186941

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

CONTRACT NUMBER _____

TITLE OF WORK PROJECT:
Combined Sewer Overflow Transients Relief Project (BES Project No. E10490)

This contract is between the City of Portland ("City," or "Bureau") and CDM Smith Inc., hereafter called Consultant. The City's Project Manager for this contract is Kurt Robinson, P.E.

Effective Date and Duration
This contract shall become effective upon execution by all parties. This contract shall expire, unless otherwise terminated or extended, on December 31, 2016.

Consideration
(a) City agrees to pay Consultant a sum not to exceed $624,992 for accomplishment of the work.
(b) Interim payments shall be made to Consultant according to the schedule identified in the STATEMENT OF THE WORK AND PAYMENT SCHEDULE.

CONSULTANT DATA AND CERTIFICATION

Name (print full legal name): CDM Smith Inc.

Address: 50 Hampshire Street Cambridge, MA 02139

Employer Identification Number (EIN): 04-2473650
[INDEPENDENT CONTRACTORS: DO NOT PROVIDE SOCIAL SECURITY NUMBER (SSN) – LEAVE BLANK IF NO EIN]

City of Portland Business Tax Registration Number: 135756

Citizenship: Nonresident alien ☐ Yes ■ No

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

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

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

TERMS AND CONDITIONS

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

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

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

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

5. Remedies and Payment on Early Termination

(a) If the City terminates pursuant to 4(a) above, the City shall pay the Consultant for work performed in accordance with the Contract prior to the termination date. No other costs or loss of anticipated profits shall be paid.

(b) If the City terminates pursuant to 4(b) above, the City is entitled all remedies available at law or equity. In addition, Consultant shall pay the City all damages, costs, and sums incurred by the City as a result of the breach.

(c) If the Consultant justifiably terminates the contract pursuant to subsection 4(b), the Consultant's only remedy is payment for work prior to the termination. No other costs or loss of anticipated profits shall be paid.

(d) If the City's termination under Section 4(b) was wrongful, the termination shall be automatically converted to one for convenience and the Consultant shall be paid as if the Contract was terminated under Section 4(a).

(e) In the event of early termination the Consultant's work product before the date of termination becomes property of the City.

6. Assignment

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

7. Compliance with Applicable Law

Consultant shall comply with all applicable federal, state, and local laws and regulations. Consultant agrees it currently is in compliance with all tax laws. Consultant shall comply with Title VI of the Civil Rights Act of 1964 and its corresponding regulations as further described at: http://www.portlandoregon.gov/bibs/article/446806. In connection with its activities under this Contract, Consultant shall comply with all applicable Grant Terms and Conditions. This includes all terms and conditions contained in this Contract and, for a contract involving a grant, the Grant Terms and Conditions as further described at: http://www.portlandoregon.gov/bibs/article/455735.

8. Indemnification for Property Damage and Personal Injury

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

9. Insurance

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

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

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

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

■ Required and attached // ☐ Waived by Bureau Director or designee // ☐ Reduced by Bureau Director or designee

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

■ Required and attached // ☐ Waived by Bureau Director or designee // ☐ Reduced by Bureau Director or design

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

■ Required and attached // ☐ Waived by Bureau Director or designee // ☐ Reduced by Bureau Director or designee

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

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

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

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

10. Ownership of Work Product

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

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

11. EEO Certification

In the event Consultant provides in excess of $2,500.00 for services to the City in any fiscal year, Consultant shall obtain EEO certification from the City.

12. Equal Benefits

Consultant must comply with the City's Equal Benefits program as prescribed by Chapter 3.100 of the Code of the City of Portland. The required documentation must be filed with Procurement Services, City of Portland, prior to contract execution.

13. Successors in Interest

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

14. Severability

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

15. Waiver

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

16. Errors
The Consultant shall promptly perform such additional services as may be necessary to correct errors in the services required by this contract without undue delays and without additional cost.

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

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

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

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

21. Payment to Vendors and Subconsultants
The Consultant shall timely pay all subconsultants and suppliers providing services or goods for this Contract.

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

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

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

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

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

27. Progress Reports: /■// Applicable /☐// Not Applicable
If applicable, the Consultant shall provide monthly progress reports to the Project Manager as described in the Statement of the Work and Payment Schedule.

28. Consultant's Personnel: /■// Applicable /☐// Not Applicable
If applicable, the Consultant shall assign the personnel listed in the Statement of the Work and Payment Schedule for the work required by the Contract and shall not change personnel without the prior written consent of the City, which shall not be unreasonably withheld.

29. Subconsultants
The Consultant shall use the subconsultants identified in its proposals. The Consultant shall not change subconsultant assignments without the prior written consent of the Chief Procurement Officer. The City will enforce all social equity contracting and Minority, Women and Emerging Small Business (M/W/ESB) subcontracting commitments submitted by the Consultant in its proposals. Failure to use the identified M/W/ESB subconsultants without prior written consent is a material breach of contract.
For contracts valued $50,000 or more, the Consultant shall submit a Monthly Subconsultant Payment and Utilization Report (MUR), made part of this contract by reference, reporting ALL subconsultants employed in the performance of this agreement. An electronic copy of the MUR may be obtained at: http://www.portlandoregon.gov/bibs/45475.

30. Third Party Beneficiaries
There are no third party beneficiaries to this contract. Enforcement of this contract is reserved to the parties.

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

STATEMENT OF THE WORK AND PAYMENT SCHEDULE

SCOPE OF WORK

Task 1 – Project Management

Objective

Lead Consultant's team and coordinate with BES to meet project objectives, scope, budget and schedule. To meet these objectives, provide quality assurance activities as part of this task.

Approach

Consultant shall develop a Project Work Plan, including Gantt Schedule and Baseline Budget, for execution of the Project. A draft of the Plan shall be provided to BES for review prior to finalizing the Plan. If the project is modified, an updated Work Plan and project schedule shall be provided by Consultant.

Semi-monthly (every other week) status memoranda (Project Status Memoranda) shall be provided by Consultant describing:

- Work completed since previous reporting period
- Work planned for current period
- Work planned for the next period
- Listing of issues and recommended resolutions, as necessary

A Budget Report and Invoice shall be prepared and submitted each month, along with a Subconsultant Payment and Utilization Report. The Budget Report will contain a brief summary of work performed on each task since the last billing period, the earned value ratio for each task (% task work complete/% task budget used), and projected work and expenditures for the next billing period.

