



Staff Report

Meeting Date: August 15, 2022

From Jenny Coker, Public Works Director

Amendment No. 2 – West Yost Engineering Services for the Sandy

SUBJECT: WWTP Condition Assessment Improvements Project

DECISION TO BE MADE:

Whether to authorize the City Manager to execute a second amendment to the agreement with West Yost for additional wastewater treatment plant professional services.

BACKGROUND / CONTEXT:

At the December 14, 2020 meeting, City Council authorized the City Manager to negotiate a fee and scope of services with West Yost for design services for the Waste Water Treatment Plant (WWTP) Condition Assessment Improvements Project. The negotiated fee for the required services totaled \$501,333. This contract was amended on August 23, 2021, to extend the contract by one year and add additional scope for the design of the tertiary treatment expansion. Amendment No. 1 increased the fee to \$781,275.

This amendment, Amendment No. 2, covers the following additional services:

Extended Project Schedule

This amendment will extend services six months from October 2022 to March 2023. The construction of the WWTP Condition Assessment Improvements Project has been extended 3 months longer than expected due to equipment lead time delays. Additionally, West Yost will provide services for overseeing a stress test after the commissioning of the WWTP Condition Assessment Improvements Project that will extend a few months after construction completion.

WWTP Capacity Evaluation

The Environmental Protection Agency has requested the City submit information on unit operation capacities at the WWTP. This capacity evaluation will fulfill that request. West Yost will utilize their BioWin model to complete a desktop analysis of unit capacity and redundancy compared to Oregon DEQ required standards. The deliverable is a Technical Memo for EPA submission.

WWTP Stress Testing Planning and Implementation

Prepare and implement a WWTP stress testing plan to evaluate the WWTP peak flow and peak load capacity. Data from the stress test will then be utilized to calibrate the

BioWin Process model and prepare a final stress test report summarizing peak flow and peak load conclusions related to WWTP capacities.

Additional Design Support During Construction

West Yost has developed additional designs for the RAS pipeline replacement, secondary clarifier modifications, utility pump replacement, temporary aeration basin diffusers, and aeration basin bypass gate modifications that were not included in the original project scope. Plant deficiencies were uncovered during construction and these improvements were added to the project to ensure the functionality of the WWTP.

Additional Engineering Services During Construction

Requests for information and submittals for review by West Yost are more than originally planned and many of the submittals required more time than budgeted. This amendment will add additional effort needed to complete engineering services during construction through the end of the project.

The requested amendment totals \$339,741.00. The updated proposal and a detailed description of the additional services are attached.

KEY CONSIDERATIONS / ANALYSIS:

The stress test scope of work is a key deliverable which will determine the re-rated capacity of the wastewater treatment plant, and the first deliverable of this scope of work is due October 31, 2022, therefore authorizing this work is important to meet this milestone.

RECOMMENDATION:

Authorize the City Manager to execute a second amendment to the wastewater treatment plant professional services agreement with West Yost.

BUDGETARY IMPACT:

The proposed Amendment, which totals \$339,741.00, would be funded by the Clean Water State Revolving Fund (CWSRF) loan .

SUGGESTED MOTION LANGUAGE:

"I move to authorize the City Manager to execute a second amendment to the agreement with West Yost for additional wastewater treatment plant professional services, in the amount of \$339,741.00."

LIST OF ATTACHMENTS/EXHIBITS:

- Draft contract amendment No.2, including a scope and fee for additional services.



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westyost.com

July 12, 2022

SENT VIA: EMAIL

Ms. Jenny Coker
Director of Public Works
City of Sandy
39250 Pioneer Boulevard
Sandy, OR 97055

SUBJECT: Proposal for Additional Engineering Services on the Sandy WWTP Condition Assessment Improvements Project

Dear Ms. Coker:

This cover letter and attachments summarize West Yost's proposed Scope of Services and Budget for providing additional engineering services on the City of Sandy's (City's) Existing Wastewater Treatment Plant (WWTP) Condition Assessment Improvements Project (Project).

The following attachments are included with this Cover Letter:

- **Attachment A.** Scope of Services
- **Attachment B.** Project Budget

SCOPE OF SERVICES

The proposed Scope of Services for additional engineering support services includes the following four tasks:

- **Task 1.** Additional Project Management
- **Task 2.** Additional Engineering Services During Construction
- **Task 3.** WWTP Capacity Evaluation
- **Task 4.** WWTP Stress Testing Planning and Implementation

This additional scope is related to additional services required during construction, including:

Extended Project Schedule: Previous amendments had assumed the project would be completed by October 2022, but that has now been extended into early 2023.

