



Hazen and Sawyer

WORK ORDER INITIATION FORM for the CITY OF CLEARWATER

Date: June 23,2020

Consultant Project Number: TBD

City Project Number: 19-0034-UT

City Plan Set Number: TBD

- 1. PROJECT TITLE:**
Chemical Storage and Handling
- 2. SCOPE OF SERVICES:**

PROJECT DESCRIPTION

The City of Clearwater owns and operates three potable water treatment plants, three water reclamation facilities (WTPs, WRFs), and numerous associated facilities in the potable distribution and wastewater collection systems to provide its utility customers with safe drinking water and environmentally sound wastewater collection and treatment. Many of these facilities use chemical agents, which play key roles in the water and wastewater treatment processes. These chemicals are delivered in bulk and therefore must be properly stored and handled to ensure safety to the environment and to staff who handle them during normal plant operations. Secondary containment of chemical systems is employed to prevent the release of stored chemicals into the environment in the event of a spill or tank rupture. In addition, instrumentation and control (I&C) systems can provide monitoring capabilities to alert staff to problems with chemical storage, such as high or low levels in tanks.

The City's treatment plants and other facilities already employ these containment and I&C safeguards to a certain extent. However, incremental changes that happen over time during normal plant operations, such as equipment replacement or addition of new chemicals, warrant a periodic review of the chemical storage infrastructure to ensure that the existing safeguards remain sufficient or whether additional improvements are required. The purpose of this project is to evaluate the existing chemical containment structures and handling procedures in place at three water treatment facilities, three water reclamation facilities, and other key City facilities to ensure that all areas and

equipment requiring it are included within the containment, that the containment structures and systems have sufficient capacity, and that the containment systems and handling procedures comply with regulatory requirements and industry best practices. Where a need for improvements is found, Hazen will develop recommendations and associated planning-level costs.

The City is also concerned about the vulnerability of the respective chemical storage spaces to the impacts of projected sea level rise and future storm surge.

Fuel storage, lubricants and other hydrocarbons will not be evaluated as a part of this project.

In addition to the WTPs and WRFs, the following sites are included in the assessment:

- Three reclaimed water booster stations: Union, Skycrest, and Drew. Various chemicals, such as sodium hypochlorite, are sometimes stored at these locations.
- Two Iron Sponge units at LS11 and LS58: Although chemicals are not stored in bulk on site, certain harmful chemicals such as sulfuric acid have been produced as a byproduct and have leaked in the past.
- The Cliff Stephenson Park Odophos station.
- The Marshall Street Lab: Although chemicals used in the lab are in smaller quantities and not store in bulk, the lab's chemical handling processes will be included in the assessment.
- Coachman Station: Sodium hypochlorite and aqueous ammonia are stored here on occasion.

PROJECT TASKS

Task 1.0 – Project Management

The CONSULTANT will complete the following subtasks:

- 1.1 Project Scheduling: The CONSUTLANT will prepare a project schedule to the CITY using MS Project software. A pdf copy of an updated schedule is to be submitted with the invoice following the end of each month.
- 1.2 Monthly Status Reports: The CONSULTANT will prepare a monthly status report for summarization of the current status of the project. The report is to be submitted with the invoice following the end of each month.
- 1.3 Project Meetings: The CONSULTANT will schedule and attend monthly status meetings with the City to provide information regarding the current status of the project. The meetings will be scheduled to coincide with the CITY's Project Manager's needs for such status information and be scheduled with CITY staff as directed by the CITY's Project Manager. The CONSULTANT will prepare the agenda, sign-in sheet and minutes for these meetings.