Quality Assurance (QA) activities for the overall project shall be performed under the project management task including internal management and project/quality control planning, quality assurance review, and project closeout. Quality Control (QC) activities will be conducted under the specific tasks below. A Project Quality Management (PQM) meeting will be held with BES as part of the Modelling Approach Meeting under Task 2. QA and QC

activities will be identified in the Project Work Plan and schedule, and will be discussed in the Project Status Memoranda.

Assumptions

- It is anticipated that the pre-design phase will begin in January, 2015 and construction will reach substantial completion by December 31, 2016 (24 months).
- Project Status Memoranda will be provided every other week during the project duration (48 memoranda) and will be submitted via e-mail with attachments, as appropriate
- Invoices and Budget Reports will be submitted via e-mail by the 15th of each following month
- This scope of work includes optional subtasks for the modeling and design work related to the Alder Trunk System. These optional tasks will not be started until written authorization is received from BES. This Project Management task includes labor hours for revising the Project Work Plan and level of effort to delete the work if it is decided to not proceed with these optional subtasks.

Deliverables

- Draft Project Work Plan with Gantt Schedule and electronic budget worksheet
- Final Project Work Plan with Gantt Schedule and electronic budget worksheet
- Revised Project Work Plan with Gantt Schedule and electronic budget worksheet should optional subtasks be deleted or delayed
- Semi-monthly (every other week) Project Status Memoranda
- Monthly Budget Reports and Invoices with Monthly Subconsultant Payment and Utilization Reports

Task 2 – Existing Information Review

Objective

Compile information, review and identify any data gaps that need attention to execute the project. In addition, a site visit and a Modeling Approach Review/PQM meeting will be held near the beginning of the project schedule to coordinate and confirm the project approach and objectives with BES.

Approach

At the beginning of the project, BES shall transmit available pertinent information to Consultant needed for executing the project. Consultant shall file the information and compile a list of the items. After a review of the information by Consultant, gaps in the information and additional information needs shall be identified by Consultant and transmitted to BES. BES and Consultant shall discuss possible methods to supplement the information to fill identified data gaps.

Consultant shall meet with BES to visit the three project sites. Consultant shall provide a Site Visit Report discussing the sites and observations, and identify issues that may impact future tasks. During Consultant's site visit, BES will provide Consultant an operations-view presentation of storm events recorded on the Bureau's "IFIX" SCADA system to provide Consultant an opportunity to query the system and determine if other available data may be of benefit to the project; the presentation will be at the BES offices.

Based on available information and Consultant's scope of work, a Project Kick-off Meeting shall be held with BES to confirm the scoped approach to model the three project areas and adapt the approach to available information, if necessary. Any changes to the scope, budget and/or schedule will be documented and transmitted to BES for an amendment. Revised Project Work Plan will be developed once an amendment is executed for significant changes.

Consultant will provide presentation materials and collaborate with BES staff to convey how the modelling will be conducted and the type of output that will be generated. As part of this meeting, a Project Quality Management (PQM) meeting will be held with BES to discuss project objectives and goals; communication processes; define critical success factors; and processes, activities and tasks (PATs) needed to achieve success and assignment of responsibilities for carrying out the tasks. Consultant shall record minutes from the Kick-off Meeting and update

the Work Plan according to decisions made at the meeting.

Assumptions

- BES will provide available project information within two weeks of the Notice to Proceed. BES project information will include a pipe network database of the City's sewer collection system and tunnel shafts. The database will contain sizes/diameters, shapes, invert elevations, lengths, etc. This information can be provided along with geo-spatial data from the City's GIS. As-built drawings of the shafts and pertinent pipe junction structures will also be provided. BES project information will include a pipe network database of the City's sewer collection system and tunnel shafts. The database will contain sizes/diameters, shapes, invert elevations, lengths, etc. This information can be provided along with geo-spatial data from the City's GIS. As-built drawings of the shafts and pertinent pipe junction structures will also be provided.
- Consultant will review BES information and provide a Data Gap Analysis within three weeks of receipt of the information; a two week review period is assumed for BES comments on the draft memorandum
- Consultant will have two local representatives and four non-local representatives at the site visit; it is assumed that the visit to the three project sites will be conducted in one day
- The Modeling Approach Meeting/PQM will be held the day following the site visit to minimize travel expenses
- BES will provide Consultant copies of existing geotechnical investigations and reports along the three existing alignments
- BES will provide Consultant pertinent on-line links to the City's Standard Construction Specifications, Special Specifications Provisions, and Standard (Construction) Bid Items
- BES will provide Consultant a copy of the Bureau's Engineering CAD Standards and Standard Details Reference
- Consultant will obtain a copy of the City's Standard Construction Specifications "Red Book"

Deliverables

- Data Gap Analysis including listing of provided information and recommendations for filling data gaps, after discussions with BES; draft and final memoranda
- Site Visit Report to be submitted within one week of the site visit
- Modeling Approach presentation materials; and presentation and kick-off/PQM meeting minutes within one week of the kick-off/PQM meeting
- Revised Project Work Plan should kick-off/PGM meeting discussions warrant revisions

Task 3 -SHAFT Model Development

Objective

The primary objective of this task is to identify the extent to which hydraulic transients and air movement issues within specified consolidation conduit systems during storm events have contributed to observed structural damage and geyser-like behavior. Models of these systems will be developed and simulations of actual storm events will be performed. The specific systems to be modeled are:

- Alder shaft (Oak/Stark/Alder) system
- Upshur shaft (Upshur/Tanner) system
- Alder Trunk system

Each of these systems is addressed in more detail below under Subtasks 3.1 through 3.3.

Approach

Consultant will develop models of each specific consolidation conduit system using the Surge and Hydraulic Analysis for Tunnels (SHAFT) model. SHAFT is a proprietary, one-dimensional hydraulic transient analysis model that, like other hydraulic transient models, simulates filling and emptying of tunnels and/or consolidation conduits,

but also simulates the formation of trapped air pockets and associated pneumatic effects. SHAFT models will include consolidation conduits up to diversion points from the collection system, outfalls and hydraulically relevant piping. The model will be run for a variety of rainfall events, focusing on simulations of actual rainfall including those associated with observed transient issues. Model analyses conducted under this task will assume the tunnel is full at the beginning of each simulation.

