

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

CONTRACT NO.

SHORT TITLE OF WORK PROJECT: CBWTP Secondary Process Improvements

This contract is between the City of Portland, acting by and through its Elected Officials, hereafter called "City," and CH2M HILL, hereafter called Contractor. The City's Project Manager for this contract is **Vu Han (503-823-2635)**.

Effective Date and Duration

This contract shall become effective on **September 6, 2010**. This contract shall expire, unless otherwise terminated or extended, on **June 30, 2014**.

Consideration

- (a) City agrees to pay Contractor a sum not to exceed \$1,893,801.00 for accomplishment of the work.
 (b) Interim payments shall be made to Contractor according to the schedule identified in EXHIBIT A.

CONTRACTOR DATA AND CERTIFICATION

Name (please print): CH2M HILL

Address: 2020 SW 4th Ave, Portland, OR 97201

Employer Identification Number (EIN) 59-09-18189

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

City of Portland Business License # 308278-06

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 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 Chief Procurement Officer to be valid. Any amendment that increases the original contract amount by more than 25% must be approved by the City Council to be valid.

19. Business 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: / ☒ / 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 Chief Procurement Officer.

**STATEMENT OF THE WORK
AND PAYMENT SCHEDULE**

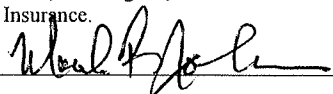
Statement of Work and Payment Schedule are contained in EXHIBIT A attached.

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

15 July 2010

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:

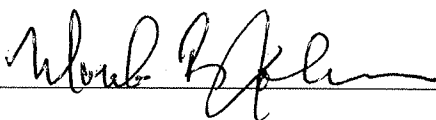
This contract may be signed in two (2) or more counterparts, each of which shall be deemed an original, and which, when taken together, shall constitute one and the same Agreement.

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

BY: _____



Date: _____

15 July 2010

Name: _____

Mark R. Johnson

Title: _____

Vice President

184108

Contract No. _____

Contract Title: CBWTP Secondary Process Improvements

CITY OF PORTLAND SIGNATURES:

By: WTR
Bureau Director

Date: _____

By: _____
Chief Procurement Officer

Date: _____

By: _____
Elected Official

Date: _____

Approved:

By: _____
Office of City Auditor

Date: _____

Approved as to Form:

By: [Signature]
Office of City Attorney

Date: 8/12/10



CERTIFICATE OF LIABILITY INSURANCE

 DATE (MM/DD/YYYY)
06/10/2010

PRODUCER

 MARSH USA, INC.
1225 17TH STREET, SUITE 2100
DENVER, CO 80202-5534

THIS CERTIFICATION IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

15114 -00006-PL2MM-10/11 PDX

INSURED

 CH2M HILL, INC.
9191 SOUTH JAMAICA STREET
ENGLEWOOD, CO 80112

INSURERS AFFORDING COVERAGE

NAIC

INSURER A: Zurich American Insurance Company

16535

INSURER B:

INSURER C:

INSURER D:

INSURER E:

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR ADD'L LTR	INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	LIMITS
		GENERAL LIABILITY				EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$
		☐ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS MADE ☐ OCCUR GENERAL AGGREGATE LIMIT APPLIES PER ☐ POLICY ☐ PRO-JECT ☐ LOC				
		AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
		☐ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ☐ NON-OWNED AUTOS				
		GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT \$ OTHER THAN EA ACC \$ AUTO ONLY: AGG \$
		☐ ANY AUTO ☐ OCCUR ☐ CLAIMS MADE ☐ DEDUCTIBLE ☐ RETENTION \$				EACH OCCURRENCE \$ AGGREGATE \$ \$ \$ \$
		EXCESS / UMBRELLA LIABILITY				EACH OCCURRENCE \$ AGGREGATE \$ \$ \$ \$
		☐ OCCUR ☐ CLAIMS MADE ☐ DEDUCTIBLE ☐ RETENTION \$				WC STATU-TORY LIMITS ☐ OTH-ER ☐ E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE Y / N OFFICER/MEMBER EXCLUDED? ☒ N (Mandatory in NH) If yes, describe under SPECIAL PROVISIONS below				
A		OTHER				
		PROFESSIONAL LIABILITY*	EOC3829621-08	05/01/2010	05/01/2011	\$2,000,000 EACH CLAIM AND TOTAL FOR ALL CLAIMS

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS

RE: CITY'S PROJECT NO. E08909.

*FOR PROFESSIONAL LIABILITY COVERAGE, THE AGGREGATE LIMIT IS THE TOTAL INSURANCE AVAILABLE FOR CLAIMS PRESENTED WITHIN THE POLICY PERIOD FOR ALL OPERATIONS OF THE INSURED. THE LIMIT WILL BE REDUCED BY PAYMENTS OF INDEMNITY AND EXPENSE.

