (BDR). The Contractor anticipates advancing eleven borings with one being optional, consisting of six at the UV building, four at the operations building and one optional. At least five of the borings shall be advanced to the bedrock surface which is below the deepest excavation. The rotosonic drilling footage is estimated at 650-linear feet. The Contractor also anticipates digging four to six deep test pits with a large track-mounted excavator not only for additional characterization, but also to document boulder size, and the sloughing and caving potential, with various depths into the landslide debris.
- 204.03 At Lusted Hill: Past explorations on site are sufficient for the site specific seismic analysis. For the final building location, the Contractor anticipates to advance two boreholes through the silty clay and silty sand layers to the very dense gravelly sand, 40 foot depth each using mud rotary drilling techniques with in-place strength measurements (SPT N-values). There is sufficient groundwater level information with past borings and numerous test pits.
- 204.04 Perform appropriate laboratory tests, including corrosion potential.

- 204.05** For seismic site specific hazard evaluations at Headworks, the Contractor shall include down-the-borehole suspension seismic logging in three boreholes to obtain the necessary shear wave velocities for the analysis. This shall entail grouting a 3- to 4-inch PVC casing into the borehole and perform in-site tests that provide a continuous record of the needed parameters with depth down to the bedrock surface.
- 204.06** **Seismic Analysis:** The Contractor shall analyze or evaluate liquefaction potential and quantify post-liquefaction settlement analysis with Shake and D-MOD computer programs, lateral spreading and slope stability analysis, allowable seismic foundation bearing pressure, and on buried facilities lateral seismic earth pressure. If needed, the Contractor has included an evaluation of methods to stabilize the affected facilities and site due to seismic forces; a "placeholder" to evaluate potential ground modification methods, perform a preliminary design, and develop design criteria for the preferred ground modification as needed.
- 204.07** **Static Analysis:** The Contractor shall perform foundation and potential settlement analysis on buried facilities, lateral earth pressures, and develop parameters for buried conduit pipe support. If deep foundation support is necessary for the operations building or other shallow structures, the Contractor shall evaluate alternatives in-light of the need for ground modification. For the planned retaining wall at the UV site, the Contractor shall work with the structural engineer to evaluate alternatives and develop parameters for design of the preferred alternative, including global and external stability analysis, and tie-back anchor unit strengths.
- 204.08** **Reuse of Excavated Materials:** The Contractor shall evaluate potential reuse of excavated materials, with appropriate processing, in the backfill of the deep structures, conduit trench bedding, and backfill materials. The Contractor shall work with PWB personnel to determine nearby sources for imported granular materials and incorporate these materials in the design recommendations, as needed.
- 204.09** The major geotechnical construction evaluations and constructability assessments shall be for deep excavations consisting of potential shoring methods, underpinning and support of conduits, and groundwater control techniques; including treatment and disposal of large volumes of water. For the temporary excavations the Contractor shall perform a slope stability analyses to assess the space needed for temporary full or partial open cuts and the potential impacts on adjacent existing facilities.
- 204.10** Summarize the geotechnical investigation results in a Geotechnical Data Report, to include rotosonic core photos and provide engineering evaluations and design recommendations in a series of technical memoranda to support the design team in a timely manner. The Contractor shall prepare a final Geotechnical Design Recommendation Report to compile the technical memoranda and summarize our design recommendations.
- 204.11** **Risk Factor Mitigation:** The Contractor shall perform a site evaluation and infiltration testing to assist the design of an on-site sewage disposal system at both the Headworks and the Lusted Hill sites. The location of the proposed drain fields shall be chosen by PWB. The drain field evaluation shall consist of four (4) backhoe test pit excavations at each site. The test pits shall be a minimum of 6 feet in depth, but not more than 10 feet in depth. The excavations shall be made under the direction of the Contractor's Professional Engineer (PE) or Registered Geologist (RG) approved by the PWB Team Lead, who shall prepare a written description of the soil materials exposed including, but not necessarily limited to soil type, color, moisture, consistency/relative density, grain sizes and percentages, soil structures and stratification, and the presence or absence of ground water. Soil samples may be collected at the discretion of the Contractor for additional observations and laboratory testing. If suitable soils are present in the proposed drain field site, the Contractor shall also perform a minimum of two (2) infiltration tests in general conformance with the "Encased Falling Head Test" procedure as described in the City of Portland Stormwater Management Manual (October 2009).
- 204.12** **Risk Factor Mitigation (optional):** The Contractor shall perform a Seismic Refraction Survey. PWB may authorize this task if preliminary exploration drilling indicates that basalt bedrock may be near or above the anticipated depth of the UV Treatment Building. As authorized by PWB, the Contractor shall locate the basalt bedrock surface beneath the footprint of the proposed UV Treatment Building and adjacent areas by performing a seismic refraction survey. The survey shall consist of a maximum of two approximately 230 to 350-foot profile alignments. The refraction survey shall obtain the 2-dimensional (2D) P-wave (compression) velocity ( $V_p$ ) versus depth profile along each profile alignment. The compression wave seismic velocities of both overburden and rock shall be obtained.

The seismic refraction survey shall consist of field data acquisition, data processing and interpretation, and a summary report that includes the velocity data in 2D graphical (profile) form. The report shall include descriptions of the techniques and procedures utilized in the survey.

#### **FIELD ASSUMPTIONS:**

- The site is free of obstacles (vegetation, vehicles, buildings, fences, etc.), other than minimal brush clearing using hand tools, that would prohibit free access along the linear survey alignments.
- The site is free of obstacles that may be the source of electrical geophysical noise, e.g., communication towers, power substations, utility corridors.
- The site is accessible by a 4-wheel drive vehicle.
- The seismic source shall consist of an accelerated weight drop mounted on an all-terrain vehicle.
- Data shall be recorded using one 24-channel seismograph and an array of geophones on 10 to 15 foot geophone spacing.
- The refraction survey data can be acquired in a single 8-hour field day.

#### **Deliverable**

Seismic Refraction Survey Technical Report, one (1) electronic copy and three (3) hard copy originals provided to the PWB Team Lead.

- 204.13 Risk Factor Mitigation (Optional):** The Contractor shall perform an Aquifer Pump Test. PWB may authorize this task to determine more accurate information regarding groundwater control parameters and pumping flow estimates for the deep excavation at the UV Treatment Plant. The hydraulic conductivity and transmissivity of the aquifer shall be estimated. The pumping well shall be constructed using procedures consistent with the requirements of OAR Chapter 690-240. A groundwater pumping well shall be installed near the footprint of the proposed ultra-violet (UV) Reactor Building. The pumping well is proposed to be 6 inches in diameter and shall be installed in a 10-inch boring opened with sonic drilling techniques.

The survey locations shall include the northing, easting, the elevation of top-of-casing, and elevation of the ground surface at that location. Five borings with piezometers near the UV site, completed during the geotechnical investigation, shall be used to observe the groundwater response during the Aquifer Pump Test. Vibrating wire pressure transducers and associated data loggers shall be placed in three of the observation wells and the pumping well. The data loggers shall be programmed to record water level measurements at a pre-selected time interval. The remaining piezometers that do not have vibrating wire pressure transducers installed in them shall be manually read during the Aquifer Pump Test.

Step-drawdown tests shall be conducted as the first part of the actual pumping phase. The Step-drawdown tests are a series of pumping / recharge events at progressively greater discharge rates. Each discharge rate is held at a pre-determined time period, typically 1 to 2 hours. The objectives of the Step-drawdown tests are to determine the target pumping rate that could be sustained for the period of time required to conduct the Aquifer Pumping Test and obtain sufficient hydro geologic information to estimate aquifer parameters from the single well test. After a brief review of the Step-drawdown test results, the target pumping rate shall be selected and the Aquifer Pumping Test shall be initiated. The Aquifer Pumping Test would be a constant rate test that is proposed to last 24 hours. During the constant rate test, periodic flow measurements (based on total flow measurements) shall be collected to document that the discharge rate has been held constant.

#### **Deliverable**

Aquifer Pump Test Report, submitted as draft to the PWB Team Lead. Final report shall consist of one (1) Electronic copy and three (3) hard copy originals.

- 204.14 Risk Factor Mitigation:** The Contractor shall prepare a Geotechnical Baseline Report (GBR) to describe the baseline conditions for the deep excavation and groundwater control at the UV Treatment Building. For this deep excavation there is the probability of encountering boulders and possibly rock excavation. In addition a significant construction issue shall be the control of groundwater.

The Geotechnical Baseline Report establishes for construction contractual purposes, the geotechnical and construction conditions anticipated to be encountered during the deep excavation. The goal of the GBR shall be to establish the baseline for bidding and construction risk associated with the site conditions by defining the level of risk to be accepted by the contractor and the owner. As a secondary purpose, the GBR would generally establish the basis upon which differing site conditions would be considered. The GBR would be prepared following the Guidelines *Geotechnical Baseline Reports for Underground Construction*, published by ASCE, current edition. In summary, the GBR shall aid prospective Contractors in preparing their bids, shall aid the successful bidder in performing the work, would assist the Engineer and the Construction Management staff in providing construction surveillance, and would establish the PWB's decision whether the potential risk of differing site conditions should be built into the construction bid or whether the potential risk should be addressed by change order should the risk materialize.

#### **Deliverable**

Geotechnical Baseline Report, submitted as a draft to the PWB Team Lead. Final copy shall consist of one (1) Electronic copy and three (3) hard copy originals.

- 204.15 Risk Factor Mitigation:** The Contractor shall perform an Existing Conduit Geotechnical Exploration. This task is for PWB should it be determined to evaluate the potential seismic ground deformations of the existing conduits at the two connection locations to the new conduits as part of the UV Plant areas and along the existing conduit areas (upstream, from Headworks to UV Plant, and downstream, from UV Plant to the proposed Conduit #3 tie in). For this task, the Contractor proposes to conduct six (6) borings to characterize the subsurface conditions. Due to presence of gravels and cobbles in the landslide debris, DOW II plans to use rotosonic drilling techniques with in-place strength measurements (SPT N-values). Two borings in the downstream pipeline area would be completed with 2-inch PVC piezometers for water level reading. At least two of the borings shall be advanced to the bedrock surface. The Contractor has estimated rotosonic drilling footage at 280-linear feet. The Contractor plans to conduct laboratory testing for the soil index parameters to assist the seismic hazard evaluation and mitigation design.

#### **Deliverable**

Supplemental Geotechnical Data Package for the Existing Conduits. Consist of one (1) electronic copy and three (3) hard copy originals to be provided to the BRST Team Lead.

- 204.16 Risk Factor Mitigation:** The Contractor shall perform an Existing Conduit Seismic Hazard Evaluation (Settlement/Deformation). For the existing conduits at two connection locations, this task includes analyzing liquefaction potential and quantifying post-liquefaction ground deformations (vertical settlement and lateral deformation) with Shake and D-MOD computer programs. This information is intended to evaluate differential settlement between the existing conduits and the new conduit connected to the proposed UV Plant. The Contractor shall analyze the general liquefaction potential along conduits between Headworks and UV Plant and downstream of UV Plant to Conduit No 3 tie-in.

#### **Deliverable**

Technical Memorandum for Seismic Ground Deformations in the Pipeline Areas. Consist of one (1) electronic copy and three (3) hard copy originals to be provided to the PWB Team Lead.

- 204.17 Risk Factor Mitigation:** The Contractor shall perform an Existing Conduit Seismic Hazard Mitigation Evaluation. This shall include the evaluation of methods to mitigate seismic hazards to the existing conduit areas between the proposed UV Plant and Headworks and downstream of the UV Plant ending at the proposed Conduit No 3 Tie In location. The Contractor shall evaluate potential ground improvement methods, perform a preliminary design, and develop design criteria for the preferred ground improvement as needed.

#### **Deliverable**

Technical Memorandum for Ground Improvement in the Pipeline Areas. Consist of one (1) electronic copy and three (3) hard copy originals to be provided to PWB Team Lead.

**204.18 Risk Factor Mitigation:** The Contractor shall perform Boulder Drilling with Air Rotary (alternative drilling technique). Considering the presence of large hard rock boulders up to 8 feet in diameter within the subsurface soils at the site; very difficult drilling or refusal may be encountered in the rotosonic geotechnical explorations. Therefore, the Contractor shall use Air Rotary drilling technique at two boring locations in should the rotosonic drilling technique be unable to penetrate through boulders. This task includes mobilization and operation of all personnel, equipment and supplies necessary to drill two 80-foot deep by 8-inch diameter boreholes using Air-Rotary method. This task also includes providing a roll-off box and water truck to collect, temporarily contain and haul drill cuttings and water generated by the drilling process. Expectations are that:

- Investigation derived waste soil, rock cuttings and water can be disposed on or near the site of generation.
- If needed for drilling above the ground water surface, an adequate water supply can be obtained on or near the drilling site.

#### Deliverable

Supplemental Geotechnical Data Package for the Air Rotary Drilling that consists of one (1) electronic copy and three (3) hard copy originals provided to the PWB Team Lead.

**204.19 Risk Factor Mitigation:** The Contractor's geotechnical team shall attend additional meetings throughout the various tasks as requested or appropriate. Activity shall include, meeting preparation, travel and meeting time, and meeting documentation.

<b>Subtask 205</b>	<b>Preliminary LEED and City of Portland Green Building Compliance</b>	Establish LEED requirements for each facility and develop initial strategy to achieve required certification
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Memo establishing requirements and type of LEED certification required for each site based on assumed extent of work.</li> <li>• Preliminary LEED Scorecard for Headworks site.</li> <li>• Preliminary LEED Scorecard for Lusted Hill site.</li> <li>• Design Phase commissioning activities for LEED</li> </ul>	
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• Lusted Hill Planning and Programming Work</li> </ul>	

The Contractor shall conduct a LEED workshop to establish the strategies for achieving LEED Gold Certification at the Headworks and Lusted Hill sites.

#### Activities/Deliverables:

The Contractor shall complete the following:

- 205.01** Prepare agenda and expectations for the LEED/ Programming Workshop with applicable members of the BRST project team and assign research deliverables by the Contractor which requires meeting with the PWB PM group and design team.
- 205.02** Prepare a recommended approach to achieving LEED certification at each site including establishing a LEED site boundary and providing a recommendation for which LEED standard is appropriate (i.e. LEED N.C. or LEED for Multiple Buildings)
- 205.03** The Contractor shall facilitate a **Workshop** to identify strategies for achieving LEED certification as required at each site.

<b>Subtask 206</b>	<b>Operational Descriptions</b>
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Operations Descriptions of building systems.</li> <li>• Piping and Instrumentation Diagram (P &amp; ID's).</li> <li>• Description of Security System.</li> </ul>
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• Coordination with PWB Operations personnel on design, maintenance, and operations requirements.</li> <li>• Coordination with O&amp;M format as developed by DOW III.</li> </ul>

The Contractor shall provide a narrative document describing the intended usage of each building, occupancy requirements, along with descriptions of building systems. This document shall also describe preliminary assumptions regarding operations and maintenance requirements for each facility. In addition, this document shall also identify ongoing commissioning and maintenance items related to the required LEED certification.

**Activities/Deliverables:**

**The Contractor shall complete the following:**

**206.01** The Contractor shall provide operational descriptions of all major building systems for the UV building, the operations building, the maintenance building and the generator enclosure at the Headworks site.

**206.02** The Contractor shall provide operation descriptions for all major building systems for the Corrosion Control and Disaster Recovery buildings at the Lusted Hill site.

**TASK 300: FINAL DESIGN**

Final Design consists of preparation of Construction Plans (drawings) and Specifications for the construction of the UV Disinfection Facilities at the Headworks site and the Corrosion Control Facilities at the Lusted Hill site. It is assumed that the two facilities shall be designed with two separate sets of construction documents and are intended to be bid as two separate construction contracts. Final Design for DOW II includes architectural, structural, conduit design, civil, mechanical and electrical design work for the facilities portion of the project. Process mechanical, electrical and related design work of other disciplines shall be conducted by PWB through separate DOWs. The progression of Final Project Design shall include preparation, submittal and review at 30%, 60%, 90% and final design milestones.

Subtask 301	30% Design Submittal Package
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• 30% Plans</li> <li>• 30% Specifications</li> <li>• Permitting Memorandum</li> <li>• Design Memorandum</li> <li>• Cost Estimate – Assistance to DOW III</li> <li>• Design Project Schedule update</li> <li>• 30% Phase LEED Summary Report</li> <li>• Technical Memorandum – Conduit Alternatives</li> <li>• AutoCAD 3D model of 30% building design for incorporation into overall 3D Microstation model by DOW III</li> <li>• “Pre” Design Review Workshop presentation and presentation handout material.</li> <li>• “Post” Design Review Workshop presentation of resolution or response plan to Category I comments.</li> <li>• Comment Response Report for all comments.</li> <li>• Attendance at workshops.</li> </ul>
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• Task 200 decisions completed and frozen.</li> <li>• Seismic design and anchorage of the emergency generator is assumed to be by generator manufacturer.</li> <li>• For Design Review Workshop, DOW III shall coordinate and consolidate minutes and action items.</li> </ul>

The Contractor shall prepare 30% Design Drawings and Specifications and deliver a Review Package per PWB requirements to DOW III for coordination into an overall Project Package for BCOE and concurrent PWB and DOW III review. The Contractor shall perform an internal QA/QC review prior to submission to DOW III.

Activities/Deliverables:

The Contractor shall complete the following:

GENERAL

- 301.01 The Contractor shall facilitate, create agendas and take meeting minutes for bi-weekly Contractor and PWB coordination meetings.
- 301.02 The Contractor shall prepare and submit construction cost information quotations for major equipment and material take-offs for use in cost estimate Subtask 101.
- 301.03 The Contractor shall prepare and submit Design Project Schedule information for Subtask 101.
- 301.04 The Contractor shall provide one electronic copy of 30% plans and specifications. Electronic documents shall be provided in PDF format except at least two or more drawings of each type shall be provided in original native AutoCAD or equal format.
- 301.05 The Contractor shall prepare a presentation with handout material and co-facilitate a 30% "Pre" Design Review Workshop for the purposes of summarizing major design criteria development, design decisions, and points of review and coordination and to assist the BRST project team in the understanding of design review issues.
- 301.06 The Contractor shall attend a 30% **BRST Review Team Presentation** in which the Review Team shall describe Category I review comments.
- 301.07 The Contractor shall present and participate in a 30% "Post" Design Review Workshop to present responses to Category I review comments and discuss unresolved comments and coordination issues.
- 301.08 The Contractor shall submit a complete Comment Response Report one week following the Response and Resolution Workshop to capture responses for all Category I, II and III review comments.
- 301.09 The Contractor shall provide an update to the Executive Summary in the Basis of Design Report.
- 301.10 The Contractor shall attend the BCOE review as indicated in Subtask 107.

ARCHITECTURAL

- 301.11 The Contractor shall prepare 30% architectural drawings including: site plans, building floor plans, building elevations, building sections and typical assembly details.
- 301.12 The Contractor shall prepare 30% architectural outline specifications in CSI format.
- 301.13 The Contractor shall coordinate and attend a pre-application conference with Clackamas and Multnomah Counties for facilities at Headworks and Lusted Hill. Based upon these conferences, the Contractor shall produce a Permitting Memorandum including permit requirements, estimated timelines for reviews and identification of potential zoning, land use or building code issues.
- 301.14 The Contractor shall develop an AutoCAD 3D model of the buildings for incorporation into the 3D Microstation model by DOW III.
- 301.15 The Contractor shall update the Building Narrative and Building Programming documents for each building to be incorporated into updates to the Executive Summary in the Basis of Design Report.

CIVIL

- 301.16 The Contractor shall prepare 30% civil drawings including: site plans, grading plans and site utilities plans.
- 301.17 The Contractor shall prepare 30% civil outline specifications in CSI format.



- 301.18** Wastewater. The Contractor shall evaluate three options for sanitary sewer waste at the Headworks site. The options shall include a drain field on site, drain field at Kaiser Park and a package MBR facility at the Headworks site discharging to the Bull Run River. Assume a Membrane Biological Reactor (MBR) facility shall be required. Permitting of the discharge to the river shall be done by DOW III. It is assumed that a separate holding tank for the chemical Phenyl arsine used in the lab shall be required.
- 301.19** Site Layout. The Contractor shall provide layout for the buildings, parking lots, and pathways. Pavement sections shall be designed based on information provided by the geotechnical engineer. Design of site shall be performed using LEED guidelines.
- 301.20** Plant Process Water System Evaluation. The Contractor shall prepare a technical memorandum to evaluate the capacity of the existing potable and plant process water system and its ability to be of service to the new facilities. It is assumed that the outcome of these analyses shall show that it is adequate. No additional design services are assumed to provide upgrades to the existing facilities.
- 301.21** Hydrology Calculations. The Contractor shall prepare hydrology calculations for the project site to support the site civil design, following the requirements of Multnomah and Clackamas Counties. Hydrology calculations to encompass areas beyond the project site are not included. It is anticipated that said calculations shall be submitted to the Building Departments along with the improvements plans for review by the Counties. It is anticipated that the calculations shall be deemed acceptable by Counties after one review and incorporation of comments by the Contractor.
- 301.22** The Contractor shall provide third party design review and oversight of civil and storm water design to meet LEED requirements.

#### LANDSCAPE

- 301.23** The Contractor shall provide 30% Landscape drawings including: planting plans and site layout plans.
- 301.24** The Contractor shall provide 30% Landscape outline specifications in CSI format.
- 301.25** The Contractor shall research relevant development/landscape requirements. This research is to identify the general requirements for further development during this design and may include such requirements as landscape area, street trees, screening and buffering, tree counts, and relevant plant sizes and spacing.
- 301.26** The Contractor shall provide a brief narrative of the landscape concepts and strategies for inclusion in a broader project technical memorandum.

#### CONDUIT DESIGN

- 301.27** The Contractor shall provide 30% Conduit Design drawings including layout plans.
- 301.28** The Contractor shall provide 30% Conduit Design outline specifications in CSI format.
- 301.29** Preliminary Conduit Design
- 301.30** Refine horizontal and vertical alignment.
- 301.31** Conduit sizing, thickness and lining requirements.
- 301.32** Flow meter locations and possible manufactures with possible vault requirements.
- 301.33** Chlorine diffuser locations with possible vault requirements.
- 301.34** Flex coupling locations and possible manufacturers.
- 301.35** Air valve sizing and locations.
- 301.36** Preliminary access points and drain locations.
- 301.37** Preliminary Cathodic Protection layout.

- 301.38 Temporary end cap locations for testing and connections.
- 301.39 **Risk Factor Mitigation:** The Contractor shall provide 30% Conduit Intertie design downstream of UV building.

#### STRUCTURAL

- 301.40 The Contractor shall prepare 30% Structural drawings including structural foundation plans, floor framing plans and roof framing plans and typical structural details.
- 301.41 The Contractor shall prepare 30% Structural outline specifications in CSI format.
- 301.42 The Contractor shall coordinate hanging loads on the floor and roof structure from pipes, equipment, etc. required by the DOW I Contractor. Coordinate loads from the UV conduit lines and related equipment with the DOW I Contractor. Design the primary structure to support these loads. Design of the UV conduit supports and seismic bracing within the UV building, as well as the support and seismic bracing for other piping is anticipated to be performed by the DOW I team.
- 301.43 The Contractor shall review the monorail specifications prepared by the DOW I team. Coordinate monorail requirements into the design of the primary building envelope.
- 301.44 The Contractor shall prepare structural calculations and design of the bridge crane system. Prepare specifications for the bridge crane system as required. Coordinate bridge crane location and loading requirements with the DOW I team.
- 301.45 The Contractor shall prepare structural calculations and design of access platforms within the UV building. The design shall include stairs, ladders, guardrails and platforms.
- 301.46 The Contractor shall prepare structural calculations and design of UV conduit below grade vault structures. A total number of (4) vaults are assumed to be required.
- 301.47 **Risk Factor Mitigation:** The Contractor shall design 30' high site retaining wall at Headworks site as shown in Figure 3-2 Option 'B' site plan in the BDR. Specific design and requirements of retaining wall to be determined by final site layout.

