



OFFICIAL NOTICE AND AGENDA
of a meeting of a City Board, Commission, Department
Committee, Agency, Corporation, Quasi-Municipal
Corporation, or Sub-unit thereof.

A Meeting of Wausau Water Works Commission will be held in the
Council Chambers, 1st Floor City Hall, Wausau, WI 54403 at 12:30 p.m. on
Thursday, October 14th, 2021.

Members: Katie Rosenberg (President), Dawn Herbst, Jim Force, Joe Gehin, John Robinson

AGENDA

1. Discussion and Possible Action Awarding a Proposal for the Development of a Lead Service Line Replacement Program.
2. Discussion and Possible Action on the Purchase of Trucks/Trailers for Hauling Class A Biosolids.
3. Discussion and Possible Action Approving Recruitment and Retention Initiatives.

Adjourn.

**Next meeting scheduled for November 2, 2021 at 1:30 P.M.*

THIS NOTICE POSTED AT CITY HALL AND EMAILED TO CITY PAGES AND DAILY HERALD: October 13, 2021 at 8:45 a.m.

This meeting is being held in person and via teleconference by calling 1-408-418-9388. The Access Code is 2480 555 2558 and the password is BGqys9mZZ58. All public participants' phones will be muted during the meeting. Members of the public who do not wish to appear in person may view the meeting live over the internet on the City's YouTube Channel <http://tinyurl.com/WAAMedia>, live by cable TV, Channel 981, and a video is available in its entirety and can be accessed at <https://tinyurl.com/wausaucitycouncil>. Any person wishing to offer public comment who does not appear in person to do so, may e-mail michelle.weasler@ci.wausau.wi.us with "Water Commission public comment" in the subject line prior to the meeting start. All public comment, either by email or in person, will be limited to items on the agenda at this time. The messages related to agenda items received prior to the start of the meeting will be provided to the Chair.

In accordance with the requirements of Title II of the Americans with Disabilities Act of 1990 (ADA), the City of Wausau will not discriminate against qualified individuals with disabilities on the basis of disability in its services, programs or activities. If you need assistance or reasonable accommodations in participating in this meeting or event due to a disability as defined under the ADA, please call the ADA Coordinator at (715) 261-6590 or ADAServices@ci.wausau.wi.us to discuss your accessibility needs. We ask your request be provided a minimum of 72 hours before the scheduled event or meeting. If a request is made less than 72 hours before the event the City of Wausau will make a good faith effort to accommodate your request.



TO: Wausau Waterworks Commission

FROM: Eric Lindman, P.E.
Director of Public Works & Utilities

DATE: October 14, 2021

SUBJECT: RFP LSL program, Regulatory Requirements & Workload for Staffing

Please find attached the additional information that was requested at the October 5 Commission meeting related to the recommended proposal for the LSL Replacement Plan.

1. General TOC to help highlight the deliverables
2. A more detailed cost breakdown of the work to be completed by the consultant
3. Communication/public Outreach was well detailed in the proposals and in particular in Appendix A which has been attached for your reference. It should also be noted that CDM Smith has Communication/Public Outreach Staff who will be assisting us with customizing outreach to meet our needs.

Staff also had conversations about what work can be done in house. We agree working with the legal office the ordinance would be completed in house and provided to Clark Dietz to prepare Public Outreach documentation as part of the communication plan. The inventory will need to be a joint effort, in house staff will provide the information we have to Clark Dietz and our current inventory will be compiled, then there will need to be a plan on how we progress making the inventory more accurate as is required by the LCR revisions.

The USEPA has made revisions to the Lead and Copper Rule which will go into effect on December 16, 2021. The compliance deadline for the revisions is set to be October 2024. Knowing what these deadlines are for Wausau means there is only 3-years before we need to become compliant. As staff looks at the level of work and man hours over the next 2-3 years it is absolutely necessary for the utility to contract out the following work:

1. Development of a LSL Replacement Plan (proposal received and recommended)
2. Completion of a Corrosion Control Study (RFP currently being prepared)
3. Implementation of Asset Management Software program (Beginning stages of developing needs)

All of the identified professional services listed above will require some level of staff involvement. This involvement will not only require utility staff but will also require staff participation from Inspections, Engineering, GIS, Legal and Community Development. There will be ongoing costs of professional services for implementation and meeting compliance.

Currently utility staff continues to manage both the water and wastewater treatment facility construction projects as well as perform their day to day duties. The new facilities still have 12-18 months of construction remaining along with training and implementing new processes.

The LSL Replacement Plan proposal recommended by staff is a complete proposal and will meet the needs of the utility and the regulatory agencies once it is prepared. It is necessary to begin this plan asap as the plan will take several months to develop and it is anticipated the WDNR will take 2-4 months for review and approval. It should also be noted that the current WDNR Forgivable Loan Program for LSL replacement may not be around much longer. It is the goal of staff to try and maximize our requests by changing the way we develop and replace private LSL's, in order to have the best chance to take advantage of any available funding we would need to implement the plan and have it approved prior to 2023. The LSL Replacement Plan is basically a plan that shows how the utility will spend \$60 million over the next 15+ years. This needs to be done well and it needs to be guided by a firm with significant experience.

The Corrosion Control Study results are required to be to the WDNR within 18-months. This means we need to have a consultant under contract before year end, prepare the plan and then get 12-months of results and provide written reports of the results in less than 18-months.

Implementation of Asset Management Software is recommended to be available at time of start up with both the water and wastewater facilities. Staff will need to determine which software vendor will meet our needs and then RFP for a consultant to implement the software.

With the current utility staffing levels there is no additional hours for staff to take on the LSL Replacement Plan development and meet compliance deadlines. The work needs to be done through a consultant with utility staff managing the process. All of the work proposed will be presented to the Commission as milestones of each project are prepared. The Commission, through these presentation, will be able to provide feedback and ask questions and ultimately provide final approval.

Lead Service Line Replacement Plan
Suggested/Typical Report Table of Contents (Draft)

Section ES	Executive Summary
Section 1	Introduction and Report Organization
Section 2	Background and Report Objectives
Section 3	Lead Service Line Inventory - Existing Inventory - Strategy for Unknowns
Section 4	Full Lead Service Line Replacement - Prioritization for Replacement - Integration with other Capital Projects - Replacement Goals - Procedures for Replacement
Section 5	Funding Opportunities and Strategies
Section 6	Communication and Outreach Strategy
Section 7	Post Replacement Recommendations - Post Replacement Considerations - Program Tracking
Section 8	Implementation Plan

Wausau Water Utility Lead Service Line Replacement Plan																
TASK NO.	PROJECT TASKS	CDM Smith Assistant PM	CLARK DIETZ PROJECT MANAGER	Technical Lead	LSLR Planning ENGINEER	SENIOR GIS	JUNIOR GIS / DRAFTING	QAQC	PROJECT ENGINEER	CLARK DIETZ PROJECT ENGINEER	PUBLIC OUTREACH	SUPPORT STAFF	LABOR HOURS TOTAL	ODC's	LABOR TOTAL	TASK TOTAL
1.0	LSL Replacement Plan															\$54,240
	Two Workshops with Utility Staff	8	8	8	4						4		32	\$500	\$6,340	
	Develop Replacement Plan With Timeline	2	4	2	8		8		16				40		\$5,760	
	Develop Prioritization Plan			4	8		8						20		\$3,080	
	Estimate Replacement Costs		2		8					8			18		\$2,710	
	Review Funding Options		1	2	2			8	24	8			45		\$7,355	
	Develop Participation Incentives		1	2	12						8		23		\$3,655	
	Develop Public Outreach Plan and Strategies to inform customer before LSLR	2	2	2	2				8		16		32		\$4,910	
	Provide Draft, And Final Versions Of Plan, Including Utility Review Workshop	4	8	16	16	4	12	8	24			16	108	\$600	\$17,540	
	WDNR Meeting To Review Plan And Incorporate Comments (Assume Virtual)	2	2	4									8		\$1,790	
2.0	Material Inventory (SEPARATE TASK)															\$20,120
	Review Existing LSL Inventory		2	2	4	2	4		12	4			30		\$4,340	
	Document Existing Procedure and Strategy For Material Inventory				6		6						12		\$1,560	
	LSL Inventory Technical Memorandum		2	2	8	2	8						22		\$3,320	
	Prepare Maps And Figures			2	8	2	12			8			32		\$4,490	
	Develop Service Line inventory		4	4	8	2	12		8			8	46		\$6,410	
3.0	Project Management & Project Meetings															\$15,320
	Kickoff Meeting And Project Planning	2	4	8	4								18		\$3,780	
	Project Management and Coordination		12	12								8	32		\$6,100	
	Commission Presentations (Virtual)	4	8	8							4		24	\$500	\$4,940	
	TOTAL (with Inventory Effort)	24	60	78	98	12	70	16	92	28	32	32	542	\$1,600	\$88,080	\$89,680

1. Other Direct Costs or ODCs include travel cost, copies, FedEx, etc.



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DETAILED PROJECT DESCRIPTIONS

LSL Inventory, Replacement Plan, Funding, and Phase I Implementation, Chicago, Illinois

CDM Smith has been the City of Chicago's trusted advisor on lead corrosion control and the LCR since its inception. Our team is conducting a multi-year study using 10 pipe loops to help optimize CCT, and we have been working with Chicago since 2018 on an LSL inventory and LSLR plan. As the program has developed, CDM Smith has had a pivotal role in guiding early program phase implementation.

For the last two years, CDM Smith has been working with the City on their LSL inventory, development of an LSLR program, public input, outreach, and initiating the implementation of Phase I Program. CDM Smith's comprehensive program support has also included financial analysis for funding public and private side replacements and completed applications for SRF, WIFIA, WIIN, and other funding sources for this program. Specific tasks, include:

- **Refinement of LSL Inventory for the 500,000 Service Lines:** CDM Smith reviewed building age and service class, connection size, construction records, and other information to identify and implement methodologies to refine the LSL material inventory.



Project Highlights

- LSLR program planning and development
- Pilot LSLR implementation
- Public education, outreach, and community feedback
- Construction services for LSLR

- **Investigation of Current Industry Practices and Recommendations:** CDM Smith interviewed utilities around the country on their LSLR programs. We set up workshops with a variety of utilities and Chicago staff to share lessons learned on specific program topics.
- **Development of the LSLR Program Based on a Prioritized Process and Phasing Plan:** CDM Smith developed a prioritization framework and collected the data necessary to prioritize individual addresses for LSLR. We created three phases for building up the LSLR program and identified the types of LSLR that should occur in each phase. The prioritization and phasing were flexible to accommodate a variety of replacement timelines as Chicago staff developed their program budget.
- **Development of Cost Projections:** CDM Smith created detailed cost estimates for individual LSLR for a variety of construction techniques, site layouts, and regulatory environments. We projected the cost split between private and public side and the cost-savings anticipated from combining LSLR with other infrastructure work, such as water main replacement.
- **Investigation and Development of Industry Practices for Private side Participation and Implementation:** CDM Smith reviewed programs from cities across the country for strategies to encourage public participation and determine the effectiveness of various strategies. Additionally, we reviewed plans for how liability for private-side work occurred, including handling of unexpected construction conditions and repair work.
- **Identification of Funding Sources:** CDM Smith identified and wrote applications for WIIN and WIFIA funds. We are supporting Chicago in utilizing Community Development Block Grant (CDBG) funds and SRF principal forgiveness funds for two LSLR programs currently in the implementation phase. We

additionally reviewed local funding programs, such as fundraisers, donation programs, and other city fees from other utilities around the country to identify alternative funding sources.

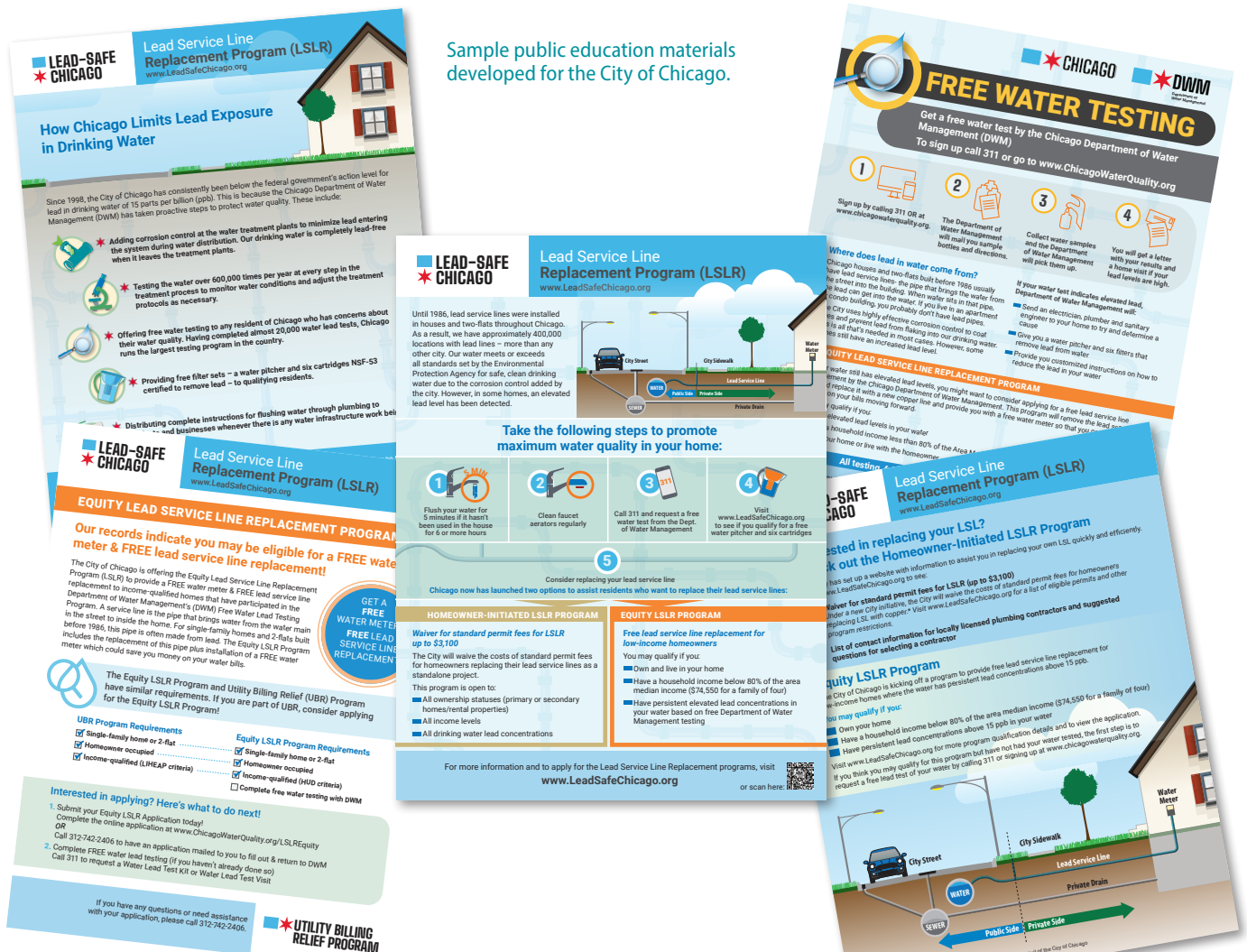
- **Development of Construction Methods to Complete the Work:** CDM Smith developed typical construction details for multiple construction techniques and home configurations. We developed bid documents using the standard construction details with pay based on unit bid pricing.
- **Piloting Assistance of LSLRs:** CDM Smith is supporting two early phase LSLR programs for Chicago. The first provides full LSLR for individual low-income homeowners with elevated lead. The second program replaces LSLs alongside a water main replacement. As part of these projects, CDM Smith developed technical specifications, including the measurement and payments and the bid form, and standard design drawings related to the LSLR.

- **Public Outreach and Education, Including Holding Public Meetings and Developing Flyers and Other Materials:** CDM Smith help organize and create content for meetings of a working group comprised of local non-profits and other interested parties. We've designed and created flyers (with original graphics) aimed at different populations to describe the full LSLR program in addition to individual LSLR program initiatives.
- **Phase I Program Implementation:** CDM Smith has been assisting with the LSLR Phase I Implementation, including equity application review, public outreach, and implementation.

Lessons Learned

- Building support from within the department, across city departments, and among the public is critical for program success.
- Early and consistent public outreach is necessary to build program trust.

Sample public education materials developed for the City of Chicago.



Lead and Copper Rule (LCR) Compliance Assistance and LSLR Program, Newark, New Jersey

The City of Newark is the first large system in the U.S. to aggressively tackle LSLRs. The City ramped up their original 10-year LSLR program and completed it in 2.5 years. Newark became the first city in New Jersey and one of the few cities in the country to offer an LSLR for the customer-owned service line at no direct cost to the homeowner. Newark relied on its partner, CDM Smith, to design, implement, manage, and oversee a program more aggressive than any other in the country.

After developing Newark's service line materials inventory, an innovative tracking tool (shown below) developed by CDM Smith is used to track replacements, verifications, paving, and post-replacement sampling on a near real time basis with 50 to 100 service lines being replaced each day. Data populates a mapping tool accessible to the public so residents can check the status of their LSLR, as well as results of post-replacement lead sampling. CDM Smith was instrumental in helping Newark acquire \$30M of grant funding through the New Jersey Infrastructure Bank (NJIB).

Project Highlights

- LSLR program development and implementation, including field training and support
- Integration with City's existing GIS data through Survey 1-2-3 program
- Innovative use of document scanning services for fast digitization and integration of old inventory card data
- Development, implementation, and maintenance of LSL program website and a strong public outreach campaign
- Database management solution with everything in one place
- Construction administration and resident engineering inspection services
- Full-time staff handling customer coordination and complaints



Improving Quality of Life

The public health benefits of replacing LSLs are well-known. As part of the LSLR program, restoration of pavement was anticipated. The City seized on an opportunity to leverage the LSLR to provide paving throughout the city. CDM Smith developed a management approach to coordinate paving for the LSLR program, as well as for the City's ongoing paving program and the gas utility's gas line replacement program. By managing these three large projects, CDM Smith developed a programmatic database in GIS to manage the

street paving. Additionally, CDM Smith minimized digging in recently paved streets and coordinated efforts between the various contracts to maximize the amount of street paving completed. On many blocks throughout the city, the LSLs were replaced, new gas service were provided, and the residents were left with a freshly paved street.

Diversity, Equity, and Inclusion

The City's goal was to use the program to create an economical and equitable replacement program with opportunities for both Newark residents and businesses to compete



As of July 2021, the City's LSLR Program had successfully replaced 20,800 LSLs with approximately 2,500 remaining. Click the QR code or scan with your smartphone camera to see Newark's LSLR in action!



and participate in the program. To encourage participation by local contractors, the City, with CDM Smith's assistance, hosted outreach events to the local minority and women owned business enterprises (M/WBE). The outreach brought Newark's M/WBE community together with the utility contractors to foster collaboration to complete the project. Newark also provided support to help M/WBE firms complete the necessary paperwork to be able to participate on state-funded projects. In addition, Newark partnered with the local trade unions to create an apprenticeship program for Newark residents. LSLR contracts included requirements for contractors to employ Newark-based apprentices in their crews to provide on-the-job training. To date, over \$60M of the program has been performed by Newark-based businesses and city residents.

Contracting Approach

To achieve the City's goal for an economical and equitable replacement program, CDM Smith developed a 10-phase bidding approach with 19 individual contracts. Contract size varied from 100 to 5,000 homes with durations from 3 to 12 months. By varying contract size and duration, opportunities were made available for smaller contractors to compete and participate in the program. Furthermore, projects were typically bid in groups of three contracts over a week. This allowed the contractors to continually be able to bid work and drive down the bid prices.

Point-of-Use (POU) Filter Program

CDM Smith also managed a program for the City to test approximately 320 POU filters. The program resulted in new recommendations for the homeowners: to flush for at

least 5 minutes and then filter the water before drinking. The results of the filter study were posted on the City's lead program website for all residents to access. The City also provides filters after an LSLR.

Corrosion Control Treatment Change

With the help of the ongoing loop study, the City is working toward optimizing its CCT and simultaneous compliance with other regulations. CDM Smith simultaneously designed, bid, and implemented a new CCT solution in 7 months, bringing Newark back into compliance 6 months later.

Summary

By working proactively, thinking holistically, and utilizing innovative technology tracking tools, Newark took on the lead issue by conducting up to 100 LSLRs per day, distributing over 40,000 POU filters, implementing an aggressive education campaign, and enacting modifications to corrosion control. Now nearing completion, CDM Smith has been Newark's partner through this entire program. The program continues to track LSLR progress with 12 on-site inspectors and state-of-the-art live dashboard tools utilizing e-Builder and GIS, monitoring lead levels, and conducting studies to bring Newark into compliance and to remove all major sources of lead contamination in drinking water.

Lessons Learned

- The ordinance to make the program mandatory and allow for a resident, rather than just the homeowner, to provide right of entry allowed Newark to move quickly on this project.
- Because paving is a major component, Newark ultimately incorporated a massive paving program into the project.
- Services listed as last replaced after Newark stopped using lead can still have lead between the curb and meter.

"When our lead levels spiked in 2017, we hired CDM Smith, one of the world's most respected environmental companies. CDM Smith helped us analyze our water sample data and the EPA simultaneously analyzed a harvested lead pipe from our system to microscopically determine how the corrosion control failed to properly coat the pipes. Because of these actions we were able to quickly and accurately pinpoint the reason for our exceedances and implement corrective action that would be effective and scientifically sound."

- Ras J. Baraka, Mayor of the City of Newark

Lead Service Line Replacement Program, Trenton, New Jersey

CDM Smith is serving as the City's Program Manager assisting Trenton Water Works (TWW) with meeting LCR requirements of the USEPA and the NJDEP by designing, implementing, and monitoring two zinc orthophosphate feed systems for a new CCT system, and developing and implementing an LSLR program to replace over 9,000 of TWW's estimated 36,000 LSLs.

CDM Smith's role involved all facets of an LSLR program, including development of a service line materials inventory, a prioritization study, preparation of design documents, development of permit applications and a funding application to the State's SRF program, bidding, construction and data management, inspection services, and public outreach.

TWW's program is to replace only full LSLs by not leaving any portion of the service line containing lead, including the homeowner's side of the line. TWW pays the contractors for completing the work and is requesting homeowners to contribute \$1,000 over five years via a special tax assessment to pay for the cost of the homeowner-owned portion (curb to meter). TWW is covering the majority of costs for the homeowner-owned portion through an SRF loan with \$21M in principal forgiveness. When TWW finds that a homeowner has already replaced the homeowner-owned portion of the service line, the utility is replacing their portion (main to curb). This program is entirely voluntary and communication with the residents is a key component of the success of the program. To date, over 5,500 LSLs have been replaced as part of this program.

TWW is completing the required 21% of LSLs to be replaced due to previous lead action level exceedances in the first two phases of this program at a total cost of approximately \$60M, however, TWW intends to replace all LSLs in future phases based on available funding.

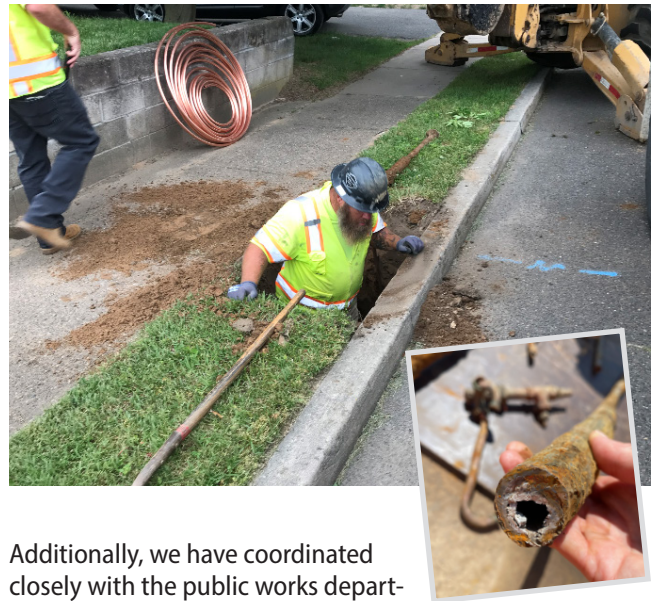
Prioritization

TWW initially established a prioritization program looking at multiple factors, including low-income neighborhoods, density of children, areas of high lead levels, and other environmental hazards. However, since the program did not have the funding or approval to be completely free to residents, TWW generally had to go on a registration basis. CDM Smith has leveraged the contractors to perform additional outreach on the streets with registered homes to implement a block-by-block approach to the extent possible with a voluntary program.

One lesson learned from this program is that many residents will sign up for a program once they see their neighbor having their LSL replaced. Therefore, flexibility is provided in the schedule to allow for additional replacements on streets where the contractor is already working.

Project Highlights

- LSLR program development and implementation, field training, and support
- Database management solution with everything in one place
- Inspection oversight during construction
- Significant public outreach campaign
- Diversity and inclusion goals



Additionally, we have coordinated closely with the public works departments in the four towns where TWW is replacing LSLs to get ahead of the paving programs and replace as many LSLs on those streets before being paved.

