

RESOLUTION NO. 2823

A RESOLUTION OF THE CITY OF WILSONVILLE AUTHORIZING THE CITY MANAGER TO EXECUTE A PROFESSIONAL SERVICES AGREEMENT WITH STANTEC CONSULTING SERVICES TO PROVIDE ENGINEERING CONSULTING SERVICES FOR THE WATER TREATMENT PLANT EXPANSION PROJECT (CAPITAL IMPROVEMENT PROJECT #1144).

WHEREAS, the City has planned and budgeted for engineering consulting services for Capital Improvement Project #1144, known as the Water Treatment Plant Expansion project (the Project); and

WHEREAS, the City solicited proposals from qualified consulting firms for the Project that duly followed State of Oregon Public Contracting Rules and the City of Wilsonville Municipal Code; and

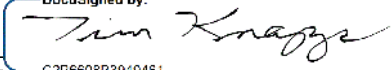
WHEREAS, Stantec Consulting Services submitted a proposal on April 30, 2020 and was subsequently evaluated and determined to be the most qualified consultant to perform the work; and

WHEREAS, following the qualifications based selection process and under the direction of the City, a detailed scope of work was prepared, and the fee for the scope was negotiated and found to be acceptable and appropriate for the services to be provided.

NOW, THEREFORE, THE CITY OF WILSONVILLE RESOLVES AS FOLLOWS:

1. The procurement process for the Project duly followed Oregon Public Contracting Rules, and Stantec Consulting Services has provided a responsive and responsible proposal for engineering consulting services.
2. The City Council, acting as the Local Contract Review Board, authorizes the City Manager to enter into and execute, on behalf of the City of Wilsonville, a Professional Services Agreement with Stantec Consulting Services for a not-to-exceed amount of \$3,888,741, which is substantially similar to **Exhibit A** attached hereto.
3. This resolution becomes effective upon adoption.

ADOPTED by the Wilsonville City Council at a regular meeting thereof this 6th day of July, 2020, and filed with the Wilsonville City Recorder this date.

DocuSigned by:

C2D6698B3949461
Tim Knapp, Mayor

ATTEST:

DocuSigned by:

E781DE102763498...
Kimberly Veliz, City Recorder

SUMMARY OF VOTES:

Mayor Knapp	Yes
Council President Akervall	Yes
Councilor Lehan	Yes
Councilor West	Excused
Councilor Linville	Yes

EXHIBIT:

A. Water Treatment Plant Expansion Professional Services Agreement

**CITY OF WILSONVILLE
PROFESSIONAL SERVICES AGREEMENT (CIP #1144)**

This Professional Services Agreement (“Agreement”) for the Design of the Willamette River Water Treatment Plant Expansion Project (“Project”) is made and entered into on this ____ day of _____ 2020 (“Effective Date”) by and between the **City of Wilsonville**, a municipal corporation of the State of Oregon (hereinafter referred to as the “City”), and **Stantec Consulting Services Inc.**, a New York corporation (hereinafter referred to as “Consultant”).

RECITALS

WHEREAS, the City requires services which Consultant is capable of providing, under terms and conditions hereinafter described; and

WHEREAS, Consultant represents that Consultant is qualified to perform the services described herein on the basis of specialized experience and technical expertise; and

WHEREAS, Consultant is prepared to provide such services as the City does hereinafter require.

NOW, THEREFORE, in consideration of these mutual promises and the terms and conditions set forth herein, the parties agree as follows:

AGREEMENT

Section 1. Scope of Work

Consultant shall diligently perform the engineering services according to the requirements identified in the Scope of Work for the Project, attached hereto as **Exhibit A** and incorporated by reference herein (the “Services”).

Section 2. Term

The term of this Agreement shall be from the Effective Date until all Services required to be performed hereunder are completed and accepted, or no later than December 31, 2022, whichever occurs first, unless earlier terminated in accordance herewith or an extension of time is agreed to, in writing, by the City.

Section 3. Consultant’s Services

3.1. All written documents, drawings, and plans submitted by Consultant in conjunction with the Services shall bear the signature, stamp, or initials of Consultant’s authorized Project Manager. Any documents submitted by Consultant that do not bear the signature, stamp, or initials of Consultant’s authorized Project Manager, will not be relied upon by the City. Interpretation of plans and answers to questions regarding the Services or Scope of Work given by Consultant’s Project Manager may be verbal or in writing, and may be relied upon by the City, whether given

verbally or in writing. If requested by the City to be in writing, Consultant's Project Manager will provide such written documentation.

3.2. Consultant will not be deemed to be in default by reason of delays in performance due to circumstances beyond Consultant's reasonable control, including but not limited to strikes, lockouts, severe acts of nature, or other unavoidable delays or acts of third parties not under Consultant's direction and control ("Force Majeure"). In the case of the happening of any Force Majeure event, the time for completion of the Services will be extended accordingly and proportionately by the City, in writing. Lack of labor, supplies, materials, or the cost of any of the foregoing shall not be deemed a Force Majeure event.

3.3. The existence of this Agreement between the City and Consultant shall not be construed as the City's promise or assurance that Consultant will be retained for future services beyond the Scope of Work described herein.

3.4. Consultant shall maintain the confidentiality of any confidential information that is exempt from disclosure under state or federal law to which Consultant may have access by reason of this Agreement. Consultant warrants that Consultant's employees assigned to the Services provided in this Agreement shall be clearly instructed to maintain this confidentiality. All agreements with respect to confidentiality shall survive the termination or expiration of this Agreement.

Section 4. Compensation

4.1. Except as otherwise set forth in this **Section 4**, the City agrees to pay Consultant on a time and materials basis, guaranteed not to exceed THREE MILLION EIGHT HUNDRED EIGHTY-EIGHT THOUSAND SEVEN HUNDRED FORTY-ONE DOLLARS (\$3,888,741), for performance of the Services ("Compensation Amount"). Any compensation in excess of the Compensation Amount will require an express written Addendum to be executed between the City and Consultant.

4.2. During the course of Consultant's performance, if the City, through its Project Manager, specifically requests Consultant to provide additional services that are beyond the Scope of Work described on **Exhibit A**, a written Addendum to this Agreement must be executed in compliance with the provisions of **Section 17**.

4.3. Except for amounts withheld by the City pursuant to this Agreement, Consultant will be paid for Services for which an itemized invoice is received by the City within thirty (30) days of receipt, unless the City disputes such invoice. In that instance, the undisputed portion of the invoice will be paid by the City within the above timeframe. The City will set forth its reasons for the disputed claim amount and make good faith efforts to resolve the invoice dispute with Consultant as promptly as is reasonably possible.

4.4. The City will be responsible for the direct payment of required fees payable to governmental agencies, including but not limited to plan checking, land use, zoning, permitting, and all other similar fees resulting from this Project, that are not specifically covered by **Exhibit A**.

4.5. Consultant's Compensation Amount and Rate Schedule are all inclusive and include, but are not limited to, all work-related costs, expenses, salaries or wages, plus fringe benefits and contributions, including payroll taxes, workers compensation insurance, liability insurance, profit, pension benefits and similar contributions and benefits, technology and/or software charges, licensing, trademark, and/or copyright costs, office expenses, travel expenses, mileage, and all other indirect and overhead charges.

Section 5. City's Rights and Responsibilities

5.1. The City will designate a Project Manager to facilitate day-to-day communication between Consultant and the City, including timely receipt and processing of invoices, requests for information, and general coordination of City staff to support the Project.

5.2. Award of this contract is subject to budget appropriation. Funds are approved for Fiscal Year 2019-20. If not completed within this fiscal year, funds may not be appropriated for the next fiscal year. The City also reserves the right to terminate this contract early, as described in **Section 15**.

Section 6. City's Project Manager

The City's Project Manager is Mike Nacrelli. The City shall give Consultant prompt written notice of any re-designation of its Project Manager.

Section 7. Consultant's Project Manager

Consultant's Project Manager is Bryan Black. In the event that Consultant's designated Project Manager is changed, Consultant shall give the City prompt written notification of such re-designation. Recognizing the need for consistency and knowledge in the administration of the Project, Consultant's Project Manager will not be changed without the written consent of the City, which consent shall not be unreasonably withheld. In the event the City receives any communication from Consultant that is not from Consultant's designated Project Manager, the City may request verification by Consultant's Project Manager, which verification must be promptly furnished.

Section 8. Project Information

Except for confidential information designated by the City as information not to be shared, Consultant agrees to share Project information with, and to fully cooperate with, those corporations, firms, contractors, public utilities, governmental entities, and persons involved in or associated with the Project. No information, news, or press releases related to the Project, whether made to representatives of newspapers, magazines, or television and radio stations, shall be made without the written authorization of the City's Project Manager.

Section 9. Duty to Inform

If at any time during the performance of this Agreement or any future phase of this Agreement for which Consultant has been retained, Consultant becomes aware of actual or potential problems, faults, or defects in the Project or Scope of Work, or any portion thereof; or of any nonconformance with federal, state, or local laws, rules, or regulations; or if Consultant has any objection to any decision or order made by the City with respect to such laws, rules, or regulations, Consultant shall give prompt written notice thereof to the City's Project Manager. Any delay or failure on the part of the City to provide a written response to Consultant shall neither constitute agreement with nor acquiescence to Consultant's statement or claim, nor constitute a waiver of any of the City's rights.

Section 10. Subcontractors and Assignments

10.1. Consultant shall not assign any of Consultant's rights acquired hereunder without obtaining prior written approval from the City, which approval may be granted or denied in the City's sole discretion. Some Services may be performed by persons other than Consultant, provided Consultant advises the City of the names of such subcontractors and the work which they intend to perform, and the City specifically agrees in writing to such subcontracting. Consultant acknowledges such work will be provided to the City pursuant to a subcontract(s) between Consultant and subcontractor(s) and no privity of contract exists between the City and the subcontractor(s). Unless otherwise specifically provided by this Agreement, the City incurs no liability to third persons for payment of any compensation provided herein to Consultant. Any attempted assignment of this Agreement without the written consent of the City shall be void. Except as otherwise specifically agreed, all costs for work performed by others on behalf of Consultant shall not be subject to additional reimbursement by the City.

10.2. The City shall have the right to enter into other agreements for the Project, to be coordinated with this Agreement. Consultant shall cooperate with the City and other firms, engineers or subcontractors on the Project so that all portions of the Project may be completed in the least possible time and within normal working hours. Consultant shall furnish other engineers, subcontractors and affected public utilities, whose designs are fitted into Consultant's design, detail drawings giving full information so that conflicts can be avoided.

10.3. Consultant shall include this Agreement by reference in any subcontract and require subcontractors to perform in strict compliance with this Agreement.

Section 11. Consultant Is Independent Contractor

11.1. Consultant is an independent contractor for all purposes and shall be entitled to no compensation other than the Compensation Amount provided for under **Section 4** of this Agreement. Consultant will be solely responsible for determining the manner and means of accomplishing the end result of Consultant's Services. The City does not have the right to control or interfere with the manner or method of accomplishing said Services. The City, however, will have the right to specify and control the results of Consultant's Services so such Services meet the requirements of the Project.

11.2. Consultant may request that some consulting services be performed on the Project by persons or firms other than Consultant, through a subcontract with Consultant. Consultant acknowledges that if such services are provided to the City pursuant to a subcontract(s) between Consultant and those who provide such services, Consultant may not utilize any subcontractor(s), or in any way assign its responsibility under this Agreement, without first obtaining the express written consent of the City, which consent may be given or denied in the City's sole discretion. In all cases, processing and payment of billings from subcontractors is solely the responsibility of Consultant.

11.3. Consultant shall be responsible for, and defend, indemnify, and hold the City harmless against, any liability, cost, or damage arising out of Consultant's use of such subcontractor(s) and subcontractor's negligent acts, errors, or omissions. Unless otherwise agreed to, in writing, by the City, Consultant shall require that all of Consultant's subcontractors also comply with, and be subject to, the provisions of this **Section 11** and meet the same insurance requirements of Consultant under this Agreement.

Section 12. Consultant Responsibilities

12.1. Consultant must make prompt payment for any claims for labor, materials, or services furnished to Consultant by any person in connection with this Agreement as such claims become due. Consultant shall not permit any liens or claims to be filed or prosecuted against the City on account of any labor or material furnished to or on behalf of Consultant. If Consultant fails, neglects, or refuses to make prompt payment of any such claim, the City may, but shall not be obligated to, pay such claim to the person furnishing the labor, materials, or services and offset the amount of the payment against funds due or to become due to Consultant under this Agreement. The City may also recover any such amounts directly from Consultant.

12.2. Consultant must comply with all applicable Oregon and federal wage and hour laws, including BOLI wage requirements, if applicable. Consultant shall make all required workers compensation and medical care payments on time. Consultant shall be fully responsible for payment of all employee withholdings required by law, including but not limited to taxes, including payroll, income, Social Security (FICA), and Medicaid. Consultant shall also be fully responsible for payment of salaries, benefits, taxes, Industrial Accident Fund contributions, and all other charges on account of any employees. Consultant shall pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167. All costs incident to the hiring of assistants or employees shall be Consultant's responsibility. Consultant shall defend, indemnify, and hold the City harmless from claims for payment of all such expenses.

12.3. No person shall be discriminated against by Consultant or any subcontractor in the performance of this Agreement on the basis of sex, gender, race, color, creed, religion, marital status, age, disability, sexual orientation, gender identity, or national origin. Any violation of this provision shall be grounds for cancellation, termination, or suspension of the Agreement, in whole or in part, by the City. References to "subcontractor" mean a subcontractor at any tier.

Section 13. Indemnity

13.1. Indemnification. Consultant acknowledges responsibility for liability arising out of the performance of this Agreement, and shall defend, indemnify, and hold the City harmless from any and all liability, settlements, loss, costs, and expenses in connection with any action, suit, or claim resulting or allegedly resulting from Consultant's negligent acts, omissions, errors, or willful or reckless misconduct pursuant to this Agreement, or from Consultant's failure to perform its responsibilities as set forth in this Agreement. The review, approval, or acceptance by the City, its Project Manager, or any City employee of documents or other work performed, prepared, or submitted by Consultant shall not be considered a negligent act, error, omission, or willful misconduct on the part of the City, and none of the foregoing shall relieve Consultant of its responsibility to perform in full conformity with the City's requirements, as set forth in this Agreement, and to indemnify the City as provided above and to reimburse the City for any and all costs and damages suffered by the City as a result of Consultant's negligent performance of this Agreement, failure of performance hereunder, violation of state or federal laws, or failure to adhere to the standards of performance and care described in **Subsection 13.2**. Consultant shall defend the City (using legal counsel reasonably acceptable to the City) against any claim that alleges negligent acts, omissions, errors, or willful or reckless misconduct by Consultant. As used herein, the term "Consultant" applies to Consultant and its own agents, employees, and suppliers, and to all of Consultant's subcontractors, including their agents, employees, and suppliers.

13.2. Standard of Care. In the performance of the Services, Consultant agrees to use at least that degree of care and skill exercised under similar circumstances by reputable members of Consultant's profession practicing in the Portland metropolitan area. Consultant will re-perform any Services not meeting this standard without additional compensation. Consultant's re-performance of any Services, even if done at the City's request, shall not be considered as a limitation or waiver by the City of any other remedies or claims it may have arising out of Consultant's failure to perform in accordance with the applicable standard of care of this Agreement and within the prescribed timeframe.

Section 14. Insurance

14.1. Insurance Requirements. Consultant shall maintain insurance coverage acceptable to the City in full force and effect throughout the term of this Agreement. Such insurance shall cover all risks arising directly or indirectly out of Consultant's activities or work hereunder. Any and all agents, contractors, or subcontractors with which Consultant contracts to work on the Services must have insurance that conforms to the insurance requirements in this Agreement. Additionally, if a subcontractor is an engineer, architect, or other professional, Consultant must require the subcontractor to carry Professional Errors and Omissions insurance and must provide to the City proof of such coverage. The amount of insurance carried is in no way a limitation on Consultant's liability hereunder. The policy or policies maintained by Consultant shall provide at least the following minimum limits and coverages at all times during performance under this Agreement:

14.1.1. Commercial General Liability Insurance. Consultant and all subcontractors shall obtain, at each of their own expense, and keep in effect during the term of this

Agreement, comprehensive Commercial General Liability Insurance covering Bodily Injury and Property Damage, written on an “occurrence” form policy. This coverage shall include broad form Contractual Liability insurance for the indemnities provided under this Agreement and shall be for the following minimum insurance coverage amounts: The coverage shall be in the amount of **\$2,000,000** for each occurrence and **\$3,000,000** general aggregate and shall include Products-Completed Operations Aggregate in the minimum amount of **\$2,000,000** per occurrence, Fire Damage (any one fire) in the minimum amount of **\$50,000**, and Medical Expense (any one person) in the minimum amount of **\$10,000**. All of the foregoing coverages must be carried and maintained at all times during this Agreement.

14.1.2. Professional Errors and Omissions Coverage. Consultant agrees to carry Professional Errors and Omissions Liability insurance on a policy form appropriate to the professionals providing the Services hereunder with a limit of no less than **\$2,000,000** per claim. Consultant shall maintain this insurance for damages alleged to be as a result of errors, omissions, or negligent acts of Consultant. Such policy shall have a retroactive date effective before the commencement of any work by Consultant on the Services covered by this Agreement, and coverage will remain in force for a period of at least three (3) years after termination of this Agreement.

14.1.3. Business Automobile Liability Insurance. If Consultant or any subcontractors will be using a motor vehicle in the performance of the Services herein, Consultant shall provide the City a certificate indicating that Consultant and its subcontractors have business automobile liability coverage for all owned, hired, and non-owned vehicles. The Combined Single Limit per occurrence shall not be less than **\$2,000,000**.

14.1.4. Workers Compensation Insurance. Consultant, its subcontractors, and all employers providing work, labor, or materials under this Agreement that are subject employers under the Oregon Workers Compensation Law shall comply with ORS 656.017, which requires them to provide workers compensation coverage that satisfies Oregon law for all their subject workers under ORS 656.126. Out-of-state employers must provide Oregon workers compensation coverage for their workers who work at a single location within Oregon for more than thirty (30) days in a calendar year. Consultants who perform work without the assistance or labor of any employee need not obtain such coverage. This shall include Employer’s Liability Insurance with coverage limits of not less than **\$500,000** each accident.

14.1.5. Insurance Carrier Rating. Coverages provided by Consultant and its subcontractors must be underwritten by an insurance company deemed acceptable by the City, with an AM Best Rating of A or better. The City reserves the right to reject all or any insurance carrier(s) with a financial rating that is unacceptable to the City.

14.1.6. Additional Insured and Termination Endorsements. The City will be named as an additional insured with respect to Consultant’s liabilities hereunder in insurance coverages. Additional Insured coverage under Consultant’s Commercial General Liability,

Automobile Liability, and Excess Liability Policies, as applicable, will be provided by endorsement. Additional insured coverage shall be for both ongoing operations via ISO Form CG 2010 or its equivalent, and products and completed operations via ISO Form CG 2037 or its equivalent. Coverage shall be Primary and Non-Contributory. Waiver of Subrogation endorsement via ISO Form CG 2404 or its equivalent shall be provided. The following is included as additional insured: “The City of Wilsonville, its elected and appointed officials, officers, agents, employees, and volunteers.” An endorsement shall also be provided requiring the insurance carrier to give the City at least thirty (30) days’ written notification of any termination or major modification of the insurance policies required hereunder. Consultant must be an additional insured on the insurance policies obtained by its subcontractors performing work on the Services contemplated under this Agreement.

14.1.7. Certificates of Insurance. As evidence of the insurance coverage required by this Agreement, Consultant shall furnish a Certificate of Insurance to the City. This Agreement shall not be effective until the required certificates and the Additional Insured Endorsements have been received and approved by the City. Consultant agrees that it will not terminate or change its coverage during the term of this Agreement without giving the City at least thirty (30) days’ prior advance notice and Consultant will obtain an endorsement from its insurance carrier, in favor of the City, requiring the carrier to notify the City of any termination or change in insurance coverage, as provided above.

14.2. Primary Coverage. The coverage provided by these policies shall be primary, and any other insurance carried by the City is excess. Consultant shall be responsible for any deductible amounts payable under all policies of insurance. If insurance policies are “Claims Made” policies, Consultant will be required to maintain such policies in full force and effect throughout any warranty period.

Section 15. Early Termination; Default

15.1. This Agreement may be terminated prior to the expiration of the agreed upon terms:

15.1.1. By mutual written consent of the parties;

15.1.2. By the City, for any reason, and within its sole discretion, effective upon delivery of written notice to Consultant by mail or in person; or

15.1.3. By Consultant, effective upon seven (7) days’ prior written notice in the event of substantial failure by the City to perform in accordance with the terms through no fault of Consultant, where such default is not cured within the seven (7) day period by the City. Withholding of disputed payment is not a default by the City.

15.2. If the City terminates this Agreement, in whole or in part, due to default or failure of Consultant to perform Services in accordance with the Agreement, the City may procure, upon reasonable terms and in a reasonable manner, services similar to those so terminated. In addition to any other remedies the City may have, both at law and in equity, for breach of contract, Consultant

shall be liable for all costs and damages incurred by the City as a result of the default by Consultant, including, but not limited to all costs incurred by the City in procuring services from others as needed to complete this Agreement. This Agreement shall be in full force to the extent not terminated by written notice from the City to Consultant. In the event of a default, the City will provide Consultant with written notice of the default and a period of ten (10) days to cure the default. If Consultant notifies the City that it wishes to cure the default but cannot, in good faith, do so within the ten (10) day cure period provided, then the City may elect, in its sole discretion, to extend the cure period to an agreed upon time period, or the City may elect to terminate this Agreement and seek remedies for the default, as provided above.

15.3. If the City terminates this Agreement for its own convenience not due to any default by Consultant, payment of Consultant shall be prorated to, and include the day of, termination and shall be in full satisfaction of all claims by Consultant against the City under this Agreement.

15.4. Termination under any provision of this Section shall not affect any right, obligation, or liability of Consultant or the City that accrued prior to such termination. Consultant shall surrender to the City items of work or portions thereof, referred to in **Section 19**, for which Consultant has received payment or the City has made payment.

Section 16. Suspension of Services

The City may suspend, delay, or interrupt all or any part of the Services for such time as the City deems appropriate for its own convenience by giving written notice thereof to Consultant. An adjustment in the time of performance or method of compensation shall be allowed as a result of such delay or suspension unless the reason for the delay is within Consultant's control. The City shall not be responsible for Services performed by any subcontractors after notice of suspension is given by the City to Consultant. Should the City suspend, delay, or interrupt the Services and the suspension is not within Consultant's control, then the City shall extend the time of completion by the length of the delay.

Section 17. Modification/Addendum

Any modification of the provisions of this Agreement shall not be enforceable unless reduced to writing and signed by both the City and Consultant. A modification is a written document, contemporaneously executed by the City and Consultant, which increases or decreases the cost to the City over the agreed Compensation Amount in **Section 4** of this Agreement, or changes or modifies the Scope of Work or the time for performance. No modification shall be binding or effective until executed, in writing, by both Consultant and the City. In the event Consultant receives any communication of whatsoever nature from the City, which communication Consultant contends gives rise to any modification of this Agreement, Consultant shall, within five (5) days after receipt, make a written request for modification to the City's Project Manager in the form of an Addendum. Consultant's failure to submit such written request for modification in the form of an Addendum shall be the basis for refusal by the City to treat said communication as a basis for modification or to allow such modification. In connection with any modification to this Agreement affecting any change in price, Consultant shall submit a complete breakdown of labor, material, equipment, and other costs. If Consultant incurs additional costs or devotes additional time on

Project tasks, the City shall be responsible for payment of only those additional costs for which it has agreed to pay under a signed Addendum. To be enforceable, the Addendum must describe with particularity the nature of the change, any delay in time the Addendum will cause, or any increase or decrease in the Compensation Amount. The Addendum must be signed and dated by both Consultant and the City before the Addendum may be implemented.

Section 18. Access to Records

The City shall have access, upon request, to such books, documents, receipts, papers, and records of Consultant as are directly pertinent to this Agreement for the purpose of making audit, examination, excerpts, and transcripts during the term of this Agreement and for a period of four (4) years after termination of the Agreement, unless the City specifically requests an extension. This clause shall survive the expiration, completion, or termination of this Agreement.

Section 19. Property of the City

19.1. Originals or certified copies of the original work forms, including but not limited to documents, drawings, tracings, surveying records, mylars, spreadsheets, charts, graphs, modeling, data generation, papers, diaries, inspection reports, and photographs, performed or produced by Consultant under this Agreement shall be the exclusive property of the City and shall be delivered to the City prior to final payment. Any statutory or common law rights to such property held by Consultant as creator of such work shall be conveyed to the City upon request without additional compensation. Upon the City's written approval, and provided the City is identified in connection therewith, Consultant may include Consultant's work in its promotional materials. Drawings may bear a disclaimer releasing Consultant from any liability for changes made on the original drawings and for reuse of the drawings subsequent to the date they are turned over to the City.

19.2. Consultant shall not be held liable for any damage, loss, increased expenses, or otherwise, caused by or attributed to the reuse by the City or its designees of all work performed by Consultant pursuant to this Agreement without the express written permission of Consultant.

Section 20. Notices

Any notice required or permitted under this Agreement shall be in writing and shall be given when actually delivered in person or forty-eight (48) hours after having been deposited in the United States mail as certified or registered mail, addressed to the addresses set forth below, or to such other address as one party may indicate by written notice to the other party.

To City: City of Wilsonville
 Attn: Mike Nacrelli
 29799 SW Town Center Loop East
 Wilsonville, OR 97070

To Consultant: Stantec Consulting Services Inc.
Attn: Bryan Black
601 SW 2nd Avenue, #1400
Portland, OR 97204
(503) 490-2041; bryan.black@stantec.com

Section 21. Miscellaneous Provisions

21.1. Integration. This Agreement, including all exhibits attached hereto, contains the entire and integrated agreement between the parties and supersedes all prior written or oral discussions, representations, or agreements. In case of conflict among these documents, the provisions of this Agreement shall control.

21.2. Legal Effect and Assignment. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective heirs, personal representatives, successors, and assigns. This Agreement may be enforced by an action at law or in equity.

21.3. No Assignment. Consultant may not assign this Agreement, nor delegate the performance of any obligations hereunder, unless agreed to in advance and in writing by the City.

21.4. Adherence to Law. In the performance of this Agreement, Consultant shall adhere to all applicable federal, state, and local laws (including the Wilsonville Code and Public Works Standards), including but not limited to laws, rules, regulations, and policies concerning employer and employee relationships, workers compensation, and minimum and prevailing wage requirements. Any certificates, licenses, or permits that Consultant is required by law to obtain or maintain in order to perform the Services described on **Exhibit A**, shall be obtained and maintained throughout the term of this Agreement.

21.5. Governing Law. This Agreement shall be construed in accordance with and governed by the laws of the State of Oregon, regardless of any conflicts of laws. All contractual provisions required by ORS Chapters 279A, 279B, 279C, and related Oregon Administrative Rules to be included in public agreements are hereby incorporated by reference and shall become a part of this Agreement as if fully set forth herein.