For tracking purposes, model development for each system will proceed under independent subtasks, as follows.

Subtask 3.1 -SHAFT Model of Alder Shaft System

Consultant will develop a SHAFT model of the Oak/Stark/Alder consolidation conduits, simulate transient events, and provide summaries of modeling results that will be incorporated into a technical memorandum. The layout of the SHAFT model will be based on GIS data and record drawings provided by BES. The downstream boundary of this model will be the Alder shaft and the upstream boundaries will be determined by review of the record drawings and consultation with BES. Inflows to the model from the service area will consist of modeling results provided by BES. The downstream boundary condition of the model will be defined by the water surface elevation and rate of rise in the Alder shaft using data provided by BES.

Verification of model performance for Alder and Oak/Stark conduits will be based upon a comparison to available monitoring data, the observed event information, and a rational interpretation of results. It is understood that the available data and information are not sufficient to calibrate the SHAFT model in the conventional sense and that some qualitative or semi-quantitative professional judgment will be applied in model verification.

The model results will be summarized as time series of hydraulic grade lines (HGLs) at key structures along the consolidation conduit, and of air exhaust rates at selected venting locations. Animations of the HGL profile in the consolidation conduit will also be provided.

Subtask 3.2 -SHAFT Model of Upshur Shaft System

Consultant will develop a SHAFT model of the Upshur/Tanner consolidation conduits, simulate transient events, and provide summaries of modeling results that will be incorporated into a technical memorandum. The layout of the SHAFT model will be based on GIS data and record drawings provided by BES. The downstream boundary of this model will be the Upshur shaft; the upstream boundaries will likely include multiple branches including, at a minimum, the 48-inch connection at Northrup Street. The final configuration of upstream branches will be determined by review of the record drawings and consultation with BES. Inflows to the model from the service area will consist of modeling results provided by BES. The downstream boundary condition of the model will be defined by the water surface elevation and rate of rise in the Upshur shaft, using data provided by BES.

Verification of model performance for the Upshur conduits will be based upon the observed event information along with rational interpretation of results. It is understood that the available data and information are not sufficient to calibrate the SHAFT model in the conventional sense and that some qualitative or semi-quantitative professional judgment will be applied in model verification.

The model results will be summarized as time series of hydraulic grade lines (HGLs) at key structures along the consolidation conduit(s), and of air exhaust rates at selected venting locations. Animations of the HGL profile in the consolidation conduit will also be provided.

Subtask 3.3 -SHAFT Model of Alder Trunk System

Consultant will develop a SHAFT model of certain components of the Alder Trunk system, to such an extent that will allow the locations of pneumatic issues to be constrained. The downstream boundary of the model will be the Alder shaft; the upstream boundary will need to be determined through review of the GIS data and the record drawings, and consultation with BES staff. At a minimum, the model will extend to the manholes where excessive air release has been observed (Yamhill St. and 7th Ave.). The upstream boundary should be far enough from the points of observed air release such that simulated air release is not substantially affected. Inflows and downstream boundary conditions will be developed in the same way as the Alder and Upshur conduit systems..

The model results will be summarized as time series of hydraulic grade lines (HGLs) at key structures along the trunk, and of air exhaust rates at selected venting locations. Animations of the HGL profile in the consolidation conduit will also be provided.

The results from the SHAFT modeling of the Alder and Upshur shaft consolidation conduits will be compiled in a technical memorandum (TM01). The memorandum will also include a description of the input sources, the geometric configuration of the models, and a list of assumptions used in model development. The memorandum will be submitted as a draft and discussed with BES in a conference call meeting, which will also include a presentation of key aspects of model development and verification via the internet.

Assumptions

The technical memorandum will emphasize concise description of model information, relying substantially on the use of bulleted lists, tables and graphics to present necessary information. It is expected that the overall length of the technical memorandum will be less than 20 pages.

It is assumed that BES will provide the following information:

- As-built drawings of all structures to be modeled
- Inflow hydrographs for all storm events to be simulated, as well as tunnel model output to provide drop shaft boundary conditions
- All data collected by BES in the Alder and Upshur systems to be used for model verification, as well as all field notes, photographs, videos and other information documenting the hydraulic or pneumatic transient events to be used for model verification

It is also assumed that BES will provide a single set of consolidated written review comments on written deliverables, with internal discrepancies rectified, within two weeks of the draft submittal.

Anticipated interaction with BES staff under this task will include, but not necessarily be limited to:

- Conference call(s) to discuss and address questions concerning background material provided by BES, if needed
- Conference call following model development to verify key scenarios to be simulated
- Conference call to review results of scenario simulations and the draft memorandum

Deliverables

- Agenda and presentation materials for meetings/conference call facilitated by Consultant
- Draft and final Technical Memorandum describing SHAFT model development and verification (TM01)
- Animations of model results showing the HGL profile in the consolidation conduits
- Executable versions of SHAFT models for each consolidation conduit system modeled

Task 4 -Computational Fluid Dynamics (CFD) Development and Modeling Objective

Develop CFD model(s) to provide a more detailed representation of hydrodynamics and air/water interactions at key structural locations in the system to verify the potential location(s) and/or nature of system modifications to mitigate undesirable hydraulic/pneumatic transient effects.

Approach

SHAFT is capable of simulating the entrapment of air pockets but does not explicitly track their subsequent movements. Computational Fluid Dynamic (CFD) modeling, however, can provide detailed resolution of two-phase flows involving mixtures of air and water. Based on the results of the SHAFT models, CFD models will be developed for locations where air/water interactions and/or hydraulic surges are identified as potentially problematic or where flows may be structurally impeded. Together, the SHAFT and CFD models will be used to evaluate the effectiveness of structural or control method alternatives for providing transient relief. Consultant will develop CFD models, using the OpenFOAM CFD platform, of structures in the consolidation conduits where transient issues have been potentially identified either by observation or through SHAFT modeling in Task 3. The

model(s) will represent existing conditions. The models will be used to simulate from one to three different transient events, by imposing non-steady boundary conditions derived from outputs of the SHAFT model. Results will be provided in a technical memorandum (TM02) and in the form of animation files.

Assumptions

It is not known at this time which parts of the consolidation conduit systems will be analyzed using CFD, but up to three CFD models are included in this scope of work. It is assumed that BES will provide the following information for each location to be modeled:

- Complete engineering drawings of all structures to be modeled using CFD
- It is assumed that electronic CAD files of engineering drawings are available and will be provided to Consultant to expedite CFD model development

Task includes development of up to three CFD models of existing conditions.