CERTIFICATE HOLDER

SEA-001596718-01

CANCELLATION

 CITY OF PORTLAND
ATTN: VU HAN
5001 N. COLUMBIA BLVD.
PORTLAND, OR 97203

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

 AUTHORIZED REPRESENTATIVE
of Marsh USA Inc.
Sharon A. Hammer

184108



CERTIFICATE OF LIABILITY INSURANCE

 DATE (MM/DD/YYYY)
06/10/2010

PRODUCER MARSH USA, INC. 1225 17TH STREET, SUITE 2100 DENVER, CO 80202-5534		THIS CERTIFICATION IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.	
15114 -00124-GAWC-10/11 PDX		INSURERS AFFORDING COVERAGE	
INSURED CH2M HILL, INC. 9191 SOUTH JAMAICA STREET ENGLEWOOD, CO 80112		INSURER A: Zurich American Insurance Co	NAIC # 16535
		INSURER B: American Zurich Insurance Co.	40142
		INSURER C:	
		INSURER D:	
		INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR ADD'L LTR	INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	LIMITS
A	X	GENERAL LIABILITY ☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS MADE ☒ OCCUR ☒ \$500,000 SIR GENERAL AGGREGATE LIMIT APPLIES PER ☐ POLICY ☐ PROJECT ☐ LOC	GLO3784726-06	05/01/2010	05/01/2011	EACH OCCURRENCE \$ 1,500,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,500,000 MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ 1,500,000 GENERAL AGGREGATE \$ 5,000,000 PRODUCTS - COMP/OP AGG \$ 5,000,000
A	X	AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ☐ NON-OWNED AUTOS	BAP8378516-15	05/01/2010	05/01/2011	COMBINED SINGLE LIMIT (Ea accident) \$ 2,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
		GARAGE LIABILITY ☐ ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN AUTO ONLY: EA ACC \$ AGG \$
		EXCESS / UMBRELLA LIABILITY ☐ OCCUR ☐ CLAIMS MADE ☐ DEDUCTIBLE ☐ RETENTION \$				EACH OCCURRENCE \$ AGGREGATE \$ \$ \$ \$
B		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE Y/N OFFICER/MEMBER EXCLUDED? ☒ N (Mandatory in NH) If yes, describe under SPECIAL PROVISIONS below	WC8378566-16 (AOS) WC8378565-15 (WI & MA) WC3784761-05 (ID)	05/01/2010 05/01/2010 05/01/2010	05/01/2011 05/01/2011 05/01/2011	☒ WC STATUTORY LIMITS ☐ OTHER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
A		OTHER				

APPROVED AS TO FORM

 [Signature]
 CITY ATTORNEY

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS

RE: CITY'S PROJECT NO. E08909.

THE CERTIFICATE HOLDER IS INCLUDED AS AN ADDITIONAL INSURED ON THE GENERAL LIABILITY POLICY BUT ONLY WITH RESPECT TO LIABILITY ARISING OUT OF THE NAMED INSUREDS ONGOING OPERATIONS PERFORMED FOR THAT ADDITIONAL INSURED. THE CERTIFICATE HOLDER IS INCLUDED AS AN ADDITIONAL INSURED ON THE AUTOMOBILE LIABILITY AS REQUIRED BY CONTRACT OR AGREEMENT.

CERTIFICATE HOLDER

SEA-001596714-01

CANCELLATION

 CITY OF PORTLAND
 ATTN: VU HAN
 5001 N. COLUMBIA BLVD.
 PORTLAND, OR 97203

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL **30** DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

 AUTHORIZED REPRESENTATIVE
 of Marsh USA Inc.
 Sharon A. Hammer

[Signature] Sharon A. Hammer

ACORD 25 (2009/01)

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EXHIBIT A**Statement of Work and Payment Schedule**

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I. Statement of Work

The CBWTP Secondary Improvements Project (BES Project E08909) is one of a series of projects undertaken to accommodate flows that will be conveyed to the facility once the city's CSO program is complete. The secondary treatment facilities must reliably treat 100 mgd under all flow conditions. This project will update the facilities, last improved in 1992, providing up-to-date process control technology and process improvements to achieve this goal.

II. General Project Description

The CBWTP Secondary Improvements Project will improve the reliability and maximize the capacity of the secondary treatment system including aeration basins, RAS/WAS system and secondary clarifiers. The project will result in a more homogenous loading the aeration basins, automation to provide process reaction to variable influent flows and loads and wet weather operational modes. When completed, the secondary treatment process will provide treatment to 100 mgd and an SVI of less than 200 ml/g.

The City of Portland Bureau of Environmental Services (BES) defines and programs capital projects in the following sequential phases:

1. Predesign
2. Design
3. Bid and Award
4. Construction
5. Startup and Closeout

This Scope of Work (SOW) is for professional services for the listed phases. The major work elements are:

- Task 1. Project Management
- Task 2. Preliminary Design Services
- Task 3. Instrumentation and Control Design
- Task 4. Value Engineering Review
- Task 5. Final Design Services
- Task 6. Quality Control Review
- Task 7. Bid Phase services
- Task 8. Services During Construction
- Task 9. Process Control Training
- Task 10. Programming
- Task 11. Full Scale Step Feed Pilot Test Support
- Task 12. Follow Up Support
- Task 13. Geotechnical Services

III. Schedule of Work

Work shall start within 10 working days after Notice to Proceed. Contractor shall complete final design services and submit final Contract Documents, final construction cost estimate and

a final construction schedule to the City on or before July 31, 2011. The project schedule is attached.

IV. Contractor's Personnel

The following key personnel will be assigned to do the work for this project:

Dave Green, Principal-in-charge
Lynne Chicoine, Project Manager
Jim Griffiths, Design Manager
Craig Rawie, Lead I&C Engineer

V. Subconsultants

The following subcontractors will be assigned to perform work in the capacities designated:

NAME	ROLE ON PROJECT
MEC	Electrical Engineering
Super Elevation	Drafting
Envirosim	Biowin Training
Robinson Stafford and Rude	Value Engineering

VI. Project Goals and Objectives

The goals of this project are to:

- Provide a design that provides secondary treatment to a minimum of 100 mgd with an SVI of 200ml/g or less.
- Provide a design that maximizes secondary treatment capacity.
- Meet the schedule requirements for the completion of the project as defined in the RFP.
- Complete the project within the budget established in the contract for the project.