21.6. Jurisdiction. Venue for any dispute will be in Clackamas County Circuit Court.

21.7. Legal Action/Attorney Fees. If a suit, action, or other proceeding of any nature whatsoever (including any proceeding under the U.S. Bankruptcy Code) is instituted in connection with any controversy arising out of this Agreement or to interpret or enforce any rights or obligations hereunder, the prevailing party shall be entitled to recover attorney, paralegal, accountant, and other expert fees and all other fees, costs, and expenses actually incurred and reasonably necessary in connection therewith, as determined by the court or body at trial or on any appeal or review, in addition to all other amounts provided by law. If the City is required to seek legal assistance to enforce any term of this Agreement, such fees shall include all of the above fees, whether or not a proceeding is initiated. Payment of all such fees shall also apply to any administrative proceeding, trial, and/or any appeal or petition for review.

21.8. Nonwaiver. Failure by either party at any time to require performance by the other party of any of the provisions of this Agreement shall in no way affect the party's rights hereunder to enforce the same, nor shall any waiver by the party of the breach hereof be held to be a waiver of any succeeding breach or a waiver of this nonwaiver clause.

21.9. Severability. If any provision of this Agreement is found to be void or unenforceable to any extent, it is the intent of the parties that the rest of the Agreement shall remain in full force and effect, to the greatest extent allowed by law.

21.10. Modification. This Agreement may not be modified except by written instrument executed by Consultant and the City.

21.11. Time of the Essence. Time is expressly made of the essence in the performance of this Agreement.

21.12. Calculation of Time. Except where the reference is to business days, all periods of time referred to herein shall include Saturdays, Sundays, and legal holidays in the State of Oregon, except that if the last day of any period falls on any Saturday, Sunday, or legal holiday observed by the City, the period shall be extended to include the next day which is not a Saturday, Sunday, or legal holiday. Where the reference is to business days, periods of time referred to herein shall exclude Saturdays, Sundays, and legal holidays observed by the City. Whenever a time period is set forth in days in this Agreement, the first day from which the designated period of time begins to run shall not be included.

21.13. Headings. Any titles of the sections of this Agreement are inserted for convenience of reference only and shall be disregarded in construing or interpreting any of its provisions.

21.14. Number, Gender and Captions. In construing this Agreement, it is understood that, if the context so requires, the singular pronoun shall be taken to mean and include the plural, the masculine, the feminine and the neuter, and that, generally, all grammatical changes shall be made, assumed, and implied to individuals and/or corporations and partnerships. All captions and paragraph headings used herein are intended solely for convenience of reference and shall in no way limit any of the provisions of this Agreement.

21.15. Good Faith and Reasonableness. The parties intend that the obligations of good faith and fair dealing apply to this Agreement generally and that no negative inferences be drawn by the absence of an explicit obligation to be reasonable in any portion of this Agreement. The obligation to be reasonable shall only be negated if arbitrariness is clearly and explicitly permitted as to the specific item in question, such as in the case of where this Agreement gives the City "sole discretion" or the City is allowed to make a decision in its "sole judgment."

21.16. Other Necessary Acts. Each party shall execute and deliver to the other all such further instruments and documents as may be reasonably necessary to carry out this Agreement in order to provide and secure to the other parties the full and complete enjoyment of rights and privileges hereunder.

21.17. Interpretation. As a further condition of this Agreement, the City and Consultant acknowledge that this Agreement shall be deemed and construed to have been prepared mutually by each party and it shall be expressly agreed that any uncertainty or ambiguity existing therein shall not be construed against any party. In the event that any party shall take an action, whether judicial or otherwise, to enforce or interpret any of the terms of the Agreement, the prevailing party shall be entitled to recover from the other party all expenses which it may reasonably incur in taking such action, including attorney fees and costs, whether incurred in a court of law or otherwise.

21.18. Entire Agreement. This Agreement and all documents attached to this Agreement represent the entire agreement between the parties.

21.19. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall constitute an original Agreement but all of which together shall constitute one and the same instrument.

21.20. Authority. Each party signing on behalf of Consultant and the City hereby warrants actual authority to bind their respective party.

The Consultant and the City hereby agree to all provisions of this Agreement.

CONSULTANT:

CITY:

STANTEC CONSULTING SERVICES INC.

CITY OF WILSONVILLE

By: _____

By: _____

Print Name: _____

Print Name: _____

As Its: _____

As Its: _____

Employer I.D. No. _____

APPROVED AS TO FORM:

Amanda Guile-Hinman, Asst. City Attorney
City of Wilsonville, Oregon

Exhibit A
Design Scope of Services
WRWTP Expansion Project #1144
Prepared for City of Wilsonville, Oregon
Prepared by Stantec Consulting Services, Inc.
June 19, 2020

A. Introduction

This scope of work provides professional engineering and design services related to the Willamette River Water Treatment Plant (WRWTP) Expansion (Project #1144). The project will serve to expand the existing Willamette River Water Treatment Plant (WRWTP) from 15 mgd to 20 mgd for greater finished water production to serve the cities of Wilsonville and Sherwood, Oregon. Construction will utilize the Construction Manager/General Contractor (CM/GC) form of project delivery.

ENGINEER PROJECT TEAM

Table 1 lists the ENGINEER project team and responsibilities.

Table 1: ENGINEER Responsibilities

Role	Company	Responsibility
Prime Consultant	Stantec Consulting Services Inc.	Project Management, CM/GC procurement assistance and coordination, detailed design of process mechanical (excluding ozone generation and contactor upgrades), structural, architectural, landscape, civil, geotechnical disciplines, computation fluid dynamics (CFD) modeling, hydraulics analyses, tracer studies, permitting assistance, Oregon Health Authority and other regulatory coordination, and cost estimating.
Subconsultant	HDR	Detailed design of electrical and building mechanical (HVAC, Building Plumbing, and Fire Protection) disciplines
Subconsultant	CDM Smith	Evaluation and detailed process design of gaseous oxygen (GOX) piping, ozone generation equipment and contactor upgrades including potential replacement of ozone-related water quality analyzers (excluding contact basin hydraulics, CFD, tracer studies, and baffling; and liquid oxygen bulk storage and vaporization systems)
Subconsultant	Portland Engineering	Detailed design of Instrumentation and Control improvements
Subconsultant	Otak, Inc.	Field surveys and development of base mapping for design
Subconsultant	Angelo Planning	Conditional Use Permit and Site Design Review

The subconsultants listed in **Table 1** may be modified in the future depending on project needs and requirements.

B. PROJECT BACKGROUND

The WRWTP was commissioned in 2002 to serve the City of Wilsonville. The City of Sherwood became a partner in 2014, started receiving water from the WRWTP, and owns 5 mgd of the total 15 mgd plant

capacity. The CITY has had an agreement with Veolia to operate and maintain the plant since it was initially commissioned in 2002.

The Cities of Wilsonville and Sherwood need additional and reliable potable water. To meet this challenge, life-safety, seismic, electrical and O&M improvements have been identified in addition to capacity expansion at the WRWTP. The Willamette Water Supply Program (WWSP) is constructing raw water improvements starting in mid-2020 including upgrades/modifications to the existing Raw Water Pump Station (RWPS) and Intake pipe. The Oregon Health Authority (OHA) approved use of ozone upstream from filtration as a primary disinfectant with six new conditions of approval. The proposed capacity upgrade is identified in the 2017 WRWTP Master Plan Update near-term CIP along with other improvements identified by Veolia staff.

The Project seeks to “up-rate” primary treatment processes (Actiflo, ozonation, filtration, and chlorine disinfection) to increase production capacity to 20 mgd without the need to build additional ballasted flocculation trains, ozone contact basins, filters, nor additional clearwell volume. With this expansion, the CITY also has an opportunity to decrease future costs and risks by effectively planning for the next expansion to 30+ mgd.

The CITY will also conduct a filtration pilot study concurrently with the preliminary design of the WTP expansion and related improvements. The study will be focused on the critical task of demonstrating and obtaining approval from OHA for an increased filtration rate over a 12-month period.

C. KEY PROJECT CONSIDERATIONS

1. WRWTP will be expanded from 15 mgd to 20 mgd maximum daily finished water production.
2. Existing processes at the WRWTP – ballasted flocculation (Actiflo), ozonation, deep bed granular media filtration, chlorination – have operated well since original plant commissioning in 2002 and will continue to serve into the future.
3. Construction work for the Willamette Water Supply Program (WWSP) Raw Water Facilities will be taking place on the same site beginning in June 2020.
4. The “WRWTP 2017 Master Plan Update” was previously completed for the WRWTP and will serve as a partial basis of the work of this Project. Recommendations from the Master Plan will be reviewed and confirmed at project initiation.

D. ANTICIPATED DESIGN SCOPE

Table 2 provides the anticipated scope of design services that will be required for the Project. The initial phases of this project will include review and confirmation of the recommendations from the Master Plan. The outcomes of these evaluations may lead to additional improvements being added to the scope beyond what has been previously identified by the CITY and Veolia. Additional design scope beyond what is included in this scope of services would need to be authorized by the CITY through contract amendment.

Table 2: Anticipated Design Scope

Area	Design Elements
Raw Water Pump Station	<ul style="list-style-type: none"> • Replacement of Raw Water Pump No 4
Finished Water Pump Station	<ul style="list-style-type: none"> • Seismic retrofits • Replacement of Finished Water Pump No 4 or installation of fifth pump
Actiflo	<ul style="list-style-type: none"> • Replace/upgrade MCCs with upgraded components • Shelf spare sand pump
Ozone Contactors	<ul style="list-style-type: none"> • Replacement of ozone diffusers with new, fine bubble diffusers and diffusion manifolds, valves, and appurtenances • Process Sampling Improvements
Ozone Generators	<ul style="list-style-type: none"> • Replacement of two existing ozone generators with larger units including inlet oxygen gas and outlet ozone gas pipelines, gas control valves and meters, as necessary • Installation of emergency shutoff at two exits

Area	Design Elements
Clearwell	<ul style="list-style-type: none"> • Baffling
Washwater Equalization (WWEQ) Basin	<ul style="list-style-type: none"> • Seismic retrofits • Modifications to support chemical lines along western wall • Replacement of washwater pumps
Solids Thickening	<ul style="list-style-type: none"> • Installation of second solids mixing pump or purchase of shelf spare
Solids Dewatering Building	<ul style="list-style-type: none"> • Seismic retrofits • Addition of overflow scupper with downspout to Solids Handling Building
Liquid Oxygen (LOX) Storage	<ul style="list-style-type: none"> • Upsize existing LOX tank and vaporizer
Chemical Storage and Metering	<ul style="list-style-type: none"> • Second dry polymer batching system for Actiflo • Replace all existing chemical feed lines from storage tanks to injection points • Containment pans for chemical feed lines routed above doorways • Provide seismic bracing for chemical feed lines • Add wye and basket strainers to all pump suction lines • Add ventilation lines back to tank on sodium hypochlorite system • Add solenoid valves to prevent chemical dosing after power interruption
Power System Upgrades	<ul style="list-style-type: none"> • New switchgear and transformer housed in a new building • New 2 MW generator installed in weatherproof, noise attenuating enclosure coupled with an automatic transfer switch • Convert existing emergency generator room to workshop storage space • Evaluate need for additional power supply for ozone system • Diesel storage tank
Site/Civil	<ul style="list-style-type: none"> • Extension of chemical pipe utilidor (approximately 400 LF) to southern end of plant • Paving • Improved truck access to LOX Storage Tank • Replace main access gate • Landscaping around new facilities

GENERAL DESIGN ASSUMPTIONS

1. The intent of the Project is to demonstrate acceptable performance at higher capacities for the two existing Actiflo basins in lieu of building new process units, but this is subject to OHA approval. Existing Actiflo units do not require renovation unless noted otherwise in this scope of work.
2. Raw water metering and flash mix facilities do not require improvements for 20 mgd.
3. Existing ozone dissolution and contact chambers are adequate for the expansion and no new basins are required. The plant will continue to rely on bubble diffusion to introduce ozone into water, rather than sidestream injection.
4. Ozone destruct and work on the ozone contactor structure roof is not included. Ozone destruct, off-gassing, and safety systems are not included.
5. Ambient ozone and oxygen analyzer replacement or modifications not included.
6. The CITY will continue use the ozonation process to meet a 1-log *Cryptosporidium* inactivation goal as a voluntary, unregulated goal.

7. No new filters will be constructed, with the assumption that the Filtration Pilot Study will successfully demonstrate filter loading rates up to 11 gpm/sf. Existing Filtration units do not require renovation unless noted otherwise in this scope of work.
8. Clearwell baffles will be added during the scheduled February 2021 WRWTP shutdown period(s) for greater disinfection capability to achieve at least 0.5-log Giardia inactivation at 20 mgd.
9. Chemical systems are sufficient for the expansion unless otherwise noted in the scope of work.
10. Additional design scope identified during Preliminary Design will be authorized through contract amendment.
11. ENGINEER shall be entitled to reasonably rely upon the information and data provided by the Client or obtained from generally acceptable sources within the industry without independent verification except to the extent such verification is expressly included herein.

E. Scope of Services

Table 3 provides a simplified list of Tasks that are described in greater detail below. A Preliminary List of Drawings to be produced for this Project is included with the Scope of Services as **Attachment A**.

Table 3: Task Listing

Task No.	Task Name	Summary of Service
1.0	Project Management	Project Management, client communications, subconsultant contracting, quality assurance, schedule and budget management, invoicing and status reporting.
2.0	Filtration Pilot Study	Pilot study to support uprating of existing filters (equipment and initial ENGINEER services, including development of the pilot test plan, to be scoped separately)
3.0	CM/GC Procurement Support and Coordination	Support CM/GC contractor procurement by the CITY and implementation of project delivery using CM/GC
4.0	Surveying and Geotechnical Investigation	Includes surveying and geotechnical investigations as required
5.0	Preliminary Design	Includes alternatives development, development of Basis of Design Report (BODR) and 30% Design Documents
6.0	Detailed Design	Includes detailed design and construction services for clearwell modifications to improve the hydraulic efficiency to allow continued use of free chlorination as the primary disinfection method, and development of 60, 90, and 100-percent complete design packages for the rest of the improvements.
7.0	Permitting Assistance	Develop permitting plan, coordinate, and submit permit applications on behalf of the CITY
8.0	Engineering Services During Construction	Scope of Services to be developed during final stages of Task 3 and authorized by amendment in March 2021 (approximate)

Optional Tasks: Actiflo Full Scale Demonstration Testing, Ozone Contactor Tracer Study, Ozone Contactor CFD Modeling, Preliminary Clearwell Tracer Study, Conditional Use Permit Application

GENERAL DELIVERABLE ASSUMPTIONS

Form of deliverables for each task and subtask is described herein. All work will be prepared using the ENGINEER's design, drafting and documentation standards.

1. Technical Memoranda (TM) will be provided to the CITY in draft and final form. Draft TMs will be submitted by the ENGINEER in MSWord file format and a Portable Document Format (PDF). Final Preliminary Design TMs will be combined into a BODR. Five paper copies of Final TMs not included in the BODR will be submitted by the ENGINEER along with a PDF file.
2. The Draft and Final BODR will be submitted as a PDF. Five bound paper copies of the Final BODR will be delivered to the CITY.
3. Other reports and documents that are described below as specific deliverables will be prepared during the work and provided to the CITY. Unless otherwise noted, five paper copies of each final deliverable will be furnished. Draft deliverables will only be provided in PDF format.
4. Final construction drawings will be prepared according to the ENGINEER's CAD standards and delivered to the CITY in AutoCAD format. 3D models will be developed using Revit or other comparable software as determined by the ENGINEER and submitted to the CITY. No paper copies will be provided by the ENGINEER. The CITY may choose to distribute bidding documents using electronic files in whole or in part.
5. It is understood that the CITY will review and comment on all submittals within 10 working days, unless otherwise indicated, and that the CITY staff will be made available in a timely manner for review workshops. The CITY will use a mutually agreeable form for collating and recording comments. The ENGINEER will prepare written responses as appropriate, documenting the resolution of the CITY's comments and concerns. The ENGINEER will incorporate accepted comments into the final deliverable. Design work will proceed during each review period to avoid schedule impacts. Changes to design documentation resulting from comments will be reflected in the deliverable for the next milestone (e.g.; comments on the 30% design will be reflected in the 60% design submittal).

1 PROJECT MANAGEMENT

Task 1 Objectives:

The purpose of this task is to provide the administrative, client communication, sub-consultant management, quality assurance (QA), and financial/schedule management activities to complete the WRWTP Expansion. The ENGINEER will manage the project according to the ENGINEER's internal Project Delivery Framework. Project management services for Task 8 (Engineering Services During Construction) of this project will be separately scoped.

Task 1 Assumptions:

- A. Period of Performance is anticipated to be August 2020 through September 2021. Additional services beyond September 2021, including Engineering Services during Construction, will be authorized by amendment.

Task 1 Subtasks:

- 1.1 Execute sub consulting agreements and set up project financial systems
- 1.2 Plan and Execute Quality Assurance
- 1.3 Develop and submit the Project Management Plan, including budgets.
- 1.4 Review Veolia's Health and Safety Plan and develop the Project Health and Safety Plan consistent with Veolia's and ENGINEER's policies.
- 1.5 Develop and submit a project schedule that incorporates key activities and milestones. Provide updates to the project schedule on a monthly basis.
- 1.6 Manage project activities including tasks, budgets, schedule, and project decision log. Coordinate with CITY Staff, Veolia, the CM/GC, and subconsultants to discuss the status of and guide completion of work activities. Ad-hoc meetings will be held by teleconference, video conference, or

other means as needed to facilitate communication and information exchange while complying with COVID-related laws and policies. The ENGINEER will make use of email and conventional correspondence as necessary to transmit information, make submittals, etc.

- 1.7 Provide monthly billing invoices with progress reporting. Monthly invoices shall include a breakdown of hours by staff category billed by task. Include a summary of cost to date and percentage complete by task. Provide monthly project status reports with an overview of the past month's activities and identification of upcoming project activities and milestones in the coming month.
- 1.8 Notify CITY of design and project changes. Prepare change management logs as necessary.
- 1.9 Conduct monthly progress meetings with the CITY staff to review project scope, schedule, and status. At a minimum, the ENGINEER's Project Manager or Project Engineer will attend. Meetings will be held at WRWTP or via Teleconference. Written summaries will be prepared and distributed as PDF files for each meeting.
- 1.10 Perform project closeout at the conclusion of the work.

Task 1 Deliverables:

- A. Project Management Plan
- B. Project Schedule with updates
- C. Project Budget with status updates
- D. Quality Assurance Plan
- E. Decision log with updates
- F. Invoices and Project Status Reports
- G. Monthly meeting summaries
- H. Change management log and updates

2 FILTRATION PILOT STUDY

Task 2 Objectives:

Demonstrate filter performance for the WRWTP, as determined by unit filter run volumes (UFRVs) and filter effluent water quality, at filter loading rates up to 11 gallons per minute per square foot (gpm/sf). The data gathered by this pilot study will be compiled in a final report and submitted to the Oregon Health Authority (OHA) with the intent of obtaining approval to increase the capacity of the existing filters to 20 million gallons per day (mgd), or higher. This will provide the WRWTP a low-cost means to increase plant capacity to meet demands until approximately 2034.

The plant will need to obtain approval from the Oregon Health Authority (OHA) to increase filter loading rates. A pilot study is required by OHA to demonstrate that the existing WRWTP filters can operate at higher filtration rates while meeting state and federal requirements. Per OHA requirements outlined in a letter received by the CITY in April 2020, the pilot will need to extend over a full year, to demonstrate filter performance with seasonal changes in the raw water quality. Ultimately, the pilot study results will be summarized in a report for OHA review and approval. The Willamette Water Supply Program (WWSP) is a partner in this project and plans to use the data from this project to receive OHA approval of the filter loading rates proposed for the new water treatment plant being designed as part of the WWSP. As such, all work shall be conducted and results presentation prepared in such a manner to benefit both the City of Wilsonville and the WWSP in their respective efforts to receive OHA filter loading rate approval.

Table 4 illustrates the WRWTP capacity at increased filtration rates. The current approved filtration rate is 8.0 gpm/sf with one filter out-of-service for the existing filters, each with a surface area of 460 sf. Increasing the maximum filtration rate from 8 gpm/sf to 11 gpm/sf increases the available firm plant filtration capacity from 15.9 to 21.9 mgd, or an increase of 38%.

Table 4: Filtration Rate and WWTP Capacity

Filter Rate and Plant Capacity Information				
Filtration Rate (gpm/sf)	Individual Filter Capacity (mgd)	Combined Filter Capacity ⁽¹⁾ (mgd)	Combined Filter Firm Capacity ⁽²⁾ (mgd)	Combined Filter Firm Capacity Increase ⁽³⁾ (%)
8.0	5.3	21.2	15.9	-
9.0	6.0	23.8	17.9	12.6 %
10.0	6.6	26.5	19.9	25.2 %
11.0	7.3	29.1	21.9	37.7 %
Notes:				
1. Maximum plant inlet flow rate with all filters in service.				
2. Maximum total filtration capacity with one filter out of service (firm filtration capacity).				
3. Percent combined nominal filter capacity increase compared to 8.0 gpm/sf filtration rate.				

Task 2 Assumptions:

- A. This study also has interest by the WWSP. The CITY will coordinate efforts with the WWSP, potentially including distribution of draft documents for review and comment.
- B. The City of Sherwood is a partner in the water treatment plant; the WWSP has interest in the outcome of the study; and all are considered key Stakeholders.
- C. The CITY will perform/provide the following work for this task:
- a. Attend meetings and workshops.
 - b. Review filtration pilot study deliverables and provide comments within 7 days of receipt.
 - c. Operate the pilot plant, including field activities for monitoring or sampling as indicated in the action plans for each task. The level of effort will vary based on amount of troubleshooting that is required to match test conditions in the work plan.
 - d. Provide particle counters that can be used at the water treatment plant after the study concludes.
 - e. Provide location, power, and water connections required for pilot plant operations.
 - f. Coordinate with the WWSP
 - g. Pay any OHA review / permit fees
 - h. The CITY will secure pilot test equipment from the ENGINEER through an Equipment Lease Agreement to be authorized separately.
- D. ENGINEER will perform/provide the work described in the subtasks below unless noted otherwise.

Task 2 Subtasks:**2.1 Pilot Study Work Plan**

This task is scoped and budgeted under a separate contract. The purpose of this task is to develop detailed procedures for conducting pilot-scale testing at the WWTP for approval by OHA prior to initiation of the Pilot Filter Rate Study.

2.2 Pilot Filter Rate Study

Testing will include pilot-scale collection of operational and filter performance data and will aim to investigate the effect of seasonal raw water quality variability on filter performance. Filter loading rates between 8 - 11 gpm/ft² will be tested, and filter operation and water quality parameters will be evaluated against CITY contract requirements, and state and federal requirements.

The filter rate study will span an entire year to assess the impact of seasonal water quality changes on filter operations. The pilot will be operated for a maximum of five weeks during each season, for a total of 20 weeks. Specific work items to be completed under this task are:

1. The CITY has procured a pilot unit throughout the duration of the study from ENGINEER through a separate contract. The unit shall include at least two filter column feed pumps and associated columns, analyzers, peristaltic chemical feed pumps, air compressor, backwash pump and backwash tank.
2. The ENGINEER shall facilitate pilot plant start-up and commissioning, as well as demobilization of pilot equipment
3. The CITY will operate and maintain the pilot, including the collection and analysis of grab samples.
4. The ENGINEER will collect and analyze on-line data from pilot operations and online analyzers.
5. The CITY will provide all chemicals required for testing with assistance from the ENGINEER as needed.

Assumptions:

1. The pilot unit shall be capable of testing different filter loading rates. It is assumed that two filter columns will be used.
2. Once testing periods have enough data for analysis and reporting, a test may conclude early in accordance with the OHA approved work plan.
3. Media design and characteristics will match the existing filters.
4. Filter aid polymer (FAP) doses will be optimized during testing to achieve desirable finished water quality and filter performance goals. It should be noted that the existing full-scale plant filters have operated successfully without adding FAP for the past 18 years.

2.2.1 Pilot Start-up/Shakedown, Decommissioning and Demobilization

Under this task, ENGINEER shall facilitate the installation and demobilization of the pilot unit. Specific work items to be completed under this task are:

1. ENGINEER shall provide the pilot start-up services, including start-up/shakedown, and instruction of CITY personnel.
2. ENGINEER will provide pilot installation guidance, including recommendations on location, power, water, and wastewater connections, and weather protection; and will install the pilot and make connections as noted below.
3. ENGINEER will provide pilot demobilization services including but not limited to preparing pilot for shipping, media disposal, and process disconnections.
4. The CITY will provide shelter for the pilot unit, and any required plumbing, electrical, and communications support, as outlined in the Work Plan.
5. The CITY will provide power supply, chemicals, and electricity for the pilot unit.
6. The CITY will provide filter media for testing to match existing filter media characteristics including depth, effective size, specific gravity, and uniformity coefficient.

2.2.2 Data Collection and Analysis

The purpose of this task is to manage data collected from the pilot plant and full-scale plant and develop a database that captures the performance analysis. Data will be collected by a combination of ENGINEER provided on-line analyzers and Veolia-collected grab samples and will be outlined in the Work Plan. The data transfer protocol (email, etc.) will be determined at the pilot study Kickoff Meeting.

Specific work items to be completed under this task include:

1. The CITY will be responsible for maintaining test conditions and controlling pilot operations required for conducting the work.
2. The CITY will document all times when the pilot plant is not operating in a scenario that meets the work plan.
3. ENGINEER shall collect electronic data from the pilot unit.
4. ENGINEER shall compile data and develop figures and tables, as needed, to help facilitate discussion between ENGINEER and CITY.

5. ENGINEER shall work in collaboration to maintain a database inclusive of water quality and filter operational parameters throughout the study.
6. CITY will electronically submit weekly grab sample water quality data in .xlsx format.
7. CITY will provide full-scale operational data that corresponds to testing as a comparison to pilot operations also in .xlsx format, if feasible.

Assumptions:

1. On-line data collected by CITY shall include:
 - a. Settled water turbidity, and particle count (pilot only).
 - b. Filtered water turbidity and particle count for two filter columns
 - c. Operational parameters such as filtration rates, filter run time and head loss accumulation.
2. Monthly grab sample data (once per test period) collected and analyzed by the CITY shall include:
 - d. Settled water alkalinity, pH, TOC/UV254, and temperature
 - e. Filtered water TOC/UV254 and temperature

2.2.3 Interim Pilot Reports

ENGINEER will provide three (3) interim pilot reports at the end of each five-week seasonal testing period to summarize:

1. Influent water quality conditions,
2. Effluent water quality conditions, and
3. Filter operation and performance.

At the end of the fourth seasonal testing period, ENGINEER will summarize all pilot test results as further described in Task 2.4 Pilot Summary Report.