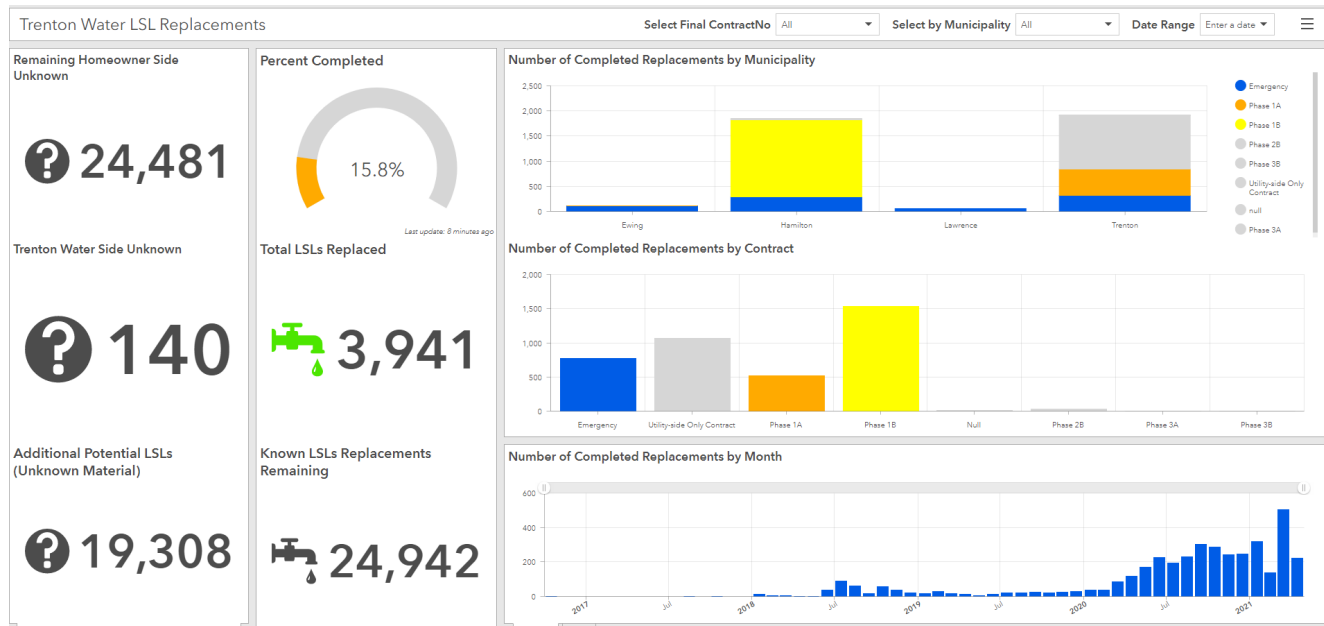
Public Outreach

This project involves a high level of public and NJDEP coordination and communication. CDM Smith participated in public forums to help TWW address the concerns of the residents, developed an interactive website with information on lead in drinking water and a way to register for the LSLR program, designed and printed brochures, magnets, letters, posters, and flyers to help TWW get the message across on what they are doing to address the lead issues.

Program and Data Management

CDM Smith is currently managing 9,000 replacements by four contractors via six contracts. The contracts have been staggered starting in March 2020 and estimated to be completed by end of April 2022. All data is managed through our program management system that leverages tools such as ArcGIS Online, Survey 123, Collector, and e-Builder. Daily checks are performed on the data comparing GIS data input by the contractors and e-Builder data

CDM Smith-developed dashboard show's TWW's program status at a glance.



input by the inspectors. Discrepancies are communicated and addressed.

A portal has been set up for TWW's staff and CDM Smith to track any customer complaints and issues. A web form populates a spreadsheet, which allows for easy sorting and tracking. The contractor is required to follow-up and provide resolution to each issue.

- Access inside the home is critical for flushing, even if only replacing the utility side.
- Because paving is a major component, consider curb-to-curb paving when replacing several lines on one street

Example public education materials developed for TWW.

Diversity and Inclusion

To foster local training and development of staff, TWW has supplied two in-house inspectors to supplement CDM Smith's inspection staff. CDM Smith trained the inspectors in all management tools and inspection work and they perform the inspections as part of the team. Additionally, the contractors have aggressive diversity targets and local hiring requirements that are tracked and reported on a monthly basis.

Lessons Learned

- Even when offering a discount, it is still very challenging to get homeowners to sign up.
- Unit price items work well and control costs. Detailed design would not have reduced cost enough to offset the design on this project.
- Customer communication and coordination requires a significant effort in manpower.
- Replacement of water lines can lead to other issues indirectly related to the work, such as flooded basements due to voids from replacing a lead pipe with a smaller copper outside diameter (OD) pipe.



Corrosion Control Study, Racine, Wisconsin

In preparation of LCR-Revisions and in response to WDNR regulatory requirement, Racine Water Utility retained CDM Smith to conduct a comprehensive corrosion control optimization study that includes a pipe loop study consisting of four pipe loops with harvested lead. Our team developed the design documents for the pipe loops, including pipe harvesting protocols, design of pipe loops, and a pipe loop testing plan.

CDM Smith conducted scale analysis to evaluate existing scale on LSLs. We reviewed water quality data, sequential sampling data, water use, and other parameters to evaluate corrosion control treatment. The pipe loops evaluated different phosphate doses. CDM Smith is facilitating meetings with WDNR and Racine Water Utility as part of the overall corrosion study. Additionally, we evaluated distribution system water quality and stability of the water by monitoring pH, chlorine residual, and other parameters.

Project Highlights

- Coordination with WDNR
- Pipe loop study
- Corrosion control optimization
- Distribution system water quality and operational review



2021 Municipal LSLR Program Management • Glendale and Whitefish Bay, WI

Clark Dietz has worked with water utilities in both the City of Glendale and the Village of Whitefish Bay to get the lead out of the community drinking water systems. Their involvement started with passing ordinances, and has included applying for funding, researching and listing LSL locations, conducting public outreach, preparing bidding documents, and performing on-site inspection. In 2021, they secured the replacement of 60 LSLs, with annual programs aiming for much more in coming years.

These communities have used both the DNR Lead Service Line Replacement Program and the Federal American Restoration Plan funding to replace the public and private side lead water services. These forgivable loans have helped fund the replacement of nearly 20 LSLs in Whitefish Bay and another 40 LSLs in Glendale. With Clark Dietz's help, these communities will be able to continue this aggressive program to remove thousands of remaining lead services.

Project Highlights

- Lead replacement planning
- Funding support
- Public outreach support



TO: Wausau Waterworks Commission

FROM: Eric Lindman, P.E.
Director of Public Works & Utilities

DATE: October 5, 2021

SUBJECT: Proposals – LSL Replacement Program Development

Staff sent out an RFP requesting professional services for the development of an LSL replacement Plan which would meet WDNR requirements and approvals. Two proposals were received by the following Engineering firms:

1. Clark Dietz - \$69,560
2. TruePani - \$49,392.98

Both proposals were reviewed independently by 4 staff personnel and the scores averaged. Based on the level of work and estimated number of hours to complete the work staff estimated the work to cost \$60,000 as shown in the below table:

Average Scores - 4 raters		Clark Dietz		TruPani, Inc	
Selection Criteria	Weighted %	Score (1-10)	Weighted Score	Score (1-10)	Weighted Score
Experience in preparing LSL Replacement plans	30%	9	2.7	2.25	0.675
Approach and sequence used for Plan Development	50%	8.5	4.25	5	2.5
Fee Schedule and Cost Breakdown	20%	6.25	1.25	7.75	1.55
	Total =	23.75	8.2	15	4.725

Based on the review and scoring staff recommends awarding the work to Clark Dietz.



September 27, 2021

Eric Lindman, PE
Director of Public Works & Utilities
City of Wausau
407 Grant Street
Wausau, WI 54403

Re: Proposal for Lead Service Line Replacement (LSLR) Program

Dear Mr. Lindman:

The Wausau Waterworks is charged with delivering safe and reliable drinking water to its customers. The task of doing so is seemingly in a constant state of flux. The USEPA and the Wisconsin DNR are proposing new rules to address Lead Service Lines (LSLs) in water systems statewide. These rules will require communities to have a plan to address LSLs and move toward complete replacement. We applaud Wausau's proactive approach to its prime task of providing safe and reliable drinking water by completing its LSL Replacement Program in a manner that is consistent with proposed rules and allows the City to be in front to future funding options.

We are pleased to submit our team's qualifications and proposal to assist the Water Utility in its continued efforts to proactively provide safe and reliable water to its customers. As your trusted, local adviser, we recognize this RFP as an opportunity to provide dedicated and devoted local experience with one of America's leading experts on Lead Service Line Replacement Programs. Clark Dietz and CDM Smith have partnered to provide such a team.

The Clark Dietz/CDM Smith Team's **expertise is an exact match** to the City's Water Utility request for developing a LSLR Program meeting DNR's requirements. We bring three primary benefits to Wausau:

Unmatched LSLR Experience to Find the Right Solution and Implementation Strategy for Wausau's Water Utility

We bring three technical experts who have 60+ years of combined experiences in water quality, corrosion control, and LSLR programs to the team. Amrou Atassi, Sandy Kutzing, and Mark White have worked with dozens of communities, nationwide.



Knowledge and Experience with Wisconsin DNR Regulators

Wisconsin has unique requirements for LSL inventory and replacement. Having a team with an established working relationship with WDNR is critical to implementation of a timely and cost-effective LSLR program. CDM Smith has worked with WDNR on various water projects and in particular lead corrosion and LSL inventory and replacement.

Strong Local Expertise and Dedicated Boots on the Ground Capabilities that Enhance Our Ability to Meet Your Needs

In addition to the Team's National expertise, Clark Dietz provides local strength and attention to detail in operations and technical functions in Wausau. With staff in downtown Wausau, just a few blocks from City Hall, Clark Dietz will provide the local resources.

Our team has provided a scope and corresponding fee to complete a LSL Replacement Program document for Wausau Waterworks. Included as an optional task that goes beyond the requested RFP scope. This option is to prepare a more comprehensive LSL Inventory and associated documentation. This inventory would also work toward meeting the revised rule requirements; mitigate inventory rework; and better prepare the utility for future phases of the LSLR.

We are looking forward to partnering with the Water Utility to provide a program that will meet DNR's requirements and provide guidance for Wausau Water Works to continue to provide safe, abundant drinking water.

Sincerely,

Clark Dietz, Inc.

Tonia Westphal, PE, LEED AP
Vice President

CDM Smith

Matthew J. Bednarski, PE
Client Service Leader

We have organized our proposal to meet the requirements of the RFP. It includes the following Sections and Appendices:

Section 1: Team Overview & Qualifications
Section 2: Relevant Experience
Section 3: Project Team
Section 4: Project Understanding & Approach
Section 5: Fees
Appendix A: Detailed Project Descriptions
Appendix B: Resumes



1

TEAM OVERVIEW & QUALIFICATIONS

Team Overview

CDM Smith is a leader in providing lasting and integrated solutions in water, environment, transportation, energy, and facilities to public and private clients worldwide. As a full-service consulting, engineering, construction, and operations firm, we deliver exceptional client service, quality results, and enduring value across the entire project lifecycle. From our beginning in 1947, CDM Smith has been an innovator in the development, treatment, and delivery of safe drinking water supplies. CDM Smith provides expert engineering in every aspect of water quality investigation, development, pilot testing, facility design, installation, and operations.

CDM Smith Offers Comprehensive Local & National Resources

CDM Smith's local office is located in downtown Milwaukee. From this location, we are able to respond to local project needs, manage and perform all project activities, and command the resources of the entire firm. As part of our commitment to provide our regional clients with integrated, full-service engineering and design resources, CDM Smith established a Chicago design center to serve our Midwest clients. Our Chicago office has 100+ professionals covering all disciplines and skills needed to execute this project, including civil engineers with underground design experience, geographic information system (GIS) and data management specialists, public outreach, communication, and resident coordination, inspection and construction oversight, program management and construction management professionals, and more. Housing these groups in a common location provides focused coordination between disciplines.

Qualifications

CDM Smith was founded as a drinking water treatment firm more than 70 years ago. Although we have diversified our service offerings since then, the improvement of water quality remains at the heart of what we do.

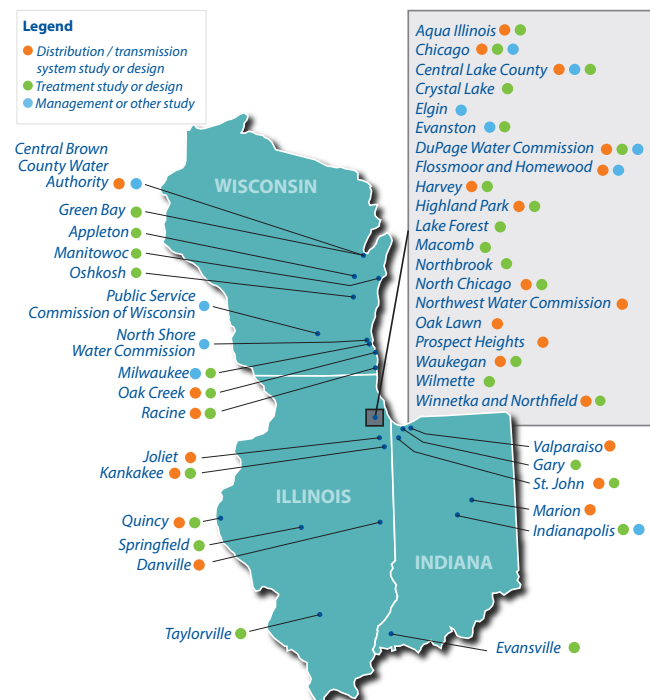
Lead and Copper Rule Compliance and Lead Service Line Replacement Programs

CDM Smith is a leader in the industry when it comes to achieving Lead and Copper Rule (LCR) compliance. We have successfully designed and implemented several Lead Service Line Replacement (LSLR) programs, both for when it was required due to an LCR violation and as a proactive program similar to Wausau Waterworks. This experience includes directly applicable LSLR projects for the City of

Chicago, as well as for the City of Newark and Trenton Water Works (TWW) in New Jersey, and New Bedford, Massachusetts. We will leverage this expertise, combined with our local experience and staff resources, to cost-effectively meet your objectives for this critical project.

Unparalleled Midwest Water Experience

CDM Smith has helped 44 clients in the upper Midwest, including 35 with Great Lakes water supplies, create and enhance high-quality, reliable water supplies that last for decades, cementing our understanding of water conditions throughout the region. Wausau Waterworks' LSLR Program requires an understanding of the challenges and characteristics of the water source, and a team with particular expertise in the treatment, transmission, and supply of Lake Michigan water is critical. **CDM Smith has extensive water system experience throughout the Midwest.** This unique expertise and familiarity are gained from performing nearly 100 planning and design projects.



Leader in LSLR and Distribution System Water Quality

CDM Smith helped guide several utilities through LSLR programs and compliance with the LCR. Our LSLR program/corrosion control compliance services have been deployed for clients throughout the U.S. We have become the leader

in full-service LSL replacement, and Revised Lead and Copper Rule (LCRR) related data solutions. We are also a leader in conducting corrosion control studies and making recommendations to optimize corrosion control programs, while maintaining compliance with all other drinking water standards. We have completed corrosion control studies, as well as varied water quality system evaluations for some of the largest utilities across the country. CDM Smith will leverage this expertise—combined with our local experience and staff resources—to cost-effectively meet Wausau Waterworks' objectives on this assignment.



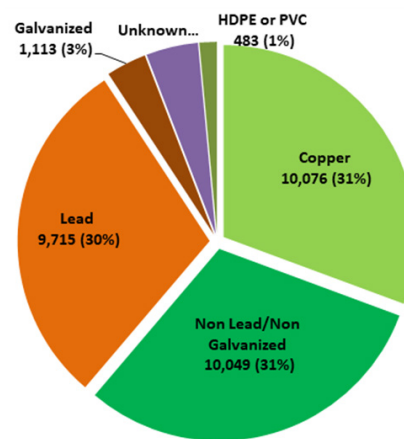
Designed, Managed, Inspected, Replaced

We have designed and managed the removal of more LSLs than any other consulting firm. Through this experience, we have seen the multitude of challenges and situations that arise. Our expertise will help the City navigate the LSLR process to save money and manage risk. Similarly to what we have done for other utilities, CDM Smith will assist Wausau Waterworks with the following when developing an LSLR program:

- GIS-based LSLR inventory and data management support
- Development of a prioritization program
- Public outreach support, including website development and maintenance
- Design and procurement
- Researching and obtaining loans and grants
- Construction methods, oversight, and inspections
- Management of post-replacement sampling and point-of-use filter distribution

Long-standing Relationship with Wisconsin Department of Natural Resources (WDNR)

We have a long-standing relationship with WDNR through numerous Lake Michigan projects over the past 20 years, including Sheboygan, Racine, Oshkosh, Green Bay, Oak Creek, and others. CDM Smith saves time and minimizes extra and unforeseen costs by collaborating with WDNR to gain support and approval at the outset of any project. Early communication with WDNR has proven essential to various innovative, trend-setting Wisconsin projects. Our designated project task leads have developed working relationships with WDNR staff by initiating discussions early on in the project schedule for WDNR engagement, inclusion during technical review committees, and ultimately project buy-in.



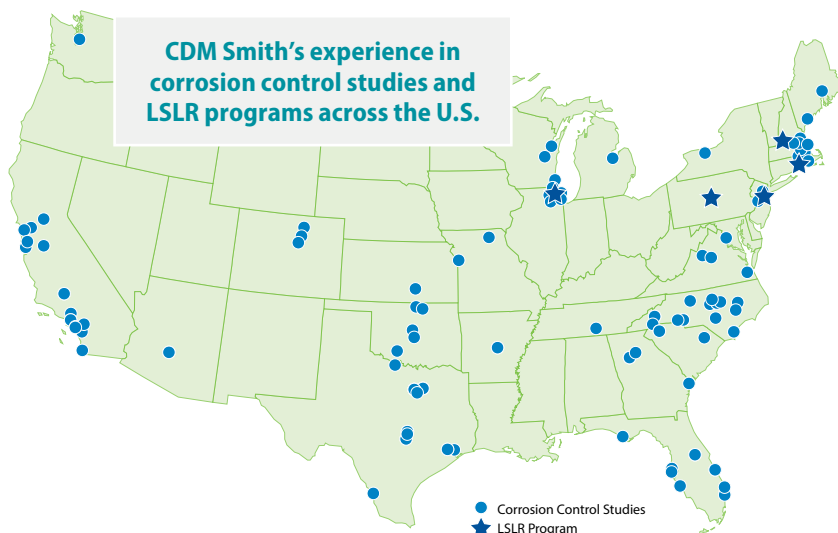
For over a year, CDM Smith has been working with the Racine Water Utility and WDNR on Racine's corrosion control optimization study. We have held several meetings, developed the methodology, and have achieved WDNR buy-in on the approach. Through these efforts, CDM Smith has gained WDNR's trust and confidence..

Unmatched Funding Support

CDM Smith brings an extensive history, national expertise, knowledge of funding sources, and best practices from what other communities and states are doing to fund programs similar to Wausau Waterworks'. In fact, we have even served as a resource for federal and state regulators. From our experience helping clients with Lead Action Level exceedances—and their urgent need to address public

health, LSLR replacement, and corrosion control treatment—we are adept at rapidly developing these programs and identifying funding opportunities. **Over the years, CDM Smith has supported 200+ communities in securing more than \$3.4B in grants and State Revolving Fund (SRF) loans.** Locally, our project team has worked to secure a variety of funding and grants for utilities throughout the Midwest.

Removing LSLs from drinking water systems can be very costly. We can help develop a financial assistance strategy to fund Wausau Waterworks' LSLR program. Replacing a single LSL typically costs



\$5,000-10,000 for both the public and private side. Costs quickly escalate when including other aspects of LSLR programs like distributing filters, paving curb-to-curb, community outreach, and follow-up sampling. The removal of LSLs requires a strategic combination of private, federal, and local funding sources—especially because many public funds cannot be used to offset costs on the private side of the service line.



2 RELEVANT EXPERIENCE

Wausau Will Benefit from Our Recent and Relevant Experience

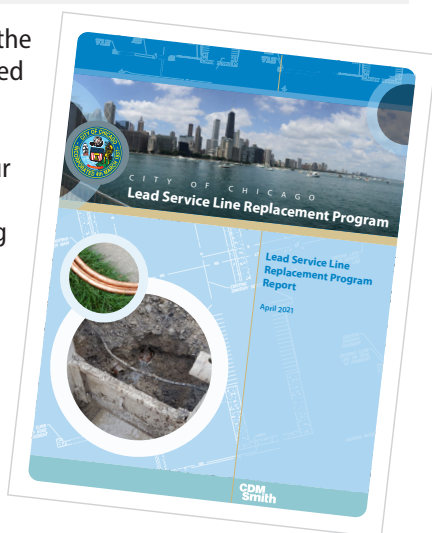
When it comes to executing complex LSLR programs that are efficient and safe, CDM Smith is unmatched. We bring all the expertise needed to be successful and work collaboratively with communities to take on challenges the right way, leaving them stronger and safer. The following pages highlight CDM Smith's most relevant experience. **These projects bring invaluable lessons that will be applied to Wausau Waterworks' program!** They also demonstrate our experience helping municipal clients in the development and implementation of LSLR programs similar to Wausau Waterworks' scope. We present our projects in more detail in **Appendix A**.

LSL Inventory, Replacement Plan, Funding, and Phase I Implementation • Chicago, IL

RELEVANCE TO WAUSAU:

- LSL inventory development and prioritization
- Phase I LSLR implementation
- Financial analysis and funding applications
- Public education and outreach

CDM Smith has been the City of Chicago's trusted advisor on corrosion control and the LCR since its inception. Our team is conducting a multi-year study using 10 pipe loops to help with optimization of Corrosion Control Treatment (CCT)



Public Outreach

CDM Smith's in-house, experienced public engagement and outreach staff conduct outreach programs with a high-level of community engagement and develop targeted outreach materials. Since 2016, this team has been heavily focused on communications for lead and drinking water initiatives for similar programs, such as Chicago, Newark, and TWW.

while minimizing deposition formation in the system. The work involves review of disturbance effect and water use patterns, with the results being used to drive the prioritization process for LSLR.

For the last two years, CDM Smith has been working with the City on their LSL inventory, development of an LSLR program, public education and outreach, and initiating the implementation of Phase I Program. CDM Smith also conducted a financial analysis for funding public and private side replacements and completed applications for SRF, Water Infrastructure Finance and Innovation Act (WIFIA), Water Infrastructure Improvements for the Nation (WIIN) Act, and other funding sources for this program.

Specific tasks, include:

- Development of LSL inventory for the 500,000 service lines
- Investigation of current industry practices and recommendations
- Development of the LSLR program based on a prioritized process and phasing plan, including development of cost projections
- Investigation and development of industry practices for public participation and implementation
- Identification of funding sources
- Development of construction methods to complete the work
- Piloting assistance of LSLRs
- Public outreach and education, including public meetings and development of flyers and other materials

LCR Compliance Assistance and LSLR Program • Newark, NJ

RELEVANCE TO WAUSAU:

- Development of state legislation and local ordinances
- LSLR program planning, development, and implementation, including field training and support
- Integration with City's existing GIS data
- Innovative use of document scanning services for fast digitization and integration of old inventory card data
- Development, implementation, and maintenance of LSLR program website and a strong public outreach campaign
- Database management solution
- Post-replacement filters, flushing, and samples

Newark is the first large system in the U.S. to tackle LSLRs so aggressively—ramping up their 10-year LSLR program to be completed in 2.5 years. Newark relied on its partner, CDM Smith, to design, manage, and implement a program more aggressive than any other program in the country.



After developing Newark's service line material's inventory, CDM Smith developed an innovative dashboard to track replacements and verifications on a near real-time basis with 50 to 100 service lines being replaced daily. Data populates a mapping tool accessible to the public so residents can check status of their LSLRs.

CDM Smith was instrumental in helping Newark acquire \$30M of grant funding through the New Jersey Infrastructure Bank (NJIB). We also managed a program for the City to test approximately 320 point-of-use (POU) filters. The program resulted in new recommendations for the homeowners: to flush for at least five minutes and then filter the water before drinking. The results of the filter study were posted on the City's lead program website for residents to access.

Through working proactively, thinking holistically, and leveraging innovative tracking tools, Newark took on the lead issue by conducting up to 100 LSLRs per day, distributing 40,000 POU filters, implementing an aggressive education campaign, and enacting modifications to corrosion control.

The project is nearing completion and CDM Smith has been Newark's partner through this entire program, and we continue to track LSLR progress with 12 onsite inspectors, state-of-the-art live dashboard tools using eBuilder and GIS, and monitoring lead levels.

LCR Compliance Study and LSL Replacement Program • Trenton, NJ

RELEVANCE TO WAUSAU:

- Development of state legislation and local ordinances
- LSLR program planning, development, and implementation, including field training and support
- LSL inventory and identifying unknowns
- Development, implementation, and maintenance of LSL program website for public education and awareness
- Database management solution
- Preparation of funding applications
- Restoration/paving plan

CDM Smith is serving as the City's Program Manager helping TWW meet LCR requirements of the U.S. Environmental Protection Agency (USEPA) and the New Jersey Department of Environmental Protection (NJDEP), designed two CCT systems, and is developing and implementing an LSLR program. The LSLR program involved a prioritization study, development of a service line materials inventory, and preparation of design documents, permit applications and a funding application to the NJIB to replace 21% of the known LSLs in the distribution system.

This project requires a high level of public and NJDEP coordination and communication. CDM Smith participated in public forums to help TWW address the concerns of the residents, developed an interactive website with information on lead in drinking water and a way to register for the LSLR program, designed and printed materials to help TWW get the message across on what they are doing to address the lead issues.



TWW pays the contractors up front and is requesting residents to contribute \$1,000 over five years via a special tax assessment to pay for the cost of the homeowner-owned portion (curb to meter). TWW is covering the majority of the cost of the homeowner-owned portion through an NJIB loan with \$21M in principal forgiveness. When TWW finds that a homeowner has already replaced the homeowner-owned portion of the service line, the utility is replacing their portion (main to curb). This program is entirely voluntary and communication with the residents is a key component of the success of the program.

Corrosion Control Optimization Study and LCR Compliance • Racine, WI

RELEVANCE TO WAUSAU:

- Comprehensive corrosion control study to prepare for LCRR compliance
- LSL inventory
- Distribution system water quality evaluation, including analysis of sequential samples and scale analysis

In preparation for the LCRR and in response to the State regulatory requirement (WDNR), Racine Water Utility retained CDM Smith to conduct a comprehensive corrosion control optimization study. The City has approximately 11,000 LSLs remaining in their system.

CDM Smith evaluated historical finished and distribution system water quality, including compliance data. We developed a CCT plan that consisted of four pipe loops with harvested lead. CDM Smith developed the design documents for the pipe loops, including pipe harvesting protocols, design of pipe loops and pipe loop testing plan. Our team conducted scale analysis to evaluate existing scale on lead service lines. We also reviewed water quality data, sequential sampling data, water use, and other parameters to evaluate CCT. The pipe loops evaluated different phosphate doses.