#### MECHANICAL, PLUMBING, FIRE PROTECTION

- 301.48 The Contractor shall prepare 30% Mechanical, Plumbing and Fire Protection drawings including floor plans.
- 301.49 The Contractor shall prepare 30% Mechanical outline specifications in CSI format.
- 301.50 The Contractor shall provide energy analysis and modeling sufficient to achieve the LEED Energy and Atmosphere (EA) prerequisite and the desired number of LEED EA credit 1 and 2 points at Headworks and Lusted Hill sites.

#### COMMUNICATIONS & SECURITY

- 301.51 The Contractor shall prepare 30% Communications and Security drawings including floor and site plans.
- 301.52 The Contractor shall prepare 30% Communications and Security outline specifications in CSI format.
- 301.53 The Contractor shall provide a communication technical memorandum for the City of Portland network, telephone, and security requirements.
- 301.54 The Contractor shall provide all elements associated with the building data/telecom systems (Non-SCADA), including data racks and cabling design. It is anticipated that DOW I shall provide all elements associated with the SCADA systems, including active equipment and SCADA system cabling design. It is also assumed that DOW I shall provide all monitoring and data cabling specific to the SCADA system function using either Bacnet and/ or Lonworks.

- 301.55** The Contractor shall provide building network data drops for any SCADA system component, which requires either "voice over IP" or contains a NIC card and requires a connection to the building data network systems, as directed by the SCADA system designer.
- 301.56** The Contractor shall provide site security design based on the following assumptions: Access to the site shall be controlled through the use of a proximity card reader system located at all building entrances and at the gate through the perimeter fence. A proximity card reader shall be able to automatically open the electric entrance gate when valid credentials are presented. The same card shall allow entrance to the building. There shall be a two-way intercom that allows non-credentialed personnel to communicate with security personnel in the building. A remote gate operator shall be located at the interior location of the intercom that will open the gate. The gate will automatically open when a vehicle approaches from inside the secure perimeter. All exterior building doors shall have contacts to detect forced entry or unauthorized intrusion. Although video surveillance of the site is indicated as an anticipated item, extensive coordination during the construction process is advisable. Pathways for cabling to all camera locations shall be indicated during the initial design. The communications infrastructure shall be robust enough to allow security personnel to monitor and control cameras locally or from remote locations. Outdoor rated camera enclosures that are vandal and weather resistant are readily available once the video system is installed. These enclosures are designed to lower maintenance costs and down time. All of the security system components; access control, intrusion detection, and video surveillance shall have battery backup in addition to being connected to the UPS system and backup generator. Extensive coordination between the owner's security department and designers shall ensure the system is both compatible with existing systems and standards, and takes into account new standards and technologies.

#### **ELECTRICAL**

- 301.57** The Contractor shall prepare 30% electrical drawings including site plan, floor plans, schedules and one-line diagrams.
- 301.58** The Contractor shall prepare 30% electrical outline specifications in CSI format.
- 301.59** Perform electrical load calculations for building loads.
- 301.60** Coordinate with DOW I engineer and assign dedicated switchboards for building loads.
- 301.61** Provide preliminary site lighting layout and luminaire schedule.
- 301.62** Provide preliminary interior lighting layout and luminaire schedule.
- 301.63** Provide preliminary general purpose receptacle layout.

#### **LEED COMPLIANCE**

- 301.64** The Contractor shall set up LEED Online and invite team members.
- 301.65** The Contractor shall prepare a 30% LEED Summary Report.

#### **GEOTECHNICAL**

- 301.66** The Contractor shall geotechnical team shall provide support for plans and specifications.
- 301.67** The Contractor shall geotechnical team shall attend meetings as requested.

<b>Task 302</b>	<b>Value Engineering</b>
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• DOW II shall provide written responses to VE suggestions.</li> <li>• LEED Cost Analysis</li> </ul>
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• None</li> </ul>

The Contractor shall participate in a VE session at the 30% milestone. (1) The Contractor shall be present at the Value Engineering meeting which is assumed to be (1) week in duration.

The Contractor shall attend an initial meeting to present design information and concepts. The Contractor shall answer questions within the week long VE session and attend a presentation at the end of the session.

**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 302.01** The Contractor shall prepare a short presentation describing the site layout, site security, civil design, and conduit design and building design and building systems for the Value Engineering (VE) panel.
- 302.02** The Contractor shall respond to questions from VE panel during the VE session.
- 302.03** The Contractor shall review each short listed value proposition related to site design, site utilities, conduit design, facilities and building systems and shall prepare responses to the VE recommendations. Responses shall include validation of costs.
- 302.04** The Contractor shall prepare a VE LEED Summary Report to identify impact of VE decisions on LEED status and strategies for mitigation if needed.

Subtask 303	60% Design Submittal Package
Deliverables	<ul style="list-style-type: none"> <li>• 60% Plans</li> <li>• 60% Specifications</li> <li>• Permitting Memorandum update</li> <li>• Design Memorandum update</li> <li>• Cost Estimate – Assistance to DOW III</li> <li>• Design Project Schedule update</li> <li>• 60% Phase LEED summary report</li> <li>• 60% updates to AutoCAD 3D building models</li> <li>• “Pre” Design Review Workshop presentation and presentation handout material.</li> <li>• “Post” Design Review Workshop presentation of resolution or response plan to Category I comments.</li> <li>• Comment Response Report for all comments.</li> <li>• Attendance at workshops.</li> </ul>
Dependencies	<ul style="list-style-type: none"> <li>• Should the septic systems be chosen for disposal of domestic wastewater at both sites, the Contractor shall submit septic system plans for approval by Health Department. It is anticipated permit fees shall be paid by PWB.</li> <li>• It is assumed that underground facilities, including water and wastewater and process pipelines, shall be designed by others.</li> <li>• 30% BCOE Review Comments.</li> <li>• Value Engineering Items. See Task 302</li> <li>• For Design Review Workshop, DOW III shall coordinate and consolidate minutes and action items.</li> </ul>

The Contractor shall prepare 60% design drawings and specifications and deliver a review package per PWB requirements to DOW III for coordination into an overall Project package for BCOE and concurrent PWB and DOW III review. The Contractor shall perform an internal QA/QC review prior to submission to DOW III.

**Activities/Deliverables:**

**The Contractor shall perform the following:**

**GENERAL**

- 303.01** The Contractor shall facilitate, create agendas and take meeting minutes for bi-weekly Contractor and PWB coordination meetings.

- 303.02 The Contractor shall prepare and submit construction cost information quotations for major equipment and material take-offs for use in cost estimate Subtask 101.
- 303.03 The Contractor shall prepare and submit Design Project Schedule information for Subtask 101.
- 303.04 The Contractor shall provide one electronic copy of 60% plans and specifications. Electronic documents shall be provided in PDF format except at least two or more drawings of each type shall be provided in original native AutoCAD or equal format.
- 303.05 The Contractor shall prepare a presentation with handout material and co-facilitate a 60% "Pre" Design Review Workshop for the purposes of summarizing major design criteria development, design decisions, and points of review and coordination and to assist the BRST project team in the understanding of design review issues.
- 303.06 The Contractor shall attend a 60% **BRST Review Team Presentation** in which the Review Team shall describe Category I review comments.
- 303.07 The Contractor shall present and participate in a 60% "Post" **Design Review Workshop** to present responses to Category I review comments and discuss unresolved comments and coordination issues.
- 303.08 The Contractor shall submit a complete Comment Response Report one week following the **Response and Resolution Workshop** to capture responses for all Category I, II and III review comments.
- 303.09 The Contractor shall update the Executive Summary in the Basis of Design Report.
- 303.10 The Contractor shall attend the BCOE review as indicated in Subtask 107.

#### ARCHITECTURAL

- 303.11 The Contractor shall prepare 60% architectural drawings including site plan, building floor plans, building elevations, building sections and typical assembly details.
- 303.12 The Contractor shall prepare 60% architectural specifications in CSI format.
- 303.13 The Contractor shall update the Permitting Memorandum including permit requirements, estimated timelines for reviews and identification of potential zoning, land use or building code issues.
- 303.14 The Contractor shall provide 3D AutoCAD model updates of the buildings for incorporation into the 3D Microstation model by DOW III.

#### CIVIL

- 303.15 The Contractor shall prepare 60% civil drawings including site plans, grading plans and site utilities plans.
- 303.16 The Contractor shall prepare 60% civil specifications in CSI format.
- 303.17 The Contractor shall provide third party peer review of civil design drawings.

#### LANDSCAPE

- 303.18 The Contractor shall provide 60% landscape drawings including intermediate development landscape plans. This includes further refinement of landscape concept plans for the Bull Run and Lusted project sites for internal review.
- 303.19 The Contractor shall provide 60% landscape outline specifications in CSI format.

#### CONDUIT DESIGN

- 303.20 Provide 60% Conduit Design drawings including layout plans.
- 303.21 Provide 60% Conduit Design specifications in CSI format.

- 303.22 Design bends to minimize head loss.
- 303.23 Complete preliminary thrust restraint design.
- 303.24 Complete bedding and backfill with typical trench detail.
- 303.25 Refine CP system, existing and proposed.
- 303.26 Details for air valves, chlorine diffusers, flow meters, temporary end caps, access points, drains and flex couplings.

#### **STRUCTURAL**

- 303.27 The Contractor shall prepare 60% structural drawings including foundation plans, floor framing plans and roof framing plans and typical structural details.
- 303.28 The Contractor shall prepare 60% structural specifications in CSI format.

#### **MECHANICAL, PLUMBING & FIRE PROTECTION**

- 303.29 The Contractor shall prepare 60% Mechanical, Plumbing and Fire Protection drawings including floor plans, schedules, typical details.
- 303.30 The Contractor shall prepare 60% Mechanical, Plumbing and Fire Protection specifications in CSI format.
- 303.31 The Contractor shall issue intermediate results of the LEED Energy Modeling.

#### **COMMUNICATIONS & SECURITY**

- 303.32 The Contractor shall prepare 60% Communications and Security drawings including floor and site plans, schedules, typical details.
- 303.33 The Contractor shall prepare 60% Communications and Security specifications in CSI format.

#### **ELECTRICAL**

- 303.34 The Contractor shall prepare 60% Electrical drawings including site plan, floor plans, one-line diagrams.
- 303.35 The Contractor shall prepare 60% Electrical specifications in CSI format
- 303.36 The Contractor shall update electrical load calculations for building loads.
- 303.37 The Contractor shall update site lighting layout and luminaire schedule.
- 303.38 The Contractor shall update interior lighting layout and luminaire schedule.
- 303.39 The Contractor shall update general purpose receptacle layout.

#### **LEED COMPLIANCE**

- 303.40 The Contractor shall complete an Online Documentation Review and Submittals Support.
- 303.41 The Contractor shall update shall prepare a 60% LEED Summary Report.

#### **GEOTECHNICAL**

- 303.42 The Contractor's geotechnical team shall provide support for plans and specifications.
- 303.43 The Contractor's geotechnical team shall attend meetings as requested.

Subtask 304	90% Design Submittal Package
Deliverables	<ul style="list-style-type: none"> <li>• 90% Plans</li> <li>• 90% Specifications</li> <li>• Permitting Memorandum update</li> <li>• Design Memorandum update</li> <li>• Supporting Engineering Documentation</li> <li>• Cost Estimate – Assistance to DOW III</li> <li>• Design Project Schedule update</li> <li>• 90% LEED Summary Report</li> <li>• “Pre” Design Review Workshop presentation and presentation handout material.</li> <li>• “Post” Design Review Workshop presentation of resolution or response plan to Category I comments.</li> <li>• Comment Response Report for all comments.</li> <li>• Attendance at workshops.</li> </ul>
Dependencies	<ul style="list-style-type: none"> <li>• 60% BCOE Review comments</li> <li>• For Design Review Workshop, DOW III shall coordinate and consolidate minutes and action items.</li> </ul>

The Contractor shall prepare 90% design drawings and specifications and deliver a review package per PWB requirements to DOW III for coordination into an overall Project package for BCOE and concurrent PWB and DOW III review. DOW II shall perform an internal QA/QC review prior to submission to DOW III.

#### **Activities/Deliverables:**

**The Contractor shall complete the following:**

#### **GENERAL**

- 304.01** The Contractor shall facilitate, create agendas and take meeting minutes for bi-weekly Contractor and PWB coordination meetings.
- 304.02** The Contractor shall prepare and submit construction cost information quotations for major equipment and material take-offs for use in cost estimate Subtask 101.
- 304.03** The Contractor shall prepare and design project schedule information for Subtask 101.
- 304.04** The Contractor shall provide one electronic copy of 90% plans and specifications. Electronic documents shall be provided in PDF format except at least two or more drawings of each type shall be provided in original native AutoCAD or equal format.
- 304.05** The Contractor shall prepare a presentation with handout material and co-facilitate a 90% “Pre” Design Review Workshop for the purposes of summarizing major design criteria development, design decisions, and points of review and coordination and to assist PWB staff in the understanding of design review issues.
- 304.06** The Contractor shall attend a 90% **BRST Review Team Presentation** in which the Review Team shall describe Category I review comments.
- 304.07** The Contractor shall present and participate in a 90% “Post” Design Review Workshop to present responses to Category I review comments and discuss unresolved comments and coordination issues.
- 304.08** The Contractor shall submit a complete Comment Response Report one week following the Response and Resolution Workshop to capture responses for all Category I, II and III review comments.
- 304.09** The Contractor shall provide and update to the Basis of Design Memorandum.
- 304.10** The Contractor shall attend the BCOE review as indicated in Subtask 107.

**ARCHITECTURAL**

- 304.11 The Contractor shall prepare 90% architectural drawings including floor plans, building sections, building elevations, wall sections, enlarged floor plans, interior elevations, door and window schedules, exterior details and interior details.
- 304.12 The Contractor shall prepare 90% Architectural specifications in CSI format.

**CIVIL**

- 304.13 The Contractor shall prepare 90% civil drawings including site layout plan, grading plan, site utilities plan and typical site details including paving and sidewalk sections.
- 304.14 The Contractor shall prepare 90% civil specifications in CSI format.

**LANDSCAPE**

- 304.15 The Contractor shall prepare 90% landscape drawings including planting plans, irrigation plans and planting and irrigation details.
- 304.16 The Contractor shall prepare 90% landscape specifications on CSI format.

**CONDUIT DESIGN**

- 304.17 The Contractor shall prepare 90% Conduit Design drawings including Conduit Layout Plans and conduit design details.
- 304.18 The Contractor shall prepare 90% Conduit Design specifications in CSI format.
- 304.19 The Contractor shall finalize all horizontal and vertical conduit layouts.
- 304.20 The Contractor shall finalize thrust restraint design.
- 304.21 The Contractor shall finalize cathodic protection (CP) system design.
- 304.22 The Contractor shall finalize all conduit details.

**STRUCTURAL**

- 304.23 The Contractor shall prepare 90% structural drawings including foundation plans, floor framing plans and roof framing plans and typical structural details.
- 304.24 The Contractor shall prepare 90% structural specifications in CSI format.

**MECHANICAL, PLUMBING & FIRE PROTECTION**

- 304.25 The Contractor shall prepare 90% Mechanical, Plumbing and Fire Protection drawings including floor plans, schedules, and details.
- 304.26 The Contractor shall prepare 90% Mechanical, Plumbing and Fire Protection specifications in CSI format
- 304.27 The Contractor shall issue final results of the LEED Energy Modeling
- 304.28 The Contractor shall complete general purpose receptacle layout.
- 304.29 The Contractor shall complete power plans for building loads.



**COMMUNICATIONS & SECURITY**

- 304.30** The Contractor shall prepare 90% Communications and Security drawings including floor plans, schedules, and typical details.
- 304.31** The Contractor shall prepare 90% Communications and Security specifications in CSI format.

**ELECTRICAL**

- 304.32** The Contractor shall prepare 90% Electrical drawings including site plan, floor plans, and one-line diagrams.
- 304.33** The Contractor shall prepare 90% Electrical specifications in CSI format.
- 304.34** The Contractor shall complete panel schedules.
- 304.35** The Contractor shall complete electrical load calculations for building loads.
- 304.36** The Contractor shall complete site lighting layout and luminaire schedule.
- 304.37** The Contractor shall complete interior lighting layout and luminaire schedule.
- 304.38** The Contractor shall complete general purpose receptacle layout.
- 304.39** The Contractor shall complete power plans for building loads.
- 304.40** The Contractor shall complete electrical conduit and wire schedules, except for lighting and receptacle circuits.

**LEED COMPLIANCE**

- 304.41** The Contractor shall manage response cycle and advise DOW team on their responses.
- 304.42** The Contractor shall complete Online Documentation Review and Submittals Support.
- 304.43** At project completion the Contractor shall manage, prepare and review LEED submittals by DOW Project Team and submit on LEED Online for Green Building Certification Institute (GBCI) review.

**GEOTECHNICAL**

- 304.44** The Contractor shall prepare a 90% LEED Summary Report.
- 304.45** The Contractor's geotechnical team shall provide support for plans and specifications.

<b>Subtask 305</b>	<b>Final Design 100% Submittal</b>
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• 95% "Backcheck" Submittal.</li> <li>• 100% Plans signed and stamped.</li> <li>• 100% Specifications signed and stamped.</li> <li>• Permitting Memorandum update.</li> <li>• Basis of Design Memorandum update.</li> <li>• Supporting Engineering Documentation.</li> <li>• Cost Estimate – Assistance to DOW III.</li> <li>• Design Project Schedule update.</li> <li>• 100% LEED Summary Report.</li> </ul>
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• 90% BCOE Review comments.</li> </ul>

The Contractor shall prepare 100% design drawings and specifications and deliver a Review Package per PWB requirements to DOW III for coordination into an overall Project package for BCOE and concurrent PWB and DOW III review. DOW II shall perform an internal QA/QC review prior to submission to DOW III.

#### Activities/Deliverables:

The Contractor shall complete the following:

#### GENERAL

- 305.01 The Contractor shall prepare "95% Backcheck" submittal to demonstrate incorporation of 90% review comments prior to issuance of 100% Design drawings.
- 305.02 The Contractor shall prepare and submit construction cost information quotations for major equipment and material take-offs for use in cost estimate Subtask 101.
- 305.03 The Contractor shall prepare and submit construction scheduling information for Subtask 101.

#### ARCHITECTURAL

- 305.04 The Contractor shall provide one electronic copy of 100% architectural drawings and specifications. Electronic documents shall be provided in PDF format except at least two or more drawings of each type shall be provided in original native AutoCAD or equal format.

#### CIVIL

- 305.05 The Contractor shall provide one electronic copy of 100% civil drawings and specifications. Electronic documents shall be provided in PDF format except at least two or more drawings of each type shall be provided in original native AutoCAD or equal format.

#### LANDSCAPE

- 305.06 The Contractor shall provide one electronic copy of 100% landscape drawings and specifications. Electronic documents shall be provided in PDF format except at least two or more drawings of each type shall be provided in original native AutoCAD or equal format.

#### CONDUIT DESIGN

- 305.07 The Contractor shall provide one electronic copy of 100% conduit design drawings and specifications. Electronic documents shall be provided in PDF format except at least two or more drawings of each type shall be provided in original native AutoCAD or equal format.

#### STRUCTURAL

- 305.08 The Contractor shall provide one electronic copy of 100% structural design drawings and specifications. Electronic documents shall be provided in PDF format except at least two or more drawings of each type shall be provided in original native AutoCAD or equal format.

#### MECHANICAL, PLUMBING & FIRE PROTECTION

- 305.09 The Contractor shall provide one electronic copy of 100% Mechanical, Plumbing and Fire Protection drawings and specifications. Electronic documents shall be provided in PDF format except at least two or more drawings of each type shall be provided in original native AutoCAD or equal format.

#### COMMUNICATIONS & SECURITY

- 305.10 The Contractor shall provide one electronic copy of 100% communications and security drawings and specifications. Electronic documents shall be provided in PDF format except at least two or more drawings of each type shall be provided in original native AutoCAD or equal format.

**ELECTRICAL**

- 305.11** The Contractor shall provide one electronic copy of 100% electrical drawings and specifications. Electronic documents shall be provided in PDF format except at least two or more drawings of each type shall be provided in original native AutoCAD or equal format.

**LEED COMPLIANCE**

- 305.12** The Contractor shall complete Online Documentation Review and Submittals Support
- 305.12.1** After 100%, the Contractor shall manage, prepare and review LEED submittals by project team and submit on LEED Online for GBCI review.
- 305.12.2** The Contractor shall manage response cycle and advise team on their responses.
- 305.13** The Contractor shall prepare 100% LEED Summary Report.

**COMMISSIONING**

**The Contractor shall complete the following:**

**305.14 Operations Descriptions**

- 305.14.1** HVAC
- 305.14.2** Security
- 305.14.3** Mechanical Systems
- 305.14.4** Electrical Systems

**305.15 Develop Commissioning Criteria**

- 305.15.1** Ensure owner documents the OPR, and design team develops BOD. Review for clarity and completeness.
- 305.15.2** Develop and incorporate Cx requirements into construction documents
- 305.15.3** Develop and implement a commissioning plan

<b>Subtask 307</b>	<b>Final Operational Descriptions</b>
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>Final Operational Descriptions</li> <li>Training Program for operations of building systems.</li> </ul>
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>PWB and DOW III for format.</li> </ul>

Within all submittal milestones, the Contractor shall coordinate and supply DOW III with operational descriptions regarding building mechanical, electrical, security, plumbing and lab related equipment. With the final document developed by DOW III, the Contractor shall review our information within this document for accuracy and completeness.

**Activities/Deliverables:**

**The Contractor shall complete the following:**

- 307.01** The Contractor shall update material and equipment data sheets.

**307.02** The Contractor shall formalize program and approach for operator training of building systems.

**TASK 500: BIDDING ASSISTANCE**

<b>Task 500</b>	<b>Bidding Assistance</b>
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• Written clarifications to bidder questions for each project site.</li> <li>• Addendums as required</li> </ul>
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• The Contractor anticipates that DOW III shall provide primary support to PWB for issuing addendums</li> </ul>

The Contractor shall participate in (2) Pre-Bid conferences. (1) Conference for the Bull Run facilities and (1) conference for the additions and improvements at the Lusted Hill facility. It is assumed that these projects shall be bid as two separate construction contracts.

**Activities/Deliverables:**

**The Contractor shall complete the following:**

**500.01** The Contractor shall provide written clarifications to bidder questions for each project site.

**500.02** The Contractor shall provide PWB with assistance with developing and issuing all necessary addendums.

**TASK 600: CONSTRUCTION ASSISTANCE**

This task's efforts shall be negotiated between the Contractor and the PWB Project Manager. Fees are not reflected in the attached Exhibit A, Compensation Detail.

**TASK 700: O&M MANUALS**

<b>Task 700</b>	<b>O&amp;M Manual</b>
<b>Deliverables</b>	<ul style="list-style-type: none"> <li>• The Contractor shall provide final building system descriptions and anticipated maintenance requirements for all facilities work. Manufacturers cut sheets, warranty and maintenance information shall be incorporated if and when possible.</li> </ul>
<b>Dependencies</b>	<ul style="list-style-type: none"> <li>• DOW III shall provide format and organization of O&amp;M.</li> <li>• O&amp;M's shall continue to evolve based on actual systems provided by contractors to be selected via bid.</li> </ul>

Within each major milestone delivery, progress toward a coordinated, interactive and PWB approved O&M manual system shall be implemented. DOW III shall manage and coordinate this effort. The Contractor shall include collections of materials, cut-sheets, owner's manuals and miscellaneous control equipment specifications from systems we are responsible for. After collection of this material, The Contractor shall adjust the format to match the established standards and transmit this information to DOW III. After completion of various sections The Contractor meet with PWB O&M staff to confirm information is accessible and appropriate for the level of operations and maintenance they require. Separate construction contracts may yield variations in systems provided between the two sites. As a result, O&M efforts shall be approached as separate efforts between the Bull Run facilities and the Lusted Hill facility.