Deliverables:

1. Interim Pilot Report 1
2. Interim Pilot Report 2
3. Interim Pilot Report 3

2.3 Pilot Operation

This task assumes CITY will be responsible for operating the pilot in conformance with the work plan. Specific work items to be completed under this task are:

1. CITY will operate the pilot in accordance with the Work Plan
2. CITY will troubleshoot pilot as needed to meet Work Plan.
3. ENGINEER shall provide guidance to CITY for pilot operational changes and considerations to meet the Work Plan.
4. CITY will provide pilot operations including pilot data collection and troubleshooting
5. CITY will bear responsibility for pilot operations including but not limited to filter column backwashing, chemical refill, and troubleshooting.

Assumptions:

1. Pending OHA approval, seasonal pilot testing periods may be shortened or lengthened from five (5) weeks to something less pending continued acceptable filter performance demonstration at 11 gpm/sf.
2. The pilot will run for 5 weeks during each season for a total of 20 weeks of operational data over the year. Four seasons will be evaluated: spring, summer, fall and winter as defined in the work plan.
3. Two filter columns will be used for testing.

2.3.1 Weekly Operation Coordination Meetings

The purpose of this subtask is to facilitate communication between the ENGINEER and CITY's operations team. CITY and ENGINEER will discuss weekly operation activities pertinent to the filter rate study. ENGINEER shall provide input on operational changes that may be required to meet testing regime described in the Work Plan.

Assumptions:

1. Weekly operation coordination meetings will be attended by the ENGINEER's project manager and project engineer when the pilot is in operation. ENGINEER will facilitate meetings, provide agendas, and take notes.
2. Meeting notes and related materials (action/decision logs, presentations, etc.) shall be transmitted electronically (.pdf and/or .docx) via email within five business days of the meeting date.
3. CITY will supply filter study data three days prior to the weekly operation coordination meetings for ENGINEER to analyze and prepare figures.
4. Meeting durations will be up to 1 hour.

2.4 Pilot Summary Report

Upon conclusion of the pilot study, the ENGINEER shall present test results for each discreet test period in a final report. A draft and final report will be prepared to compile the results of the filter rate study along with project findings and recommendations. ENGINEER shall submit a draft of the report to the CITY, WWSP, the City of Sherwood, and Veolia for review/comment. ENGINEER will incorporate CITY comments into the draft report, then submit to OHA for review and comments. ENGINEER will incorporate comments from OHA and submit the final report to OHA for approval.

Assumptions:

1. CITY and Veolia will provide review comments 2-weeks following receipt of the draft report.
2. Draft Pilot Summary will incorporate comments from the CITY, WWSP, the City of Sherwood, and Veolia.
3. City has right to adjudicate comments from key stakeholders.
4. Final Pilot Summary will incorporate comments from OHA.

Deliverables:

1. Draft Pilot Summary Report.
2. Final Pilot Summary Report.

2.5 Meetings

The purpose of this task is to facilitate ENGINEER communication with the CITY, WWSP, City of Sherwood, Veolia, and OHA. ENGINEER shall provide draft agendas five business days prior to meetings and workshops.

2.5.1 Internal Meetings

The ENGINEER will lead internal review workshops at the following stages: Interim Report Reviews 1-3, Pilot Summary Report review.

Assumptions:

1. Meetings shall be attended by ENGINEER's Project Manager and Project Engineer.
2. Meeting durations shall be 2 hours or less.

Deliverables:

1. Meeting Agendas.
2. Meeting Minutes.

2.5.2 Monthly Progress Status Meetings

Monthly progress status meetings will occur via conference call to provide updates on project performance, schedule, and progression. Meetings are assumed to be thirty minutes. Participation will include ENGINEER, Veolia, WWSP, and CITY managers. ENGINEER will discuss the filter operations and water quality data with CITY for the previous month test period including unit filter run volume, filtered water quality and backwash frequency.

Assumptions:

1. Monthly meetings between test periods will cease once filter performance has been continuously demonstrated during the testing period as defined in the work plan.

Deliverables:

1. Monthly Progress Status Meeting Agenda.

2.5.3 OHA Coordination Meetings

ENGINEER shall assist CITY in submitting a final study report by facilitating OHA coordination meetings, including a meeting to be held upon final submission of the report to OHA. In addition, ENGINEER shall assist CITY in providing follow-up and/or additional information, as needed, in support of re-rating the existing filters.

Assumptions:

1. One meeting will be held with OHA to provide an overview of the Pilot Summary Report.
2. One meeting will be held with OHA to resolve OHA comments on the Pilot Summary Report.
3. Meeting shall be attended by ENGINEER's Project Manager and Project Engineer.
4. Meeting durations shall not exceed 2 hours.

Deliverables:

1. OHA Coordination Meeting Agendas
2. OHA Coordination Meeting minutes.
3. OHA submittal cover letter (draft and final).
4. Draft and final OHA PowerPoint slide presentation.

3 CM/GC PROCUREMENT SUPPORT AND COORDINATION

Task 3 Objectives:

The objective of this task is to assist the CITY with CM/GC procurement and coordinate with the CITY and CM/GC during preliminary design and detailed design.

Task 3 Assumptions:

- A. The CITY has approved the use of a CM/GC delivery method for this project.
- B. The ENGINEER will assist the CITY with the procurement of a CM/GC contractor. Advertisement and selection will be the responsibility of the CITY.
- C. It is the objective of the CITY for each party to collaborate in the planning, design and implementation of the proposed work.
- D. Coordination with City Council for CM/GC procurement has already been completed by the CITY.

Task 3 Subtasks:

3.1 Develop CM/GC Procurement Documents

The CITY and ENGINEER will work in collaboration to develop the CM/GC procurement documents as identified below.

The ENGINEER will:

- Provide three examples each of Requests for Proposals along with Contracting documents
- Advise CITY as requested on requirements and provisions to be included
- Provide recommendations for proposal selection criteria and scoring
- Provide one example set of Division 1 specifications, then finalize based on CITY review comments
- Develop project description draft and final
- Develop project schedule draft and final

The CITY will:

- Review and edit RFP / Contract example documents to finalize for use in the procurement
- Review and comment on Division 1 specifications
- Provide legal review

Assumptions:

1. Four meetings not exceeding two hours in length are assumed to prepare these procurement documents.

Deliverables:

1. Required documents include:
 - RFP
 - Contract
 - Division 1 Specifications
 - Schedule

3.2 Conduct CM/GC Proposal Process

The CITY and ENGINEER will work collaboratively to conduct the CM/GC Proposal process with responsibilities noted below.

The ENGINEER will:

- Answer questions during CM/GC proposal preparation
- Provide addenda content for up to 3 addenda
- Develop a pre-proposal presentation
- Participate in the pre-proposal meeting
- Review proposals and provide comments to CITY during evaluation team meeting

The CITY will:

- Advertise the RFP
- Distribute documents
- Maintain the plan holder's list
- Lead the pre-proposal meeting
- Receive questions
- Issue addenda
- Assemble and manage the proposal evaluation process and team
- Receive and distribute proposals
- Perform the evaluation
- Select or prepare a short-list of preferred CM/GC's
- Issue Notice of Intent to Award or Shortlist for Interview

Deliverables:

1. Answers to CM/GC Questions
2. Addenda content
3. Pre-proposal presentation

3.3 Conduct CM/GC Interview Process

The CITY and ENGINEER will work collaboratively to conduct the CM/GC Interview process with responsibilities noted below.

The ENGINEER will:

- Provide recommendations regarding interview format
- Prepare interview questions
- Attend the interview (2 Representatives from ENGINEER, Up to 3 Interviews)
- Provide input to CITY's selection committee

The CITY will:

- Schedule interviews and meeting rooms
- Manage / coordinate with selection committee
- Host interviews
- Score interviews
- Hold selection team meeting to prepare selection results
- Issue Notice of Intent to Award

Deliverables:

1. Interview Questions

3.4 CM/GC Phase 1 Contracting Assistance

The ENGINEER will assist the CITY with CM/GC contracting including.

- Reviewing and commenting on CM/GC scope of work
- Reviewing and commenting on CM/GC budget
- Review of bond and insurance documentation
- Prepare recommendation for award

Deliverables:

1. Comments on CM/GC Scope of Work
2. Comments on CM/GC Budget

3.5 Partnering Workshops

The ENGINEER will organize and facilitate partnering workshops with CITY staff, CM/GC representatives and other key stakeholders during the preparation of the BODR and detailed design. The ENGINEER will prepare information and graphics in support of the workshops, which will be held at the WRWTP site or via Teleconference.

3.5.1 BODR Partnering Workshop

The BODR workshop will consist of a 4-hour partnering meeting to document project commitments, staffing and responsibilities, and objectives to be supported and carried forward by each party.

Deliverables

1. Agenda for Workshop
2. Partnering Agreement
3. Supporting materials and summary for the workshop

3.5.2 Detailed Design Partnering Workshop

The Detailed Design Partnering Workshop will consist of a 4-hour partnering meeting to confirm review commitments and staffing, discuss key design or construction concerns, schedule, and overall approach for collaborating between each party during detailed design preparation.

Deliverables:

1. Agenda for Workshop

2. Supporting materials and summary for the workshop

3.6 Early Work Amendment (EWA) for Clearwell Modifications

An EWA is planned to install baffles in the clearwell during a February 2021 WWSP planned shutdown. This task will support the CITY in review and comment on the draft EWA generated by the CM/GC. ENGINEER scope of work for design and ESDC for the Clearwell Modifications is detailed in Task 6.

3.7 Construction Sequencing, Staging and Startup Planning

The ENGINEER will work together with the CM/GC and will develop preliminary construction sequencing and staging concepts in close coordination with WWSP construction. Opportunities for accelerated construction of portions of the project as identified by the CM/GC will be considered. Site circulation during construction and issues associated with performing construction with multiple contractors on-site while maintaining operation of the existing water treatment facilities will be evaluated by the CM/GC.

A conceptual start-up and testing plan will be developed cooperatively by the ENGINEER working with the CM/GC, with recommendations provided for minimizing electrical service interruptions and maintaining service to existing customers to the greatest extent possible. It should be noted that detailed startup and commissioning plans will be developed by the CM/GC and reviewed by the ENGINEER during subsequent construction phases with close coordination with WWSP construction.

ENGINEER's scope related to maintenance of Plant Operations (MOPO) during construction of the WWSP RWF improvements and the WRWTP expansion is detailed in Task 5 – Detailed Design.

Deliverables

1. It is assumed that these activities will be led and documented by the CM/GC

3.8 Guaranteed Maximum Price (GMP) Contracting

An Opinion of Probable Construction Cost (OPCC) will be developed at the BODR, 30%, 60%, and 90% design stage. The 30%, 60%, and 90% OPCC will be reconciled with CM/GC values as described in Task 5 and Task 6. The OPCC Reconciliation process is anticipated to result in a proposed GMP amendment from the CM/GC that includes documentation developed by all parties during preconstruction. The ENGINEER will support the CITY with review and comment on GMP amendment documentation.

Deliverables:

1. Comments on GMP amendment documentation

3.9 Engineering Support During Subcontract Buyout

Following execution of the GMP amendment, the CM/GC will proceed with procurement of its subcontractors. The ENGINEER will provide general support during subcontract bidding and procurement by the CM/GC by advising on equipment prequalification, subcontractor prequalification, providing written answers for bidder questions, and issuing clarifications for design intent, contract plans and specifications. If the CM/GC contractor declares its intent to bid on a subcontracted package, then the CITY would oversee the bidding process with ENGINEER'S assistance. Level of effort is assumed to be limited to 104 hours of the ENGINEER staff time. CM/GC is responsible for preparing bidding packages based on plans and specifications as submitted by the ENGINEER.

4 SURVEY AND GEOTECHNICAL INVESTIGATION

Task 4 Objectives:

Obtain site control and develop base mapping for the project. Perform geotechnical explorations, documentation, and geotechnical engineering analysis for the project.

Task 4 Assumptions:

- A. Existing water feature will be excluded from mapping work.
- B. Field data, boring logs and other information for previous geotechnical work on the site will be provided to the ENGINEER by the CITY.
- C. The ENGINEER will have access to the site to conduct field operations.

Task 4 Subtasks:

4.1 Information Collection

As-built drawings, historical reports, existing land survey data, and previously completed geotechnical studies and associated field data for the existing facilities to assist in completing the preliminary design of the new facilities.

4.2 Topographic Survey and Mapping

ENGINEER will review existing survey and mapping data as provided by WRWTP and will provide additional surveying to develop a topographic map for the WRWTP site within the limits of anticipated construction. ENGINEER will conduct a topographic ground-level survey and a boundary survey with ties to NGS and USGS horizontal control monuments. ENGINEER at their own risk will rely on control already established at the WRWTP site by the WWSP RWF 1.0 mapping work. Work will incorporate the site horizontally to the Oregon Coordinate Reference System Portland Zone. State Plan Coordinate System based on the North American Datum (NGVD 29) with ties to local benchmarks.

A digital terrain model (DTM) will be prepared for the project site utilizing a 1-foot contour interval. Existing structures and surface features of pipelines and tie-in points will be identified and located using supplemental topographic surveys.

Survey will be limited to area not mapped for WWSP RWF 1.0 work, as shown in **Figure 1**.

Deliverables

1. Topographic mapping at a scale of 1-inch = 40 feet with 1-foot contour interval, digital file.

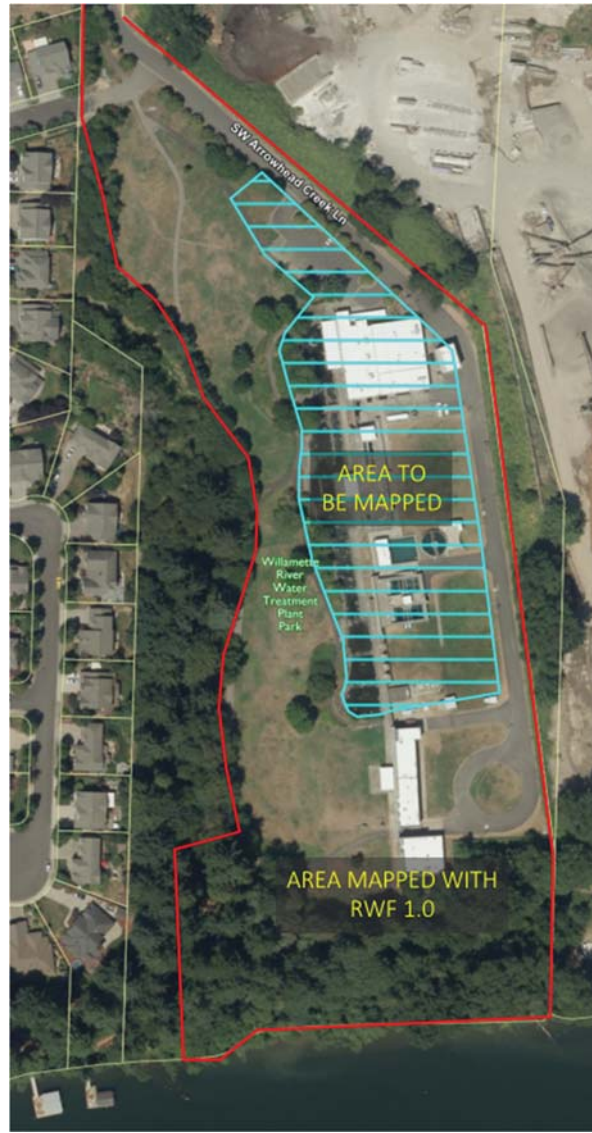


Figure 1. Mapping Area

4.3 Geotechnical Investigation and Analysis

The full Geotechnical Investigation and Analysis scope is provided in **Attachment B**. The geotechnical investigation will include subsurface exploration and laboratory testing. Geotechnical analyses will include foundation total and differential settlement estimates, foundation bearing capacity calculations (mat or deep-foundations), liquefaction triggering and/or cyclic softening calculations, modulus of subgrade reaction recommendations, site-specific probabilistic Seismic Hazard Assessment (SHA), lateral earth pressures recommendations in term of equivalent fluid pressure

The results from the field investigation and analyses will be used to develop the basis of design for the proposed electrical building, fuel tank, emergency generator, and utilidor expansion.

Outputs will include a summary of results and findings from the field investigation, summary of results from the analyses, and recommended geotechnical parameters for design. This information will be summarized and presented in a technical memorandum.

4.3.1 Geotechnical Field Investigation

The geotechnical field investigation planned for the site includes one drill hole, which includes standard penetration testing (SPT), collection of disturbed and undisturbed samples and groundwater observations; and soil laboratory testing to be performed on the selected soil samples.

4.3.1.1 Subsurface Exploration Program

The planned subsurface investigation consists of one drill hole DH-01, which is proposed at the southeast corner of the electrical building.

4.3.1.2 Laboratory Testing

Geotechnical laboratory testing will be conducted on selected samples of soil collected from the drill hole in order to evaluate engineering characteristics and develop design parameters.

Laboratory testing and reporting should conform to the ASTM standards, and testing should be performed by an accredited soil testing laboratory.

4.3.2 Geotechnical Analyses and Foundation Concepts

After the geotechnical investigation and laboratory testing is completed, the ENGINEER will perform geotechnical analyses in support of the foundation design based on the new, as well as existing, geotechnical information.

Foundation concepts will be developed in coordination with the structural engineer. Based on analyses above and conceptual designs for the expansion, an alternatives analysis will be included in the Geotechnical Report for deep and/or shallow foundation options.

4.3.3 Geotechnical Report

Upon completion of the investigation and analyses, a draft Geotechnical Report will be prepared with the results of the analysis with options and recommendations submitted to the Owner for review.

Following review of the draft report, the owner will decide on their desired course of action based upon the options and recommendations.

A final Geotechnical Report will be issued with the selected recommendations to be progressed into Detailed Design.

Deliverables

1. Draft and Final Geotechnical Report

5 PRELIMINARY DESIGN

Task 5 Objectives:

Preliminary Design will lay the foundation for overall project execution, evaluate and establish the preferred alternatives, establish design criteria, confirm plant hydraulics, and develop construction costs. Preliminary Design results will support the CITY in coordinating with Veolia, stakeholders, including the City of Sherwood, and permitting agencies.

Task 5 Subtasks:

5.1 Information Collection

Working with WRWTP staff, ENGINEER will review information provided by CITY consisting of construction drawings, operating records, and historical reports for the existing facilities to assist in completing the preliminary design of the new facilities. ENGINEER will submit data request.

5.2 Review and Confirm Master Plan Recommendations

The ENGINEER will review the previously prepared WRWTP 2017 Master Plan Update and other project documentation to prepare a comprehensive list of upgrades to be made to the WRWTP for review and comment by CITY staff. This list will assist with project definition and will be updated if additional upgrades

are identified during Preliminary Design. Review of the Master Plan along with further will develop the Project's basis of design.

5.3 Workshops

ENGINEER will organize, plan, conduct, and document a series of workshops to review project issues and alternatives and to make project decisions. Workshops will be held at the WRWTP or via Teleconference. ENGINEER will work with the CITY to identify attendees which will generally consist of the project manager, key task leaders, and selected operations and engineering team staff. Workshops will last up to four hours unless noted otherwise.

Deliverables:

1. Workshop agenda, presentation materials and associated documentation
2. Draft and Final workshop summaries

5.3.1 Kickoff Meeting and Site Tour

ENGINEER will conduct a workshop to include the project kickoff meeting, site tour, and workshop to review and confirm master plan recommendations.

5.3.2 OHA Coordination Strategy Workshop

The ENGINEER and CITY will meet to review the proposed project schedule and regulatory expectations for this project. Elements to be considered include approaches for hydraulic analysis, CFD and tracer studies, integrating the design with planned high-rate filter piloting, Actiflo uprating demonstration, and other aspects related to the proposed plant capacity expansion. Communications protocol with OHA will be discussed. An action plan for OHA Coordination will be developed based on the outcomes of this workshop.

5.3.3 Process Workshop 1

ENGINEER will conduct a workshop to include the following topics:

- Primary Disinfection Evaluation/Clearwell Modifications
- Actiflo Uprating
- Ozone Upgrades
- LOX Upgrades
- Filtration Pilot Study
- Full Scale Testing

5.3.4 Process Workshop 2

ENGINEER will conduct a workshop to include the following topics:

- Hydraulic Analyses
- Pumping Systems
- Chemical System Upgrades
- Residuals Handling

5.3.5 Structural/Seismic Improvements Workshop

ENGINEER will conduct a workshop to discuss seismic retrofits and structural design criteria.

5.3.6 Electrical and Process Control Workshop

ENGINEER will conduct a workshop to discuss electrical and process control design criteria.

5.3.7 Civil/Site and Stormwater Management Workshop

ENGINEER will conduct a workshop to discuss civil design criteria, site layout, and stormwater management.

5.3.8 Concluding Workshop

ENGINEER will conduct a workshop to review and confirm outcomes of predesign evaluations and discuss any remaining predesign activities prior to submission of the draft BODR.

5.4 Primary Disinfection Evaluation

The ENGINEER will assist the CITY to confirm the WRWTP primary disinfection strategy to achieve 0.5-log *Giardia* inactivation and 2-log virus inactivation, assuming that OHA continues to consider the WRWTP a “conventional filtration plant” which provides for 2.5-log *Giardia* removal credit and 2.0-log virus removal credit.

5.4.1 Prepare Primary Disinfection TM

A TM will be prepared to evaluate advantages and disadvantages, including plant modifications that are anticipated for conversion to primary disinfection using 1) ozone prior to filtration, or 2) continued use of free chlorine following filtration. The evaluation will include a review of operational disruptions which might occur, regulatory and regional water purveyor considerations, safety and cost impacts.

Since this topic is critical to the Project, it will be addressed at the Kickoff Meeting to receive preliminary feedback on the key decision-making factors. The two options will be vetted during the Kickoff Meeting to ensure that participants understand the primary requirements for implementation:

Option 1 – Continue Using Free Chlorine following Filtration – requires modifications to the clearwell to increase the baffling factor

Option 2 - Conversion to Ozone Disinfection prior to Filtration – requires plant operational and reporting modifications to meet the intent of OHA’s preliminary approval. Modifications to the clearwell to increase the baffling factor will still be carried out in order to provide WRWTP additional flexibility.

5.4.2 Draft Primary Disinfection TM

The ENGINEER will submit a draft TM for review by the CITY. The TM will also consider the strategy for interaction with OHA.

5.4.3 Final Primary Disinfection TM

Based on comments from the CITY and workshop outcomes, the ENGINEER will submit a final TM.

Deliverables

1. Draft and Final TM

5.5 Preliminary Alternatives Analysis

The objective of this task is to evaluate preliminary alternatives to develop the design basis for the project.

5.5.1 Hydraulic Assessments at 20 and 30 mgd

Treatment process hydraulics for 20 mgd and the future 30 mgd expansion will be evaluated and a preliminary hydraulic profile for the proposed 20 mgd and 30 mgd future capacity for inclusion in the 30% design drawings will be prepared.

5.5.1.1 Hydraulic Calculations

ENGINEER will perform hydraulic calculations for the main process train and residuals (thickener/WWEQ) using proprietary computer modeling and referencing original WRWTP design values and using available drawings and site observations. Head losses at channels, pipelines, inlets, outlets, and related features will be considered and an initial hydraulic profile at 20 and 30 mgd developed, to be confirmed during Detailed Design. Work will include overflows.

5.5.1.2 Draft Hydraulics TM

The ENGINEER will prepare and submit a draft TM with findings and graphical depiction of plant hydraulic profile.

5.5.1.3 Final Hydraulics TM

Based on comments from the CITY, the ENGINEER will prepare and submit a final TM.

Deliverables

1. Draft and Final TM

5.5.2 Up-rating/Upgrades for the Ballasted Flocculation Process

Up-rating of the existing Actiflo system will be evaluated with the intent to increase loading rates and avoid construction of new process units for the proposed 20 mgd plant capacity condition. The results of the evaluation will be communicated in a summary TM.

5.5.2.1 Actiflo Evaluation

This task includes evaluation of the existing WRWTP Actiflo System. Full scale demonstration testing of increased loading rates is included as an optional task at the end of this Scope of Services.

5.5.2.1.1 Review of Existing Facility

The ENGINEER will meet at the WRWTP site during the Kickoff Meeting and initial site visit to receive preliminary feedback from Project participants. Following the Kickoff Meeting, ENGINEER will meet with CITY/Veolia at a later date (after historical plant operations data has been received by ENGINEER) for a meeting up to 4-hours to review Actiflo operation, performance and effectiveness, including a process-specific tour of the process units and support systems if needed. Condition and deficiencies will be noted. The past 5 years of operational data will be requested and reviewed to evaluate performance during peak periods and challenging water quality conditions. Historical chemical doses will be evaluated, along with other parameters such as sand and energy consumption, where such data is available. Design criteria and actual operating ranges will be evaluated including sand recycle rates, mixing speeds, overflow rates, settled water turbidity, and staff concerns with performance and potential needs for the newly up-rated system. **No condition assessments of structural, electrical/controls or building HVAC components of the Actiflo system are planned for the study.**

5.5.2.1.2 Summarize Performance of other Actiflo Systems

The ENGINEER will identify at least two other similar Actiflo systems with at least one routinely operating between 25 and 30 gpm/sf. Comparisons will be presented to the CITY for WRWTP performance, loading rates, hydraulics and flow split, sludge production,

The Actiflo manufacturer will be consulted for modifications that are likely to be necessary to up-rating the process to 20 mgd. Equipment capacities, hydrocyclone orifices, operating pressures, overflow rates, sand recovery will be considered and operational efficiencies will be identified where possible. A comparative table will be developed with information from the manufacturer for other facilities which successfully operate above 20 gpm/sf.

5.5.2.1.3 Regulatory Consensus and Demonstration Plan Preparation

The ENGINEER will meet with the CITY to review findings, identify regulatory concerns, and determine basic parameters for a demonstration study or other means for gaining OHA approval for the higher operating conditions. A 2-hour meeting with OHA and the CITY will be conducted to present the selected approach for building consensus.

Following the OHA meeting and based on comments received at the workshop and with regulators, the ENGINEER will prepare a draft up-rating demonstration plan. The approach is anticipated to consist of operating one Actiflo train at approximately 10 mgd and measuring all currently measured operating parameters, including recycle, sand inventory, chemical dose, settled water turbidity, and flow. Testing is assumed to occur on a similar schedule to the filtration pilot testing (5-week run periods occurring four times during the first year of the project). A Draft Work Plan review meeting will be held with OHA and the CITY.

Deliverables

1. Meeting Materials and Summaries

2. Draft and Final Work Plan

5.5.2.1.4 Draft Proposed Actiflo Improvements TM

The ENGINEER will prepare and submit the draft TM presenting the results of the Actiflo uprating evaluations and recommended system improvements. This will include a summary of findings and recommendations for system improvements in support of the proposed up-rating of the Actiflo process.