CDM Smith is also facilitating meetings with WDNR and Racine Water Utility as part of the overall corrosion study. We also evaluated distribution system water quality and stability of the water by monitoring pH, chlorine residual, and other parameters in the distribution system.



3

PROJECT TEAM

The Right Team with the Right Experience

Our team understands better than any other how to address the daunting array of issues connected to LSLRs. We combine innovation and ingenuity to solve problems for utilities facing complex challenges. We will help Wausau Waterworks figure out your next moves. **Whether it is enhancing your data management capabilities for more accurate inventories, ramping up a more aggressive LSLR program, educating residents on the program's importance, or navigating the funding/financial landscape, our team will help you move forward in a way that makes sense for your particular situation.**

Figure 3-1 illustrates the organization of our team. Our team will be led by **Tonia Westphal and Matt Bednarski**.

2021 Municipal LSLR Program Management • Glendale and Whitefish Bay, WI

RELEVANCE TO WAUSAU:

- Lead replacement planning
- Funding support
- Public outreach support

Clark Dietz has worked with the water utilities in both the City of Glendale and the Village of Whitefish Bay to get the lead out of the community drinking water systems. Their involvement started with passing ordinances, and has included applying for funding, researching and listing LSL locations, conducting public outreach, preparing bidding documents, and performing on-site inspection. In 2021, they secured the replacement of 60 LSLs, with annual programs aiming for much more in coming years.

These communities have used both the Department of Natural Resources (DNR) LSLR Program and the Federal American Restoration Plan funding to replace the public and private side lead water services. These forgivable loans have helped fund the replacement of nearly 20 LSLs in Whitefish Bay and another 40 LSLs in Glendale. With Clark Dietz's help, these communities will be able to continue this aggressive program to remove thousands of remaining lead services.

As project manager, Tonia will serve as the primary point-of-contact for Wausau Waterworks. In this role, she will be responsible for ensuring timely completion of work according to an established schedule of activities and project costs within the established budget. She will be supported by Matt Bednarski as deputy project manager. As a principal of the firm, Matt will be responsible for overall project execution, ensuring resources are directed as needed to complete each task to your satisfaction, and providing quick responses to concerns or needs that may arise.

As technical lead, **Amrou Atassi** will direct the day-to-day activities of the team, shape the direction of the project, and lead the cross-disciplinary team. In addition, **Sandy Kutzing** and **Mark White** will serve as technical advisors and will be available to provide expertise and guidance to our team at key points throughout the project.

Involvement of Key Personnel

The key personnel that CDM Smith has identified to serve Wausau Waterworks on this project are committed to this work for the contract's duration. Wausau Waterworks is committed to meeting its deadlines and providing high-quality drinking water to its customers. CDM Smith understands these priorities. The project is the top priority for our team members who will be available to complete the tasks as determined by the project schedule and will be available as unpredictable things come up from the public or WDNR. Brief biographies for our key team members are presented below. Detailed resumes for our entire team are provided in **Appendix B**.

Tonia Westphal, PE, LEED AP, Project Manager

Tonia's strong communication skills, coupled with her technical expertise, enable her to facilitate collaborative efforts with stakeholder groups in a meaningful manner. She frequently serves as a liaison between municipal entities, technical staff, clients, stakeholders, regulatory agencies, and the general public.

- Lead Compliance Consulting, Wausau, WI
- Water Quality Investigation, Wausau, WI
- DWTF Electrical Design & Construction Services, Wausau, WI

Matt Bednarski, PE, ENV SP, Deputy Project Manager

Matt is a project manager and principal-in-charge engineer specializing in water resource with expertise in large and collaborative public works projects. His experience encompasses project management, contract administration, client relations, construction supervision, community relations, and special assessments. He brings an understanding of how to work effectively with WDNR.

Amrou Atassi, PE, BCEE, PMP, Technical Lead/LSLR Plan

Amrou is one of CDM Smith's national experts in distribution system water quality and corrosion control. He has led corrosion control studies for utilities across the country and overseas. Amrou also brings vast Great Lakes water quality experience having completed water treatment and quality studies for several systems using Great Lakes water. He has worked with the City of Chicago for the past 15+ years on their corrosion control optimization and LSLR program. He is also on the Project Advisory Committee for Water Research Foundation 4713 - "Full Lead Service Line Replacement Guidance." Amrou's relevant experience includes:

- Project Manager, LSL Inventory, Replacement Plan, Funding, and Phase I Implementation, Chicago, IL
- Technical Reviewer, LSLR Program, Newark, NJ
- Technical Reviewer, LSLR Program, Trenton, NJ
- Technical Lead or Technical Advisor on corrosion control/water quality studies for over a dozen water systems
- More than a dozen national and local American Water Works Association (AWWA) conference presentations and publications related to corrosion control and distribution water quality

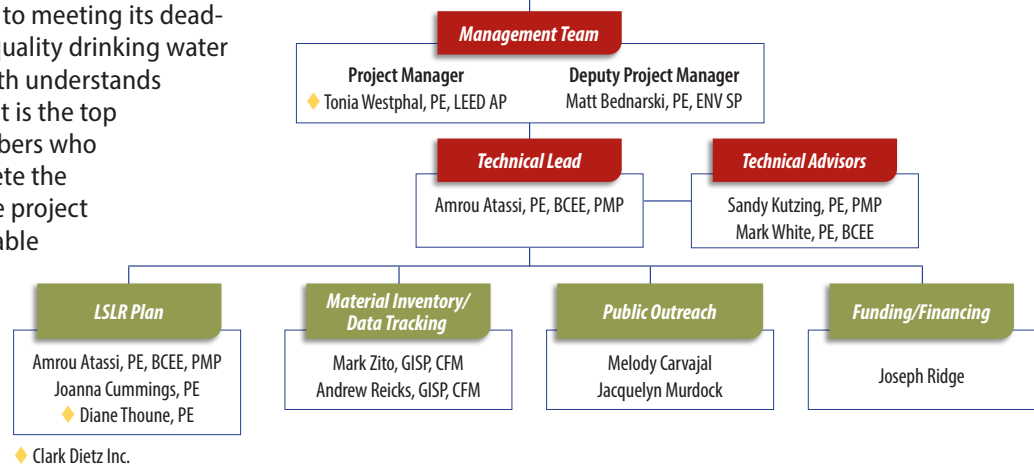


Figure 3-1. CDM Smith offers personnel with recent and highly relevant experience and expertise in all aspects of the LSLR program planning, development, and implementation.

In addition, Amrou has worked on water treatment, water quality, and lead related projects for several utilities in Wisconsin, including:

- Lead and Corrosion Control Treatment, Racine Water Utility
- Ultraviolet Disinfection, Master Planning, and Raw Water Improvements, Sheboygan Water Utility
- Water Master Planning and Distribution Water Quality, Oak Creek Water and Sewer Utility
- Blending Study and Filter Improvements, Milwaukee Water Works
- Master Planning, Central Brown County Water Authority
- Water Plant Improvements, Manitowoc Public Utilities

Sandy Kutzing, PE, PMP, Technical Advisor

Sandy has 19 years of engineering and management expertise, mostly focused on the design of water treatment facilities, pump stations, water transmission mains, tank rehabilitation, lead and copper corrosion control, and LSLR programs. Her expertise in developing the LSLR programs for Newark and Trenton and being involved in the day-to-day activities will provide our team with lessons learned that will be incorporated into the design documents and program set-up. Sandy's relevant experience includes:

- Project Manager, LSLR Program Phase 1 and LCR Compliance, TWW, Trenton, NJ
- Project Manager, LSLR Program Phase 2, Trenton, NJ
- Project Manager, LSLR Program – Phase I, Newark, NJ
- Project Manager, LCR Compliance Assistance, Newark, NJ

Mark White, PE, BCEE, Technical Advisor

In his 25 years with CDM Smith, Mark's experience has spanned the full range of project activities, from pilot investigation and design, to construction, startup, and operations and maintenance (O&M). He has managed more than 36 projects related to water treatment, optimization, and pumping systems. Mark's drinking water experience in Wisconsin includes:

- Senior Technical Advisor, Corrosion Control Study, Racine, WI
- Project Manager and Treatment Process Design Lead, Ultrafiltration Membrane Improvements, Racine, WI
- Treatment Process Design Lead, Membrane Filtration System, Manitowoc, WI
- Water Plant Assessment Lead, Oak Creek, WI

Mark Zito, GISP, CFM, Material Inventory/Data Tracking

Mark has 14 years of experience as a geospatial data scientist and is CDM Smith's technology lead for the firm's LCRR Task Force. He is experienced in project planning, process and requirements analysis, stakeholder engagement, and development of workflow diagrams that evolve into highly detailed systems. As a data scientist, Mark is proficient in data modeling, analytics, machine learning, database design, and application development. By leveraging his technical and leadership skills, he has successfully developed automated tools to efficiently and accurately uplift and process data into the proper specifications for use by utilities across the country. His relevant experience includes:

- Technology Lead, LSLR Program, Newark, NJ
- Technology Lead, LSLR Program, Trenton, NJ
- Data Visualization Lead, Naval Facilities Engineering Services Command (NAVFAC) Utility Metrics Dashboards
- Geospatial Data Scientist, Pipeline Capital Plan, Honolulu, HI

Melody Carvajal, Public Outreach

With more than 25 years of professional experience, Melody has received accolades from stakeholders, clients, and agencies for her unique abilities in conflict resolution, successfully producing positive outcomes for her clients in the area of public outreach, real estate acquisition, cemetery consulting, and cultural brokering. She has conducted mediation sessions in an effort to provide effective change in communities due to agency or client projects. Melody has held a myriad of management positions, as well as assisted a diverse client base, frequently handling sensitive and confidential matters. Additionally, she is fluent in English and Spanish.

Joseph Ridge, Funding/Financing

Joe is an economist with extensive experience in assessing the fiscal and economic impacts of capital projects for municipal governments and authorities. He has 42 years of experience helping clients assess and implement programs to improve competitiveness and determine the financial feasibility and economic impact of proposed projects. He has developed financing plans, assessed financial capability, and conducted financial feasibility and marketing analyses for more than 80 projects. These studies frequently require the creation, evaluation, and implementation of inter-municipal agreements to support and secure financing packages.



4

PROJECT UNDERSTANDING & APPROACH

Project Understanding & Background

Wausau Waterworks is requesting engineering proposals for the preparation of a full LSLR Plan that will be reviewed and approved by the WDNR. Wausau Waterworks is in the process of building a new Water Treatment Facility (WTF) that is expected to be operational in the Fall of 2022. The City has approximately 17,000 total water services with an estimated 8,000 LSLs. Using a meter replacement program, Wausau Waterworks has been verifying service line material data. Wausau Waterworks conducts lead and copper sampling of tap water every three years in compliance with existing state and federal drinking water regulations. However, under the federal LCRR, lead sampling will be required to utilize the fifth liter, which was selected to better represent sample water that is in contact with the LSL during the stagnation period, instead of the first liter, which represents the faucet and indoor plumbing. Most utilities find higher lead concentrations in the fifth liter relative to the first liter. The LCRR also establishes a new 10-parts-per-billion (ppb) lead concentration trigger level, which if exceeded, requires utilities to replace LSLs (both the public and private side) at a rate negotiated with the state. If the 15-ppb Action Level is exceeded, Wausau Waterworks would be required to replace a minimum of 3% of LSLs per year.

Wausau Waterworks has received funds in 2017, 2018, and 2021 for LSLRs using the WDNR Forgivable Loan Program, at an average of 80 to 100 LSL replacements annually. While Wausau Waterworks has been proactive, there have

been challenges that are limiting the annual replacements, including commitment from local plumbers and the low participation rates from homeowners because the program is currently voluntary.

Wausau Waterworks is looking to develop a full LSLR Plan that includes the following items:

- **Inventory Development Plan** – A review of the existing inventory, data gaps, methodology review, and a timeline for completing the inventory. This first step is important to understanding how many and where the LSLs are and what exists on both the public and private sides of the service lines. This plan will also include strategies for identifying unknown services.
- **Public Outreach Plan** – A plan that defines communication and outreach strategies to encourage more participation.
- **Ordinances and Other Legislation Recommendations** – Ordinances and other legislation based on successes for other utilities the City should adopt to increase participation rates and maximize the use of funding on the private site and access into homes.
- **Funding Options** – Identification of local, state, and federal funding options available to Wausau Waterworks, including WDNR SRF loans and Federal grants.
- **LSLR Prioritization Plan and Timeline for Completion** – A plan that defines the prioritization factors,

weightings, and replacement targets. This can include a variety of factors, including historical lead data, water use, income, environmental justice factors, and more. As part of this, the target annual replacements over the next 15 years would be developed.

- **Design, Bidding, and Construction Implementation Plan** – A plan for how to implement the design, bidding, and construction of LSL replacements. This would include construction methods, contract types, bidding strategies, and other implementation factors.
- **Homeowner Forms** – The plan should include development of right-of-entry (ROE) and other forms/agreements to facilitate replacement between all parties.
- **Program Management and Data Tracking Tools** – The plan will present the recommended tools and software for program management and tracking the significant amount of data generated in an LSLR program both in the field and at the office.
- **Post-Replacement Requirements** – The plan should include post-replacement requirements and recommendations for flushing, sampling, and closeouts with the residents and contractors.
- **Restoration Plan** – Based on the construction methods being proposed, identify what is being restored on public and private sides, and what allowances should be considered for restoration inside homes. A citywide paving plan that would be coordinated with the LSLR program and also incorporated as part of this plan.

Critical Success Factors

At the outset of each project, CDM Smith defines the critical success factors the work must address to result in a successful project. Developing a plan to replace the private side of LSLs requires a highly experienced team due to the unique visibility of work on private property and the required coordination and cooperation from homeowners and residents. **Table 4-1** summarizes the key factors that the selected firm must demonstrate their understanding of and proof of how each will be addressed on this project.

Project Approach and Deliverables

CDM Smith's approach for the LSLR Plan is described below.

Lead Service Line Replacement Plan

Strategy to Determine the Composition of Lead Status Unknown Service Lines

CDM Smith will begin this task with a project kickoff meeting with Wausau Waterworks' staff to review project contacts, project scope, schedule, available data, the existing LSL inventory, and the City's history with LSL and water main design and replacement. We understand that the City has already developed a service line material inventory that identifies approximately 8,000 LSLs.

Following the kickoff meeting, CDM Smith will document the City's existing procedure for determining the service line material inventory. For unknown or uncertain service line materials, we will evaluate a variety of verification

Table 4-1. Summary of Key Factors Critical for Project Success

Critical Success Factors	Why Important	CDM Smith Expertise
Knowledge and experience with local and state regulatory (WDNR)	Wisconsin has unique requirements for LSL inventory and replacement. Having a team with an established working relationship with WDNR is critical to implementation of a timely and cost-effective LSLR program.	CDM Smith has worked with WDNR on various water projects and in particular lead corrosion and LSL inventory and replacement.
Proven successes in developing and implementing full LSLR programs	Lessons learned from past implementations are key for developing strong plans and avoiding missteps.	CDM Smith has designed and managed the removal of more private-side LSLs than any other consulting firm. We have developed best practices through our experience replacing LSLs in Newark and Trenton, NJ. This practical knowledge includes a wide range of topics from typical customer complaints to handling unusual interior water service configurations.
Proven tools to develop service line inventory	Developing a lead service line inventory is critical to meeting federal and state rules and communicating to the public on where these services are and how much money it will take to replace them.	CDM Smith has helped numerous communities locally and across the country with developing a service line inventory using state-of-the-art tools to predict the location of lead service lines.
Experienced public engagement/outreach team	Developing an effective LSLR plan will require a robust public outreach plan that can be effectively communicated to the public.	Our local team has conducted outreach and homeowner coordination for the Chicago Equity LSLR. Our national team has conducted a successful outreach program for Newark to reach nearly 100% program participation. Our local design team can create websites, handouts, and flyers to support program outreach.

techniques as shown in **Figure 4-1**. The suggestions carried into the inventory task will include the methods that are cost-effective for obtaining service material information.

One of the most challenging aspects of an LSLR program is the management of data and making sure that the service line material records are updated and accurate for future use. CDM Smith has developed customized dashboards and exportable reports for tracking and reporting LSLRs and verifications for utilities, such as Newark and Trenton. While not currently included in the project scope, CDM Smith can provide examples of these dashboards for Wausau Waterworks to consider during implementation as a way to manage the program with live data all in one location.

Task Deliverables:

- Prepare and distribute meeting minutes from project kickoff meeting with Wausau Waterworks staff
- Prepare draft and final technical memorandum for LSL inventory documentation that includes procedures for determining service line material inventory

LSLR Plan

CDM Smith is experienced in developing LSLR plans from our work in Chicago, Newark, and Trenton, and other locations where we have developed comprehensive LSLR strategies with all project components, including planning, design, public outreach, data management, funding, and permitting. Our team will leverage expertise and experience gained from developing other large programs to create a custom LSLR plan for Wausau Waterworks. We will complete the following tasks to develop this program.

Lead a Brainstorming Session with the City to Discuss Approaches

CDM Smith will lead a workshop with Wausau Waterworks to determine how to best meet your specific needs. Planned infrastructure projects, available funding and debt structure, location and quantity of LSLs, available sources of service line material data, and staff expertise and availability will be taken into consideration in designing the LSLR plan. We will also discuss coordination of capital projects between City departments, particularly road re-pavement projects.

Develop a 15-Year Plan to Replace all LSLs

Wausau Waterworks is targeting to replace all lead service lines within 15 years. As such, CDM Smith will develop a 15-year plan for replacement, including where these replacements will take place and how to prioritize and integrate those replacements with other capital projects planned over this timeframe. CDM Smith has developed a worksheet to

Verification Best Practices

- Interior
 - Door to door inspections by field staff
 - Homeowner surveys and photos
 - Meter inspections
 - Inspections during compliance sampling
 - Contractor inspections
- Exterior
 - Test pit
 - Utility records
- Data Mining
- Predictive Modeling/Machine Learning

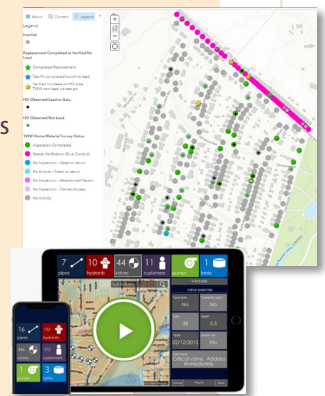


Figure 4-1. CDM Smith utilizes various verification methods for identifying lead status unknown service laterals, which will be included in the suggested strategy.

help utilities in making decisions on customer contributions and timelines. The worksheet then calculates the resources needed (i.e. construction crews, inspectors, etc.).

Develop a Plan for LSLR Prioritization

In developing the prioritization plan, CDM Smith will first work with Wausau Waterworks to determine how many LSLRs will occur under regular maintenance and in conjunction with water main replacement projects. We will review records of the number of historical leaks and breaks for water services and historical and future planned water main replacement rates. We are also interested in the typical sewer main replacement procedures because these projects can disturb LSLs and serve as another opportunity to efficiently replace LSLs. These numbers will help us understand how many of the annual LSLRs will be part of those programs and how many would be replaced under a stand-alone LSLR prioritization program. We will also discuss the current process for prioritizing water main replacements so we have a full understanding of how LSLRs, alongside water main replacements, can be adjusted to complement the LSLR prioritization.

Our approach will capitalize on our experience working with other systems to efficiently assist Wausau Waterworks with developing a prioritization strategy for LSLRs. Potential prioritization factors that we will discuss include:

- Areas with highest density of suspected LSLs
- Areas with highest density of children
- Areas with high priority customers (daycares, schools, parks, medical facilities)

There is no “one size fits all plan”. Every plan is unique and will depend on the community, the utility’s resources, the funding, the legislative landscape, the schedule, and the makeup of the inventory, among other factors. We know how to help a utility navigate through these decisions and challenges.



Lead Potential Prediction Surface Map where the orange represents older homes and blue represents homes constructed after 1980. The "heat map" can also be used to prioritize other LSLR activities, such as main replacement and paving.

- Areas with highest lead water and blood levels
- Areas with low water usage
- Areas with other ongoing work, such as water or sewer lateral replacements or paving projects
- Low-income areas
- Areas with other environmental concerns, such as lead paint
- Level of public interest

CDM Smith will work with Wausau Waterworks to develop a strategy incorporating multiple factors to balance risk of lead exposure, construction efficiency, and reliability of available data. The factors will be weighted, and a score provided for each suspected LSL. For example, we developed an LSLR prioritization analysis tool for Chicago's LSLR program that allows a weighting to be assigned to each factor or criteria that helps with program development and capital improvement program (CIP) planning. The prioritization will incorporate clear justification, which is often needed for grant applications and for positive public perception of the program.

Depending on the planned replacement rate in the first years, targeting individual LSLRs for specific high-priority customers, such as daycares, can be an early recommended stand-alone program. Overall, the level of detail in the prioritization will be based on the detail available in the data. Census data regarding children and income is typically available at the census tract level, and can be used to prioritize among the census tracts. However, if water testing results or water usage data is widely available for individual homes, more detailed prioritization scores at the block level can be created.

Quantify Support Expected from Wausau Waterworks Staff to Develop and Execute the LSLR Plan

In developing and executing the proposed LSLR, Wausau Waterworks will need to dedicate staff resources to the program, including plumbing inspectors, distribution staff, water quality control, communications, legal, and financial experts. In developing this plan, CDM Smith will discuss current staffing requirements for infrastructure programs, such as the water main replacement program, and use this information combined with our expertise in the requirements for LSLR administration, to provide customized estimates for staffing and resource requirements. The required staffing will vary during the program, and estimates will be based on the anticipated number of LSLRs in each 5-year period over the anticipated 15-year program.

Document Financing and Measures to Address Affordability

Together with Wausau Waterworks' financial team and the Commission, we will brainstorm financing strategies. We have experience applying for grant funding (such as the federal WIIN) program, creating programs to extend homeowners' credit, and performing rate analyses, which could be added to our scope but is not included at this time. We have provided examples of funding solutions we have developed for other municipalities in **Section 1**.

Propose and Develop Incentives for Homeowner Participation

Financial and logistical support are important tools for increasing program participation, and CDM Smith is experienced in a variety of incentives that can be developed, with different costs to Wausau Waterworks, to encourage participation. We will present information on different financing plans that could add to the current offering to encourage homeowner participation. Other incentives, such as time-limited financial support or the convenience of using the City's negotiated contractor price, can also increase participation. Outreach and education also play a critical role in increasing participation rates. Based on our experience in Newark and Trenton, participation rose when people knew others that had benefited from the LSLR program.

Even with significant financial support, many utilities have passed ordinances that require private side LSLRs, typically when the public side is replaced. We will provide example language for these ordinances and typical penalties for noncompliance. While utilities typically reserve the right to shut-off water for noncompliance, when LSLR plans include reasonable homeowner payments and active homeowner outreach, water service shut-off can be avoided.

Develop a Public Outreach and Communications Plan

A critical challenge in LSLR is conveying to residents the importance of program participation and fully replacing LSLs without creating the perception of a crisis. Part of a successful communication plan is emphasizing that LSLs can have negative health impacts and their removal is to the benefit of the customers and their families. CDM Smith is experienced in developing public outreach plans with consistent messaging that are key in navigating this balance. We will share successful examples of communications related specifically to LSLs so that we will not need to reinvent the wheel, such as a postcard developed for Trenton shown in **Figure 4-2**. Topics for flyers include encouraging program enrollment, flushing instructions, and general awareness of sources and risks of lead.



Figure 4-2. Example of a postcard assisting in obtaining homeowner service line material information for an LSL inventory.

CDM Smith will meet with Wausau Waterworks staff to identify where LSLR education and outreach could be added to existing initiatives, and how much additional staffing or support may be required for a full outreach campaign.

A section on communication strategies with some sample messaging will be provided for full and partial LSLRs. Communication will include:

- Allowing contractors into the home for a materials inspection and replacement
- Encouraging homeowners to sign up for a program and paying for the replacement if it is not a free program
- Communicating to homeowners and renters
- What a customer can expect with an LSLR
- Flushing procedures and POU filter information
- Communication regarding partial LSLRs when necessary during emergency repairs

We will also include strategies for engaging with community groups, soliciting public comment, and providing regular public updates as the program progresses.

Communicate with the WDNR for Approval of the LSLR Plan

CDM Smith will conduct a meeting with the WDNR to walk the agency through the final draft LSLR Plan and solicit feedback. We will incorporate any WDNR comments, and set up an additional meeting if any comments require further clarification or discussion.

Prepare Draft and Final LSLR Plan

To develop the final LSLR Plan with associated maps and figures, we will submit a draft plan for Wausau Waterworks to review and provide comments. Our draft plan will include guidelines for public outreach and maintaining water quality following LSLR (post replacement requirements). CDM Smith will lead a workshop on the plan to discuss any concerns or questions Wausau Waterworks may have on the draft LSLR Plan. After these comments are incorporated, we will submit the final draft version to the WDNR.

Task Deliverables

Deliverables for this task include:

- Three hard copies and a PDF copy of the draft LSLR Plan
- Three hard copies and a PDF copy of the final LSLR Plan

Preparation of Material Inventory

CDM Smith will prepare an LSL material inventory based on the City's current LSL inventory and documentation that will satisfy the requirements of the LCRR and can be used as the basis for the LSLR program. We will facilitate the development of an updated LSL inventory that meets the deadlines outlined by WDNR. Historical construction and plumbing records will be used in conjunction with new observations during work involving service lines and other sources. Resident-reported data may also be considered for the identification of private LSL materials. CDM Smith is experienced not only in collecting and compiling this data, but also in creating interfaces for publishing this data with the public and regulatory organizations. Our preferred method of tracking the LSL inventory, unknowns, and those residents not allowing access is by utilizing GIS. The ESRI shapefiles can be transferred to the City following the completion of activities this task.