The objectives of this project are to:

- Work together as an effective and efficient design team
- Provide a design that is efficient and cost-effective to construct and operate
- Utilize the existing facilities to the extent practical
- Communicate with and address engineering, CBWTP operation, maintenance and instrumentation staff comments provided during specific design review periods
- Provide a design that is flexible to accommodate changes in operating requirements and future process expansion
- Provide a facility that is easy to maintain
- Provide design documents that are clear and result in responsive bids
- Maintain operation of the CBWTP during construction
- Receive the positive endorsement of internal and external stakeholders
- Comply with regulatory requirements and procedures

VII. Owner-Provided Services

BES will provide the following:

- Participation of key engineering, operation and maintenance personnel at review workshops
- Meeting space for workshops and training
- Plant Operating Data
- Reports associated with CBWTP secondary treatment
- Compiled written review comments
- Divisions 0 and 1 specifications
- Survey data where requested
- Coordinate utility locates (if required)
- Geotechnical data where requested
- Two VE team members
- All permitting efforts. CH2M HILL will provide copies of project documents to support BES.
- As built drawings of the following facilities:
 - Primary effluent channel
 - Aeration basins including tunnels
 - Blowers and aeration piping
 - Secondary clarifiers
 - RAS pumps and piping
 - WAS pumps and piping
- Primary responsibility for witnessing Phase 1 of the field hardware operational ready testing (ORT1)
- Biowin licenses for BES use.
- Software licenses for CH2M HILL use during software development. One each for UnityPro and iFIX.
- BES will provide training for CH2M HILL and subconsultant personnel on the use of Constructware.

The fee associated with this scope of work is based on the following assumptions:

- Design includes facilities generally as set forth in the CBWTP Secondary System Capacity Report (2009) and CBWTP Selector Enhancement Pilot Project Results and Recommendation (2009)
- After a common preliminary design effort, two bid packages will be prepared. One bid package will include channel mixing with manual control or an equivalent package as agreed to by CH2M HILL and BES.
- The preliminary design will be frozen after implementing the accepted recommendations from the Value Engineering study. Changes to the design subsequent of initiating Task 5 Final Design Service could result in additional engineering fee due to re-engineering that is required to implement changes during final design.
- Construction of a new RAS distribution structure, new RAS/WAS pumps and modified RAS/WAS piping.

- Full length aeration basin tunnel plans and sections will not be required.
- No seismic upgrade to the aeration basin/secondary clarifier structure
- 100% and conformed Drawings will be provided in BES standard CAD format.
- Specifications will be prepared in Construction Specifications Institute (CSI) 16 Division format
- BES will reproduce and distribute final construction contract and conformed documents
- BES will lead the bid phase, receive bidder questions, prepare and distribute addenda
- Record drawings are not provided
- CH2M HILL will lead software testing and training related activities with assistance from BES
- Blower operational modifications, but no new blower will be added.

Additional assumptions specific to tasks are listed with the tasks.

VIII. Scope of Work

The Secondary Process Improvements project will be performed using a phased design delivery approach to assure a coordinated, thorough, and efficient completion of the work in compliance with BES standards. Throughout the project we will use a collaborative approach to integrate process, operations and I&C staff into the decision-making process. At critical design milestones, design review workshops will be conducted with BES personnel and key individuals from the CH2M HILL project team.

Task 1—Project Management

The objective of this task is to lead, structure, and monitor the project to meet project goals within the schedule and budget.

Task 1.1—Project Administration

Prepare and distribute a project management plan to include schedule, budget, roles, contacts, and procedures. Prepare and execute subconsultant agreements. Prepare monthly invoices and subconsultant payment and utilization report.

Task 1.2—Progress Reporting

Prepare monthly progress reports to advise BES project manager of project status. The report will accompany invoices and will include monthly progress by task, task budget status, and estimated percentage complete. A decision log, list of outstanding issues, and updated schedule will also be included.

Task 1.3—Coordination Meetings

During design, conduct weekly internal team meetings to review progress, coordinate disciplines, and identify information needs. The project manager will send weekly (Friday) e-mails to the BES project manager that will summarize the week's progress, outline upcoming tasks, and identify outstanding issues.

Task 1 Deliverables: Project management plan, subconsultant agreements, monthly invoices and progress reports, decision logs and project schedule, weekly e-mails

Task 2—Preliminary Design Services

BES Involvement: Participate in workshops and provide review comments. Provide plant data and related reports.

Task 2.1— Develop Project Definition Report

Task 2.1.1 - Establish Design Criteria and Standards

CH2M HILL will compile existing relevant plant data and reports and develop design criteria and design standards, including mechanical, structural, electrical, and I&C standards will be established and reviewed with BES engineering and CBWTP operating staff.

Task 2.1.2—Evaluate Secondary Process

Task 2.1.2.1—Perform CFD modeling of the existing secondary clarifiers

CH2M HILL will provide the following:

- Stress test the secondary clarifiers and characterize the sludge settling properties to provide verification of the secondary clarifier CFD model.
- Collect sludge settling properties for dry and wet weather conditions.
- Model the CBWTP clarifiers in 2D using the CCNY secondary clarification model on the FLUENT platform to identify opportunities for optimization. Conduct CFD modeling for three levels of settling characteristics, including high and mid-level SVI, and settling characteristics of biomass after the influence of wet weather flows.
- Define the allowable mixed liquor concentration to the clarifiers as a function of settling characteristics.

CH2M HILL will prepare a technical memorandum presenting CFD modeling findings and recommendations for improvements, if any.

Task 2.1.2.2—Perform Biowin Modeling of Secondary Process

CH2M HILL will use Biowin to optimize high flow treatment capacity utilizing the range of solids loading rates as a function of settling characteristics developed by the CFD modeling effort.