Increased Office Engineering Services: A significant number of additional Requests for Information and Clarification (RFI/Cs) and Submittals have been reviewed by West Yost than originally planned has exhausted our budget for office engineering services.

Greater time required for specific Submittals: Additional time has been required for several submittals for elements like the temporary aeration basin diffusers and electrical breaker replacement change order. These submittals have required 16-20 hours per submittal, which is significantly higher than the amount budgeted on a per submittal basis.

Additional Design Support during Construction: West Yost has developed additional design for the RAS pipeline replacement, secondary clarifier modifications, utility pump replacement and aeration basin bypass gate modifications that were not included in the GMP 1 to 3 design or in West Yost's previous scope for construction services. These additional design services have included six Design Engineer Initiated Changes (DEICs) that were not originally budgeted.

PROJECT BUDGET

West Yost's detailed estimate of labor hours and budget for completing the Scope of Services is included as **Attachment B** and summarized in Table 1 below. West Yost will perform the Scope of Services for a not-to-exceed budget of **\$339,741**. Additional services not included in this Scope of Services will only be completed by West Yost based on prior written authorization by the City.

Task	Level of Effort, hours	Estimated Budget, dollars
Task 1. Additional Project Management	58	13,765
Task 2. Additional Engineering Services During Construction	458	115,624
Task 3. WWTP Capacity Evaluation	81	18,747
Task 4. WWTP Stress Testing Planning and Implementation	692	191,604
Total Labor Hours and Budget	1,289	\$339,741

SCHEDULE

Services on the project are anticipated to be provided through February 2024.

TERMS AND CONDITIONS

West Yost anticipates the additional engineering services will be provided under a budget augmentation using the same contractual terms and conditions as our current contract for the project.

Thank you for providing West Yost the opportunity to serve the City of Sandy. We look forward to continuing to work with you on this important project. Please call Preston Van Meter at 503.784.9536 or Corie Moolenkamp at 503.601.9520 if you have any questions or require additional information.

Sincerely,

WEST YOST



Preston Van Meter, PE
Principal Engineer
RCE #51615PE

WEST YOST



Corie Moolenkamp, PE
Principal-in-Charge | Authorized Representative
RCE # 58810PE

Attachments: Attachment A. Scope of Services
Attachment B. Project Budget



Attachment A

Scope of Services

Attachment A

Scope of Services for Additional Engineering Services

The following tasks summarize the additional engineering services to be provided by West Yost on the City of Sandy's (City's) Existing WWTP Condition Assessment Improvements Project:

- Task 1.** Additional Task 1 Project Management Services
- Task 2.** Additional Task 4 Engineering Services During Construction
- Task 3.** WWTP Capacity Evaluation
- Task 4.** WWTP Stress Testing Planning and Implementation

Task 1. Additional Task 1 Project Management Services

Project management includes coordination of West Yost's internal team and subconsultants, quality assurance and quality control (QA/QC) activities, and preparation of monthly project updates and invoices.

Task 1.01. Additional Project Management

Additional time for contracting with the City and sub-consultants related to the additional engineering services to be provided is included in this task along with preparation of monthly project updates and invoices, budget and schedule tracking and internal/external team coordination activities.

Task 1 Assumptions

- Services are anticipated to be required through February 2023. West Yost's previous amendment extended construction services through October 2022. Therefore, four (4) additional monthly project progress reports and invoices are budgeted.
- Agendas and minutes from monthly construction meetings will be prepared by the City's Owner's Representative.

Task 1 Deliverables

- West Yost will provide one electronic (PDF) copy of monthly progress reports with invoices.

Task 2. Additional Task 4 Engineering Services During Construction

This task summarizes additional level of effort (LOE) related for providing Office Engineering Services as part of the Engineering Services During Construction (ESDC) as summarized in Table 1 below.