**Activities/Deliverables:**

**The Contractor shall complete the following:**

**700.01** The Contractor shall provide updates to O&M manual at the design milestones (30/60/90 and 100) as necessary.

**CONTRACTOR PERSONNEL**

The Contractor shall assign the following personnel to do the work in the capacities designated:

NAME	ROLE ON PROJECT
Jeffrey McGraw	Principal –in-Charge
Brad Bane	Project Architect
Chris Hendryx	Project Coordinator
Michael McHugh	Project Designer
Margaux Davis	Interiors and Space Planning

**SUBCONTRACTORS**

The Contractor shall assign the following subcontractors to perform work in the capacities designated:

NAME	ROLE ON PROJECT
Interface Engineering	Mechanical Security Engineering
Brightworks	City's Green Building Policy Compliance
Energy Performance Engineering	Commissioning
Architectural Cost Consultants	Cost Estimating
Superelevation Inc.	Drafting
AECOM	Site and Civil Engineering
NW Geotech, Inc.	Geotechnical
Beaty Engineering	Site Specific Seismic Evaluation
MEC Electrical Engineering	Electrical Engineering
Shannon & Wilson	Geotechnical & Seismic
Baarspul Consulting	Conduit Design & Layout
Brown & Caldwell	Conduit Design Quality Assurance
KPFF Consulting Engineers	LEED & Sustainability for Site and Civil
ABHT Structural Engineers	Structural Engineering
GreenWorks	Landscape Architecture

The City shall enforce all diversity in workforce and Minority, Women and Emerging Small Business (M/W/ESB) subcontracting commitments submitted by the Contractor in its Proposal. For contracts valued \$100,000 or more, the Contractor shall submit a Monthly Subconsultant Payment and Utilization Report (MUR), made part of this contract by reference, reporting ALL subcontractors employed in the performance of this agreement. An electronic copy of the MUR may be obtained at: <http://www.portlandonline.com/shared/cfm/image.cfm?id=119851>.

**COMPENSATION**

Contractor shall be paid the not to exceed amount of **\$4,337,852**. The Contractor shall be paid based on its hourly rates, costs incurred in paying its subcontractors, if any, plus any authorized expenses, as set forth in more detail in the attached Exhibit A, Compensation Detail. The "not to exceed amount" is the maximum amount of compensation due the Contractor for all the work required by the contract. Errors in estimating the number of hours necessary to perform the work is the sole responsibility of the Contractor.

**Multiplier Information**

The multiplier applied to salaries shall not exceed 3.1. The multiplier shall include the following non-reimbursable expenses: fringe benefits, payroll bonuses, autos and other defined perquisites, telecommunications, facsimile services, overhead expenses including but not limited to local and long distance telephone, parking, delivery/courier, general business and professional liability insurance, advertising costs, postage, internal copying, lease of office equipment, mileage and other local travel costs, information technology (including computer time and CAD services and other related highly specialized equipment), all other direct costs not identified as reimbursable, other indirect costs and profit.

**Standard Reimbursable Costs**

The following costs shall be reimbursed without mark-up:

- **Out-of-Town Travel.** Travel (transportation, lodging and per diem) of Contractor and/or experts when specified in the contract or requested by PWB, directly attributed to specific tasks and when to a location outside a 100 mile radius of Contractor's project office. Travel costs shall be reimbursed in accordance with the City's Travel Expense Guidelines, which are based on the General Services Administration (GSA) per diem rates.
- **Photocopying/Reproduction Costs.** Reproduction of required drawings, reports, specifications, bidding documents, in excess of the number required as part of the contract excluding the cost of reproduction for Contractor's or sub's own use.

**Sub-consultant Costs**

Compensation for sub-consultants shall be limited to the same restrictions imposed on the Contractor. The maximum markup on sub-consultant services shall not exceed 5%.

**Adjustment of Hourly Rates Due to Inflation**

Annual adjustment of hourly rates shall be considered upon written request from the Contractor. Approval of a request for rate increases is solely within the City's discretion and under no circumstances is the City obligated to approve such a request.

Rate increases are subject to the following limitations:

- No increases shall be granted before the one-year anniversary of the contract;
- No more than one increase shall be granted per contract year;
- Rate increases may not exceed the then-current average inflation rate for the Portland Metropolitan Area (as determined from the US Department of Labor statistics and certified by the City of Portland Auditor);
- Rate increases shall not be retroactive.

Other than the impact of inflation as described above, hourly rates may not be increased.

**PAYMENT TERMS: Net 30 Days****Hourly Rates**

The Contractor shall be reimbursed in accordance with the rates listed on the attached Exhibit A, Summary of Project Fee.

**Progress Payments**

On or before the 15<sup>th</sup> of each month, the Contractor shall submit to the Water Bureau's Accounts Payable an invoice for work performed by the Contractor during the preceding month. The invoice shall contain the City's Contract Number and set out all items for payment including, but not limited to: the name of the individual, labor category, direct labor rate, hours worked during the period, tasks performed, and the percentage of work successfully completed for each task. The Contractor shall provide written explanation of deviations from the contract fees and provide measures of correction as necessary to ensure that the project remains on budget. The Contractor shall also attach photocopies of claimed reimbursable expenses. The City's Project Manager shall stamp and approve all subconsultant invoices and note on the subconsultant invoice what they are approving as "billable" under the contract. The billing from the prime should clearly roll up labor and reimbursable costs for the prime and subconsultants – matching the subconsultant invoices. Prior to initial billing, the Contractor shall develop a billing format for approval by the City. Invoices shall either be e-mailed to: [wb.accountspayablesection@ci.portland.or.us](mailto:wb.accountspayablesection@ci.portland.or.us) (this is the preferred method) or sent to:

City of Portland Water Bureau  
Attn: Portland Water Bureau Accounts Payable  
1120 SW 5<sup>th</sup> Avenue, Room 609  
Portland, OR 97204

The City shall pay all amounts to which no dispute exists within 30 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 Contractor shall make full payment to its subcontractors within 10 business days following receipt of any payment made by the Bureau to Contractor.

## INDEPENDENT CONTRACTOR CERTIFICATION STATEMENT

## SECTION A

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

Contractor Signature

Date

4/26/2010

Entity

ARCHITECT

**If entity does not have Workers' Compensation Insurance, City Project Manager and Contractor complete the remainder of this form.**

## SECTION B

**ORS 670.600 Independent contractor 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 contractor" 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

## SECTION C

Independent contractor certifies he/she meets 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 contractor 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. Contractor 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.

Contractor Signature

Date



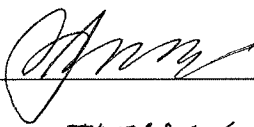
**CONTRACTOR SIGNATURE:**

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 Contractor 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 Chapter 3.100 of Code of the City of Portland; and hereby certify I am an independent contractor as defined in ORS 670.600.

**Michael Willis Architects**

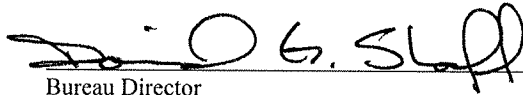
BY:  Date: 4/26/2010

Name: JEFFREY J. MCGRAW, AIA

Title: PRINCIPAL / VICE PRES.

Contract No. 30001284Contract Title: Bull Run Supply Treatment Project – Division of Work II - Facilities

## CITY OF PORTLAND SIGNATURES:

By:  Date: 05.11.2010  
Bureau Director

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Purchasing Agent

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Elected Official

Approved:

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Office of City Auditor

Approved as to Form:

APPROVED AS TO FORM

By:  Date: 5/3/10  
Office of City Attorney  
CITY ATTORNEY



Randy Leonard, Commissioner  
David G. Shaff, Administrator

1120 SW 5th Avenue, Room 600  
Portland, Oregon 97204-1926  
Information: 503-823-7404  
[www.portlandonline.com/water](http://www.portlandonline.com/water)



*An Equal Opportunity Employer*

## EXHIBIT B

To: David Peters, Principal Engineer  
City of Portland Water Bureau  
1120 SW 5<sup>th</sup> Ave.  
Portland, OR 97204

By signing this letter the Contractor for itself and on behalf of its employees and agents, agrees to adhere to the following procedures:

Disclosure of any information designated as "for non-disclosure" or "confidential" when gathered as part of the design and construction of the Bull Run Supply Treatment Improvements shall be a breach of the terms of this contract unless otherwise required by Federal or State law. The Contractor agrees to make provisions to secure all project records designated by the City "for non-disclosure" or "confidential" including drafts. The Contractor, their employees and all subcontractor's employees shall each be required to SIGN this City of Portland Water Bureau Confidentiality statement prior to the commencement of the awarded contract.

The Contractor shall deliver to the City all documents in any format including the Basis of Design Report (BDR), and any and all documents obtained from the City or generated during the course of this project designated as "for non-disclosure" or "confidential", unless otherwise authorized by the City upon completion of the project. All final documents designated as "for non-disclosure" or "confidential" shall be stamped on each page "NOT FOR PUBLIC DISCLOSURE" or "CONFIDENTIAL". The contractor shall not make available or use any system information, drafts or reports for any purpose without the written consent of the Portland Water Bureau (PWB) at any time.

Public safety may require limiting access to public work sites, public facilities, and public offices, at times with little advance notice. The Contractor's employees and agents shall follow the Bureau's Access procedures and will carry sufficient identification to show by whom they are employed and display it upon request to security personnel. City project managers have discretion to require the Contractor's employees and agents to be escorted to and from any public office, facility or work site if national or local security appears to require it.

Contractors, their employees and all subcontractor's employees shall each be required to fill out a City of Portland Water Bureau Facility Access Form as required and determined by the Project Manager. Access will be denied if this form has not been filled out and returned in advance. Portland Water Bureau's current version of this form is attached as Exhibit B1. The expected procedure during construction will be that, (at the Bureau's option), all contractor and subcontractor employees will wear a Bureau issued badge, turned into their superintendent at the end of each day; or provide a list of employees working on the job to be updated with each shift change.

A limited background check may be required at PWB's discretion, to be conducted by PWB's background check vendor (NOTE: this is NOT a Federal Security Clearance. Only those passing the Bureau's background checks, if required, will be authorized to work on the project.

The Contractor shall impose these same requirements on all employees, agents, other firms and their employees participating in the project, including subcontractors unless otherwise agreed upon with the Bureau.

Contractor agrees that any breach of this Agreement will cause irreparable harm to the City and without limitation of any other remedy; the City may obtain injunctive relief to prevent disclosure. Jurisdiction and venue shall be in the Circuit Court of the State of Oregon for the County of Multnomah.

Signed by: JEFFREY J. MCGRAW, AIA

MICHAEL WILLIS ARCHITECTS

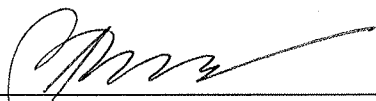
Company Name

70 NW COUCH ST. # 401, 97209

Address

JEFFREY J. MCGRAW, AIA

Authorized Agent of the Contractor (Print Name)

  
Signature of Authorized Agent of the Contractor

4/26/2010  
Date

APPROVED AS TO FORM

  
CITY ATTORNEY  
5/3/10

## Exhibit B1

## Portland Water Bureau Public Site Visit Request Procedure

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The Portland Water Bureau provides limited public site visits at Bureau facilities. All site visits must be requested and coordinated through a Water Bureau sponsor or in the case of VIP's, international visitors or the media, the Public Information Officer.

Approval must be obtained a minimum of 48 hours (two working days) prior to the requested visit date. The following procedure should be followed to request a site visit at a Bureau facility:

**For visits to any Water Bureau facility:**

1. Provide the name of the group, address and contact phone number of the group or group representative, the name of the facility for which the visit is being requested along with the date and time of the visit utilizing to the Water Bureau's Security Section by completing a *Facility Security Access Form-Visitor* and a *Group Visitor Identification Form*.

**For High Security Facilities only:**

VIP's, international visitors and members of the media must contact the Public Information Officer at (503) 823-2794. All other visitors are to make arrangements through a designated Water Bureau sponsor, who, when deemed necessary, will communicate with the Public Information Officer and Security Dispatch at (503) 823-6084.

At the time of the visit, all attendees will be asked to:

1. Provide first and last name, address, and phone number to the sponsor or Bureau guide. Adult visitors will be asked to show the sponsor or Bureau guide valid photo identification.
2. Remain under constant supervision during the visit.
3. Secure all doors to facilities upon entry and exit.
4. Remain in or at facilities for only the time designated in the visit request.

## ATTACHMENT 2

FACILITY SECURITY ACCESS FORM-VISITOR  
INFORMATION & INSTRUCTIONS

- ☐ To request access to Water Bureau sites/facilities, contact an authorized Water Bureau sponsor.
- ☐ NOTE: For access to "High Security Facilities," all individuals will be asked to provide full name, address and phone number to the sponsor. Additionally, adults will be asked to show valid photo identification.
- ☐ Check the appropriate box (*Individual or Group*) and indicate number of persons requesting access to the site/facility.

## SECTION 1 - VISITOR INFORMATION

- ☐ Check the appropriate box (*Individual or Group*) and indicate the number of attendees.
- ☐ Enter the name, address and contact information of the individual requesting access or, if a group request, the name of the group representative.
- ☐ For group access, complete and attach a "*City of Portland Bureau of Water Works Group Visitor Identification Information*" form.

## SECTION 2 - FACILITY INFORMATION

- ☐ Enter the name and address (if available) of the facility or location to be accessed.
- ☐ Enter the date of the requested access and the times of anticipated arrival and departure.
- ☐ Describe the reason for requesting access.
- ☐ Describe any special equipment or training needed for making access.
- ☐ Enter the name of the Water Bureau member participating in the access.
- ☐ Describe any additional information as deemed necessary.

## SECTION 3 - WATER BUREAU EMPLOYEE SPONSOR INFORMATION

- ☐ Enter the name and contact information of the Water Bureau employee sponsoring the access.
- ☐ Enter the date the request was forwarded to the Water Bureau Security Section. (*Fax 823-6078*)

## SECTION 4 - WATER BUREAU SECURITY SECTION USE ONLY

- ☐ Enter the name of the Water Bureau Security Section person reviewing the access.
- ☐ Enter the date and time the access was reviewed.
- ☐ Enter the name and date, if appropriate, that the *facility/site manager or supervisor* of the location to be accessed was notified.
- ☐ Enter the name and date *Water Control Center* personnel were notified.
- ☐ If the Bull Run Watershed is to be accessed, enter the name and date *Headwork's* personnel were notified.
- ☐ Other notifications as appropriate:

## ATTACHMENT 3

**CITY OF PORTLAND WATER BUREAU  
FACILITY SECURITY ACCESS FORM  
VISITOR**

☐ INDIVIDUAL☐ GROUP \_\_\_\_\_ NUMBER OF ATTENDEES \_\_\_\_\_

FOR GROUP ONLY: Complete and submit a GROUP VISITOR IDENTIFICATION INFORMATION form also.

SECTION 1 – VISITOR INFORMATION		
Name of Person or Group Representative:		
Company / Group / Agency:		
Address:		
City:	State:	Zip:
Phone #:	Cell Phone #:	

SECTION 2 – FACILITY INFORMATION		
Facility / Location to be visited:		
Address (if available):		
Date of visit:	Estimated time of arrival:	Estimated time of departure:
Reason for Visit:		
Special equipment or training needed:		
Name of Water Bureau staff escort:		
Notes:		

SECTION 3 – WATER BUREAU EMPLOYEE SPONSOR INFORMATION	
Print Name:	Title & Section:
Authorized By (Signature):	Phone #:
Date request forwarded to Water Bureau Security:	
Name of Water Bureau Security staff contacted:	

SECTION 4 – WATER BUREAU SECURITY USE ONLY	
Access reviewed by (print name):	Title:
Signature:	Phone #:
Date:	Time:
Interstate or Portland Building receptionist notified:	Date:
Facility manager or supervisor notified:	Date:
Water Control Center Operator notified:	Date:
Headworks Operator notified (For Bull Run Access):	Date:
Other notifications as appropriate:	Date:

Revised: 07/01/05

## ATTACHMENT 4

CITY OF PORTLAND WATER BUREAU  
GROUP - VISITOR IDENTIFICATION INFORMATION

Location: \_\_\_\_\_ Date: \_\_\_\_\_ Group Name: \_\_\_\_\_

WB Employee Sponsor: \_\_\_\_\_  
(name) (phone number)

	Last	First	M.I.	Address	City	State	Zip	Phone #
1								
2								
3								
4								
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19								
20								



## ATTACHMENT 5

**CITY OF PORTLAND WATER BUREAU  
FACILITY SECURITY ACCESS FORM  
CONTRACTOR / VENDOR / CELL SITE**

Complete an "Employees To Be On Site" Form

CONTRACTOR USE ONLY			
Name of Company:			
Company Address:			Suite:
City:	State:	Zip:	
Company Phone #:		Fax #:	
Portland Business License #:			
Site / Facility To Be Accessed:			
Site Address:			
Date(s) of Work:			
Work To Be Performed:			
Authorized Signature:			Date:
City Contact Arranging For The Contract:			Phone #:

CITY OF PORTLAND SPONSOR USE ONLY	
Print Name & Title:	Phone #:
Sponsor Approval Date:	

WATER BUREAU SECURITY USE ONLY			
Access reviewed by (print name):			Title:
Signature:		Phone #:	
Date:	Time:		
Interstate or Portland Building receptionist notified:			Date:
Facility manager or supervisor notified:			Date:
Water Control Center Operator notified:			Date:
Headworks Operator notified (For Bull Run Access):			Date:

Revised: 07/01/05

**CELL SITE PERSONNEL MUST CALL THE SECURITY DISPATCH  
AT (503) 823-6084 PRIOR TO ENTERING AND UPON EXITING A  
SITE.**

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## ATTACHMENT 6

CITY OF PORTLAND WATER BUREAU  
CONTRACTOR / VENDOR / CELL SITE  
EMPLOYEES TO BE ON SITE

No.	Last	First	M. I.	Contact Phone #
1				
2				
3				
4				
5				
6				
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23				
24				
25				

<b>Architectural - Michael Willis Architects</b>		(3) 1 (Multiplot)	<b>Structural - ABHT</b>		(3) 1 (Multiplot)
Principal in Charge (PIC): Jeffrey J. McGraw, AIA		(\$195hr)	Principal in Charge (PIC): Cincin J. Ambrose, P.E., S.E.		(\$195hr)
Senior GA/GC (SO/GC): Michael Willis, FAIA		(\$225hr)	Project Manager (PM): Christian Bolton, P.E.		(\$195hr)
Project Archt / Coord (PA): Brad Sams, AIA, LEED AP		(3) 110hr	Project Designer/Specs (PD): Ken Su, P.E.		(\$200hr)
Project Coord (PC): Chris Hinkle		(\$100hr)	Design Draft: Joie Ann Smith		(\$100hr)
Project Designer/Specs (PD): Michael McHugh		(\$100hr)	Administrative (Ad): Carissa Watanabe		(\$50hr)
Technical II (Tech II):		(\$55hr)			
Interior Designer, (ID)		(\$90hr)			
Administration (AD)		(\$70hr)			
			<b>LEED Support - Brightworks</b>		(3) 1 (Multiplot)

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[illegible]



EXHIBIT C

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

**CONTRACT NO. 30001291**

**SHORT TITLE OF WORK PROJECT:  
Bull Run Supply Treatment Project  
Division of Work III  
Project Support**

This contract is between the City of Portland, acting by and through its Elected Officials, hereafter called "City," and **CH2M Hill, Inc.**, hereafter called Contractor. The City's Project Manager for this contract is **David Peters**.

**Effective Date and Duration**

This contract shall become effective on **June 25, 2010**. This contract shall expire, unless otherwise terminated or extended, on **December 31, 2014**.

**Consideration**

- (a) City agrees to pay Contractor a sum not to exceed **\$3,669,790** for accomplishment of the work.
- (b) Interim payments shall be made to Contractor according to the schedule identified in the STATEMENT OF THE WORK AND PAYMENT SCHEDULE.

**CONTRACTOR DATA AND CERTIFICATION**

Name (please print): CH2M Hill, Inc.

Address: 2020 SW Fourth Avenue, Suite 300, Portland, OR 97201

Employer Identification Number (EIN) 59-0918189

[INDEPENDENT CONTRACTORS: DO NOT PROVIDE SOCIAL SECURITY NUMBER (SSN) - LEAVE BLANK IF NO EIN]

City of Portland Business License # 308278

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. Information not matching IRS records could subject you to 20 percent backup withholding.

**STANDARD CONTRACT PROVISIONS FOR  
PROFESSIONAL, TECHNICAL & EXPERT SERVICES (MANDATORY PROVISIONS)**

**1. Access to Records**

The Contractor shall maintain, and the City of Portland ("City") and its duly authorized representatives shall have access to the books, documents, papers, and records of the Contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts, and transcripts for a period of three years after final payment. Copies of applicable records shall be made available upon request. Payment for cost of copies is reimbursable by the City.

**2. Audits**

(a) The City, either directly or through a designated representative, may conduct financial and performance audits of the billings and services specified in this agreement at any time in the course of the agreement and during the three (3) year period established by section 1, **Access to Records**. 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 General Accounting Office.

(b) If an audit discloses that payments to the Contractor were in excess of the amount to which the Contractor was entitled, then the Contractor shall repay the amount of the excess to the City.

(c) If any audit shows performance of services is not efficient in accordance with Government Auditing Standards, or that the program is not effective in accordance with Government Auditing Standards, the City may pursue remedies provided under section 5, **Early Termination of Agreement** and section 7, **Remedies**.



### 3. **Effective Date and Duration**

The passage of the contract expiration date (as recorded on reverse side) 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 cured.

### 4. **Order of Precedence**

This contract consists of the terms and conditions of this contract, the Request for Proposals (RFP) issued by the City, if any, and the Contractor's proposal in response to the RFP. In the event of any apparent or alleged conflict between these various documents, the following order of precedence shall apply to resolve the conflict: a) this contract's terms and conditions, b) the City's RFP, and c) the Contractor's proposal in response to the RFP.

### 5. **Early Termination of Agreement**

(a) The City and the Contractor, by mutual written agreement, may terminate this Agreement at any time.

(b) The City, on thirty (30) days written notice to the Contractor, may terminate this Agreement for any reason deemed appropriate in its sole discretion.

(c) Either the City or the Contractor may terminate this Agreement in the event of a breach of the Agreement by the other. Prior to such termination, however, the party seeking the termination shall give to the other party written notice of the breach and of the party's intent to terminate. If the party has not entirely cured the breach within fifteen (15) days of the notice, then the party giving the notice may terminate the Agreement at any time thereafter by giving a written notice of termination.

### 6. **Payment on Early Termination**

(a) In the event of termination under subsection 5(a) or 5(b), **Early Termination of Agreement** hereof, the City shall pay the Contractor for work performed in accordance with the Agreement prior to the termination date.

(b) In the event of termination under subsection 5(c), **Early Termination of Agreement** hereof, by the Contractor due to a breach by the City, then the City shall pay the Contractor as provided in subsection (a) of this section.

(c) In the event of termination under subsection 5(c), **Early Termination of Agreement** hereof, by the City due to a breach by the Contractor, then the City shall pay the Contractor as provided in subsection (a) of this section, subject to set off of excess costs, as provided for in section 7(a), **Remedies**.

(d) In the event of early termination all of the Contractor's work product will become and remain property of the City.

### 7. **Remedies**

(a) In the event of termination under subsection 5(c), **Early Termination of Agreement**, hereof, by the City due to a breach by the Contractor, then the City may complete the work either itself, by agreement with another contractor or by a combination thereof. In the event the cost of completing the work exceeds the remaining unpaid balance of the total compensation provided under this contract, then the Contractor shall pay to the City the amount of the reasonable excess.