Task Deliverables:

- Esri Shapefiles of material inventory
- Technical memorandum outlining and documenting the initial inventory including data sources used

Assumptions and Clarifications

The following list of assumptions and clarifications were used to prepare this proposal:

- CDM Smith will develop a service line inventory and will rely on existing data and records to predict the materials. Field work to confirm service line material on public or private side is assumed to be done by the City or others.
- GIS files are assumed to be complete with current unknowns clearly identified.
- Project Kickoff by October 20, 2021
- Receipt of available data and information by October 20, 2021
- Review of material inventory and plan for unknowns by November 19, 2021
- LSLR Plan Outline by November 19, 2021
- Review Meeting with WDNR anticipated December 2021 (this would include the draft LSLR Plan and the initial inventory)
- Presentation of Draft LSLR Plan Outline to Commission January 4, 2022 (at this meeting we anticipate discussing various key options, including funding, ordinances and public outreach)
- Development of Draft LSLR Plan – December – March 2022 (during this timing, we anticipate monthly meetings with Wausau Waterworks staff to discuss options and draft plans for the key elements of the overall LSLR Plan)
- Presentation of Draft LSLR Plan to Commission April 2022
- Update/Final LSLR Plan by May 2022
- Presentation to Commission of Final Plan by June 2022
- Submit Final Plan to WDNR by June 2022

Project Management

Project management activities will include continually assessing the expectations of Wausau Waterworks and managing scope, schedule, and budget to meet these expectations. Our team will maintain regular communication with Wausau Waterworks staff with periodic progress updates as required.

Project Timeline and Milestones

LSLR program development is assumed to be completed from October 2021 to June 2022 with the following key milestones:



5 FEES

The fee presented in **Table 5-1** is based on the above scope of services and separates the LSLR Plan from the inventory effort. We welcome the opportunity to discuss our fee and associated assumptions. The fee separates the replacement plan from the inventory efforts because additional scope items are added for the inventory effort that the Utility may elect to keep or handle as a separate task order.

Table 5-1. Cost Breakdown

Task Description	Cost
Lead Service Line Replacement Plan	\$54,240
Project Management and Commission Presentations	\$15,320
TOTAL	\$69,560
Material Inventory and Documentation (<i>Optional</i>)	\$20,120

Fee Assumptions:

- Workshops/meetings will be attended in person by Clark Dietz and virtually by CDM Smith.
- One workshop will be attended by CDM Smith in person.
- No field work is involved with inventory development.
- No public outreach meetings are assumed as part of this phase.
- No design or details are developed as part of this phase.
- Data/information provided by the Utility are assumed to be digital/electronic.



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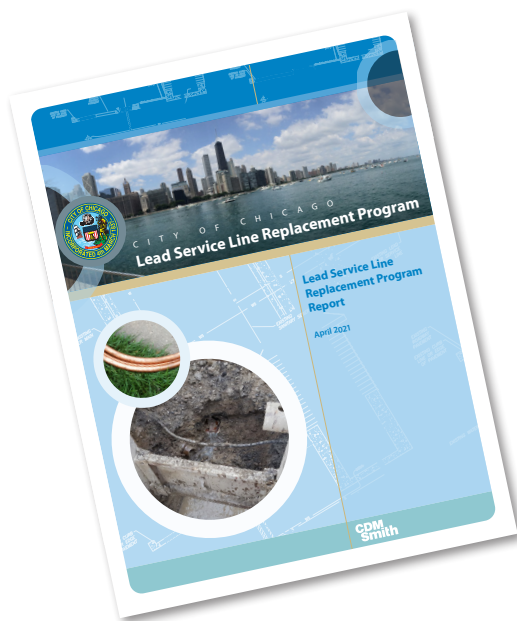
DETAILED PROJECT DESCRIPTIONS

LSL Inventory, Replacement Plan, Funding, and Phase I Implementation, Chicago, Illinois

CDM Smith has been the City of Chicago's trusted advisor on lead corrosion control and the LCR since its inception. Our team is conducting a multi-year study using 10 pipe loops to help optimize CCT, and we have been working with Chicago since 2018 on an LSL inventory and LSLR plan. As the program has developed, CDM Smith has had a pivotal role in guiding early program phase implementation.

For the last two years, CDM Smith has been working with the City on their LSL inventory, development of an LSLR program, public input, outreach, and initiating the implementation of Phase I Program. CDM Smith's comprehensive program support has also included financial analysis for funding public and private side replacements and completed applications for SRF, WIFIA, WIIN, and other funding sources for this program. Specific tasks, include:

- **Refinement of LSL Inventory for the 500,000 Service Lines:** CDM Smith reviewed building age and service class, connection size, construction records, and other information to identify and implement methodologies to refine the LSL material inventory.



Project Highlights

- LSLR program planning and development
- Pilot LSLR implementation
- Public education, outreach, and community feedback
- Construction services for LSLR

- **Investigation of Current Industry Practices and Recommendations:** CDM Smith interviewed utilities around the country on their LSLR programs. We set up workshops with a variety of utilities and Chicago staff to share lessons learned on specific program topics.
- **Development of the LSLR Program Based on a Prioritized Process and Phasing Plan:** CDM Smith developed a prioritization framework and collected the data necessary to prioritize individual addresses for LSLR. We created three phases for building up the LSLR program and identified the types of LSLR that should occur in each phase. The prioritization and phasing were flexible to accommodate a variety of replacement timelines as Chicago staff developed their program budget.
- **Development of Cost Projections:** CDM Smith created detailed cost estimates for individual LSLR for a variety of construction techniques, site layouts, and regulatory environments. We projected the cost split between private and public side and the cost-savings anticipated from combining LSLR with other infrastructure work, such as water main replacement.
- **Investigation and Development of Industry Practices for Private side Participation and Implementation:** CDM Smith reviewed programs from cities across the country for strategies to encourage public participation and determine the effectiveness of various strategies. Additionally, we reviewed plans for how liability for private-side work occurred, including handling of unexpected construction conditions and repair work.
- **Identification of Funding Sources:** CDM Smith identified and wrote applications for WIIN and WIFIA funds. We are supporting Chicago in utilizing Community Development Block Grant (CDBG) funds and SRF principal forgiveness funds for two LSLR programs currently in the implementation phase. We

additionally reviewed local funding programs, such as fundraisers, donation programs, and other city fees from other utilities around the country to identify alternative funding sources.

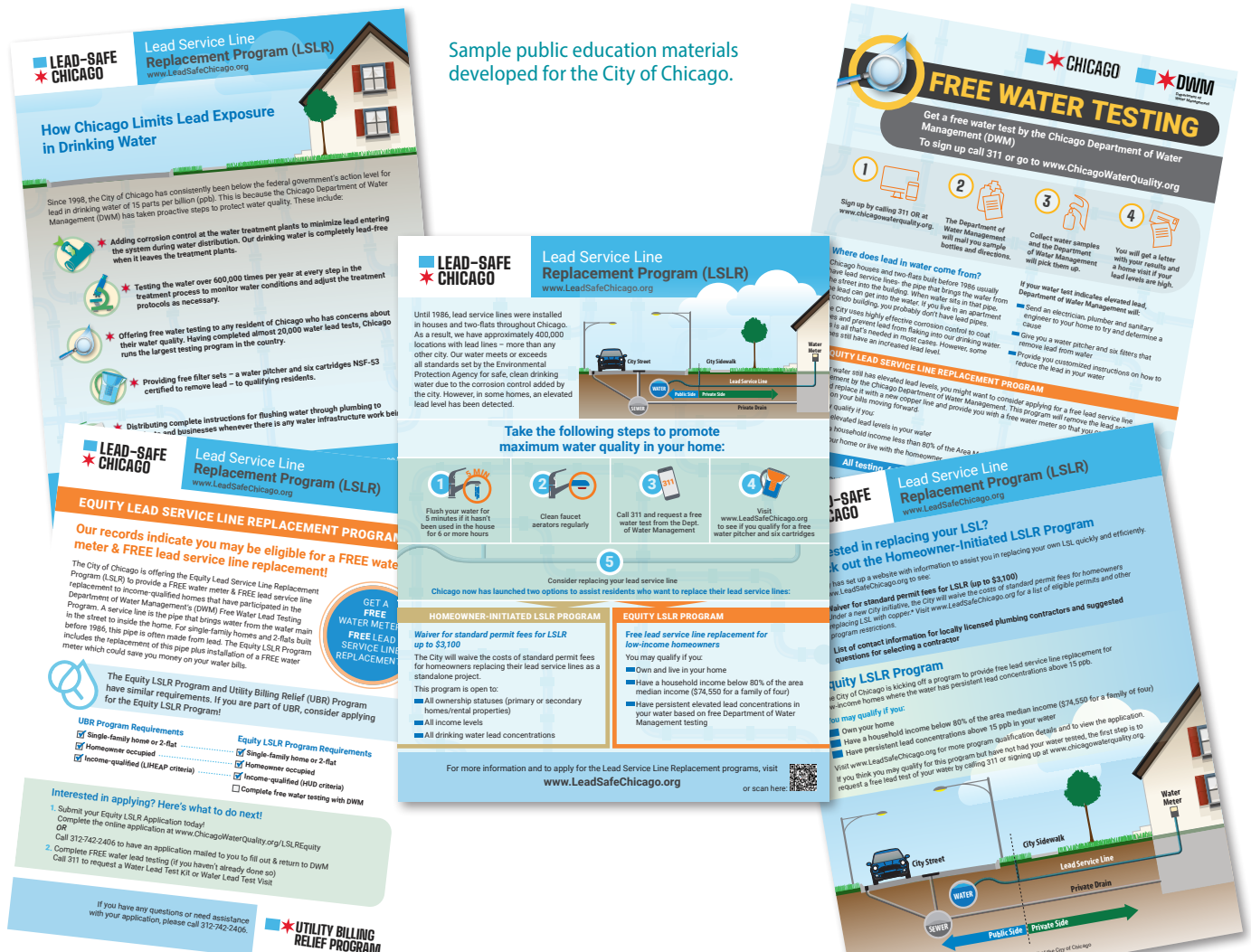
- **Development of Construction Methods to Complete the Work:** CDM Smith developed typical construction details for multiple construction techniques and home configurations. We developed bid documents using the standard construction details with pay based on unit bid pricing.
- **Piloting Assistance of LSLRs:** CDM Smith is supporting two early phase LSLR programs for Chicago. The first provides full LSLR for individual low-income homeowners with elevated lead. The second program replaces LSLs alongside a water main replacement. As part of these projects, CDM Smith developed technical specifications, including the measurement and payments and the bid form, and standard design drawings related to the LSLR.

- **Public Outreach and Education, Including Holding Public Meetings and Developing Flyers and Other Materials:** CDM Smith help organize and create content for meetings of a working group comprised of local non-profits and other interested parties. We've designed and created flyers (with original graphics) aimed at different populations to describe the full LSLR program in addition to individual LSLR program initiatives.
- **Phase I Program Implementation:** CDM Smith has been assisting with the LSLR Phase I Implementation, including equity application review, public outreach, and implementation.

Lessons Learned

- Building support from within the department, across city departments, and among the public is critical for program success.
- Early and consistent public outreach is necessary to build program trust.

Sample public education materials developed for the City of Chicago.



Lead and Copper Rule (LCR) Compliance Assistance and LSLR Program, Newark, New Jersey

The City of Newark is the first large system in the U.S. to aggressively tackle LSLRs. The City ramped up their original 10-year LSLR program and completed it in 2.5 years. Newark became the first city in New Jersey and one of the few cities in the country to offer an LSLR for the customer-owned service line at no direct cost to the homeowner. Newark relied on its partner, CDM Smith, to design, implement, manage, and oversee a program more aggressive than any other in the country.

After developing Newark's service line materials inventory, an innovative tracking tool (shown below) developed by CDM Smith is used to track replacements, verifications, paving, and post-replacement sampling on a near real time basis with 50 to 100 service lines being replaced each day. Data populates a mapping tool accessible to the public so residents can check the status of their LSLR, as well as results of post-replacement lead sampling. CDM Smith was instrumental in helping Newark acquire \$30M of grant funding through the New Jersey Infrastructure Bank (NJIB).

Project Highlights

- LSLR program development and implementation, including field training and support
- Integration with City's existing GIS data through Survey 1-2-3 program
- Innovative use of document scanning services for fast digitization and integration of old inventory card data
- Development, implementation, and maintenance of LSL program website and a strong public outreach campaign
- Database management solution with everything in one place
- Construction administration and resident engineering inspection services
- Full-time staff handling customer coordination and complaints



Improving Quality of Life

The public health benefits of replacing LSLs are well-known. As part of the LSLR program, restoration of pavement was anticipated. The City seized on an opportunity to leverage the LSLR to provide paving throughout the city. CDM Smith developed a management approach to coordinate paving for the LSLR program, as well as for the City's ongoing paving program and the gas utility's gas line replacement program. By managing these three large projects, CDM Smith developed a programmatic database in GIS to manage the

street paving. Additionally, CDM Smith minimized digging in recently paved streets and coordinated efforts between the various contracts to maximize the amount of street paving completed. On many blocks throughout the city, the LSLs were replaced, new gas service were provided, and the residents were left with a freshly paved street.

Diversity, Equity, and Inclusion

The City's goal was to use the program to create an economical and equitable replacement program with opportunities for both Newark residents and businesses to compete



As of July 2021, the City's LSLR Program had successfully replaced 20,800 LSLs with approximately 2,500 remaining. Click the QR code or scan with your smartphone camera to see Newark's LSLR in action!



and participate in the program. To encourage participation by local contractors, the City, with CDM Smith's assistance, hosted outreach events to the local minority and women owned business enterprises (M/WBE). The outreach brought Newark's M/WBE community together with the utility contractors to foster collaboration to complete the project. Newark also provided support to help M/WBE firms complete the necessary paperwork to be able to participate on state-funded projects. In addition, Newark partnered with the local trade unions to create an apprenticeship program for Newark residents. LSLR contracts included requirements for contractors to employ Newark-based apprentices in their crews to provide on-the-job training. To date, over \$60M of the program has been performed by Newark-based businesses and city residents.

Contracting Approach

To achieve the City's goal for an economical and equitable replacement program, CDM Smith developed a 10-phase bidding approach with 19 individual contracts. Contract size varied from 100 to 5,000 homes with durations from 3 to 12 months. By varying contract size and duration, opportunities were made available for smaller contractors to compete and participate in the program. Furthermore, projects were typically bid in groups of three contracts over a week. This allowed the contractors to continually be able to bid work and drive down the bid prices.

Point-of-Use (POU) Filter Program

CDM Smith also managed a program for the City to test approximately 320 POU filters. The program resulted in new recommendations for the homeowners: to flush for at

least 5 minutes and then filter the water before drinking. The results of the filter study were posted on the City's lead program website for all residents to access. The City also provides filters after an LSLR.

Corrosion Control Treatment Change

With the help of the ongoing loop study, the City is working toward optimizing its CCT and simultaneous compliance with other regulations. CDM Smith simultaneously designed, bid, and implemented a new CCT solution in 7 months, bringing Newark back into compliance 6 months later.

Summary

By working proactively, thinking holistically, and utilizing innovative technology tracking tools, Newark took on the lead issue by conducting up to 100 LSLRs per day, distributing over 40,000 POU filters, implementing an aggressive education campaign, and enacting modifications to corrosion control. Now nearing completion, CDM Smith has been Newark's partner through this entire program. The program continues to track LSLR progress with 12 on-site inspectors and state-of-the-art live dashboard tools utilizing e-Builder and GIS, monitoring lead levels, and conducting studies to bring Newark into compliance and to remove all major sources of lead contamination in drinking water.

Lessons Learned

- The ordinance to make the program mandatory and allow for a resident, rather than just the homeowner, to provide right of entry allowed Newark to move quickly on this project.
- Because paving is a major component, Newark ultimately incorporated a massive paving program into the project.
- Services listed as last replaced after Newark stopped using lead can still have lead between the curb and meter.

"When our lead levels spiked in 2017, we hired CDM Smith, one of the world's most respected environmental companies. CDM Smith helped us analyze our water sample data and the EPA simultaneously analyzed a harvested lead pipe from our system to microscopically determine how the corrosion control failed to properly coat the pipes. Because of these actions we were able to quickly and accurately pinpoint the reason for our exceedances and implement corrective action that would be effective and scientifically sound."

- Ras J. Baraka, Mayor of the City of Newark

Lead Service Line Replacement Program, Trenton, New Jersey

CDM Smith is serving as the City's Program Manager assisting Trenton Water Works (TWW) with meeting LCR requirements of the USEPA and the NJDEP by designing, implementing, and monitoring two zinc orthophosphate feed systems for a new CCT system, and developing and implementing an LSLR program to replace over 9,000 of TWW's estimated 36,000 LSLs.

CDM Smith's role involved all facets of an LSLR program, including development of a service line materials inventory, a prioritization study, preparation of design documents, development of permit applications and a funding application to the State's SRF program, bidding, construction and data management, inspection services, and public outreach.

TWW's program is to replace only full LSLs by not leaving any portion of the service line containing lead, including the homeowner's side of the line. TWW pays the contractors for completing the work and is requesting homeowners to contribute \$1,000 over five years via a special tax assessment to pay for the cost of the homeowner-owned portion (curb to meter). TWW is covering the majority of costs for the homeowner-owned portion through an SRF loan with \$21M in principal forgiveness. When TWW finds that a homeowner has already replaced the homeowner-owned portion of the service line, the utility is replacing their portion (main to curb). This program is entirely voluntary and communication with the residents is a key component of the success of the program. To date, over 5,500 LSLs have been replaced as part of this program.

TWW is completing the required 21% of LSLs to be replaced due to previous lead action level exceedances in the first two phases of this program at a total cost of approximately \$60M, however, TWW intends to replace all LSLs in future phases based on available funding.

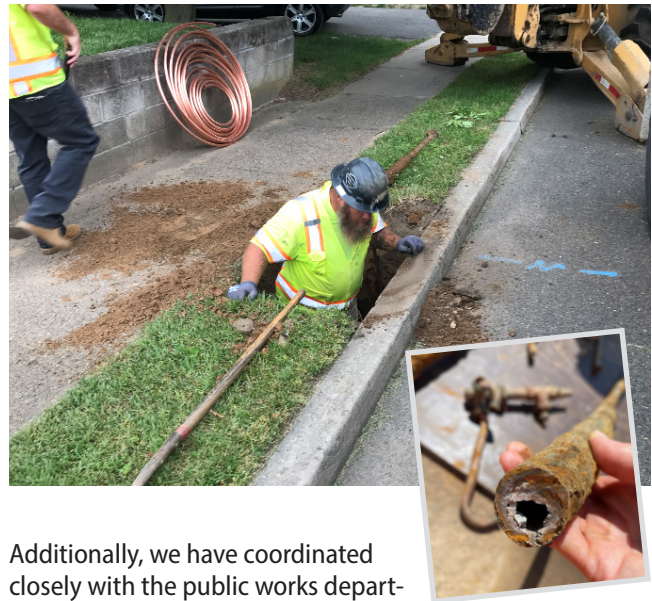
Prioritization

TWW initially established a prioritization program looking at multiple factors, including low-income neighborhoods, density of children, areas of high lead levels, and other environmental hazards. However, since the program did not have the funding or approval to be completely free to residents, TWW generally had to go on a registration basis. CDM Smith has leveraged the contractors to perform additional outreach on the streets with registered homes to implement a block-by-block approach to the extent possible with a voluntary program.

One lesson learned from this program is that many residents will sign up for a program once they see their neighbor having their LSL replaced. Therefore, flexibility is provided in the schedule to allow for additional replacements on streets where the contractor is already working.

Project Highlights

- LSLR program development and implementation, field training, and support
- Database management solution with everything in one place
- Inspection oversight during construction
- Significant public outreach campaign
- Diversity and inclusion goals



Additionally, we have coordinated closely with the public works departments in the four towns where TWW is replacing LSLs to get ahead of the paving programs and replace as many LSLs on those streets before being paved.

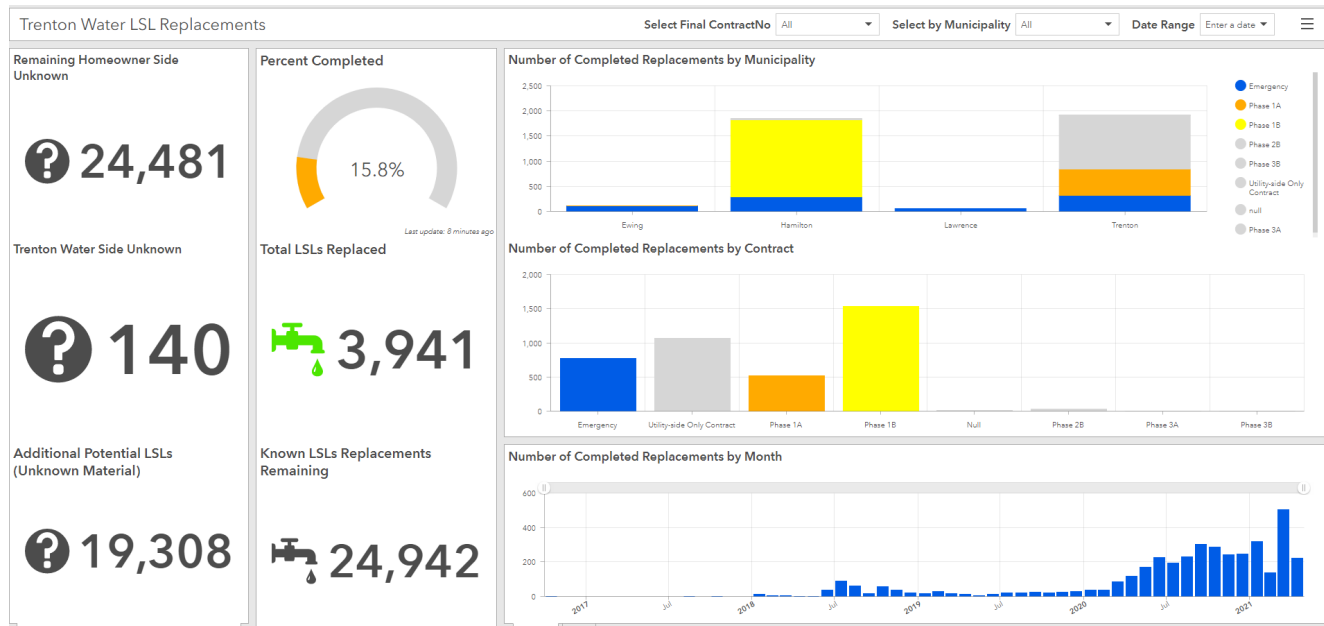
Public Outreach

This project involves a high level of public and NJDEP coordination and communication. CDM Smith participated in public forums to help TWW address the concerns of the residents, developed an interactive website with information on lead in drinking water and a way to register for the LSLR program, designed and printed brochures, magnets, letters, posters, and flyers to help TWW get the message across on what they are doing to address the lead issues.

Program and Data Management

CDM Smith is currently managing 9,000 replacements by four contractors via six contracts. The contracts have been staggered starting in March 2020 and estimated to be completed by end of April 2022. All data is managed through our program management system that leverages tools such as ArcGIS Online, Survey 123, Collector, and e-Builder. Daily checks are performed on the data comparing GIS data input by the contractors and e-Builder data

CDM Smith-developed dashboard show's TWW's program status at a glance.



input by the inspectors. Discrepancies are communicated and addressed.

A portal has been set up for TWW's staff and CDM Smith to track any customer complaints and issues. A web form populates a spreadsheet, which allows for easy sorting and tracking. The contractor is required to follow-up and provide resolution to each issue.

- Access inside the home is critical for flushing, even if only replacing the utility side.
- Because paving is a major component, consider curb-to-curb paving when replacing several lines on one street

Example public education materials developed for TWW.

Diversity and Inclusion

To foster local training and development of staff, TWW has supplied two in-house inspectors to supplement CDM Smith's inspection staff. CDM Smith trained the inspectors in all management tools and inspection work and they perform the inspections as part of the team. Additionally, the contractors have aggressive diversity targets and local hiring requirements that are tracked and reported on a monthly basis.

Lessons Learned

- Even when offering a discount, it is still very challenging to get homeowners to sign up.
- Unit price items work well and control costs. Detailed design would not have reduced cost enough to offset the design on this project.
- Customer communication and coordination requires a significant effort in manpower.
- Replacement of water lines can lead to other issues indirectly related to the work, such as flooded basements due to voids from replacing a lead pipe with a smaller copper outside diameter (OD) pipe.



Corrosion Control Study, Racine, Wisconsin

In preparation of LCR-Revisions and in response to WDNR regulatory requirement, Racine Water Utility retained CDM Smith to conduct a comprehensive corrosion control optimization study that includes a pipe loop study consisting of four pipe loops with harvested lead. Our team developed the design documents for the pipe loops, including pipe harvesting protocols, design of pipe loops, and a pipe loop testing plan.

CDM Smith conducted scale analysis to evaluate existing scale on LSLs. We reviewed water quality data, sequential sampling data, water use, and other parameters to evaluate corrosion control treatment. The pipe loops evaluated different phosphate doses. CDM Smith is facilitating meetings with WDNR and Racine Water Utility as part of the overall corrosion study. Additionally, we evaluated distribution system water quality and stability of the water by monitoring pH, chlorine residual, and other parameters.

Project Highlights

- Coordination with WDNR
- Pipe loop study
- Corrosion control optimization
- Distribution system water quality and operational review



2021 Municipal LSLR Program Management • Glendale and Whitefish Bay, WI

Clark Dietz has worked with water utilities in both the City of Glendale and the Village of Whitefish Bay to get the lead out of the community drinking water systems. Their involvement started with passing ordinances, and has included applying for funding, researching and listing LSL locations, conducting public outreach, preparing bidding documents, and performing on-site inspection. In 2021, they secured the replacement of 60 LSLs, with annual programs aiming for much more in coming years.

These communities have used both the DNR Lead Service Line Replacement Program and the Federal American Restoration Plan funding to replace the public and private side lead water services. These forgivable loans have helped fund the replacement of nearly 20 LSLs in Whitefish Bay and another 40 LSLs in Glendale. With Clark Dietz's help, these communities will be able to continue this aggressive program to remove thousands of remaining lead services.

Project Highlights

- Lead replacement planning
- Funding support
- Public outreach support



B Resumes

We are pleased to present detailed resumes for our entire team on the following pages.

TONIA WESTPHAL, PE, LEED AP

Project Manager

As an experienced civil engineer, Tonia is keenly aware that decisions made today, have a lasting impact on future improvements and the community's vitality. Highly engaged with her clients, Tonia proactively facilitates informed decision-making to optimize the impact on the community. Her clients have come to rely on her experience and insights to provide engineering solutions that support their goals.