Using the Biowin model, CH2M HILL will develop and evaluate step-feed alternatives to maintain the solids loading rate defined by CFD modeling using a simplified modification of the WERF wastewater characterization protocol applicable to wet weather flow modeling. Modeling will be conducted for up to 4 settling characteristic parameter sets to define the maximum high flow capacity of the process. Design process aeration requirements will be defined for each pass of the step feed or contact stabilization configuration. Flow split ratios for each operating mode will be provided. CH2M HILL will prepare a draft technical memorandum presenting Biowin modeling findings.

Task 2.1.3 – Primary Effluent Channel Modeling

Prepare model of primary effluent channel to evaluate alternatives for static mixing of RAS and primary effluent in the channel and for flow splitting into the aeration basins. The model will begin at Box GO 1 and include the length of the primary effluent channel to Aeration Basin 1. Minor deviations in channel geometry will not be included in the model. The result of the modeling will be a recommendation for primary effluent channel mixing. The step feed mode of operation will not be modeled. The LOE for this task includes the following:

- One RAS feed configuration

- Modeling of up to three mixing geometries (including existing channel geometry and two alternative geometries)
- Modeling of flow split into the aeration basins under two flow conditions.

The evaluation and recommendation will be presented in a TM. The TM will include graphical modeling results and include headloss for each alternative for the flow conditions modeled. Recommendations will include size, geometry and location of channel modifications for mixing and aeration basin influent gate positions for two flow conditions.

Task 2.1.3 Deliverables: Draft Technical Memorandum.

Task 2.1.4—Define Process Improvements

Develop and evaluate alternative process improvements and modifications to achieve the performance defined in Task 2.1.2. Improvements and modifications previously developed by BES will be included in the analysis. A recommendation will be developed in collaboration with BES engineering and operations staff through two workshops. The purpose of the first workshop will be to develop identified alternatives and the purpose of the second workshop will be to review evaluation of alternatives and develop a recommendation.

The evaluation will include:

- RAS/WAS system
- Aeration system (valves, flow meters, DO probes, blowers and blower controls)
- Aeration basin gates
- Primary effluent channel mixing/aeration basin flow split
- Process control instrumentation

CH2M HILL will include information regarding savings available through energy rebates in the blower control evaluation.

Task 2.1.5 – Develop Project Definition Report

Develop a Project Definition Report summarizing design criteria and standards and defining process improvements. The Control Communication Evaluation and Instrumentation and Control Requirements Technical Memorandums developed in Tasks 3.1 and 3.2, respectively will be included in the draft and final report. The final Project Definition Report will serve as a basis for the subsequent preliminary and final design.

Task 2.1.5 Deliverables: Draft Design Criteria and Standards, CFD and Biowin modeling and Process Improvements Technical Memorandums, twenty (20) hard copies of the draft and final Project Definition Report, Biowin model files.

Task 2.2—Develop Technical Preliminary Design

Design disciplines will perform evaluations and develop the 30 percent complete construction documents. Instrumentation and Control preliminary design LOE is included in Task 3.3. Significant activities and the outline of the Preliminary Technical Memorandums are:

- Civil and Site Development – Assume pavement cutting and replacement for piping.
Erosion control
- Structural – Assume new RAS distribution box.
- Process/Mechanical – RAS/WAS pumping, piping and valves, air valves, flow control gates
- Electrical – Electrical loads for new equipment; one-line diagrams; electrical feeds

- Instrumentation and Control - Preliminary P&IDs, draft process narratives and an equipment list
- Support System, Utilities, and Process Interconnections - Evaluate existing support systems including nonpotable water and instrument air, utilities, and process interconnections to define required modifications or improvements.
- Project Implementation - Identify long-lead equipment items and make preliminary recommendations on construction phasing.

Task 2.2 Deliverable: Draft technical preliminary design memoranda.

Task 2.3—Cost Estimate and Schedule

Develop a preliminary construction cost estimate and construction schedule to serve as the basis for the value engineering review. The cost estimate will include vendor quotes and contingencies consistent with a 30-percent design level cost estimate. The schedule will address constructability and construction sequencing constraints.

Task 2.3 Deliverables: Preliminary cost estimate and schedule

Task 2.4—Draft and Final Preliminary Design Report

Develop a draft preliminary design report to summarize the findings of the preliminary design phase and serve as a basis for detailed design. A draft report will be prepared for BES review. Review comments will be incorporated into the final report. The report will include:

- Executive summary
- Final versions of draft technical memoranda
- 30 percent design drawings
- Major equipment cut sheets
- P&IDs
- Draft process narratives
- Equipment list
- List of major specification sections
- Preliminary cost estimate
- Implementation Plan
- Schedule

Task 2.4 Deliverables: Twenty (20) hard copies of the draft and final Preliminary Design Report

Task 2.5—Preliminary Design Meetings and Workshops

The following meetings and workshops will be conducted during the preliminary design phase. Four hour meetings are anticipated:

- Project Kick Off Meeting
- Design Criteria and Standards Workshop
- Process Evaluation Workshops
 - Present results of the CFD modeling
 - Present results of Biowin modeling
 - Process Improvement alternatives development
- Process Improvement Alternatives Evaluation Workshop
- Project Definition Report Review Workshop
- Preliminary Design Report Review Workshop

Task 2.5 Deliverables: Agenda, meeting materials, and meeting notes

Task 3—Instrumentation and Control Design

BES Involvement: Participate in workshops and provide review comments. Provide software programming.