Deliverables

1. Draft TM

5.5.2.1.5 Final Proposed Actiflo Improvements TM

Based on comments from the CITY and workshop outcomes, the ENGINEER will submit a final TM with the intent to document the improvements made and recommended to up-rate the facility and support the full-scale demonstration testing and the long term upgrades.

Deliverables

1. Final TM

5.5.3 Ozone Upgrade and Modernization

The goal of this task is to identify improvements necessary to continue the CITY's voluntary *Cryptosporidium* inactivation goal while expanding the WRWTP capacity and modernizing the ozone system for greater efficiency and operations capability. The ENGINEER will implement a systematic approach for conducting the work.

Assumptions:

1. As the existing ozone system does not have a clean air system, one will not be included in the design.
2. Cost and budget information prepared to support studies, analyses and other evaluations (including estimates of costs related to capital, recurring O&M activities, escalation, and net present values) will be prepared based on vendor information and representative costs from similar, applicable projects. Such items will not constitute an Opinion of Probable Construction Cost.

5.5.3.1 Evaluation of Existing Ozone System

This task will review available engineering reports and historical water quality and treatment performance data for the ozone system and identify performance limiting factors (PLFs) associated with major components of the ozone system: gaseous oxygen (GOX) feed, ozone generation, ozone contacting, ozone offgas destruct, nitrogen boost, cooling water systems, and monitoring and control system.

5.5.3.1.1 Kickoff Meeting and Plant Walk-Through

The ENGINEER will conduct a ½-day Ozone Workshop to review uprating goals and approach for achieving greater ozonation capacity. This will be followed by a ½-day interview with plant operations staff and a 1-day walk-through of the ozone system with key plant operations staff. The Project Manager, Senior Technical Reviewer and Lead Process Engineer will participate in the kickoff meeting, interviews, and plant walk-through.

5.5.3.1.2 Treatment Performance Data Analysis

ENGINEER will analyze historical operating data for the ozone system for the past five years and develop temporal trends and cumulative frequency curves for key ozone treatment performance parameters. This information will be used to determine historical plant flow and ozone production rates and generator operating ranges to meet *Cryptosporidium*-based and *Giardia*-based disinfection goals. Datasets should be provided in electronic format (EXCEL files), as will be detailed in the data needs request.

5.5.3.1.3 Summary of Staff Interviews

The ENGINEER will review the results of staff interviews, identify common themes, and prioritize critical O&M issues for the liquid oxygen (LOX), gaseous oxygen (GOX) and ozone systems to be considered in development of recommended ozone system improvements.

5.5.3.1.4 Process and Equipment Assessment

The ENGINEER will evaluate the physical condition and performance of ozone system components including: oxygen feed gas systems (LOX); ozone generators and power supply units, including associated HVAC units built into the MCCs if applicable; cooling water system; contact basins and diffusion system; off-gas destruct units; and instrumentation and process control system. The evaluation will be based on field observations during the plant walk-through, prioritized O&M issues from staff interviews, historical ozone treatment performance data trends, reports and maintenance records on ozone generator cleaning and performance testing, original equipment manufacturer (OEM) evaluations and recommendations on power supply unit electrical component upgrades, review of SCADA HMI screens for the ozone system, and review of available record drawings, specifications and engineering reports for the ozone system. **No condition assessments of structural, electrical or building HVAC components of the ozone system are planned for the study.**

Existing Ozone Process Evaluation

ENGINEER will evaluate the current ozone disinfection process and plant operations and recommend improvements to optimize ozone dose control and treatment performance. This will include an assessment of voluntary 1-log *Cryptosporidium* disinfection CT inactivation ratios and the CT disinfection monitoring algorithm currently used to meet *Cryptosporidium* inactivation targets.

Existing Oxygen and Ozone Equipment Evaluation

ENGINEER will assess existing equipment components for the ozone system in terms of condition, effectiveness and suitability for long-term operation (i.e. 20-year service life). ENGINEER will develop a list of Process Limiting Factors (PLFs) for the following major ozone system components, with respect to meeting process, design or O&M goals for the ozone system: (1) LOX system, (2) GOX piping downstream of the vaporizers including pressure control, (3) ozone generation system, (4) ozone contacting and off-gas destruct system, and (5) ozone control system. These findings will be used to prioritize ozone system deficiencies and develop upgrading alternatives to mitigate or eliminate as many PLFs as possible.

5.5.3.1.5 Draft TM

The ENGINEER will prepare a draft TM presenting the results of the data analysis and assessments performed as part of the evaluation of the existing ozone system.

The following information will be provided:

- Plant flow and treatment performance trends for the ozone system based on historical datasets provided in electronic (EXCEL) format.
- Prioritized list of PLFs for the existing ozone generators and cooling water system, ozone contacting and off gas destruct system and ozone control system.

5.5.3.1.6 Workshop

The ENGINEER will conduct a ½ day workshop to discuss the results of the evaluation and prioritize the PLF list to be include in the final TM.

5.5.3.1.7 Final TM

Based on comments from the CITY, the ENGINEER will prepare and submit a final TM.

Deliverables

1. Draft and Final TM

5.5.3.2 Evaluation of System Improvements

This task will evaluate design alternatives, process/equipment improvements and control strategies to mitigate or eliminate PLFs identified. A prioritized list of short-term and long-term recommended improvements will be developed.

5.5.3.2.1 Ozone System Alternative Evaluations

ENGINEER will develop design alternatives for specific ozone system components and control strategies based on treatment performance trends and PLFs, plus any discussions from the needs assessment workshop.

Ozone Generation

Evaluate replacement of two, existing 300 ppd units with new larger ozone generators by qualified vendors (SUEZ, Xylem/WEDECO, or Aqua Aerobic) for voluntary *Cryptosporidium* inactivation goal.

Ozone Dissolution System Alternatives

Evaluation will include two design alternatives: (1) replace the existing diffusers with new diffusers, and (2) replace the existing fine bubble diffuser system with a new pumped sidestream injection system for each individual contact basin, using either a Mazzei Basin Nozzle Manifold arrangement or a Pipeline Flash Reactor. Prepare a preliminary process flow diagram (PFD) and general arrangement drawings for the proposed sidestream injection configuration. Summarize benefits, advantages and disadvantages for each alternative, including a comparison between nozzle manifold or pipeline flash reactor application. Present a cost-benefit analysis for 20-year operation life cycle.

Cooling Water System Alternatives

Evaluate benefits for converting from existing open loop cooling water to a closed loop, identify potential need if any for a chiller, identify additional equipment and mechanical components necessary to achieve successful implementation. Prepare a PFD and preliminary general arrangement drawings. Summarize advantages and disadvantages and present a benefit cost analysis for 20-year operation life cycle.

5.5.3.2.2 Development of Ozone System Improvements

Based on the information developed in Tasks 1 and 2.1, ENGINEER will develop a list of recommended improvements and planning-level construction costs. The improvements will include equipment replacement due to age, condition, or applicability for intended purpose; addition of new equipment or facilities for process improvement; modifications to process control strategies; or other items.

5.5.3.2.3 Draft TM

ENGINEER will prepare and submit draft TMs presenting the results of the alternative evaluations described above and recommended ozone system improvements. This task includes preparation of three drawings.

5.5.3.2.4 Workshop

Approximately 2 weeks following draft TM submittal the ENGINEER will conduct a ½ day workshop with CITY staff to present findings and seek consensus for the final strategy.

5.5.3.2.5 Final TM

ENGINEER will incorporate review comments and submit the final TM.

Deliverables

1. Draft and Final TM

5.5.3.3 Ozone Tracer Study

The purpose of this task is to perform a tracer study of the existing ozone contactor basins to simulate performance at 20 mgd (10 mgd per basin). It is anticipated that a tracer test will be conducted at 9-10 mgd through an individual basin, with each basin being tested in sequential tests.

5.5.3.3.1 Develop Ozone Tracer Test Protocol

The ENGINEER will develop the test protocol for the tracer study. Tracer test protocol will confirm the flow rate to be tested, length of time required for the tests, type and quantity of tracer chemical to add, how the tracer chemical will be added, where sampling will occur, how frequently sample will be taken and by what methods.

As part of the protocol, the ENGINEER will define equipment and chemicals required for conducting the tracer test, and will purchase or otherwise make available that equipment. The ENGINEER will contact other utilities in the area to locate required tracer chemical, facilities and equipment for mixing the tracer solution, equipment for injecting the tracer solution into the plant flow, and instruments for sampling and logging the resulting conductivity. However, direct costs for renting or purchase of testing equipment or chemicals would be paid by the CITY.

ENGINEER will coordinate review and approval of the tracer study protocol with OHA personnel, including soliciting comments on the draft protocol, submission of the final protocol, and receipt of the OHA approval, prior to conducting the tracer test.

Deliverables:

1. Draft Test Protocol
2. Final Test Protocol

5.5.3.3.2 Conduct Ozone Tracer Test

ENGINEER will conduct up to one tracer test of each of the WRWTP ozone contact basins. The study will commence by injecting tracer chemical upstream of the ozone contactor and measuring the conductivity downstream of the ozone contactor. It is assumed that the test(s) will take approximately 4 hours each including preparation time. This testing will provide information about the contact time and hydraulic performance of the ozone contactor. ENGINEER will provide two people to perform the test. Additional tests may be conducted if required as additional services as described in the optional services section below.

ENGINEER will perform all tracer test coordination including: mixing and storing the tracer solution; operating the chemical injection equipment; sample collection; and analysis. Veolia WRWTP staff will operate the plant at the desired flow rate and maintain close coordination with the CITY distribution personnel and Sherwood water operations personnel to ensure desired flow rates are maintained for the test periods. Each test shall extend approximately three hydraulic detention times through the ozone contact basin. The tracer test(s) will be performed following the protocol and per EPA/OHA criteria to determine actual hydraulic efficiency at a single continuous flow rate.

Assumptions

1. During the tracer test periods, if the flow rate varies by more than +/- 10%, the test may have to be terminated and repeated later, which will require additional effort from ENGINEER. ENGINEER will coordinate with WRWTP staff to schedule the tracer test

to avoid washwater recycle as this also could result in terminating a tracer test and repeating later

2. Proposed tracer chemical is calcium chloride
3. Conductivity will be measured using analytical equipment provided by ENGINEER
4. Sampling is expected to occur in 5-minute intervals after the slug dose addition to obtain background conductivity levels, and then in 1-minute intervals once conductivity begins to increase until the end of the test. ENGINEER will collect needed SCADA data from the plant systems.
5. Total number of samples collected, the sampling interval and the test duration will be determined as part of the testing protocol preparation.

5.5.3.3.3 Summary of Ozone Tracer Test Results

ENGINEER will prepare TM documenting protocol, design criteria, tracer study results, and CT calculations. TM will be presented to the CITY, Veolia, stakeholders (including City of Sherwood) and submitted to OHA.

Deliverables

1. Draft and Final TM

5.5.3.4 Ozone CFD Modeling

Perform CFD modeling of existing ozone contactor to evaluate performance and prepare technical memorandum to summarize findings. This task will be authorized by addendum if necessary.

5.5.4 Filtration Evaluation and Recommendations

The objective of this task is to review the existing filters and determine if any improvements not identified during the Master Plan are recommended for expansion to 20 mgd.

5.5.4.1 Evaluation

The ENGINEER will perform a needs assessment for existing filters and support systems (including backwash pumps and air scour blowers) by conducting a site visit to observe filter operation, equipment condition, and interview plant staff. Filter performance will be evaluated by inspecting historical record for outlet turbidities, backwashing characteristics, head loss accumulation data, and particle counts if any. Media condition will be observed. Media size, sieving, filter cores, or other detailed evaluations, and any study of biological conditions, will be performed by the ENGINEER as an additional service.

5.5.4.2 Draft TM

ENGINEER will prepare and submit a draft TM presenting the results of the filter evaluation.

5.5.4.3 Final TM

ENGINEER will incorporate comments and submit the final TM.

Deliverables

1. Draft and Final TM

5.5.5 Raw and Finished Water Pumping

The purpose of this task is to establish the design criteria for the Raw and Finished Water Pumps to be installed.

5.5.5.1 Evaluation

ENGINEER will evaluate alternatives (replace existing Finished Water Pump No. 4 with 5 mgd pump or install fifth pump with a capacity of 5 mgd) to increase the firm capacity of Finished Water Pump Station for 20 mgd. ENGINEER will document design criteria to replace Raw Water Pump No. 4 with 5 mgd pump. Space available for VFDs will be considered in pump selection. Pumping improvements (and associated electrical/I&C improvements) needed for 30 mgd will also be considered when making final recommendations.

5.5.5.2 Draft TM

The ENGINEER will submit a draft TM for review by the CITY.

5.5.5.3 Final TM

ENGINEER will incorporate comments and submit the final TM.

Deliverables

1. Draft and Final TM

5.5.6 Clearwell Modifications

5.5.6.1 Preliminary Inspection of Clearwell

ENGINEER will assist the CITY in procurement of a professional dive/under-water inspection company to perform a general inspection of the existing clearwell and document the as-built dimensions and other inspection findings using video and measurements. CITY will contract and pay for the dive inspection separately. CITY will use it's own forces to excavate clearwell hatches to support the inspection.

5.5.6.2 Baffle Material Evaluation

The ENGINEER will evaluate up to three types of flexible baffle materials/arrangements and select one to carry forward to detailed design of the baffle system. Access to the clearwell and staging of the installation will be considered as part of the evaluation.

5.5.6.3 Develop CFD Modeling

The ENGINEER will use ANSYS FLUENT to develop a CFD model of the existing clearwell and evaluate the addition of baffles to improve the baffle factor for CT compliance at 20 mgd and 30 mgd using free chlorine. Exact configurations will be recommended by the ENGINEER based upon existing clearwell geometry and experience with previous projects. The models are assumed to include the following flow conditions and baffle configurations:

1. Existing Clearwell CFD Model: develop CFD Model of existing clearwell and perform one simulation to compare to results of the previously performed physical tracer study with the CFD model results.
2. Baffle Improvements CFD Model: Modify CFD model of existing clearwell to add baffles to improve the baffle factor of the existing clearwell. Perform three simulations: 1) low flow rate (approximately 10 mgd), 2) 20 mgd, and 3) 30mgd.
3. Baffle Optimization: Modify CFD model from previous subtask to optimize baffle layout and develop ultimate baffle layout to maximize baffle factor of tank in future plant expansions.

5.5.6.4 Draft TM

Prepare technical memorandum to summarize findings and results of the CFD modeling and present clearwell modifications design criteria and layout to be carried forward into detailed design.

5.5.6.5 Final TM

Incorporate review comments into draft TM.

Deliverables

1. Draft and Final TM

5.5.7 Residuals Handling

The objective of this task is to review and confirm equipment improvements for the residual handling systems (WWEQ Basin and Pumps, Thickener, Solids Holding Tank and Solids Pumping, and Solids Dewatering), and to establish design criteria.

5.5.7.1 Evaluation

The ENGINEER will evaluate alternatives for the Master Plan recommended equipment improvements to the residual handling systems, including:

- Replacement of existing three washwater pumps
- Installation of second solids mixing pump or purchase of shelf spare (including electrical/I&C considerations)

5.5.7.2 Draft TM

The ENGINEER will submit a draft TM for review by the CITY.

5.5.7.3 Final TM

ENGINEER will incorporate review comments and submit the final TM.

Deliverables

1. Draft and Final TM

5.5.8 Chemical Storage and Metering

The objective of this task is to review and confirm piping/equipment improvements for the chemical systems and establish design criteria.

5.5.8.1 Evaluation

The ENGINEER will evaluate alternatives for the Master Plan recommended piping/equipment improvements to the chemical systems, including:

- Second dry polymer batching system for Actiflo
- Replace all existing chemical feed lines from storage tanks to injection points
- Containment pans for chemical feed lines routed above doorways
- Provide seismic bracing for chemical feed lines
- Add wye and basket strainers to all pump suction lines
- Add ventilation lines back to tank on sodium hypochlorite system

5.5.8.2 Draft TM

The ENGINEER will submit a draft TM for review by the CITY.

5.5.8.3 Final TM

ENGINEER will incorporate review comments and submit the final TM.

Deliverables

1. Draft and Final TM

5.5.9 Process Control and SCADA

This task will develop the design criteria for the control system modification and expansion.

5.5.9.1 Evaluation

The following work will be performed as part of preliminary design:

- Meet with the CITY and plant staff to identify SCADA / Controls needs
- Develop general scheme for modify/expanding control system for new and modified systems
- Review network and PLC capacity with regards to expansion.
- Develop preliminary Instrumentation List
- Determine PLC/Drive/Instrumentation
- Schematic design review meeting

5.5.9.2 Draft TM

The ENGINEER will submit a draft TM for review by the CITY.

5.5.9.3 Final TM

ENGINEER will incorporate review comments and submit the final TM.

5.5.10 Electrical Power Systems

The objective of this task is to develop the electrical system design criteria.

5.5.10.1 Evaluation

The ENGINEER will confirm the Master Plan recommended improvements to the existing power supply system and develop the electrical design criteria. Proposed improvements include a new electrical service, 12KV distribution gear, 12KV generation, 4160V switchgear including Finished Water pump and 480V distribution modifications as required. Proposed improvements will also include upgrades as needed to support O&M improvements (e.g. Ozone system upgrades, Chemical systems upgrades, Actiflo MCC replacement or upgrade). Other existing electrical equipment will be reviewed to determine if additional equipment requires replacement/upgrade.

The ENGINEER will perform field load monitoring and analyses of the existing electrical system. Requirements for the new electrical service will be determined.

The ENGINEER will begin coordinating with the local electrical utility (PGE) and WWSP as required to provide a new 12KV service to the plant.

5.5.10.2 Draft TM

The ENGINEER will submit a draft TM for review by the CITY.

5.5.10.3 Final TM

ENGINEER will incorporate comments and submit the final TM.

Deliverables

1. Draft and Final TM

5.5.11 Structural Investigation of Existing Facilities, Alternatives Analysis, and Foundation Concepts

Seismic evaluation will be completed for all structural elements which were identified in the 2017 Master Plan Update as items to receive seismic upgrade. Seismic evaluation of existing facilities will be pursuant with ASCE 41-17, Tier 2, Deficiency Based Evaluation and Retrofit. The evaluation will be based on review of Master Plan Tier 1 and Tier 2 evaluations (ASCE 41-13) and a review of as-built information in accordance with ASCE 41-17 Section 3.2.

Where field investigations are necessary to validate existing conditions, a program shall be developed to obtain missing information as needed. The program may include nondestructive and destructive testing, and repair procedures where destructive testing is necessary.

Assumptions: Risks to the Wilsonville Water Treatment Plant due to lateral spreading towards the river are assumed to be entirely mitigated through the WWSP seismic resiliency improvement - no engineering analysis or design is assumed to be necessary. Seismic design criteria will be based on the 2019 Oregon Structural Specialty Code (OSSC), and the seismic performance levels established in the 2017 Master Plan Update.

Investigation of existing facilities is limited to the areas listed in the Projects from Master Plan 2017 that were included with WTP Expansion Request for Proposals:

1. Finished Water Pump Station, the roof joist wall anchorage along the east and west walls of the High Service PS have a demand to capacity ratio (DCR) of 1.55. Add new wall anchorage along the east and west walls between the existing roof joists. (S3)
2. Finished Water Pump Station, the roof diaphragm shear at the High Service PS has a DCR of 1.82 to 2.25. Replace existing deficient deck sections with 16 GA corrugated steel decking. (S4)
3. Finished Water Pump Station, Tension capacity of the diaphragm chords at the High Service PS has a DCR of 1.20 at connections at the east windows. Strengthen chord splices as required. (S5)

4. Finished Water Pump Station, Roof deck shear transfer to interior wall ledger bolts at the High Service PS have DCR's of 3.20 to 3.90. Add new top plate over exterior shear wall and install epoxied anchors. (S6)
5. The Solids Dewatering Building has no lateral load resisting system in the transverse direction at the lower level. Provide structural bracing in the east-west direction by installation of shear wall extensions or exterior steel bracing. (S7)
6. Solids Dewatering Building, the roof joist wall anchorage along the east and west walls of the Solids Handling Building have a DCR of 1.17. Add new wall anchorage along the east and west walls between the existing roof joists. (S8)
7. The foundation elements at the Solids Dewatering Building do not have adequate ties. The floor slab is not doweled into the walls or the footings. Tie the existing slab to the walls with stainless steel angles and epoxy anchors. (S9)
8. WWEQ Basin North & South Walls: Horizontal reinforcing steel at east corners (#8 @ 12" OC) have a DCR of 1.53 for soil seismic loads. Recommend adding additional reinforced shotcrete to wall or adding three concrete/steel braces across the basin. (S1)
9. WWEQ Basin North & South Walls: Wall shear at the concrete beam has a DCR of 1.67 for soil seismic loads. Recommend addition of reinforced shotcrete to wall or addition of concrete/steel braces across the basin. (S2)

Foundation concepts for the new Electrical Switchgear Building will be investigated in coordination with the geotechnical engineer. Based on estimated settlements, design seismic events, and conceptual designs for the expansion an alternatives analysis will be included in the TM for deep and shallow foundation options.

5.5.11.1 Draft and Final TM

Upon Completion of the analysis and investigations above, a draft technical memorandum will be prepared with the results of the analysis with options and recommendations submitted to the CITY for review.

Following review of the draft technical memorandum, the CITY will decide on its desired course of action based upon the options and recommendations.

A final technical memorandum will be issued with the selected recommendations to be progressed into Detailed Design and review comments incorporated.

Deliverables

1. Draft and Final TM

5.5.12 Architectural Considerations and Guidelines

This task will establish architectural considerations and guidelines for the proposed new Electrical Switchgear Building and modification of the emergency generator room for occupation.

5.5.12.1 Evaluation

A meeting will be held to discuss facility and staff needs, functionality, and architectural design theme. Programming will serve to establish design objectives; general space requirement, function, and relationships; circulation patterns; personnel functional responsibilities; flexibility and expandability; material handling and workflow; and special equipment and systems.

It is assumed that other structures on the site will not require a building program.

5.5.12.2 Draft TM

The ENGINEER will submit a draft TM for review by the CITY.

5.5.12.3 Final TM

ENGINEER will incorporate review comments and submit the final TM.

Deliverables

1. Draft and Final TM

5.5.13 Building Mechanical (HVAC, Plumbing, Fire Protection)

The objective of this task is to develop the design criteria for the building mechanical systems for the proposed new Electrical Switchgear Building. Also, if new VFDs are to be in the existing Raw Water Pump Station, evaluate if an update to the cooling system in the existing Raw Water Pump Station is required.

5.5.13.1 Evaluation

The ENGINEER will develop design criteria for heating, ventilation, and air conditioning (HVAC) for the new facilities (Switchgear Building, Raw Water Pump Station (if required), and condensate drainage to a nearby drain or out of the building). No other plumbing or fire protection design is anticipated. The HVAC system will be selected as required to protect the electrical, instrumentation and control, and process equipment. Spaces that are not temperature sensitive will have heating and ventilation cooling. Temperature sensitive spaces will be provided with mechanical cooling. Controls for the HVAC systems will be self-contained.

5.5.13.2 Draft TM

The ENGINEER will submit a draft TM for review by the CITY.

5.5.13.3 Final TM

ENGINEER will incorporate review comments and submit the final TM.

Deliverables

1. Draft and Final TM

5.5.14 Site/Civil Design and Stormwater Management

This task will establish the site/civil design criteria and develop the stormwater management plan for the new facilities.

5.5.14.1 Evaluation

A preliminary site plan for the new facilities and improved truck access to the LOX storage tank area will be developed. ENGINEER will prepare a stormwater management plan which will determine volumes and detention requirements to accommodate the permanent proposed site development. It is assumed that a new stormwater treatment facility will not be required. Construction stormwater management requirements will be addressed in Task 7 – Permitting.

5.5.14.2 Draft TM

The ENGINEER will submit a draft TM for review by the CITY.

5.5.14.3 Final TM

ENGINEER will incorporate review comments and submit the final TM.

Deliverables

1. Draft and Final TM

5.5.15 Maintenance of Plant Operations

The WRWTP is the primary supply of drinking water for the cities of Wilsonville and Sherwood. This task will plan for Maintenance of Plant Operations (MOPO) during construction of the WWSP RWF improvements and the WRWTP expansion.

5.5.15.1 Review WWSP RWF Project, Schedule, and Shutdowns

Review the WWSP RWF project, schedules, and planned shutdowns of the WRWTP. Summarize the schedule and shutdown information. Identify opportunities to utilize WWSP planned shutdowns to perform WRWTP expansion activities. Document sequencing of WWSP and WRWTP Expansion

project elements, particularly where project elements are co-located. Review construction staging plans from the WWSP contractor. Integrate relevant WWSP activities into the WRWTP Expansion schedule. Discuss the results of this activity in a project workshop with CITY staff.

5.5.15.2 Contingency Planning for WWSP Shutdowns

Review the planned WRWTP shutdowns and procedures for the WWSP RWF project. Review WRWTP components to identify ones that may have high likelihood of failure or have high consequences of failure. For the identified at-risk components, determine potential steps that could be taken by the CITY to reduce risk. Risk mitigation steps to be considered include on-boarding the WRWTP CM/GC early, developing processes for emergency work authorization for the WWSP CM/GC contractor, obtaining spare parts in advance, preparation for emergency equipment ordering, calculating durations of water supply available given demand and alternate supply options, and developing conceptual operational sequences to bypass failed equipment. Attend up to four pre-work MOPO activity meetings with WWSP contractor to assist the CITY with contingency planning discussions. Discuss the results of this activity in a project workshop with CITY staff.

5.5.15.3 Preliminary Construction Sequence

Develop preliminary sequences for construction activities addressing MOPO. Identify sequencing constraints. Document the results in workflow sequences and specification narratives. Discuss the results in a project workshop with CITY staff.

5.5.15.4 Draft TM

The ENGINEER will submit a draft TM for review by the CITY.

5.5.15.5 Final TM

ENGINEER will incorporate review comments and submit the final TM.

Deliverables

1. Draft and Final TM

5.6 Basis of Design Report

Based on information developed in previously completed tasks, a Basis of Design Report (BODR) will be prepared by the ENGINEER which will document design decisions in preparation for future project phases.

5.6.1 Draft Report

The ENGINEER will prepare the BODR to document what will be designed and constructed for the Project. The BODR will represent a compilation of design criteria, technical analyses, decisions and assumptions.

It is the intent of the ENGINEER to use previously-submitted TMs to serve as chapters, sections, and subsections for the draft and final BODR. The BODR components will be assembled and bound together into a complete document, including an Executive Summary.

5.6.2 Final Report

ENGINEER will incorporate comments and submit the final BODR.

5.7 30% Design

The 30% design submittal shall consist of drawings representing the project as presented in the Final Basis of Design Report.

5.7.1 30% Design Drawings and Specifications Outline

For scope and budgeting purposes, the facilities listed under Part D Anticipated Design Scope are anticipated to be included in the Project.

Assumptions:

- Design for any additional improvements identified during review of Master Plan recommendations will be scoped and authorized by amendment
- Raw water metering and flash mix facilities do not require improvements for 20 mgd.