The technical memorandum will emphasize concise description of model information, relying substantially on the use of bulleted lists, tables and graphics to present necessary information. It is expected that the overall length of the technical memorandum will be less than 20 pages.

It is assumed that BES will provide a single set of consolidated written review comments on written deliverables, with internal discrepancies rectified, within two weeks of the draft submittal.

As stated above, the purpose of CFD modeling under Task 4 is to verify the potential location(s) and/or nature of system modifications to mitigate undesirable hydraulic/pneumatic transient effects. If CFD modeling of potential mitigation strategies is required, that work will be completed in coordination with the design team under Task 6.

Deliverables

- Agenda and presentation materials for conference calls facilitated by Consultant
- Draft and Final Technical Memorandum (TM02) describing CFD model development, scenario modeling and results
- Animations of model results

Task 5 – Transient Risk Assessment

Objective

Through analysis of the Task 3 and Task 4 modeling results, develop and present the risk(s) that transient effects pose to BES' infrastructure, O&M personnel, public and the environment.

Approach

The modeling work conducted under Tasks 3 will characterize a range of rainfall events and antecedent system conditions during which undesirable air venting scenarios have occurred or may occur, as well as the severity of the release events. Under Task 5, those events will be organized according to their theoretical frequency of occurrence and magnitude (as indicated by, for example, peak internal pressure or volume of trapped air) in order to assist BES in prioritizing mitigation effort.

Risks will be characterized qualitatively using the City's CIP relative risk matrix for evaluating Risk (Consequence x Likelihood of failures) on a relative basis. Relative Risk will be estimated for the base condition and for the alternatives after the level of service (return frequency) for protecting against transients and pneumatics has been decided upon by the City. The decision process will utilize the matrix of storms presented below as an overall assessment of risk relative to other event scenarios. This assessment will be performed for each of the three consolidation conduit systems modeled under this scope of work.

To simplify and facilitate communication of findings, a matrix of model results will be prepared similar to the table shown below:

	Inflow Events				
Tunnel Boundary Condition	Event 1	Event 2	Event 3	Event 4	Event 5
Tunnel BC 1	Relative Risk Score	Relative Risk Score	Relative Risk Score	Relative Risk Score	Relative Risk Score
Tunnel BC 2	Relative Risk Score	Relative Risk Score	Relative Risk Score	Relative Risk Score	Relative Risk Score
Tunnel BC 3	Relative Risk Score	Relative Risk Score	Relative Risk Score	Relative Risk Score	Relative Risk Score
Tunnel BC 4	Relative Risk Score	Relative Risk Score	Relative Risk Score	Relative Risk Score	Relative Risk Score

After compiling the preliminary assessment of relative risk, Consultant will present preliminary results to BES to review the draft findings and discuss whether weighting factors should be applied to any of the Consequence or Likelihood components included in the risk assessment. It is expected that this preliminary review discussion will be conducted as a teleconference with internet presentation of supporting materials as needed.

After all agreed-upon modifications to the relative risk assessment and matrix have been implemented, Consultant will meet with the BES Technical Review Committee (TRC) to present the results of model development and verification, the relative risk assessment results, and a description of potential alternatives to reduce risks of transients and pneumatic impacts. At that meeting, BES TRC will provide direction to Consultant on the level of service (storm return frequency and scenario) and the preferred set of potential alternatives to be considered for design of up to two alternatives for each site in Task 6. Following this meeting, a technical memorandum (TM03) will be prepared describing the process and outcome of the risk assessment.

Optional Alder Trunk Risk Task

If results of modeling and analysis under Task 3.3 demonstrate that a persistent operational problem exists along the Alder Trunk, a risk analysis of the Alder Trunk System will be performed, following procedures similar to those described above for the Alder and Upshur shafts. If BES authorizes optional subtask 5.4 sufficiently in advance of drafting TM03, the results of subtask 3.3 will be included in TM03. Otherwise, Consultant will prepare an addendum to TM03 to report the results of the Alder Trunk System transient risk analysis.

Assumptions

It is assumed that the risk assessment will be based on simulation of up to five inflow events of known frequency and up to four tunnel boundary conditions.

It is assumed that BES will provide the following information for each location to be modeled:

- Inflow hydrographs for all storm events to be simulated, as well as tunnel model output to provide drop shaft boundary conditions
- Other information necessary to determine the impact of hydraulic/pneumatic conditions simulated by the models, necessary for determining the relative risk score for each scenario modeled

The technical memorandum will emphasize concise description of model information, relying substantially on the use of bulleted lists, tables and graphics to present necessary information. It is expected that the overall length of the technical memorandum will be less than 20 pages.

It is assumed that BES will provide a single set of consolidated written review comments on written deliverables, with internal discrepancies rectified. Review comments will be provided by BES within two weeks of the draft Technical Memorandum.

Deliverables

- Agenda, presentation materials and follow-up notes for conference call facilitated by Consultant to present/review preliminary risk assessment results
- Agenda, presentation materials and follow-up notes for meeting with BES TRC facilitated by Consultant to

present model results, relative risk assessment results, and description of potential risk mitigation alternatives

- Draft and final Technical Memorandum (TM03) describing risk assessment methodology and results, BES TRC direction to Consultant, and preferred potential alternatives for Preliminary Design

Task 6 – Relief Facilities Preliminary Design

Objective

Evaluate preferred potential alternative projects and methods to identify, verify and develop preliminary designs of projects to relieve or mitigate surges or the effects of surges in the Alder Shaft System and the Upshur Shaft System, plus the Alder Trunk System as an optional subtask.

Approach

Based on the modeling work performed in previous tasks and direction from the BES TRC, Consultant will work with BES in developing and evaluating alternatives to relieve or mitigate surges in the Alder Shaft and Upshur Shaft systems. Two alternatives will be identified for each system (four total) and schematic drawings will be developed for each alternative. Each of these alternatives will then be evaluated for its effectiveness in mitigating risks (Conceptual Alternative Modeling), relative level of capital and O&M costs, and constructability. The effectiveness evaluation will include application of the SHAFT and/or CFD models developed in Tasks 3 and 4, respectively, to confirm that the transient and/or pneumatic issues are resolved with respect to the modeled conditions. The models will be revised as needed to represent relevant physical alterations to the systems that are imposed by the alternatives. Consultant will develop an Alternatives Evaluation Memorandum (TM04) which will include the Conceptual Alternative Modeling results. Consultant will conduct a Technical Review Committee (Consultant's TRC) review of the draft material prior to submitting it to BES.