Task 3.1—Control Communications Evaluation

Evaluate bus control system architecture at the CBWTP, including an overview of bus technologies; advantages/disadvantages for this installation; cost comparisons; compatibility with upcoming communications technologies; ethernet at the plant floor; reliability and redundancy; testing; applicability of bus technologies to specific field devices to be used on this project.. Conduct two workshops with BES staff for technology transfer and evaluation of alternatives.

Task 3.1 Deliverables: Draft control communications evaluation technical memorandum to be included in the draft Project Definition Report, workshop agenda and summaries.

Task 3.2 Determine Instrumentation Requirements

If the outcome of Task 3.1 is to proceed with conventional control architecture, Task 3.2.1 will be performed. If the outcome of Task 3.1 is to proceed with bus architecture, Task 3.2.2 will be performed.

Task 3.2.1—Determine Instrumentation Requirements (Conventional Control Architecture)

Assuming conventional control architecture, develop a plan for integration of the improvements into the existing electrical and control systems. Determine the capacity of the existing systems and identify required upgrades. Work with BES I&C staff to develop a plan that meets BES criteria and standards.

Task 3.2.2—Determine Instrumentation Requirements (Bus Control Architecture)

Assuming bus control architecture, develop a plan for integration of the improvements into the existing electrical and control systems. Determine the capacity of the existing systems and identify required upgrades. Work with BES I&C staff to develop a plan that meets BES criteria and standards.

Task 3.2 Deliverables: Draft Instrumentation Requirements Technical Memorandum.

Task 3.3—Develop Preliminary P&IDs and Draft Process Narratives

Develop preliminary P&IDs, draft control narratives and an equipment list to be included in the Preliminary Design Report. CH2M HILL will conduct a one day (8 hour) review workshop with BES I&C staff to review I&C materials developed in this task.

Task 3.3 Deliverables: Draft P&ID, process narratives and equipment list. Workshop materials, agenda and meeting notes.

Task 3.4 – Prepare Final Instrumentation and Control Design

If the outcome of Task 3.1 is to proceed with conventional control architecture, Task 3.4.1 will be performed. If the outcome of Task 3.1 is to proceed with bus architecture, Task 3.4.2 will be performed. CH2M HILL will conduct half-day (4 hour) review workshops with I&C staff at the 60% and 90% design stages.

Task 3.4.1—Prepare Final Instrumentation and Control Design (Conventional Control Architecture)

Assuming conventional control architecture, prepare 60%, 90%, and 100% instrumentation and control design deliverables. This task includes the LOE for final P&IDs, loop narratives, and typical and final loop drawings.

Task 3.4.1 Deliverables: P&IDs, loop and process narratives and typical and final loop drawings integrated with Task 5 deliverables.

Task 3.4.2 – Prepare Final Instrumentation and Control Design (Bus Control Architecture)

Assuming bus control architecture, prepare 60%, 90%, and 100% instrumentation and control design deliverables. This task includes the LOE for final P&IDs, loop narratives, and typical and final loop drawings.

Task 3.4.2 Deliverables: P&IDs, loop and process narratives and typical and final loop drawings integrated with Task 5 deliverables. Review workshop materials, agenda and meeting notes.

Task 3.5—Develop Wiring Diagrams

Prepare 60%, 90% and 100% instrumentation and control design deliverables. This task includes the LOE for typical and final wiring diagrams using an intelligent CAE wiring and panel layout tool and a database driven process to create the required wiring diagrams. up to 375 drawings are assumed in the LOE.

Task 3.5 Deliverables: Wiring diagrams.

Task 4—Value Engineering (VE) Review

BES Involvement: Assist with project overview presentation and review draft VE report.

A value engineering review will be conducted at the 30-percent design level to identify cost-savings measures that do not compromise project functionality or safety. CH2M HILL will provide a leader and two team members resumes (instrumentation/control engineer and process engineer) for BES review and allow two seats for BES-selected members. The LOE for this task includes engineering time to respond to VE review comments.

Task 4.1—Workshop Preparation

Establish goals and limits, collect data and develop basis of cost estimates. The value engineering team leader will schedule a project initiation phone meeting with the BES project manager, the CH2M HILL project manager, and others as necessary to reconfirm the goals and study limits for this assignment.

Task 4.2—Value Engineering Workshop

Conduct a 3-day in-house value engineering workshop that includes a brief project presentation by BES and CH2M HILL project managers and field visit; identification of alternatives; screening and refining alternatives; detailed development of a short list of alternatives; and presentation of findings.

Task 4.3—Design Response

Within 1 week of the conclusion of the workshop, the VE team will prepare a written technical memorandum of its findings and recommendations. The CH2M HILL design team will review the VE TM and, with the BES project manager, prepare a design response. The design response technical memorandum will indicate which ideas are accepted, accepted with modification, or rejected. In cases where VE proposals are rejected, CH2M HILL will provide the reason for rejection.

Task 4 Deliverables: Value engineering and Design Response technical memorandums.

Task 5—Final Design Services

CH2M HILL will develop a discipline-coordinated set of contract documents ready for bid. This task continues the activities completed during the preliminary design.

Task 5.1—60-Percent Design

BES Involvement: Ongoing communication; review of 60-percent submittal; attend 60-percent review workshop

The design team will further develop construction drawings and specifications for BES project team review. Final recommendations on equipment procurement and construction packaging will be made. The 60-percent design package will include: process control strategies; final P&IDs; loop narratives; typical loop drawings; 60-percent drawings and technical specifications; updated cost estimate. CH2M HILL will conduct a one-day (8-hour) review workshop with BES staff. Materials will be submitted no later than two weeks prior to the review workshop.