- 1.4 Quality Assurance/Quality Control: The CONSULTANT will provide quality assurance and quality control (QA/QC) reviews throughout the life of the project. For this service, the CONSULTANT will utilize the services of senior and/or experienced professional engineers across the disciplines represented. Such professionals will make up a consistent QA/QC Team throughout the project, who, while not necessarily routinely engaged in the project on a day to day basis, are sufficiently familiar with the project throughout the process. The QA/QC Team will follow the CONSULTANT's corporate QA/QC policies. The QA/QC Team will assist in the analysis of the existing site data and perform a review of the draft and final recommendations prior to submittal to the CITY.

Task 2.0 – Kickoff and Data Collection Review

- 2.1 Kickoff Meeting: The CONSULTANT will hold a project kickoff meeting with the CITY to introduce the project team, review the proposed schedule and assigned tasks, receive data collected to date, and document project expectations for communications, reporting, invoicing, deliverables, schedule, and meeting objectives.
- 2.2 Data Collection Review: The CONSULTANT will review the data received at the kickoff meeting for completeness and suitability for executing required tasks. Data to be provided by the CITY include, but are not limited to:
 - a. Record drawings for each treatment plant, especially for any projects related to installations or modifications of the chemical systems
 - b. Material Safety Data Sheets (SDS) for the chemicals used or stored at the facilities
 - c. Equipment data sheets for tanks and chemical handling equipment
 - d. Existing operations procedures or manuals
 - e. Any available information related to historical maintenance or operational difficulties encountered with any of the chemical storage infrastructure
 - f. Any gaps in the data will be identified as soon as possible by the CONSULTANT and discussed with the CITY to determine alternate sources for missing data.

To reduce the volume of data the CITY must assemble, the CONSULTANT will obtain permit documents and additional publicly available data from alternate sources, such as the Florida Department of Environmental Protection's (FDEP) Oculus system, where possible.

Task 3.0 –Site Visits

- 3.1 Initial Site Visits: The CONSULTANT, in coordination with the CITY, will schedule and conduct an initial site visit at each plant to observe the existing chemical storage, handling, and delivery equipment and infrastructure. Objectives of the initial site visits are:
- a. Assess the general accuracy of the available record drawings with actual site conditions
 - b. Document any site conditions with the chemical systems that materially differ from record drawings
 - c. Verify the chemicals that are used or stored on site and where they are stored
 - d. Verify where in the treatment process each chemical is used, and examine the delivery/dosing equipment, using process flow diagrams and other available information. Where they are observable, feed lines will be assessed from the feed equipment to the dosing point.
 - e. Verify existing storage capacities, storage tank ages (if known), and the general layout of the surrounding structures, identifying where the record drawings differ from field observations
 - f. Obtain any site-specific observations from plant staff that can inform the analysis and recommendations for that site
 - g. Take photographs to aid in the analysis of existing conditions and development of recommendations

The CONSULTANT will schedule the site visits in advance through the CITY's project manager. One day will be reserved for visiting the CITY's water plants, up to two days will be reserved for visiting the CITY's wastewater plants, and up to four days will be reserved for the remaining seven sites.

- 3.2 Follow-Up Site Visits: As the assessment analysis proceeds, it may become necessary for the CONSULTANT to revisit one or more plants or other sites to verify information from the initial visit, assess feasibility of recommendations being developed, or obtain additional information that subsequently may be required. The CONSULTANT will schedule follow-up visits in advance through the CITY project manager. Up to four days will be reserved for revisiting sites as needed, contingent upon the City PM authorization.

Task 4.0 – Analysis and Development of Recommendations

- 4.1 Assessment and Analysis: After the data review and initial site visits, the chemical storage and handling infrastructure at each facility will be assessed to confirm that there is sufficient capacity of containment based on existing storage volume, and that containment is in place where required. The analysis and recommendations will focus on the following key aspects:

- a. Proper method (dual walled tanks, etc.) and capacity of containment for all system components, including piping, meters, other equipment, and stormwater protection (covers, roofs, etc.) as required by FDEP, NPDES, and other regulatory provisions.
- b. Proper chemical storage, in compliance with SDS data and best practices, including health and safety, and compatibility of chemicals stored in the same area.
- c. Adequacy of existing storage tank capacity, including opportunities to benefit from a capacity increase to leverage bulk pricing opportunities or excess containment capacity relative to relative to the existing chemical volume stored, factoring in chemical decay, tank material, and tank location (indoor vs outdoor, covered vs uncovered).
- d. Identifying potential points of failure that could result in an offsite release.
- e. Where gaps are identified in the existing containment structures and systems, conceptual development of recommended improvements (such as expansion of containment volume, addition of double-walled tanks or pipe, etc.) and associated planning-level cost estimates for each. Where excess containment capacity exists, corresponding potential increases in tank capacity will be included in the development of recommended improvements.
- f. Sea level rise and storm surge evaluation for category 1, 2, 3, 4 and 5 hurricanes at the Mean Higher High Water (MHHW) elevation for each facility, based on current plant elevations and the potential impacts of the 5, 10, and 25-year storm events. All depths will be referenced to NAVD 88 datum.
- g. High level (Planning level) climate vulnerability analysis consisting of calculated surge elevations vs. finish grade elevations for each facility using the NOAA high curve for the Tampa Bay region. Hazen will develop qualitative descriptions of the anticipated impact of the surge elevations to the containment systems and buildings, focused on the potential for offsite releases of chemicals. The descriptions will include possible improvements recommended for further analysis and cost estimating. Recommendations will be planning level climate resilience measures, with costs to be developed in separate analyses.

- 4.2 Technical Memorandum of Recommendations. The CONSULTANT will prepare a draft technical memorandum that details the project efforts and presents the recommendations developed during the analysis phase. A feasibility level budget estimate for each recommendation will be included. The CONSULTANT will submit the draft document to the CITY for review and comments. The CONSULTANT will incorporate comments on the draft memorandum, provide associated responses in the comment log, and issue a final technical memorandum to the CITY. If a review meeting is required to discuss any comments that need further clarification, a subsequent meeting will be scheduled for that purpose.

- 4.3 Review Meeting. If required, the CONSULTANT will hold a meeting with the City to discuss CITY comments on the draft technical memorandum that require additional clarification. The CONSULTANT will provide a summary of the meeting to document major discussion topics and action items, add outstanding responses to the comment log, incorporate the remaining comments into the document, and issue the final technical memorandum.

Key Assumptions:

- Containment structures are being evaluated for coverage and capacity only. No structural, electrical and instrumentation, or safety evaluation is being conducted.
- Sea level rise and storm surge evaluations will be conducted on the chemical containment structures and buildings. Other facility process tanks will not be evaluated.
- Chemical storage volume changes due to process optimizations (instead of available containment volume) will not be evaluated in this assessment. Process optimizations will be evaluated as part of a separate study.
- Liquid polymer systems and storage will not be evaluated.

3. PROJECT GOALS:

The CITY seeks to assess its current chemical storage and handling infrastructure, identify any potential gaps or capacity needs, and obtain recommendations for facility improvements and associated preliminary costs for each.

The goals of this project are as follows:

- Complete a thorough assessment of the existing chemical storage facilities at each of the CITY's water and wastewater treatment plants, three reclaimed water booster stations, three wastewater lift stations, the Cliff Stephenson Odophos station, the Marshall Street Lab, and Coachman Station, utilizing site visits and an in-depth review of record drawings.
- Identify areas where additional containment or other mitigation efforts are required to provide complete secondary containment or improve handling procedures.
- A high-level assessment of each facility's chemical storage to both sea level rise as well as storm surge from a projected category 1, 2, 3, 4 and 5 hurricane at mean higher high water (MHHW) for each facility assessed over a twenty five year span. If vulnerable make recommendations for making chemical storage areas resilient.
- Produce specific recommendations for plant improvements that bring the CITY's chemical systems into alignment with minimum requirements or, ideally wherever possible, industry best practices

The objective of the project is to provide the CITY with specific, actionable project options for further development and implementation that will provide the maximum

overall benefit and value with regards to relative costs and feasibility. The final deliverable will be the final Technical Memorandum in paper and Adobe PDF format.