- Clearwell modifications will be designed and constructed to be constructed in February 2021 as a separate package from the other proposed improvements.
- Design will use the 2019 Oregon Structural Specialty Code, 2019 Zero Energy Ready Commercial Code, 2019 Mechanical Specialty Code, and 2017 Oregon Electrical Specialty Code.
- No fire suppression systems will be required for the new facilities.
- Spaces that are not temperature sensitive will have heating and ventilation cooling. Temperature sensitive spaces will be provided with mechanical cooling. Controls for the HVAC systems will be self-contained.
- A detailed fire alarm system design, if required, will not be provided, but will be implemented by means of a “Performance Specification” by the Contractor.
- Lightning Strike Protection will be evaluated, if needed will be provided by means of a “Performance Specification” by the Contractor.
- Short Circuit coordination and Arc Flash Analysis provided by means of a “Performance Specification” by the Contractor.
- Existing ancillary systems such as telephone, public address systems, data networking, access control, video surveillance will be expanded to encompass the proposed new Electrical Switchgear building.
- Lighting design will include automatic energy reduction measures are required by the Oregon Energy Code.
- Detailed point-to-point wiring diagrams not included as part of the design.
- Electrical conduit runs will be diagrammatically shown on the plans.

Drawings will be prepared in electronic format and are generally organized as follows to perform 30% design for scope outlined in Table 2:

General sheets - Include cover title sheet, location map, vicinity map, drawing index, design criteria, process flow diagrams, general notes, hydraulic profile, symbols and abbreviations.

Civil sheets - Include site plan, survey data, site grading and paving plans, and storm drainage plans.

Architectural sheets – Include building code summaries and general notes

Structural sheets - Include structural design standards, general notes, plans and sections and details.

Mechanical sheets - Include general mechanical symbols, abbreviations and general notes, piping and equipment schedules, plans and sections for mechanical systems, and details.

Electrical sheets - Include symbols, abbreviations and general notes, electrical site plan, single line diagram, service load calculation table, panel schedules, power and lighting plans, schematics, and equipment details.

Instrumentation and Control sheets - Include instrumentation symbols and abbreviations, P&ID schematics, SCADA details, Control Panel elevations, schematics, and details.

HVAC, Building Plumbing sheets - Include general symbols and abbreviations, general notes, plans and sections for HVAC and building plumbing.

Demolition sheets are included where necessary. A preliminary list of drawings is furnished as **Attachment A** herein. ENGINEER will prepare a three-dimensional CAD-generated model of the work for some facilities to use in drawing preparation. The model will be developed using software compatible with AutoCAD and will be submitted to the CM/GC at the 90% stage of project completion for further development and for use during subsequent construction stages. Drawings for some existing facilities will only be prepared in 2D. The following facilities are assumed to be modeled in 3D:

- Dry polymer batching system for Actiflo
- Raw Water Pump Station
- WWEQ Basin and Pump Station (Pump area only)
- Finished Water Pump Station/Clearwell
- Sludge Thickener (Solids Holding Tank mixing pump area only)
- LOX System

- New Electrical Switchgear Building
- New Emergency Generator/Diesel Fuel Storage Tank

Technical specifications will be prepared following the Construction Specifications Institute (CSI) specification format. ENGINEER will not be responsible for preparing general and supplemental conditions, bidding instructions, bid forms, or other non-technical or contract-related specifications, but will provide technical input and review sections prepared by the CITY or CM/GC for conformance with the design intent.

Design Milestone submittals will be used to conduct quality reviews, solicit stakeholder comments, and assess project status and progress. Following internal QA/QC procedure, ENGINEER will provide electronic documents for formal review by the CITY, Veolia, and CM/GC. The ENGINEER will consider formal review comments received on each submittal and provide a response to each indicating if the design was changed to incorporate the comment, or rationale for why the comment did not result in a design change.

Assumptions:

1. All work is confined to the site as defined in the Basis of Design Report.
2. CADD standards and drafting criteria will follow the ENGINEER standard format.
3. Civil design will be done with Civil 3D. Other design will be performed in AutoCAD and Revit.
4. Title Blocks will conform with the CITY standard.

The 30% design submittal shall consist of drawings representing the selected alternative as presented in the Final Basis of Design Report and will consist of the following:

Specifications:

- Draft table of contents
- Draft specification sections for long-lead, major work items only

Other Supporting Information:

- OPCC
- Updated schedule
- QA/QC documentation

Deliverables:

1. 11x17 size drawings, PDF
2. All other deliverables, PDF

5.7.2 Opinion of Probable Construction Cost

The ENGINEER will prepare an OPCC at the 30% completion stage as described herein. All work will be performed in accordance with the Association for the Advancement of Cost Engineering (AACE) guidelines, the project specific estimating policies, and standard THE ENGINEER estimating procedures as follows:

- 30% completion - Class 4 OPCC (unit pricing methodology)

The OPCC will be prepared in accordance with the cost estimate classes defined by the AACE. The CITY acknowledges that the ENGINEER has no control over costs of labor, materials, competitive bidding environments and procedures, unidentified field conditions, financial and/or market conditions, or other factors likely to affect the OPCC of this project, all of which are and will unavoidably remain in a state of change, especially in light of the high volatility of the market attributable to Acts of God and other market events beyond the control of the parties. The CITY further acknowledges that this is a “snapshot in time” and that the reliability of this OPCC will inherently degrade over time. The CITY agrees that the ENGINEER cannot and does not make any warranty, promise, guarantee, or representation, either express or implied, that proposals, bids, project construction costs, cost of operation, or cost of maintenance will not vary substantially from the ENGINEER’s good faith Opinion of Probable Construction Cost.

Deliverables:

- 30% OPCC

5.7.3 Design Review Workshop

30% design reviews will be interactive. A 4-hour presentation of the 30% design will be made by the ENGINEER to the design review team and to the CM/GC. The review team and the ENGINEER will meet in a second 4-hour meeting for 30% complete stage to discuss questions and resolve issues identified during the review process. Accepted comments will be incorporated into the project design for subsequent submittals. It is understood that the CITY will review all submittals within 10 working days – design activities will continue throughout the review period to enable overall project schedule to be met. Review comments will be collated by the CITY and compiled onto a comment review form provided by the ENGINEER. Each meeting will be held either at the WRWTP or via Teleconference.

Deliverables:

1. Workshop Agenda
2. Draft and Final meeting minutes

6 DETAILED DESIGN

Task 6 Objectives:

Continue development of the design and prepare construction contracting documents – drawings and specifications. Clearwell modifications will be designed and constructed separately (earlier) from the rest of the planned improvements. CM/GC involvement in Detailed Design is detailed in Task 3 - CM/GC Support.

Task 6 Assumptions:

- A. Changes to the preliminary design concepts will not be made except through mutual agreement between the CITY and the ENGINEER team, including applicable Scope of Services and Budget revisions, if necessary.

Task 6 Subtasks:**6.1 Clearwell Modifications**

The objective of this subtask to complete the design of the proposed clearwell modifications prior to completing the rest of the design package and to also provide Engineering Services During Construction (ESDC) of the clearwell modifications. ESDC for construction of the remaining improvements will be determined later under Task 8.

6.1.1 Clearwell Design Review Workshops

The ENGINEER will conduct two interactive design review workshops with the CITY, Veolia, and CM/GC during each of the 60% and 90% design submittal review periods. Reviewers will discuss issues and concerns and will work to identify acceptance and/or resolution. Accepted comments will be incorporated into the project design for subsequent submittals.

Each meeting will last 2 hours and will be held either at the WRWTP or via teleconference.

Deliverables:

1. Workshop Agenda
2. Draft and Final meeting minutes

6.1.2 Clearwell Final Design

The purpose of this task is to develop construction documents for the clearwell modifications.

6.1.2.1 60% Design

The 60% design submittal shall consist of drawings and specifications as developed for the selected alternative as presented in the Final BODR and the 30% design, as revised based on review comments received. Submittal documents will consist of the following:

- 60% Specifications (all proposed specification sections)
- 60% drawings (complete drawing set)

Deliverables:

1. Specifications and drawings as PDF files
2. All other deliverables as PDF files

6.1.2.2 90% Design

The 90% design submittal will be used for formal biddability, constructability, and operation review; and to coordinate permit applications. The submittal will consist of the following:

- Tabulated comment response for 60% submittal review log
- 90% Drawings (complete drawing set)
- 90% Specifications (all proposed specification sections)
- Updated Detailed Design phase technical memoranda
- Updated design schedule

The 3D model will be furnished to the CITY and will be intended for use by the CM/GC. All drawings will be 11x17 size, 2D only.

Deliverables:

1. Specifications and drawings as PDF files
2. All other deliverables as PDF files

6.1.2.3 100% Design

The Final Design submittal includes all materials needed to begin issuing packages for bidding. It will consist of the following:

- Tabulated comment response for 60% submittal review log
- 100% stamped and sealed drawings
- 100% stamped and sealed specifications
- Final detailed design phase technical memoranda
- Final schedule

Deliverables:

1. Specifications and drawings as PDF files, labeled
2. All other deliverables as PDF files, labeled

6.1.3 Clearwell Permitting Assistance

Prepare, submit, and monitor application for Oregon Health Authority, Drinking Water Program Plan Review. Incorporate comments into the design. Incorporate conditions into design documents.

6.1.4 Clearwell ESDC

The objective of this task is to provide ESDC of the clearwell modifications. ESDC for construction of the remaining improvements will be determined under Task 8.

6.1.4.1 Pre-construction Meeting

ENGINEER will attend a preconstruction meeting with CM/GC, CITY, and Veolia to be conducted at WRWTP. The purpose of the conference will be to discuss communication, coordination, and other procedures and discuss general work plan and project requirements. CITY will take notes or otherwise record the results of this conference.

6.1.4.2 Shop Drawings and Submittals

ENGINEER shall review and comment on submittals for substantial conformance with the Contract Documents and any special provisions. Submittals will originate with the CM/GC and will be submitted in accordance with the Contract Documents, and will consist of such items as design drawings; calculations; shop drawings; working drawings; certificates; lists of materials; operating

instructions; catalog cuts; data sheets; brochures; samples and mock-ups; installation instructions; plans to accommodate portions of the work; quality control plans; manufacturers' and contractors' Operations and Maintenance Manuals and Training Plans; environmental and pollution control plans; and other items used to administer the construction and performance of the Work. Reviews and comments performed by ENGINEER will recommend further action.

All reviews will be performed using PDF files to be provided by the CM/GC to the CITY. ENGINEER will receive files from the CITY, and reviewed documents will be transmitted to the CITY.

ENGINEER will keep a copy of submittals reviewed by ENGINEER for documentation purposes. Correspondence with the CM/GC will be through the CITY. Comments on shop drawings will be made directly onto the submittal (as PDF). ENGINEER may also provide additional information in a traditional memo format and may attach related PDF files directly to the submittal. ENGINEER will also receive a file copy of submittals reviewed by the CITY. Submittal logs will be maintained by the CITY.

The estimated level of effort for this subtask is based on an assumed review effort required for up to 5 shop drawing reviews, not including resubmittals. For the purposes of budgeting, it is assumed that up to 7 hours for an engineer, architect, or other design professional will be required to review and respond to each submittal directly, not including clerical. Manpower estimates include a 10% contingency factor and additional hours for coordination of review comments. Additional requests or levels of effort beyond these assumptions may be provided as Additional Services.

ENGINEER shall establish a goal to complete the review of submittals in a timely manner, to allow CITY to respond to the CM/GC within the time allotted in the Contract Documents. Minor clarifications may be noted on submittals, and ENGINEER may contact the construction contractor for minor clarifications and supplemental data to allow quicker final turnarounds of submittals. Oral clarifications shall be noted in writing by a follow up memorandum or a note on the submittal being reviewed.

Deliverables:

1. PDF files consisting of submittal responses.

6.1.4.3 Document Clarifications and RFI Responses

ENGINEER shall provide assistance and guidance to the CM/GC, as requested by CITY, in the interpretation of written Requests for Clarification of Contract Documents (RFC) and Requests for Information (RFI) from the CM/GC, installing subcontractors and suppliers.

ENGINEER will interpret the Contract Documents and will provide written responses, which may include elementary sketches to illustrate design details and intent. This scope of work assumes 3 written RFI or RFC responses. For the purposes of budgeting, it is assumed that up to 5 hours for an engineer, architect, or other design professional will be required to review and respond to each request. Additional requests or levels of effort beyond these assumptions may be provided as Additional Services.

RFI and RFC logs will be maintained by Engineer. ENGINEER will receive files from CM/GC, and reviewed documents will be transmitted to CITY.

Deliverables:

1. PDF files consisting of RFI and RFC responses.

6.1.4.4 Construction Progress Meetings

ENGINEER shall attend one construction progress meeting during construction of clearwell modifications.

6.1.4.5 Record Drawings

ENGINEER shall prepare Record Drawings based on red-line markups, addenda and change order information compiled and furnished by CITY. The record drawings will represent the information provided and to that extent will represent the location, types of various components and the way

the project was constructed. The work scope assumes accurate and complete information will be received and that an average of 1 hour for an engineer, architect, or other design professional will be required per drawing to document conditions, and that no more than 5 project drawings will require revision. It is assumed that red-line markups will be furnished to ENGINEER at end of construction.

ENGINEER is not responsible for errors or omissions in the information that is used to create the record drawings. Record Drawings shall be in the format described herein. ENGINEER shall modify CAD design files and submit to CITY a final set of Record Drawings when the project is complete and accepted.

Deliverables:

1. AutoCAD files and 22x34 pdf file

Task 6.1.5 Preliminary Clearwell Tracer Study

The purpose of this task is to perform a tracer study of the existing clearwell after completion of clearwell modifications to confirm results of CFD modeling performed at a similar flow rate, perhaps at 10-15 mgd depending on the plant's ability to operate at a specific flowrate for an extended period of time. This tracer test will not be used to change the hydraulic efficiency of the tank for use in CT compliance calculations – only for confirmation of the performance of the newly installed baffles. At the completion of construction of the main construction package, another tracer study (to be negotiated under Task 8) will be performed to establish the hydraulic efficiency of the tank for use in CT compliance calculations at the uprated 20 mgd capacity.

6.1.5.1 Develop Clearwell Tracer Test Protocol

The ENGINEER will revise the test protocol developed for the 2014 WRWTP Tracer Test as required for this work. Tracer test protocol will confirm the flow rate to be tested, length of time required for the tests, type and quantity of tracer chemical to add, how the tracer chemical will be added, where sampling will occur, how frequently sample will be taken and by what methods.

As part of the protocol, the ENGINEER will define equipment and chemicals required for conducting the tracer test and will purchase or otherwise make available that equipment. The ENGINEER will contact other utilities in the locale to locate required tracer chemical, facilities and equipment for mixing the tracer solution, equipment for injecting the tracer solution into the plant flow, and instruments for sampling and logging the resulting conductivity.

As part of the protocol, previously prepared reports (WRWTP Tracer Study, 2014, WSMP, September 2012, and WRWTP Disinfection (CT) Analysis, April 7, 2011) will be used to determine and/or confirm the effective clearwell volume and Hydraulic Residence Time for one points of CT compliance: current compliance point at the outflow from the clearwell (from measured values).

Deliverables:

1. Draft and Final Clearwell Tracer Test Protocol

6.1.5.2 Conduct Clearwell Tracer Test

ENGINEER will conduct two tracer tests at WRWTP Clearwell following baffle installation. The tracer study flow rate shall be mutually agreed upon by the ENGINEER, the CITY, and Veolia before CFD modeling is completed. The study will commence by injecting tracer chemical into the filter effluent and measuring the conductivity at the utility waterline at the high service pump station discharge pipeline. The initial test will be with the clearwell full and will be repeated if necessary. It is assumed that the test(s) performed with the clearwell full will take approximately 10 hours; including preparation time. ENGINEER will confirm with CITY, Veolia and Sherwood operations staff that PRV settings and tank levels are set and maintained to facilitate the testing. This testing will provide information about the contact time and hydraulic performance of the clearwell. ENGINEER will provide two people to perform the test. Additional tests may be conducted if required as additional services as described in the optional services section below.

ENGINEER will perform all tracer test coordination including: mixing and storing the tracer solution; operating the chemical injection equipment; sample collection; and analysis. Veolia WRWTP staff will operate the plant at the desired flow rate and clearwell level and maintain close coordination with the CITY distribution personnel and Sherwood water operations personnel to ensure desired flow rates are maintained for the test periods. Each test shall extend approximately three hydraulic detention times through the clearwell. The tracer test(s) will be performed following the protocol and per EPA/OHA criteria to determine actual hydraulic efficiency at both alternate compliance points at a single continuous flow rate.

Assumptions

1. During the entire tracer test periods, if the flow rate or water level changes by more than +/- 10%, the test may have to be terminated and repeated later, which will require additional effort from ENGINEER. ENGINEER will coordinate with WRWTP staff to schedule the tracer test to avoid backwashes or washwater recycle as this also could result in terminating a tracer test and repeating later
2. Proposed tracer chemical is calcium chloride
3. Conductivity will be measured using analytical equipment provided by ENGINEER
4. Sampling is expected to occur in 5-minute intervals after the slug dose addition to obtain background conductivity levels, and then in 1-minute intervals once conductivity begins to increase until the end of the test. ENGINEER will collect needed SCADA data from the plant systems.
5. Total number of samples collected, the sampling interval and the test duration will be determined as part of the testing protocol preparation.

6.1.5.3 Summary of Tracer Test Results

ENGINEER will prepare TM documenting protocol, design criteria, tracer study results, and CT calculations. TM will be presented to the CITY, Veolia, stakeholders for review and comment.

Deliverables

1. Draft and Final TM

6.2 60% Design and Review Meetings

The 60% design submittal shall consist of drawings and specifications as developed for the selected alternative as presented in the Final Design Report, as revised based on review comments received at the 30% complete stage. Submittal documents will consist of the following:

Specifications:

- Final table of contents
- Draft specification sections, selected for key equipment

Drawings will generally be the same as those included in the 30% submittal, with additional drawings prepared to reflect the higher level of completion and design progression and related review comments received from the CITY, see the drawing list in Appendix A.

Other Supporting Information:

- Tabulated comment response for 30% submittal review log
- OPCC
- Updated schedule

The CITY and CM/GC will review and comment on draft documents. The ENGINEER will conduct three 60% design review workshops with the CITY and CM/GC to review design comments and coordinate with CMGC's scope items anticipated to be constructability, construction sequence, value analysis, and schedule. Reviewers will discuss issues and concerns and will work to identify acceptance and/or resolution. Accepted comments will be incorporated into the project design for subsequent submittals.

Each meeting will last 4 hours and will be held either at the WRWTP or at the ENGINEER's office in Portland. Workshop deliverables include Workshop Agenda and Draft and Final meeting minutes.

Deliverables:

3. Specifications and 11x17 drawings as PDF files
4. Other deliverables as PDF files
5. Workshop Materials and Summary

6.3 90% Design of WRWTP Expansion

The 90% design submittal will be used for formal biddability, constructability, operation, and environmental review; and to coordinate with GMP preparation and permit applications. The submittal will consist of the following:

- Tabulated comment response for 60% submittal review log
- 90% Drawings (complete drawing set)
- 90% Specifications (all proposed specification sections)
- OPCC
- Updated design schedule

The 3D model will be furnished to the CITY and will be intended for use by the CM/GC. All drawings will be 11x17 size, 2D only. Deliverables will include Specifications and drawings as PDF files

The CITY and CM/GC will review and comment on draft documents. The ENGINEER will conduct one 90% design review workshops with the CITY and CM/GC to review design comments and coordinate with CMGC's scope items anticipated to be constructability, construction sequence, value analysis, and schedule. Reviewers will discuss issues and concerns and will work to identify acceptance and/or resolution. Accepted comments will be incorporated into the project design for subsequent submittals.

The meeting will last 4 hours and will be held either at the WRWTP or at the ENGINEER's office in Portland. Workshop deliverables include Workshop Agenda and Draft and Final meeting minutes.

Deliverables:

1. Specifications and 11x17 drawings as PDF files
2. All other deliverables as PDF files
3. Workshop Materials and Summary

6.4 100% Design of WRWTP Expansion

The Final Design submittal includes all materials needed to begin issuing packages for subcontract buyout. It will consist of the following:

- Tabulated comment response for 90% submittal review log
- 100% stamped and sealed drawings
- 100% stamped and sealed specifications
- Final schedule

Deliverables:

1. Specifications and drawings as PDF files
2. All other deliverables as PDF files

Assumptions:

1. All bidding packages and processes are to be prepared by the CM/GC.
2. No Mylar civil drawings are required because there will be no civil yard piping drawings in the public right of way

6.5 Opinions of Probable Construction Cost

The ENGINEER will prepare a Opinions of Probable Construction Cost (OPCC) at the 60% and 90% completion stage as described herein and will conduct a one-day meeting with the CM/GC to consider and

reconcile differences between the ENGINEER OPCC and similar CM/GC values. All work will be performed in accordance with the Association for the Advancement of Cost Engineering (AACE) guidelines, the project specific estimating policies, and standard THE ENGINEER estimating procedures as follows:

- 60% completion - Class 3 OPCC (resource pricing methodology)
- 90% completion - Class 2 OPCC (resource pricing methodology)

The CITY acknowledges that the ENGINEER has no control over costs of labor, materials, competitive bidding environments and procedures, unidentified field conditions, financial and/or market conditions, or other factors likely to affect the OPCC of this project, all of which are and will unavoidably remain in a state of change, especially in light of the high volatility of the market attributable to Acts of God and other market events beyond the control of the parties. The CITY further acknowledges that this is a “snapshot in time” and that the reliability of this OPCC will inherently degrade over time. The CITY agrees that the ENGINEER cannot and does not make any warranty, promise, guarantee, or representation, either express or implied, that proposals, bids, project construction costs, cost of operation, or cost of maintenance will not vary substantially from the ENGINEER’s good faith Opinion of Probable Construction Cost.

Deliverables:

1. 60% and 90% OPCC, draft and final versions

7 PERMITTING ASSISTANCE

Task 7 Objectives:

The purpose of this task is to identify and complete applications for local and State permits for the Project.

Task 7 Assumptions:

- A. This task will be performed by ENGINEER.
- B. The CITY will pay application fees directly to the agency and will sign permit applications.
- C. No impacts to wetlands, waterways of the United States or threatened or endangered species is anticipated.
- D. The Contractor will obtain construction general building and trade discipline permits
- E. The project is excluded from National Environmental Policy Act (NEPA) review.
- F. A stormwater management plan and Clean Water Act 401 Certification is not required.
- G. If required, tree identification, mapping, planning, and permitting will be performed by the CITY's arborist.
- H. No Federal permits are required

Task 7 Subtasks:

7.1 Prepare a Permitting Plan

Identify the various permits that may be required, the authorizing or approval agency, points of contact, timeline of activities and whether the permit is to be acquired by the CITY or the Construction Contractor.

7.2 Meeting with Public Agencies

Following creation of the permitting plan, ENGINEER will meet with public agencies at the local and state level in a pre-application meeting to identify points of contact, procedures, expectations for permit application packages and to review the project timeline and permitting sequences.

7.3 Establish Permitting Requirements

Establish requirements that will impact the design or design presentation and document them in a memorandum for internal use by design discipline leads.

7.4 Design Review

Prepare, submit, and monitor application to OHA for Design Review (Type II or III). This includes development of a stormwater report. Incorporate conditions into design documents.

7.5 Tualatin Valley Fire and Rescue (TVF&R) Coordination

Coordinate with Tualatin Valley Fire and Rescue (TVF&R) and incorporate its requirements into the design. Incorporate conditions into design documents.

7.6 Oregon Health Authority Coordination

Prepare, submit, and monitor application for Oregon Health Authority, Drinking Water Program Plan Review. Incorporate comments into the design. Incorporate conditions into design documents.

7.7 City of Wilsonville NPDES Permit Coordination

Prepare, submit, and monitor application to City of Wilsonville for Oregon Department of Environmental Quality NPDES General 1200-CN Permit related to erosion control. Incorporate conditions into design documents.

7.8 Building Permit

Prepare, submit, and monitor application for City of Wilsonville general building permit. Incorporate conditions into design documents.

7.9 Meetings

Participate in three permitting coordination meetings with the CITY staff to identify action items and schedule.

Task 7 Deliverables:

1. City of Wilsonville Permit Applications
 - a) City of Wilsonville Modification of a Conditional Use Permit (if needed)
 - b) Design Review (Type II or III)
2. Oregon DEQ 1200CN – Application
3. OHA Plan Review – Application
4. Public information materials, as requested

8 ENGINEERING SERVICES DURING CONSTRUCTION

With completion of Task 5, the CITY and the ENGINEER will develop a contract amendment for Task 8, in which the ENGINEER will furnish engineering services assistance during the WRWTP construction and post-construction stages.

Scope of Services for Task 8, including adjusted Basis of Compensation and revised Schedule, will be developed as mutually agreed by the CITY and the ENGINEER near the conclusion of Task 5 once engineering assistance requirements are more clearly understood by all parties. Scope will be authorized by an amendment.

OPTIONAL TASKS

The following optional tasks require written authorization from the City before proceeding.

Task 5.5.2.2 Actiflo Full Scale Demonstration Testing

The ENGINEER will implement the test plan, with operations staff making all field adjustments and measurements. Weekly progress meetings at the WRWTP will be held with Veolia and the ENGINEER to review findings and identify necessary changes in direction. Daily log forms will be made available to provide a mechanism for recording observations, flow changes, and other concerns.

At the midpoint of the test, the ENGINEER will make a presentation to the CITY, summarizing all interim findings and results. A test report will be prepared and submitted to the CITY at the conclusion of all tests.

Assumptions:

1. Veolia will operate the plant to allow testing of individual Actiflo basins at 9-10 mgd flowrate, as documented in the Testing Plan
2. It is assumed that this will occur on a similar schedule to the filtration pilot testing (5-week run periods occurring four times during the first year of the project).

Deliverables:

1. Daily log template
2. Interim results presentation
3. Draft Test Report
4. Final Test Report

Task 7.10 Public Outreach Support

Provide support for public outreach and community involvement by providing summary technical information, preliminary site plans, 2D or 3D renderings where available, schedules, and other information as requested. ENGINEER will prepare for and participate in up to 2 community or neighborhood meetings.