Utilizing Consultant's evaluation of the alternatives (TM04), BES and Consultant will hold an Alternatives Selection Workshop to discuss and select a project or set of projects for each system. Based on the outcome of the Workshop, Consultant will develop a preliminary design, including a Geotechnical Design Criteria Evaluation Technical Memorandum (TM05), of the selected projects to be included in a Preliminary Design Report.

A draft memorandum will be developed for BES's review on recommendations for public outreach on the selected projects. Based on BES's review comments, the memorandum will be finalized and included in the Relief Facilities Preliminary Design Report. The outreach plan and initial information materials will include:

- Develop public outreach plan, including list of stakeholders and stakeholder issues, geographic/locational considerations, schedule for outreach, etc. Assumes a visit to each project area site. May include check-in type interviews with up to 6 stakeholders (to be approved by BES).
- Draft project information sheet/flyer and coordinate with BES graphic designer (or use BES-developed template). Assumes BES will print/mail through City Printing and Distribution and costs are not assumed in budget.
- Draft text content for web. Assumes BES posts/designs project web page.

The Relief Facilities Preliminary Design Report shall include sections on background, the alternatives selections process, and opinion of probable construction cost. Previously prepared technical memoranda will be included on modeling methods and results. Consultant will conduct a Technical Review Committee review of the draft Report prior to submitting to BES. Once BES's review comments have been received and discussed with BES, the Final Preliminary Design Report will be submitted.

Optional Alder Trunk Preliminary Design

Similar to the preliminary design of the Alder Shaft System and the Upshur Shaft System, Consultant will develop and evaluate two alternatives, modeling and a preliminary design of the Alder Trunk System if BES provides written authorization to proceed with this optional subtask 6.8. Since the alternatives for the two shafts would be presented and discussed with BES at the Alternative Selection Workshop, it is assumed that BES would provide authorization to proceed with the optional work in advance of the start of Task 6. The optional work includes the Alder Trunk System related work on TM04 and TM05, as well as the Public Outreach memorandum.

Assumptions

- The three project sites will be addressed in the Relief Facilities Preliminary Design Report: the Alder Shaft System, Upshur Shaft System and Alder Trunk System (optional)
- The Alternatives Evaluation will include two alternatives for each of the sites
- Physical alternations to the systems that are imposed by the alternatives will be relatively simple structural changes or additions and will require minor model modifications to allow simulation of alternatives, consistent with the proposed level of effort
- The Alternative Selection Workshop will be a four hour meeting held at BES's offices with local Consultant attendees
- Prior to start of drawing production, BES will provide Consultant base map files of the three sites. The base map files will contain land base planimetric data (streets, curbs, property, building footprints, etc.) and City sewer and water pipelines in AutoCAD format with BES layering conventions. However, it is anticipated that limited structures or structural features will need to be developed by Consultant from PDFs and other sources.
- BES will provide Consultant with the BES design review checklists (30%, 60%, 90%, FINAL) prior to start of drawing production
- Relief Facilities Preliminary Design Plans will be developed to 30% complete for the three project sites, one alternative per site, after the Alternatives Selection Workshop
- Design plans will be drawn on the BES CAD drawing template with BES layering conventions
- Relief Facilities Preliminary Design Plans shall consist of two preliminary drawings per site showing property/rights-of-way, major physical features, major existing utilities that may impact the proposed facility, and the proposed facilities based on the Alternatives Selection Workshop
- Relief Facilities Preliminary Design Report and Preliminary Drawings review comments by BES will be provided to Consultant within three weeks of the draft deliverable, according to BES procedures which include a formal two week review of the 30% design by BES Construction staff and BES in-house QA/QC review
- Scope does not include geotechnical investigations by Consultant but relies on BES' geotechnical data for the project areas being adequate for Consultant's development of geotechnical design criteria for each of the projects

Deliverables

- Alternatives Evaluation Memorandum (TM04) on evaluation of alternative projects, draft and final, including Conceptual Alternative Modeling Results and schematic drawings for each of the alternatives considered
- Alternatives Selection Workshop presentation materials and minutes
- Geotechnical Design Criteria Evaluation Technical Memorandum (TM05), draft and final
- Preliminary Design Plans for the three project sites, draft and final
- Relief Facilities Preliminary Design Report, draft and final
- Public Outreach Memorandum, draft and final

Task 7 – Design Development

Objective

The three project sites will be addressed in the Relief Facilities design: the Alder Shaft System, Upshur Shaft System and Alder Trunk System (optional), as identified and agreed to under Task 6. Consultant will work with BES in developing these projects and will provide progress submittals at the 60 percent and 90 percent level. The final design packages will be used by BES under Task 8 to obtain bids from contractors.

Approach

Two design packages will be developed by Consultant, one for the Alder Shaft System and one for the Upshur Shaft System, based on the Relief Facilities Preliminary Design Report and Preliminary Drawings developed under Task 6. Consultant will perform a Technical Review Committee review of the draft 60 percent design prior to submitting to BES. Once the 60 percent design has been reviewed by BES, Consultant and BES will meet to discuss review comments.

Each of the design packages will be reviewed for relevant differences with respect to the SHAFT and CFD models, and the models will be rerun as needed to verify the effectiveness of the alternatives. Consultant will prepare a brief technical memorandum (TM06) summarizing the findings and outcome of the design verification review.

Consultant will then progress the design to the draft 90 percent design level when final cross-checking and Senior Review will be conducted prior to submitting the design to BES. Once BES comments have been received by Consultant, the design will be advanced to the Final Design package and submitted to BES for bid package routing and approval by BES Principal Managers, and City Council Ordinance authorizing the award to the lowest responsible bidder.

