Exhibit A
City of Camas
North Shore Sewer Transmission System
Construction Services Scope of Work
February 6, 2017

This scope of work is to provide construction management and inspection, archeological monitoring, construction staking, geotechnical engineering support, and design services for construction of the North Shore Sewer Transmission System project.
The following roles are anticipated, and terms used in this scope are consistent with responsibilities shown below.

Role	**Firm Responsibility**
Construction Manager	Otak
Inspector – Pipeline	Otak
Inspector – Pump Stations	CH2M
Pipeline engineer	Otak
Discipline Engineers – Mechanical, Electrical, I&C, Odor Control	CH2M
Contractor	TBD – The selected prime construction contractor
City	City of Camas
Geotechnical Engineer	GRI
Archaeology Consultant	AINW

Specific tasks in this scope of work are described below.

Task 1 Construction Management and Inspection

Subtask 1.1 Project Management of Construction Phase Services

This task will be conducted by the consultant team and will include:

- Project Management and Coordination (Otak). This activity is continuous throughout the duration of the Bid/Award and Construction Phases. Otak will provide leadership, direction and control of the services described in this Scope of Work. Otak will direct the consultant team with regard to overall construction management, inspection, and engineering activities and team meetings. Otak will

maintain liaison, communication, and coordination between consultant staff, City, Construction Contractor, and other project stakeholders.

- Status Reports and Invoices (Otak). For each month the Otak team is working, a status report will be submitted along with an invoice detailing out the previous month's work accomplished and a forecast of work for the coming month.

Assumptions:

- This task is on-going for the full duration of the construction contract.

Deliverables

- Monthly status reports and invoices.

Subtask 1.2 Services During Bid and Award Phase

This task will be conducted by the consultant team and will include:

- Preparation of documents used during bid period (Otak). Otak will prepare documents and logs for use during bid and award phase such as a Bidder Tracking Log, Bidder Question Log, and Pre-Bid agenda.
- Bid Period Information Requests (Otak and CH2M). Otak will develop and implement procedures for receiving and answering bidders' questions and requests for additional information. The procedures shall include a log of all significant bidder questions and requests and the response thereto. Otak and CH2M will provide technical interpretation of the contract bid documents and will prepare proposed responses to all bidder questions and requests, which may be in the form of addenda.
- Pre-Bid Conference (Otak and CH2M). Otak will assist the City in arranging and take the lead in conducting the pre-bid conference. Otak will work with the City in developing the agenda and content of the pre-bid conference. Otak will take minutes or make other provision for documenting the results of the pre-bid conference. Otak will also record all questions and requests for additional information, and shall coordinate with the City for issuing responses and additional information.
- Addenda (Otak). Otak will assist the City in issuing all Addenda to the Bid Documents and shall distribute Addenda to the bidders. All Addenda shall be approved by the City.
- Bid Opening (Otak). Otak will assist the City in opening of bids. Otak will create and maintain the bid tabs. Otak will review all bids and evaluate them for responsiveness and bid amount. Otak will verify through reasonable investigation the supplemental bidder responsibility criteria submitted by the low bidder and second low bidder. Otak will prepare a report of its review and evaluation and include recommendations for award of the contract for construction, or other action as may be appropriate. The City shall make the final decision on the award of the contract for construction and the acceptance or rejection of all bids. Otak will provide technical (but not legal) advice in bid pretest situations.
- Recommendation of Project Award (Otak). Otak will assist the City in preparing the notice of award; assembly, delivery and execution of the contract for construction;

and preparation of the notice to proceed. The City shall sign the notice of award and the notice to proceed.

Assumptions:

- This task assumes a four (4) hour pre-bid conference onsite with two (2) Otak CM staff and 1 CH2M CM staff in attendance, and no more than three (3) addenda.

Deliverables

- Pre-bid agenda and minutes, addenda, and recommendation of project award.

Subtask 1.3 Pre-Construction Meeting

This task will be conducted by the consultant team and will include:

- Schedule and lead Pre-Construction Meeting with consultant team, City, Construction Contractor, and other project stakeholders.
- Prepare and distribute Pre-Construction Meeting agenda and minutes.
- Attend, facilitate, and participate in the Pre-Construction Meeting.

Assumptions:

- This task assumes a four (4) hour pre-construction meeting to be held at the City, with three (3) Otak CM staff and 1 CH2M CM staff in attendance.

Deliverables

- Meeting agenda and minutes.