(b) The remedies provided to the City under section 5, **Early Termination of Agreement** and section 7, **Remedies** for a breach by the Contractor shall not be exclusive. The City also shall be entitled to any other equitable and legal remedies that are available.

(c) In the event of breach of this Agreement by the City, then the Contractor's remedy shall be limited to termination of the Agreement and receipt of payment as provided in section 5(c), **Early Termination of Agreement** and section 6(b), **Payment on Early Termination** hereof.

### 8. **Subcontracts and Assignment**

Contractor 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 subcontractor, the Contractor shall remain obligated for full performance hereunder, and the City shall incur no obligation other than its obligations to the Contractor hereunder. The Contractor agrees that if subcontractors are employed in the performance of this Agreement, the Contractor and its subcontractors are subject to the requirements and sanctions of ORS Chapter 656, Workers' Compensation.

### 9. **Compliance with Applicable Law**

In connection with its activities under this Agreement, Contractor shall comply with all applicable federal, state and local laws and regulations including the City's Equal Benefits Ordinance and its administrative rules, all of which are incorporated by this reference. Failure to comply with the Ordinance permits the City to impose sanctions or require remedial actions as stated in Section 13.1 of the administrative rules. Contractor shall complete the INDEPENDENT CONTRACTOR CERTIFICATION STATEMENT, which is attached hereto and by this reference made a part hereof.

### (a) **Indemnity - Claims for Other than Professional Liability**

Contractor shall defend, save, and hold harmless the City of Portland, its officers, agents, and employees, from all claims, suits, or actions of whatsoever nature, including intentional acts, resulting from or arising out of the activities of Contractor or its subcontractors, agents or employees under this agreement. Nothing in this section requires the Contractor or its insurer to indemnify the City for any claims or losses arising out of death, or bodily injury to persons, or property damage caused by the negligence of the City.

**(b) Indemnity - Claims for Professional Liability**

Contractor shall defend, save, and hold harmless the City of Portland, its officers, agents, and employees, from all claims, suits, or actions arising out of the professional negligent acts, errors or omissions of Contractor or its subcontractors and sub-consultants, agents or employees in performance of professional services under this agreement. Nothing in this section requires the Contractor or its insurer to indemnify the City for any claims or losses caused by the negligence of the City.

**(c) Indemnity - Standard of Care**

If Contractor's services involve engineering or consulting, the standard of care applicable to Contractor's service will be the degree of skill and diligence normally employed by professional engineers or consultants performing the same or similar services at the time such services are performed. Contractor will re-perform any services not meeting this standard without additional compensation.

**10. Insurance**

During the term of this contract Contractor shall maintain in force at its own expense, each insurance noted below:

- (a) Workers' Compensation insurance in compliance with ORS 656.017, which requires subject employers to provide Oregon workers' compensation coverage for all their subject workers (contractors with one or more employees, unless exempt under ORS 656.027).

- (b) ☒ Required and attached or Waived by City Attorney: \_\_\_\_\_

General Liability insurance with a combined single limit of not less than \$1,000,000 per occurrence for Bodily Injury and Property Damage. It shall include contractual liability coverage for the indemnity provided under this contract, and shall provide that City of Portland, and its agents, officers, and employees are Additional Insured but only with respect to the Contractor's services to be provided under this Contract:

- (c) ☒ Required and attached or Waived by City Attorney: \_\_\_\_\_

Automobile Liability insurance with a combined single limit of not less than \$1,000,000 per occurrence for Bodily Injury and Property Damage, including coverage for owned, hired, or nonowned vehicles, as applicable:

- (d) ☒ Required and attached or Waived by City Attorney: \_\_\_\_\_

Professional Liability insurance with a combined single limit of not less than \$1,000,000 per claim, incident, or occurrence. This is to cover damages caused by error, omission or negligent acts related to the professional services to be provided under this contract. If insurance coverage is provided on a "claims made" basis, the successful Proposer shall acquire a "tail" coverage or continue the same coverage for three years after completion of the contract, provided coverage is available and economically feasible. If such coverage is not available or economically feasible, contractor shall notify City immediately.

- (e) On all types of insurance. There shall be no cancellation, material change, reduction of limits, or intent not to renew the insurance coverage(s) without 30-days written notice from the Contractor or its insurer(s) to the City.
- (f) Certificates of insurance. As evidence of the insurance coverages required by this contract, the Contractor shall furnish acceptable insurance certificates to the City at the time contractor returns signed contracts. The certificate will specify all of the parties who are Additional Insured and will include the 30-day cancellation clause and 10-day non-payment clause that provides that the insurance shall not terminate or be cancelled without 30 days or 10 days written notice first being given to the City Auditor. Insuring companies or entities are subject to City acceptance. If requested, complete policy copies shall be provided to the City. The Contractor shall be financially responsible for all pertinent deductibles, self-insured retentions, and/or self-insurance.

**11. Ownership of Work Product**

All work products produced by the Contractor under this contract is the exclusive property of the City. "Work product" shall include but not be limited to research, reports, computer programs, manuals, drawings, recordings, photographs, artwork and any data or information in any form; the Contractor 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 Contractor 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. Contractor shall obtain such interests and execute all documents necessary to fully vest such rights in the City. Contractor 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 Contractor is an architect, the work product is the property of the Contractor-Architect, and by execution of this contract, the Contractor-Architect grants the City an exclusive and irrevocable license to use that work product.

**12. Nondiscrimination**

Contractor agrees to comply with all applicable requirements of federal and state civil rights and rehabilitation statutes, rules, and regulations. Contractor also shall comply with the Americans With Disabilities Act of 1990 (Pub I. No. 101-336) including Title II of that Act, ORS 659.425, and all regulations and administrative rules established pursuant to those laws.

**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 Contractor shall perform such additional work as may be necessary to correct errors in the work required under this contract without undue delays and without additional cost.

**17. Governing Law**

The provisions of this contract shall be construed in accordance with the provisions of the laws of the State of Oregon. 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 scope of work and contract amount, must be made by written amendment and approved by the Purchasing Agent 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 License**

The Contractor shall obtain a City of Portland business license as required by PCC 7.02 prior to beginning work under this Agreement. The Contractor shall provide a business license number in the space provided on page one of this Agreement. Additionally, the Contractor shall pay all fees or taxes due under the Business License Law and the Multnomah County Business Income Tax (MCC Chapter 12) during the full term of this contract. Failure to be in compliance may result in payments due under this contract to be withheld to satisfy amount due under the Business License Law and the Multnomah County Business Income Tax Law.

**20. Prohibited Interest**

(a) No City officer or employee during his or her tenure or for one year thereafter shall have any interest, direct or indirect, in this Agreement or the proceeds thereof.

(b) No City officer or employee who participated in the award of this Agreement shall be employed by the Contractor during the period of the Agreement.

**21. Payment to Vendors and Subcontractors**

The Contractor shall timely pay all suppliers, lessors and contractors providing it services, materials or equipment for carrying out its obligations under this Agreement. The Contractor shall not take or fail to take any action in a manner that causes the City or any materials that the Contractor provides hereunder to be subject to any claim or lien of any person without the City's prior written consent.

**Merger Clause**

THIS CONTRACT AND ATTACHED EXHIBITS CONSTITUTES THE ENTIRE AGREEMENT BETWEEN THE PARTIES. NO WAIVER, CONSENT, MODIFICATION, OR CHANGE OF TERMS OF THIS CONTRACT SHALL BIND EITHER PARTY UNLESS IN WRITING AND SIGNED BY BOTH PARTIES. SUCH WAIVER, CONSENT, MODIFICATION, OR CHANGE IF MADE, SHALL BE EFFECTIVE ONLY IN SPECIFIC INSTANCES AND FOR THE SPECIFIC PURPOSE GIVEN. THERE ARE NO UNDERSTANDINGS, AGREEMENTS, OR REPRESENTATIONS, ORAL OR WRITTEN, NOT SPECIFIED HEREIN REGARDING THIS CONTRACT. CONTRACTOR, BY THE SIGNATURE OF ITS AUTHORIZED REPRESENTATIVE, HEREBY ACKNOWLEDGES THAT HE OR SHE HAS READ THIS CONTRACT, UNDERSTANDS IT AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS.

**OPTIONAL PROVISIONS (selected by City Project Manager)****22. Arbitration: / X / Not Applicable /     / Applicable (consult with City Attorney's Office before finalizing as applicable)**

(a) Any dispute arising out of or in connection with this Agreement, which is not settled by mutual agreement of the Contractor and the City within sixty (60) days of notification in writing by either party, shall be submitted to an arbitrator mutually agreed upon by the parties. In the event the parties cannot agree on the arbitrator, then the arbitrator shall be appointed by the Presiding Judge (Civil) of the Circuit Court of the State of Oregon for the County of Multnomah. The arbitrator shall be selected within thirty (30) days from the expiration of the sixty (60) day period following notification of the dispute. The arbitration, and any



litigation arising out of or in connection with this Agreement, shall be conducted in Portland, Oregon, shall be governed by the laws of the State of Oregon, and shall be as speedy as reasonably possible. The applicable arbitration rules for the Multnomah County courts shall apply unless the parties agree in writing to other rules. The arbitrator shall render a decision within forty-five (45) days of the first meeting with the Contractor and the City. Insofar as the Contractor and the City legally may do so, they agree to be bound by the decision of the arbitrator.

(b) Notwithstanding any dispute under this Agreement, whether before or during arbitration, the Contractor shall continue to perform its work pending resolution of a dispute, and the City shall make payments as required by the Agreement for undisputed portions of work.

**23. Progress Reports: ☐ / Applicable ☐ / Not Applicable**

The Contractor shall provide monthly progress reports to the Project Manager. If applicable, the STATEMENT OF THE WORK should list what information the Contractor must include in monthly progress reports.

**24. Contractor's Personnel: ☐ / Applicable ☐ / Not Applicable**

The Contractor shall assign the following personnel to do the work in the capacities designated: If applicable, list selected personnel in the STATEMENT OF THE WORK. The Contractor shall not change personnel assignments without the prior written consent of the City.

**25. Subcontractors: ☐ / Applicable ☐ / Not Applicable**

The City requires Contractors to use the Minority, Women and Emerging Small Business (M/W/ESB) subcontractors identified in their proposals, and as such the Contractor shall assign these subcontractors as listed in the STATEMENT OF THE WORK to perform work in the capacities designated. The Contractor shall not change subcontractor assignments without the prior written consent of the Purchasing Agent.

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**STATEMENT OF THE WORK  
AND PAYMENT SCHEDULE**

The Portland City Council has directed the Portland Water Bureau (PWB) to design an ultraviolet (UV) light disinfection system for additional treatment of the drinking water from the Bull Run watershed. Specifically, the UV system would be designed to provide *Cryptosporidium* inactivation as required under the U.S. Environmental Protection Agency (EPA) Long Term 2 Enhanced Surface Water Treatment Rule (LT2). Should the City's attempts to seek a variance from the US EPA related to the LT2 Rule prove unsuccessful, this UV disinfection system shall be constructed. The Bull Run Supply Treatment project (BRST) shall include UV light disinfection at Headworks and corrosion control process modifications at Lusted Hill.

The UV disinfection portion of the Bull Run Supply Treatment Project shall be located at the Headworks site. The project design shall include a UV light disinfection process facility; offices and supporting spaces; and primary and emergency back-up power for the facility. The process facility shall be within a building and shall contain the UV reactors, process piping, instrumentation, controls and chlorination. That building or an additional building needs to be provided to house operations and maintenance personnel, and support functions including a control room, supervisor offices, a laboratory, lunchroom, restrooms, locker rooms, and maintenance shops.

This scope of work includes all work and deliverables required by the Contractor for Division of Work III (DOW III), Project Support Division. DOW III involves all the activities to support BRST Project Team with producing final design work products using deliverables from DOW Team members and includes several tasks to ensure cohesiveness, team efficiencies, and project oversight. There are two other Divisions of Work:

- Division of Work I (DOW I) shall perform engineering services for the process systems including the UV disinfection and corrosion control design work, and the components inside the building(s).
- Division of Work II (DOW II) which shall perform engineering services for geotechnical, structural, architectural, HVAC, plumbing, security, civil sitework, and building service electrical work.

The collective work under all three divisions of work includes designing and developing plans and specifications for a Design-Bid-Build construction contract for a 212 MGD UV water treatment and corrosion control systems including the associated building structures and support systems.

Construction Management services shall be retained by the Bureau if the project moves forward to construction.

All three (3) Contractors working on the BRST project shall work in conjunction with one another along with the PWB's Project Manager, PWB Project Team Leads and PWB staff in order to achieve the desired project outcome. These individuals shall make up the BRST Project Team.

Each DOW Contract shall have a team which consists of the PWB Project Team Lead, Contractor's Project Manager, and with other PWB and Contractor staff in order to achieve the desired project outcome. These individuals shall make up the DOW Team.

The Contractor's Project Manager shall (1) coordinate, communicate, receive directions from, and support the BRST Project Team, and (2) plan, organize, monitor, and control the day to day project team activities. The Project Manager shall have the authority to make commitments for the DOW III Contractor. The Contractor's Project Manager shall informally meet weekly with the PWB's Project Team Lead, Walt Lewandowski, to coordinate the project.

#### **TASK 100 PROJECT MANAGEMENT**

- Subtask 101: Scheduling, Project Controls, Payment Requests, & Monthly Progress Reporting
- Subtask 102: Partnering Sessions
- Subtask 103: Meetings
- Subtask 104: Change Management Plan
- Subtask 105: Risk Management Plan
- Subtask 106: Quality Management
- Subtask 107: BCOE Reviews
- Subtask 108: Health and Safety Plan
- Subtask 109: General Project Management and Support

#### **TASK 200 PRELIMINARY DESIGN/ ISSUES RESOLUTION**

- Subtask 201: Early Decision Framework and Support
- Subtask 202: Project Issues Resolution Support
- Subtask 203: Conflict Resolution

#### **TASK 300 DESIGN**

- Subtask 301: 30 Percent Design Submittal Package
- Subtask 302: Value Engineering
- Subtask 303: 60 Percent Design Submittal Package
- Subtask 304: 90 Percent Design Submittal Package
- Subtask 305: 95 Percent Design Submittal Package
- Subtask 306: Final Design 100 Percent Submittal
- Subtask 307: Operational Descriptions

#### **TASK 400 NOT USED**

#### **TASK 500 BIDDING ASSISTANCE**

#### **TASK 600 PERMITTING AND PERMIT COORDINATION**

- Subtask 601: Federal Emergency Management Agency (FEMA) Flood Plain Determination
- Subtask 602: Conduct Endangered Species Act (ESA) Review
- Subtask 603: Meet with Permitting Agencies
- Subtask 604: Develop Permit Applications
- Subtask 605: Permitting Coordination

#### **TASK 700 ONLINE OPERATION AND MAINTENANCE DATA PROVISION**

- Subtask 701: Operation & Maintenance (O&M) Data Provision Activities During 30 Percent Design
- Subtask 702: O&M Data Provision Activities During 60 Percent Design
- Subtask 703: O&M Data Provision Activities During 90 Percent Design
- Subtask 704: O&M Data Provision Specification for the Bid Documents
- Subtask 705: Electronic O&M Data Provision Development

**TASK 800 PROJECT COORDINATION**

- Subtask 801: Prepare and Implement Project Management Plan  
 Subtask 802: Project Standards  
 Subtask 803: Project Standards and Tools Training  
 Subtask 804: Project Scheduling and Controls – Overall Project

**TASK 900 PROJECT WEBSITE AND DOCUMENT CONTROL SYSTEM**

- Subtask 901: Project Website  
 Subtask 902: Document Control System

**TASK 1000 ADMINISTRATIVE SUPPORT****TASK 1100 PUBLIC INVOLVEMENT****TASK 1200 3D COMPUTER MODELING****TASK 1300 ASSISTANCE IN TECHNICAL REVIEW OF DESIGN SUBMITTALS AND GAP ANALYSIS**

- Subtask 1301: Implement Design Submittal Review Process  
 Subtask 1302: Manage Design and Technical Issues  
 Subtask 1303: Manage Design Submittal Review Process  
 Subtask 1304: Provide Technical Review of Milestone Submittals  
 Subtask 1305: Provide Technical Review of Additional Submittals

**TASK 1400 PROJECT COST ESTIMATING****TASK 1500 LEED COMPLIANCE****TASK 1600 REGULATORY COMPLIANCE**

- Subtask 1601: Regulatory Compliance Strategy  
 Subtask 1602: LT2ESWTR Time Extension

**TASK 1700 CONSTRUCTION ASSISTANCE****SCOPE OF WORK FOR DOW III**

The following scope of work details the professional, technical, and engineering services to be provided by the DOW III Contractor for the Project. The scope of work has been organized into the following major tasks:

**TASK 100: PROJECT MANAGEMENT**

This task provides overall project management activities for this contract.

<b>Subtask 101</b>	<b>Scheduling, Project Controls, Payment Requests, and Monthly Progress Reporting – DOW III</b>
<b>Deliverables</b>	Project Instructions for the Contractor, including work plan. MS Project Schedule for the Contractor, updated monthly. Monthly report of amount spent, for the month and cumulatively, and estimated amount to complete. Graphic showing actual amount spent versus planned cash flow. Monthly payment request with documentation. One original copy of each Monthly Summary Report.
<b>Dependencies</b>	<b>PWB</b>  Review and comment on draft payment request guidance document. Review and process payment requests. Written comments on the summary report within 10 days of receipt.  <b>DOW I and II Contractors</b> Inputs that affect the Contractor's schedule.

This subtask is specific to the work relating to scheduling, project controls, payment requests, and monthly progress reporting for the work performed by the Contractor in managing this contract. The Contractor shall prepare DOW III Project Instructions including a work plan for performing the activities and producing the DOW III deliverables. The Contractor shall include internal processes, procedures, policies, and the work breakdown structure. The Contractor shall include references to the overall Project Management Plan and Quality Management Plan for additional applicable information.

The Contractor shall prepare a schedule of work to be performed under this contract, including all task and subtask deliverables and milestones which are critical to the overall schedule. Ongoing routine tasks and subtasks shall not be included. The schedule shall link to and be a component of the overall project schedule, prepared using MS Project. The Contractor shall update the schedule on a monthly basis.

The Contractor shall establish project controls to monitor the budget status for each task and subtask, as well as the overall budget for the Contractor. The Contractor shall provide monthly updates including estimated cost to complete compared to remaining budget by task and subtask and provide a summary graphic displaying planned overall budget expenditure by month and cumulative expenditure over the duration of the contract. The Contractor shall update the graphic on a monthly basis, showing actual versus planned cash flow.

The Contractor shall prepare a draft payment request guidance document for use by the Contractor and sub-consultants project management and accounting staff for preparing monthly payment requests. The Contractor shall include payment document templates, instructions on typical processes and schedule for submitting each request, and instructions on required documentation to be included with each request. The Contractor shall include description of processes. The DOW Contractors shall submit monthly payment requests consistent with the guidance document.

The Contractor shall prepare a Monthly Progress Report and submit it to the BRST Project Manager along with the monthly payment request. The report shall include a summary highlighting progress during the previous month and listing unresolved outstanding issues specific to the Contractor's project delivery. The report shall include an attachment of the project controls data prepared under subtask 101.

<b>Subtask 102</b>	<b>Partnering Sessions</b>
<b>Deliverables</b>	Draft and final agendas and materials for the 2 <sup>nd</sup> and 3 <sup>rd</sup> Partnering Sessions. Signed Project Charter document. Updated Signed Project Charter after review at 30 percent Partnering Session.
<b>Dependencies</b>	<b>PWB</b>  Review and comment of draft Partnering materials. Participation in Partnering Sessions. Commitment to Project Charter.  <b>DOW I and II Contractors</b>  Participation in Partnering Sessions. Commitment to Project Charter.

Partnering shall be conducted to establish effective relationships among the BRST Project Team. The purpose of partnering is to clearly define the team goals, roles, expectations, and commitments. The initial partnering session shall be conducted at the beginning of the project, based on an agenda, materials and arrangements previously developed. An element of the initial Partnering Session shall be joint efforts to create effective approaches to deal with change management during the project. A Project Charter shall be developed as an output of the Partnering Session.

Follow-up sessions shall be conducted near the 30 percent and 90 percent submittals, the last one in part to check back on the status of the DOW Team's fulfillment of the Project Charter.

The Contractor shall prepare materials for the Partnering Sessions, including agenda, and suggestions for elements of the Project Charter.

The Contractor shall work with PWB staff in developing the agendas and materials to assure that PWB objectives are met. Processes to resolve conflicts shall be defined in addition to defining the elements above.

Included in the table below are the estimated hours included for the Contractor participation in the Partnering Sessions. Costs for sub-consultant participation are covered in Task 600 and Task 1100.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Estimated Hours by DOW III <i>Includes travel, prep, follow-up</i>
102	Partnering	Kickoff/Chartering 8 hours	4 + 2 sub-consultants	58
		30% (~6 months) 4 hours	4 + 2 sub-consultants	28
		90% (~12 months) 4 hours	4 + 2 sub-consultants	28

<b>Subtask 103</b>	<b>Meetings</b>
<b>Deliverables</b>	Meeting materials Meetings notes
<b>Dependencies</b>	<b>PWB</b>  Participation in Project Meetings  <b>DOW I and II Consultants</b>  Participation in Project Meetings as detailed below Materials required for specific items on Project Meeting agendas

The Contractor shall participate in project team meetings exclusive of those associated with detailed design progression under Task 300 and Task 1300. Examples of meetings included under this sub-task include project coordination meetings, training sessions, issue resolution meetings beyond routine issue tracking, and additional meetings as needed for project support. For all routine team meetings and as requested, the Contractor shall schedule, prepare materials in advance, and provide meeting notes. Administrative support time for all project meetings is captured in Task 1000.

Included in the table below are the estimated hours included for the Contractor's participation in the project meetings.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Duration	Estimated Hours <i>Includes travel, prep, follow-up</i>
103	Project Coordination	2 per month 2 hour meetings	2	18 months	340
	Contractor + PWB	2 per month (Alternate with Project Coordination meetings) 2 hour meetings	2	18 months	340

<b>Subtask 104</b>	<b>Change Management</b>
<b>Deliverables</b>	Change Management Plan as a component of the Project Management Plan Master Project Change Register
<b>Dependencies</b>	<b>PWB</b>  Endorsement of Change Management Plan as a component of the Project Management Plan.  <b>DOW I and II Contractors</b>  Change Management Registers for each Division of Work.

**104.01 CHANGE MANAGEMENT PLAN**

The Contractor shall prepare a Change Management Plan to manage changes and to mitigate the impact of the change events as they occur. Change management includes absences or changes of project team members, changes in project objectives, scope changes, schedule changes, and budget changes. The Change Management Plan shall be prepared following mutual efforts to develop basic concepts at the initial Partnering Session, with the outlook to assure project success, enhance financial performance, avoid project delays, improve team performance, and enhance the quality of the project. The Change Management Plan would be predominantly applied under Subtask 202, 203, and 1302.

**104.02 MASTER PROJECT CHANGE REGISTER**

The Contractor shall establish a Master Project Change Register for all DOWs, updated monthly as needed, and included in the Overall Monthly Progress Report. The register shall track potential and actual changes to the scope of work for all Divisions of Work and associated changes in budget, cost and/or schedule.

<b>Subtask 105</b>	<b>Risk Management</b>
<b>Deliverables</b>	Risk Management Plan as a component of the Quality Management Plan Updates to Risk Assessment Ledger
<b>Dependencies</b>	<b>PWB</b> Monthly input on changes to the Risk Assessment Ledger.  <b>DOW I and II Contractors</b> Monthly input on changes to the Risk Assessment Ledger.

**105.01 RISK MANAGEMENT PLAN AND LEDGER**

Based on the continued use of the Risk Assessment Ledger created during the Basis of Design Report (BDR), the Contractor shall create a Risk Management Plan integrated within the Quality Management Plan for Design as part of initial chartering activities, include quality and risk management segments.

The Contractor shall facilitate updating the Project Master Risk Assessment Ledger on a monthly basis, as needed, including input from the BRST Project Team.