As part of the design development, public outreach will be advanced through the following activities:

- Update project flyer/information handout at key milestones. Assumes up to 3 text updates. This may or may not be printed/mailed; may just be available on web or used by staff in the field. Print/mail budget would be covered by BES so does not affect Consultant budget.
- Update web content for project at key milestones. Assumes up to two text updates, and one under the optional subtask, provided to BES.
- Draft articles for local neighborhood newsletters, as requested or opportunity warrants. Assumes up to two with a third as part of the optional subtask.
- Assist project team with coordination on specific properties affected by construction, as needed, i.e., limited access or street closure issues anticipated during construction. This may include special meetings with stakeholders to address issues of design. Assume visits to up to 40 properties/businesses to share project information and collect any community concerns related to construction that can be considered by project team (20 to be considered as part of the optional subtask).
- Attend/present at up to two business or neighborhood association meetings (and one under the optional subtask) during design. Assume flyers will be available to any area groups and they likely will not need more than one visit.

Optional Alder Trunk Design Development

Similar to the design development for the Alder Shaft System and the Upshur Shaft System, the 60 percent, 90 percent and final design will be developed for the Alder Trunk System after receiving written authorization from BES for this optional subtask 7.6. The public outreach material for Alder Trunk System will be developed under this optional subtask also.

Assumptions

- Since the number and specific type of projects are unknown at this time, it is assumed that three projects will be developed, one for each of the three areas. The assumed projects will each consist of new piping (1 city block or less in length) and connection to shaft or other piping system to relieve and/or store product.
- Design drawings will conform to the BES CAD Standards Manual
- Construction Specifications will follow the City of Portland Standard Construction Specifications
- BES will provide Consultant with a copy of the most current version of Special Specifications Template (the bid book starter template)
- BES will provide Consultant specifications and plan sheets for traffic controls during construction, e.g., authorized lane closures, hours of work, work moratoriums.
- BES will modify and provide Consultant with Special Provisions Part 00100 (Contract) General Requirements

- Consultant will adapt Special Provisions Parts 00200 – 03000 as necessary to describe work, measurement and payment which do not conform to the standard specifications or standard bid items and that is particular to the design60 percent design will include the construction specification outline, bid quantities, engineering opinion of probably construction cost, likely traffic control requirements (e.g., how many lanes will be closed, night work, etc.), utility conflict log, and list of permit/easement requirements
- 90 percent design will include the bid book in draft form, construction specifications, revised bid quantities, engineering opinion of probably construction cost, utility conflict log, and updated permit/easement list
- Final design will include the Bid Book and Final Design Report
- Additional field survey data required for design will be collected and provided by BES and other City Bureaus
- Each project is assumed to consist of the following 17 drawings, with the 7 traffic control drawings provided by BES:
    - Cover, Index and Location Map
    - General Notes and Area Map
    - Civil Legend and Notes
    - Civil Plan
    - Civil Profile and Sections
    - Civil Details
    - Lane Closure Plan I (BES)
    - Lane Closure Plan II (BES)
    - Intersection Plan I (BES)
    - Intersection Plan II (BES)
    - Intersection Plan III (BES)
    - Detour Plans (BES)
    - Signage Details (BES)
    - Structural Legend and Notes
    - Structural Plan and Sections
    - Structural Sections
    - Structural Details
- It is assumed that BES will provide comments on review packages within two weeks of submittal by Consultant. Comments from various reviewers will be consolidated and provided as one set of review comments by BES.
- At this time, no permitting work has been identified and it is assumed that permits will be obtained either by BES or the contractors, as is appropriate
- BES will be the main contact on broader public information materials, but Consultant will provide draft content for public information materials, staff outreach (door-to-door, neighborhood meetings, etc.), and coordinate individually, as appropriate, with neighboring property owners/businesses
- Excavation support design will be provided by the construction contractor(s)

Deliverables

- Updated project flyer/information handouts and web content
- Articles for local neighborhood newsletters
- Stakeholder, business or neighborhood meeting materials and minutes
- 60 Percent Design Packages of drawings and specifications outline, bid quantities, Consultant's opinion of probable construction cost, traffic control requirements, utility conflict log and list of permit/easement requirements (two with one under the optional subtask)
- Verification of Effectiveness Memorandum (TM06)
- Response to BES review comments on 60 Percent Design Packages
- 90 Percent Design Packages of bid book (draft), construction specifications, revised bid quantities,

Consultant's opinion of probable construction cost, updated traffic control requirements, updated utility conflict log and updated list of permit/easement requirements (two with one under the optional subtask)

- Response to BES review comments on 90 Percent Design Packages
- Final Design Packages of drawings and specifications, and Consultant's Opinion of Probable Construction Cost (two with one under the optional subtask)

Task 8 – CM Assistance

Objective

Consultant shall assist BES in advertising and bidding of projects developed under previous tasks. Once contracts have been awarded for the projects, Consultant shall assist BES with construction submittal reviews, responding to RFIs, developing change requests, and providing specialty inspections. Work related to the Alder Trunk System is under the optional subtask 8.6.

Approach

Consultant shall assist BES with bidding of the three projects by providing written responses to submitted questions and developing addenda as necessary to provide clarifications to bidders. Consultant will receive and provide responses, and addenda if necessary, to BES for communications with bidders.

Construction submittals will be reviewed by BES and the Consultant for each project, if necessary. Consultant will receive submittals from BES via e-mail and shall provide review comments via e-mail back to BES. Consultant shall endeavor to provide review comments within 14 calendar days, though extensive and complex submittals may take longer.

Similarly, Consultant will receive RFIs from BES and provide written responses back to BES. Consultant shall endeavor to provide responses to RFIs within 4 business days, though extensive and complex RFIs may take longer.

Based on submittals, RFIs or other information, it may be necessary to provide the contractors with Contract Change Orders. Once identified and directed by BES, Consultant shall develop drawing and/or specification modifications to address the identified issue. These materials will be provided for BES's review, and will be finalized based on BES comments. As necessary, Consultant will provide an opinion of probable construction cost related to the Change Order.

As requested by BES, Consultant shall provide specialty inspection of project elements. Consultant shall provide a Field Inspection Report after each site visit and provide an opinion as to the acceptability of identified issues or items.

Optional Alder Trunk CM Assistance

Similar to the services provided for the construction of project related to the Alder Shaft System and the Upshur Shaft System, this optional subtask 8.6 will be performed for the project related to the Alder Trunk System once written authorization is provided by BES.

Assumptions

- Since the number and specific type of projects are unknown at this time, it is assumed that three projects will be developed, one for each of the three areas, as described under Task 7.
- BES will advertise projects and perform communications with bidders.
- Consultant will address bidders' questions, provide submittal reviews, respond to RFIs, provide change orders and perform field visits to the extent afforded by the Contract budget.
- BES will perform Public Outreach activities and field survey support, including confined space entry, as needed.