Subtask 1.4 Construction Management and Contract Administration

Otak will provide day-to-day administration of the construction contract. This task will be conducted by the consultant team and will include:

- Monitor overall budget and costs included in the project authorization.
- Monitor and evaluate the construction schedule and determine whether the construction contractor is proceeding in a manner that will result in timely project completion.
- Maintain liaison contact between the Contractor, City and stakeholders.
- Respond to daily construction issues and research with appropriate parties to resolve issues at lowest possible level with Contractor.
- Review construction contractor's subcontracts for conformance to the contract.
- Perform labor compliance monitoring as required, tracking subcontracts, certified payroll, subcontractor payments, and performing intermittent on-site employee interviews for wage verifications.
- Authorize minor variations in the work which do not involve an adjustment in the contractor's contract price nor time for construction and are not inconsistent with the intent of the contract documents.
- Assist the City with the issuance of changes to the contract for construction. Otak will receive and review the contractor's response to the request for change and will

obtain such further information as is necessary to evaluate the basis for the contractor's proposal. Otak will assist the City with negotiations of the proposal and, upon approval by the City, prepare final change order documents for execution by the City and Contractor.

Assumptions:

- This task is on-going throughout the duration of the construction contract (estimated at 60 weeks).
- No level of effort or budget is assumed for claim/dispute review. In the event it becomes necessary for Otak to assist the City in defending Construction Contractor disputes or claims, this work will be tracked on an actual time and materials (T&M) basis and a contract amendment will be required.

Deliverables

- Status updates and recommendations regarding budget and schedule.
- Reviewed labor compliance documentation (to be kept at Otak's office and turned in at project completion)
- Documentation of changes ordered

Subtask 1.5 Weekly Construction Progress Meetings

Otak will facilitate and attend weekly on-site construction progress meetings with consultant team, City, Construction Contractor, and other project stakeholders. Meetings will review project schedule, status of submittals and RFIs, review of pending change orders, and construction issues for resolution. Otak will distribute meeting minutes.

Assumptions:

- This task assumes weekly site meetings for the full duration of the construction contract (60 meetings), with two (2) CM staff in attendance

Deliverables

- Meeting agenda and minutes

Subtask 1.6 Monthly Construction Progress Estimates/Payments

Otak will work closely with the Construction Contractor to establish monthly estimated quantities for payment. Otak will document materials as they are installed and track quantities throughout each month to verify and confirm Construction Contractor invoices.

Otak will receive and review the Contractor's requests for payment. Otak will determine whether the amount requested reflects the progress of the Contractor's work and is in accordance with the contract for construction. Otak will provide recommendations to the City as to the acceptability of the requests. Otak will advise the City as to the status of the total amounts requested, paid, and remaining to be paid under the terms of the contract for construction.

Otak will create and keep updated a quantity tracking spreadsheet that identifies original

contract quantities and corrected estimated quantities to complete the work to identify real-time budget status. This spreadsheet will be available for the City to review, and will be submitted along with Contractor estimates each month.

Assumptions:

- This task assumes monthly estimates for the full duration of the construction contract (14 estimates)

Deliverables

- Reviewed contractor invoice to City with recommendation to pay
- Quantity tracking spreadsheet

Subtask 1.7 Submittal Review and RFIs

Otak will review construction shop drawings, Requests for Information (RFIs) and submittals electronically or in paper form as submitted by the Construction Contractor. Otak will log in each submittal/RFI when it arrives, distribute accordingly to appropriate review staff, track the submittal/RFI to ensure a timely response, and log out the reviewed submittal/RFI when it is returned to the construction contractor.

Assumptions:

- This task is on-going throughout the duration of the construction contract (estimated at 60 weeks) and assumes 200 submittals and 50 RFIs.

Deliverables

- Submittal and RFI log will be available to view by City

Subtask 1.8 Construction Monitoring and Inspection

Otak will mobilize a team on site for the duration of the construction to provide site coordination and monitoring the performance of the Construction Contractor. The on-site team will mobilize in a field office to be provided by the Contractor in accordance with the terms of the contract for construction.

Otak will provide on-site monitoring and inspection of construction for conformance with construction contract documents. Otak will coordinate and conduct on-site monitoring and inspections so they do not cause unnecessary adverse impacts to the construction schedule. On-site monitoring and inspections will occur at critical times during the construction process based on Otak's evaluation of the Contractor's schedule and construction contract documents.