Table 1. Additional Level of Effort			
Budgeted	Actual (to date)	Budgeted	Difference
RFI/C Responses	49	14	35
Submittals/Resubmittals	125	30	95
GMP Mods/Change Orders	4	6	0
Design Engineer Initiated Changes (DEICs)	6	0	6

Attachment A

Scope of Services for Additional Engineering Services

Task 2.01. Additional Office Engineering Support Services

Following the completion of individual GMP package negotiations, work with the full project team (City staff, WWTP operations staff, Owner’s Representative, and Construction Manager/General Contractor (CM/GC) partner) to provide engineering support services during construction by the CM/GC partner. The following additional office engineering services are budgeted:

- Requests for Information and Clarification (RFI/C) – 35 additional RFI/Cs
- Submittal reviews and responses – 95 additional Submittals/Resubmittals
- Design Engineer Initiated Changes (DEICs) – 2 additional DEICs

Task 2 Assumptions

- Office engineering services are budget at approximately 3 hours per additional RFI/C, 2 hours per RFI/C and 16 hours per additional DEIC.
- Support for reviewing and negotiating additional changes is not included in the budget.
- Due to the unknowns of construction, West Yost’s budget for ESDC is anticipated to be provided on a time-and-materials (T&M) basis.
- No full-time construction observation is anticipated to be required under a CM/GC alternate delivery approach.

Task 2 Deliverables

- West Yost will provide one (1) electronic (PDF) copy of all construction-related office engineering correspondence.

Task 3. WWTP Capacity Evaluation

This task investigates the redundant WWTP capacity following upgrades based on design and redundancy requirements using the Washington Criteria for Sewerage Works Design (“Orange Book”) and an evaluation of potential options to increase treatment hydraulic and process capacity.

Task 3.01. WWTP Capacity Evaluation Technical Memorandum

A desktop analysis will be completed using the Washington Criteria for Sewerage Works Design (“Orange Book”) to evaluate redundant capacity of the WWTP unit processes. Prepare tables summarizing the following information for each WWTP unit process:

- Design criteria and flow basis
- Number of installed units
- Total capacity
- Reliability requirement
- Reliable capacity

Identify limiting process units from a capacity and redundancy perspective and identify where expansion is needed to meet the capacity or redundancy requirements. Prepare a WWTP Capacity Analysis and Treatment Options Technical Memorandum (TM 3-1) summarizing the unit process capacity analysis and identify where expansion is needed to meet the capacity or redundancy requirements.

Attachment A

Scope of Services for Additional Engineering Services

Task 3 Assumptions

- WWTP capacity analysis will use existing WWTP design criteria as modified or updated as part of the current WWTP upgrades design by West Yost.
- Unit process capacities and redundancy requirements will follow criteria presented in the Washington Criteria for Sewerage Works Design, otherwise known as the Washington “Orange Book”. These criteria will be modified for any favorable differences in application of reliability criteria typically allowed by Oregon Department of Environmental Quality (DEQ).

Task 3 Deliverables

- West Yost will provide one (1) electronic (PDF) copy of the Draft and Final WWTP Desktop Capacity Analysis and Treatment Options TM 3-1.

Task 4. WWTP Stress Testing Planning and Implementation

This task provides for planning, implementation and reporting for WWTP stress testing following guidelines contained in the EPA Peak Stress Testing Protocol Framework (EPA, May 2015).

Task 4.01. WWTP Stress Testing Plan Technical Memorandum

Prepare a WWTP stress testing plan identifying the stress testing approach and implementation requirements for evaluating WWTP capacity. It is anticipated the stress testing would be completed in the Spring, Summer and Fall of 2023. Different stress testing periods may be defined for evaluating peak flow capacity vs. peak load capacity.

Peak Flow Stress Testing will evaluate WWTP liquid stream capacity for the secondary clarifiers, tertiary filters, and UV disinfection. It is anticipated peak flow stress testing will include:

- Peak flow stress testing schedule
 - Timing for peak flow stress testing is anticipated to be Spring or Fall 2023
- Peak flow stress testing target flows and flow management approach
- Secondary clarifier influent and effluent sampling and testing
- Secondary clarifier RAS/WAS flow and concentration sampling and testing
- Secondary clarifier sludge blanket monitoring
- Tertiary filter influent and effluent sampling and testing
- Tertiary filter backwash monitoring and cycle tracking
- UV Disinfection flow, UVT and dose monitoring

Peak Load Stress Testing is anticipated to evaluate aeration basin and secondary clarifier capacity. This testing will include:

- Aeration basin flow and WQ monitoring for influent flows and BOD, TSS, nutrient concentrations and other critical WQ parameters.
- Monitoring and adjusting aeration basin operating setpoints including RAS, IMLR, DO setpoints and other parameters to prepare rating curves for evaluating and recommending capacity setpoints.