Task 5.1 Deliverables: Twenty (20) hard copies of the 60-percent design package; cost estimate; review meeting agenda, and meeting notes

Task 5.2—90-Percent Design

The design team will develop construction drawings and specifications to a 90-percent level and clearly define construction requirements. Comments from the 60-percent review meeting will be addressed. The 90-percent documents will include: final loop narratives, final loop drawings; 90-percent drawings and technical specifications; construction schedule; and updated cost estimate. CH2M HILL will conduct a one day (8-hour) review workshop with BES staff. Materials will be submitted no later than two weeks prior to the review workshop.

Task 5.2 Deliverables: Twenty (20) hard copies of the 90-percent design package; construction schedule; cost estimate; review meeting agenda; and meeting notes

Task 5.3—Contract Documents

The design team will address 90-percent review comments and submit final contract documents, including construction drawings and detailed specifications certified by professional engineers, ready for acquiring building permits, and construction bidding. A final cost estimate, updated construction schedule, structural calculations, and final design report will be prepared.

Task 5.3 Deliverables: Final construction drawings (full-size stamped originals, half-size stamped originals, and electronic files in AutoCAD format); final specifications in MS WORD and reproducible hard copy format; updated construction schedule; final cost estimate; and stamped structural calculations.

Task 6—Quality Control Reviews

Provide documented quality control reviews of 30-percent, 60-percent, 90-percent and 100-percent submittals in accordance with CH2M HILL and Portland quality management policies. Formal reviews will be conducted by senior technical advisors who are not directly involved with the design. Ongoing reviews will be conducted by senior team members. Calculations will be back-checked and reviews will be documented.

Task 6 Deliverables: Documentation of QC reviews.

Task 7—Bid Phase Services

BES Involvement: Lead the bid phase process, develop and distribute addenda (if needed)

CH2M HILL will provide technical assistance as needed to interpret the contract documents during the bid phase. CH2M HILL team members will attend the prebid conference and will assist in preparing technical addenda to the contract documents (if needed). The team will also respond to questions raised by the Oregon Department of Environmental Quality (DEQ) and assist with responses to check sheets from the Bureau of Development Services (BDS).

CH2M HILL will provide conformed documents in electronic format.

Task 7 Deliverables: Technical addenda to the contract documents (if needed). Electronic copies of conformed documents in MS WORD and AutoCad formats.

Task 8—Services During Construction

BES Involvement: Provide construction oversight; screening, and distribution of requests for information (RFIs), submittals and change orders. BES will provide training for CH2M HILL and subconsultant personnel on the use of Constructware.

Task 8.1 Site Visits

CH2M HILL staff will provide periodic site visits and inspections as requested by BES and participate in final inspection and developing punch lists. The site visits will include code-required structural observation visits. The LOE for this task includes up to sixteen 6-hour site visits.

Task 8.2 Construction Meetings

CH2M HILL staff will attend the preconstruction meeting led by BES staff and one consultant staff member will up to twelve (12) 2-hour construction meetings.

Task 8.3 Submittal Review/RFIs/Construction Changes

CH2M HILL will provide design support services in the review of construction submittals as requested by BES. Submittals include shop drawings, samples, requests for information (RFIs), proposed substitutions and construction changes. The scope for this task includes a maximum of two submissions by the Contractor for each shop drawing, sample or submission.

The LOE for this task includes:

- 160 submittals reviewed at an average of three hours each for a total of 480 hours
- 100 RFIs at an average of two hours each for a total of 200 hours
- 180 hour allowance, including CAD for construction

Task 8.4 Operation and Maintenance (O&M) Manual

CH2M HILL will assist BES with the update to the O&M manual to include modifications made in the project. The LOE includes 140 hours for this task.

Task 8 Deliverables: Site visit diary; structural inspection report; final inspection punch list; marked up copies of contractor submittals, written responses to all requests for information, revised drawings and specifications to support contract change orders; O&M manual sections

Task 9 - Process Control Training

BES Involvement: Lead process control training

CH2M HILL and subconsultant EnviroSim will provide assistance with process control and Biowin training including one training session and electronic copies of training materials.

Task 9 Deliverables: Electronic copies of training materials

Task 10 - Programming

Task 10 Assumptions and BES Involvement:

- BES will provide reproduction of training materials
- BES will provide edits to software standards capturing workshop decisions
- Traditional analog/discrete wiring methods where limited device data is available
- Upgrading existing databases to the latest COD application is not included
- Program Flow Diagrams will be developed for more complex portions of code or where new DFB is used
- PLC and HMI software development will be at location chosen by CH2M HILL
- BES will provide PLC hardware to CH2M HILL during the software development phase
- BES will provide temporary software licenses necessary for PLC and HMI programming
- BES will provide minor graphical revisions to screens once they are functionally correct and operating in BES environment
- BES will make available AST staff during the ORT and PAT phases to assist in installing integrated applications into operating environment
- BES will provide access to workstation capable of running both PLC and HMI software during ORT and PAT phases.

The objective of this task is to ensure BES staff is comfortable with the planned software functionality that will be used to control and monitor all of the process equipment in the CBWTP Secondary Improvements Project. CH2M HILL will then proceed to develop that functionality, working closely with the AST group, test it, and provide startup support.

10.1 Software Pre-Design and Workshops

CH2M HILL will develop preliminary HMI screens sketches based on the project's latest design functionality requirements and will prepare a Power Point presentation. A collective workshop with Engineering, operations, and maintenance staff will be held at the project site to review this functionality and proposed screens. CH2M HILL will also meet with AST staff to review latest software standards and available code from other projects that may be useful. A technical memo will be provided to summarize the decisions agreed upon. The LOE for this task includes up to four trips to CBWTP.