Otak will have inspection staff onsite during all active construction. Otak will monitor the Construction Contractor's quality control process for compliance with the construction contract requirements. Otak will prepare daily progress reports of construction for each day consultant team staff are onsite. Photos will be taken daily and kept for review at Otak's office. Otak will determine and document pay quantities for work and materials incorporated into the project to confirm Construction Contractor monthly invoices.

Should Otak discover or believe that any work by the Contractor is not in accordance with the contract for construction, or is otherwise defective, or not conforming to requirements of the contract or applicable rules and regulations, Otak will bring this to the attention of the Contractor and the City. Otak will there upon monitor the Contractor's corrective actions and shall advise the City as to the acceptability of the corrective actions.

Assumptions:

- This task is on-going throughout the duration of the construction contract (estimated at 60 weeks). Two inspectors (Otak pipe inspector and CH2M pump station inspector) will be assigned to the project, both full time (50 hours/week) for the full duration of the project.

Deliverables

- Daily progress reports from each inspector for days inspectors are onsite
- Photographs for each day inspectors are onsite

Subtask 1.9 Material Testing

Otak will coordinate with the independent testing firm for the material testing related to verifying the quality of the Contractor's work. Otak will review the reports and other information prepared by the independent firm. Otak will assist in coordinating their schedules and transmit reports, findings or other information to the contractor, City, and Design Team.

Assumptions:

- City will procure and pay for independent testing firm

Subtask 1.10 Construction Phase Close-Out

Otak will facilitate project close-out activities with the Construction Contractor, including:

- Create a punch list of corrective action as the Construction Contractor nears substantial completion.
- Monitor punch list work for completion and compliance
- Facilitate system testing and start-up operations with Construction Contractor and City, as needed
- Deliver project documentation to City

Assumptions:

- This task includes four (4) punch list site meetings to review draft and final punch lists with contractor and City, for three (3) CM staff in attendance.
- The Construction Management services described and required herein shall be completed in a timely manner based on the following:
    - a four week bid period
    - a five week period from the Bid Opening to Notice to Proceed
    - 14 months of active construction (approximately 60 weeks)
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Deliverables

- Draft and final punch lists for both pump station and pipe work.

Task 2 Survey and Mapping

Subtask 2.1 Survey Staking

This task will be conducted by Otak and will include:

- Perform office calculations for all staking requests;
- Begin staking with 2 working days of contractor/city request;
- Recover existing survey control, set and maintain survey control for the duration of the construction;
- Provide one set of stakes for construction fencing (101 stakes)
- Provide one set of stakes for erosion control fencing (231 stakes)
- Mark trees for removal (65 total);
- Provide one set of stakes for gravity and force main sanitary sewer construction including lines, transition structures, manholes, laterals and tees. Stakes will be placed at horizontal angle points, PC's, PT's and vertical grade changes, every 50'. Stakes will be stationed, labeled and marked for cut to invert elevations. In areas of parallel dual force main, staking will be a single offset to the construction center line. The Contractor will be provided with one set of cut sheet notes (766 stakes);
- Provide one set of stakes for water line, including lines, hydrants, meters and tees. Stakes will be placed at horizontal angle points, PC's, PT's and every 50'. Stakes will be stationed and labeled. No cuts will be marked (267 stakes);
- Provide one set of stakes for the HDD, including alignment stakes and stakes every 25 feet over the line (56 stakes);
- Provide one set of stakes for fiber optic junction boxes (66 stakes);
- Provide one set of stakes for the road at the pedestrian bridge (11 stakes);
- Provide two sets of stakes for the pedestrian bridge footings (48 stakes);
- Provide one set of stakes for gravel road restoration (52 stakes);
- Provide staking for the construction at three pump station locations and the remote odor control facility:
    - Goodwin Road PS:
        - Provide three sets of stakes for pads/structures/wet well (90 stakes);
        - Provide one set of stakes for the fence/gate (17 stakes);
        - Provide one set of stakes for internal piping (40 stakes);
        - Provide one set of stakes for waterline (8 stakes);
        - Provide one set of stakes for pavement (30 stakes);
        - Provide miscellaneous staking within each pump station (up to 50 stakes)
    - NE 232nd Avenue PS:
        - Provide three sets of stakes for pads/structures/wet well (90 stakes);
        - Provide one set of stakes for the fence/gate (17 stakes);
        - Provide one set of stakes for internal piping (43 stakes);

- Provide one set of stakes for waterline (13 stakes);
- Provide one set of stakes for pavement (38 stakes);
- Provide miscellaneous staking within each pump station (up to 50 stakes).

o Leadbetter Road PS:
- Provide three sets of stakes for pads/structures/wet well (100 stakes);
- Provide one set of stakes for the fence/gate (17 stakes);
- Provide one set of stakes for internal piping (40 stakes);
- Provide one set of stakes for waterline (10 stakes);
- Provide one set of stakes for pavement (16 stakes);
- Provide miscellaneous staking within each pump station (up to 50 stakes).

o Remote Odor Control Facility:
- Provide 3 sets of stakes for pads/structures (21 stakes);
- Provide one set of stakes for foul airline/drain (28 stakes);
- Provide miscellaneous staking within each pump station (up to 150 stakes).