4. BUDGET:

See Schedule "B"

This price includes all labor and expenses anticipated to be incurred by Hazen and Sawyer for the completion of these tasks in accordance with Professional Services Method "A" – Cost Times Multiplier Basis, **for a fee not to exceed** One Hundred Eighty Nine Thousand Twenty Four Dollars (\$189,024).

5. SCHEDULE:

The project is to be completed **166 days** from issuance of notice-to-proceed. The project deliverables are to be phased as follows:

Task 100 – Project Management	166 calendar days
Task 200—Kickoff and Data Collection	43 calendar days
Task 300—Site Visits	45 calendar days
Task 400—Analysis & Development of Recommendations	166 calendar days

6. STAFF ASSIGNMENT

Hazen and Sawyer (Consultant) Staff

Andre Dieffenthaler, P.E., Vice President

John Pacifici, P.E., Senior Project Manager

Samantha Lemaster, P.E., Angie Rodriguez, E.I., Christopher Matos, Tyler Mokris, et al, Project Engineers

Bob Anderson, P.E., George Brown, P.E., et al, Subject Matter Experts (SME), QA/QC

City of Clearwater Staff

Kaylynn Price, City Project Manager

Jeremy J. Brown, P.E., City Utilities Engineering Manager

Richard G. Gardner, P.E., City Public Utilities Assistant Director

Glenn Daniel, City Public Utilities Water, Reclaim and Wastewater Collection Manager

Frederick Hemerick, City Public Utilities Water, Reclaim and Wastewater Collection Assistant Manager - Liasion

Jason Jennings, City Public Utilities Wastewater Environmental Technology Manager

Michael Flanigan, City Public Utilities Wastewater Environmental Technology Assistant Manager
- Liaison

7. CORRESPONDENCE/REPORTING PROCEDURES:

ENGINEER's project correspondence shall be directed to:

Andre Dieffenthaller (adieffenthaller@hazenandsawyer.com) and John Pacifici (jpacifici@hazenandsawyer.com).

All City project correspondence shall be directed to:

Project Manager - Kaylynn Price (Kaylynn.Price@myclearwater.com) with copies to the Utilities Engineering Manager - Jeremy Brown, P.E. (jeremy.brown@myclearwater.com) and Public Utilities Assistant Director - Richard Gardner (richard.gardner@myclearwater.com and others as may be appropriate.

ENGINEER shall provide a minimum of forty-eight (48) hours' notice prior to conducting fieldwork/site visits. ENGINEER shall provide a minimum of seven (7) days notification for site visits requiring the assistance of City Operations and Maintenance personnel.

ENGINEER acknowledges that all City directives shall be provided by the City Project Manager.

In addition to the original copies delivered as stated in the scope of work, all project deliverables will be submitted in electronic format on CD or other City approved device prior to approval of final invoice.

8. INVOICING/FUNDING PROCEDURES:

For work performed, invoices shall be submitted monthly to the:

**City of Clearwater, Engineering Department
Att. Veronica Josef, Senior Staff Assistant
PO Box 4748
Clearwater, Florida 33758-4748.**

Contingency services will be billed as incurred only after written authorization provided by the City to proceed with those services.

City Invoicing Code: 3217321-530100-96721 for \$94,512

3217321-530100-96664 for \$94,512 _____

9. INVOICING PROCEDURES

At a minimum, in addition to the invoice amount(s) the following information shall be provided on all invoices submitted on the Work Order:

- A. Purchase Order, Project and Invoice Numbers and Contract Amount.
- B. The time period (begin and end date) covered by the invoice.
- C. A short narrative summary of activities completed in the time period
- D. Contract billing method – Lump Sum or Cost Times Multiplier
- E. If Lump Sum, the percent completion, amount due, previous amount earned and total earned to date for all tasks (direct costs, if any, shall be included in lump sum amount).
- F. If Cost Times Multiplier, hours, hourly rates, names of individuals being billed, amount due, previous amount earned, total earned to date for each task and other direct costs (receipts will be required for any single item with a cost of \$50 or greater or cumulative monthly expenses greater than \$100).
- G. If the Work Order is funded by multiple funding codes, an itemization of tasks and invoice amounts by funding code.