Task 10.1 Deliverables: Technical memorandum summarizing decisions on HMI screens and functionality requirements.

10.2 COD Database Development

If the outcome of Task 3.1 is to proceed with conventional control architecture, Task 10.2.1 will be performed. If the outcome of Task 3.1 is to proceed with bus architecture, Task 10.2.2 will be performed. The LOE for this task assumes 250 loops/loop indexes and up to 700 I/O points.

10.2.1 COD Database Development

The COD tool will be used to develop and manage the points that will be created on this project. BES staff will be given the opportunity to review the tagging standards utilized. BES staff will be consulted to determine appropriate alarm behavior and will be configured into the database.

Alarm responses and suggested actions will be developed and incorporated into the database, also for later use by O&M staff in the iFIX environment. At the end of the project the resulting MS Access database will be handed over to AST staff for continued use in the ongoing operations and maintenance of the facility. Master plant-wide COD database management utilize will be modified to include the additional database to support the HMI right-click info-access functionality. The LOE for this task includes up to 4000 software points.

10.2.2 COD Database Development

Same as task 10.2.1, except given the additional bus data available from the devices, there will be additional COD points to configure when that data is desired in the SCADA system. The LOE for this task includes up to 5000 software points.

Task 10.2 Deliverables: COD MS Access database with extended alarm information and suggested actions.

10.3 PLC Software Development

If the outcome of Task 3.1 is to proceed with conventional control architecture, Task 10.3.1 will be performed. If the outcome of Task 3.1 is to proceed with bus architecture, Task 10.3.2 will be performed.

10.3.1 PLC Software Development

CH2M HILL with AST staff will perform a review of available user definable function blocks and general code from other projects. New function blocks will be developed as needed. Program flow diagrams (PFDs) will be developed where needed to clarify more complex portions of code. The PLC applications software will then be developed specific to this project. The LOE for this task includes up to three (3) trips to CBWTP.

10.3.2 PLC Software Development

Same as Task 10.3.1, except additional time will be needed to discuss and define the details of how the programmable logic system will interface with and leverage the bus devices. The LOE includes up to 10 additional new user definable function blocks; memory usage will need to be considered and how it maps to bus data; and many more device parameters that will have to be accommodated. The LOE for this task includes up to four (4) trips to CBWTP.

Task 10.3 Deliverables: Program flow diagrams.

10.4 HMI Software Development

If the outcome of Task 3.1 is to proceed with conventional control architecture, Task 10.4.1 will be performed. If the outcome of Task 3.1 is to proceed with bus architecture, Task 10.4.2 will be performed.

10.4.1 HMI Software Development

Develop and the iFIX objects and displays. Leveraging screen sketches agreed upon by BES staff, CH2M HILL will configure up to fifteen (15) new screens and up to seven (7) additional screens that will be duplicates of typicals. The LOE for this task includes up to three (3) trips to CBWTP.

10.4.2 HMI Software Development

Same as Task 10.4, except additional time will be taken to explore with BES staff how to leverage the additional bus data available, and configure up to two additional communication screens.

Task 10.4 Deliverables: HMI Screens**10.5 Hardware Field Testing / ORT1 Support**

If the outcome of Task 3.1 is to proceed with conventional control architecture, Task 10.5.1 will be performed. If the outcome of Task 3.1 is to proceed with bus architecture, Task 10.5.2 will be performed.

10.5.1 Hardware Field Testing / ORT1 Support

Develop testing forms to supplement the field hardware Operational Readiness Test (ORT1). Each loop, control circuit, and input/output point will be tested by the Contractor for proper operation. The LOE for this task includes up to two (2) trips to CBWTP to support ORT1 testing.

10.5.2 Hardware Field Testing / ORT1 Support

Same as task 10.5.1, except additional time is included to assist contractor and BES staff to troubleshoot and test the bus devices. A well-qualified contractor who has performed multiple large scale Profibus startups is assumed. The LOE for this task includes up to five (5) trips to CBWTP to support ORT1 testing. Additional effort from BES AST staff is also assumed.

Task 10.5 Deliverables: I/O and loop based testing forms to supplement typical startup forms.

10.6 Integrated Software Testing

If the outcome of Task 3.1 is to proceed with conventional control architecture, Task 10.6.1 will be performed. If the outcome of Task 3.1 is to proceed with bus architecture, Task 10.6.2 will be performed.

10.6.1 Integrated Software Testing

Perform a combined PLC/HMI test off-site and/or at the staging site using simulated inputs and outputs. A loop-by-loop testing form will be developed and utilized to exercise the software and aid in troubleshooting.

During phase 2 of the Operational Readiness Test (ORT2), software will be re-tested by programmers and AST staff with actual field devices.

During Performance Acceptance Testing (PAT), the software will be re-tested again for other BES staff to confirm the software is performing as expected.

The LOE for this task includes up to fifteen (15) trips to CBWTP.

10.6.2 Integrated Software Testing

Same as task 10.6.1, except additional LOE is included to test proper communication and usage of the large amount of additional data available on the bus network. The LOE for this task includes up to twenty (20) trips to CBWTP.

Task 10.6 Deliverables: PLC and HMI import files as needed during startup.

10.7 System Tuning

Tune the system during and after startup of the system to help the plant staff resolve software problems. Maintain a log of problems encountered and actions taken to resolve them. The LOE associated with this task includes services provided prior to final completion and up to three (3) trips to CBWTP.

10.8 Training

If the outcome of Task 3.1 is to proceed with conventional control architecture, Task 10.8.1 will be performed. If the outcome of Task 3.1 is to proceed with bus architecture, Task 10.8.2 will be performed.