Deliverables

- Written responses to bidders' questions on bid documents

- Addenda to bid documents
- Review comments on contractors' submittals
- Consultant's Submittal Review Log
- Responses to RFIs
- Consultant's RFI Response Log
- Contract Change Order materials, draft and final

WORK PERFORMED BY CITY

The City has assigned a project manager to oversee Consultant's work and provide support as needed. Specific duties the City will perform include:

a. Manage Consultant's scope of work, schedule and budget.

1) Clarify technical requirements for deliverables.
2) Approve changes to scope, schedule and budget.
3) Review and approve all deliverables.
4) Approve invoices for payment.

b.. Coordinate City-Consultant team

1) Identify initial stakeholders and project team members.
2) Facilitate communication between City, stakeholders, and Consultant.

c. Work Participation

1) Participate in the design, alternatives analysis, and final design(s) and provide comments on all draft deliverables.

d. Resource Support

1) Provide conference rooms with audio visual equipment for meetings and presentations which are conducted at the City of Portland Building, 1120 SW 5th Ave., Portland, OR.
2) Provide as-built documents from City of Portland archives.
3) Provide source data for modeling, mapping and GIS analysis.
4) Review and sign rights-of-way development permit applications.

e. Advertise Construction Project

1) Submit ordinance to City Council authorizing award of construction contract.
2) Print Final Bid Book.
3) Advertise project.
4) Print and issue addenda to bidders.

CONSULTANT KEY PERSONNEL

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

NAME	ROLE ON PROJECT
Janelle Rogers, PhD, P.E.	Quality Assurance and Quality Control
Mark Ryan, P.E.	Project Manager
Scott Bell, P.E.	Hydraulic Modeling and Analysis, Risk Assessment
Jose Vasconcelos	Hydraulic Modeling and Analysis

SUBCONSULTANTS

The Consultant shall assign the following subconsultants to perform work in the capacities designated:

NAME	ROLE ON PROJECT	AMOUNT (Base Budget)	AMOUNT (w/ Optional Tasks)
LimnoTech	SHAFT model development, risk assessment, alternatives	$208,513	$219,358
Cooper Zietz Engineers, Inc.*	Structural support, CADD drawings	$95,996	$117,580
JLA Public Involvement*	Public Outreach	$12,339	$17,151
	Total Subcontracting:	$316,848	$354,089

*M/W/ESB certified firm

The subconsultant labor amounts shown above include $108,335 in the Base Budget for subcontracting to M/W/ESB certified firms, representing M/W/ESB participation of 19.7%. With Optional Tasks added, the amount subcontracted to M/W/ESB certified firms is $134,731, representing M/W/ESB participation of 21.6%.

The City will enforce all social equity contracting and Minority, Women and Emerging Small Business (M/W/ESB) subcontracting commitments submitted by the Consultant in its Proposal. For contracts valued $50,000 or more, the Consultant shall submit a Monthly Subconsultant Payment and Utilization Report (MUR), made part of this contract by reference, reporting ALL subconsultants employed in the performance of this agreement. An electronic copy of the MUR may be obtained at: http://www.portlandoregon.gov/bibs/45475.

COMPENSATION

The maximum that the Consultant can be paid on this contract is $624,992 (hereafter the "not to exceed" amount.). The "not to exceed" amount includes all payments to be made pursuant to this contract, including reimbursable expenses, if any. Nothing in this contract requires the City to pay for work that does not meet the Standard of Care or other requirements of the Contract. The actual amount to be paid Consultant may be less than that amount.

The task breakdown of the "not to exceed" amount is shown in the table below. Work cannot proceed on a Task and/or charges made against a Task until the Consultant has received written notification from the City's Project Manager that the Task is authorized to proceed. The Consultant may not reallocate compensation between tasks without the written approval of the City's Project Manager.

Task No.	Description	Task Amount not to Exceed
Base Budget		
1	Project Management	$56,325
2	Existing Information Review	$26,087
3	SHAFT Model Development	$84,064
4	CFD Development & Modeling	$48,979
5	Transient Risk Assessment	$40,550
6	Relief Facilities Preliminary Design	$91,060
7	Design Development	$159,937
8	Engineering Services During Construction	$43,895
	Base Budget Subtotal (without Optional Tasks):	**$550,897**
		Optional Tasks
5.4	Alder Trunk Model and Risk	$8,429
6.8	Alder Trunk Preliminary Design	$26,129
7.6	Alder Trunk Design and Public Outreach	$36,460
8.6	Alder Trunk System CM Assistance	$3,077
	Optional Tasks:	**$74,095**
	Total Not-To-Exceed Amount:	**$624,992**

The necessity for Optional Tasks will be determined by the City. No work or charges may proceed on Optional Tasks without written authorization of the City's Project Manager.

The Consultant is entitled to receive progress payments for its work pursuant to the Contract as provided in more detail below. The City will pay Consultant based on these invoices for acceptable work performed and approved

until the "not to exceed" amount is reached. Thereafter, Consultant must complete work based on the Contract without additional compensation unless there is a change to the scope of work.

Any estimate of the hours necessary to perform the work is not binding on the City. The Consultant remains responsible if the estimate proves to be incorrect. Exceeding the number of estimated hours of work does not impose any liability on the City for additional payment.

If work is completed before the "not to exceed" amount is reached, the Consultant's compensation will be based on the Consultant's bills previously submitted for acceptable work performed and approved.

PAYMENT TERMS: Net 30 Days

Hourly Rates
Contractor's hourly billing rates shall be based on a multiplier not to exceed 3.1 times the direct labor rate. The billing rates shall not exceed those set forth below:

Labor Classification	Maximum Hourly Billing Rate
CDM SMITH INC.	
Officer and Senior Reviewer	$305
Senior Quality Reviewer 1	$295
Senior Geotechnical Engineer	$260
Project Manager	$255
Traffic Control Planner	$187
Construction Cost Estimator	$160
Hydraulics Engineer	$145
Geotechnical Engineer	$154
Permit Specialist	$151
Project Engineer, Civil	$131
Contract Administration	$123
Word Processing	$102
SUBCONSULTANTS	
Cooper Zietz Engineers, Inc.	
Principal Structural Engineer	$179
Senior Structural Engineer	$120
CADD	$94
Administrative Assistant	$72
JLA Public Involvement	
Public Involvement Specialist 6	$146
Public Involvement Specialist 2	$91
Administrative 3	$78
LimnoTech	
Principal	$244
Project Manager	$207
Jose Vasconcelos	$186
Senior Project Engineer	$154
Project Engineer	$122

The hourly billing rates include a multiplier applied to salaries. This multiplier shall not exceed 3.1 and shall include the following non-reimbursable expenses: fringe benefits, payroll bonuses, autos and other defined perquisites, telecommunications, facsimile services, overhead expenses including but not limited to local and long distance telephone, parking, delivery/courier, general business and professional liability insurance, advertising costs, postage, internal copying, lease of office equipment, mileage and other local travel costs (travel within 100-mile radius of Consultant's office), information technology, all other direct costs not identified as reimbursable, other indirect costs and profit.