Attachment A

Scope of Services for Additional Engineering Services

- Conducting sampling and testing throughout the WWTP to update and assess performance using the Biowin® biological process model.
- Aeration basin, secondary clarifier and recycle stream (pressate and backwash) flow monitoring and concentration sampling and testing.
- Monitoring of the secondary clarifier sludge blanket.

The data collected through stress testing will be used to update and calibrate the Biowin® biological process model needed after field testing has been completed to simulate the wide range of flow and load conditions that can impact the plant. The stress testing plan will include tasks associated with developing a calibrated treatment plant process model to characterize current plant processes and identify existing WWTP capacity under a broad range of operating conditions. A sampling and testing plan will be developed for conducting WQ monitoring before and during the WWTP peak flow and load stress testing.

A Stress Testing Implementation Plan will be completed to implement the peak flow and peak load stress testing and the model calibration sampling efforts, including:

- Sampling and analytical requirements.
- Unit process operations to concentrate flows for peak flow testing. For example, operating one aeration basin, one secondary clarifier and one tertiary filter for testing or utilizing the equalization basin for flow augmentation.
- Temporary equipment and installation requirements.
- Temporary requirements for completing stress testing (pumps, piping, aeration, etc.).
- Temporary online flow and WQ monitoring to facilitate stress testing evaluations.
- Other temporary measures required for stress testing to assure the testing provides the information required by Oregon DEQ to certify the WWTP for higher peak flow and peak load capacity, if additional capacity is determined to be available during stress testing.

The Stress Testing Implementation Plan and Schematic Design will be summarized in a WWTP Stress Testing Plan Technical Memorandum (TM 4-1). The WWTP Stress Testing Plan TM 4-1 will be submitted to the City and Oregon DEQ for review prior to finalizing TM 4-1.

Task 4.02. WWTP Stress Testing Support Services

Provide ongoing regulatory support and coordination with DEQ related to the WWTP stress testing and implementation of the Stress Testing Plan. Stress testing support services will include continuing evaluations using the calibrated WWTP Biowin® biological process model and WWTP Visual Hydraulics® hydraulic model developed by West Yost.

Provide support services for the WWTP stress testing, including providing support for City operations staff leading the WWTP stress testing implementation. Anticipated time frames for completion of peak flow and peak load stress testing are as follows:

- | | |
|---------------------------|--|
| Peak Load Stress Testing: | Five weeks over 2-3 SRT cycles during dry weather. |
| Peak Flow Stress Testing: | Three weeks to capture at least two storm events during wet weather. |

Attachment A

Scope of Services for Additional Engineering Services

West Yost's Project Manager will conduct two site visits per week during each stress testing (16 site visits total). During stress testing, West Yost will review water quality sampling data and provide ongoing updates to the WWTP Biowin® process modeling for the WWTP to assess stress testing results. Water levels will be monitored throughout the plant during peak flow stress testing for evaluation using the existing WWTP Visual Hydraulics model.

Task 4.03. WWTP Stress Final Report

Prepare a final report summarizing the peak flow and peak load stress testing along with conclusions related to WWTP capacity during the winter and summer NPDES Permit seasons. This task includes preparation of the Draft and Final stamped WWTP Stress Testing Report. One review meeting with the City and DEQ is included in West Yost's Scope of Work.

Task 4 Assumptions

- WWTP stress testing will follow guidelines for WWTP stress testing contained in the EPA Peak Stress Testing Protocol Framework (EPA, May 2015).
- Stress testing planning will consider peak flow and peak load stress testing.
- Peak flow and load stress testing will be conducted at different times to target ideal flow conditions for the type of testing conducted with a single treatment train in operation. Peak flow testing will be conducted in the spring or fall "shoulder" months and peak load testing will be conducted during lowest flow summer months.
- Water Quality sampling and testing for initial planning and during actual stress testing will be conducted by City or City's WWTP operations contractor.
- The scope of services includes updating and calibrating the existing WWTP Biowin® biological process model using additional WQ sampling data provided by the City before actual stress testing begins.
- The Biowin® biological process model will be updated and utilized to assess capacity and performance during peak flow and peak load stress testing.
- Site visits during WWTP stress testing will be conducted by West Yost's Project Manager.
- Regulatory coordination with DEQ to be led by the City with support from West Yost.