Tonia's strong communication skills, coupled with her technical expertise, enable her to facilitate collaborative efforts with stakeholder groups in a meaningful manner. Tonia frequently serves as a liaison between municipal entities, technical staff, clients, stakeholders, regulatory agencies, and the general public. She excels at presenting technical information to the general public and in receiving and understanding public input as it relates to the project design.

- Wausau Waterworks Lead Compliance Consulting, Wausau, WI
- Wausau Waterworks Water Quality Investigation, Wausau, WI
- Wausau Waterworks Drinking Water Risk Resilience Assessment (RRA) and Emergency Response Plan (ERP), Wausau, WI
- Drinking Water Treatment Facility (DWTF) Electrical Design and Construction Services, Wausau, WI
- 72nd Avenue Lift Station and Building Design and Construction, Wausau, WI
- DWTF Solar Array, Wausau, WI
- Infiltration and Inflow (I/I) and Interceptor Sewer Rehab Study, Wausau, WI
- Industrial Park Lift Station Pump Addition and Rehabilitation, Wausau, WI
- Industrial Park Lift Station Construction Services, Wausau, WI
- Industrial Park Lift Station Upgrades and Force Main Cleaning, Wausau, WI
- Stewart Avenue Force Main and Interceptor Sewer, Wausau, WI
- Cleveland and 72nd Avenue Lift Stations, Wausau, WI
- Kronenwetter Water Utility, Future Water Capacity and Quality Study, Kronenwetter, WI
- Sanitary Sewer Master Plan Update, Weston, WI
- Apache Lane Utilities and River Crossing Design and Construction Services, Weston, WI
- Trotzer Avenue and Ryan Street Lift Station Design, Weston, WI
- Weston School Neighborhood Reconstruction Design and Construction Services, Weston, WI
- 2017-2021 WPS Weston Plant Grading and Paving Design and Construction, Rothschild WI
- WPS Weston Plant Storm Sewer and Outfall Replacement, Rothschild, WI
- WPS Weston Power Plant Crusher House, Weston, WI



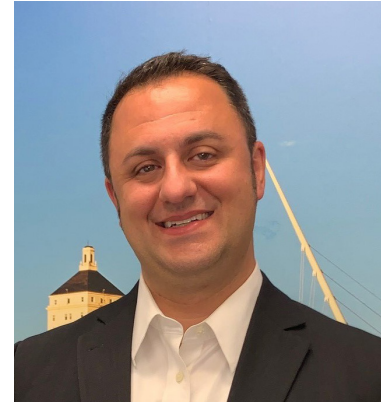
Education: BS, Environmental Engineering

Registration: PE: WI, MI; LEED Accredited Professional (LEED AP)

MATTHEW BEDNARSKI, PE, ENV SP

Deputy Project Manager

Matt has refined his experience and expertise in large and collaborative efforts on a number of watercourse and public works projects. He is a project manager, principal-in-charge, and municipal engineer specializing in water resource projects. Matt's experience encompasses project management, contract administration, client relations, construction supervision, stormwater management and modeling, community relations, and special assessments. He brings an understanding of how to work effectively with WDNR.



Education: Executive MBA; BS, Civil Engineering

Registration: PE: WI; Envision Sustainability Professional (ENV SP)

- **Local Permitting Liaison, Site Plan and Stormwater Management, The Great Water Alliance, Waukesha, WI.** Matt was responsible for local permitting requirements for the water supply line and return flow pipeline that supplies potable water from Lake Michigan to the City Waukesha. In this capacity he convened meetings with the communities affected by the pipeline routing to ensure the regional project met local permit requirements and local outreach needs. Additionally, he led the team responsible for site plans, structural design, and stormwater management for the Booster Pump Station and Chemical Feed Station.
- **Client Service Manager, Village Engineer, Newburg, WI.** Matt was involved in an array of day-to-day and project engineering duties, including administrative services ranging from construction to planning. These included attending council, committee, and commission meetings; leading presentations and public hearings; overseeing bidding; and managing capital improvement projects. Matt was responsible for annual reporting requirements and responding to resident phone calls and complaints. He negotiated for easements and managed engineering, planning, and construction budgets. He also completed Pavement Management Plan, Comprehensive Outdoor Recreation Plan, "Smart Growth" Plan, and Sanitary Sewer Master Plan.
- **Project Manager, Main Street Corridor Reconstruction, Sussex, WI.** Matt managed this project to develop reconstruction plans for water main, sanitary sewer, storm sewer, new roadway cross-sections, streetscaping, two stream relocations, floodplain analysis and permitting, intersection analysis, access management, and public relations and communications.
- **Project Engineer, Milwaukee Avenue Reconstruction, Wauwatosa, WI.** This project replaced a portion of two existing storm sewer systems, to alleviate flooding problems in the neighborhoods. Challenges included design of a cost-effective, constructible storm sewer system in coordination with the roadway design. Another challenging aspect was development of outfall designs that minimized scour and erosion at the Menomonee River.
- **Project Manager, Roadway Projects, Sussex, WI.** Matt oversaw design, construction documents, bidding, construction management, and permitting of various roadway construction and rehabilitation projects in the Village of Sussex.
- **Contract Manager, On-Call Engineering Services for Watercourse Facilities, Milwaukee, WI.** For Milwaukee Metropolitan Sewerage District (MMSD), Matt developed project teams for given tasks, coordinated scope, schedule, and fee development, and was responsible for quality assurance and quality control. Matt served as the contract manager, project manager, and overall quality control coordinator for a diverse team of engineering, geomorphic, landscape architecture, field, and environmental professionals for various on-call watercourse needs.
- **Envision Sustainability Professional, Edgewood Near Surface Collector, Milwaukee, WI.** Matt evaluated this relief sewer project's potential for improved sustainability based on the ISI Envision checklist. Criteria were sorted by potential to be met allowing designers to increase the use of sustainable practices in design, specification, and construction.
- **Project Manager, Kinnickinnic River Rehabilitation, Milwaukee, WI.** Matt managed a large team of regional and local experts – including DBE firms – for this long-term flood risk reduction project for MMSD. The project included long-range planning for Milwaukee County Parks facilities, bridge improvements, and stakeholder and public outreach and involvement. Matt organized and managed many team members to allow the technical experts to excel without needing to navigate a difficult project from a public and political point-of-view.

AMROU ATASSI, PE, BCEE, PMP

Technical Lead/LSLR Plan

Amrou is a senior project manager and senior project engineer specializing in drinking water treatment and distribution and energy efficiency/system optimization. With 20 years of experience, he has worked on all phases of drinking water projects, including pilot testing, distribution system modeling, corrosion control, master planning, water quality compliance issues, energy efficiency analysis/planning, design, and construction phase services. He has worked on a wide range of projects from \$5,000 studies to over \$5M design projects.

Amrou is one of CDM Smith's national technical experts in distribution system water quality, corrosion control, and LSLRs. He has been working with the City of Chicago's LSLR program, including planning, inventory, and phase I implementation. Amrou also brings extensive knowledge of federal and state regulations and has given more than 10 presentations on how to prepare for the LCR-Revisions and develop a plan for LSL inventory and replacement.

- Served on the Project Advisory Committee for WRF 4713 – “Full Lead Service Line Replacement Guidance”
- Managed Chicago's LSLR plan, LSL inventory, and outreach plan, as well as the Phase I implementation
- Served as technical reviewer for LSLR in Newark, NJ
- Assisted City of Bloomington and various other communities in Illinois with LSLR planning, inventory development, and overall preparation for upcoming regulations
- **Senior Project Manager, LSLR Plan, Inventory, and Phase I LSLR Implementation, Chicago, IL.** Amrou worked with the City of Chicago and Mayor's office to develop Chicago's LSLR plan, including an inventory of nearly 400,000 LSLs. He led development of various programs phased over time to remove LSLs in the system. The plan included prioritization strategies to phase the program, public outreach, construction details and costs, financing and funding options, and more. Amrou is currently working with the City to implement the Phase I Program.
- **Technical Reviewer, LSLR Program, Newark, NJ.** Amrou is serving as a technical advisor for the City of Newark's corrosion control optimization program and replacement of LSLs. He is reviewing corrosion control studies, contract documents, and replacement procedures.
- **Technical Reviewer, City of Trenton LSLR Program, Trenton, NJ.** Amrou is serving as a technical advisor for Trenton Water Work's corrosion control optimization program and replacement of LSLs, as well as the design of a phosphate system addition.
- **Lead Process Engineer, Corrosion Control Optimization Study and LCRR Compliance, Racine, WI.** Amrou is working to develop a corrosion control optimization program that includes desktop analysis, bench-scale testing, pipe loop testing, and negotiations with the regulatory agency. He is also assisting the City with LCRR compliance, including sequential sampling, scale analysis, and LSL inventory.
- **Lead Process Engineer, Corrosion Control Optimization, Chicago, IL.** Amrou is helping to optimize the City's corrosion control program. Work includes the design, construction, and testing of 10 pipe loop systems with varying water quality and phosphate conditions. The pipe loops consist of harvested LSLs.
- **Corrosion Control Specialist, Corrosion Control Optimization Study and LCR-R Compliance, Town of Dillon, CO.** Amrou served as the technical specialist to complete a desktop study and bench-scale testing for the Town of Dillon to reduce lead levels. As part of the desktop study, Amrou provided guidance on corrosion control, distribution system water quality optimization, and LCR-R. The study also included recommendations for further optimization in the distribution system.
- **Lead Process Engineer, Corrosion Control Optimization Study, Lake Zurich, IL.** Amrou worked with the Village to develop a corrosion control optimization study that includes desktop analysis, bench-scale testing, and negotiations and meetings with the regulatory agency. The recommendations are currently in design.



Education: MS, Environmental Engineering; BS, Civil Engineering

Registration: PE: WI, IL; Project Management Professional (PMP)

Honors: Board Certified Environmental Engineer (BCEE), American Academy of Environmental Engineers and Scientists

SANDY KUTZING, PE, PMP

Technical Advisor

Sandy is a project manager in CDM Smith's municipal water and wastewater group with 19 years of experience. She has experience in the design of water and wastewater treatment facilities, corrosion control studies, LSLR programs, pump stations, water transmission mains, tank rehabilitation, outfalls, sanitary sewers, and solids handling facilities. Sandy has experience performing studies, including master planning, pipeline condition assessments, treatment evaluations, and route evaluations. She has also been responsible for permitting on projects in New York and New Jersey and for providing construction coordination and design services during construction.

- **Project Manager, LCR Compliance Assistance Project, Newark, NJ.** Sandy manages the LCR Compliance Assistance project, which involved a study to evaluate current corrosion control practices in Newark and to provide recommendations for improving corrosion control and bringing Newark back into compliance with the LCR. The study involved a desktop analysis, scale analysis partnership with the USEPA, sequential sampling at several homes and analyzing the lead results and water quality by source and over time. The study found that Newark had Lead (IV) scales that changed the direction of the project and brought it to National attention. The study was summarized in an Optimal Corrosion Control Treatment report recommending the addition of a high dose of orthophosphate to the Pequannock water supply downstream of its open water reservoir along with other modifications. The report also recommended short-term measures, such as providing filters to customers to protect them from high lead levels in the interim until the CCT is implemented and effective at preventing lead from leaching into the water. The orthophosphate feed system was designed, procured, and constructed within 6 months and went into service in May 2019. CDM Smith is working with Newark to monitor water quality parameters and lead levels in the distribution system as the phosphate scale develops on the lead pipes. Newark's lead levels fell below the lead action level starting with the January to June 2020 sampling period and has continued to see reduced lead levels. CDM Smith developed a program to distribute 40,000 POU filters to residents that are affected and developed a vigorous public education campaign. CDM Smith also developed a protocol for a loop study to study the optimization of the orthophosphate treatment in Newark's distribution system by adjusting pH, sodium silicate, and calcium concentrations.
- **Project Manager, LSLR Program – Phase I, Newark, NJ.** As part of this project, Sandy worked with Newark to develop a prioritization plan for the first phase of Newark's LSLR program. The project involved a campaign to get customers to register for the program at a reduced cost, including development of a website and several posters, letters, and flyers that were distributed to residents. CDM Smith also worked with Newark to develop and maintain an LSL inventory and helped to verify the information in Newark's records. Sandy also managed the development of the design documents, permitting activities, and funding applications through the NJIB for the LSLR program. CDM Smith worked with Newark to progress the program from the initial 10-year voluntary program to make it free and mandatory to an estimated 23,000 residents with LSLs and complete the entire LSLR Program within 2.5 years replacing up to 1,000 LSLs per week at the peak of the program.
- **Project Manager, Newark Point-of-Use Filter Program, Newark, NJ.** Sandy managed the POU filter study for the City of Newark. In mid-August 2019, the USEPA placed Newark on bottled water based on concerns from two tests indicating that the 40,000 POU filters distributed by Newark may not be as effective at reducing lead as originally thought. CDM Smith implemented a program to efficiently collect and analyze data from 337 filters. Sandy managed 20-30 people contributing to the project daily, including field sampling teams, data analysts, quality control specialists, and GIS support. In addition, Sandy and Newark collaborated



Education: MS, Civil Engineering;
BS, Civil Engineering

Registration: PE: NY, NJ, DE; Project
Management Professional (PMP)

“One of my proudest accomplishments to date is working with the City of Newark to combat their lead in drinking water crisis. Working with CDM Smith colleagues, we helped solve a very complex water quality issue and developed solutions to protect the public, including the most aggressive lead service line replacement program in the country.”

– Sandy Kutzing, CDM Smith

closely with the USEPA and NJDEP throughout the study, including having the data available live as results were reported and analyzed. Ultimately, the USEPA and NJDEP strongly supported the findings in the study indicating that the filters were working to reduce lead when installed and maintained properly and the USEPA lifted the bottled water recommendation within 5 weeks of issuing. The final report was posted to Newark's website for all residents to access.

- **Program Manager, LSLR Program, Trenton, NJ.** Sandy serves as the program manager for TWW's LSLR program. TWW's program is to replace only full LSLs by not leaving any portion of the service line containing lead. TWW pays the contractors up front and is requesting residents to contribute \$1,000 over five years via a special tax assessment to pay for the cost of the homeowner-owned portion (curb to meter). TWW is covering the majority of the cost of the homeowner-owned portion through an NJIB loan with \$21M in principal forgiveness. When Trenton finds that a homeowner has already replaced the homeowner-owned portion of the service line, the utility is replacing their portion (main to curb) at no cost to the homeowner. This program is entirely voluntary and communication with the residents is a key component of the success of the program. CDM Smith is the construction manager for the LSLR Program currently overseeing 5 contractors on 6 contracts in Trenton, Hamilton, Lawrence, and Ewing. The total replacements in 2020 and 2021 will total approximately 7,500 replacements for approximately \$50M. CDM Smith is using a combination of GIS technology and e-Builder to manage and track the replacements and update the materials inventory as the program moves forward. Approximately 5,000 LSLs have been replaced as of July 2021.
- **Project Manager, LCR Compliance Assistance, Trenton, NJ.** Sandy served as the project manager assisting TWW with meeting the requirements of the USEPA and the NJDEP related to corrosion control. The project involves both design of a CCT system and development and implementation of a LSLR program. The CCT solution was recommended based on a desktop study and analysis of water quality trends. The recommendation for adding zinc orthophosphate was approved by NJDEP and went into service in December 2019. The LSLR Program involved a prioritization study, development of design documents and preparation of permit applications and a funding application to the NJIB to replace 21% of TWW's approximately 31,000 LSLs in the distribution system. This project involved a high level of public and NJDEP coordination and communication. CDM Smith participated in public forums to help TWW address the concerns of the residents, developed an interactive website with information on lead in drinking water and a way to register for the LSLR Program, designed and printed brochures, magnets, letters, posters, and flyers to help TWW get the message across on what they are doing to address the lead issues.
- **Project Manager, Lead and Copper Sampling Plan, Water Quality Parameters Sampling Plan (WQPS) and Plumbing Material Verification Surveys, SUEZ Water New Jersey, Franklin Lakes, NJ.** Sandy managed the development of a LCR Sampling Plan and WQPS Plan for the Franklin Lakes distribution system. The project involved plumbing material verification surveys for 90 residents with swab testing of suspected lead material. The surveys were conducted and plans developed in a short timeframe to meet NJDEP's schedule. In addition, CDM Smith has since assisted SUEZ in plumbing material verification surveys and development of LCR Sampling Plans and WQPS Plans in their Allendale and Saddle River systems.
- **Project Manager, Corrosion Control Study and Implementation, SUEZ Water New Jersey, Haworth, NJ.** Sandy managed a corrosion control study for Suez's 187.5-million-gallons-per-day (mgd) Haworth Water Treatment Plant (WTP). SUEZ previously accomplished corrosion control through pH adjustment and the Langelier Index. It is estimated that 9,000 lead service connections could be tied to the distribution system. CDM Smith performed a lead coupon emersion study to evaluate the effectiveness of zinc orthophosphate and phosphoric acid at different doses and different pHs at three locations in the distribution system. CDM Smith also performed a desktop model to evaluate the theoretical impacts of soluble lead release from changing pH and other water quality parameters in the system. Ultimately, zinc orthophosphate was selected as the corrosion inhibitor chemical. CDM Smith performed the design and permitting of the system that retrofitted existing chemical feed tanks and equipment. The zinc orthophosphate system has been operational since October 2017. Also as part of this work, CDM Smith assisted in keeping the wholesale customers informed regarding the planned water quality changes.

MARK WHITE, PE, BCEE

Technical Advisor

Mark is a registered professional engineer and Board Certified Environmental Engineer with 25 years of international experience in the planning, design, operations and maintenance, and construction of water treatment facilities. He has evaluated and/or designed improvements to more than 40 WTPs totaling more than 1-billion-gallons-per-day (bgd) of capacity. As a water treatment industry leader, Mark serves on various state and national committees, including the American Water Works Association's (AWWA's) Water Treatment Facilities Design and Construction Committee. He has authored more than 20 technical presentations on water treatment technologies at AWWA National Conferences and has taught classes on the design of water treatment systems at the University of Wisconsin-Madison and the University of North Carolina-Chapel Hill. In addition, he has authored chapters of drinking water manuals of practice, including the AWWA M53 Manual of Practice for Microfiltration and Ultrafiltration Membranes and the Indian Water Works Association M5 Manual on Augmentation and Upgradation of Water Treatment Plants.

- **Senior Technical Advisor, Corrosion Control Study, Racine, WI.** Mark is currently serving as the senior technical advisor for an ongoing corrosion control study for the Racine Water Utility that involves four pipe loops of harvested lead to evaluate alternative corrosion control strategies.
- **Project Manager and Treatment Process Design Lead, Ultrafiltration Membrane Improvements, Racine, WI.** Mark served as the project manager and treatment process lead for the design, construction, and startup of a new 50-mgd ultrafiltration membrane system for the Racine WTP. This is currently one of the largest membrane facilities within the U.S. Following commissioning, Mark worked with Racine staff to optimize operational performance of the installed membrane system to increase capacity, improve redundancy, and lower operational costs.
- **Treatment Process Design Lead, Membrane Filtration System, Manitowoc, WI.** Mark served as treatment process design lead for the addition of a new 24-mgd membrane filtration system retrofit into the existing Manitowoc Public Utilities WTP. This project included the implementation of new submerged membrane treatment within existing conventional filtration basins.
- **Water Plant Assessment Lead, Oak Creek, WI.** Mark served as water plant assessment lead for a condition assessment at the Oak Creek WTP. The project included a multi-discipline condition assessment that identified, evaluated, and prioritized WTP improvements projects anticipated for a 20-year planning period. The project included a review of current and anticipated future regulations and an evaluation of opportunities for optimizing WTP treatment performance. The project also included evaluation and prioritization of distribution system improvements, creation of a distribution system hydraulic model, and development of a water main replacement prioritization plan.
- **Project Manager, Water System Planning and Plant Improvements, Highland Park, IL.** Mark managed a feasibility study that identified and evaluated alternative strategies for rehabilitating the 30-mgd Highland Park WTP. He served as the lead process designer for the design and construction phases of the \$31M capital improvements project to completely rehabilitate the aging WTP. This project included a desktop and bench-scale corrosion control study to evaluate the impact that the treatment plant changes would have on LCR compliance.
- **Process Design Lead, Design-Build of the Pojoaque Basin Regional WTP, Santa Fe County, NM.** Mark is serving as the process design lead for the design-build of a new 6.23-mgd WTP utilizing high-recovery ultrafiltration and nanofiltration membrane systems. This project is being implemented for the United States Department of the Interior, Bureau of Reclamation to develop a new potable water supply for the pueblos of Nambe, Pojoaque, San Ildefonso, and Tesuque; and unincorporated areas of Santa Fe County. This project included a corrosion control study to evaluate the impacts of changing the source of water supply and the design of a new phosphate feed system.



Education: MSEE, Water Resources Engineering; BS, Civil Engineering; BS, Architecture

Registration: PE: WI, IL, NM, NC

Honors: Board Certified Environmental Engineer (BCEE), American Academy of Environmental Engineers and Scientists

JOANNA CUMMINGS, PE

LSLR Plan

Joanna is an environmental engineer with 10 years of professional experience in design and optimization of drinking water process systems. She has performed desktop, bench-scale, full-scale, and pipe loop corrosion control studies for utilities throughout the Midwest. Joanna has contributed to Water Research Foundation (WRF) reports on corrosion control and presented at regional AWWA conferences on optimizing corrosion control treatment techniques. She has also helped utilities develop LSLR strategies in anticipation of regulatory changes.



Education: ME, Environmental & Water Quality Engineering; BS, Civil Engineering

Registration: PE: IL

- **Project Engineer, LSL Inventory, Replacement Plan, Funding, and Phase I Implementation, Chicago, IL.** CDM Smith has a multi-year contract working with the City to develop a comprehensive LSLR program. Jonna has taken the lead in tasks, such as:
 - Updating the water service line material inventory with new and updated data
 - Developing construction details and cost estimates for lead service line replacement
 - Developing prioritization criteria for service line replacements and identifying and developing data sources to prioritize locations
 - Developing discrete replacement programs to provide short-term replacement goals
 - Working with community stakeholders to build program support and develop outreach materials to increase public participation
 - Identifying funding sources and writing funding grant applications
- **Project Engineer, LCR Compliance Assistance and LSLR Program, Newark, NJ.** Joanna helped design of a pipe loop construction and study design. She presented options for pipe loop layouts and control designs. She reviewed design specifications and drawings. The pipe loops were constructed and put in operation.
- **Project Engineer, Corrosion Control Optimization Study and LCR Compliance, Racine, WI.** Joanna reviewed the study plan, design drawings, and water sampling plan for a pipe loop study.
- **Project Engineer, Corrosion Control Optimization, Chicago, IL.** CDM Smith has a multi-year corrosion control and lead pipe handling program with Chicago DWM. Joanna has had a leading role in designing the pipe loop study, including the design of the pipe loops themselves, writing the operation and sampling plan, developing the lead harvesting plan, selecting installation locations, and source water protection systems. She also conducted full-scale testing of a chemical modification to the pre-treatment system pared with a pipe loop study. Joanna designed/performed jar testing to review the impact of different CCT options. She discussed the study plan and results with the Illinois Environmental Protection Agency (IEPA) and prepared summary reports and a presentation for the client and relevant stakeholders. Additionally, she conducted bench studies on the impact of CCT modifications on cast iron scale.
- **Project Engineer, Corrosion Control Optimization Study and LCR Compliance, Bloomington, IL.** Joanna consulted on the design of a pipe loop construction and study design. She contributed to the study plan, design drawings, system controls, and water sampling plan.
- **Project Engineer, Corrosion Control, Lake Zurich, IL.** Joanna reviewed water quality data and identified additional information that needed to be collected for a corrosion control study. She used this information to run a desktop analysis of corrosion control options using WaterPro and designed an IEPA-approved jar testing experiment and wrote and received approval for an IEPA report of a new optimized corrosion control strategy. She is working on preliminary design of a new phosphoric system.
- **Project Engineer, Corrosion Control, Brunswick County, NC.** CDM Smith is designing a new reverse osmosis (RO) treatment system that will blend different well waters with the treated water. Joanna reviewed the current treated water quality and the pilot water quality from the RO system. She modeled the water quality and potential stabilization chemicals in WaterPro to estimate the corrosivity of the new water and develop preliminary dosages for chemicals to restore the water's alkalinity and pH. Additionally, Joanna developed a procedure for jar testing the recommended chemical dosages and reviewed pipe loop data.

MARK ZITO, GISP, CFM

Material Inventory/Data Tracking

Mark has 14 years of experience in project planning, process and requirements analysis, stakeholder engagement, and development of workflow diagrams that evolve into highly detailed systems. As a data scientist, he is proficient in data modeling, analytics, machine learning, database design, application development. By leveraging his technical and leadership skills, Mark has successfully developed automated tools to efficiently and accurately uplift and process data into the proper specifications for use by utilities across the country.

- **Technology Lead, LSLR Program, Newark, NJ.** Mark led the development and implementation of technology solutions to manage the City's LSLR program. He leverages several technology solutions, including SquareSpace for the public outreach component, Esri's ArcGIS Online platform for collection and maintenance of spatial data, and e-Builder for construction oversight. These systems were integrated into a seamless environment using custom scripts and scheduled processes. The Esri GIS system was used to deploy field collection tools for collecting information from homeowners, such as right of entry forms and high-accuracy GPS locations of corporation stops, curb stops, and meter locations along the replaced service line. Oversight of construction was performed using e-Builder, and this information was integrated with the GIS and displayed in near real-time on a dashboard using Esri's Operations Dashboard. Multiple dashboards were developed for varying user levels with an executive dashboard that tracked construction progress across administrative districts and contracts. A public facing dashboard was developed to track the count of replacements and was embedded on the SquareSpace outreach portal.

- **Technology Lead, LSLR Program, Trenton, NJ.** Mark led the development and implementation of technology solutions to manage TWW's LSLR program. He leverages several technology solutions, including SquareSpace for the public outreach component, Esri's ArcGIS Online platform for collection and maintenance of spatial data, and e-Builder for construction oversight. These systems were integrated into a seamless environment using custom scripts and scheduled processes.