Subtask 2.2 As-builts

- Field tie all above-ground evidence of sewer lines and water lines. Tie sewer line locations during construction in areas where line varies from design locations. Provide as-built data for preparation of as-built plans.

Subtask 2.3 Post Construction Monumentation Survey

- Replace all survey monuments destroyed by construction
- Prepare record of survey with monuments replaced and their locations with the Clark County Surveyors Office.

Task 3 Archeological Site Monitoring

Subtask 3.1 Site Monitoring

This task will be conducted by Archeological Investigations Northwest (AINW) and will include monitoring of the following areas:

SITE	LENGTH	WORK DESCRIPTION
45CL1207 (in Camp Currie)	1,300 FT, including the 300 FT through BPA ROW where we aren't actually in the site but BPA wants monitoring	Dual 6" FM, 2" conduit Assumes 4 weeks

SITE	LENGTH	WORK DESCRIPTION
45CL1211 (near 232nd Ave Pump Station)	420 FT BPA access road 400 FT 232nd Ave	BPA Access Road: Dual 6" FM, 2" conduit, transition structure 232nd Ave: 12" gravity sewer, 12" waterline, 4" fiber conduit, 2" fiber conduit, 2 pull boxes, 4" power conduit Assumes 2 weeks
45CL1219 (in Lacamas Park)	90 FT	8" FM, bridge abutments, and trail restoration Assumes 4 weeks

Assumptions:

- Monitoring requests will be communicated directly to AINW by the project manager, or by the construction firm contracted by the City of Camas.
- AINW will verify that the area staked on the ground accurately reflects the areas to be monitored, protected, or avoided.
- Monitoring is assumed to be 20 10-hour days, including travel.
    - Overtime would be billed at 1.5 times regular rate, if incurred during the work week.
- Costs to coordinate the field monitoring schedule, and for downloading photographs and filing notes and maps are included.
- Artifacts collected during monitoring will be under the DAHP permits issued previously. The budget covers costs to analyze and curate up to approximately 40 artifacts recovered during construction monitoring.

Deliverables:

- A report summarizing the monitoring will be needed upon conclusion of the field monitoring. It will consist of a memo, maps showing the location and details, and photographs showing the extent of the monitoring. Updated archaeological site forms will need to be included.
- AINW will submit the report to DAHP to satisfy the monitoring requirement.
- AINW will distribute the report to parties required under the permit (agencies and Tribes).

Subtask 3.2 Site Monitoring Contingency

This task is a contingency and is only authorized by written or email correspondence from the city. It will be conducted by Archeological Investigations Northwest (AINW) and will

include monitoring of the following areas:

SITE	LENGTH	WORK DESCRIPTION
45CL1208	40 FT	Dual 6" FM, 2" conduit Assume 1 day
45CL1209	350 FT	Dual 6" FM, 2" conduit Assume 1week
45CL1210	500 FT	Dual 6" FM, 2" conduit Assume 3 weeks

Assumptions:

- Assumptions and Deliverables for Subtask 3.1 are valid for this task also.

Subtask 3.3 Archeological Site Meetings

This task will be conducted by Archeological Investigations Northwest (AINW) and will include:

- Meetings with City staff to discuss archeological issues.

Assumptions:

- Assume 3 meetings
- Costs for three round-trips to Otak or City of Camas offices are included.

Task 4 Design Services During Construction

Subtask 4.1 Project Meetings

This task will be conducted by the consultant team and will include:

- **Construction Meetings (Otak).** Otak Engineers will attend project construction meetings as requested by the construction management team. This task assumes attendance at a pre-construction meeting, plus attendance at 25 construction meetings, for a total of 26 meetings.
- **Attend Client meetings and miscellaneous meetings (Otak).** This task will cover additional client meetings, meetings with construction management, or meetings with City staff. (Assume 15 meetings.)
- **Meeting Attendance (CH2M).** This task will cover any weekly construction meetings CH2M is asked to attend, additional client meetings, meetings with construction management team, or meetings with other City staff. (Assume 10 meetings, 4 hours each including travel time.)
- **Meeting Attendance (AINW).** This task will cover meetings with construction management or meetings with City staff to discuss archeological issues if needed. (Assume 3 meetings.)