Hourly billing rates shall remain the same throughout the term of the contract.

Standard Reimbursable Costs
The following costs will be reimbursed without mark-up:

- Out of Town Travel: Travel (transportation, lodging, and per diem) of Contractor and/or experts where specified in the contract scope or required by BES. Travel shall be directly attributed to specific project tasks and to a location outside of a 100-mile radius of the Contractor's project office. Travel will be preapproved by the City Project Manager, and travel costs will be reimbursed in accordance with the City's Travel Expense Guidelines.
- Photocopying / Reproduction Costs: Reproduction of required drawings, reports, specifications, public involvement material, and workshop material as reflected in the Scope of Work in Exhibit A.

Subconsultant Costs
Compensation for subconsultants shall be limited to the same restrictions imposed on the Consultant. There shall be no additional markup on subconsultant services.

Progress Payments
On or before the 15th of each month, the Consultant shall submit to the City's Project Manager an invoice for work performed by the Consultant during the preceding month. The invoice shall contain the City's Contract Number and set out all items for payment including, but not limited to: the name of the individual, labor category, direct labor rate, billing rate, hours worked during the period, and tasks performed. The Consultant shall also attach photocopies of claimed reimbursable expenses, if applicable. The Consultant shall stamp and approve all subconsultant invoices and note on the subconsultant invoice what they are approving as "billable" under the contract. The billing from the prime should clearly roll up labor and reimbursable costs for the prime and subconsultants – matching the subconsultant invoices. Prior to initial billing, the Consultant shall develop a billing format for approval by the City.

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

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

ACH Payments
It is the City's policy to pay its Consultant invoices via electronic funds transfers through the automated clearing house (ACH) network. To initiate payment of invoices, Consultants shall execute the City's standard ACH Vendor Payment Authorization Agreement which is available on the City's website at:
http://www.portlandoregon.gov/bfs/article/409834?.

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

WORKERS' COMPENSATION INSURANCE STATEMENT

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

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

Consultant Signature: _____ Date: 11/11/2014 Entity: CDM Smith Inc.

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

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

1. The individual or business entity providing labor or services is registered under ORS Chapter 701, if the individual or business entity provides labor or services for which such registration is required;

2. Federal and state income tax returns in the name of the business or a business Schedule C or form Schedule F as part of the personal income tax return were filed for the previous year if the individual or business entity performed labor or services as an independent contractor in the previous year; and

3. The individual or business entity represents to the public that the labor or services are to be provided by an independently established business. Except when an individual or business entity files a Schedule F as part of the personal income tax returns and the individual or business entity performs farm labor or services that are reportable on Schedule C, an individual or business entity is considered to be engaged in an independently established business when four or more of the following circumstances exist.
   Consultant: check four or more of the following:

_____ A. The labor or services are primarily carried out at a location that is separate from the residence of an individual who performs the labor or services, or are primarily carried out in a specific portion of the residence, which portion is set aside as the location of the business;

_____ B. Commercial advertising or business cards as is customary in operating similar businesses are purchased for the business, or the individual or business entity has a trade association membership;

_____ C. Telephone listing and service are used for the business that is separate from the personal residence listing and service used by an individual who performs the labor or services;

_____ D. Labor or services are performed only pursuant to written contracts;

_____ E. Labor or services are performed for two or more different persons within a period of one year; or

_____ F. The individual or business entity assumes financial responsibility for defective workmanship or for service not provided as evidenced by the ownership of performance bonds, warranties, errors and omission insurance or liability insurance relating to the labor or services to be provided.

_____ _____
Consultant Signature Date

FOR CITY USE ONLY

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

1. The individual or business entity providing the labor or services is free from direction and control over the means and manner of providing the labor or services, subject only to the right of the person for whom the labor or services are provided to specify the desired results;

2. The individual or business entity providing labor or services is responsible for obtaining all assumed business registrations or professional occupation licenses required by state law or local government ordinances for the individual or business entity to conduct the business;

3. The individual or business entity providing labor or services furnishes the tools or equipment necessary for performance of the contracted labor or services;

4. The individual or business entity providing labor or services has the authority to hire and fire employees to perform the labor or services;

5. Payment for the labor or services is made upon completion of the performance of specific portions of the project or is made on the basis of an annual or periodic retainer.

_____ _____
City Project Manager Signature Date

CONSULTANT SIGNATURE:

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

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

I, the undersigned, agree to perform work outlined in this contract in accordance to the STANDARD CONTRACT PROVISIONS, the terms and conditions, made part of this contract by reference, and the STATEMENT OF THE WORK made part of this contract by reference; hereby certify under penalty of perjury that I/my business am not/is not in violation of any Oregon tax laws; hereby certify that my business is certified as an Equal Employment Opportunity Affirmative Action Employer and is in compliance with the Equal Benefits Program as prescribed by Chapter 3.100 of Code of the City of Portland; and hereby certify I am an independent contractor as defined in ORS 670.600.

CDM SMITH INC.

BY: _____ Date: 11/11/2014

Name: Janelle Rogers

Title: Vice President

186941

CONTRACT NUMBER: _____

CONTRACT TITLE: Combined Sewer Overflow Transients Relief Project

CITY OF PORTLAND SIGNATURES:

By: n/a Date: _____
Bureau Director

By: n/a Date: _____
Chief Procurement Officer

By: _____ Date: _____
Elected Official

Approved:

By: _____ Date: _____
Office of City Auditor

Approved as to Form: APPROVED AS TO FORM

By: _____ Date: 11/28/12
Office of City Attorney CITY ATTORNEY