Task 7.11 Conditional Use Permit Application

Prepare, submit, and monitor application for City of Wilsonville Major Modification of a Conditional Use Permit (Type III). Attend a public meeting. Incorporate conditions into design documents. The City Planning Manager indicated that this would not be required so it is listed as optional

ATTACHMENTS

Attachments:

- A Preliminary Drawing List**
- B Full Geotechnical Scope of Work**
- C Preliminary Project Schedule**
- D Fee Summary and Breakdown by Task**

Attachment A
Preliminary Drawing List

Attachment A - Willamette River Water Treatment Plant Expansion - Preliminary Drawing List

DISCIPLINE	SHEET NAME	30%	60%	90%	100%	Count	
GENERAL							
G-	1	COVER SHEET	S	O	C	X	1
G-	2	LOCATION AND VICINITY MAP	S	O	C	X	2
G-	3	LIST OF DRAWINGS	S	O	C	X	3
G-	4	SYMBOLS	S	O	C	X	4
G-	5	ABBREVIATIONS	S	O	C	X	5
G-	6	PROCESS FLOW SCHEMATIC	S	O	C	X	6
G-	7	DESIGN CRITERIA - I	S	O	C	X	7
G-	8	DESIGN CRITERIA - II	S	O	C	X	8
G-	9	HYDRAULIC PROFILE	S	O	C	X	9
G-	10	PIPE SCHEDULE - FLUID ABBREVIATIONS	S	O	C	X	10
G-	11	PIPE SCHEDULE - PIPE MATERIALS	S	O	C	X	11
CIVIL							
C-	1	GENERAL NOTES AND SYMBOLS	S	O	C	X	12
C-	2	EXISTING SITE PLAN, CONTRACTOR'S SITE ACCESS, STORAGE & STAGING	S	O	C	X	13
C-	3	OVERALL SITE PLAN	S	O	C	X	14
C-	4	HORIZONTAL CONTROL AND PAVING PLAN - EMERGENCY GENERATOR AREA	S	O	C	X	15
C-	5	HORIZONTAL CONTROL AND PAVING PLAN - LOX AREA	S	O	C	X	16
C-	6	STORM DRAINAGE AND GRADING PLAN - EMERGENCY GENERATOR AREA		S	C	X	17
C-	7	STORM DRAINAGE AND GRADING PLAN - LOX AREA		S	C	X	18
C-	8	CHEMICAL PIPING PLAN - I	S	O	C	X	19
C-	9	CHEMICAL PIPING PLAN - II	S	O	C	X	20
C-	10	STANDARD DETAILS - I		S	C	X	21
C-	11	STANDARD DETAILS - II		S	C	X	22
C-	12	STANDARD DETAILS - III		S	C	X	23
C-	13	STANDARD DETAILS - IV		S	C	X	24
C-	14	MISCELLANEOUS CIVIL DETAILS		S	C	X	25
STRUCTURAL							
S-	1	NOTES AND DESIGN CRITERIA	S	O	C	X	26
S-	2	STATEMENT OF SPECIAL INSPECTIONS - I	S	O	C	X	27
S-	3	STATEMENT OF SPECIAL INSPECTIONS - II	S	O	C	X	28
S-	4	STANDARD DETAILS	S	O	C	X	29
S-	5	STANDARD DETAILS	S	O	C	X	30
S-	6	STANDARD DETAILS	S	O	C	X	31
S-	7	STANDARD DETAILS	S	O	C	X	32
S-	8	STANDARD DETAILS	S	O	C	X	33
WASTE WASHWATER BASIN AND PUMP STATION							
8S-	1	PLAN	S	O	C	X	34
8S-	2	SECTION		S	C	X	35
8S-	3	DETAILS		S	C	X	36
FINISHED WATER PUMP STATION/CLEARWELL							
9S-	1	PLAN	S	O	C	X	37
9S-	2	SECTION		S	C	X	38
9S-	3	SECTION		S	C	X	39
9S-	4	SECTION		S	C	X	40
9S-	5	DETAILS		S	C	X	41
9S-	6	DETAILS		S	C	X	42
SLUDGE THICKENER							
11S-	1	PLAN	S	O	C	X	43
11S-	2	SECTION		S	C	X	44
SLUDGE DEWATERING BUILDING							
12S-	1	PLAN	S	O	C	X	45
12S-	2	SECTION		S	C	X	46
12S-	3	DETAILS		S	C	X	47
CHEMICAL STORAGE AND METERING							
13S-	1	PLAN	S	O	C	X	48
13S-	2	SECTION		S	C	X	49
13S-	3	DETAILS		S	C	X	50
OZONE GENERATION							
19S-	1	PLAN	S	O	C	X	51
19S-	2	SECTION		S	C	X	52
LOX SYSTEM							
20S-	1	PLAN	S	O	C	X	53
20S-	2	SECTION		S	C	X	54
20S-	3	DETAILS		S	C	X	55
GENERATOR/DIESEL FUEL TANK							
22S-	1	PLAN	S	O	C	X	56
22S-	2	SECTION		S	C	X	57
SWITCHGEAR BUILDING							
23S-	1	PLAN	S	O	C	X	58

23S-	2	PLAN	S	O	C	X	59
23S-	3	SECTION		S	C	X	60
23S-	4	DETAILS		S	C	X	61
ARCHITECTURAL							
A-	1	ABBREVIATIONS	S	O	C	X	62
A-	2	SCHEDULES		S	C	X	63
A-	3	DETAILS		S	C	X	64
A-	4	DETAILS		S	C	X	65
A-	5	DETAILS		S	C	X	66
FINISHED WATER PUMP STATION							
9A-	1	EX. GENERATOR ROOM CODE SUMMARY, LIFE SAFETY PLAN, ENERGY SUMMARY	S	O	C	X	67
9A-	2	EX. GENERATOR ROOM FLOOR PLA		S	C	X	68
9A-	3	EX. GENERATOR ROOM REFLECTED CEILING PLAN		S	C	X	69
9A-	4	EX. GENERATOR ROOM INTERIOR ELEVATIONS		S	C	X	70
SLUDGE DEWATERING BUILDING							
12A-	1	ROOF PLAN, EXTERIOR ELEVATION, SECTION	S	O	C	X	71
SWITCHGEAR BUILDING							
23A-	1	BUILDING CODE SUMMARY AND LIFE SAFETY PLANS	S	O	C	X	72
23A-	2	FLOOR PLAN		S	C	X	73
23A-	3	ROOF PLAN		S	C	X	74
23A-	4	EXTERIOR ELEVATIONS - I		S	C	X	75
23A-	5	EXTERIOR ELEVATIONS - II		S	C	X	76
23A-	6	SECTION		S	C	X	77
INSTRUMENTATION							
I-	1	P&ID SYMBOLS AND LEGEND	S	O	C	X	78
I-	2	DETAILS		S	C	X	79
I-	3	DETAILS		S	C	X	80
I-	4	DETAILS		S	C	X	81
I-	5	CONTROL NETWORK 1	S	O	C	X	82
I-	6	CONTROL NETWORK 2	S	O	C	X	83
I-	7	RAW WATER PUMP STATION I/O WIRING 1	S	O	C	X	84
I-	8	RAW WATER PUMP STATION I/O WIRING 2	S	O	C	X	85
I-	9	LIQUID OXYGEN STORAGE I/O WIRING	S	O	C	X	86
I-	10	OZONE GENERATOR NO. 1 I/O WIRING 1	S	O	C	X	87
I-	11	OZONE GENERATOR NO. 1 I/O WIRING 2	S	O	C	X	88
I-	12	OZONE GENERATOR NO. 2 I/O WIRING 1	S	O	C	X	89
I-	13	OZONE GENERATOR NO. 2 I/O WIRING 2	S	O	C	X	90
I-	14	OZONE CONTACT BASINS I/O WIRING 1	S	O	C	X	91
I-	15	OZONE CONTACT BASINS I/O WIRING 2	S	O	C	X	92
I-	16	OZONE CONTACT BASINS I/O WIRING 3	S	O	C	X	93
I-	17	OZONE CONTACT BASINS I/O WIRING 4	S	O	C	X	94
I-	18	FILTER WASTE WASHWATER PUMP STATION I/O WIRING 1	S	O	C	X	95
I-	19	FILTER WASTE WASHWATER PUMP STATION I/O WIRING 2	S	O	C	X	96
I-	20	FILTER WASTE WASHWATER PUMP STATION I/O WIRING 3	S	O	C	X	97
I-	21	FINISHED WATER PUMP STATION I/O WIRING 1	S	O	C	X	98
I-	22	FINISHED WATER PUMP STATION I/O WIRING 2	S	O	C	X	99
I-	23	SLUDGE THICKENER I/O WIRING 1	S	O	C	X	100
I-	24	SLUDGE THICKENER I/O WIRING 2	S	O	C	X	101
I-	25	SLUDGE THICKENER I/O WIRING 3	S	O	C	X	102
I-	26	DRY POLYMER FEED SYSTEM I/O WIRING 1	S	O	C	X	103
I-	27	DRY POLYMER FEED SYSTEM I/O WIRING 2	S	O	C	X	104
I-	28	DRY POLYMER FEED SYSTEM I/O WIRING 3	S	O	C	X	105
I-	29	GENERATOR IO WIRING 1	S	O	C	X	106
I-	30	GENERATOR IO WIRING 2	S	O	C	X	107
I-	31	ACTIFLO IO WIRING 1 (MCC IO MODIFICATIONS)	S	O	C	X	108
I-	32	ACTIFLO IO WIRING 2 (MCC IO MODIFICATIONS)	S	O	C	X	109
I-	33	ACTIFLO IO WIRING 3 (MCC IO MODIFICATIONS)	S	O	C	X	110
2I-	1	RAW WATER PUMP STATION P&ID	S	O	C	X	111
5I-	1	OZONE CONTACTOR FEED GAS SYSTEM P&ID	S	O	C	X	112
5I-	2	OZONE CONTACTOR BASIN 1 SAMPLING AND WATER SYSTEMS P&ID	S	O	C	X	113
5I-	3	OZONE CONTACTOR BASIN 2 SAMPLING AND WATER SYSTEMS P&ID	S	O	C	X	114
5I-	4	OZONE INSTRUMENTATION DETAILS	S	O	C	X	115
5I-	5	OZONE INSTRUMENTATION DETAILS	S	O	C	X	116
8I-	1	FILTER WASTE WASHWATER PUMP STATION P&ID	S	O	C	X	117
9I-	1	HIGH SERVICE PUMP STATION P&ID	S	O	C	X	118
11I-	1	SLUDGE THICKENER P&ID	S	O	C	X	119
13I-	1	DRY POLYMER FEED SYSTEM P&ID	S	O	C	X	120
19I-	1	GOX PRESSURE CONTROL P&ID	S	O	C	X	121
19I-	2	OZONE GAS GENERATION SYSTEM 1 P&ID	S	O	C	X	122
19I-	2	OZONE GAS GENERATION SYSTEM 2 P&ID	S	O	C	X	123
19I-	3	OZONE GAS GENERATION SYSTEM 3 P&ID	S	O	C	X	124
19I-	2	OZONE GENERATORS COOLING WATER SYSTEM P&ID	S	O	C	X	125
19I-	3	OZONE POWER SUPPLY UNITS COOLING WATER SYSTEM P&ID	S	O	C	X	126
19I-	4	OZONE GENERATION CLOSED LOOP COOLING WATER SYSTEM P&ID	S	O	C	X	127

19I-	5	SUPPLEMENTAL NITROGEN SYSTEM P&ID	S	O	C	X	128
20I-	1	LIQUID OXYGEN STORAGE P&ID	S	O	C	X	129
22I-	1	EMERGENCY GENERATOR P&ID	S	O	C	X	130
22I-	2	DIESEL FUEL STORAGE TANK P&ID	S	O	C	X	131
23I-	1	12KV SERVICE SWITCHGEAR P&ID	S	O	C	X	132
23I-	2	4160V SWITCHGEAR P&ID	S	O	C	X	133
PROCESS MECHANICAL							
M-	1	GENERAL NOTES AND SYMBOLS	S	O	C	X	134
M-	2	EQUIPMENT SCHEDULE	S	O	C	X	135
M-	3	STANDARD DETAILS	S	O	C	X	136
M-	4	STANDARD DETAILS	S	O	C	X	137
M-	5	STANDARD DETAILS	S	O	C	X	138
M-	6	STANDARD DETAILS	S	O	C	X	139
M-	7	STANDARD DETAILS	S	O	C	X	140
RAW WATER PUMP STATION							
2M-	1	DEMO PLAN	S	O	C	X	141
2M-	2	PLAN	S	O	C	X	142
2M-	3	SECTION		S	C	X	143
2M-	4	DETAILS		S	C	X	144
OZONE CONTACTORS							
5M-	1	DEMO PLAN	S	O	C	X	145
5M-	2	DEMO SECTION	S	O	C	X	146
5M-	3	PLAN	S	O	C	X	147
5M-	4	SECTION	S	O	C	X	148
5M-	5	SECTION		S	C	X	149
5M-	6	DETAILS		S	C	X	150
WASTE WASHWATER BASIN AND PUMP STATION							
8M-	1	DEMO PLAN	S	O	C	X	151
8M-	2	PLAN	S	O	C	X	152
8M-	3	SECTION		S	C	X	153
8M-	4	DETAILS		S	C	X	154
FINISHED WATER PUMP STATION/CLEARWELL							
9M-	1	DEMO PLAN	S	O	C	X	155
9M-	2	PLAN	S	O	C	X	156
9M-	3	SECTION		S	C	X	157
9M-	4	DETAILS		S	C	X	158
SLUDGE THICKENING							
11M-	1	DEMO PLAN	S	O	C	X	159
11M-	2	PLAN	S	O	C	X	160
11M-	3	SECTION		S	C	X	161
11M-	4	DETAILS		S	C	X	162
CHEMICAL STORAGE AND METERING							
13M-	1	DEMO PLAN	S	O	C	X	163
13M-	2	PLAN	S	O	C	X	164
13M-	3	PLAN	S	O	C	X	165
13M-	4	SECTION		S	C	X	166
13M-	5	SECTION		S	C	X	167
13M-	6	DETAILS		S	C	X	168
OZONE GENERATION							
19M-	1	DEMO PLAN	S	O	C	X	169
19M-	2	PLAN	S	O	C	X	170
19M-	3	SECTION		S	C	X	171
19M-	4	SECTION		S	C	X	172
19M-	5	DETAILS		S	C	X	173
LOX SYSTEM							
20M-	1	DEMO PLAN	S	O	C	X	174
20M-	2	PLAN	S	O	C	X	175
20M-	3	SECTION		S	C	X	176
20M-	4	DETAILS		S	C	X	177
DIESEL FUEL TANK							
22M-	1	PLAN	S	O	C	X	178
22M-	2	SECTION		S	C	X	179
22M-	3	DETAILS		S	C	X	180
BUILDING MECHANICAL							
GH-	1	MECHANICAL ABBREVIATIONS, SYMBOLS, AND LEGEND	S	O	C	X	181
GH-	2	HVAC DETAILS		S	C	X	182
GH-	3	HVAC SCHEDULES		S	C	X	183
RAW WATER PUMP STATION							
2H-	1	DEMO PLAN	S	O	C	X	184
2H-	2	PLAN	S	O	C	X	185
2H-	3	SECTIONS		S	C	X	186

SWITCHGEAR BUILDING							
23H-	1	PLAN	S	O	C	X	187
23H-	2	SECTIONS		S	C	X	188
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E-	1	SYMBOLS AND LEGEND	S	O	C	X	189
E-	2	ELECTRICAL DEMO PLANS I	S	O	C	X	190
E-	3	ELECTRICAL DEMO PLANS II	S	O	C	X	191
E-	4	ELECTRICAL DEMO PLANS III	S	O	C	X	192
E-	5	ELECTRICAL DEMO PLANS IV	S	O	C	X	193
E-	6	SITE PLAN	S	O	C	X	194
E-	7	SERVICE SINGLE LINE DIAGRAM		S	C	X	195
E-	8	12KV SWITCHGEAR ELEVATION		S	C	X	196
E-	9	12KV SWITCHGEAR CONTROL DIAGRAM I		S	C	X	197
E-	10	12KV SWITCHGEAR CONTROL DIAGRAM II		S	C	X	198
E-	11	4160V SWITCHGEAR ELEVATION		S	C	X	199
E-	12	4160 SWITCHGEAR CONTROL DIAGRAM I		S	C	X	200
E-	13	4160 SWITCHGEAR CONTROL DIAGRAM II		S	C	X	201
E-	14	12KV SERVICE ENLARGED PLAN	S	O	C	X	202
E-	15	4160 SERVICE ENLARGED PLAN	S	O	C	X	203
E-	16	GENERATOR AREA ENLARGED PLAN	S	O	C	X	204
E-	17	RAW WATER PUMP UPGRADE PLAN	S	O	C	X	205
E-	18	RAW WATER PUMP UPGRADE SINGLE LINE		S	C	X	206
E-	19	RAW WATER PUMP UPGRADE MCC ELEVATION		S	C	X	207
E-	20	RAW WATER PUMP UPGRADE MCC CONTROL DIAGRAMS		S	C	X	208
E-	21	CHEMICAL AREA UPGRADES PLAN	S	O	C	X	209
E-	22	CHEMICAL AREA UPGRADES SINGLE LINE		S	C	X	210
E-	23	CHEMICAL AREA UPGRADES MCC ELEVATION		S	C	X	211
E-	24	CHEMICAL AREA UPGRADES MCC CONTROL DIAGRAMS		S	C	X	212
E-	25	OZONE GENERATOR UPGRADES PLAN	S	O	C	X	213
E-	26	OZONE GENERATOR UPGRADES SINGLE LINE		S	C	X	214
E-	27	OZONE GENERATOR UPGRADES MCC ELEVATION		S	C	X	215
E-	28	OZONE GENERATOR UPGRADES MCC CONTROL DIAGRAMS		S	C	X	216
E-	29	LOX/VAPORIZERS PLAN	S	O	C	X	217
E-	30	OZONE UPGRADES PLAN		S	C	X	218
E-	31	OZONE UPGRADES SINGLE LINE		S	C	X	219
E-	32	OZONE UPGRADES MCC ELEVATION		S	C	X	220
E-	33	OZONE UPGRADES MCC CONTROL DIAGRAMS		S	C	X	221
E-	34	HIGH SERVICE PUMP PLAN	S	O	C	X	222
E-	35	HIGH SERVICE PUMP SINGLE LINE		S	C	X	223
E-	36	HIGH SERVICE PUMP MCC ELEVATION		S	C	X	224
E-	37	HIGH SERVICE PUMP MCC CONTROL DIAGRAMS		S	C	X	225
E-	38	FINISHED WATER PUMP PLAN	S	O	C	X	226
E-	39	FINISHED WATER PUMP SINGLE LINE		S	C	X	227
E-	40	FINISHED WATER PUMP MCC ELEVATION		S	C	X	228
E-	41	FINISHED WATER PUMP MCC CONTROL DIAGRAMS		S	C	X	229
E-	42	WASHWATER RECYCLE PUMP PLAN	S	O	C	X	230
E-	43	WASHWATER RECYCLE PUMP SINGLE LINE		S	C	X	231
E-	44	WASHWATER RECYCLE PUMP MCC ELEVATION		S	C	X	232
E-	45	WASHWATER RECYCLE PUMP MCC CONTROL DIAGRAMS		S	C	X	233
E-	46	SOLIDS MIXING PUMP PLAN	S	O	C	X	234
E-	47	SOLIDS MIXING PUMP SINGLE LINE		S	C	X	235
E-	48	SOLIDS MIXING PUMP MCC ELEVATION		S	C	X	236
E-	49	SOLIDS MIXING PUMP MCC CONTROL DIAGRAMS		S	C	X	237
E-	50	ELECTRICAL BUILDING POWER PLAN	S	O	C	X	238
E-	51	ELECTRICAL BUILDING LIGHTING PLAN		S	C	X	239
E-	52	ELECTRICAL BUILDING SYSTEMS PLAN		S	C	X	240
E-	53	CONDUIT AND CABLES SCHEDULES I		S	C	X	241
E-	54	CONDUIT AND CABLES SCHEDULES II		S	C	X	242
E-	55	PANEL SCHEDULES I		S	C	X	243
E-	56	PANEL SCHEDULES II		S	C	X	244
E-	57	ELECTRICAL DETAILS I		S	C	X	245
E-	58	ELECTRICAL DETAILS II		S	C	X	246
E-	59	ELECTRICAL DETAILS III		S	C	X	247

S - Started

O - Ongoing

C - Completed

X - Signed and sealed

Attachment B
Full Geotechnical Scope of Work

PREPARED FOR
City of Wilsonville

WILSONVILLE WTP EXPANSION

GEOTECHNICAL SCOPE OF WORK

May 18, 2020

INTRODUCTION

This Scope of Work (SOW) outlines the geotechnical investigation and geotechnical analyses proposed to characterize the subsurface conditions and support the design of the planned electrical building and utilidor extension as part of the Wilsonville Water Treatment Plant (WWTP) expansion project. The geotechnical investigation will include the following, which are described in more detail in the following sections:

- Subsurface exploration
- Laboratory testing

Geotechnical analyses will include the following:

- Foundation total and differential settlement estimates
- Foundation bearing capacity calculations (mat or deep-foundations)
- Liquefaction triggering and/or cyclic softening calculations
- Modulus of subgrade reaction recommendations
- Site-specific probabilistic Seismic Hazard Assessment (SHA)
- Lateral earth pressures recommendations in term of equivalent fluid pressure

Stantec has developed this SOW to describe the field investigation and analyses planned to characterize the subsurface soil and groundwater conditions at specific locations within the WWTP site. The results from the field investigation and analyses will be used to develop the basis of design for the proposed electrical building, fuel tank, emergency generator, and utilidor expansion.

Outputs will include a summary of results and findings from the field investigation, summary of results from the analyses, and recommended geotechnical parameters for design. This information will be summarized and presented in the Task 4 technical memorandum.

1.0 GEOTECHNICAL INVESTIGATION

The geotechnical field investigation planned for the site includes one drill hole, which includes standard penetration testing (SPT), collection of disturbed and undisturbed samples and groundwater observations; and soil laboratory testing to be performed on the selected soil samples.

Subsurface exploration program

The planned subsurface investigation consists of drill hole DH-01, which is proposed at the southeast corner of the planned electrical building and summarized in **Table 1**. The hole location is presented in **Figure 1** (note that actual coordinates will be recorded with GPS at the time of drilling).

A truck-mounted drill rig using mud rotary drilling will be used to advance and maintain an open drill hole for planned drilling. Hollow Stem Auger (HSA) drilling would be acceptable, although all previous investigations at the WWTP facility have used mud rotary methods. The drill rig crew will include one driller and one helper. A temporary staging area for drilling supplies and vehicles will be identified onsite upon approval of related authorities. Some disturbance to existing grass turf is expected where the rig will drive over the grass and a small area of turf will be damaged in a 3' by 3' footprint of the drill hole.

Expected encountered materials are the Willamette Silt and the Troutdale Formation. Previous investigations at the WWTP indicate the Willamette Silt is composed of interbedded alluvial silt and sand, although the layering structure is highly variable across the site. The interbedded silt is typically stiff, low plasticity, and moderately overconsolidated. The interbedded sand is typically silty, very loose to dense, and a relative density of medium dense.

The Troutdale Formation ranges from interbedded gravel and sand to silt and clay. Previous investigations indicate that, in this area of the WWTP, interbedded silt and clay of the Troutdale Formation is more predominant closer to the Willamette River. For example, Troutdale Formation in Boring RWF 1.0-B-5 is sand, gravel, and cobbles; boring RWF 1.0-B-4 is predominantly silt and clay. Locations of these borings are shown in **Figure 1**. Interbedded gravel and sand of the Troutdale Formation are typically very dense, although basing the density on SPT N-values is often overestimated due to coarse, granular materials. Interbedded silt and clay zones of the Troutdale Formation are typically medium stiff to hard and are medium to high plasticity.

DH-01 will be advanced through the fill material, Willamette Silt, and 10 feet into the Troutdale Formation. This total drilling length of DH-01 is anticipated to be approximately 65 feet. It is assumed mud rotary will be acceptable to use in all encountered materials. Utility locates will be performed prior to mobilization and drillhole locations will be potentially altered as a result of this. Privately-owned utilities at the site will need to be cleared by the owner, as public utility locate services may not cover all buried utilities at the site.

Standard Penetration Tests (SPTs) will be performed at 2.5-ft intervals in the upper 25 feet of the hole, then transition to 5-ft intervals for the remaining depth. The soil sampling will be performed in accordance with American Society of Testing Materials (ASTM) D 1586, "*Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils.*" Samples collected at each interval will be bagged immediately after recovering from sampler with appropriate labels including drill hole ID, sample depth, sample type, and date for further examination or laboratory testing.

Undisturbed samples will be obtained when fine-grained materials are encountered (in between SPT testing intervals). Undisturbed samples will be obtained using Shelby tube samplers in accordance with ASTM D 1587, "*Standard Practice for Thin-Walled Tube Sampling of Fine-Grained Soils for Geotechnical Purposes*". Additionally, Pocket penetrometer and/or torvane shear tests will be performed in the fine-grained samples for estimation of shear strength. Undisturbed samples for laboratory testing will be carefully packaged and transported to the laboratory in accordance with ASTM D 4220 "*Standard Practice for Preserving and Transporting Soil Samples.*" In general, immediately after retrieval of the sample, the tubes will be trimmed and cleaned of excess disturbed materials on the ends; and sealed with approved air-tight caps and/or sealing wax on both ends to prevent moisture loss. To prevent the movement of the sample within the tube, a suitable filler will be applied to the space left between the end of the liner or tube and the top of the cap or wax. The ends should be covered with the plastic caps and taped to provide a seal. During transportation and storage samples will be kept in vertical position with the top up and should not be shaken or jarred. Samples should be protected from extreme heat and cold; shall be stored in a cool dry place. Each tube shall be properly labeled with relevant information such as project number, drill hole ID, sample depth, recovery, sampling date and orientation. Samples should be delivered to the laboratory for testing promptly, and testing shall be performed no later than two weeks of sampling. Samples shall be extruded from the tube within five days after retrieval and shall be kept airtight. Samples that will be tested more than seven days after extrusion shall be waxed.

No samples will be discarded in the field. For recording purposes, each sample will be photographed on site.

Time onsite per day is assumed to be 10 hours. Drill rate, incorporating testing and sampling, is assumed to be 60 to 80 ft/day through all materials. The estimated duration of the drilling program is 1 day.

All drilling operations will be carried out under the full-time supervision of an experienced engineering geologist or geotechnical engineer from Stantec. Field drill hole logs will include lithological descriptions, visual-manual soil/rock classifications, results of SPT recorded as blows per 6 inches of penetration. The soils will be described and classified in the field according to ASTM D 2488, "*Standard Practice for Description and Identification of Soils (Visual-Manual Procedures)*". The field logs will be finalized after checking the field visual classifications against the laboratory test results.

Groundwater observations will be made during and at the end of drilling operations. The boreholes will be backfilled with the grout or/and bentonite chips. The ground surface will be restored as original as possible. However, some disturbance to turf is expected.

Laboratory Testing

Geotechnical laboratory testing will be conducted on selected samples of soil collected from the drill hole in order to evaluate engineering characteristics and develop design parameters. A preliminary laboratory testing program with specific information regarding the test procedure and standard to follow is presented in **Table 2**. The laboratory testing program will likely be modified based on a review of the actual samples collected during the investigation. Samples will be selected and tests will be assigned based on Stantec's evaluation of data needs and encountered soil conditions.