- **Meeting Attendance (GRI).** This task will cover site meetings with construction management or meetings with City staff to discuss geotechnical issues. (Assume 5 meetings.)

Assumptions:

- Meeting agendas will be prepared by others.
- Meeting minutes will be written by others.
- Number of meetings has been estimated for budgeting purposes.

Deliverables

- None

Subtask 4.2 Project Submittals and RFIs

This task will be conducted by the design team and will include:

4.2.1 Project Submittals

Review Requests for Approval (RAMs) and other material submittals as requested by Construction Manager (CM) and provide written responses. Efforts will include the review and response to submittals.

This task will be conducted by the design team and will include:

- Review Requests for Approval of Materials (RAMs) and other material submittal documents as requested by the CM Team. (Otak - Assume review of **20** submittals)
- Review RAMs and other material submittal documents as requested by the CM Team. (CH2M - assume review of **40** submittals)

Assumptions:

- Construction Management team will provide submittals and RAMs for review.

Deliverables

- Memo of response to submittal or RAM approval request

4.2.2 Review and Respond to Requests for Information

The design team will provide interpretations and clarifications of contract documents. Effort includes services to research, respond, and document each RFI.

This task will be conducted by the design team and will include:

- Review and respond to RFIs (Otak – Assumes 15 RFI's)
- Review and respond to RFIs (CH2M – Assumes 30 RFI's)
- Review and respond to RFIs (GRI – Assumes 5 RFI's)

Deliverables

- Memorandum of response to RFIs

4.2.3 Review and respond to Change Orders

Assist CM with reviewing technical merit associated with change order requests. This task will be conducted by the design team and will include:

- Review and respond to Change Orders (Otak – Assumes 5 change orders)
- Review and respond to RFIs (CH2M – Assumes 5 change orders)

Assumptions:

- This scope does not include the preparation of new designs or drawings

Deliverables

- Written responses to change order requests.

Subtask 4.3 On-Site Observation Services

This task includes on-site design support services to assist the CM with coordination between construction activities and members of the design team. The design support services will be provided by either the project manager, or one of the project discipline engineers, depending on the type of construction activities.

Pipeline/Pump Station Field services provided by Otak include:

- Civil/Architectural On-Site Observation: Civil and architectural on-site observation will be provided when requested by the CM. Civil and architectural on-site observation and consultation services will be provided on an as-needed basis to assist in the review of pipeline and building construction.

Pump Station Field Services provided by CH2M include:

- Mechanical On-Site Observation: Mechanical on-site observation will be provided when requested by the CM. Mechanical on-site observation and consultation services will be provided by a mechanical engineer on an as-needed basis to assist in the review of installation of mechanical components and equipment.
- Structural On-Site Observation: Structural on-site observation will be provided when requested by the CM. Structural on-site observation and consultation services will be provided by a structural engineer on an as-needed basis to assist in the review of construction of the concrete structures.
- EI&C On-Site Observation: EI&C on-site observation and consultation services will be provided by an electrical engineer on an as-needed basis to assist in the review of installation of EI&C components and equipment.

Assumptions:

- Civil/Architectural On-Site Observations: 25 site visits
- Mechanical On-Site Observations: 4 site visits
- Structural On-Site Observations: 2 site visits
- EI&C On-Site Observations: 4 site visits

Deliverables:

- Field Observation Reports to document conditions, site observations, and recommendations

Task 4.4 Design Revisions

This task includes provisions for providing requested design revisions throughout the Project. The design team will revise and/or provide new plans and designs as needed and as requested.

This task will be conducted by Otak and CH2M and will include:

- Revise or provide new plans and designs as needed and as requested (Otak – 60 hours engineering and 120 hours of drafting allotted towards this task)
- Revise or provide new plans and designs as needed and as requested (CH2M – 60 hours engineering and 120 hours of drafting allotted towards this task)

Assumptions:

- City or Construction Manager will request any design revisions.