**105.02 OPTIONAL SERVICES**

The Contractor shall provide additional optional services that shall be authorized in writing by the BRST Project Manager or Team Lead as generally characterized below:

- Provide miscellaneous Project Management support to PWB on an as needed basis, which could include preparing additional presentation materials, responding to requests for supplemental analyses, responding to public requests for information, etc.
- Perform additional services and tasks that are identified during the course of the project, including additional project support services created as a result of additions to the scope of work by DOW I and II Contractors.
- If additional permits are required, a supplemental scope of work for the cost to prepare and submit those applications shall be submitted to the BRST Team Leads for authorization. An allowance of \$50,000 has been included as an optional cost in the estimated level of effort spreadsheet.
- Provide additional technical expertise and support as requested by the BRST Project Manager or Team Lead to address technical challenges or assist with resolving technical issues.
- Provide additional services wherein the time allowances in various subtasks are exceeded as a result of the work required exceeding the estimated activities or level of effort. This includes work under tasks/subtasks 107, 201, 302, 600, 604, 1100, and 1300, as well as to the estimated number of meetings and attendance hours in several subtasks.

<b>Subtask 106</b>	<b>Project Quality Management Plan</b>
<b>Deliverables</b>	Draft, and final Project Quality Management Plan
<b>Dependencies</b>	<p><b>PWB</b></p> <p>Review and comment on draft Project Quality Management Plan.</p> <p><b>DOW I and II Contractors</b></p> <p>Internal QA/QC Plans.</p> <p>Review and comment on draft Project Quality Management Plan.</p>

The Contractor shall prepare a draft Project Quality Management Plan (PQMP) which defines quality assurance and control objectives for the overall project. The PQMP shall also include specific processes and tools that shall be used by all participants during the formal review of 30, 60, and 90 percent design submittals, and for any other deliverables identified to be formally reviewed by the BRST Team Leads and the Contractor.

The Contractor shall include a section on risk management, consistent with subtask 105 Risk Management and include a section or appendix specific to the Contractor's work and work products, defining quality assurance procedures, including periodic internal audits, of the project support deliverables, processes, and tools.

The Contractor shall review the draft PQMP with BRST Project Team and prepare a final PQMP.

**NOTE:** DOW I and DOW II Contractor's shall be responsible for establishing and implementing internal Quality Assurance/Quality Control Plans (QA/QC Plans) which provide for quality control review of all submittals and deliverables to the BRST Team Leads, including those prepared by their sub-consultants.

These internal QMPs are to be consistent with the objectives and guidelines established in the PQMP, but each DOW Contractor may choose to utilize varying processes and tools which are their standard practice with proven effectiveness.

<b>Subtask 107</b>	<b>BCOE Reviews</b>
<b>Deliverables</b>	<p>Re-organized Bidability, Constructability, Operability, and Environmental Review (BCOE) Check List.</p> <p>Summary notes of major review comments and recommendations.</p>
<b>Dependencies</b>	<p><b>PWB</b></p> <p>Participate in re-organizing current BCOE Check List.</p> <p>Participate in initial briefing and report out meetings.</p> <p><b>DOW I and II Contractors</b></p> <p>Provide input to the BCOE checklist at each milestone.</p> <p>Provide one Senior Engineer each on the review team.</p> <p>Participate in initial briefing and report out meetings.</p>

The Contractor shall work jointly with PWB staff in re-organizing into logical and systematic categories the existing design review check list included in the PWB adopted Project Workflow Process Manual. The Contractor shall update the checklist at the 30/60/90 percent design submittal milestones drawing upon input from the DOW I and II Contractors, and the Contractor's Quality Manager.

The Contractor shall provide one well-qualified Senior Engineer on the BCOE review team. The Contractor shall integrate the BCOE review into the technical review of design submittals and gap analysis process in Subtask 1301. BCOE reviewers shall be expected to include notations on the BCOE checklist of their review findings. In addition, BCOE reviewers shall be expected to utilize Quality Review Forms as described in the Project Quality Management Plan to record any particularly important Category 1 or 2 review comments.

The Contractor shall facilitate a report-out meeting with the BCOE reviewers and PWB providing an opportunity for reviewers to present and discuss significant review findings. The Contractor shall summarize major recommendations, conclusions and action items derived during the meeting. These activities shall be carried out in association with the 30, 60 and 90 percent design submittals.

A time allowance of up to 120 hours in total for the three submittals is included for the participation of the Senior Engineer with water treatment background on the BCOE review team.

Included in the table below are the estimated hours included for the Contractor's participation in the BCOE report-out meetings.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Estimated Hours <i>Includes travel, prep, follow-up</i>
107	BCOE Reviews	BCOE Report-out meeting, one at each submittal (30, 60, 90 percent)	3	64

<b>Subtask 108</b>	<b>Health and Safety Plan</b>
<b>Deliverables</b>	Health and Safety Plan for DOW III staff.
<b>Dependencies</b>	<p><b>PWB</b></p> <p>Discuss PWB Health &amp; Safety (H&amp;S) program and planned training for Contractors with the Contractor's H&amp;S specialist.</p> <p><b>DOW I and II Contractors</b></p> <p>Provide training based on PWB H&amp;S program for DOW III team members in team space or visiting project sites.</p>

The Contractor shall prepare a Health and Safety Plan to be followed by the Contractor and sub-consultants, coordinated with PWB's H&S program. The H&S specialist shall:

- a. Review the scope and responsibilities of the Contractor for this project.
- b. Prepare and submit electronic field project startup form and environmental plan.
- c. Develop field safety instructions.
- d. Identify and address training needs for project personnel
- e. Assign a Field Safety Officer with the following responsibilities:
  - Monitor project progress and update field safety instructions.
  - Meet with client safety professionals and provide H&S project reviews.

PWB is expected to provide safety training for the Contractor who shall be routinely working in the PWB project office, and for any of the Contractor's staff who visit either the Headworks or Lusted Hill project sites. A time allowance of 20 person-hours is included for attendance by the Contractor in safety training sessions.

<b>Subtask 109</b>	<b>General Project Management and Support</b>
<b>Deliverables</b>	Overall Project Monthly Progress Report. Presentation materials, reports on analyses, and other documents as requested by PWB staff.
<b>Dependencies</b>	<p><b>PWB</b></p> <p>Identification of and direction on needed project support.</p> <p><b>DOW I and II Contractors</b></p> <p>Monthly Progress Reports and Associated Materials.</p>



**109.01 INTERNAL PROJECT MANAGEMENT AND INTERACTION WITH SUB-CONSULTANTS**

The Contractor shall provide general Project Management activities not included in other tasks. This shall include time required to manage and schedule the work of the Contractor's team members including sub-consultants, setup and maintain internal records and files, provide internal administrative support, and provide time to interact with PWB and DOW I and II participants in routine phone and email communications, etc.

**109.02 OVERALL MONTHLY PROGRESS REPORTS**

The Contractor shall prepare a Overall Project Monthly Progress Report, developed from the Monthly Progress Reports and other information provided by the Contractor and DOW I, and II Contractors, and submit it to the PWB's Project Manager within one week of receiving information from other DOW Contractor's. The report shall include a summary highlighting progress during the previous month and listing unresolved high-level outstanding issues. The report shall include an attachment of the project controls data and project dash board prepared under sub-task 804.

**TASK 200: PRELIMINARY DESIGN/ ISSUES RESOLUTION**

<b>Subtask 201</b>	<b>Early Decision Framework and Support</b>
<b>Deliverables</b>	Finalized Decision Framework. Summary Notes and Completed Decision Framework Documents for each Decision Workshop.
<b>Dependencies</b>	<p><b>PWB</b></p> <p>Participate in Finalizing the Decision Framework Participate in Decision Workshops, and Make Final Decisions</p> <p><b>DOW I and II Contractors</b></p> <p>Participate in Finalizing the Decision Framework. Prepare and Present Technical Information and Cost Estimates at Decision Workshops. Prepare Summary Technical Memorandum for each Decision.</p>

The Contractor shall support PWB and DOW I and II Contractors in making major decisions during the course of the project, in particular decisions needed early in the project to allow the detailed design to be advanced. In a meeting with key project team members and stakeholders, the Contractor shall present and finalize the draft decision framework previously created, including decision criteria and weightings, and scoring definitions. The Contractor shall discuss the application of the decision framework for each of the planned decision making workshops, including consideration of the most appropriate tools to use for specific decisions and confirm the information and evaluations that shall be necessary by DOW I and II Contractors to provide a solid basis for future decision making.

The Contractor shall facilitate up to four decision workshops in the first several months of the project to support PWB in making final decisions on the facility details. The Contractor shall provide summary notes for each workshop, including finalized decision framework documents. The four workshops are slated to cover the following areas:

- Chlorination and Corrosion Control.
- UV, Mercury mitigation, Headworks electrical.
- Headworks building definition.
- Final decision coordination and overview.

A time allowance is included to facilitate up to two additional decision workshops with the BRST Project team to address alternatives that are identified in the course of the project that can be effectively addressed using the Decision Framework.

Included in the table below are the estimated hours included for the Contractor's participation in the Decision-making workshops.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Estimated Hours <i>Includes travel, prep, follow-up</i>
201	Issue Decision-making	Finalize Criteria Development One 4 hour session	4	32
		Decision workshops on Early Decisions Four 8 hour sessions	3 to 4	236
		Decision workshops on subsequent issues Two 4 hour sessions	4	60

<b>Subtask 202</b>	<b>Project Issues Resolution Support</b>
<b>Deliverables</b>	Project issue record – updated as issues are identified and resolved Reports on investigations, analysis
<b>Dependencies</b>	<b>PWB/DOW I and II Contractors</b> Participation in developing and concurrence with strategy for issue resolution

Routine issues that arise during the project and that could affect the project shall be addressed under this sub-task. Issues could arise from outside the project team, such as public issues. Processes developed during the Partnering Process in Task 100 and applied under Task 203 Conflict Resolution shall be used when applicable. An electronic file shall be developed to maintain a record of project issues that are addressed. The record shall include assigned responsibilities and target resolution dates.

The Contractor shall assist PWB with developing strategies to gather the information needed for prompt resolution of issues that arise that may require additional analysis. The Contractor shall assist with the investigation and research as requested by PWB.

**NOTE:** Design and technical issue resolution is provided for under subtask 1302.

<b>Subtask 203</b>	<b>Conflict Resolution</b>
<b>Deliverables</b>	Documentation of conflict resolution process agreed to in Partnering Session
<b>Dependencies</b>	<b>PWB</b>  Concurrence with conflict resolution process.  <b>DOW I and II Contractors</b>  Concurrence with conflict resolution process. Participation in conflict resolution process.

The objective of this sub-task is to minimize disputes between design delivery participants and achieve timely resolution of any disputes that develop so the work flow and project schedule are not interrupted.

During the initial partnering process the BRST Project Team shall facilitate creation of commitments and processes to resolve conflicts which could arise between these parties during design delivery. The PWB and DOW Contractor's shall include identification of actions to be taken so that opportunities for misunderstandings are minimized. During the course of the project the Contractor shall facilitate conflict resolution utilizing the processes adopted during the initial partnering session.

**TASK 300 DESIGN**

This task generally includes the work performed by the Contractor's staff assigned to this task associated with receiving and compiling plans, specifications, and other documents prepared by DOW I and II Contractors and providing complete submittal review packages to PWB at the 30, 60, 90, 95, and 100 percent design completion stages. Project management staff participation within this task is generally included under Task 100.

<b>Subtask 301</b>	<b>30 Percent Design Submittal Package</b>
<b>Deliverables</b>	Compiled 30 Percent Design Submittal Package
<b>Dependencies</b>	<b>DOW I and II Contractors</b>  Draft and Final Design Work Plans. Individual 30 Percent Design Submittal Packages.

The Contractor shall collect draft Design Work Plans from the DOW I and II Contractor's and review the information received relative to contract requirements and alignment with overall project schedule and project management elements. The Contractor shall work with DOW I and II Contractors along with PWB to resolve any variances. The Contractor shall receive final Design Work Plans from the DOW I and II Contractor's and integrate the final information received into Subtask 804 Project Scheduling and Controls – Overall Project, or other tasks as applicable.

The Contractor shall work with the PWB and DOW I and II Contractor's to establish an efficient process for receiving and assembling each design submittal package.

The Contractor shall receive and compile submittal materials from the DOW I and II Contractor's, unless otherwise noted, including one hard copy and electronic copies of all drawings and documents as follows:

- a. 30 percent plans (half-scale) including, as a minimum, a preliminary site plan, process and building facilities footprints, at least one elevation view of each structure, draft process schematic, draft instrumentation and control diagrams (P&IDs), preliminary electrical diagram, equipment list, proposed conduit and pipe alignments, pipe sizes, and connections to existing pipe.
- b. 30 percent specifications, including a proposed list of specification 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 practices and shall incorporate Construction Quality Management requirements accordingly.
- c. Permitting Memo (completed by Contractor described in subtask 605), providing details on the permitting requirements of the project, status for each permit, the permitting agency, contract information, a preliminary cost estimate for each permit, 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. The Contractor shall also include a list and detailed description of base sheets, other drawings, specifications, or other technical support required from DOW I and II Contractors during the subsequent permitting processes.
- d. Draft Design Memo including design assumptions and criteria, description of resolved and outstanding issues, and a discussion of field work and investigations. Supporting Engineering Documentation, including any engineering assessment or reports that provide technical analysis needed to support engineering decisions and evaluate key assumptions. Provide initial draft of instrumentation and process narrative (control strategy). Provide electronic copies of design calculations, including structural.
- e. Cost Estimate providing a preliminary construction cost estimate for each major component of the work. Provide a potential list of bid items and units of measurement.
- f. DOW I and II shall provide an update to the design schedule. 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 comments and float time to address public comment and additional submittals that may be required of the permitting agency.
- g.

DOW I and II Contractors shall include identification of delays as a result of elements of work they control directly, or as caused externally, and supplemental narrative addressing actions taken or required to meet the timeline for start of construction. The Contractor shall create a compiled schedule and overall schedule assessment within 1 week following the submittal, to avoid delaying the overall submittal schedule.

- h. Recommended revisions to BDR provisions for Operations & Maintenance Manual.
- i. Recommended revisions to the BDR provisions for Training Program and Staffing.

The Contractor shall provide 30 hard copies with ½ size plan sets, and post electronic copies in ProjectWise and SharePoint folders.

<b>Subtask 302</b>	<b>Value Engineering</b>
<b>Deliverables</b>	VE Summary Report
<b>Dependencies</b>	<p><b>PWB</b></p> <p>Participate in initial meeting to establish framework and objectives</p> <p><b>DOW I and Contractors</b></p> <p>Be available when requested to respond to clarifying questions</p> <p>Evaluate VE recommendations as requested by PWB</p>

The Contractor shall meet with BRST Project Team Leads and establish the framework and objectives for the Value Engineering (VE) task. This could include cost savings and/or could potentially include focus on value-added improvements supported by business case assessments. The Contractor shall provide the core staff for performing the VE task, including the certified value specialist to lead and facilitate workshop sessions, a Senior Water Treatment Process Engineer, a Cost Estimator, and an Associate to provide editing and project management coordination. The Contractor shall select and schedule additional VE team members based on the objectives established for the task. It is anticipated that five additional members shall be required, representing other areas of technical expertise, such as structural, electrical, architectural, geotechnical, etc. It is anticipated that DOW I and DOW II Contractor's shall each provide one member under separate contracts and budgets. The Contractor shall provide three members under this contract.

The Contractor shall conduct the VE workshop, consisting of four 10-hour sessions, at the 30 percent design stage based on the 30 percent design submittal. The VE workshop shall be held in the Contractor's Portland office and the Contractor shall provide a report summarizing the findings of the VE team.

Included in the table below are the estimated hours included for the Contractor's participation in the Value Engineering meetings and workshops.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Duration	Estimated Hours <i>Includes travel, prep, follow-up</i>
302	Value Engineering	Meeting to establish VE objectives	2	TBD	20
		VE workshop Core Team Four 10 hour sessions	4	TBD	184
		VE Workshop Additional DOW III VE Team Members Four 10 hour sessions	3	TBD	179

<b>Subtask 303</b>	<b>60 Percent Design Submittal Package</b>
<b>Deliverables</b>	Compiled 60 Percent Design Submittal Package
<b>Dependencies</b>	<b>DOW I and II Contractors</b>  Individual 60 Percent Design Submittal Packages

The Contractor shall receive and compile submittal materials from the DOW I and II Contractors, unless otherwise noted, including electronic copies of all drawings and documents, and additional hard copies, as follows:

- a. 60 percent plans half-scale, plus 1 hard copy full-scale, including, as a minimum, a final site plan, elevation views, slope stability and retaining structures, process schematic, instrumentation and control diagrams, electrical diagrams, final conduit and pipe alignments, plan and profile, utilities required for the project, and all appurtenances.
- b. 60 percent specifications, including a complete Table of Contents with a complete list of, complete Special Provisions/Conditions, complete General Requirements, and a draft of the technical specification unique to the project scope. Specifications shall be consistent with design elements as shown on the drawings.
- c. Permitting Memo (completed by the Contractor), providing details on the permitting requirements of the project, status for each permit, the permitting agency, contract information, a preliminary cost estimate for each permit, 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. The Contractor shall also include a list and detailed description of base sheets, other drawings, specifications, or other technical support required from DOW I and II Contractors during the subsequent permitting processes.
- d. Draft Design Memo providing design assumptions and criteria, description of resolved and outstanding issues, and a discussion of field work and investigations.
- e. Supporting engineering documentation including any supporting engineering assessment for report completed since the 30 percent milestone and the status of any incomplete assessments(s) or report(s). Assessments and reports that provide technical analysis needed to support engineering decisions, evaluate key assumptions, and complete design must be completed at this design stage. Provide electronic copies of design calculations, including structural.
- f. Cost Estimate providing a proposed bid item list for measurement and payment, and construction costs estimate for each bid item.
- g. Schedule providing an update to the design schedule. DOW I and II Contractor's shall include identification of delays as a result of elements of work they control directly, or as caused externally, and supplemental narrative addressing actions taken or required to meet the timeline for start of construction. The Contractor shall create a compiled schedule and overall schedule assessment within 1 week following the submittal, to avoid delaying the overall submittal schedule.

The Contractor shall provide 30 hard copies with ½ size plan sets, 1 full-size set of plans, and post electronic copies in Project Wise and SharePoint folders.

<b>Subtask 304</b>	<b>90 Percent Design Submittal Package</b>
<b>Deliverables</b>	Compiled 90 Percent Design Submittal Package.
<b>Dependencies</b>	<b>DOW I and II Contractors</b>  Individual 90 Percent Design Submittal Packages

The Contractor shall receive and compile submittal materials from the DOW I and II Contractor's, unless otherwise noted, including electronic copies of all drawings and documents, and additional hard copies, as follows:

- a. 90 percent plans including 1 hard copy half-scale, plus 1 hard copy full-scale. Plans shall be complete in all details including all engineering details and consistent with specifications.

- b. 90 percent specifications, complete and consistent with design elements as shown on the drawings.
- c. Permitting: The Contractor shall provide all required permit applications including any supporting documentation, plans, specifications, calculations, etc., required for the permits. The Contractor shall update the permitting memo with status for each permit and an updated schedule. The Contractor shall identify delays and actions required/taken to meet the timeline for start of construction.
- d. Design Memo updated to match current design status.
- e. Supporting engineering documentation shall be provided for any outstanding supporting engineering assessment or report. The Contractor shall provide electronic copies including but not limited to design calculations, including structural, contract time, and liquidated damages.
- f. Cost Estimate providing update to bid item list for measurement and payment, and construction costs estimate for each bid item.
- g. Provide update to the design schedule and identify delays and actions required/taken to meet the timeline for start of construction.

The Contractor shall provide 30 hard copies with ½ size plan sets, 1 full-size set of plans, and post electronic copies in Project Wise and SharePoint folders.

<b>Subtask 305</b>	<b>95 Percent Design Submittal Package</b>
<b>Deliverables</b>	Compiled 95 Percent Design Submittal Package
<b>Dependencies</b>	<b>PWB</b>  Standard City of Portland Front End Documents  <b>DOW I and II Contractors</b>  Individual 95 Percent Design Submittal Packages

This task is a "back check" of changes to the plans and specifications to finalize them. The Contractor shall receive and compile submittal materials from the DOW I and II Contractor's, including electronic copies of all drawings and documents, and additional hard copies, as follows:

- a. 95 percent plans half-scale, plus 1 hard copy half-scale and 1 hard copy full-scale. Plans shall be complete in all details including all engineering details and consistent with specifications, and incorporating all final revisions resultant from completion of the 90% quality review process.
- b. 95 percent specifications, complete and consistent with design elements as shown on the drawings, and incorporating all final revisions resultant from completion of the 90% quality review process.

The Contractor shall provide 15 hard copies with ½ size plan sets, 1 full-size set of plans, and post electronic copies in Project Wise and SharePoint folders.

The Contractor shall assist PWB with completing standard City of Portland front end documents including bid forms, bidding instructions, and special prequalification forms as required.

<b>Subtask 306</b>	<b>Final Design 100 Percent Submittal</b>
<b>Deliverables</b>	Compiled 100 Percent Final Design Submittal Package
<b>Dependencies</b>	<b>DOW I and II Contractors</b>  Individual Final Design Submittal Packages

The Contractor shall receive and compile submittal materials from DOW I and II Contractors, including:

- a. 100 percent plans, including 1 signed, full-sized original plan set and 1 electronic copy with all reference files.

- b. 100 Percent Technical Specifications, Attachments and Appendices, including 1 signed, unbound, original with dividers and cover, and 1 electronic copy (PDF on compact disk).
- c. All required Building Permit applications including any supporting documentation, plans, specifications, calculations, etc., required for the permits. An updated permitting memo with the status for each permit and an updated schedule. Identify delays and actions required/taken to meet the timeline for start of construction.

The Contractor shall provide up to 80 hard copies of full-size sets of plans and technical specifications. Post electronic copies in Project Wise and SharePoint folders.

<b>Subtask 307</b>	<b>Operational Descriptions</b>
<b>Deliverables</b>	Compiled Operational Descriptions at 30, 60, 90, and 95 percent design stages
<b>Dependencies</b>	<p><b>PWB</b></p> <p>Review and comment on Operational Descriptions</p> <p><b>DOW I and II Contractors</b></p> <p>Submit individual Operational Descriptions at 30, 60, 90 and 95 percent design stages.</p>

The Contractor shall receive and compile submitted Operational Descriptions at 30, 60, 90 and 95 percent materials from DOW I and II Contractors.

The Contractor shall review submitted Operational Descriptions for the 30, 60 and 90 percent submittals, schedule and facilitate a review session with PWB operations staff, and assist PWB in preparing questions and comments.

#### **TASK 400 NOT USED**

#### **TASK 500 BIDDING ASSISTANCE**

<b>Subtask 500</b>	<b>Bidding Assistance</b>
<b>Deliverables</b>	Summary notes of prebid conferences
<b>Dependencies</b>	<p><b>PWB</b></p> <p>Relevant bid documents.</p> <p><b>DOW I and II Contractors</b></p> <p>Participation in pre-bid conferences.</p> <p>Response to requests for clarification from bidders.</p>

The Contractor shall work with the Design Contractor to assemble all relevant bid documents, including contractor prequalification forms. Quantities of unit price items of the bid proposal shall be provided by the DOW I and II Contractors as necessary. The Contractor shall assist the PWB in pre-bid conferences. The Contractor shall provide written summary of pre-bid conferences and assist PWB in obtaining timely design team responses to requests for clarification from bidders. The Contractor shall assist PWB in preparing and issuing addenda to bid documents as required and assist PWB in reviewing bids and making recommendations for award.

#### **TASK 600 PERMITTING AND PERMIT COORDINATION**

This task provides the steps needed to verify which permits are needed and for the Contractor to prepare applications for the required permits in a timely manner so that permits do not delay the project.