- **Inventory Lead, Lead and Copper Compliance Services, New Haven, CT.** Mark led the development of the service line materials inventory, including the database design and materials investigation. He leveraged various data sources from public sources and within South Central Connecticut Regional Water Authority, including SAP and historic workorder management, parcel data, scanned tap cards, and plumbing records. The primary objective was to reduce the number of unknown service materials using digital records before moving onto the second phase that involves in-situ investigation.

- **Data Visualization Lead, Naval Facilities Engineering Services Command (NAVFAC) Utility Metrics Dashboards, Worldwide.** Mark led the development of data visualizations in Tableau to support the view and interpretation of 30 established metrics for NAVFAC. The dashboards were part of a pilot project to prove the benefit of using Tableau as a Business Intelligence software platform for monitoring progress across the command. He leveraged multiple data sources to blend the data for use in Tableau workbook that provides a single dashboard to view the monthly metrics most important to the command.

- **Data Visualization Specialist, Climate Change Planning Study, Hampton Roads, VA.** For the Hampton Roads Sanitation District, Mark led the development of a dynamic reporting tool for the vulnerability assessment using Microsoft PowerBI. The report depicts each asset, it's associated annualized risk and mitigation measures. The user can dynamically update the timing of the mitigation measures and evaluate the annualized risk and the associated capital costs with performing the mitigation measure.



Education: MPS, Geographic Information Technology; BS, Geography

Certification: Geographic Information Systems Professional, (GISP); Esri ArcGIS Desktop Professional; Certified Technology Business Management Executive (CTBME)

"Compiling and organizing data is a tedious process, but in the long run, it saves more money, time, and resources than physically verifying unknown service lines."

ANDREW REICKS, GISP

Material Inventory/Data Tracking

Drew has six years of experience as a geospatial data scientist. His experience includes analysis of geospatial data; tool, process, and staff development; remote sensing; stakeholder engagement; and project management. Drew understands complicated processes and automates them by developing customized solutions to improve data processing efficiency. His technical skills include Esri's ArcGIS Suite, including Drone2Map, ArcScene, and ArcPro; ERDAS Imagine; Trimble eCognition; as well as Python, which includes Pandas, Numpy, Matplotlib, Seaborn, Scikit-learn, Arcpy, Arcpy geometry objects, and Python add-ins..



Education: Masters of Geographic Information Science; BA, International Studies

Certification: Geographic Information Systems Professional, (GISP)

- **GIS Analyst, Water Main Prioritization, Wilmette, IL.** Drew used a suite of tools developed by CDM Smith to calculate the risk of water mains experiencing a failure. The suite of tools includes processes for scoring assets based on proximity, attribute information, including material and diameter groups, and spatial density of features along the asset, such as break density. The suite also includes tools for weighing the factors, calculating total risk, and visualizing the results using maps and charts. The tools are flexible and repeatable using an open database design and extensible markup language (xml) settings and include several intermediate graphic outputs for reviewing the calculations.
- **Tools and Technology Leader, Federal Emergency Management Agency (FEMA) Risk MAP Program.** Drew serves as the tools and technology leader for CDM Smith's FEMA Risk MAP Program. He supports the development and maintenance of the Risk MAP Program Data Management Plan and Data Usage Plan and enforces compliance with those plans, ensuring data privacy and cybersecurity requirements are met. Drew is responsible for the management of program tools, including GIS, engineering, and program specific tools.
- **Project Manager, FEMA Risk MAP Program.** Drew managed a Hydrologic Unit Code-8 (HUC-8) watershed study in Region I, starting with hydraulics finishing with preliminary issuance of seven counties covering three states. He coordinated with a different mapping partner to ensure proper incorporation of study information from two separate HUC-8 studies that were at different stages of production.
- **Remote Sensing Analyst, Fort Pulaski National Monument Unmanned Aerial Vehicle (UAV) Study, Savannah, GA.** Drew was responsible for processing and analyzing multispectral UAV data using structure from motion. Multispectral data was processed along with survey data using ArcGIS Drone2Map. Structure from motion was used to create elevation models to estimate spartina stem heights and evaluate temporal vegetation and soil change. Multispectral data was then used to calculate fractional vegetation coverage (FVC) to estimate spartina density. The results of these analyses are being used to monitor and help mitigate coastal soil erosion.
- **GIS Developer, FEMA Floodplain Mapping.** Drew leads a team that maintains and develops custom floodplain mapping tools to assist in the data development, production, and review of FEMA Flood Insurance Rate Maps (FIRM). Built on the ArcGIS Platform using Python and arcpy geometry objects, these tools ensure uniformity and have increased efficiency and quality. Drew is also responsible for training staff on the use of these tools and helping trouble shoot user issues.
- **Application Developer and GIS Analyst, Virginia Department of Transportation (VDOT) Office of Intermodal Planning and Investment (OIPI), Richmond, VA.** Drew helped develop a transportation needs dataset using ArcGIS Pro, and ArcGIS Desktop with guidance from OIPI. The base of the dataset was a linear referencing system originally created by VDOT that was then overlaid with transportation needs information created by CDM Smith. Needs data was based on demographics, vulnerability, economic, and infrastructure data. The data was then pushed into a website to help users query and view the needs dataset within the state of Virginia.
- **GIS Developer, FEMA Flood Risk Products.** Drew created a toolset to aid in the creation of FEMA Flood Risk Products. This toolset, created using Python in the ArcGIS environment, has saved 40 hours (on average) per flood risk study.

MELODY CARVAJAL

Public Outreach

With more than 25 years of professional experience, Melody has received accolades from stakeholders, clients, and agencies for her unique abilities in conflict resolution, successfully producing positive outcomes for her clients in the area of public outreach, real estate acquisition, cemetery consulting, and cultural brokering. She has conducted mediation sessions to provide effective change in communities due to agency or client projects. Melody has held a myriad of management positions and has helped a diverse client base, frequently handling very sensitive and confidential matters. She has the proven ability to combine extreme dedication and passion with a strong personal work ethic and strives to increase client and employee satisfaction. She is also fluent in English and Spanish.



- **Community Development Block Grant (CDBG) Application Reviewer and Public Outreach, City of Chicago Equity LSLR Program, Chicago, IL.** Melody serves as the CDBG Application Lead Reviewer, interacting with property owners, assisting them with the application process, and ensuring program compliance. She supports the City with program outreach and educating residents on the benefits of the Equity Lead Service Line Replacement Program.
- **Real Estate Analyst/Lead Negotiator, West Group Easement Acquisition, Central Lake County Joint Action Water Agency (CLCJAWA), Lake Bluff, IL.** Melody serves as the lead land acquisition negotiator for the agency, assisting with public outreach and legal notification to impacted property owners. She reviews title commitments, plats, and legals for acquisition packages. She prepares offer letters, easement agreement documents, and construction condition terms. Melody negotiates the required easements for installation of water transmission lines to applicable communities with the majority of property owners accepting the original offer values within time and budget and avoiding lengthy litigation and cost impacts. She coordinates with the client to develop internal processes for document signatures, file storage, and recording.
- **Relocation Monitor, CDBG, Cook County, IL.** Melody monitors and consults on project related aspects of the Uniform Relocation Assistance (URA) and Real Properties Acquisition Policies Act of 1970 for Cook County. She developed a custom relocation plan (RAMP) for 99 low-income households. Melody mentors onsite relocation staff assisting with residential surveys, holds individual meetings with impacted households to assess their current housing situation, and coordinates and attends public hearings. She drafts applicable public notices and coordinates with onsite property management, developers, construction teams, and county officials.
- **Public Outreach Lead, I-80 Environmental Justice, PTB 176-03 WO-11-13 and WO 16, PTB 196-19 WO 1, IDOT District 1.** Melody serves as lead public outreach specialist, leveraging community leaders, political representatives, non-profit organizations, local religious leaders, and key city personnel seeking support and guidance for enhancing community input. She coordinates and hosts virtual meetings with each identified stakeholder/community partner group, as well as community members at their request. She reviews and outlines general acquisition and relocation benefits as per the Urban Rural Authority (URA) to potentially impacted property owners and tenants during on the ground community meetings and open office hours. She fields and manages all incoming calls, emails, and questionnaire responses from property owners and affected community members. Melody has helped mitigate vetting for the environmental justice community and supported the community outreach plan, questionnaire, and other outreach materials.
- **Public Outreach Liaison Lead, Red Line Extension (RLE) Environmental Impact Statement (EIS), Chicago, IL.** Melody led the outreach team during the initial phase of the project. She reviewed and outlined general acquisition and relocation benefits (as per the URA) to potentially impacted property owners and tenants during door to door outreach. She fielded and managed incoming calls from property owners and attended public meetings responding to URA questions and concerns in both English and Spanish.

Education: Hotel Management

Registration: State of Illinois Notary

Certification: Illinois Broker
Pre-Licensing Course ; Licensed
Cemetery Manager, Illinois; Residential
Relocation Assistance, Course work,
International Right of Way Association
(URA)

JACQUELYN MURDOCK

Public Outreach

Jacki is a transportation planner with experience in federal, state, and regional planning conducting long-range plans, economic analysis, freight plans and priorities, project evaluation and performance management, and stakeholder engagement. Her experience includes developing transportation policy, identifying funding priorities, developing performance measures, transportation project evaluation and prioritization, and leading public involvement efforts.



Education: MA, Urban Planning,
(Transportation Policy and Planning);
BA, Environmental Policy and Latin
American Studies

- **Lead Planner, Long-Range Transportation Plan, DuPage County, IL.** CDM Smith is preparing DuPage County's first long-range transportation plan. The project includes extensive stakeholder involvement, an update to the County's travel demand model, extensive analysis of maintenance and rehabilitation needs and policies, and a detailed financial plan, in addition to the capital improvement plan. The plan will be fully compliant with MAP-21. CDM Smith is also helping to update the County's Road Improvement Impact Fee Ordinance. Jacki has been leading the transportation planning elements of this project since joining CDM Smith.
- **Deputy Project Manager, Joliet Intermodal Master Plan, Will County, IL.** CDM Smith is completing a transportation master plan to identify transportation improvements in the Elwood/Joliet cluster area that can accommodate the current level of commerce and for future forecasted development. The team will perform outreach and engagement, develop land use scenario analysis, perform travel demand modeling and traffic impact analysis, identify project improvements and sequencing, and identify funding opportunities.
- **Lead Planner, Community Friendly Freight Mobility Plan, Will County, IL.** CDM Smith is completing an extensive analysis of freight movements in suburban Will County, home of the nation's largest inland port. The study includes extensive stakeholder engagement within the freight and distribution industry, community input, and extensive analytics using shipping datasets. Additionally, the study's workforce component will identify training needs and opportunities to assist employers in identifying needed staffing for this growing industry. Since joining CDM Smith, Jacki has been leading the transportation planning elements of this project.
- **Transportation Planner/Task Lead, US 67 Corridor Master Plan, El Paso and Odessa Districts, TX.** For the Texas Department of Transportation, Jacki is leading the public engagement and policy for the US 67 Corridor Master Plan. The US 67 corridor is a 142-mile long stretch of US 67 from I-10 near Fort Stockton to the Presidio/Ojinaga Port of Entry on the Mexican border. It provides access to the towns of Marfa, Alpine, and Presidio, as well as Big Bend National Park, the Marfa Lights, and other West Texas attractions. Although the corridor is rural, it has experienced traffic growth driven by many factors, including international commerce and Permian Basin oil field development. A key task of the Corridor Master Plan will be to analyze current and future transportation and economic impacts, and assess options for accommodating the expected growth while preserving regional quality of life.
- **Lead Transportation Planner, Eastside Transit Corridor Phase 2 Transit Oriented Communities Assessment, LA Metro, Los Angeles, CA.** CDM Smith is leading LA Metro's NEPA alternatives analysis and final EIR (CEQA) for the new 10-mile, \$3.5B Eastside Metro rail expansion project. This will extend the Gold Line from the Atlantic Station east. Jacki led the development of the Transit Oriented Community criteria and First/Last Mile (criteria specific to the corridor and station areas). The tasks include working with LA Metro staff and other agency stakeholders (LA County, City of Los Angeles, and other communities) to develop criteria that reflect the current scoring of station locations for transit connections/access, land use/development, transit dependency, and other social factors. This also included developing GIS screening tools that included alternatives ridership analysis, local demographic data, and existing/projected community development.

DIANE THOUNE, PE

Public Outreach

Diane has experience in the design of a wide variety of projects. She understands that real solutions come from understanding the client's needs. Whether the goal is to increase capacity, maintain compliance, or achieve energy efficiencies, Diane works closely with her clients throughout the design process to ensure that comprehensive and efficient solutions are achieved for the long term.

As a senior level design engineer, Diane is responsible for taking her projects from kickoff through construction completion. She is extremely adept at designing and managing treatment plant upgrades, wastewater lift stations, drinking water booster stations, water storage tanks, needs assessment/impact fee studies, water system models, and facilities plans. Diane stays involved throughout project construction to ensure a quality project delivery start to finish.

- Wausau Waterworks Drinking Water RRA/ERP, Wausau, WI
- Future Capacity and Water Quality Study, Kronenwetter, WI
- 72nd Avenue Lift Station Building, Wausau, WI
- 72nd Avenue Lift Stations Design and Construction, Wausau, WI
- I/I and Interceptor Sewer Rehabilitation Study, Wausau, WI
- Industrial Park Lift Station Pump Addition, Wausau, WI
- Industrial Park Lift Station Construction, Wausau, WI
- Industrial Park Lift Station Upgrades Forcemain Cleaning, Wausau, WI
- Stewart Avenue Force Main and Interceptor Sewer, Wausau, WI
- Sanitary Sewer Master Plan Update, Weston, WI
- Apache Lane Utilities and River Crossing Design and Construction Services, Weston, WI
- Cleveland and 72nd Avenue Lift Stations, Wausau, WI



Education: BS, Environmental Engineering

Registration: PE: WI, IL; Certified Municipal Water Operator: WI

JOSEPH RIDGE

Funding/Financing

Joe is an economist with extensive experience in assessing the fiscal and economic impacts of capital projects for municipal governments and authorities. He has 42 years of experience helping clients assess and implement programs to improve competitiveness and determine the financial feasibility and economic impact of proposed projects. Joe has developed financing plans, assessed financial capability, and conducted financial feasibility and marketing analyses for more than 80 projects. These studies frequently require the creation, evaluation, and implementation of inter-municipal agreements to support and secure financing packages.



Education: MCRP, Public Finance; BA, Economics

- **Task Manager, CleanWater 2020 Program Management, Columbia, SC.** CDM Smith is leading a team of locally-based firms to support the City of Columbia with its CleanWater 2020 Program (CW2020), assisting with program cost, schedule, and scope control. As program manager, our assignment is to provide an extension of City staff to the existing utility management team and to assist in the planning and design coordination of all new facilities. Joe is serving as the task manager for the development of the required financial plan that will guide rate setting and borrowing schedules for the program over the next 10 years.
- **Financial Consultant, Financial Feasibility and Financing Studies, Multiple Locations.** Joe has prepared financial and engineering feasibility studies for the City of New Bedford, Massachusetts; Boston Water and Sewer Commission (BWSC); Bristol County Water Authority, Rhode Island; Kent County Water Authority, Rhode Island; New England Solid Waste Commission, Massachusetts; Wichita, Kansas; and Jet-A-Way waste disposal in Massachusetts.
- **Financial Planner, Planning and Affordability Studies, Multiple Locations.** Joe has prepared financial planning studies for communities developing traditional water and sewer master plans as well as communities undertaking mandated combined sewer overflow (CSO) and wastewater improvement programs. He has recently completed such work for the Hartford MDC, CT, Manchester, NH, Environmental Protection Division, Taunton, MA, Stillwater, OK, and for the state of Mississippi looking at Gulf Coast reconstruction. He has also developed such plans for Indianapolis, IN; Knoxville, KY; as well as Newport and East Providence, RI, Brockton, MA, and Portland, ME. Other clients have included New Bedford, Lynn Water and Sewer Commission, and Plymouth, MA; Manchester and Nashua, NH; Austin, TX; and Onondaga County, NY. The purpose of these assignments has been to project long-term rates given a proposed capital improvement program and to evaluate alternatives for achieving the same results in a more cost-effective, politically sensitive manner. These studies have evaluated the burden of the proposed program on residential and business customers along with the economic impacts, and recommended an affordable schedule. These studies have been used to negotiate consent decree schedules and financial assistance packages with various regulatory agencies.
- **Financial Analysis, Alternative Grant and Loan Programs, Multiple Locations.** Joe determined the impact of alternative grant and loan programs on the ability of several New England communities to successfully undertake major wastewater projects, including Lynn, New Bedford, and Boston, MA and West Warwick, RI. For these projects, he assessed the impact on the tax structure, user fee rate structure, and bond rating of alternative State Revolving Loan fund subsidy levels. He has assisted New Bedford, Lynn, the South Essex Sewerage District, Boston, and Newburyport, MA; Manchester and Nashua, NH, and Onondaga County, NY receive SRF loans.
- **Task Manager, Program Management Services for CSO Abatement Program, Onondaga County, NY.** CDM Smith and another firm provided program and project management services for the \$650M Onondaga Lake improvement project. CDM Smith acted as the program manager for approximately \$360M invested in wastewater treatment plant upgrades and "gray" CSO abatement projects, resulting in significant and measurable improvements to water quality. Joe managed development of an initial financial plan for the overall project and helped the County negotiate with USEPA and the New York State Department of Environmental Conservation (DEC) on what the County program would include and the implementation schedule. Those negotiations also included negotiations with the Governor's office, DEC, and USEPA on funding support that resulted in the County obtaining nearly \$400M in grants and other financial support.



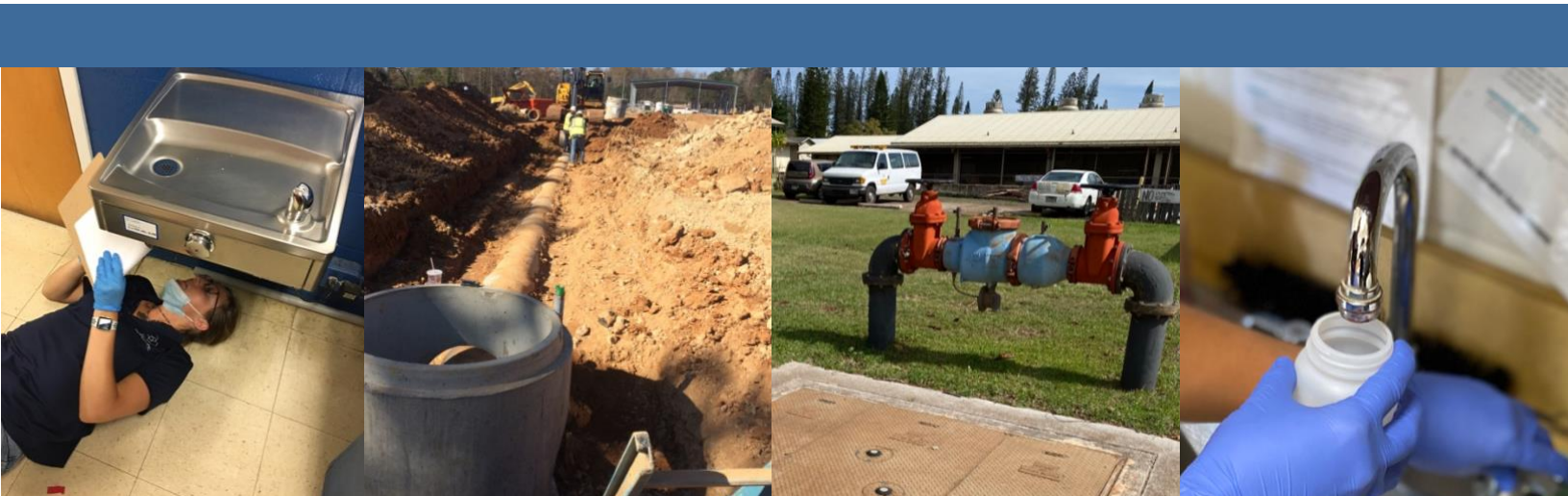
Proposal in Response to:

Preparing a Lead Service Line Replacement Program Meeting WDNR Requirements



Prepared For:
City of Wausau – Engineering
City Hall
407 Grant St Wausau, WI 54403

Due:
September 27nd, 2021, at 2PM CDT



September 24, 2021

Attn: Mr. Eric Lindman, P.E.
eric.lindman@ci.wausau.wi.us

Dear Mr. Lindman,

Thank you for considering TruePani as a potential contractor for developing the LSL Replacement Plan in collaboration with the City of Wausau Engineering and Wausau Waterworks. It is my pleasure to submit the following response on behalf of the passionate engineering and communications team at TruePani, Inc.

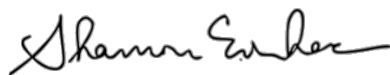
Over the past four years, TruePani has completed projects similar in scope and scale, while growing our team and expertise in detecting and remediating lead and other drinking water contaminants, the 3Ts program, Lead and Copper Rule Revisions, sample collection and analysis, and project management through customized cloud-based database and software solutions. We look forward to the opportunity to collaborate with Wausau to deploy TruePani's robust strategy which will meet the following objectives:

- Create a WDNR approved Lead Service Line (LSL) Replacement Program
- Develop a strategy (including communications and funding mechanisms) to equalize demand from homeowners for replacement with supply of available workers to complete replacement
- Assess current LSL inventory and identify areas where unknown service lines exist
- Create a prioritization strategy for replacing roughly 8,000 LSLs over the next 15 years
- Equip Wausau Waterworks and the City of Wausau engineering with tools to streamline data and program management

Included in this package, please find our technical approach, statement of qualifications, past project examples for your reference. Please do not hesitate to reach out at any time with questions or clarifications.

Thank you for your time and consideration.

Best Regards,



Shannon Evanchec, Project Manager, TruePani Inc.
(724) 584-7192
shannon@truepani.com
220 W. Jackson Ave Suite 405
Knoxville TN, 37902

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A. TECHNICAL APPROACH

I. Approach to LSL Plan Preparation

TruePani, Inc. (“TruePani”) is an environmental engineering and communications firm specialized in providing comprehensive consulting services related to air and drinking water quality for governmental clients, non-profit organizations, public school districts, private schools, and commercial businesses nationwide.

TruePani has a strong reputation for providing cost-effective solutions to challenging environmental problems and contributing to the community through outreach and educational events centered around environmental/public health issues. Over 70% of TruePani’s project portfolio is directly related to reducing lead in drinking water.

TruePani’s technical approach to preparing a Lead Service Line (LSL) Replacement Program meeting WDNR requirements focuses on developing a robust plan that will:

- Equip the City with tools, systems, and software to complete LSL inventory and track data
- Maximize homeowner participation to increase LSL replacement rate and identify unknown LSLs through engaging communication methods
- Outline funding mechanisms to speed up the replacement rate
- Increase reliability and quality of plumbing work through revising contractor agreements or developing a plumbing unit within Wausau Waterworks

TruePani will complete this project on time and within budget through:

- Assessing best practices from previous LSL replacement programs nationwide
- Understanding the current operations, challenges, and successes from Wausau Waterworks employees and homeowners in the City of Wausau
- Leveraging TruePani staff’s existing expertise as it relates to lead in drinking water

Upon notice of award, the TruePani Project Team (“Project Team”, see Section VI.A.) will spend 2 – 3 weeks conducting a literature review of best practices from LSL replacement programs of similar scope and scale nationwide, as well as external resources from community and industry organizations such as the Lead Service Line Replacement Collaborative.¹

With many Wisconsin cities taking proactive steps towards full LSL replacement, TruePani will analyze both publicly available resources as well as initiate discussions with utility contacts at Resource Communities across the state.²

This review will allow Wausau Waterworks to leverage best practices, while also understanding challenges that similar cities have faced with LSL replacement programs. TruePani’s LSL plan will build upon established best practices, while remaining unique to Wausau. It is TruePani’s goal for the City of Wausau’s LSL Replacement program to ultimately serve as a resource for

¹ LSLRC: <https://www.lslr-collaborative.org/>

² WI DNR Resource Communities for LSL Replacement: <https://dnr.wi.gov/Aid/documents/EIF/LSLresourceCommunities.pdf>

other cities as LSL inventory and replacement become required with the proposed Lead and Copper Rule Revisions (LCRR).

1. Communication and Public Outreach Plan

To address Wausau Waterwork's concern of a low response rate from homeowners, TruePani will utilize the records of the most recent LSL replacements to learn how past replacement programs were received by individuals. The Project Team will then survey and/or hold focus groups with homeowners that have not yet completed LSL replacement to gain information on the low response rate. TruePani will also implement feedback from customer service professionals at Wausau Waterworks that have interfaced with homeowners during prior LSL replacements.

The external communications component of the LSL Replacement Program will include developing compelling messages to target audiences. Target audiences will be determined through analysis of the current inventory data. The outreach plan will include channels to reach and deliver the communications messages.

In addition to the external communications and outreach plan, TruePani will include an internal plan for the communications team within Wausau Waterworks to execute the external outreach plan.

2. Ordinances and Legislation Recommendations and Requirements

TruePani will work with the City to determine if an ordinance mandating homeowners replace privately-owned LSLs would be feasible and effective to achieve the stated program outcomes. In developing this area of the LSL Replacement Plan, leveraging the inputs of the Resource Communities throughout the State would be essential.

3. Inventory Development Plan

TruePani will conduct an initial review of the available data from Wausau Waterworks and relevant state agencies. This includes, but is not limited to, parcel information, tap cards, service line installations, plumbing permits, build dates, and the locations of the completed LSL replacements. Upon review of the information, TruePani will determine the appropriate course of action for preparing the LSL inventory and outline the strategy in the Inventory Development Plan.

The final deliverable will be the Inventory Development Plan, which outlines the approach for verification and validation of the inventory data and provides tangible and practical next steps for completing a full inventory.

4. Plan for Identifying Unknown Service Lines

After an initial review of the available data, TruePani will determine whether the percentage of unknown service lines warrants the use of predictive modeling. A limited dataset would issue a high number of unknowns, which would be best suited for a predictive modeling approach in which machine learning is used to identify areas with the greatest probability of having a lead service line. Because there are locations of known and replaced lead service lines in Wausau, predictive modeling is a viable approach in a situation with many unknowns. (If there were no

known lead service lines, the predictive modeling algorithms would not be able to identify LSLs, as all inputs would essentially be zeros.)

