

Racine Water Utility
Chlorine Conversion Study
Scope of Work, Schedule, and Fee

Scope of Services

This section provides an overview of CDM Smith's approach and scope of services for the project.

Task 1: General Information Gathering, Site Tour, and Project Kickoff

Task 1.1 Review Existing Data and Operations: CDM Smith will work with Racine Water Utility (RWU) to review the layout of the existing water treatment plant chlorine gas storage and feed systems, including review of operating data and operational practices. RWU will provide drawings, MS Excel spreadsheets and portable document format (PDF) files of monthly operating reports for the water treatment plant, operation and maintenance (O&M) manuals, standard operating procedures (SOPs), and other relevant information. CDM Smith will hold a workshop with RWU to discuss the review and answer additional questions to gain a deeper understanding of past and current chlorination operational practices and procedures. As part of this effort, CDM Smith will review recent USEPA and WDNR audit reports and sanitary surveys regarding the existing chlorine system and application points.

Task 1.2 Site Tour and On-Site Assessment: CDM Smith will conduct a site visit to inspect the water treatment plant layout, chlorine feed systems, observe current operating conditions, and identify potential constraints and opportunities for system improvements.

Task 1.3 Project Kick-Off Meeting: Conduct a kick-off meeting with the Utility to review the project objectives, work plan and schedule, roles and responsibilities of the consultant's and the Utility's staff, points of contact, communications, and other relevant matters.

Task#2: Condition Assessment of Existing Chlorine System and Development of Alternatives

Task 2.1 Condition Assessment. CDM Smith will complete a visual condition inspection and regulatory WDNR compliance review of the existing chlorine gas storage and feed systems, including application points.

Task 2.2 Development and Review of Alternatives: Based upon the findings of the condition assessment, CDM Smith will conduct a study to evaluate and recommend up to four alternatives for upgrading the RWU chlorination practices and facilities. Alternatives to be evaluated are expected to include the following:

- Improvements to existing chlorine system, which may include replacement of components nearing the end of their useful life, relocation of remote chlorine eductors to minimize the distances that chlorine gas piping travels through the WTP, implementation of systems to provide improved operational control, and implementation of improved chlorine safety systems (e.g., scrubbers, emergency shut-off valves).
- Conversion to bulk delivery of sodium hypochlorite solution, which may include bulk storage tanks, day tanks, chemical transfer pumps, chemical feed pumps, and control systems. Alternative locations for locating the new system could include a phased retrofit into the

existing chlorine gas storage room, repurposing of an existing structure (e.g., within the existing service building), or within a building addition to the existing facilities.

- Conversion to onsite generation of sodium hypochlorite, which may include proprietary chlorine generation systems, salt storage tanks, sodium hypochlorite day tanks, chemical feed pumps, and control systems. Alternative locations for locating the new system could be similar to those described for the bulk hypochlorite alternative.

Task 2.2 Progress Meeting: Review the development and evaluation of alternatives to ensure alignment on findings, address questions, and determine next steps.

Task #3: Submission of Final Report with OPCC Class 4 Estimate and Workshop

Task 3.1 Conceptual Design of Most Feasible Alternative Option: develop a conceptual design for recommended alternative, including a description of the proposed improvements, conceptual process schematics, conceptual design criteria, conceptual plan layouts illustrating the space requirements, conceptual-level opinion of probable cost (OPCC Class 4), and conceptual-level O&M costs.

■ Deliverable

- Technical Memorandum - Summary of the alternatives and evaluation.

Task 3.2 Conceptual Design Workshop: A workshop will be held to review and discuss the conceptual design of the most feasible alternative. The workshop will focus on the details of the proposed design, including any considerations or adjustments based on the evaluation of the alternative. The session will also address any questions or concerns and provide an opportunity for Utility staff and the consultant to refine the design approach.

Task #4: Project Management

Manage scope, schedule, and budget of the work and perform administrative tasks needed for the successful completion of this work. Provide quality assurance and quality control of the work produced by all staff. Maintain regular communication with Utility staff with periodic progress updates.

■ Deliverables

- Monthly invoices
- Progress reports

Racine Water Utility Disinfection Study		Bednarski, Matthew J Principal In Charge	Tippey, Christopher J Project Manager	Dan Fourness Project Engineer	Atassi, Amrou Technical Review	White, Mark C Technical Review			Thompson, Eloise P Junior Engineer	Madura, Robert G O&M	Kahn, Michael E Electrical	Lohman, Lee A Architectural	Clukey, Robin M Cost Estimating	O'Neill, Sarah S Support	Hours	Labor	Other Direct Costs	Fee	
#	Task	\$253	\$223	\$175	\$345	\$376	\$145	\$131	\$131	\$277	\$271	\$131	\$131						
1	Data Collection,Site Meeting, Kickoff																		
	Site Tour & On-site Assessment		4	20	2	2		20		8	8				64	\$	12,838	\$	13,338
	Project Kick-off Meeting	2	4	2	2	2			2						14	\$	3,452	\$	3,452
Subtotal	Task 1	2	8	22	4	4	0	20	2	8	8	0	0		78	\$	16,290	\$	16,790
2	Development and Evaluation of Alternatives																		
	Condition Assessment	2	4	28	2	2	8	120	24	20	20		2		232	\$	38,986	\$	39,486
	Development and Review of Alternatives	2	2	4	2	2		24							36	\$	6,238	\$	6,238
Subtotal	Task 2	4	6	32	4	4	8	144	24	20	20	0	2		268	\$	45,224	\$	45,724
3	Final Report, OPCC, and Review Workshop																		
	Final Report	2	2	28	3	3	8	80					2		128	\$	19,917	\$	19,917
	Conceptual Design of Most Feasible Alternative Option		2	2				2							6	\$	1,058	\$	1,058
	Conceptual Design Workshop	2	2	4	2	2		4				40			56	\$	8,858	\$	8,858
Subtotal	Task 3	4	6	34	5	5	8	86	0	0	0	40	2		190	\$	29,833	\$	29,833
4	Project Management																		
	Monthly Invoices		8										4		12	\$	2,308	\$	2,308
	Schedule and Budget Tracking		8										4		12	\$	2,308	\$	2,308
Subtotal	Task 4	0	16	0	0	0	0	0	0	0	0	0	8		24	\$	4,616	\$	4,616
	Total	10	36	88	13	13	16	250	26	28	28	40	12		560	\$	95,963	\$	96,963