10. SPECIAL CONSIDERATIONS:

The consultant named above is required to comply with Section 119.0701, Florida Statutes (2013) where applicable.

PREPARED BY:



 Andre Dieffenthaller, P.E.

Vice President
 Hazen and Sawyer

6/23/2020

 Date

APPROVED BY:

 Tara Kivett, P.E.
 City Engineer
 City of Clearwater

 Date



CITY OF CLEARWATER ENGINEERING DEPARTMENT

WORK ORDER INITIATION FORM CITY DELIVERABLES

1. **FORMAT**

The design plans shall be compiled utilizing the following methods:

1. City of Clearwater CAD standards.
2. Datum: Horizontal and Vertical datum shall be referenced to North American Vertical Datum of 1988 (vertical) and North American Datum of 1983/90 (horizontal). The unit of measurement shall be the United States Foot. Any deviation from this datum will not be accepted unless reviewed by City of Clearwater Engineering/Geographic Technology Division.

2. **DELIVERABLES**

The design plans shall be produced on bond material, 24" x 36" at a scale of 1" = 20' unless approved otherwise. Upon completion the consultant shall deliver all drawing files in digital format with all project data in Autodesk Civil 3D file format. If not available Land Desktop files are still acceptable, however the City or Clearwater is currently phasing out Land Desktop.

NOTE: If approved deviation from Clearwater CAD standards are used the Consultant shall include all necessary information to aid in manipulating the drawings including either PCP, CTB file or pen schedule for plotting. The drawing file shall include only authorized fonts, shapes, line types or other attributes contained in the standard release of Autodesk, Inc. software. All block references and references contained within the drawing file shall be included. Please address any questions regarding format to Mr. Tom Mahony, at (727) 562 4762 or email address Tom.Mahony@myClearwater.com.

All electronic files (including CAD and Specification files) must be delivered upon completion of project or with 100% plan submittal to City of Clearwater.

CHEMICAL STORAGE AND HANDLING (City Project No. 19-0034-UT) Hazen and Sawyer

WORK ORDER INITIATION FORM PROJECT BUDGET

Task	Description	Subconsultant Services	Labor (Water Portion)	Labor (Wastewater Portion)	Total
1.0	Project Management				
1.1	Project Scheduling		\$1,640	\$1,640	\$3,280
1.2	Monthly Status Reports		\$2,780	\$2,780	\$5,560
1.3	Project Meetings		\$4,170	\$4,170	\$8,340
1.4	Quality Assurance/Quality Control		\$5,860	\$5,860	\$11,720
					\$28,900
2.0	Kickoff and Data Collection Review				
2.1	Kickoff Meeting		\$2,070	\$2,070	\$4,140
2.2	Data Collection Review		\$8,800	\$8,800	\$17,600
					\$21,740
3.0	Site Visits				
3.1	Initial Site Visits		\$11,160	\$11,160	\$22,320
3.2	Follow-Up Site Visits		\$6,540	\$6,540	\$13,080
					\$35,400
4.0	Analysis and Development of Recommendations				
4.1	Assessment and Analysis		\$22,260	\$22,260	\$44,520
4.2	Technical Memorandum of Recommendations		\$18,160	\$18,160	\$36,320
4.3	Review Meeting		\$2,480	\$2,480	\$4,960
					\$85,800
Total Without Allowances					\$171,840
Allowance (10%)					\$17,184
Grand Total					\$189,024