In the case of an ample initial dataset, TruePani recommends a more manual approach to identifying unknowns, such as water meter inspections, testing, and crowdsourcing information using effective communications.

5. Potential Funding Options

TruePani will assess Wausau Waterwork's current funding mechanisms for private LSL replacement and explore/outline a variety of funding options within the LSL Replacement Plan. Examples of funding options would include resources available through WDNR:

- Public Service Commission (PSC) Lead Service Line (LSL) Replacement³
- Wisconsin DNR Safe Drinking Water Loan Program (SDWLP) funding for replacing lead service lines under the control of the municipality⁴
- Wisconsin DNR Private LSL Replacement Program⁵

Other funding options that will be analyzed in the LSL Replacement Plan include:

- H.R. 3684 the "Infrastructure Investment and Jobs Act"
- Ratepayer funding
- EPA Drinking Water State Revolving Loan Fund (SRF)
- EPA Water Infrastructure Finance and Innovation Act (WIFIA)
- USDA Rural Development Fund
- HUD's Community Development Block Grants (CDBG)

6. Priority Areas Within the City for Replacement

TruePani will utilize GIS mapping of census blocks and LMI areas to create a prioritization strategy for LSL replacement. Other data that could be included in this analysis (if available) would be locations of residential child care facilities and households where children under five reside.

7. Process for Design and Bidding / Types of Contracts

Using insights gleaned from the review of best practices in the area and reviews of past LSL replacements in Wausau, TruePani will outline options for the types of contracts and bidding processes that would best suit the needs of the project.

8. Timeline (Commission Would Like a 15-year Replacement Plan)

To replace 8,000 LSLs in fifteen years, over 500 LSL would need to be replaced annually, requiring a budget of \$2.4 million per year; \$36 million over 15 years. It is estimated that six – eight plumbers would be needed full time to complete this work. TruePani will develop a

³ <https://psc.wi.gov/Pages/ForUtilities/Water/Lead-Service-Line.aspx>

⁴ <https://dnr.wisconsin.gov/aid/EIF.html>

⁵ <https://dnr.wisconsin.gov/aid/documents/EIF/privateLSLreplacementFundingProgram.html>

timeline influenced by a strategy to recruit and retain talent within Wausau Waterworks or scoring criteria for procuring professional plumbing services.

To meet this aggressive timeline, supply (workers to replace LSLs) and demand (willingness from homeowners with LSLs) need to match, which underscores the importance of a robust communications plan. Coordinating with neighborhoods to replace multiple LSLs on the same street simultaneously could also speed up replacement and lower costs.

9. Right of Entry Agreements

TruePani will create a right of entry (and replacement) agreement to include in the LSL Replacement Program. The agreement can be implemented through a variety of web-based tools such as ArcGis Survey, or the cloud-based smartsheet-database hybrid system that TruePani has previously implemented for lead testing and compliance programs. The right of entry and replacement agreement would be signed by the property owner. A tenant may sign up for inspection, but only the homeowner can the agreement. The agreement would include the hours that Wausau Waterworks, the City, its Representatives and Contractors can enter the property and the date of replacement. If permit payment is required by the homeowner, the agreement can also serve

10. Program and Data Tracking

TruePani believes that having a streamlined tool to manage and track LSL inventory and replacement (including communications and right of entry agreements) provides a foundation for a successful program.

TruePani will work with Wausau Waterworks to understand the existing tools that are used to track program data. The Project Team has previous experience in setting up and training city and state staff with cloud-based smartsheet-database hybrid systems, which provide a high degree of customizability and automation without complicated onboarding and at a low price point. This tool is further outlined in Section IV.

11. Post Replacement Requirements; Filters/Flushing/Sampling

The plan that is developed for Wausau Waterworks will include a pitcher filter tracking and maintenance system and flushing procedures for the service line and premise plumbing inside the home. The plan will fully comply with proposed LCRR.

TruePani will create a scorecard assessment of various filter suppliers to include in the plan. The five suppliers would be the manufacturers with NSF 53 certification for the reduction of lead in drinking water. Criteria for filter procurement would include price (total cost of ownership), efficacy, and user reviews.

TruePani has an extensive history with developing and managing lead testing programs and could incorporate this into the plan for residential sample collection post LSL replacement. TruePani will obtain a list of WDNR approved labs to include, and the frequency and sample type requirements.

Pitcher filter tracking and sample collection/results could also be monitored through the cloud-based smartsheet-database hybrid systems.

12. Restoration/Paving Plan for Public & Private Side

TruePani will develop a plan for restoring lawns and pavements that are disturbed by the LSL replacement process. The restoration plan will be modeled after other successful LSL replacement projects to ensure that the process is as pain-free for the homeowner as possible. This, in turn, will help to mitigate concerns when homeowners are considering having their lead service line replaced.

II. Timeline and Project Milestones

TruePani is prepared to meet the timeline as outlined in the RFP. The following Gantt chart provides a high-level overview of the project timeline:

<https://app.instagantt.com/shared/s/1199212098266197/latest>

In addition to the scheduled presentations to the Commission, TruePani will establish weekly meetings with the Wausau Waterworks project manager and engineering team overseeing the implementation of the LSL Replacement Plan. The twelve focal points of the LSL Replacement Plan will be distributed for management across the four designated team members within TruePani. All work will be reviewed by principals within the organization. TruePani will develop internal deadlines associated with completing each of the twelve components of the plan.

III. Tools and Ideas for Plan Development and Inventory Completion

The tools and ideas that TruePani would implement for the LSL Replacement Plan are outlined for the twelve components of the LSL Replacement Plan. TruePani will work with Wausau Waterworks from the onset of the project to determine systems to manage various aspects of the program.

On past projects, using existing low-cost solutions that can be modified for specific needs of the utility or state has been highly successful. Licenses for this software are \$120 per user per year, while more overly complex alternatives are more than \$30,000 annually.

If implemented, the cloud-based smartsheet-database hybrid system could provide Wausau Waterworks with a turnkey solution for the following sections of the twelve focal points of the LSL Replacement Plan:

1. Communication and Public Outreach Plan – communications could be automated
6. Priority Areas within the City for Replacement – using GIS data, addresses could be assigned a Prioritization Score and outreach could be tiered within the system
9. Right of Entry Agreements – these agreements could be completed through an online form and easily stored within the database system
10. Program and Data Tracking – locations of completed, pending, and future replacements could be tracked
11. Post Replacement Requirements; Filters/Flushing/Sampling – sample collection status and results could be stored in the system

For inventory completion, TruePani would assess all current data mapped in GIS, and determine if predictive modeling would be the correct approach. TruePani could also add a section to the plan that discusses crowdsourcing to identify the presence of lead service lines

through homeowners following an online survey that would feed into the cloud-based smartsheet-database hybrid system.

Another opportunity is the new Lead Service Line Inventory tool which was recently deployed in ArcGIS.⁶ Hosting LSL inventory and replacement progress on ArcGIS will allow Wausau Waterworks to use existing data to improve transparency among customers.

IV. Required Data and Mapping

The TruePani Project Team would require the information mentioned in the RFP which includes:

- GIS mapping of the distribution system
- Current inventory of lead laterals
- GIS mapping of census blocks and LMI areas
- Records of most recent LSL replacements

In addition to this data, the TruePani team would also request:

- Information about upcoming construction projects where LSL could happen simultaneously (road commissions, sewer projects, etc.)
- Current progress of the water meter change out and inventory program
- A list of project and data management tools that the City utilizes as part of the LSL inventory and replacement program
- Contact information for homeowners to conduct surveys that will inform the communications strategy
- The records of most recent LSL replacements in CSV format, if available
- Information on the permitting process and payment responsibility
- Updates on inventory information as it is gathered over the lifetime of the project

V. Project Meetings and Management

The TruePani Project Team for the work as outlined in the RFP will consist of four individuals:

Shannon Evanchec, Project Manager, Environmental Engineer

The Project Manager will serve as the point of contact for the City and will oversee file sharing, reporting, and sections 4,6,7,8,11 of the twelve focal points of the LSL Replacement Plan. Ms. Evanchec has worked with TruePani for the past five years. Most recently, she served as the Project Manager for the Hawai'i WIIN program and the Nevada WIIN program. She holds a B.S. in Environmental Engineering from Georgia Institute of Technology and a Master of Business Administration with a Supply Chain Concentration from the University of Tennessee.

Samantha Becker, Data Manager, Civil Engineer

The Data Manager will assess the status of GIS mapping and LSL inventory, managing sections 3,4,6,10 and 12 of the twelve focal points of the LSL Replacement Plan. Ms. Becker has

⁶ Lead Service Line Inventory: <https://doc.arcgis.com/en/arcgis-solutions/latest/reference/introduction-to-lead-service-line-inventory.htm>

worked with TruePani for the past five years. Most recently, she oversaw the inventory process for all drinking water fixtures, starting from the backflow preventor/water meter, for 300+ schools and child care facilities across the state of Hawai'i. Ms. Becker holds a B.S. in Civil Engineering from Georgia Institute of Technology and a Master of Public Health degree from the University of Michigan.

Ayako Tischler, Environmental Policy Consultant

The Environmental Policy Consultant will develop sections 2,5, and 9 of the LSL Replacement Plan. Ms. Tischler has worked with TruePani for one year. Recently, she worked with one of the largest residential real estate firms in the southeast to complete water quality consulting including investigating the presence of lead service lines for buildings across three cities. Ms. Tischler holds a B.A. in Economics and a B.S. in Environmental Science from the University of Michigan.

Victoria Jacobs, Communications Specialist

The Communications Specialist will develop sections 1 and 5 of the LSL Replacement Plan. Ms. Jacobs has worked with TruePani for three years. Most recently, she has worked to oversee phone calls and emails to nearly 1,000 schools and child care facilities either to coordinate sample collection visits or to instruct individuals on how to collect water samples for lead testing. Ms. Jacobs holds an A.S in Communication from Georgia Highlands College and a B.A. in Technical Communication from Kennesaw State University.

VI. Cost Proposal

	Description of Task	Qty	Subtotal
1	Misc. Project Management and Meetings		
2	Project Manager, Environmental Engineer	16 \$	1,661.54
3	Data Manager, Civil Engineer	16 \$	1,661.54
4	Environmental Policy Consultant	8 \$	644.23
5	Communications Specialist	8 \$	528.85
6	Travel - Lodging and Per Diem	6 \$	1,080.00
7	Travel - Airfare	6 \$	1,200.00
8	Best Practices Review		
9	Project Manager, Environmental Engineer	15 \$	1,557.69
10	Data Manager, Civil Engineer	5 \$	519.23
11	Environmental Policy Consultant	15 \$	1,207.93
12	Communications Specialist	5 \$	330.53
13	1. Communication and Public Outreach Plan		
14	Project Manager, Environmental Engineer	3 \$	311.54
15	Data Manager, Civil Engineer	3 \$	311.54
16	Environmental Policy Consultant	2 \$	161.06
17	Communications Specialist	16 \$	1,057.69
18	2. Ordinances and Legislation Recommendations and Requirements		
19	Project Manager, Environmental Engineer	1 \$	103.85
20	Data Manager, Civil Engineer	1 \$	103.85
21	Environmental Policy Consultant	35 \$	2,818.51
22	Communications Specialist	2 \$	132.21
23	3. Inventory Development Plan		
24	Project Manager, Environmental Engineer	20 \$	2,076.92
25	Data Manager, Civil Engineer	60 \$	6,230.77
26	Environmental Policy Consultant	2 \$	161.06
27	Communications Specialist	0 \$	-
28	4. Plan for Identifying Unknown Service Lines		
29	Project Manager, Environmental Engineer	25 \$	2,596.15
30	Data Manager, Civil Engineer	25 \$	2,596.15
31	Environmental Policy Consultant	0 \$	-
32	Communications Specialist	0 \$	-
33	5. Potential Funding Options		
34	Project Manager, Environmental Engineer	1 \$	103.85
35	Data Manager, Civil Engineer	1 \$	103.85
36	Environmental Policy Consultant	16 \$	1,288.46
37	Communications Specialist	15 \$	991.59
38	6. Priority Areas within the City for Replacement		
39	Project Manager, Environmental Engineer	18 \$	1,869.23
40	Data Manager, Civil Engineer	18 \$	1,869.23
41	Environmental Policy Consultant	7 \$	563.70
42	Communications Specialist	5 \$	330.53
43	7. Process for Design and Bidding / Types of Contracts		
44	Project Manager, Environmental Engineer	15 \$	1,557.69
45	Data Manager, Civil Engineer	5 \$	519.23
46	Environmental Policy Consultant	5 \$	402.64
47	Communications Specialist	5 \$	330.53
48	8. Timeline, Commission would like a 15-year Replacement Plan		
49	Project Manager, Environmental Engineer	15 \$	1,557.69
50	Data Manager, Civil Engineer	5 \$	519.23
51	Environmental Policy Consultant	5 \$	402.64
52	Communications Specialist	5 \$	330.53
53	9. Right of Entry Agreements		
54	Project Manager, Environmental Engineer	1 \$	103.85
55	Data Manager, Civil Engineer	1 \$	103.85
56	Environmental Policy Consultant	15 \$	1,207.93
57	Communications Specialist	0 \$	-
58	10. Program and Data Tracking		
59	Project Manager, Environmental Engineer	5 \$	519.23
60	Data Manager, Civil Engineer	18 \$	1,869.23
61	Environmental Policy Consultant	0 \$	-
62	Communications Specialist	5 \$	330.53
63	11. Post Replacement Requirements; Filters/Flushing/Sampling		
64	Project Manager, Environmental Engineer	10 \$	1,038.46
65	Data Manager, Civil Engineer	2 \$	207.69
66	Environmental Policy Consultant	0 \$	-
67	Communications Specialist	10 \$	661.06
68	12. Restoration/Paving Plan for Public & Private Side		
69	Project Manager, Environmental Engineer	5 \$	519.23
70	Data Manager, Civil Engineer	10 \$	1,038.46
71	Environmental Policy Consultant	0 \$	-
72	Communications Specialist	0 \$	-
		\$	49,392.98

B. ABOUT TRUEPANI

TruePani, Inc. was established in 2016 by a team of civil and environmental engineers and is headquartered in Knoxville, Tennessee with a satellite office in Burien, Washington. TruePani has developed expertise in several critical areas driven by client's needs, public health, economic and emerging local, state, and federal regulations. TruePani is DBE certified (NAICS 541620 Environmental Consulting Services / NIGP 91843) through the Georgia Department of Transportation (GDOT), the Texas Department of Transportation (TXDOT), the Maine Department of Transportation (MaineDOT), the New York State Department of Transportation (NYSDOT), the State of Washington Office of Minority and Women's Business Enterprises (OMWBE), the Connecticut Department of Transportation (CTDOT), and the California Department of Transportation (Caltrans).

TruePani's mission is to create simple, data driven solutions that reduce environmental exposures in air and water and increase the instances of remediation when compared to traditional approaches. Over the past five years, TruePani has worked with state and local level entities to create customized project solutions tailored to program specifications. TruePani serves state agencies, public school districts, private school districts, and individual facilities by providing project management, site investigations, sample collection, data analysis, communication, reporting, and remediation services to meet state regulations and public health goals, most significantly related to lead in drinking water.

I. Featured Projects

Reducing Lead in Drinking Water

TruePani provides program design, project management, site investigations/inventories, sample collection, data analysis, communication, reporting, and remediation services for state agencies, public school districts, and private schools to help meet state regulations and public health goals related to lead in drinking water.

TruePani is well-versed in both voluntary programs such as the EPA 3Ts, and state and federal current and proposed laws, including the Lead and Copper Rule Revisions. TruePani has participated in various panel discussions and water industry events that have discussed the pros and cons of the 3Ts program and made comments that were incorporated into the revised 3T's in 2018. TruePani maintains a strong network of advisors including individuals who have worked on EPA legislation for laws such as the Safe Drinking Water Act, and the Lead and Copper Rule.

The Hawai'i Department of Health's Safe Drinking Water Branch selected TruePani to conduct lead in drinking water testing, reporting, data management, and project logistics and management for over 300 schools and childcare facilities across the state as part of the State of Hawai'i WIIN Section 2107 Drinking Water Project.

TruePani was responsible for outreach, coordination, and communication of sampling schedules with the designated school and childcare contacts. Participation in the program was voluntary and TruePani maintained a 99% participation rate across all schools and childcare facilities. TruePani personnel also completed inventories of drinking water fixtures at all participating

facilities, which included the coordination and management of data representing thousands of potential sources of lead.

The Nevada Department of Environmental Protection sought the services of TruePani to design and manage their Lead Testing in Childcare Facilities Program with funding from the EPA's WIIN Act 2107 Grant. The scope of Nevada's program includes a fully digital approach, where TruePani guides residential and non-residential child care facilities to visually inspect their service line, collect water samples through a step-by-step training program, and properly flush and use pitcher style filters as remediation tools. All direct outreach is completed with by TruePani personnel, and supplemented by an interactive web portal connected to a smartsheet-hybrid database.

Enrollment in the Nevada Lead Testing Program is conducted by the TruePani Communications Team, which specializes in providing direct one-on-one assistance to schools, childcare facilities, and homeowners.

Construction Management

TruePani team members completed project management for the installation of RCP at a wastewater treatment plant as part of a larger upgrade project to improve plant safety, efficiency, and reliability, which will ultimately allow the facility to handle up to 16 MGD wastewater flows in accordance with state water quality standards. Through strategic phasing, self-performing critical scopes of work, and close coordination with plant operators, the existing facility was kept in continuous operation throughout construction and the overall project schedule was met.

Cleantech Consulting

TruePani has provided cleantech consulting to transit agencies, the Center for Transportation and the Environment, and private alternative fueling infrastructure companies. TruePani has developed long-term relationships in the cleantech space and has repeatedly been hired by clients to work on projects of similar scope. TruePani recently completed a project providing emission-reduction calculations, grant writing, and technical support for a hydrogen infrastructure company competing for State of California funding.

TruePani has worked as a certified DBE subcontractor on federally funded projects through the Federal Transit Administration Low or No Emission (Low-No) program. The Low-No program provides funding to state and local governmental authorities for the purchase or lease of zero-emission and low-emission transit buses as well as acquisition, construction, and leasing of required supporting facilities. As a certified DBE subcontractor, and through previous team experience, TruePani is familiar with federal contracting and contract terms and capable to meet and exceed reporting requirements and deadlines. This also includes continuing to provide follow-up client support over a multi-year contract period after the main scope of work was completed and complying with QAQC plans.

TruePani has worked with multiple transit agency's that have received funding through this program to provide route and rate modeling and simulation for deployments of zero-emission battery electric buses. The scope of these projects included modeling fleets of vehicles ranging from four to 11 battery electric buses using GPS data collected by TruePani engineers during site visits. The modeling software that was utilized was Autonomie, an extension of MATLAB.

TruePani also worked with electric utilities to complete rate modeling for the associated vehicle chargers and presented multiple cases through presentations and reports to the agencies. Transit agencies that TruePani has worked with include:

- Port Arthur Transit (2018) – Port Arthur, TX
- Napa Valley Transit Authority (2018) – Napa, CA
- Greater Bridgeport Transit (2019) – Bridgeport, CT
- COMO Transit (2021) – Columbia, Missouri

C. REFERENCES

Mr. Michael Miyahira, Section Supervisor, Engineering, Safe Drinking Water Branch
(808) 586-4258
michael.miyahira@doh.hawaii.gov
[Project completion: 2021]

Steven Clermont, Senior Managing Consultant Director of Planning and Development Center for Transportation and the Environment
404-606-3498
steve@cte.tv
[Projects completed: 2018-2021]

Steven Brooks, Hydrogen Infrastructure Director Iwatani Corporation of America
941-737-5031
SBrooks@iwatani.com
[Project completed: 2020]

Bill Marshall, Principal Civil Works US
(404) 787-2846 gacivilworks@aol.com
[Project completed: 2018]



TO: Wausau Waterworks Commission

FROM: Eric Lindman, P.E.
Director of Public Works & Utilities

DATE: October 14, 2021

SUBJECT: Dry Biosolids Handling

Staff has worked with Donohue to look at options for handling Dry Biosolids. At this time there are two separate options we are considering for handling the Dried Biosolids.

1. Two Quad Axel Trucks (18CY capacity each) would park in the building and once they are full they would be driven out and either stored onsite or hauled to another location.
2. Two 30-Yard Push Trailers would be parked in the building and once they are full staff or other 3rd party would connect and haul out the trailer.

Currently there are two used Quad Axel trucks available in North Carolina and operators feel this would be a good option in the interim, but we are not sure if this is the permanent method we would use for handling these biosolids. Each truck is \$150k and we do have funding available in our equipment replacement fund.

Donohue has prepared an attached cost and capacity chart for your review. We are unsure of the exact volume/density of the product so time for filling is estimated over a best guess scenario at this time. One of the main issues we want to avoid is having to bring in staff during the night so we want to make sure we have capacity to run the drier through the night.

New quad axel trucks are 12-18 months out and new push trailers are 6-8 months out and then we would need a truck tractor to pull the trailers.

A Summary of the Issues
Dry Biosolids Handling and Hauling
Wausau, Wisconsin

Capital Costs

18-Yard Quad Axle Dump Truck

Trucks	2 x \$150,000
<u>Push Assembly</u>	<u>2 x \$60,000</u>
Total Direct Purchase	\$420,000
<u>Add Heat to Solids Building</u>	<u>\$50,000</u>
Total Capital Cost	\$470,000

30-Yard Push Trailer

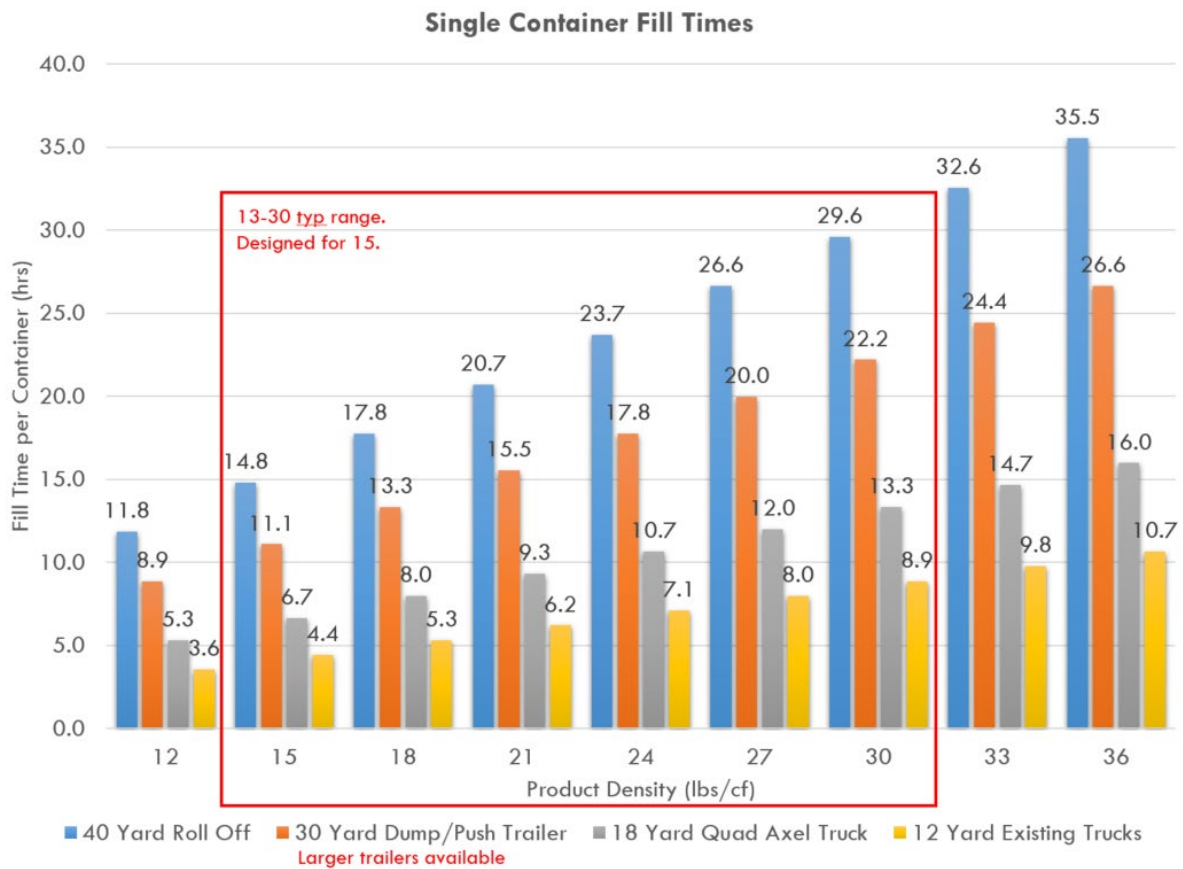
Trailers with Push Assembly	2 x \$110,000
<u>Tractor</u>	<u>1 x \$65,000</u>
Total Direct Purchase	\$285,000

Annual Costs

18-Yard	\$19,000 travel labor (537 trips) + \$36,000 fuel and maintenance	\$55,000
30-Yard	\$11,000 travel labor (322 trips) + \$21,000 fuel and maintenance	\$32,000

Non-Economic Considerations

Fill Time



Push Trailer Benefits

- Eliminates dump-height restriction on site or off site
- Eliminates need to heat loadout area in Structure 770
- Safer and less restrictive unloading

Quad Axle Benefits

- Easier to drive and backup than large trailer
- Potential use beyond biosolids holding and hauling

From: [Howe, Allen](#)
To: [Eric Lindman](#); [Gerbitz, Mike](#)
Cc: [Howe, Allen](#)
Subject: [EXTERNAL] RE: Trucks - class A
Date: Thursday, October 7, 2021 12:27:55 PM

Eric,

The 30-cy push out trailer investigated is 30-ft long tip to tail 30-yd trailer custom made with higher side walls. Standard 30-cy end dumps with curved bottoms are typically a bit longer. I talked directly to J&J Truck Bodies and Trailers who provided a \$110,000 (steel construction) budget quote. Live bottom and Walking Floors are a little more.