Deliverables

- Signed, stamped design drawings, estimates, and specifications as needed

Task 5 Startup, Testing, & Commissioning Services

This task will be conducted by CH2M and includes on-site startup and testing support services to provide technical assistance to the Contractor in starting up the new equipment and/or facilities associated with the Project. Services include:

- Witness and assist in Programmer's system commissioning of all pump stations operating together as a system (in their intended configuration) in cooperation with the CM.
- System commissioning will be completed by the Programmer as assisted by the Contractor.
- System Commissioning will include comprehensive testing of the integrated control systems, and associated programming and SCADA software configuration. CH2M will assist the Programmer in the development of a test plan.

Assumptions:

- Programmer will lead all system commissioning, in accordance with the contract documents.
- Assumes a 3 man-day allowance.

Meetings:

- System Commissioning Plan Development Workshop (1)

Deliverables:

- Field Reports to document conditions, site observations, and recommendations where requested by CM

Task 6 Record Drawings

Upon completion of construction, Record Drawings will be prepared, based upon the information compiled and furnished by CM and Contractor along with any related as-built data compiled throughout the course of the construction effort. This task will be conducted by Otak and CH2M and will include:

- Attendance at one coordination meeting to assist in resolving any clarifications to the data.
- Provide pre-pave survey data in accordance to project contract provisions.
- Revise NS-STS drawings based upon survey data collected under Task 1, revisions recorded by Construction Management and Contractor notes and diagrams. Provide revised set to the City for review. Revise and submit final record drawings.

Assumptions:

- CM Team will provide record drawing information from Contractors.
- Record Drawings will be comprised of CAD drafted field markups.

Deliverables

- As-built drawings in hard copy and electronic format

Task 7 Public Involvement

Public Outreach efforts will be led by JLA Public Involvement. JLA will work collaboratively with Otak and the City of Camas staff to develop, coordinate and deliver a community outreach program.

The outreach program will include the following tools:

Subtask 7.1 Project Website:

JLA will provide up to three content updates for the project website to be created and maintained by the City. All project information materials, such as project mailings will direct stakeholders to the project website for continued updates. The website will provide a mechanism for subscribing to project e-mail updates. The Project website will include, but will not be limited to the following information:

- Project overview
- Interactive map of the project area with current construction activity updates
- Construction activity schedule (current activities and a look-ahead)
- Frequently asked questions and answers
- Project e-mail update subscription
- Contact information

Deliverables:

- Up to three (3) Project website content updates

Subtask 7.2 Stakeholder Database, Project E-mails and Contact Database:

JLA will develop and maintain a list of stakeholder and interested parties including area residents and businesses, neighborhood associations, local authorities, public service, education and community organizations. Contact information will be collected via the project website sign-up form and interaction with the public. JLA will maintain a project contact database that documents all communication received and responses provided.

Deliverables:

- One (1) stakeholder database
- Up to 6 project e-mail updates to provide construction notices
- One (1) contact database of stakeholder communications

Subtask 7.3 Project Fact Sheet:

JLA will produce one-page project fact. It is assumed that the fact sheet will be full color, two-sided on 8 1/2 x 11 paper. The fact sheet will provide a general project overview, area map, construction schedule and project contact information.

Deliverables:

- One (1) project fact sheet

Subtask 7.4 Project Mailing:

JLA will coordinate and distribute one project mailing prior to construction to create awareness of the project and notify people of the various information resources, such as the website, e-mail notification list, and project contacts.

Deliverables:

- One (1) project mailing to all businesses and residents within at least a half mile radius of the project corridor, some broader areas around Everett Street may be added.

Subtask 7.5 Neighborhood Canvassing and Signage:

JLA will prepare information materials for up to three door-to-door canvassing events during construction. Information materials may be unique for targeted areas of construction (i.e. Park and Trail entrance and parking lot closure and other major detours). Reader boards will also be used to provide construction updates to the traveling public along the roadway.

Deliverables:

- Participation in up to three (3) canvassing events
- Up to 3 flyers
- Signage for park closures and detours

Subtask 7.6 Press Release:

JLA will create and distribute one press release in conjunction with bid notification for distribution by the City. The press release will provide a project overview, construction schedule, potential impacts for businesses, residents and traffic and will direct people to the project website for ongoing information updates.

Deliverables:

- One (1) press release

Task 7.7 Public Involvement Project Management:

Invoices and progress reports will be submitted on a monthly basis. JLA will supervise and coordinate the PI workload and internal staff to monitor project scope, schedule and budget and implement change management procedures as required.

JLA will communicate with the project team in-person, over the phone and via e-mail as needed to stay up to date on project activities and to develop accurate public information materials.