The Contractor shall be responsible for completion of first-tier review, streamlining team meetings, and field assessments under Task 600. The Contractor has determined that the bulk of the work under this task shall be performed by their subcontractor, Winterbrook Planning, with support from the Contractor's Senior Permitting staff for background and assistance.

Work associated with planning for Clackamas County and Multnomah County building and trade permits shall be performed by the DOW II Contractor, and tracked under this task. The anticipated tasks and sub-tasks are described below. Based on current plans and communications with the author of the BDR permit assessment, the Contractor's subcontractor, Winterbrook Planning, anticipates that Corps/DSL wetland and waterway permits, and associated consultations and permits (e.g., ESA Section 7 and NHPA Section 106) are avoidable. This scope includes a first-tier review with streamlining team meetings and field assessments to confirm this issue, but the budget does not include second-tier preparation of permits and supporting documentation. This second-tier scope shall be determined once the tier one review is completed. Included is a recommended allowance for the second-tier activities. The three step approach to permitting for Task 600 is summarized as follows:

Expected permits	Tier 1 Assessment & Review	Tier 2 Scoping & Permits
<p>The following permits are believed to be required by this project, and are included in the permit scope of work.</p> <ol style="list-style-type: none"> <li>1. Clackamas County Conditional Use Permit</li> <li>2. Clackamas County River &amp; Stream Conservation Area Permit</li> <li>3. Clackamas County building and trade permits</li> <li>4. Multnomah County building and/or trade permits</li> <li>5. DEQ NPDES 1200-C Construction permit</li> </ol>	<p>The Tier 1 assessment is included in the permit work scope and addresses the following tasks:</p> <ol style="list-style-type: none"> <li>1. Verify wetlands and other waters, Bull Run OHW, and relationship of design and work limits to permit thresholds. Coordinate with regulatory agencies and participate in up to two City Streamlining Team meetings to review</li> <li>2. Determine whether refined design triggers a permit</li> <li>3. If design can be adjusted to avoid permit a review of trade-offs related to project schedule and cost impacts and permit risk assessment with PWB shall be completed to determine if permit to be pursued. If permit option selected, or if permit unavoidable, go to Tier 2.</li> </ol> <p>The following permits could be triggered depending on project design and construction details. As suggested, it may be possible to modify designs to avoid certain permits and that question should be addressed at this stage.</p>	<p>After Tier 1 assessment, the permit team shall be able to definitively identify and determine scope of permit in Tier 2.</p> <p>The permit team shall prepare the following permit applications if needed or complete the tasks listed below.</p> <p>For tasks indicating "prepare scope," the permit team shall:</p> <ol style="list-style-type: none"> <li>1. Continue agency coordination as needed to complete detailed scoping.</li> <li>2. Submit Tier 2 permit scope to PWB for review</li> </ol>
	USACE 404 / DSL Removal-Fill Permits, with CWA 401 certification and potential ESA Section 7 consultation	Prepare scope
	NHPA Section 106 review / SHPO Archaeological permit	Conduct an archeological record review at SHPO offices; prepare scope if additional steps required
	Forest Service Special Use Permit (or modification to Special Use Permit)	Prepare scope
	NPDES permit modification (related to operations)	Prepare scope
	DEQ air quality permit (may already be addressed)	Prepare DEQ air quality permit
	DOF Timber Harvest Permit	Prepare DOF Timber Harvest Permit
	<b>Other policies/plans (non-permits) to be reviewed with PWB during Tier 1</b>	
	City of Portland Green Building Policy policies (e.g., may apply to Operations	Prepare summary of policy implications for project



Expected permits	Tier 1 Assessment & Review	Tier 2 Scoping & Permits
	Building)	
	City of Portland BPS Recycling Plan (not mandated outside City but PWB may require contractor compliance)	At PWB request, obtain BPS concurrence on recycling plan or prepare sample plan for contractor
	Habitat Conservation Plan (HCP) Compliance review – review ongoing owl surveys and other data and summarize compliance findings	

<b>Subtask 601</b>	<b>FEMA Flood Plain Determination</b>
<b>Deliverables</b>	FEMA floodplain determination letter
<b>Dependencies</b>	<b>PWB</b>  Review and approve FEMA floodplain determination letter

The Contractor shall complete the following:

- a. Compile floodplain maps, source data, property data.
- b. Contact local Floodplain Administrator.
- c. Prepare request for letter of determination (a.k.a. LOMA), review with PWB and incorporate comments.
- d. Send request with property data and maps to FEMA offices in Maryland.

<b>Subtask 602</b>	<b>Conduct ESA Review</b>
<b>Deliverables</b>	Technical Memorandum summarizing HCP/ESA compliance
<b>Dependencies</b>	<b>DOW I and II Contractors</b>  DOW II: Design alternatives to facilitate assessment of wetland/ water impacts and CWA 404/ESA Section 7/HCP compliance.

The Contractor shall complete the following:

- a. Verify Field jurisdictional wetlands and other waters, Bull Run OHW line, at project site.
- b. Review recent owl survey and other available data related to ESA and HCP.
- c. Assess project design alternatives for potential wetland/water impacts and CWA Section 404/ESA Section 7 compliance.
- d. Assess project design alternatives for HCP compliance.

<b>Subtask 603</b>	<b>Meet with Permitting Agencies</b>
<b>Deliverables</b>	Agency meeting notes, including County pre-app summary notes
<b>Dependencies</b>	<b>PWB</b>  Attend agency meetings  <b>DOW I and II Contractors</b>  DOW II: Preliminary plans for site layout to be used in coordination meetings

**The Contractor shall complete the following:**

- a. Coordinate with State and Federal wetland and ESA regulators and lead presentations at up to two City Streamlining Team meetings; attend two follow up meetings with State and Federal agencies if requested.
- b. Coordinate with and attend up to two meetings with DEQ on NPDES/1200-C Construction permit.
- c. Coordinate with and attend up to three meetings with Clackamas County land use and buildings staff on Conditional Use and River & Stream Conservation Area Permits, and trade permits.
- d. Schedule and attend Pre-application Conference at Clackamas County.
- e. Coordinate with and attend up to one meeting with Multnomah County staff (if building or trade permits required for any work at Lusted Hill)
- f. Participate in up to two field meetings with agency staff to review design and construction plans and potential permit requirements.

Included in the table below are the estimated hours included for the Contractor's participation in the Permitting Agency meetings.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Estimated Hours <i>Includes travel, prep, follow-up</i>
603	Agency meetings	City Streamlining Team meetings	1, 2	30
		DEQ meetings on 1200-C permit	TBD	30
		Clackamas County land use, building, and trade permit meetings	TBD	25
		Clackamas County Pre-application conference	TBD	24
		Multnomah County building and trade permit meetings	TBD	24
		Agency meetings to review design, construction plans, potential permit requirements	TBD	24

<b>Subtask 604</b>	<b>Develop Permit Applications</b>
<b>Deliverables</b>	Permit Action Plan (updated at each design stage) Permit tracking matrix (updated at each design stage) Draft and final land use and other DOW III permit applications
<b>Dependencies</b>	<b>PWB</b>  Review and comment on draft applications.  <b>DOW I and II Contractors</b>  Drawing, specifications, studies, and documentation to support DOW III permit applications.

**The Contractor shall complete the following:**

- a. Data collection and assessment.
- b. Conduct field investigations.
- c. Develop permit action plan and update at 30, 60, and 90 percent design phases after review of design submittal packages.
- d. Compile permit package drawings and supporting studies and documentation, including environmental evaluations, construction and stormwater management plans, and mitigation plans.
- e. Prepare draft land use and other DOW III permit applications for PWB review.
- f. Incorporate PWB comments on applications and supporting documents.
- g. File land use application with Clackamas County planning department (after 60 percent review).
- h. File other DOW III permit applications (see 3-step permitting strategy for details on each permit). The actual permit applications needed shall be determined as described above. For purposes of estimating level of effort, applications are assumed for these permits:
  - Clackamas County Conditional Use Permit
  - Clackamas County River & Stream Conservation Area Permit
  - Clackamas County building and trade permits
  - Multnomah County building and/or trade permits
  - DEQ NPDES 1200-C Construction permit

<b>Subtask 605</b>	<b>Permitting Coordination</b>
<b>Deliverables</b>	Initial Permitting Memo with updates at each design submittal package.
<b>Dependencies</b>	<b>DOW I and II Contractors</b>  Status of permit applications that they are responsible for

The Contractor shall create and update the Permitting Memo that is submitted with the 30, 60, 90, 95, and 100 Percent Design Submittal Packages. Content of the Permitting Memo is detailed in Task 300. The Contractor shall provide coordination and follow-up with DOW I and II Contractor's to promote timely preparation and submittal of permit applications and other documents.

**TASK 700 ONLINE OPERATION AND MAINTENANCE DATA PROVISION**

The objective of this task is to make provisions enabling operators to successfully operate the new facilities through accessing desired electronic O&M data via the treatment facility supervisory control and data acquisition SCADA systems. The work under this task would be performed interactively with DOW I and II Contractors, and PWB operations staff. Certain elements of the O&M data would be created during the design, drawing upon the designer's expertise in a timely manner, and providing an enhanced means for operators to understand the functionality of the design, and provided feedback. The work should also include an effective means of including desired provisions in the construction contract documents for securing information that will be forthcoming from the construction contractor, subconsultants and equipment suppliers. Included would be data for the Headworks Operations Building, the Lusted Hill Building, and the Lusted Hill Sample Pumping Station.

<b>Subtask 701</b>	<b>O&amp;M Data Provision Activities During 30% Design</b>
<b>Deliverables</b>	<p>Presentation on Seattle Public Utilities Cedar WTP O&amp;M electronic manual functions and elements.</p> <p>Draft design memorandum (DM-701) summarizing initial concepts for On-line O&amp;M Data Provision in electronic format.</p>
<b>Dependencies</b>	<p><b>PWB</b></p> <p>Participate in workshop with UV supplier to discuss O&amp;M aspects of the UV equipment contract.</p> <p>Participate in workshop presentation of planned provisions in tech specs for O&amp;M aspects</p> <p><b>DOW I and II Contractors</b></p> <p>Participate in meeting to discuss Online O&amp;M Data access provision concepts.</p> <p>Updated requirements in the BDR regarding O&amp;M Manuals.</p> <p>DOW I – Workshop with UV supplier to discuss O&amp;M aspects of the UV equipment contract.</p> <p>Workshop presentation of planned provisions in tech specs for O&amp;M aspects.</p>

**The Contractor shall complete the following:**

- a. Receive and review updated requirements in the BDR regarding O&M Manuals from DOW I and II Contractors.
- b. Work with PWB, DOW I Contractor, and the UV equipment supplier, to arrange a workshop in which the Contractor and supplier shall present an overview of the O&M aspects of the contract with the supplier. The focus shall be on what the equipment supply contract requires related to O&M during the design phase, and during the construction phase, and together with an overview of delivery content details. This is to include how and when items shall be delivered and operational interfaces.
- c. Organize and facilitate a workshop in which DOW I and II Contractors shall present a summary of planned provisions in the technical specifications for other major process equipment, electrical equipment, and building mechanical equipment.
- d. Prepare presentation on Seattle Public Utilities Cedar WTP O&M electronic manual functions and elements.
- e. Include and factor in Operational Descriptions from the 30 percent design stage as provided by DOW I and II Contractors under subtask 306.
- f. Meet with PWB to discuss Online O&M Data access provision concepts, and provide meeting notes.
- g. Prepare draft design memorandum (DM-1601) summarizing initial concepts for On-line O&M Data Provision in electronic format.

Included in the table below are the estimated hours included for the Contractor's participation in the O&M workshops.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Estimated Hours <i>Includes travel, prep, follow-up</i>
701	O&M Workshops	O&M Workshop with UV supplier	1	26
		O&M tech specs Workshop	1	26
		Presentation on SPU Cedar O&M Manual	1	26
		PWB meeting on Online O&M data	1	12

<b>Subtask 702</b>	<b>O&amp;M Data Provision Activities During 60% Design</b>
<b>Deliverables</b>	Updated and revised DM701. Draft O&M Data Provision specification.
<b>Dependencies</b>	<p><b>PWB</b></p> <p>Participate in defining content and format details for subsequent preparation of Standard Operating Procedures.</p> <p>Provide input on design elements to be included in O&amp;M data provisions.</p> <p><b>DOW I and II Contractors</b></p> <p>Coordinate with prospective suppliers of major equipment (other than UV) to obtain O&amp;M data provision concepts.</p> <p>DOW I – participate in defining content and format details for subsequent preparation of Standard Operating Procedures.</p> <p>DOW I – Incorporate draft O&amp;M Data Provision specification into 60 percent submittal.</p>

The Contractor shall complete the following:

- Obtain clarification as needed on PWB and DOW I and II consultants comments to draft design memorandum DM 701.
- Include and factor in Operational Descriptions from the 60 percent design stage as provided by DOW I and II consultants under subtask 306.
- Coordinate with DOW I and II designers to identify design elements that should be incorporated into the O&M data provisions.
- Coordinate with DOW I and II Contractors and prospective suppliers of major process equipment other than UV equipment, to discuss O&M data provision concept and approach during design and construction.

- e. Work with PWB and DOW I to finalize content and format details for DOW I Contractor's preparation of draft Standard Operating Procedures (SOPs) for control of:
- UV disinfection and monitoring system
  - Headworks Chlorination system
  - Lusted Hill Ammonia system
  - Lusted Hill Corrosion Control system
  - Standby Power and UPS systems
- f. Update and revise DM701 based on consideration of comments received and additional information and knowledge gained during the 60 percent design work.
- g. Develop draft O&M Data Provision specification for the 60 percent submittal.

Subtask 703	O&M Data Provision Activities During 90% Design
<b>Deliverables</b>	Electronic mock up of electronic O&M Data access provisions, including access screens and menus available to PWB operations staff. Final version of DM701 Updated O&M Data Provision specification
<b>Dependencies</b>	<b>PWB</b>  Participate in defining operating screens and screen content to be ultimately provided by SCADA. Participate in review of draft SOPs.  <b>DOW I and II Contractors</b>  Participate in defining operating screens and screen content to be ultimately provided by SCADA. DOW I – Provide draft SOPs for major processes.

**The Contractor shall complete the following:**

- a. Obtain clarification as needed on PWB and DOW I and II Contractor's comments to revised memorandum DM 701, and on draft O&M Data Provision specification.
- b. Review and comment on the Operational Descriptions provided by DOW I and II Contractor's with the 60 percent design submittal package.
- c. Continue coordination with DOW I and II Contractor's and prospective equipment suppliers to further refine provider responsibility for each O&M Data Provision element.
- d. Meet with DOW I and PWB to identify operating screens and screen content for online accessing O&M Data via SCADA system.
- e. Develop electronic mock up of electronic O&M Data access provisions, including access screens and menus available to PWB operations staff.
- f. Present electronic mock up to PWB staff and DOW I and II Contractor's, and obtain comments.
- g. Include and factor in Operational Descriptions from the 90 percent design stage as provided by DOW I and II Contractor's under subtask 306.
- h. Review, integrally with PWB staff, draft SOPs prepared by the DOW I Contractor, and provide review comments for use by the DOW I Contractor to finalize the draft SOPs.

- i. Finalize DM 1601 based on consideration of comments received and additional information and knowledge gained during the 90 percent design work.
- j. Update O&M data provision specification for the 90 percent submittal, including final list of elements, provider responsibility, electronic mock up format and content.  
Also include contract requirement for review and update of SOPs provided by the DOW I Contractors and furnishing additional SOPs for the following systems:
  - Lusted Hill Laboratory Procedures
  - Headworks Laboratory Procedures
  - UV Building Mechanical Systems
  - Operations Building Mechanical Systems
  - Lusted Hill Building Mechanical Systems
  - Lusted Hill Sample Pumping Station Mechanical Systems
  - UV Building HVAC system
  - Operations Building HVAC system
  - Lusted Hill Building HVAC Systems
  - Lusted Hill Sample Pumping Station HVAC systems
  - UV building electrical system
  - Operations Building electrical system
  - Lusted Hill Building electrical system
  - Lusted Hill Sample Pumping Station electrical system

<b>Subtask 704</b>	<b>O&amp;M Data Provision Specification for the Bid Documents</b>
<b>Deliverables</b>	Final O&M Data Provision specification
<b>Dependencies</b>	DOW I and II Contractors  Incorporate O&M Data provision specification into bid documents.

The Contractor shall complete the following:

- a. Obtain clarification from PWB on comments to 90 percent O&M Data Provision specification as needed.
- b. Finalize O&M Data Provision specification for bid documents.

<b>Subtask 705</b>	<b>Electronic O&amp;M Data Provision Development</b>
<b>Deliverables</b>	Template for relational database in which electronic O&M data, with incorporated initial SOPs and design documents Hard Copy of Draft O&M Manual
<b>Dependencies</b>	PWB  Participate in developing template for relational database for O&M data Participate in meeting with OHD DWP re monitoring and reporting functions  DOW I and II Contractors  Participate in meeting with OHD DWP re monitoring and reporting functions

**The Contractor shall complete the following:**

- a. Work with PWB operations staff, develop template for relational database in which electronic O&M data shall reside, including:
  - Final Operational Descriptions
  - SOPs
  - Equipment photos
  - Equipment manuals and training videos
  - Maintenance functions
  - Drawings, specifications, other documents developed during the design
  - 3-D model and/or model views
  - As-Build drawings
  - Construction Photos
- b. Together with PWB and the DOW I Contractor, meet with OHD DWP staff and review/identify monitoring and reporting functions required for Headworks and Lusted Hill facilities. Also identify certification requirements for Headworks and Lusted Hill operations staff.
- c. Incorporate initial SOPs and design documents into electronic database.
- d. Identify information required to be input into PWB CMMS system.
- e. Demonstrate data base access to provide online electronic O&M Data, and incorporate feedback from PWB.
- f. Prepare a hard copy of the Draft O&M Manual for Bureau Review and updating during Construction. The draft O&M Manual shall include the following sections:
  - Process Descriptions
  - Monitoring Requirements and Forms
  - Final Operational Descriptions
  - SOPs
  - Equipment photos
  - Equipment manuals and training videos
  - Maintenance functions
  - Drawings, specifications, other documents developed during the design
  - 3-D model and/or model views
  - As-Built drawings
  - Construction Photos
- g. The hard copy of the draft O&M Manual shall include those materials fully or partially available during the design phase of the project, including:
  - Process Descriptions
  - Final Operational Descriptions
  - Monitoring Requirements and Forms
  - SOPs
  - Drawings, specifications, other documents developed during the design
  - 3-D model views
- h. Additional activities anticipated to be authorized and budgeted for during the construction phase are as follows:
  - Incorporate additional electronic O&M Data Provision elements
  - Add electronic data obtained through construction submittals as required by the O&M Data Provision specification to the data base.
  - Add maintenance procedures for UV Building systems, Headworks Operations Building systems, Lusted Hill Building Systems, Lusted Hill Sample Pumping Station systems into PWB's Synergen CMMS.
  - Performance test functionality of online O&M Data access



- Provide 5 days of online O&M data access training to operations staff, including review of SOPs
- Provide 10 days of certification training to Operations staff.
- Provide 10 days of on-the-job training at Seattle Public Utilities Cedar WTP, or similar facility.

#### **TASK 800 PROJECT COORDINATION**

<b>Subtask 801</b>	<b>Prepare and Implement Project Management Plan</b>
<b>Deliverables</b>	Final BRST Project Management Plan Project Management Plan Revisions Log
<b>Dependencies</b>	<b>PWB</b>  Input to finalizing the draft Project Management Plan (PMP)  <b>DOW I and II Contractors</b>  Review and comment on draft PMP

A previously prepared draft of the BRST Project Management Plan (PMP) shall be presented at a project team meeting, with a request for review and comments by BRST Project Team. The review comments received shall be examined and discussed, and changes or additions incorporated to produce a final BRST PMP. The Contractor shall provide a Revisions Log to record future changes to the PMP and provide ten hard copies and one electronic copy of the draft and of the final PMP to the BRST Team Lead. The electronic version of the PMP shall consist of text with links to electronic files posted on the SharePoint web site. The Contractor shall provide hardcopy versions of the PMP with all text incorporated only when requested.

A supplement to the PMP is the development of the Project Standards addressing CAD and Specification standards described in Task 802.

<b>Subtask 802</b>	<b>Project Standards</b>
<b>Deliverables</b>	Guiding policy, principles, and standards for computer aided design (CAD) drawings and technical specifications Host ProjectWise for Team Use Spot check and oversee drawings for adherence to established standards Population and Coordination of the Specification database with specification as provided by the DOW I and II contractors. Spot check and oversee specifications for completeness and conformance with formatting standards
<b>Dependencies</b>	<b>PWB</b>  Provide Base Map files in the format requested by the DOW II Contractor  <b>DOW I and II Contractors</b>  DOW II Contractor to define base maps and format to be provided by PWB Adherence to the standards of the project CAD and Specification instructions. Editing and formatting of the Specifications to the standards set forth for the project.

The Contractor shall develop and document the guiding policy, principles, and standards for Project-related computer aided design CAD drawings and technical specifications. The Contractor shall host the ProjectWise collaboration tool for the drawings and specifications, as previously established and organized, with Remote Access Agreements in place for each firm or organization participating on the project.

The Contractor shall prepare the project CAD instructions for all team members to use throughout the project, which shall include characteristics such as identification of filename convention, sheet name convention, layering, fonts, line-types, and scale that are acceptable to the City of Portland. The Contractor shall provide standards to the DOW I and II Contractors for implementation throughout their respective teams.

The Contractor shall further populate the ProjectWise files with the base mapping provided by PWB including updated base map information as new information becomes available from PWB. The Contractor shall review the DOW I and II Contractor's drawings for adherence to established project requirements and inform the DOW I and II Contractors when their team is not conforming to CAD instructions and standards.

The Contractor shall work with the DOW I and II Contractors to assign and host specifications provided by them to populate the ProjectWise database. Each DOW I and II Contractor shall be responsible to provide formatting and content that meet established standards. The Contractor shall check and provide oversight of the specifications for completeness, consistency, and format. The DOW I and II Contractors shall be responsible for editing and finalizing the specifications. The Contractor shall work with the DOW I and II Contractors to develop a matrix of responsibility for the primary and contributing authors for the specifications and use the CSI 16 Division technical specifications system as the base system of technical specifications.

<b>Subtask 803</b>	<b>Project Standards and Tools Training</b>
<b>Deliverables</b>	<b>TBD</b>
<b>Dependencies</b>	<b>PWB and DOW I and II Contractors</b>
	Participation in training events

In addition to previously provided general orientation, the Contractor shall provide detailed training to PWB staff and DOW I and II Contractors on collaboration tools, 2-dimension CAD standards, and templates for specifications. This includes training on the use of SharePoint, ProjectWise, and the standards that shall be applied to this project.

The Contractor shall provide ongoing support to PWB staff on accessing 3-dimension models and their content through ProjectWise and through use of Navigator. For the duration of the project, the following tasks related to the model shall be performed:

- Provide ongoing coordination and support on collaboration tools, standards, and templates to the BRST Project Team, DOW I and II Contractors and sub-consultants in response to questions that arise during the course of the project.
- Conduct awareness / training sessions demonstrating how to virtually drive through the model using Bentley Navigator.
- Conduct awareness / training sessions showing how to upload and download content to Bentley ProjectWise.

An estimate of 400 hours is included in the budget for this ongoing support.

Included in the table below are the estimated hours included for the Contractor's participation in the Project Standards and Tools training.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Estimated Hours <i>Includes travel, prep, follow-up</i>
803	Project Standards Training	Training Workshop 8 hours	2	16

<b>Subtask 804</b>	<b>Project Scheduling and Controls – Overall Project</b>
<b>Deliverables</b>	Final Master Project Baseline Schedule. Final Participant Project Baseline Schedules for input. Monthly Updates of Master Project Schedule. Monthly Update of Project Dashboard. Monthly Updates of Project Controls Information.