Laboratory testing and reporting will conform to the ASTM standards, and testing will be performed by an accredited soil testing laboratory.

Table 1: Proposed subsurface exploration program

Structure	Drill Hole ID	Proposed Drill Length in Bedrock (Troutdale Formation)	Proposed Total Drill Length (feet)	Proposed SPTs	Anticipated Drilling Method	Location / Investigation Information
Electrical Building	DH-01	10	65	18	Mud Rotary	<ul style="list-style-type: none"> • Located at SE corner of the proposed electrical building. • Purpose is to further characterize soil and groundwater conditions and to collect samples for laboratory tests. • Drill hole shall terminate after 10 feet of drilling through Troutdale Formation, approximately 65 total feet.

Table 2: Preliminary Laboratory Testing Program

Test Name	Test Standard	Number of Tests (Proposed)	Comments
Natural Moisture Content	ASTM D 2216	10	--
Moisture and Density	ASTM 7263	3	Testing Shelby tube samples from DH-01
Particle Size Analysis Gradation with Distribution Curve	ASTM D 6913	10	--
Liquid Limit, Plastic Limit, and Plasticity Index- 5 points	ASTM D 4318	10	--
Specific Gravity of Soil	ASTM D 854	3	-Testing Shelby tube samples from DH-01
One-Dimensional Consolidation	ASTM D 2435 (Method B)	3	Testing samples from DH-01.

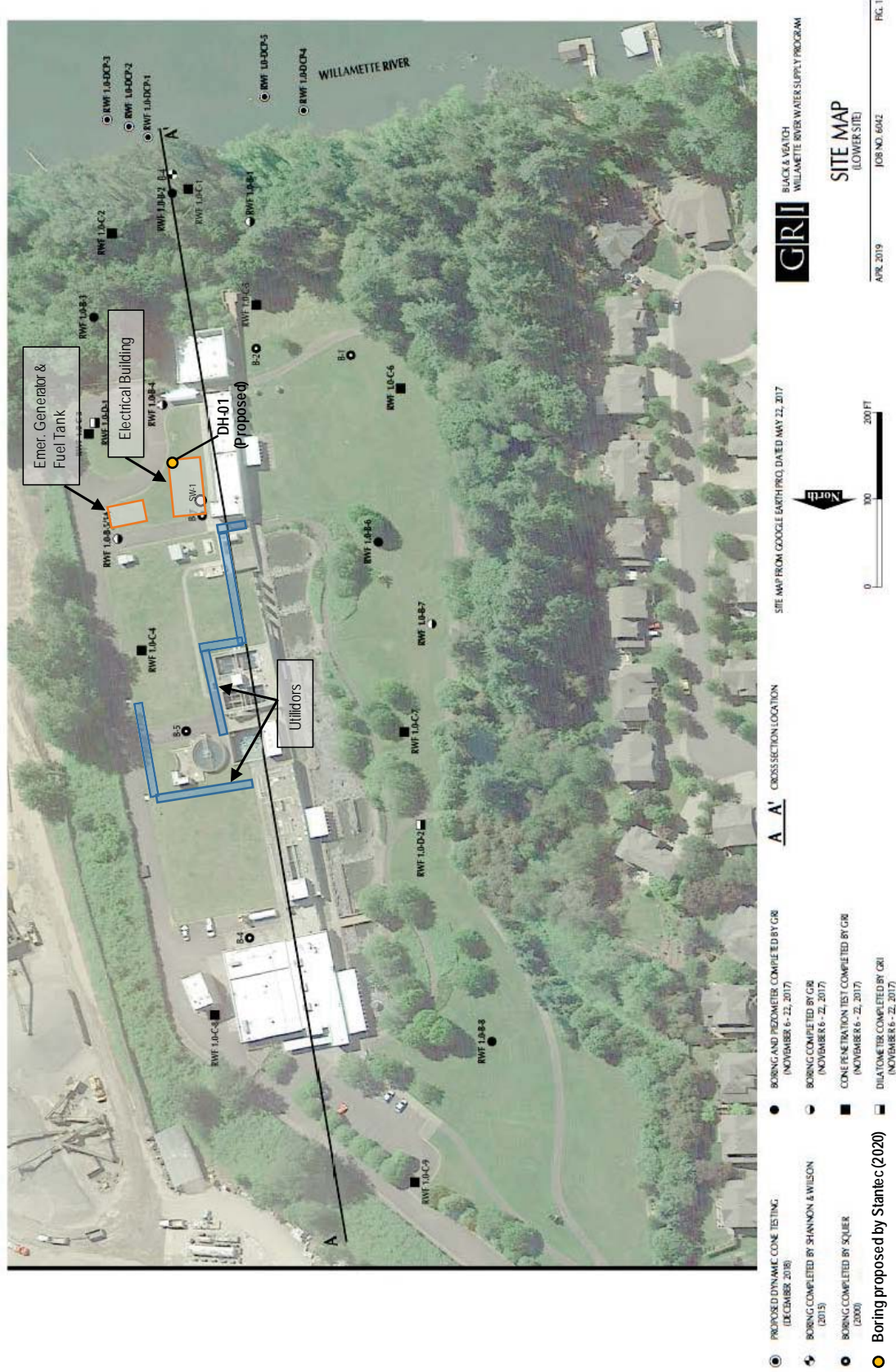


Figure 1: Proposed Drillhole Location

2.0 GEOTECHNICAL ANALYSES AND FOUNDATION CONCEPTS

After the geotechnical investigation and laboratory testing is completed, Stantec will perform geotechnical analyses in support of the foundation design based on the new, as well as existing, geotechnical information.

The following geotechnical analyses are planned for the site. These analyses and foundation recommendations are based on the information available at this time. It is assumed that a shallow foundation such as mat will be utilized to support the proposed structures. The foundation type and the scope of proposed analyses may change depending upon the actual loads and performance criteria. The analyses will be performed for soils related to the proposed electrical building, emergency generator, fuel tank, and utilidor expansion.

- Foundation bearing capacity
- Foundation settlement
 - Settlement will include immediate, consolidation, secondary, and liquefaction-induced settlements. Differential settlement will be calculated for the proposed electrical building foundation.
- Liquefaction triggering
 - Liquefaction triggering evaluations will be performed on the cohesionless soils. Cyclic softening evaluations will be performed on clays and silts.
- Modulus of subgrade reaction
- Site-specific Seismic Hazard Assessment
 - A Probabilistic Seismic Hazard Analysis (PSHA) will be performed per requirements in Oregon Building Code Section 1803.3.2
- Lateral earth pressures

Foundation concepts will be developed in coordination with the structural engineer. Based on analyses above and conceptual designs for the expansion, an alternatives analysis will be included in the Task 4 technical memorandum for deep and/or shallow foundation options.

Upon completion of the investigation and analyses, a draft technical memorandum will be prepared with the results of the analysis with options and recommendations submitted to the Owner for review. Included in the memorandum will be:

- Summary of the geotechnical investigation including digitized borelogs and laboratory testing results
- Summary of geotechnical analyses
- Foundation recommendations

Stantec will present these results in a workshop to explain the results of the analyses, options, and recommendations.

Following a 2-week review period of the draft technical memorandum, the owner will decide on their desired course of action based upon the options and recommendations. A final technical memorandum will be issued with the selected recommendations to be progressed into Detailed Design.

ASSUMPTIONS

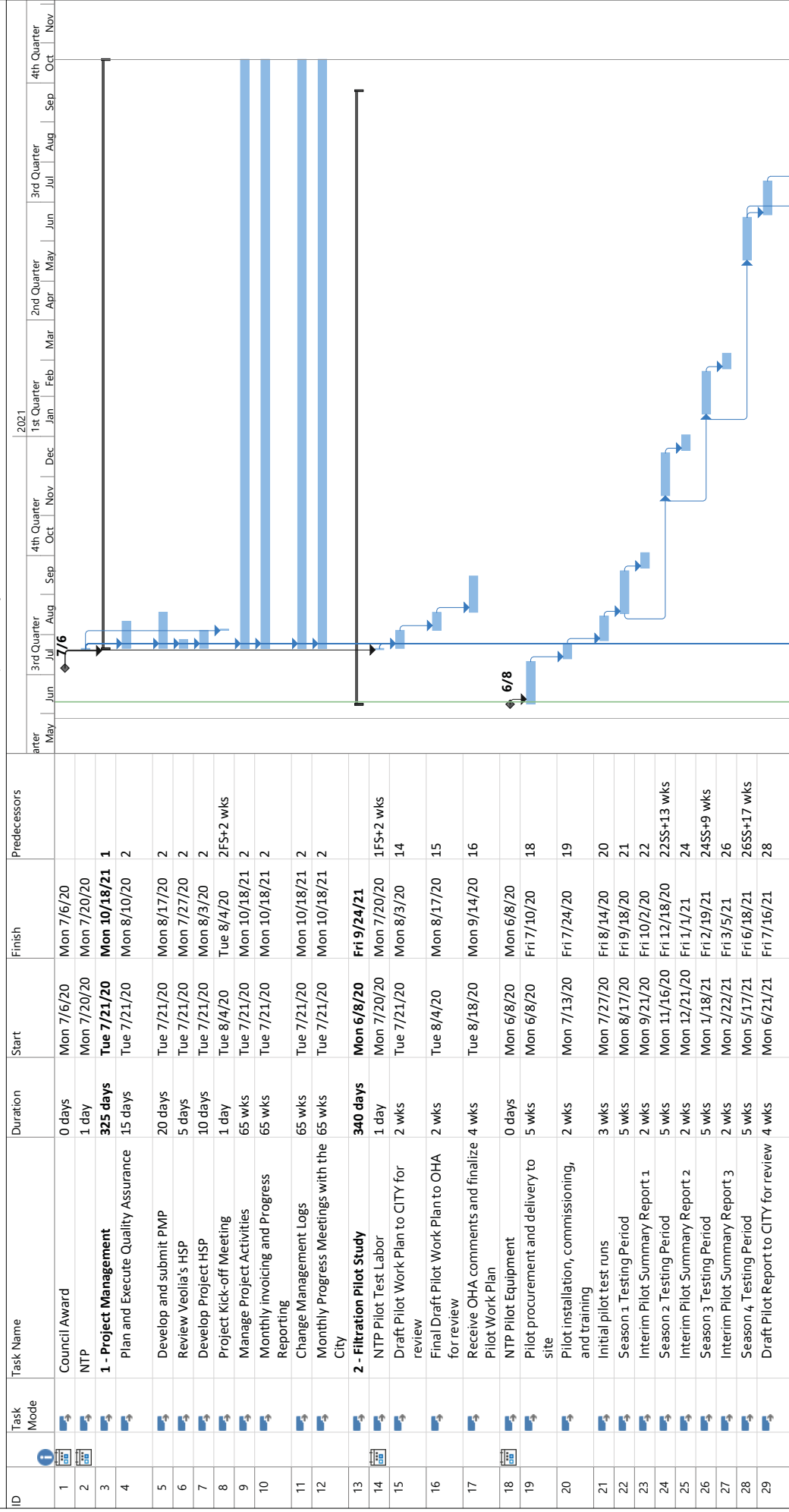
- Data from boring RWF1.0-B-5/5A (GRI, 2017) will be used for geotechnical analyses related to the emergency generator and fuel tank foundations.
- Risks to the WWTP due to lateral spreading towards the river is assumed to be entirely mitigated entirely by others and no engineering analysis or design is assumed to be necessary.
- A site-specific SHA has not been performed for the site and will be required per Oregon Building Code Section 1803.3.2.
- Shear-wave velocity data from suspension logging in boring RWF1.0-B-4 and seismic CPT data from RWF1.0-C-1, C-2, C-3, and C-8 will be used in the DSHA development.

DATA REQUESTS

- Squire geotechnical report from 2000.
 - Reference: Squire Associates, 2000, Project Memorandum, Wilsonville Water Treatment Plant (WWTP), Geotechnical Analyses and Recommendations in Support of 20 Percent Design Effort; Submitted to Montgomery/Watson by Squier Associates, dated March 6, 2000.
 - Data from borings B-5 and B-7 will be relevant and useful for geotechnical analyses.

Attachment C
Preliminary Project Schedule

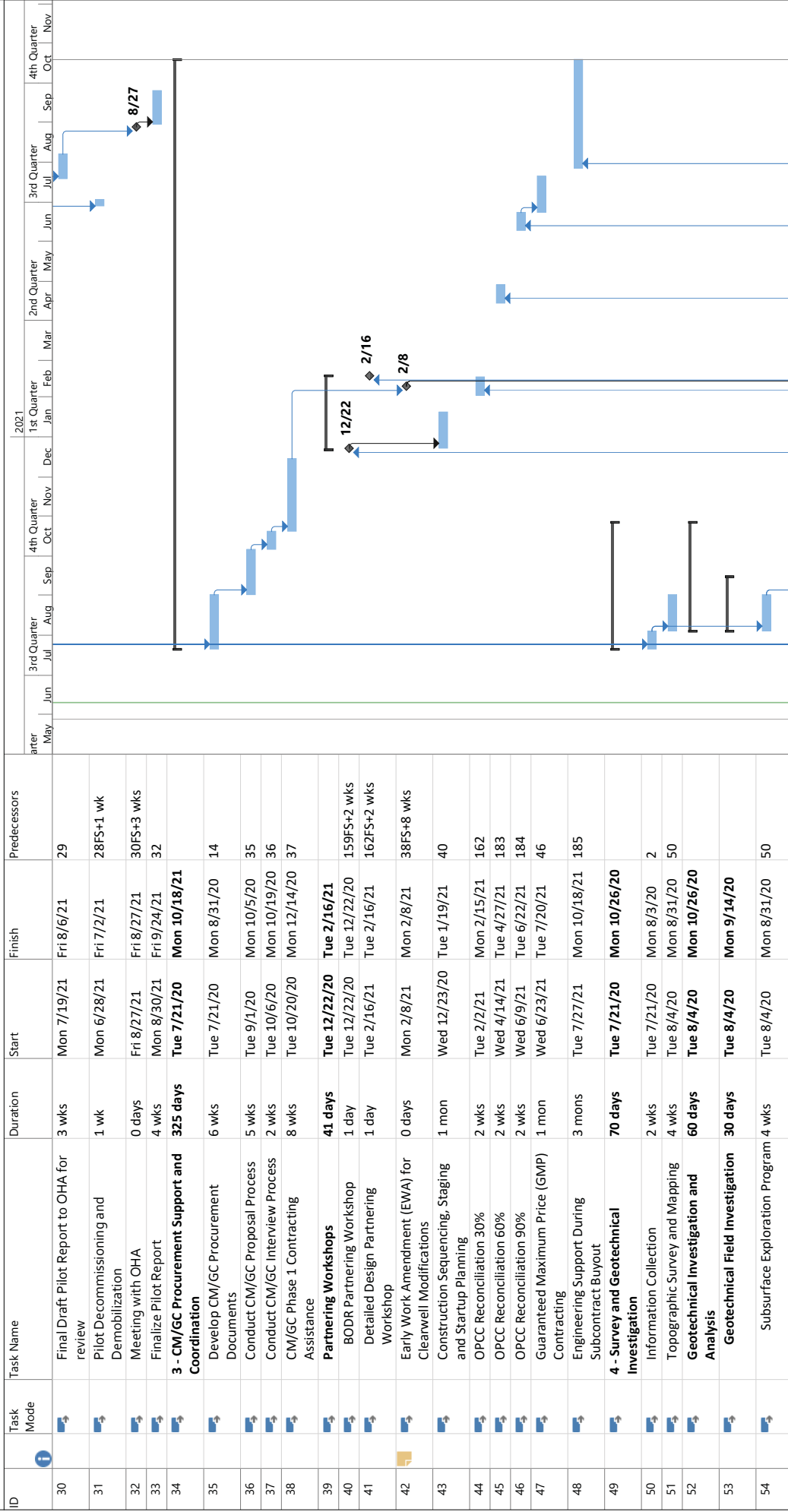
Willamette River Water Treatment Plant (WRWTP) Expansion (Project #1144)



Project: WRWTP Schedule
Date: Wed 6/10/20

- Task
- Split
- Milestone
- Summary
- Project Summary
- Inactive Task
- Inactive Milestone
- Inactive Summary
- Manual Task
- Duration-only
- Manual Summary Rollup
- Manual Summary
- Start-only
- Finish-only
- External Task
- External Milestone
- Deadline
- Progress
- Manual Progress

Willamette River Water Treatment Plant (WRWTP) Expansion (Project #1144)



Project: WRWTP Schedule
Date: Wed 6/10/20

Task Split Milestone Summary

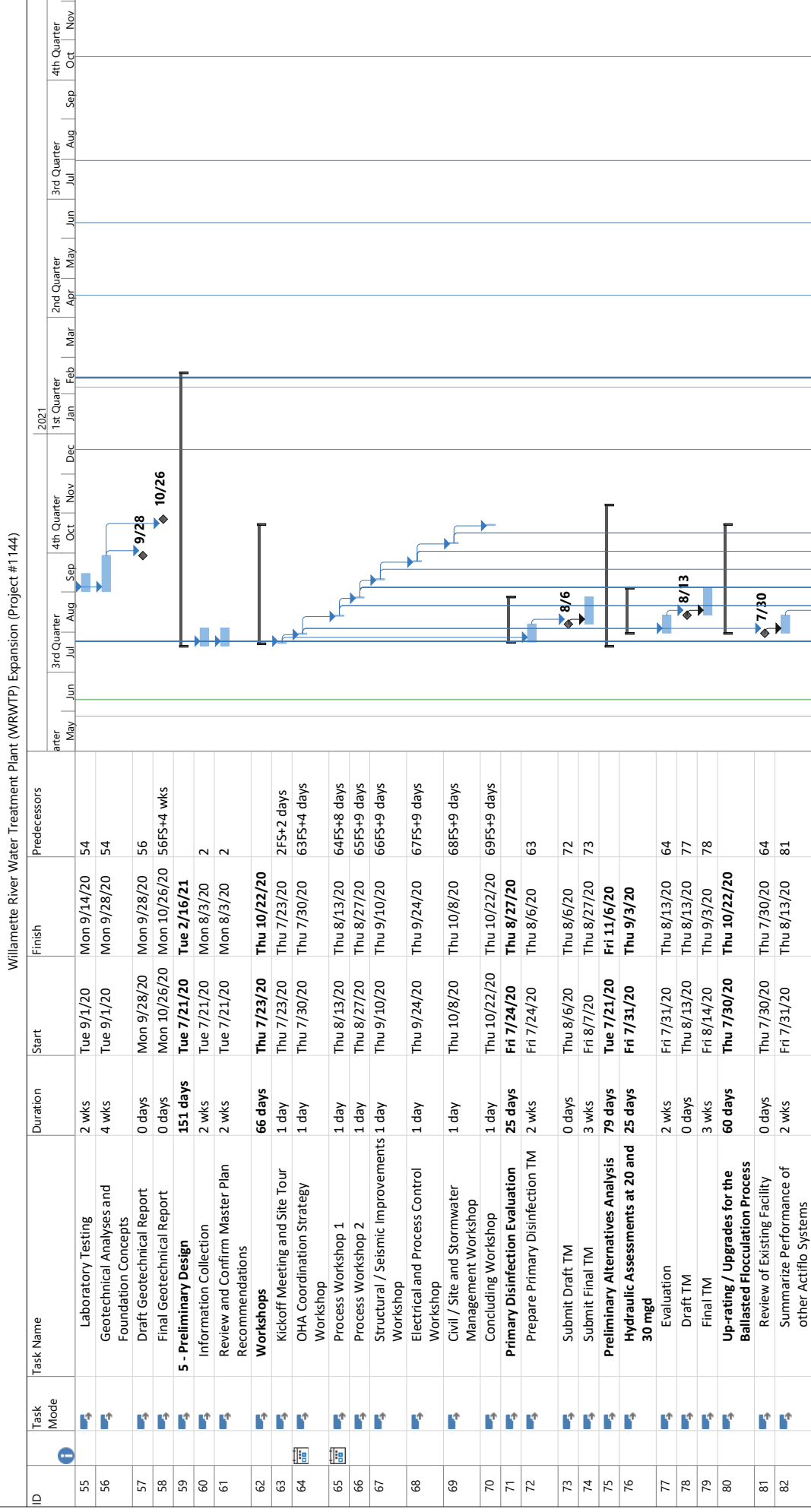
Project Summary Inactive Task Inactive Milestone Inactive Summary

Manual Task Duration-only Manual Summary Rollup Manual Summary

Start-only Finish-only External Task External Milestone

Deadline Progress Manual Progress

Willamette River Water Treatment Plant (WRWTP) Expansion (Project #1144)



Project: WRWTP Schedule
Date: Wed 6/10/20

Task Split Milestone Summary

Project Summary Inactive Task Inactive Milestone Inactive Summary

Manual Task Duration-only Manual Summary Rollup Manual Summary

Start-only Finish-only External Tasks External Milestone

Deadline Progress Manual Progress

Page 3

Willamette River Water Treatment Plant (WRWTP) Expansion (Project #1144)

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	2021																														
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter															
83		Regulatory Consensus and Demonstration Plan Preparation	1 wk	Fri 8/14/20	Thu 8/20/20	82																															
84		Meet with OHA	0 days	Thu 8/20/20	Thu 8/20/20	83																															
85		Document Required Improvements / Draft Proposed Actiflo Improvements TM	2 wks	Fri 8/21/20	Thu 9/3/20	84																															
86		OHA Coordination	0 days	Thu 9/3/20	Thu 9/3/20	85																															
87		Full Scale Demonstration Testing (Optional)	5 wks	Mon 9/7/20	Fri 10/9/20	85FS+1 day																															
88		Final Proposed Actiflo Improvements TM	7 wks	Fri 9/4/20	Thu 10/22/20	85																															
89		5.5.3 Ozone Upgrade and Modernization	79 days	Tue 7/21/20	Fri 11/6/20																																
90		5.5.3.1 Evaluation of Existing Ozone System	38 days	Tue 7/21/20	Thu 9/10/20																																
91		Treatment Performance Data Analysis	4 wks	Tue 7/21/20	Mon 8/17/20	2																															
92		Summary of Staff Interviews	4 wks	Tue 7/21/20	Mon 8/17/20	2																															
93		Process and Equipment Assessment	4 wks	Tue 7/21/20	Mon 8/17/20	2																															
94		Draft TM	2 wks	Fri 7/31/20	Thu 8/13/20	65FF																															
95		Final TM	1 mon	Fri 8/14/20	Thu 9/10/20	94																															
96		5.5.3.2 Evaluation of System Improvements	30 days	Fri 8/14/20	Thu 9/24/20																																
97		Ozone System Alternative Evaluations	2 wks	Fri 8/14/20	Thu 8/27/20	94																															
98		Draft TM	2 wks	Fri 8/28/20	Thu 9/10/20	97																															
99		Final TM	2 wks	Fri 9/11/20	Thu 9/24/20	98																															
100		5.5.3.3 Ozone Tracer Study (Optional)	79 days	Tue 7/21/20	Fri 11/6/20																																
101		Develop Tracer Test Protocol	6 wks	Tue 7/21/20	Mon 8/31/20	2																															
102		Conduct Tracer Test	1 day	Fri 10/9/20	Fri 10/9/20	87FF																															
103		Summary of Tracer Test Results	1 mon	Mon 10/12/20	Fri 11/6/20	102																															

Project: WRWTP Schedule
 Date: Wed 6/10/20

Task Project Summary Manual Task Start-only Deadline

Split Inactive task Duration-only Finish-only Progress

Milestone Inactive Milestone Manual Summary Rollup External Tasks Manual Progress

Summary Inactive Summary Manual Summary External Milestone External Milestone

Willamette River Water Treatment Plant (WRWTP) Expansion (Project #1144)

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	2021															
							1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter				
104		Optional Task: CFD Modeling	4 wks	Fri 8/28/20	Thu 9/24/20	97																
105		5.5.4 Filtration	48 days	Tue 7/21/20	Thu 9/24/20																	
106		Evaluation	2 wks	Tue 7/21/20	Mon 8/3/20	2																
107		Draft TM	3 wks	Fri 8/7/20	Thu 8/27/20	66FF																
108		Final TM	4 wks	Fri 8/28/20	Thu 9/24/20	107																
109		5.5.5 Raw and Finished Water Pumping	48 days	Tue 7/21/20	Thu 9/24/20																	
110		Evaluation	2 wks	Tue 7/21/20	Mon 8/3/20	2																
111		Draft TM	3 wks	Fri 8/7/20	Thu 8/27/20	66FF																
112		Final TM	4 wks	Fri 8/28/20	Thu 9/24/20	107																
113		5.5.6 Clearwell Modifications	50 days	Tue 7/21/20	Mon 9/28/20																	
114		Preliminary Inspection of Clearwell	5 wks	Tue 7/21/20	Mon 8/24/20	2																
115		Baffle Material Evaluation	2 wks	Tue 7/21/20	Mon 8/3/20	2																
116		Develop CFD Modeling	8 wks	Tue 7/21/20	Mon 9/14/20	2																
117		Draft TM	4 wks	Tue 8/18/20	Mon 9/14/20	116FF																
118		Final TM	2 wks	Tue 9/15/20	Mon 9/28/20	117																
119		5.5.7 Residuals Handling	48 days	Tue 7/21/20	Thu 9/24/20																	
120		Evaluation	2 wks	Tue 7/21/20	Mon 8/3/20	2																
121		Draft TM	3 wks	Fri 8/7/20	Thu 8/27/20	66FF																
122		Final TM	4 wks	Fri 8/28/20	Thu 9/24/20	107																
123		5.5.8 Chemical Storage and Metering	48 days	Tue 7/21/20	Thu 9/24/20																	
124		Evaluation	2 wks	Tue 7/21/20	Mon 8/3/20	2																
125		Draft TM	3 wks	Fri 8/7/20	Thu 8/27/20	66FF																
126		Final TM	4 wks	Fri 8/28/20	Thu 9/24/20	107																
127		5.5.9 Process Control and SCADA	68 days	Tue 7/21/20	Thu 10/22/20																	
128		Evaluation	2 wks	Tue 7/21/20	Mon 8/3/20	2																
129		Draft TM	3 wks	Fri 9/4/20	Thu 9/24/20	68FF																
130		Final TM	4 wks	Fri 9/25/20	Thu 10/22/20	129																
131		5.5.10 Electrical Power Systems	68 days	Tue 7/21/20	Thu 10/22/20																	
132		Evaluation	2 wks	Tue 7/21/20	Mon 8/3/20	2																
133		Draft TM	3 wks	Fri 9/4/20	Thu 9/24/20	68FF																
134		Final TM	4 wks	Fri 9/25/20	Thu 10/22/20	133																

Project: WRWTP Schedule
Date: Wed 6/10/20

Task		Manual Task		Start-only		Deadline	
Split		Duration-only		Finish-only		Progress	
Milestone		Manual Summary Rollup		External Tasks		Manual Progress	
Summary		Manual Summary		External Milestone			