10.8.1 Training

Develop training material and train CBWTP staff in the operation of the process through the HMI screens. Additional training will be provided to a subset of the staff on the PLC software. The LOE assumes for this task includes up to five (5) two-hour training sessions. The training sessions will be held at CBWTP and led by Craig Rawie. Training will occur on a live system supplemented with simulations to reflect operating conditions over the range of expected operating conditions.

10.8.2 Training

Same as Task 10.8.1, except additional LOE is included to train AST and Instrumentation staff regarding the bus technology. Additional software training to cover the configuration and usage of bus master polling hardware is included. Additional hardware training is included to cover bus communication test equipment.

Task 10.8 Deliverables: Training materials in electronic format.

10.9 Loop Sheet Updating

Update the process and loop narratives and loop drawings with software configuration information (i.e. alarms, etc.).

Task 10.9 Deliverables: Updated process narratives and loop narratives, loop drawings.

Task 11 - Full Scale Step Feed Pilot Test Support

BES Involvement: Lead pilot test plan development, operate facilities as required by the test for the duration of the test period; collect and record data.

Assist BES engineering and operations staff with development of a test plan for a full scale pilot study. CH2M HILL will assist BES staff in developing test goals, preparing a test plan, analyzing data during and following the test period, and preparing a test report. The LOE includes an allowance of 80 hours of process and operational support for this task.

Task 12 – Follow Up Support

CH2M HILL will provide support to BES staff for a period of 12 months from the date of final completion for construction of improvements. The support will be provided at the request of the BES project manager.

Task 12.1 - Instrumentation and Control Support

Provide assistance as requested with instrumentation and control devices and software programming following Final Acceptance. An allowance of \$20,000 has been included in the level of effort for this task.

Task 12.2 - Process Support

Provide assistance as requested with process operations. Assistance will include consultation regarding evaluation of process operation data and modeling support. An allowance of \$20,000 has been included in the level of effort for this task.

Task 13 - Geotechnical Services

Assumption: A RAS distribution structure will be attached to the aeration basin structure.

Prepare a geotechnical technical memorandum supporting the design of the RAS distribution structure based on existing geotechnical data.

Task 13 Deliverables: Geotechnical technical memorandum, earthwork specifications.

IX. Payment Schedule

The City shall pay Contractor for work performed under this Agreement after the effective date as set out below. The payment shall be full compensation for work performed, for services rendered, and for all labor, materials, supplies, equipment and incidentals necessary to perform the work and services. Compensation for each authorized project task shall be based on time and materials with a cost not to exceed the total authorized amount without the approval of the City. Where Contractor has provided City with a breakdown of the total compensation into subtasks, such breakdowns are estimates only. With the written approval of the BES Project Manager, Contractor may reallocate compensation between tasks and subtasks, provided the total authorized amount is not exceeded.

The compensation shall be as follows:

Task	Description	Cost Not to Exceed (\$)
1.0	Project Management	\$61,483
2.0	Preliminary Design Services	\$483,113
3.0	Instrumentation and Control Design	\$157,755
4.0	VE Review	\$61,864
5.0	Final Design Services	\$508,309
6.0	Quality Control Reviews	\$47,795
7.0	Bid Phase Services	34,887
8.0	Services During Construction	\$164,382
9.0	Process Control Training	\$30,141
10.0	Programming	\$284,526
11.0	Full Scale Step Feed Pilot Test Support	\$12,595
12.0	Follow Up Support	\$40,000
13.0	Geotechnical Services	\$6,952
Total Authorized Amount		\$1,893,801

Contractor's hourly rates for all tasks shall be based on a multiplier of 3.10 times direct labor, and shall be full compensation (exclusive of reimbursable direct expenses) for the work performed, including all overhead costs, routine expenses and profit. Routine expenses include, but are not limited to, miscellaneous copying, computer time, telephones, travel within the Portland metropolitan area (100 mile radius), parking, photographs, and postage. Subconsultant compensation (labor plus reimbursable direct expenses) will be billed at cost plus 5 percent. Compensation for subconsultants shall be limited to the same restrictions imposed on the Contractor.

Non-routine, reimbursable direct expenses include copying of draft and final documents in excess of the number specified, copying of contract (bid) documents, courier services and travel and per diem for travel to the Portland metropolitan area. Reimbursable 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. Non-routine direct expenses shall be billed at cost with no mark-up.

Billing and Payment Procedure

The Contractor's billing and City's payment procedures shall be described below:

Interim Payments

On or before the 20th of each month, the Contractor shall submit to the City's Project Manager an invoice for work performed by the Contractor during the previous month. The invoice shall reference the City's contract number and shall set out all items for payment, including the name of the individual, direct labor rate, billable labor rate, hours worked during the period, tasks performed within the period, and total amount claimed. The Contractor shall also attach photocopies of claimed reimbursable expenses, if applicable. Within 30 days after receipt of the bill, provided the Project Manager has certified the payment as due, the City shall pay the amount certified to the Contractor. 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 City to Contractor.

Payment to the Contractor is due upon receipt of invoice by the Owner. If payment is not made within 30 days, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5% per month or the maximum interest rate permitted by law, whichever is lesser. Such interest will become due and payable at the time said overdue payment is made.

In the event that the City questions some elements of an invoice, that fact should be made known to the Contractor within 48 hours of receipt of invoice. Contractor will help effect resolution and transmit a revised invoice as necessary. Amount not questioned by the City shall be paid promptly to Contractor in accordance with the above payment procedures.

Invoice Forms

The following forms shall be submitted with Contractor's invoice:

1. PTE Monthly Subcontracting Utilization Report
2. Invoice Supplement for Task Based Level of Effort Contracts

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