<b>Dependencies</b>	<p><b>PWB</b></p> <p>Participation in Project Scheduling Workshop</p> <p>Monthly updates of PWB activities on Project Schedule</p> <p>Participation in Project Controls Workshop</p> <p>Input to creating Master Baseline Project Schedule</p> <p>Participation in Project Scheduling Workshop</p> <p><b>DOW I and II Contractors</b></p> <p>Monthly update of Participant Project Schedule</p> <p>Participate in Project Controls Workshop</p> <p>Provide Monthly Project Controls data</p>
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This subtask is specific to work related to scheduling and project controls for the overall project, on an integrated basis, including work performed by the Contractor and DOW I, and II Contractors and the BRST Project Team.

The Contractor shall present and review with project team members the prepared draft cost-loaded project schedule and participant schedule templates. Place emphasis on deliverables and milestones which are critical to the overall schedule. The Contractor shall request DOW I, and II Contractors along with the BRST Project Team to perform a detailed review of the draft schedule produced using MS Project software, and provide any revisions to delivery schedule and cost (excluding PWB) for each task/subtask, utilizing the templates provided. The BRST Project Team shall monitor deliverable review performance and progress, and manage activities under its control in conjunction with all critical milestones. Ongoing routine tasks and subtasks shall not be included. The Contractor shall work integrally with the BRST Project Team and DOW I and II Contractors to combine the four individual participant schedules into a master project schedule with links to common milestones, etc.

The deliverable of this task shall be a final cost-loaded Master Baseline Project Schedule in combination with four Participant Baseline Project Schedules. The Master Baseline Project Schedule may have the baseline updated at one point during the project design schedule.

The Contractor shall prepare and conduct a 2-hour **Project Scheduling Workshop** to provide guidance and training to Project Team participants on understanding and interpreting the information on the schedules, and procedures for updating the schedules.

On a monthly basis during the course of the project, each DOW Team participant is expected to provide updated Participant Project Schedules to show percent complete on each activity, and integrate the information into an updated Master Project Schedule. The Contractor shall schedule and re-establish links as necessary. Each update shall display current status of each activity in comparison to the Baseline Master Project Schedule, and highlight those activities that control the overall schedule (critical path). Any schedule issues identified from review of the Master Project Schedule shall be addressed during routine project management meetings under Subtask 103, or as part of issue resolution under Subtask 202 or 1302, with the schedule being adjusted following resolution.

The Contractor shall establish project controls to monitor the budget status for each task and sub-task. The Contractor shall receive finalized budget data by task and sub-task from DOW I and II Contractors, and integrate it with similar data for the Contractor to provide a Master Project Controls document. The Contractor shall prepare and conduct a 2 to 4 hour **Project Controls Workshop** with DOW I and II Contractors and the BRST Project Team and present an overview of the Master Project Controls document content shall be presented. Each DOW Contractor is expected to present information on the procedures they propose to use to provide accurate estimate-to-complete (ETC) data. The Contractor and the BRST Project Team shall provide comment and guidance. The Contractor shall prepare notes of the workshop that summarize key conclusions and action items.

On a monthly basis during the course of the project, each DOW is expected to provide monthly update data, including current month and project-to-date costs, together with ETC cost estimates for DOW I and II Contractors. The Contractor shall integrate the data, and produce a monthly updated Master Project Controls document and address any schedule issues identified from review of the Master Project Controls Document during routine project management meetings under Subtask 103, or as part of issue resolution under Subtask 202 or 1302, with adjustments consistent with the resolution(s) reach reflected in the following month's Master Project Controls Document.

The Contractor shall provide monthly updates of the "Project Dash Board", included as a key component in Monthly Progress Reports. The Project Dash Board shall be a one-page summary, including graphics, highlighting the status of the project relative to schedule, cost, and other parameters. The Project Dash Board content and format are to meet established requirements.

Included in the table below are the estimated hours included for the Contractor's participation in the Project Controls workshop.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Estimated Hours <i>Includes travel, prep, follow-up</i>
804	Project Controls Workshop	2 hours	5	22

#### **TASK 900: PROJECT WEBSITE AND DOCUMENT CONTROL SYSTEM**

This task provides for storage and retrieval of project documents, both electronic and hard copies, other than drawings and specifications, and provides identification and labeling protocols for these documents.

<b>Subtask 901</b>	<b>Project Website</b>
<b>Deliverables</b>	<b>TBD</b>
<b>Dependencies</b>	<b>PWB- TBD</b>  <b>DOW I and II Consultants -TBD</b>

A previously established project website shall be used utilizing Microsoft Share Point software. This also includes the development of the site structure and organization. Initial training for use of the project website is included under subtask 803, Project Standards and Tools Training.

This subtask provides for ongoing assistance in granting permission to new users, adding contact information, answering questions regarding use of the software, periodic backup, and potentially maintaining a project calendar on the site.

<b>Subtask 902</b>	<b>Document Control System</b>
<b>Deliverables</b>	Reference document for labeling project documents
<b>Dependencies</b>	<b>PWB</b>  Participation in developing identifying, labeling, and storage protocol Furnishings in project office to house paper copies of documents  <b>DOW I and II Contractors</b>  Compliance with identification, labeling, and storage protocol.

The Contractor shall develop protocol for identifying and labeling all project documents. This shall include file naming conventions, labeling for technical memoranda, and designating locations for storage. Electronic files and hard copy (paper) files shall be included. The Contractor shall work with BRST Project Team to determine the preferred methods.

The Contractor shall develop a method to determine which documents shall be retained in hard copy, for what duration, and how to convert hard copy mark-ups for electronic storage. The Contractor shall set up system for filing paper copies. File documents in furnishings provided by the BRST Project Team which shall be located in the project office.

**TASK 1000 ADMINISTRATIVE SUPPORT**

This task provides Administrative Support for the overall project and for the Project Office.

<b>Task 1000</b>	<b>Administrative Support</b>
<b>Deliverables</b>	Meeting agendas, notes, and action items Templates for meeting agendas, notes, and action items
<b>Dependencies</b>	<b>PWB and DOW I and II – TBD</b>

The Contractor shall provide ongoing administrative support for the project office and for project meetings. Except at meetings where PWB staff shall perform these functions, the Contractor's administrative personnel shall attend all project team meetings to record attendees, capture main points and track action items. The Contractor shall prepare meeting agendas, notes, and resulting action item lists for these project team meetings. The Contractor shall provide additional support, including meeting meals, copying, and other arrangements.

The Contractor anticipates that the BRST Project Team meetings are those that involve PWB staff and at least one of the DOW Contractors.

The Contractor shall prepare the templates for meeting agendas, notes, and action items that can be used by the Contractor or PWB Staff member. These templates shall be used by DOW I and II Contractors for consistency among the documents that are created for the project that shall be part of the project documentation.

**TASK 1100 PUBLIC INVOLVEMENT**

<b>Task 1100</b>	<b>Public Involvement</b>
<b>Deliverables</b>	Outreach and Communications Plan. Informational materials as requested by PWB.
<b>Dependencies</b>	<b>PWB</b>  Lead public involvement activities. Request DOW III assistance as needed.  <b>DOW I and II Contractors</b>  Data and/or information needed for public informational materials.

The Contractor shall provide assistance to the PWB for public involvement activities. This task shall primarily be performed through the contracted sub-contracts with related qualifications.

Collectively, the Contractor and their sub-consultants shall assist PWB in developing and implementing a Project Communications Strategy and Framework to include the following activities:

- a. Stakeholder analysis
- b. Message development
- c. Issue identification and response tracking
- d. Impacted and interested party targeted outreach
- e. Public informational materials and newsletters
- f. Facilitation for team discussions

An estimate of \$60,827 for the sub-consultant effort has been included for this sub-task.

Included in the table below are the estimated hours included for the Contractor's participation in the Public Information meetings.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Estimated Hours <i>Includes travel, prep, follow-up</i>
1100	Public Involvement discussions	To be determined in Project Communications Strategy & Framework	1	60

#### **TASK 1200 3D COMPUTER MODELING**

Task 1200	3D Computer Modeling
<b>Deliverables</b>	3D Model, created at 30 percent design, and updated periodically through the 90 percent design, and at the 100 percent design stage.
<b>Dependencies</b>	<p><b>PWB</b></p> <p>Hardware and software in the project team space for periodic viewing of the model. Provide updates to models.</p> <p><b>DOW I and II Contractors</b></p> <p>Digital files of drawings at 30 percent, and weekly updates posted to ProjectWise thereafter.</p>

Using digital files submitted by DOW I and II Contractors under Task 300, the Contractor shall create a multi-discipline Building Information Model (3D) model using Bentley tools housed within ProjectWise.

#### **The Contractor shall complete the following:**

- a. At the 30 percent design stage, create an initial 3D model for design review presenting discipline-specific information (architectural, structural, civil, mechanical, electrical, process) based on the digital files provided by DOW I and II Contractors. Navigator software shall be used for viewing the model, including use of clash detection tools to analyze interferences within the design; communicate interferences to design teams. The Contractor shall include solid surfaces in the model sufficient for visualization of the design. The Contractor shall present the model at the 30 percent design submittal presentation meeting.
- b. Periodically update the technical discipline elements of the model through the 90 percent design stage, at most on a weekly basis, whenever DOW I and II Contractors indicate that substantial design progression has occurred. Updates shall be made using the design files posted on the ProjectWise site at least weekly by the DOW I and II Contractors. The Contractor shall continue to use Navigator and clash detection tools, and communicate any identified interferences. The Contractor shall provide for periodic viewing of the model in the project team space using hardware and internet access provided by PWB. The Contractor shall present the model at the 60 percent and 90 percent design submittal presentation meetings. The Contractor shall capture selected draft model views for use in operations manuals, presentations, etc.
- c. At the 30 percent, 60 percent and 90 percent design stages, the Contractor shall generate a summary of material quantities as available from the model, for use as a quality check on the quantity estimates provided by DOW I and II Contractors in their cost estimates.
- d. At the 100 percent design stage, finalize the 3D model based on final submitted documentation. Capture selected model views for use in operations manuals, presentations, etc.

#### **TASK 1300 ASSISTANCE IN TECHNICAL REVIEW OF DESIGN SUBMITTALS AND GAP ANALYSIS**

This task generally provides for assisting the BRST Project Team in reviewing the 30, 60, 90, 95, and 100 percent design submittals as described in Task 300.

Subtask 1301	Implement Design Submittal Review Process
<b>Deliverables</b>	Electronic folders and files for submittal review process document filing.

<b>Dependencies</b>	<p><b>PWB</b></p> <p>Participate in quality review process training, complete quality review processes as defined in the QMP, including workshop participation.</p> <p><b>DOW I and II Contractors</b></p> <p>Participate in quality review process training, complete quality review processes as defined in the QMP, including workshop participation.</p>
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The Contractor shall establish electronic folders and other files and systems for the design submittal review process as described in the Final Quality Management Plan (QMP). The Contractor shall provide review process training to project delivery staff and quality reviewers (up to six 2-hour sessions) and refine the QMP processes and tools to reflect any improvements desired as a result of feedback from the training.

Included in the table below are the estimated hours included for the Contractor's participation in the Review Process Training sessions.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Estimated Hours <i>Includes travel, prep, follow-up</i>
1301	Review Process Training	Six 2-hour sessions	3	96

<b>Subtask 1302</b>	<b>Manage Design and Technical Issues</b>
<b>Deliverables</b>	Master Project Action Item and Decision Log Issue Tracking Sheet
<b>Dependencies</b>	<p><b>PWB</b></p> <p>Participate in submitting action items and technical issues, participating in Action Item and Decision Log and Issue Tracking Sheet review sessions, and completing defined responsibilities.</p> <p><b>DOW I and II Contractors</b></p> <p>Action Item and Decision Log for respective division of work. Participate in submitting action items and technical issues that are being participated in. Action Item and Decision Log and Issue Tracking Sheet review sessions, and completing defined responsibilities.</p>

The Contractor shall develop and maintain a Master Project Action Item and Decision Log to capture and track important action items and document the action taken and decisions reached. The log shall include provisions for assigned responsibilities, and the target completion schedule. The log shall be reviewed routinely as part of a bimonthly project management meeting. Primary input to the Master Project Action Item and Decision Log shall be individual logs compiled and submitted by DOW I and II Contractors, and input from the BRST Project Team.

The Contractor shall develop and maintain an Issue Tracking Sheet (ITS) for unresolved design review comments including issues resultant from BCOE reviews. This ITS shall include provisions for assigned responsibilities for issue resolution, and the target completion schedule. The Contractor shall lead review sessions, typically two per month, to determine and discuss the status and resolution of issues, and update the ITS. Any additional supplemental evaluations or expertise required to resolve challenging issues shall be performed under subtask 105.

Included in the table below are the estimated hours included for the Contractor's participation in the Issue Review meetings.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Duration	Estimated Hours <i>Includes travel, prep, follow-up</i>
1302	Issue Review	2 per month 2 hour meetings	3	18 months	152

<b>Subtask 1303</b>	<b>Manage Design Submittal Review Process</b>
<b>Deliverables</b>	Compiled and finalized Quality Review Forms
<b>Dependencies</b>	<p><b>PWB</b></p> <p>Perform quality reviews consistent with the Quality Management Plan, including participation in BRST Project Team review workshops facilitated by the Contractor. Frequent viewing of 3D model</p> <p><b>DOW I and II Contractors</b></p> <p>Participate in facilitated workshops. Participate in quality review process consistent with the Quality Management Plan.</p>

The Contractor shall schedule and lead major presentations and workshops held as part of the 30, 60, and 90 percent reviews as defined in the Quality Management Plan.

Also included are the DOW Design Presentation Workshop, the Review Team Presentation, and the Response Resolution Workshop. The Contractor shall document review comments, responses, resolutions, and outstanding issues using the quality review forms as included in the Quality Management Plan.

The Contractor shall facilitate technical review workshops with PWB reviewers to assist in answering questions, providing clarity, framing or articulating review comments, and capturing comments on Quality Review Forms if needed. The Contractor shall interact with DOW I and II Contractor's for additional clarifications as needed.

Included in the table below are the estimated hours included for the Contractor's participation in the Submittal Review workshops.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Estimated Hours <i>Includes travel, prep, follow-up</i>
1303	Submittal Review Process workshops	Design Presentation Workshop Three 4 hour workshops (one per submittal)	4	76
		Review Team Presentation Workshop Three 4 hour workshops (one per submittal)	4	76
		Response Resolution Workshop Three 8 hour workshops (one per submittal)	4	208
		Technical Review Workshop with PWB reviewers Three 4 hour workshops per submittal	2	72



<b>Dependencies</b>	<b>PWB – TBD</b>  <b>DOW I and II Contractors</b>  Cost estimates for components of 30, 60, 90, and 100 percent design submittals.
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<b>Subtask 1304</b>	<b>Provide Technical Review of Milestone Submittals</b>
<b>Deliverables</b>	Initial and finalized Quality Review Forms for each submittal.
<b>Dependencies</b>	<b>PWB</b>  Frequent viewing of 3D model Review submittals and provide comments using tools and processes defined in the Quality Management Plan Participate in submittal review process, meetings and workshops Participate in issue tracking and resolution per defined responsibilities and schedule, and make final decisions as needed for resolution.  <b>DOW I and II Contractors</b>  Frequent viewing of 3D model Respond to quality review comments consistent with the Quality Management Plan

The Contractor shall provide technical review of 30, 60, 90, and 95 percent submittals and utilize tools and processes as defined in the Quality Management Plan. The Contractor shall include input from lead CAD technician and specifications lead to identify gaps.

The technical review team shall consist of individuals with the following roles or technical skills:

- Quality Manager
- Administrative Assistant
- Process Engineering
- Piping and Conduit Design
- Architectural
- Building Mechanical
- Structural
- Geotechnical
- Electrical
- I&C
- Operations
- Constructability

Participation and review time requirements shall vary depending on the content, level of detail, and quality of each submittal. An estimate of up to 1092 hours has been included for the initial review and response review for the four submittals

<b>Subtask 1305</b>	<b>Provide Technical Review of Additional Submittals</b>
<b>Deliverables</b>	Provide written review comments per Project QMP
<b>Dependencies</b>	<b>PWB - TBD</b>  <b>DOW I and II Contractors - TBD</b>

The Contractor shall provide technical review of memorandums and other materials submitted by DOW I and II Contractors, as requested by the BRST Project Team. The Contractor shall utilize tools and processes as defined in the Quality Management Plan.

An estimate of up to 500 hours is included for quality review and discussion of technical memoranda and other deliverables by DOW I and II Contractors.

**TASK 1400 PROJECT COST ESTIMATING**

<b>Deliverables</b>	Draft and Final TM on Cost Estimating  Consolidated cost estimates and review comments for the 30, 60, 90, and 100 percent design submittals.
<b>Dependencies</b>	<b>PWB – TBD</b>  <b>DOW I and II Contractors</b>  Cost estimates for components of 30, 60, 90, and 100 percent design submittals.

The Contractor shall establish cost estimating guidelines, templates, parameters and formats to be used by DOW I and II Contractors for estimating the construction costs of the facilities they are designing. The Contractor shall provide this information to the BRST Team Lead in a draft technical memorandum, and finalize the document based on review and comment by PWB and DOW I and II Contractors. The Contractor shall obtain cost estimates from the DOW I and II Contractors as a component of their 30, 60, 90, and 100 percent design submittals. The Contractor shall consolidate the estimated costs and review the data for conformance with the guidance in the technical memorandum for completeness and for any gaps between the individual estimates and for each submittal, provide the consolidated cost estimates, together with a brief summary of review comments and conclusions.

DOW I and II Contractors are responsible for the accuracy of quantity estimates and calculation of estimated costs. The Contractor shall perform spot checks on quantity takeoffs using estimated quantity of materials as generally available in the data base associated with the 3-D model, as an additional QC measure.

**TASK 1500 LEED COMPLIANCE**

<b>Deliverables</b>	<b>TBD</b>
<b>Dependencies</b>	<b>PWB – TBD</b>  <b>DOW I and II Contractors - TBD</b>

The Contractor shall participate in a workshop led by DOW II. Contribute to establishing LEED goals and procedures to maintain alignment among designers. Provide input as requested to discuss concepts and progress towards achieving LEED goals.

Included in the table below are the estimated hours included for the Contractor's participation in the LEED Compliance workshop.

<b>Task/Sub-task</b>	<b>Meeting Type</b>	<b>Description/Frequency</b>	<b>Attendees</b>	<b>Estimated Hours <i>Includes travel, prep, follow-up</i></b>
1500	LEED Compliance Workshop	One 8 hour workshop	1	16

**TASK 1600 REGULATORY COMPLIANCE**

<b>Subtask 1601</b>	<b>Regulatory Compliance Strategy</b>
<b>Deliverables</b>	Summary of operational data required to demonstrate compliance Guidelines for implementation Draft criteria for data reporting
<b>Dependencies</b>	<b>PWB and DOW I and II Contractors</b>  Participation in coordination meeting

The Contractor shall facilitate a meeting with BRST Project Team, DOW I UV specialist, UV supplier, and the Contractor's O&M and regulatory compliance leads.

The Contractor shall establish anticipated operational data required to demonstrate regulatory compliance under the future Department of Health Services (DHS) operation permit, and how that data can best be derived. The Contractor shall develop guidelines for implementing recommendations, and draft criteria for data reporting. The Contractor shall provide follow up review of implementation details by the Contractor's regulatory compliance/technical advisor and provide a document summarizing meeting outcome and guidelines for implementing recommendations.

Included in the table below are the estimated hours included for the Contractor's participation in the Regulatory Compliance meeting.

Task/Sub-task	Meeting Type	Description/Frequency	Attendees	Estimated Hours <i>Includes travel, prep, follow-up</i>
1601	Regulatory Compliance meeting	Operational data coordination meeting 4 hours	2	16

<b>Subtask 1602</b>	<b>LT2ESWTR Time Extension</b>
<b>Deliverables</b>	Request for LT2ESWTR time extension.
<b>Dependencies</b> <b>DOW I and II Consultants:</b>	<b>PWB</b>  Data for inclusion with time extension request  <b>DOW I and II Contractors - TBD</b>

The Contractor shall assist BRST Project Team with developing request for LT2ESWTR time extension for ongoing capital improvements.

#### **TASK 1700 CONSTRUCTION ASSISTANCE**

This task's efforts shall be negotiated between the Contractor and the PWB Project Manager. Fees are not reflected in the attached Exhibit A, Compensation Detail.

#### **CONTRACTOR PERSONNEL**

The Contractor shall assign the following personnel to do the work in the capacities designated:

NAME	ROLE ON PROJECT
Bob Chapman	Project Manager
Dale Jutila, PE	Deputy Project Manager and Public Outreach
Sue Frey	Quality Manager
Paul Swaim	Technical Advisor
Linda Dolejs	General Project Support Manager
Brad Phelps	Integrated Deliver Manager
Rod Brauer	Principal
Mark Carlson	Engineering Manager
Bill Hawkins	Construction Manager
Lee Odell	Training Manager
Brittany Garton, EIT	Modeling/CAD Expert

## SUBCONTRACTORS

The Contractor shall assign the following subcontractors to perform work in the capacities designated:

NAME	ROLE ON PROJECT
Baarspul Consulting, Inc.	Construction Issues
Crane & Merseeth Engineering/Surveying	Construction Inspection
JLA Public Involvement, Inc.	Public Involvement
Norsk Construction Services	Construction Inspection
O'Dell Communications	Public Communications
Winterbrook Planning	Permitting

The City shall enforce all diversity in workforce and Minority, Women and Emerging Small Business (M/W/ESB) subcontracting commitments submitted by the Contractor in its Proposal. For contracts valued \$100,000 or more, the Contractor shall submit a Monthly Subconsultant Payment and Utilization Report (MUR), made part of this contract by reference, reporting ALL subcontractors employed in the performance of this agreement. An electronic copy of the MUR may be obtained at: <http://www.portlandonline.com/shared/cfm/image.cfm?id=119851>.

## COMPENSATION

Contractor shall be paid the not to exceed amount of **\$3,669,790**. The Contractor shall be paid based on its hourly rates, costs incurred in paying its subcontractors, if any, plus any authorized expenses, as set forth in more detail in the attached Exhibit A, Compensation Detail. The "not to exceed amount" is the maximum amount of compensation due the Contractor for all the work required by the contract. Errors in estimating the number of hours necessary to perform the work is the sole responsibility of the Contractor.

### Multiplier Information

The multiplier applied to salaries shall not exceed 3.1. The multiplier shall include the following non-reimbursable expenses: fringe benefits, payroll bonuses, autos and other defined perquisites, telecommunications, facsimile services, overhead expenses including but not limited to local and long distance telephone, parking, delivery/courier, general business and professional liability insurance, advertising costs, postage, internal copying, lease of office equipment, mileage and other local travel costs, information technology (including computer time and CAD services and other related highly specialized equipment), all other direct costs not identified as reimbursable, other indirect costs and profit.

### Standard Reimbursable Costs

The following costs shall be reimbursed without mark-up:

- Out-of-Town Travel. Travel (transportation, lodging and per diem) of Contractor and/or experts when specified in the contract or requested by PWB, directly attributed to specific tasks and when to a location outside a 100 mile radius of Contractor's project office. Travel costs shall be reimbursed in accordance with the City's Travel Expense Guidelines, which are based on the General Services Administration (GSA) per diem rates.
- Photocopying/Reproduction Costs. Reproduction of required drawings, reports, specifications, bidding documents, in excess of the number required as part of the contract excluding the cost of reproduction for Contractor's or sub's own use.

### Sub-consultant Costs

Compensation for sub-consultants shall be limited to the same restrictions imposed on the Contractor. The maximum markup on sub-consultant services shall not exceed 5%.

### Adjustment of Hourly Rates Due to Inflation

Annual adjustment of hourly rates shall be considered upon written request from the Contractor. Approval of a request for rate increases is solely within the City's discretion and under no circumstances is the City obligated to approve such a request.