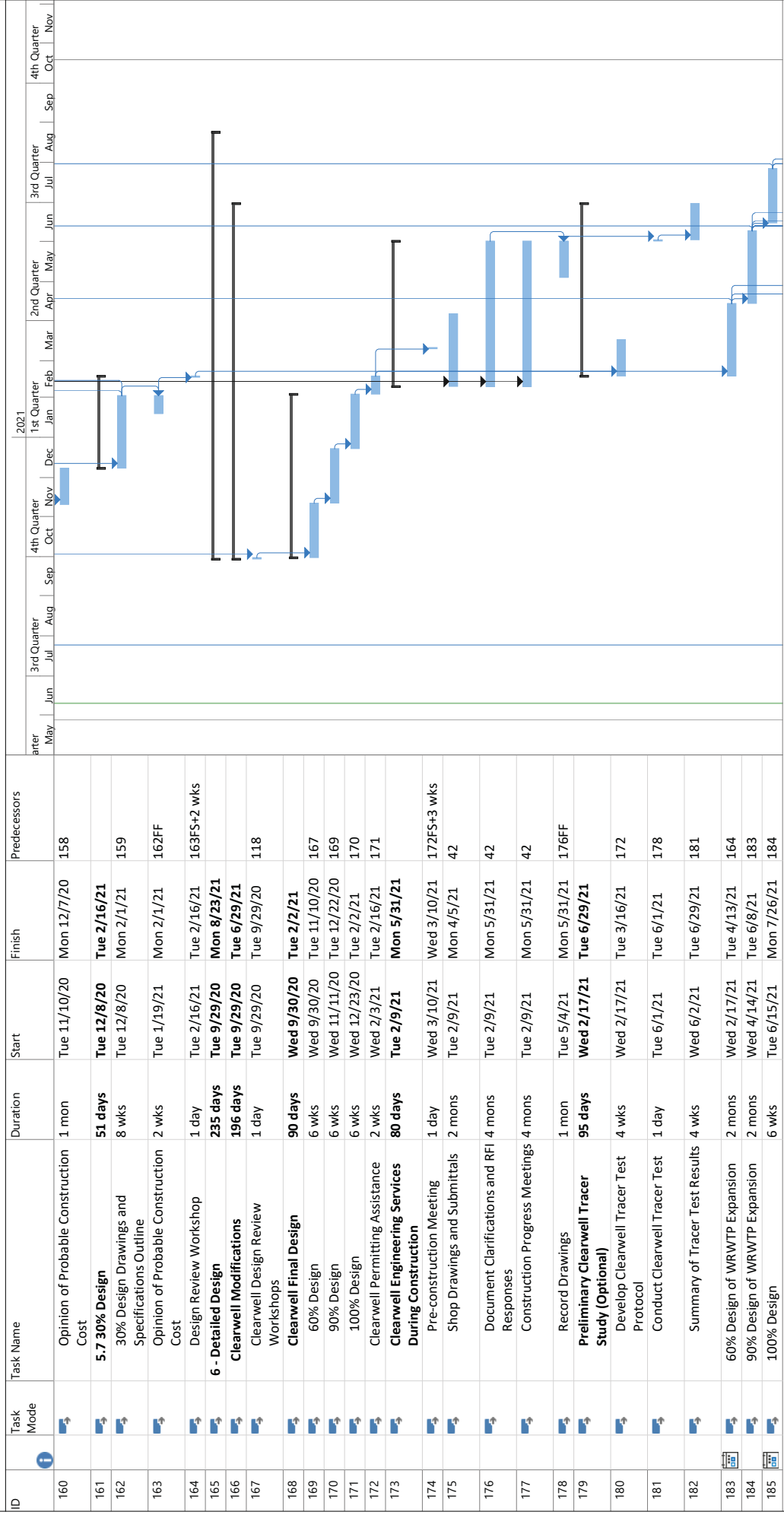
Willamette River Water Treatment Plant (WRWTP) Expansion (Project #1144)

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	2021																
							1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter					
135		5.5.11 Structural Investigation of Existing Facilities, Alternatives Analysis, and Foundation Concepts	58 days	Tue 7/21/20	Thu 10/8/20		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
136		Evaluation	2 wks	Tue 7/21/20	Mon 8/3/20	2	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
137		Draft TM	3 wks	Fri 8/21/20	Thu 9/10/20	67FF	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
138		Final TM	4 wks	Fri 9/11/20	Thu 10/8/20	137	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
139		5.5.12 Architectural Considerations and Guidelines	68 days	Tue 7/21/20	Thu 10/22/20		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
140		Evaluation	2 wks	Tue 7/21/20	Mon 8/3/20	2	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
141		Draft TM	3 wks	Fri 9/4/20	Thu 9/24/20	68FF	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
142		Final TM	4 wks	Fri 9/25/20	Thu 10/22/20	141	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
143		5.5.13 Building Mechanical	78 days	Tue 7/21/20	Thu 11/5/20		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
144		Evaluation	2 wks	Tue 7/21/20	Mon 8/3/20	2	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
145		Draft TM	3 wks	Fri 9/18/20	Thu 10/8/20	69FF	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
146		Final TM	4 wks	Fri 10/9/20	Thu 11/5/20	145	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
147		5.5.14 Site / Civil Design and Stormwater Management	78 days	Tue 7/21/20	Thu 11/5/20		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
148		Evaluation	2 wks	Tue 7/21/20	Mon 8/3/20	2	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
149		Draft TM	3 wks	Fri 9/18/20	Thu 10/8/20	69FF	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
150		Final TM	4 wks	Fri 10/9/20	Thu 11/5/20	149	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
151		5.5.15 Maintenance of Plant Operations	78 days	Tue 7/21/20	Thu 11/5/20		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
152		Review WWSP RWF Project, Schedule, and Shutdowns	2 wks	Tue 7/21/20	Mon 8/3/20	2	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
153		Contingency Planning for WWSP 2 wks Shutdowns	2 wks	Fri 7/31/20	Thu 8/13/20	65FF	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
154		Preliminary Construction Sequence	2 mons	Fri 8/14/20	Thu 10/8/20	153	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
155		Draft TM	2 wks	Fri 10/9/20	Thu 10/22/20	154	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
156		Final TM	2 wks	Fri 10/23/20	Thu 11/5/20	155	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
157		5.6 Basis of Design Report	100 days	Tue 7/21/20	Mon 12/7/20		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
158		Draft Report	4 mons	Tue 7/21/20	Mon 11/9/20	2	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
159		Final Report	1 mon	Tue 11/10/20	Mon 12/7/20	158	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov

Project: WRWTP Schedule
Date: Wed 6/10/20

Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Progress
Manual Progress

Willamette River Water Treatment Plant (WRWTP) Expansion (Project #1144)



Project: WRWTP Schedule
Date: Wed 6/10/20

Task

Task: Solid blue bar

Split: Dotted line

Milestone: Diamond symbol

Summary: Bracket

Project Summary

Project Summary: Light blue bar

Inactive task: Light grey bar

Inactive Milestone: Light grey diamond

Inactive Summary: Light grey bracket

Manual Task

Manual Task: Teal bar

Duration-only: Teal bar with dots

Manual Summary Rollup: Teal bracket

Manual Summary: Teal bracket

Start-only

Start-only: Teal bar with arrowhead

Finish-only: Teal bar with arrowhead

External Tasks: Teal bar with arrowhead

External Milestone: Teal diamond

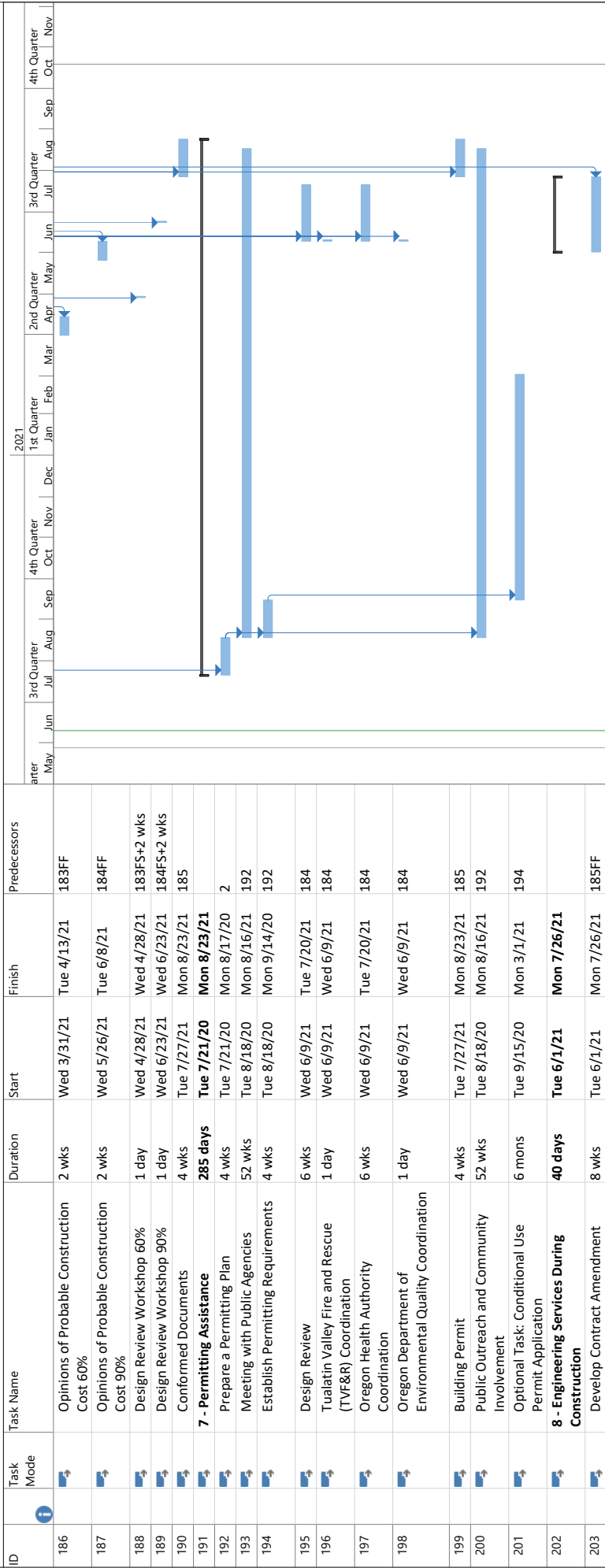
Deadline

Deadline: Solid black bar

Progress: Solid black bar with arrowhead

Manual Progress: Solid black bar with arrowhead

Willamette River Water Treatment Plant (WRWTP) Expansion (Project #1144)



Attachment D
Fee Summary and Breakdown by Task



SUMMARY REPORT

Project Company	Stantec US Business Group
Project Currency	US Dollar
Project Type	Time & Material
Project Number	
Project Name	WRWTP Expansion
Client Name	City of Wilsonville OR
Business Centre	2002
Project Manager	Bryan Black
Project Technical Lead	Peter Kreft

Project Summary	Total Fee
Labour	\$2,466,149
Expense	\$51,386
Sub-Contractor	\$1,290,311
Total	\$3,807,846

Planned Start Date	Planned End Date
16-Jun-20 (Tue)	30-Jul-21 (Fri)

Name	Role	Billing Rate	Hours	Sub-Total Fee
Wilcox, Craig	RC 19, Structural QC	\$248	46	\$11,408
Lin, Fangbiao	RC 18, Hydraulics Lead	\$239	102	\$24,378
Bromley, Charles	RC 17, Process QC	\$232	249	\$57,768
Hawkins, Bill	RC 17, Construction Specialist	\$232	153	\$35,496
Minnick, Eugene	RC 17, Architectural QC	\$232	40	\$9,280
Rollins, Gregory	RC 17, Geotech QC	\$232	10	\$2,320
Talley, Dick	RC 17, Principal-in-Charge	\$232	33	\$7,656
Wilcoxson, David	RC 17, Instrumentation/Control QC	\$232	72	\$16,704
Black, Bryan	RC 16, Project Manager	\$225	803	\$180,675
Kreft, Peter	RC 16, Project Technical Lead	\$225	366	\$82,350
Palmer, David	RC 16, Structural Lead	\$225	282	\$63,450
Young, Chuck	RC 16, Architectural Lead	\$225	52	\$11,700
Zavala, Tomas	RC 16, Cost Estimator	\$225	292	\$65,700
Eder, Aaron	RC 15, Civil Lead	\$204	134	\$27,336
Savvas, Savvas	RC 15, Building Mechanical Lead	\$204	27	\$5,508
Bartels, Justin	RC 14, Hydraulics QC	\$192	8	\$1,536
Nguyen, Tri	RC 14, CADD Drafting	\$192	820	\$157,440
Papp, Joshua	RC 14, Electrical QC	\$192	72	\$13,824
Perkins, Matthew	RC 14, Structural Engineer	\$192	797	\$153,024
Weber, Christine	RC 14, Geo. Seismic Specialist	\$192	48	\$9,216
Bruce, Eric	RC 13, Pilot Equipment Tech	\$183	32	\$5,856
Li, Stella	RC 13, I&C Engineer	\$183	1014	\$185,562
Marr, Robert	RC 13, CADD Manager	\$183	208	\$38,064
Odell, Adam	RC 13, Process Mechanical Lead	\$183	822	\$150,426
Radford, Scott	RC 13, Landscape Architect	\$183	83	\$15,189
Worthen, John	RC 13, Geotech Lead	\$183	52	\$9,516
Kitts, Christopher	RC 12, CADD Designer / Drafter	\$174	771	\$134,154
Navarro, Elizabeth	RC 12, Architectural Designer	\$174	316	\$54,984
Nishihara, Andrew	RC 12, Process Engineer	\$174	513	\$89,262
Peters, Michelle	RC 12, Process Mech. Engineer	\$174	1559	\$271,266
Gao, Haiwen	RC 10, CFD Modeling	\$154	184	\$28,336
Guthrie, Gayle	RC 10, Geotech in Training	\$154	107	\$16,478
McGinn, Rachel	RC 10, Administrative Assistant	\$154	366	\$56,364
Messologitis, Kat	RC 10, Process Mechanical EIT	\$154	1361	\$209,594
Spiro, Jeffrey	RC 10, Structural Designer	\$154	520	\$80,080
Thomson, Sean	RC 10, Civil Engineer	\$154	464	\$71,456
Johnson, Andrew	RC 9, Civil / Mechanical Designer	\$149	614	\$91,486
Haffenreffer, Zac	RC 8, Geotechnical Field Tech	\$143	149	\$21,307
			13541	\$2,466,149

Expense	Billing Rate	Units	Sub-Total Fee
Mileage (site visits or meetings)	\$0.575	7360	\$4,232
Geotech Expenses (drilling, laboratory)	\$1.05	9000	\$9,450
Travel	\$1.05	17104	\$17,959
Printing	\$1.05	6100	\$6,405
Shipping	\$1.05	3200	\$3,360
Materials	\$1.05	7200	\$7,560
Laboratory (Water)	\$1.05	2305	\$2,420
			\$51,386

Sub-Contractor	Hours	Billing Rate	Units	Sub-Total Fee
CDM (Ozone)	2188	\$1.05	447650	\$470,033
HDR (Electrical, Bldg Mech)	3402	\$1.05	624513	\$655,739
PEI (Controls)	770	\$1.05	113600	\$119,280
Angelo (Planning)	274	\$1.05	15546	\$16,323
OTAK (survey)	279	\$1.05	27558	\$28,936
				\$1,290,311

FEE ESTIMATE - WRWTP Expansion, City of Wilsonville



OTAK (Survey)	Angelo (Planning)	PE (Control)	HDS (Electrical Bid Meet)	CDM (Oxym)	Other Direct Costs	Geotech Expenses	Mileage	Resource Category 8	Resource Category 9	Resource Category 10	Resource Category 12	Resource Category 13	Resource Category 14	Resource Category 15	Resource Category 16	Resource Category 17	Resource Category 18
Fixed Fee	\$1,05	\$1,05	\$1,05	\$1,05	\$1,05	\$1,05	\$0,575	\$143	\$154	\$174	\$183	\$192	\$204	\$226	\$232	\$248	\$248
Time and Material	\$2,466,149	\$51,388	\$1,290,311	\$2,466,149	\$51,388	\$1,290,311	\$51,388	\$1,290,311	\$51,388	\$1,290,311	\$51,388	\$1,290,311	\$51,388	\$1,290,311	\$51,388	\$1,290,311	\$51,388
Total	\$2,467,204	\$52,438	\$1,291,602	\$2,467,204	\$52,438	\$1,291,602	\$52,438	\$1,291,602	\$52,438	\$1,291,602	\$52,438	\$1,291,602	\$52,438	\$1,291,602	\$52,438	\$1,291,602	\$52,438

WBS Code	Task Name	Units	Total Hours		Labour	Expense	Sub-Contractor	Project Summary		Total
			1066	\$6,143				Expense	Total	
1	Project Management		1066	\$6,143	\$201,182	\$5,143	\$0	\$0	\$206,305	\$0
1.1	Execute Sub Agmmts - Proj Financial Set Up	10			\$11,480	\$242	\$0	\$0	\$11,722	\$0
1.2	Quality Assurance	16			\$14,764	\$710	\$0	\$0	\$15,474	\$0
1.3	Project Management Plan	8			\$7,382	\$355	\$0	\$0	\$7,737	\$0
1.4	Review Vendor HASP	2			\$1,684	\$83	\$0	\$0	\$1,767	\$0
1.4.1	Develop Project HASP	2			\$1,642	\$80	\$0	\$0	\$1,722	\$0
1.5	Project Schedule	12			\$5,709	\$285	\$0	\$0	\$6,004	\$0
1.5.1	Develop Project Schedule	12			\$5,709	\$285	\$0	\$0	\$6,004	\$0
1.5.2	Update Project Schedule	24			\$10,080	\$490	\$0	\$0	\$10,570	\$0
1.6	Client and Subcontractor Coordination	96			\$46,128	\$2,241	\$0	\$0	\$48,369	\$0
1.6.1	Meetings	96			\$46,128	\$2,241	\$0	\$0	\$48,369	\$0
1.6.2	Update Project Decision Log	24			\$13,888	\$660	\$0	\$0	\$14,548	\$0
1.6.3	Invoices	18			\$18,324	\$884	\$0	\$0	\$19,208	\$0
1.7	Project Management	48			\$14,576	\$715	\$0	\$0	\$15,291	\$0
1.8	Project Closeout	6			\$3,974	\$193	\$0	\$0	\$4,167	\$0
1.10	Project Closeout	6			\$3,974	\$193	\$0	\$0	\$4,167	\$0
2	Effluent Pilot Study		666	\$114,638	\$114,638	\$1,615	\$0	\$0	\$116,253	\$0
2.1	Pilot Effluent Study		356	\$60,516	\$60,516	\$230	\$0	\$0	\$60,746	\$0
2.1.1	Pilot Start-Up/Shutdown, Decommissioning and Demobilization	21			\$28,377	\$230	\$0	\$0	\$28,607	\$0
2.1.2	Data Collection and Analysis	4			\$15,800	\$0	\$0	\$0	\$15,800	\$0
2.1.3	Interim Pilot Reports	6			\$16,341	\$0	\$0	\$0	\$16,341	\$0
2.2	Pilot Operation				\$12,330	\$493	\$0	\$0	\$12,823	\$0
2.2.1	Pilot Start-Up/Shutdown Coordination Meetings	26			\$26,045	\$630	\$0	\$0	\$26,675	\$0
2.3	Draft Pilot Summary Report	6			\$20,813	\$315	\$0	\$0	\$21,128	\$0
2.3.1	Final Pilot Summary Report	7			\$8,243	\$315	\$0	\$0	\$8,558	\$0
2.4	Meetings				\$12,632	\$263	\$0	\$0	\$12,895	\$0
2.4.1	Internal Meetings	2			\$5,738	\$285	\$0	\$0	\$6,023	\$0
2.4.1.1	Internal Meeting 1	2			\$5,738	\$285	\$0	\$0	\$6,023	\$0
2.4.1.2	Internal Meeting 2	2			\$5,738	\$285	\$0	\$0	\$6,023	\$0
2.4.1.3	Internal Meeting 3	2			\$5,738	\$285	\$0	\$0	\$6,023	\$0
2.4.1.4	Pilot Summary Report Review	4			\$1,088	\$32	\$0	\$0	\$1,120	\$0
2.4.2	Monthly Progress Status Meetings	4			\$2,440	\$32	\$0	\$0	\$2,472	\$0
2.4.3	OHA Coordination Meeting	5			\$4,754	\$105	\$0	\$0	\$4,859	\$0
2.4.3.1	Resolve Comments on Pilot Summary Report	5			\$4,754	\$105	\$0	\$0	\$4,859	\$0
2.4.3.2	Resolve Comments on Pilot Summary Report	5			\$4,754	\$105	\$0	\$0	\$4,859	\$0
3	Coordination		443	\$93,003	\$2,139	\$0	\$0	\$0	\$95,142	\$0
3.1	Develop CMMSC Procurement Documents	1			\$15,006	\$28	\$0	\$0	\$15,034	\$0
3.1.1	RFP Examples	40			\$682	\$0	\$0	\$0	\$682	\$0
3.1.2	Advise CITY as requested	1			\$10,630	\$0	\$0	\$0	\$10,630	\$0
3.1.3	Selection Criteria	4			\$1,153	\$0	\$0	\$0	\$1,153	\$0
3.1.4	Example Dm 1 Specifications	1			\$82	\$0	\$0	\$0	\$82	\$0
3.1.5	Develop CMMSC Procurement Schedule	1			\$1,306	\$0	\$0	\$0	\$1,306	\$0
3.2	Conduct CMMSC Proposal Process				\$17,777	\$420	\$0	\$0	\$18,197	\$0
3.2.1	CMMSC Proposal Questions	4			\$2,278	\$0	\$0	\$0	\$2,278	\$0
3.2.2	Prepare Adverts	6			\$2,429	\$0	\$0	\$0	\$2,429	\$0
3.2.3	Develop Pre-proposal Presentation	1			\$2,626	\$0	\$0	\$0	\$2,626	\$0
3.2.4	Prepare Pre-proposal Meeting	32			\$9,224	\$0	\$0	\$0	\$9,224	\$0
3.2.5	Review Proposals	8			\$7,333	\$200	\$0	\$0	\$7,533	\$0
3.3	Conduct CMMSC Interview Process				\$1,642	\$0	\$0	\$0	\$1,642	\$0
3.3.1	Interview Formal Recommendations	6			\$1,642	\$0	\$0	\$0	\$1,642	\$0
3.3.2	Prepare Interview Questions	4			\$1,378	\$0	\$0	\$0	\$1,378	\$0
3.3.3	Prepare Interview Questions	6			\$1,378	\$0	\$0	\$0	\$1,378	\$0
3.3.4	Prepare Interview Questions	3			\$68	\$0	\$0	\$0	\$68	\$0

FEE ESTIMATE - WRWTP Expansion, City of Wilsonville



Resource Category 19	Resource Category 18	Resource Category 17	Resource Category 16	Resource Category 15	Resource Category 14	Resource Category 13	Resource Category 12	Resource Category 10	Resource Category 9	Resource Category 8	Mileage	Geotech Expenses	Other Direct Costs	CDM (Owner)	HDS (Technical Bid Meet)	PEI (Contract)	Angelic (Planning)	OTAK (Survey)
\$248	\$230	\$232	\$204	\$192	\$183	\$174	\$154	\$149	\$143	\$9,575	\$1,05	\$1,05	\$1,05	\$1,05	\$1,05	\$1,05	\$1,05	\$1,05
46	102	557	1795	1745	2211	3159	3002	614	149	7363	9000	35909	447650	624513	113600	15548	27558	228,938.90
\$11,408	\$24,378	\$120,224	\$403,875	\$32,844	\$335,040	\$404,813	\$548,666	\$482,908	\$91,486	\$21,307	\$4,232	\$9,450	\$37,704.45	\$470,032.50	\$655,738.65	\$119,280	\$18,323.30	\$28,938.90

WBS Code	Task Name	Units	Project Summary										Sub-Contractor	Total						
			Fixed Fee	Time and Material	Expense	Labour	Sub-Contractor	CDM (Owner)	HDS (Technical Bid Meet)	PEI (Contract)	Angelic (Planning)	OTAK (Survey)								
5.5.11.1	Review of 2017 Master Plan	4																		
5.5.11.2	Architectural Guidelines	4																		
5.5.12.1	Bldg Programming Meeting	6																		
5.5.12.2	Draft TM	4																		
5.5.12.3	Final TM	2																		
5.5.13.1	Biological	4																		
5.5.13.2	Draft TM	2																		
5.5.13.3	Final TM	1																		
5.5.14	Site/Civil and Stormwater Mgmt	1																		
5.5.14.1	Site Plan	2																		
5.5.14.2	Water Management Plan	2																		
5.5.14.3	Draft TM	4																		
5.5.14.4	Final TM	14																		
5.5.15	Maintenance of Plant Operations	8																		
5.5.15.1	Review WWSP RVP Project	8																		
5.5.15.2	Contingency Planning for WWSP	8																		
5.5.15.3	Emergency Construction Sequence	8																		
5.5.15.4	Draft TM	8																		
5.5.15.5	Final TM	8																		
5.6	Basis of Design Report	2																		
5.6.1	Draft Report	8																		
5.7	WRWTP Expansion 30% Design	6																		
5.7.1	30% Drawings and Specs	6																		
5.7.2	OPCC	2																		
5.7.3	Design Review Workshop	4																		
6	Detailed Design																			
6.1	Cleanwell Modifications	4																		
6.1.1	CW Design Review Workshop	4																		
6.1.2	CW Design	2																		
6.1.2.1	CW Meets 60% Design	6																		
6.1.2.2	CW Meets 80% Design	4																		
6.1.2.3	CW Meets 100% Design	1																		
6.1.3	CW Permitting Assistance	4																		
6.1.4	CW ESDC	2																		
6.1.4.1	CW Pre-Construction Meeting	2																		
6.1.4.2	CW Permits	2																		
6.1.4.3	CW ESDC	2																		
6.1.4.4	CW Construction Progress Meetings	2																		
6.1.4.5	CW Record Drawings	2																		
6.1.5	Preliminary Cleanwell Tracer Study	2																		
6.1.5.1	Develop CW Tracer Study Protocol	2																		
6.1.5.2	CW Tracer Study Test	2																		
6.1.5.3	CW Tracer Study TM	4																		
6.2	WRWTP Expansion 60% Design	6																		
6.2.1	60% Drawings and Specs	6																		
6.3	WRWTP Expansion 90% Design	6																		
6.4	WRWTP Expansion 100% Design	10																		
6.5	WRWTP Expansion OPCC	264																		
7	Permitting Assistance																			
7.1	Prepare Permitting Plan	2																		
7.2	Meeting with Public Agencies	2																		
7.3	Permitting Requirements	3																		
7.4	30% Design Review	4																		
7.5	TYFARS Coordination	17																		
7.6	Plan Review OHA Coordination	1																		
7.7	Oregon DEQ	1																		
7.8	Building Permit	1																		
7.9	Permitting Meetings	7																		