Deliverables:

- Monthly project progress reports and invoices.
- Participate in up to twelve (12) teleconference calls with the project team to identify and discuss project issues and provide general project coordination.
- Attend up to six (6) face-to-face meetings with members of the project team.

Task 8 NS-STS Operations and Maintenance Manual

In order to meet Ecology requirements and the needs of the City of Camas O&M staff, a Process Operations and Maintenance manual will be prepared describing the operation of the Project facilities and systems. This manual will explain the various modes of operation that may be used, including both normal operation and initial emergency operation procedures. The manual will explain the purpose and basic concept of the pump station, odor control, and appurtenant systems (pig launchers, surge tank). Where appropriate, reference will be made to the manufacturer's detailed O&M submittals. It will include instructions for process operations and test or that may be required to monitor the performance of the facilities.

The manual will be suitable for use as an operational tool and to facilitate operator training. The manual will be produced in a computerized format using commercially available software (MS WORD or Adobe PDF's), suitable for inclusion in an online, electronic O&M manual.

A draft and final submittal will be prepared and submitted to the City for review prior to the 50% point of construction completion. CH2M will then incorporate the City's review comments into a final updated O&M Manual before the project is 90% complete. It is anticipated that additional fix-up and addenda to the O&M manual will be performed following substantial completion to address items that arise during startup and

commissioning. A 40 hour allowance has been included for this fix-up activity.

This task will provide completion of control narratives that were developed during design, using information obtained from contractor submittals and O&M manuals to select final equipment and instrument settings, and modify design-phase narratives with changes that occur during construction. These control narratives will serve as the basis of control system software programming, and therefore construction phase updates are required.

Six copies (including one unbound copy) of the final updated O&M Manual will be prepared for City's use.

Task 9 Remote Odor Control System De-Pressurization Test

De-pressurization testing will be conducted over an 8 hour period to confirm operation of the remote odor control facility. A single CH2M field technician will work with City personnel to conduct the testing. Up to two test runs will be conducted, each with a duration of approximately 4 hours. Portable confined space fans will be provided by the City and connected to a temporary manhole lid (provided by City) for extracting air from the sewer headspace. A temporary stack (provided by CH2M) will be attached to each fan for measuring air flow velocity (air flow velocity instrumentation provided by CH2M). Portable pressure sensors will be deployed at specific manholes to measure sewer headspace pressure under specific air flow conditions. Manhole covers within anticipated zone of influence should be sealed by the City prior to testing.

Assumptions:

- Contractor to provide temporary traffic control services related to CH2M staff work in the public right of way.
- City to provide two staff members to support one 8-hour day of field testing. Staff will be required to open manholes, and operate and monitor air flow monitoring equipment.

Deliverable:

The results of the depressurization study will be summarized in an Odor Control De-Pressurization Report. The draft report will incorporate the information derived from the site field testing and outline the recommendations and the basis for design decisions. CH2M project manager and odor control engineer (via phone) will conduct a review meeting with City staff at City offices. A final report will be issued after review comments from the City have been received and incorporated.

Task 10 Control System Programming and Commissioning Services (CH2M)

CH2M will provide control system programming and commissioning services for the Project. The content of the displays and control functions are based on the Contract Documents for the Project and CH2M's experience with similar projects prepared for the City and others. The scope of work and fee estimate is also based on the following:

- The City will witness performance acceptance tests and will provide notice of substantial completion when tests meet their requirements.
- No other formal tests are contemplated.

Subtask 10.1 Pump Station PLC and Local HMI Programming

The scope of this subtask is to generate functional PLC and HMI code to operate the pump stations as described in the project process control narratives. The pump station equipment to be configured will be Allen-Bradley programmable logic controllers (PLCs) and Automation Direct Operator Interface Panels. CH2M will use their computers and software licenses to configure and program the pump station control panels.

Code will be written to monitor and control new equipment. The pump station code will be written and tested with the associated HMI screens and provide a functional link to the City's SCADA system.

Within the Allen Bradley PLCs, common control system functions will be standardized and encapsulated through the use of Add-On-Instructions (AOIs). An AOI is a block of code created by the programmer designed to perform a specific task. Using AOIs provides consistency, efficiency and makes troubleshooting much simpler.

System screens for each of the pump stations will be developed during the development phase. Simple graphics, based on the final Piping & Instrumentation Diagrams (P&IDs) will be created and the objects linked to the PLC database. The screens will encapsulate the features and properties required for programming and allow operators to intuitively command and control the systems represented.