Rate increases are subject to the following limitations:

- No increases shall be granted before the one-year anniversary of the contract;
- No more than one increase shall be granted per contract year;
- Rate increases may not exceed the then-current average inflation rate for the Portland Metropolitan Area (as determined from the US Department of Labor statistics and certified by the City of Portland Auditor);
- Rate increases shall not be retroactive.

Other than the impact of inflation as described above, hourly rates may not be increased.

**PAYMENT TERMS: Net 30 Days**

**Hourly Rates**

The Contractor shall be reimbursed in accordance with the rates listed on the attached Exhibit A, Summary of Project Fee.

**Progress Payments**

On or before the 15<sup>th</sup> of each month, the Contractor shall submit to the Water Bureau's Accounts Payable an invoice for work performed by the Contractor during the preceding month. The invoice shall contain the City's Contract Number and set out all items for payment including, but not limited to: the name of the individual, labor category, direct labor rate, hours worked during the period, tasks performed, and the percentage of work successfully completed for each task. The Contractor shall provide written explanation of deviations from the contract fees and provide measures of correction as necessary to ensure that the project remains on budget. The Contractor shall also attach photocopies of claimed reimbursable expenses. The City's Project Manager shall stamp and approve all subconsultant invoices and note on the subconsultant invoice what they are approving as "billable" under the contract. The billing from the prime should clearly roll up labor and reimbursable costs for the prime and subconsultants – matching the subconsultant invoices. Prior to initial billing, the Contractor shall develop a billing format for approval by the City.

Invoices shall either be e-mailed to: [wb.accountspayablesection@ci.portland.or.us](mailto:wb.accountspayablesection@ci.portland.or.us) (this is the preferred method) or sent to:

City of Portland Water Bureau  
Attn: Portland Water Bureau Accounts Payable  
1120 SW 5<sup>th</sup> Avenue, Room 609  
Portland, OR 97204

The City shall pay all amounts to which no dispute exists within 30 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 Contractor shall make full payment to its subcontractors within 10 business days following receipt of any payment made by the Bureau to Contractor.

## INDEPENDENT CONTRACTOR CERTIFICATION STATEMENT

## SECTION A

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

Contractor Signature

Date

4/30/10

Entity

CH2M Hill, Inc.

**If entity does not have Workers' Compensation Insurance, City Project Manager and Contractor complete the remainder of this form.**

## SECTION B

**ORS 670.600 Independent contractor 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 contractor" 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

## SECTION C

Independent contractor certifies he/she meets 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 contractor 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. Contractor 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.

Contractor Signature

Date


**CONTRACTOR 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 Contractor 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 Chapter 3.100 of Code of the City of Portland; and hereby certify I am an independent contractor as defined in ORS 670.600.

CH2M Hill, Inc.

BY:  Date: 4/30/10

Name: Mark R. Johnson

Title: Vice President


APPROVED AS TO FORM

  
CITY ATTORNEY  
6/3/10

Contract No. 30001291

Contract Title: Bull Run Supply Treatment Project Division of Work III – Project Support

CITY OF PORTLAND SIGNATURES:

By:  Date: 05.11.2010  
Bureau Director

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Chief Procurement Officer

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Elected Official

Approved:

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Office of City Auditor

Approved as to Form:

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Office of City Attorney



Bull Run Supply Treatment Improvements Project,  
Division III - Project Support

Task No.	Task/Subtask	Chapman	Jutila	Swalm	Phelps	Campbell	Carlson	Frey	Bauer	Swalm	Beleler	Lundgren	Rausch	Frey	Daller	Hildenbrand	Burr	Bauer	Hawkins	Pieterick
		PM	Asst. PM	Tech Dir	IDS	Project Controls	Eng. Supp	Design QM	Process QCR	UV QCR	Piping/Conduit QCR	Architect QCR	Building Mech QCR	Structural QCR	Geotech QCR	Electrical QCR	I & C QCR	Operation QCR	Construc QCR	LEED QCR
		\$ 280.98	\$ 200.14	\$ 218.15	\$ 213.16	\$ 204.52	\$ 261.33	\$ 199.55	\$ 185.39	\$ 218.18	\$ 195.70	\$ 245.18	\$ 184.23	\$ 199.55	\$ 195.21	\$ 166.48	\$ 139.14	\$ 185.39	\$ 233.72	\$ 152.12
100	Project Management	\$ 425,407	\$ 378,657	\$ 436	\$ 11,724	\$ -	\$ 93,817	\$ 40,110	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
101	Scheduling, Project Controls, Payment Requests, and Monthly Progress Reporting	76	152		38															
102	Partnering Sessions	30	51		17															
103	Meetings	303	378																	
104	Change Management	9	72																	
105	Risk Management Plan	284	253				315	7												
106	Quality Management Plan	17					42	78												
107	BCOE Reviews	80	19					114												
108	Health and Safety Plan	2	2	2			2	2												
109	General Project Management and Support	713	965																	
	Task Hours	1514	1892	2	55		359	201												
200	Design Issues Resolution	\$ 34,561	\$ 60,641	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
201	Early Decision Framework and Support	70	93																	
202	Project Issues Resolution Support	53	105																	
203	Conflict Resolution		105																	
	Task Hours	123	303																	
300	Final Design - 100% Package	\$ 7,306	\$ 1,801	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
301	30% Design Submittal Package																			
302	Value Engineering	26	9																	
303	60% Design Submittal Package																			
304	90% Design Submittal Package																			
305	95% Design Submittal Package																			
306	Final Design 100% Submittal																			
307	Operational Descriptions																			
	Task Hours	26	9																	
400	Not Used	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Task Hours																			
500	Bidding Assistance	\$ 28,379	\$ -	\$ -	\$ 8,953	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Bidding Assistance	101			42															
	Task Hours	101			42															
600	Permitting and Permit Coordination	\$ -	\$ 25,217	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
601	FEMA Flood Plain Determination																			
602	Conduct ESA Review																			
603	Meet with Permitting Agencies																			
604	Develop Permit Applications																			
605	Permitting Coordination		126																	
	Task Hours		126																	
700	Online Operation and Maintenance Data Provision	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
701	O&M Data Provision Activities During 30% Design																			
702	O&M Data Provision Activities During 60% Design																			
703	O&M Data Provision Activities During 90% Design																			
704	O&M Data Provision Specification for the Bid Documents																			
705	Electronic O&M Data Provision Development																			
	Task Hours																			
800	Project Coordination	\$ 32,313	\$ 16,411	\$ -	\$ 114,678	\$ 47,245	\$ -	\$ 14,368	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
801	Prepare and Implement Project Management Plan	42	9																	
802	Project Standards				42			72												
803	Project Standards and Tools Training																			
804	Project Scheduling and Controls	73	73		496	231														
	Task Hours	115	82		538	231		72												
900	Project Website and Document Control System	\$ -	\$ 1,801	\$ -	\$ 3,624	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
901	Project Website				17															
902	Document Control System		9																	
	Task Hours		9		17															
000	Administrative Support	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Administrative Support																			
	Task Hours																			
1100	Public Involvement	\$ -	\$ 8,406	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Task No.	Task/Subtask	Chapman	Jutla	Swaim	Phelps	Campbell	Carlson	Frey	Bauer	Swaim	Beleler	Lundgren	Rausch	Frey	Daller	Hildenbrand	Burr	Bauer	Hawkins	Pieterick
		PM	Asst. PM	Tech Dir	IDS	Project Controls	Eng. Supp	Design QM	Process QCR	UV QCR	Piping/Conduit QCR	Architect QCR	Building Mech QCR	Structural QCR	Geotech QCR	Electrical QCR	I & C QCR	Operation QCR	Construc QCR	LEED QCR
	Public Involvement	\$ 280.98	\$ 200.14	\$ 218.15	\$ 213.16	\$ 204.52	\$ 261.33	\$ 199.55	\$ 185.39	\$ 218.18	\$ 195.70	\$ 245.18	\$ 184.23	\$ 199.55	\$ 195.21	\$ 166.48	\$ 139.14	\$ 185.39	\$ 233.72	\$ 152.12
	Task Hours		42																	
1200	3D Computer Modeling																			
	3D Computer Modeling																			
	Task Hours																			
1300	Assistance In Technical Review of Design Submittals and Gap Analysis	\$ 114,079	\$ 63,243					\$ 56,473	\$ 12,050	\$ 14,618	\$ 12,329	\$ 16,427	\$ 11,606	\$ 12,572	\$ 10,541	\$ 10,488	\$ 8,766	\$ 11,680	\$ 8,881	\$ 6,237
1301	Implement Design Submittal Review Process	26						51												
1302	Manage Design and Technical Issues	236	227																	
1303	Manage Design Submittal Review Process	98	89					76												
1304	Provide Technical Review of Milestone Submittals	33						130	60	62	58	62	58	58	49	58	58	58	33	36
1305	Provide Technical Review of Additional Submittals	13						26	5	5	5	5	5	5	5	5	5	5	5	5
	Task Hours	406	316					283	65	67	63	67	63	63	54	63	63	63	38	41
1400	Project Cost Estimating																			
	Project Cost Estimating																			
	Task Hours																			
1500	LEED Compliance																			
	LEED Compliance																			
	Task Hours																			
1600	Regulatory Compliance		\$ 5,204	\$ 18,108	\$ 1,918															
1601	Regulatory Compliance		9	74																
1602	LT2ESWTR Time Extension		17	9	9															
	Task Hours		26	83	9															
	Total Cost for Tasks 100-1600	\$ 642,045	\$ 561,381	\$ 18,542	\$ 140,896	\$ 47,245	\$ 93,817	\$ 110,950	\$ 12,050	\$ 14,618	\$ 12,329	\$ 16,427	\$ 11,606	\$ 12,572	\$ 10,541	\$ 10,488	\$ 8,766	\$ 11,680	\$ 8,881	\$ 6,237
	Total Hours for Tasks 100-1600	2,285	2,805	85	661	231	359	556	65	67	63	67	63	63	54	63	63	63	38	41
	Cost for Optional tasks (included in total cost)	\$ 69,122	\$ 59,883				\$ 82,319													

EXHIBIT A -Compensation Detail

Bull Run Supply Treatment Improvements Project,  
Division III - Project Support

183837

Task No.	Task/Subtask	T6	E3	Carlson	Doleac	VE Team	Odell	Spelcher	Trusler	A. Wright	Malin	Garton	Billings	Mauti	Howe	Benthin	Mowatt	Gale	Voegels	PM01	Edgerton
		Model QCR	QC Calc Checking	Permit Resource	VE	VE	O&M	Decision Science	BCOE Review	Specs Lead	Specs Processor	Proj. Eng	H&S QC Review	CADD	CADD Tech	Other CADD Tech	Contract	Proj. Con.		Engineer	Estimator
		\$ 117.08	\$ 122.14	\$ 194.77	\$ 330.54	\$ 225.00	\$ 228.41	\$ 219.67	\$ 302.72	\$ 241.68	\$ 94.99	\$ 92.88	\$ 147.93	\$ 159.84	\$ 68.05	\$ 100.34	\$ 171.09	\$ 119.06	\$ 147.87	\$ 120.00	\$ 191.34
100	Project Management	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 457	\$ -	\$ 38,143	\$ 2,175	\$ -	\$ 71,800	\$ -	\$ 1,439	\$ 1,293	\$ -	\$ 4,448	\$ 18,098	\$ -	\$ 12,840	\$ -
101	Scheduling, Project Controls, Payment Requests, and Monthly Progress Reporting																	152			
102	Partnering Sessions											17									
103	Meetings																				
104	Change Management																				
105	Risk Management Plan											246								105	
106	Quality Management Plan									9					9					105	
107	BCOE Reviews							126				86									
108	Health and Safety Plan						2					14			2					2	
109	General Project Management and Support											410					26				
	Task Hours						2		126	9		773		9	19		26	152		107	
200	Design Issues Resolution	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5,939	\$ 30,534	\$ -	\$ -	\$ -	\$ 7,059	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
201	Early Decision Framework and Support						26	139													
202	Project Issues Resolution Support											76									
203	Conflict Resolution																				
	Task Hours						26	139				76									
300	Final Design - 100% Package	\$ -	\$ -	\$ -	\$ 23,138	\$ 56,700	\$ 5,939	\$ -	\$ -	\$ -	\$ -	\$ 19,506	\$ -	\$ -	\$ 8,846	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
301	30% Design Submittal Package											42			26						
302	Value Engineering				70	252															
303	60% Design Submittal Package											42			26						
304	90% Design Submittal Package											42			26						
305	95% Design Submittal Package											42			26						
306	Final Design 100% Submittal											42			26						
307	Operational Descriptions						26								26						
	Task Hours				70	252	26					210			130						
400	Not Used	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Task Hours																				
500	Bidding Assistance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 39,012	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Bidding Assistance											420									
	Task Hours											420									
600	Permitting and Permit Coordination	\$ -	\$ -	\$ 8,180	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
601	FEMA Flood Plain Determination																				
602	Conduct ESA Review																				
603	Meet with Permitting Agencies																				
604	Develop Permit Applications																				
605	Permitting Coordination			42																	
	Task Hours			42																	
700	Online Operation and Maintenance Data Provision	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 125,624	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
701	O&M Data Provision Activities During 30% Design						132														
702	O&M Data Provision Activities During 60% Design						83														
703	O&M Data Provision Activities During 90% Design						138														
704	O&M Data Provision Specification for the Bid Documents						35														
705	Electronic O&M Data Provision Development						162														
	Task Hours						550														
800	Project Coordination	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,108	\$ 8,454	\$ 15,790	\$ -	\$ 16,943	\$ 97,304	\$ 15,854	\$ -	\$ -	\$ -	\$ -	\$ -
801	Prepare and Implement Project Management Plan											26									
802	Project Standards									17	89			17	354	105					
803	Project Standards and Tools Training											9		89	1076						
804	Project Scheduling and Controls											135				53					
	Task Hours									17	89	170		106	1430	158					
900	Project Website and Document Control System	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 32,045	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
901	Project Website											227									
902	Document Control System											118									
	Task Hours											345									
1000	Administrative Support	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Administrative Support																				
	Task Hours																				
1100	Public Involvement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Task No.	Task/Subtask	T6	E3	Carlson	Doleac	VE Team	Odell	Spelcher	Trusler	A. Wright	Malin	Garton	Billings	Mauti	Howe	Benthin	Mowatt	Gale	Voegels	PM01	Edgerton
		Model QCR	QC Calc Checking	Permit Resource	VE	VE	O&M	Decision Science	BCOE Review	Specs Lead	Specs Processor	Proj. Eng	H&S QC Review	CADD	CADD Tech	Other CADD Tech	Contract	Proj. Con.		Engineer	Estimator
	Public Involvement	\$ 117.08	\$ 122.14	\$ 194.77	\$ 330.54	\$ 225.00	\$ 228.41	\$ 219.67	\$ 302.72	\$ 241.68	\$ 94.99	\$ 92.88	\$ 147.93	\$ 159.84	\$ 68.05	\$ 100.34	\$ 171.09	\$ 119.06	\$ 147.87	\$ 120.00	\$ 191.34
	Task Hours																				
1200	3D Computer Modeling																				
	3D Computer Modeling													\$ 16,783	\$ 54,912	\$ 136,967					
	Task Hours													105	807	1365					
														105	807	1365					
1300	Assistance in Technical Review of Design Submittals and Gap Analysis	\$ 3,747	\$ 11,481				\$ 17,359			\$ 29,243	\$ 29,923	\$ 122,143		\$ 4,635							
1301	Implement Design Submittal Review Process											59									
1302	Manage Design and Technical Issues											152									
1303	Manage Design Submittal Review Process						76					1059									
1304	Provide Technical Review of Milestone Submittals	32	94							52		36		20							
1305	Provide Technical Review of Additional Submittals									69	315	9		9							
	Task Hours	32	94	-	-	-	76	-	-	121	315	1,315	-	29	-	-	-	-	-	-	-
1400	Project Cost Estimating																				
	Project Cost Estimating																				\$ 47,012
	Task Hours																				246
																					246
1500	LEED Compliance																				
	LEED Compliance																			\$ 5,028	
	Task Hours																			34	
																				34	
1600	Regulatory Compliance						\$ 2,056					\$ 836									
1601	Regulatory Compliance						9														
1602	LT2ESWTR Time Extension											9									
	Task Hours						9					9									
												9									
	Total Cost for Tasks 100-1600	\$ 3,747	\$ 11,481	\$ 8,180	\$ 23,138	\$ 56,700	\$ 157,373	\$ 30,534	\$ 38,143	\$ 35,526	\$ 38,377	\$ 308,191	\$ -	\$ 39,799	\$ 162,355	\$ 152,821	\$ 4,448	\$ 18,098	\$ 5,028	\$ 12,840	\$ 47,012
	Total Hours for Tasks 100-1600	32	94	42	70	252	689	139	126	147	404	3,318		249	2,386	1,523	26	152	34	107	246
	Cost for optional tasks (included in total cost)											\$ 22,850									\$ 12,600



EXHIBIT A -Compensation Detail

Bull Run Supply Treatment Improvements Project,  
Division III - Project Support

183837

									Subtotal CH Labor and Expenses				Total CH Labor and Expenses	Subconsultants				Sub Mark-up	Total Subs	Grand Total
Task No.	Task/Subtask	Bredehoeft	Losset	Goff		Dolejs			Labor		Expenses		Total	JLA/O'Dell		Winterbrook		5%	Total	Total
		Estimator	Actg	Repro	AA	Admin	Word Processor	Graphics	Hours	\$	Travel	Other		Hours	\$	Hours	\$			
		\$ 225.95	\$ 67.71	\$ 67.58	\$ 92.88	\$ 90.81	\$ 89.50	\$ 101.93	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
100	Project Management	\$ -	\$ 11,985	\$ 608	\$ 2,415	\$ 39,229	\$ 805	\$ 510		\$1,331,397	\$4,500		\$1,335,897				\$50,000	\$2,500	\$ 52,500	\$ 1,388,397
101	Scheduling, Project Controls, Payment Requests, and Monthly Progress Reporting					76			494											
102	Partnering Sessions								115											
103	Meetings								681											
104	Change Management								81											
105	Risk Management Plan								1210											
106	Quality Management Plan			9	26	26	9	5	2218	\$411,124						320	\$50,000	\$2,500	\$52,500	\$463,624
107	BCOE Reviews								230											
108	Health and Safety Plan					2			425		4500									
109	General Project Management and Support		177			328			32											
	Task Hours		177	9	26	432	9	5	5904											
200	Design Issues Resolution	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		\$138,733	\$3,500		\$142,233						\$ -	\$ 142,233
201	Early Decision Framework and Support								328		3500									
202	Project Issues Resolution Support								234											
203	Conflict Resolution								105											
	Task Hours								667											
300	Final Design - 100% Package	\$ -	\$ -	\$ 9,123	\$ -	\$ 1,907	\$ -	\$ -		\$134,265	\$800	\$51,000	\$186,065						\$ -	\$ 186,065
301	30% Design Submittal Package			26					94		800	9000								
302	Value Engineering			5		21			383											
303	60% Design Submittal Package			26					94			9000								
304	90% Design Submittal Package			26					94			9000								
305	95% Design Submittal Package			26					94											
306	Final Design 100% Submittal			26					94			24000								
307	Operational Descriptions								26											
	Task Hours			135		21			879											
400	Not Used	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -											\$ -	\$ -
	Task Hours																			
500	Bidding Assistance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		\$76,343	\$5,000		\$81,343						\$ -	\$ 81,343
	Bidding Assistance								563											
	Task Hours								563											
600	Permitting and Permit Coordination	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		\$33,398			\$33,398				\$184,800	\$ 9,240	\$ 194,040	\$ 227,438
601	FEMA Flood Plain Determination															69	\$7,970			
602	Conduct ESA Review															269	\$31,070			
603	Meet with Permitting Agencies															157	\$18,134			
604	Develop Permit Applications															1,105	\$127,628			
605	Permitting Coordination								168											
	Task Hours								168							1,600				
700	Online Operation and Maintenance Data Provision	\$ -	\$ -	\$ 1,216	\$ -	\$ -	\$ -	\$ -		\$126,841			\$126,841						\$ -	\$ 126,841
701	O&M Data Provision Activities During 30% Design								132											
702	O&M Data Provision Activities During 60% Design								83											
703	O&M Data Provision Activities During 90% Design								138											
704	O&M Data Provision Specification for the Bid Documents								35											
705	Electronic O&M Data Provision Development			18					180											
	Task Hours			18					568											
800	Project Coordination	\$ -	\$ -	\$ 879	\$ -	\$ -	\$ 805	\$ 917		\$386,070	\$1,500		\$387,570						\$ -	\$ 387,570
801	Prepare and Implement Project Management Plan			13			9	9	108											
802	Project Standards								696											
803	Project Standards and Tools Training								1174											
804	Project Scheduling and Controls								1061											
	Task Hours			13			9	9	3039											
900	Project Website and Document Control System	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		\$37,470			\$37,470						\$ -	\$ 37,470
901	Project Website								244											
902	Document Control System								127											
	Task Hours								371											
1000	Administrative Support	\$ -	\$ -	\$ -	\$ -	\$ 119,049	\$ -	\$ -		\$119,049			\$119,049						\$ -	\$ 119,049
	Administrative Support					1311			1311											
	Task Hours					1311			1311											
1100	Public Involvement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		\$8,406			\$8,406		\$60,827			\$3,041	\$ 63,868	\$ 72,274

									Subtotal CH Labor and Expenses				Total CH Labor and Expenses	Subconsultants				Sub Mark-up	Total Subs	Grand Total
Task No.	Task/Subtask	Bredehoeft	Losset	Goff		Dolejs	Word Processor	Graphics	Labor		Expenses			JLA/O'Dell		Winterbrook		5% Total	Total	
		Estimator	Actg	Repro	AA	Admin			Hours	\$	Travel	Other		Hours	\$	Hours	\$			
		\$ 225.95	\$ 67.71	\$ 67.58	\$ 92.88	\$ 90.81	\$ 89.50	\$ 101.93	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	
	Public Involvement								42					341						
	Task Hours								42					341						
1200	3D Computer Modeling	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		\$208,662			\$208,662						\$ -	\$ 208,662
	3D Computer Modeling								2277											
	Task Hours								2277											
1300	Assistance In Technical Review of Design Submittals and Gap Analysis	\$ -	\$ -	\$ -	\$ 5,387	\$ -	\$ -	\$ -		\$593,908	\$2,400		\$596,308						\$ -	\$ 596,308
1301	Implement Design Submittal Review Process								136											
1302	Manage Design and Technical Issues								615		2400									
1303	Manage Design Submittal Review Process								1398											
1304	Provide Technical Review of Milestone Submittals				45				1092											
1305	Provide Technical Review of Additional Submittals				13				514											
	Task Hours				58				3,755											
1400	Project Cost Estimating	\$ 14,980	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		\$61,992			\$61,992						\$ -	\$ 61,992
	Project Cost Estimating	66							312											
	Task Hours	66							312											
1500	LEED Compliance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		\$5,028			\$5,028						\$ -	\$ 5,028
	LEED Compliance								34											
	Task Hours								34											
1600	Regulatory Compliance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		\$28,120	\$1,000		\$29,120						\$ -	\$ 29,120
1601	Regulatory Compliance								92		1000									
1602	LT2ESWTR Time Extension								44											
	Task Hours								136											
	Total Cost for Tasks 100-1600	\$ 14,980	\$ 11,985	\$ 11,827	\$ 7,802	\$ 160,185	\$ 1,611	\$ 1,427		\$3,289,682	\$18,700	\$51,000	\$3,359,382		\$ 60,827	\$ 234,800	\$ 14,781	\$ 310,408	\$3,669,790	
	Total Hours for Tasks 100-1600	66	177	175	84	1,764	18	14	20,026					341		1,600		1,941	21,967	
	Cost for Optional Tasks (Included in Total Cost)									\$411,124			\$411,124			\$50,000	\$ 2,900	\$ 162,500	\$3,655,824	