Task 4 Deliverables

- West Yost will provide one (1) electronic (PDF) copy of the Draft and Final WWTP Stress Testing Plan TM 4-1.
- West Yost will provide one (1) electronic (PDF) copy of the Draft Sandy WWTP Stress Testing Final Report.
- West Yost will provide three (3) hard copies and one (1) electronic (PDF) copy of the Final Sandy WWTP Stress Testing Final Report.



Attachment B

Project Budget

West Yost Associates	P/VP \$300 Moolenkamp	PE/PS/PG II \$272 Van Meter	PE/PS/PG I \$257 Schilling	ESG II \$184 Lang/Retzlaff	CAD II \$155 Barber	EM/SM/GM II \$297 Gies	SE/SS/SG II \$241 Hardy	TS I \$158	ADM II \$102	P/VP \$300 Kapur	Labor			ACE	LCE	TAG	Costs			
											Hours	Fee	Technology & Admin 4%				Sub. w/ markup 5%	Other Direct	Total Costs	
PROJECT: Sandy WWTP Condition Assessment Impr. Project																				
Task 1	Task 1 Add'l Project Management																			
1.01 Additional Project Management	2	24	12	12					8		58	\$ 13,236	\$ 529						\$ 13,765	
Subtotal, Task 1 (hours)	2	24	12	12	0	0	0	0	8	0	58									
Subtotal, Task 1 (\$)	\$ 600	\$ 6,528	\$ 3,084	\$ 2,208					\$ 816			\$ 13,236	\$ 529						\$ 13,765	
Task 2	Task 2 Add'l Engr. Services During Construction																			
2.01 Add'l Engineering Services During Construction	4	46	138	185	49				24	12	458	\$ 96,861	\$ 3,874	\$ 4,800	\$ 4,880	\$ 4,500	\$ 14,889		\$ 115,624	
Subtotal, Task 2 (hours)	4	46	138	185	49	0	0	0	24	12	458									
Subtotal, Task 2 (\$)	\$ 1,200	\$ 12,512	\$ 35,466	\$ 34,040	\$ 7,595				\$ 2,448	\$ 3,600		\$ 96,861	\$ 3,874	\$ 4,800	\$ 4,880	\$ 4,500	\$ 14,889		\$ 115,624	
Task 3	WWTP Capacity Evaluation																			
3.01 WWTP Capacity Evaluation TM 3-1	1	8	2	40	4	16			4	6	81	\$ 17,930	\$ 717						\$ 100	\$ 18,747
Subtotal, Task 3 (hours)	1	8	2	40	4	16	0	0	4	6	81									
Subtotal, Task 3 (\$)	\$ 300	\$ 2,176	\$ 514	\$ 7,360	\$ 620	\$ 4,752			\$ 408	\$ 1,800		\$ 17,930	\$ 717						\$ 100	\$ 18,747
Task 4	WWTP Stress Testing Planning and Implementation																			
4.01 WWTP Stress Testing Plan TM 4-1	1	12	4	80	4	40	24		4	8	177	\$ 40,404	\$ 1,616						\$ 500	\$ 42,520
4.02 WWTP Stress Testing Support Services		136	8	16	16	28	60	8		42	314	\$ 81,112	\$ 3,244	\$ 2,500	\$ 5,000	\$ 3,500	\$ 11,550	\$ 2,200	\$ 98,106	
4.03 WWTP Stress Testing Final Report	1	48	12	12	8	16	24	8	24	48	201	\$ 48,536	\$ 1,941						\$ 500	\$ 50,977
Subtotal, Task 4 (hours)	2	196	24	108	28	84	108	16	28	98	692									
Subtotal, Task 4 (\$)	\$ 600	\$ 53,312	\$ 6,168	\$ 19,872	\$ 4,340	\$ 24,948	\$ 26,028	\$ 2,528	\$ 2,856	\$ 29,400		\$ 170,052	\$ 6,802	\$ 2,500	\$ 5,000	\$ 3,500	\$ 11,550	\$ 3,200	\$ 191,604	
TOTAL (hours)	9	274	176	345	81	100	108	16	64	116	1,289									
TOTAL (\$)	\$ 2,700	\$ 74,528	\$ 45,232	\$ 63,480	\$ 12,555	\$ 29,700	\$ 26,028	\$ 2,528	\$ 6,528	\$ 34,800		\$ 298,079	\$ 11,923	\$ 7,300	\$ 9,880	\$ 8,000	\$ 26,439	\$ 3,300	\$ 339,741	