Testing and Simulation

A fully simulated and tested version of the PLC code and HMI screens will be reviewed with the City. An "over the shoulder" review for these systems will be scheduled and carried out before the code is loaded on the live system.

Subtask 10.2 SCADA Display Configuration

The scope of this subtask is to provide operator interface graphics and displays that are functional and efficient for monitoring and control of the NS STS pump stations. At the WWTP, the City's SCADA computers use Wonderware InTouch software as the interface for the process instrumentation and control system. CH2M will use the City's computer hardware, operating system software, and application software packages to program the SCADA system.

A new router has been specified to be furnished by Contractor to City for City installation, for communication with the Goodwin Road pump station (PS). Fiber optic cables will connect Goodwin Road PS to 232nd Ave PS and Leadbetter Road PS and provide SCADA monitoring and control for all three pump stations. This router will be installed by the City in an appropriate enclosure. CH2M will configure the router and use it to commission the interface to the pump stations.

The operator interface graphics and displays will mimic the layout and organization as shown on the project P&IDs. The HMI screens developed for the local HMI will be replicated for the plant WWTP SCADA system. These screens will be integrated into the existing WWTP SCADA with the associated alarming, trending and navigation.

The scope of work includes the following:

- Develop custom graphics and displays for the City's review, and link process graphics to the database parameters
- Develop alarm messages and trend displays for the monitored systems.

Subtask 10.3 Testing

The scope of this subtask is to test the configuration of the control system software in a formal simulation of the system configuration witnessed by the City. The scope of work includes the following:

- Simulate various modes of operation and modes of control strategies prior to startup
- Test interaction of control strategies with graphic displays
- Simulate calculated points and all input/output points to verify that database is properly configured
- Test alarm points to verify proper message
- Conduct performance test to verify software, displays, and other functions to satisfy scope of work requirements with the City's staff

Subtask 10.4 Start-up

The purpose of this subtask is to start the control system software in the field and integrate the software with the field equipment. The scope of work includes the following:

- Completion of Functional Test Part 2. In this task as specified, Engineer will load application software and test all loops and software functions.
- Complete Performance Test as specified.

Deliverables

Completed HMI files, Final HMI files, and Updated copy of loop descriptions.

Subtask 10.5 Training

The purpose of this subtask is to train City personnel in maintaining and troubleshooting the control system programs. It is assumed that the staff will already be knowledgeable in the basic use and programming of the various software used. The training will provide a detailed review of the code installed and how to troubleshoot operational issues. Training will also explain how the code may be modified for changes and additions in the future. Provide

classroom operator training.

Deliverables

PDF copy of operation manual on how to use the software (showing screens and function of each software button).

Task 10 Assumptions:

- Goodwin Road Preliminary Operation – The Goodwin Road pump station will initially be operated by the developer supplying the pump station. CH2M system integration will not provide programming or startup services for that phase of the project. However, the control panel provided by the developer will be used in the subsequent phases. The panel and devices provided for the Goodwin Road Pump Station (by developer) will be furnished by developer to meet functional requirements and configuration provided to developer's designer by CH2M in October 2016.

- GSM Modem – initial communication with the pump stations will be through a GSM modem installed at Goodwin Road. This link will also be functional for the 232nd Avenue and Leadbetter Road pump stations. Eventually, the link will be augmented by a direct fiber link between the WWTP and Leadbetter Road but such future fiber link is not part of this programming scope of work. When the final link is installed, the GSM modem may be de-commissioned or kept in service as a backup communication link.

- Communication between Pump Stations – The system design requires direct communication between PLCs at the three pump stations as necessary for coordinated operation. This link will be provided by a fiber optic link to be installed by others. The coordinated function will be verified and tested after the fiber optic link is installed and commissioned.

- Communication with WWTP SCADA – the link between the Goodwin Road pump station and the WWTP will be functional as soon as the GSM modem at the pump station and the associated router is installed at the WWTP itself.

- Functional Acceptance Testing - FAT testing involves multiple disciplines and contractors. CH2M systems integration staff will exercise the controls but the effort is led by the contractor that provides the system.

- Installation – CH2M will observe installations before proceeding with commissioning but installation of devices and modification of PLC and VFD panels is by others.

- VFD configuration – As the configuration for VFDs include mechanical (e.g. speed setpoints) and electrical parameters (e.g. full load amperage) necessary for those disciplines to identify, VFD configuration will be the responsibility of the Contractor. CH2M will identify parameters necessary for control and transmit such

settings to Contractor for configuration.