I will let you know the concern with push trailers is that low friction material MAY have a tendency to mound in the middle and spill over the sides, one reason we were looking at live bottom or walking floor trailers; \$140,000 (steel) may be a high budget number to consider to cover either of the three options.

Could they make a 40-yd trailer? Yes, budge is about \$160,000 (steel)

Lead time on new trailer is July-August 2022.

Allen F. Howe
Donohue & Associates, Inc.

3311 Weeden Creek Road
Sheboygan, WI 53081
office 920 208 0296
mobile 920 889 9253

From: Eric Lindman <Eric.Lindman@ci.wausau.wi.us>
Sent: Wednesday, October 6, 2021 2:29 PM
To: Gerbitz, Mike <mgerbitz@donohue-associates.com>
Cc: Howe, Allen <ahowe@donohue-associates.com>
Subject: Trucks - class A

Mike,

Purchase of quad axels was discussed at the commission yesterday and will again be discussed at a special meeting on Thursday Oct 14. I will be including the information you provided me for next weeks meeting. I am not convinced the quad axels are the way to go just because we should be looking at maximizing storage capacity. Do you feel your costs are accurate related to the push out trailers and the tractor? Also do you think you could get a cost for a 40yd push out trailer as an option and would it fit in the building? Thank you.

Eric Lindman, P.E.
Director of Public Works & Utilities
City of Wausau

407 Grant St.
Wausau, WI 54403-4783
P: 715-261-6745
C: 715-292-2606

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Biosolids Disposal / Reuse Options			Dry Solids 100%	Wet Cake Landfill 20%	Dry Landfill ADC 92%	Dry Soil Amendment 92%	Dry Landfill Not ADC 92%
Biosolids Quantities	ppd		10,409	52,045	11,314	11,314	11,315
	ppy		3,799,285	18,996,425	4,129,610	4,129,610	4,129,975
	tpy		1,900	9,498	2,065	2,065	2,065
Estimated Bulk Density	lb/cf			63	24	24	24
Volume	cf/yr			301,531	172,067	172,067	172,082
	cy/yr			11,168	6,373	6,373	6,373
Annual Haul Trips - 18 CY Load	cy	18		620	354	354	354
Annual Haul Trips - 30 CY Load	cy	30		372	212	212	212
Cost to Tip at Landfill - Not ADC	\$/ton	\$33.5		\$318,190			\$69,177
Cost to Tip at Landfill - ADC	\$/ton	\$9			\$18,583		
Contract Hauler to Landfill	\$/cy	\$8		\$89,342	\$50,983	\$50,983	\$50,987
Total Cost to Landfill				\$407,533	\$69,566	\$50,983	\$120,164

Notes:

- 1 ADC = alternative daily cover (beneficial reuse at landfill)
- 2 Landfill provided costs for ADC and Not ADC reuse/disposal
- 3 Soil amendment alternative eliminates landfill cost

Contract Hauler Benefits

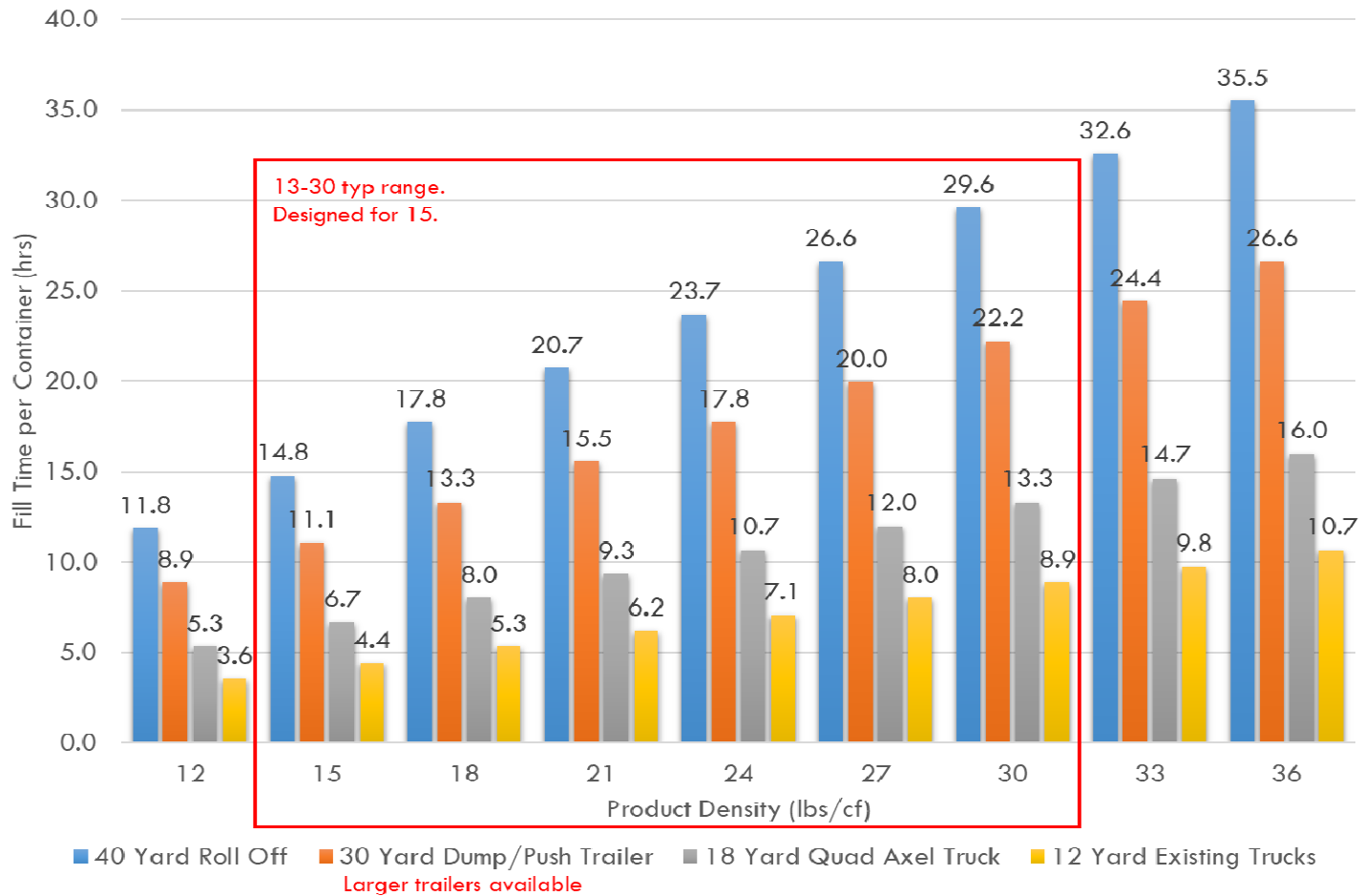
Contractor eliminates material transporting burden from WWTF/City staff.
Contractor provides CDL-licensed drivers. Better driver bench strength.
Contractor maintains hauling vehicles.

Budgetary Trailer Costs		Hours to Fill (24 lbs/cf)	
30 CY Regular Trailer	\$110,000	12 CY	7
30 CY Push or Live Bottom Trailer	\$140,000	18 CY	10
40 CY Push or Live Bottom Trailer	\$160,000	30 CY	17
Used Tractor for Trailers	\$65,000	40 CY	23

Potential Schedule / Near-Term Material Handling Strategy

Start commissioning late 2021. Use contract hauler to haul to landfill. Maybe use RFP to select contractor.
Q1 2022 - Understand material behavior and logistics. Trial containers and vehicles. Define landfill reuse/disposal.
Q2 2022 - Define long-term material handling strategy: contract hauler or order vehicles/trailers.
Q3/4 2022 - Find alternative material outlets.

Single Container Fill Times





TO: Wausau Waterworks Commission

FROM: Eric Lindman, P.E.
Director of Public Works & Utilities

DATE: October 14, 2021

SUBJECT: Proposed RFP - Recruitment/Retention/Market Analysis

The Human Resources Committee discussed recruitment/retention issues throughout the city and laid out some options that would help us with recruitment and assist us with retention. To summarize here are a few of the items discussed (the HR Director's memo is attached with much more detail for your review):

1. Temporarily eliminate Step I&II in the pay scale; essentially starting at Step III (approved by HR Committee) **Staff requests the Commission consider approving**
2. Increase vacation time for new hires and increase flexibility (Approved by HR Committee) **Staff requests the Commission consider approving**
3. **Reduce the time it takes an employee to reach market rate/mid-point (is proposed in the 2022 budget) Staff requests the Commission consider approving**
4. Retention bonus possibility
5. Annually, there is formal consideration for a COLA within the budget process
6. Salary study is currently proposed for implementation in 2024; the study would focus on market analysis and not reclassifications.

I believe for the skilled labor force, item 3 above, will be a significant positive factor in retention of employees and would ask the Commission to consider voting and supporting this proposal for the 2022 budget.

For the next salary study I would ask the Commission to consider supporting reviewing utility wages as stand-alone from the rest of the city, but under the same study. Utility work is unique and it should be reviewed and directly compared to other WI and national utility wages. Currently utility wages are about \$2-\$3 below other utilities, this is just based on a quick review of some other local utilities and review of a compensation survey.

Yrs Exp.	Wausau	Stevens Point	Medford	Kronenwetter	Rural Water 2019
1	\$19.68	\$22.83	\$24.50	\$20.00	
2	\$20.27	\$23.46			
3	\$20.88	\$24.10			
4	\$21.51	\$24.77			
5	\$22.16	\$25.45			
6	\$22.82	\$26.15			
7	\$23.50	\$26.15			
8	\$24.21	\$26.87	\$26.70	\$26.00	
9	\$24.57				
10	\$24.94				
11	\$25.31				
12	\$25.69				
13	\$26.08				27.87
14	\$26.47				
15	\$26.87				
16	\$27.27				
17	\$27.55				

I also reviewed the AWWA 2020 Compensation survey for skilled labor positions, the average starting wage with minimal experience is \$21.26. Based on these numbers I would recommend the utility wages be reviewed and compared directly to other similar sized cities with similar types of utilities.

I would recommend the Commission consider having a staffing study completed in 2022. With the additional regulations and deadlines looming for compliance we are already predicting issues with having the required staff for operations. It would be beneficial to understand staffing levels now and if any increase of staffing levels will be needed so we can begin to plan accordingly. Ideally the study would be completed while we have our engineering firms under contract to help explain the need for estimated man hours of work based on new processes.



HUMAN RESOURCES DEPARTMENT

MEMORANDUM

TO: Human Resources Committee
FROM: Toni Vanderboom, Human Resources Director
DATE: Monday, October 4, 2021
RE: City of Wausau Recruitment and Retention

The current job market is extremely competitive, and Department Directors are concerned with maintaining staffing levels and securing new hires to fill current and upcoming vacancies. Private companies are raising salaries, and most employers are struggling fill vacancies.

Current Staffing/Turnover Status

First, HR investigated the City's current staffing situation.

The City currently has the following positions vacant:

Position	# of Vacancies as of 10/1	Status
City Clerk	1	Final Interviews scheduled for 10/8
Property Appraiser	1	Candidate in pre-employment process
Municipal Court Administrative Assistant II	1	Offer extended to candidate; waiting for decision after candidate meets with department
Police Department Administrative Assistant II	1	Candidate has been selected – need to extend offer.
Economic Development Manager	1	Candidate in pre-employment process
Firefighter/Paramedic	4	2 candidates in pre-employment process (1 should be hired this month), new recruitment has been posted to close 10/31
Bus Operator I	7	Continuous Recruitment
Senior Equipment Services Mechanic	1	Held open by department due to no current employees ready to promote
Equipment Services Mechanic	2	1 candidate will be hired on 10/11, next recruitment closes 10/15
Equipment Operator	2	No recruitment has been conducted to fill – this will be internal promotion.
Street Maintainer	3	Recruitment closes 10/10
Water Plant Operations Technician	1	No hire from last recruitment – will be reposted in October

Wastewater Plant Operations Technician	1	Interviews scheduled week of 10/4
Sewer Maintainer	1	Recruitment closes 10/12

The City has failed to fill its vacancies in the positions of Bus Operator, Firefighter, and Equipment Services Mechanic in 2021. The Community Communications Specialist is creating recruitment videos for these high priority positions to assist in social media recruitment efforts. The videos for firefighter and mechanic are available on the Fire department and City's Facebook pages. Only Equipment Services Mechanic has been eligible for the hiring bonus, as the other two positions are represented by unions.

The City's turnover rate over the last 11 years is:

TURNOVER TOTAL BY YEAR				
YEAR	RETIRED	QUIT	TERMINATED	TOTAL
2010	13	7	2	22
2011	11	3	3	17
2012	12	5	0	17
2013	6	9	1	16
2014	17	11	3	31
2015	16	16	1	33
2016	19	13	4	36
2017	13	10	5	28
2018	7	16	0	24
2019	14	14	2	30
2020	13	19	5	37
2021 (ytd)	8	20	2	31

The City's overall turnover rate increased in 2014, and remained steady since that increase. There hasn't been a significant increase in turnover in 2020 and 2021. However, the lack of a marked increase does not mean that the City would not benefit from an effort to increase employee retention. We have experienced resignations in the double digits since 2014, and the City would benefit from a reduction of that number.

There are two ways to identify positions with the most turnover:

1. Most resignations. The positions with the most resignations in the last five years are Police Officer (10), Street Maintainer (9), Bus Operator (7), Firefighter (6), Administrative Assistant II (5), Property Appraiser (4), and Sewer Maintainer (4). However, these positions are also the most populous, meaning the more individuals in the positions the more likely they are to have higher numbers.
2. Turnover rate. To calculate turnover rate, the number of vacancies is divided by the number of employees in that job title. Under this calculation, the positions with the highest turnover rates in the last five years are City Clerk (200%) and Street Maintainer (113%). One challenge with this method of calculation is that a resignation in a job that has one incumbent will be calculated at 100%, even though that position does not truly experience significant turnover.

If we combine these two methods of calculating turnover, I would identify the following positions as experiencing high turnover in the last 5 years (in no order of importance):

- Street Maintainer
- Property Appraiser
- Bus Operator
- Sewer Maintainer
- City Clerk
- Equipment Services Mechanic

The Human Resources Department conducts exit interviews with all employees who voluntarily resign from City employment. In the last three years (2019-2021), the most common resignation reasons given in the exit interview are:

Relocated: 12
Money/Benefits/Hours: 9
Hired by NCHC, County, CCIT: 8
Environment/Job Fit: 6
Management: 3
Returned to old job: 2
Job Location (found work nearer to home): 2

When considering the reasons listed above, the most common reason is beyond our control or influence (relocation). However, the next most common issues are pay/benefits and culture (environment, job fit and management). We have the opportunity to improve these two areas, which will likely improve the City's overall rate of retention.

Staff Feedback

The Human Resources department conducted a recruitment and retention survey of current staff. The intention was to identify the areas of most import to our employees, so our resources can be focused in that direction for the most impact. Employees were asked the following questions:

Why did you choose your current job?
Why did you leave your last job?
When considering a new job, what is most important to you?
What are the top three issues that cause you to look for a different job?
What do you think the City is currently doing well?
What do you think the City could improve upon?
Do you see yourself working here in a year?
What do you like best about the City of Wausau as a place to live?

Some of the responses were contradictory. For example, the City's benefits and culture were top responses both as something the City is doing well and something that needs to be improved upon. Pay, benefits and management/environment/culture were consistently identified as the items most important to employees.

When considering a new job, what is most important to you?	
Pay	98
Benefit	66
Management/Environment	45

What are the top three issues that cause you to look for a different job?	
Pay	110
Management/Environment	88
Benefit	57

What do you think the City could improve upon?	
Pay	81
Benefits	35
Culture	22

Pay, benefits and culture are wide topics. When discussing pay, employees roughly equally mentioned the pay rate itself (i.e. salary range and comparison to market) and the amount of time it takes to move through the pay scale. When discussing benefits, employees mentioned vacation/time off amounts, flexibility, and insurance costs.

The Human Resources Department has submitted a supplemental budget for a culture survey, which will assist in getting a wider picture of the current culture including areas of success and needed improvement.

The Human Resources Department also spoke to each Department Director about their recruitment and retention needs. Specifically, I asked directors what items they thought were impeding recruitment and retention, and what solutions they would like implemented.

Some Department Directors highlighted the areas that employees also mentioned, including a concern that salaries are too low or not aligned with market, the time it takes to advance through the salary scale, and the lack of a recent or annual cost of living increase. One director identified a need for more training funds; this wasn't a need for an across the board increase, as another department cited generous training funds as a reason for current success.

One department director noted that Council actions and political stress can also have an impact on recruitment and retention. The public discussion on recruitment and retention is likely to be emotional and is certainly critically important to staff. Emotionally laden terms like "the wage they deserve" versus the unemotional term "market wage" can have an impact on employee retention, especially if the City isn't able to afford all the initiatives we might wish.

Current Improvement Efforts

It is important to note that the City has already made significant efforts to improve the employment experience and improve recruitment and retention:

- Hiring bonus up to \$2,000 for difficult to fill positions.
- Able to negotiate starting vacation accrual amounts for high-level and difficult to fill positions.
- Removed waiting period to use vacation and personal holidays and shortened vacation accrual schedule.
- Currently developing recruitment videos for the most-needed positions (Mechanic, Bus Operator and Firefighter). Recruitment videos for other positions and informational videos about each department will follow.
- Added incentives (mechanic incentive up to \$1.90/hour, tool allowance of \$500, Battalion Chief Paramedic incentive of 2%) and increased incentives (boot allowance increased to \$125).
- Revamped Utility Mechanic incentive (redefined to allow more employee participation and increased amount to \$0.75/\$1.50).
- Added holiday (New Year's Eve).
- Tuition reimbursement program funded in 2020 and 2021.
- Increase of shift differential from \$0.45/\$0.60 to \$1.45/\$1.60.
- 2022 recommendation to fully implement wage study.
- 2022 cost of living increase recommendation

Prospective Changes

Insurance costs

One item frequently highlighted in the staff survey was the cost of the City's health insurance. Many employees mentioned dissatisfaction that health insurance is no longer fully funded by the City. However, Act 10 requires employees fund a portion of their insurance costs which makes a fully funded insurance program impossible. The City has the ability to charge a higher portion of insurance costs back to the employee, but has opted not to do that. Beyond this shared funding burden, health insurance costs are driven by the health of our employees and dependents. Healthier employees result in lower insurance costs. The City regularly takes its insurance coverage to market, looking for the most competitive rate for the best coverage. We will continue to evaluate the possible return to self-insured status, which may become possible as expensive members leave the plan.

Paid Time Off Benefits

HOLIDAYS

The City recently increased its number of paid holidays with the addition of New Year's Eve. No negative feedback was received from employees or directors regarding the number of holidays.

VACATION

The City revamped its vacation policy in 2017, removing the waiting period to use vacation time and reducing the amount of time required to advance to 3 weeks' vacation accrual and 4 weeks' vacation accrual. The Human Resources Department consulted with local municipalities of Stevens Point, Marshfield and Wisconsin Rapids, and both Wisconsin Rapids and Marshfield are currently considering adjusting similar changes to their vacation policies.

Possible changes to the City's vacation plan include:

1. Allowing new hires to borrow up to half (1 week for regular FTE) of their vacation allowances in the first six months of hire. New hires would be able to use this vacation accrual and personal holidays immediately after hire, without waiting for the time to accrue. An employee who separates before the time is earned would be required to repay the City for any unaccrued time used.
2. Start employees at 3 weeks of vacation accrual, and adjust the vacation schedule accordingly.
3. Reduce the amount of time for an employee to advance to 3, 4 and 5 weeks of vacation accrual.

PERSONAL HOLIDAYS

As an alternative to increasing vacation time, the Council could consider an increase to personal holidays. Personal holidays do not carry over from year to year, but they also would not be required to be repaid if a new employee separates.

SICK LEAVE

The City offers a generous sick leave policy to employees. Some survey respondents expressed dissatisfaction that sick leave accrues at a faster basis than vacation; however, vacation time increases with seniority and sick leave accrual remains static regardless of seniority. Some respondents preferred a PTO (combined sick leave and vacation time); this would allow employees more time off for vacation, but could leave employees without sufficient balances in the case of an extended medical absence. Generally, a switch to PTO is considered a reduction in benefits. A switch to PTO would also likely trigger a design change to the Post-Employment Health Plan (PEHP) program.

PEHP

This did not come up as either the employee or director feedback, but the City could consider a redesign of the PEHP program:

1. Extend the benefit to new hires.
2. Deposit a set amount into employee accounts, allowing for expanded use of PEHP benefits upon retirement.

Cost of Living Increases

The Employee Handbook instructs the Human Resources Director to consider market adjustments to the salary scales on an annual basis. There is a mistaken impression that this process hasn't been followed.

To correct that misconception:

- In 2017, the Common Council approved a cost of living increase of 2% (employees received a 2% increase and the salary ranges were increased by 2%) and was in the process of selecting a wage study vendor.
- In 2018, the City was in the process of completing the wage study and the Common Council approved a 2% across the board increase.
- In 2019, the wage study was implemented. Employees received a wage study implementation increase as identified by the vendor and funded by the Common Council, and also received a step increase of at least 1.5%.

- In 2020, funding was dedicated to a partial implementation of Option 3 of the wage study. Employees who were identified for an Option 3 increase of the wage study were granted an additional step increase on January 1.
- In 2021, funding was again dedicated to a partial implementation of Option 3 of the wage study. Employees who were identified for an Option 3 increase of the wage study were granted an additional step increase on January 1. The City was concerned about the pandemic's impact on shared revenue from the state.
- In 2022, the Human Resources Committee has approved full implementation of Option 3 of the wage study (this item still needs Finance and Council approval). The working budget also includes a 2% cost of living increase, which would adjust all current employee pay and the salary sales up by 2%.

The Human Resources Department will continue to make annual recommendations in this area, but a public method may help avoid future misconceptions that this task is not being met. These recommendations can continue to be made directly the Finance Department, or they can be made to this Committee, the Finance Committee, or as a supplemental request in every budget process.

Retention Bonus

Unlike a cost of living increase, a lump sum bonus is a non-recurring expense and can be funded by a one-time budget source like the ARPA funds or carryover funds. The City of Wauwatosa approved a lump sum increase for employees of 3%, and the City of Marshfield approved a retention bonus for their Street department after experience a high rate of turnover in that area.

The City can consider either a flat rate bonus, which would have a greater impact on employees in a lower salary scale, or a % bonus under which higher paid employees would receive a larger bonus.

Hiring Bonus

The City has currently approved a hiring bonus of up to \$2,000 for difficult to fill positions. This bonus is currently being reduced by tax (candidates receive a bonus of \$2,000 and then that amount is taxed). This amount could be increased, it could be adjusted so that the employee's take-home amount after taxes is \$2,000, and it could be extended to all/more positions.

Salary Range Adjustments

Perhaps the most common recommended change was consideration of the salary range: increasing salaries and shortening the time it takes employees to advance through the salary scale.

Salary Study

The Common Council has established a 5 year cycle for a full review of market data for all city jobs. The last salary study was implemented in 2019, so according to the established schedule the City will implement the next study in 2024. If this timeline is followed, an RFP for a vendor will be issued in 2022, the study will be completed in 2023, and the adjustments will be implemented in 2024. This timeline gives the City two years to set aside funding for the costs of the study (\$80,000 for the last study) and funding implementation of the study (\$500,000 for full implementation of the last study).

Instead of a full redesign of our salary structure, I recommend the next salary study be focused on a market analysis. Under this plan, the study will compare our positions to the current market, but not redesign which jobs are considered equivalent and exist in the same salary range. (These adjustments

can continue to be made via the reclassification process, although for workflow purposes I recommend establishing a biannual reclassification schedule limiting reclassifications to consideration at the February and August HR Committee meetings.) I would also recommend a custom study, which would allow the City to identify which employers we would like to compare to instead of relying upon published studies, which cannot be adjusted for our specific needs. A custom study will likely result in an increased cost and timeline.

This Committee could consider advancing the timeline for the salary study. This would ensure that the adjustments being made to the salary scales are consistent with current market conditions. However, the timeline for any changes would be impacted (6-12 months minimum should be expected for a realistic timeline for a salary study). The City also hasn't had a chance to build up a funding source, so funding would need to be secured in the 2022 budget or by budget modifications to the current budget. Finally, the Human Resources and Finance staff anticipate being incredibly strained implementing the new ERP system, and adding another large project is unlikely to be realistic at our current staffing levels.

Salary Ranges

The City could also consider adjusting the salary ranges without conducting a salary study. The proposed 2% cost of living increase will adjust the salary ranges and current pay accordingly. The following adjustments can be considered:

1. Shorten the salary ranges.

The current salary range represents a 20-25% range above and below market values. If an employee is hired at the minimum salary, it will take 16-20 years to reach the maximum salary. This timeline accounts for longevity increases, allowing employees to continue to experience pay increases long into their tenure with the City. Employees may be hired anywhere in the salary range, based upon their education and experience; starting salaries above midpoint require mayoral approval. Many departments have expressed an unwillingness to hire employees at a salary above that of current employees, regardless of experience and education.

The City will need to determine whether this adjustment will be made across all salary ranges or only for identified jobs. Making this adjustment across the board will increase the expense for this change, but shortening the salary range for particular positions is likely to have a negative morale impact on the positions that are not adjusted. The Human Resources Department contacted the wage study vendor for guidance on the impact of shortening the time to advance through the salary ranges for selected positions. The vendor responded, "If the City desires to reduce progression time for a section of jobs, we would recommend only decreasing time to midpoint. Essentially, some positions might reach midpoint (fully competent rate) quicker than some other positions in the same range, but they are then held at that midpoint until they reach the time required for the rest of the positions to progress past midpoint." The vendor also noted that if this change is not made across the board, internal inequities may occur and jobs must be selected on a defensible basis to ensure no adverse impact occurs.

2. Establish recruitment steps to hire candidates at an adjusted starting salary.

If the City wishes to address recruitment but not retention, we can establish either permanent or temporary recruitment salaries. These recruitment "steps" could be used to start new employees at a higher rate within the existing salary structures, without adjusting the ranges themselves or current employee salaries.

3. Establish attainment steps.

The recent Fleet Study recommended creating a process that allowed Mechanic positions to advance faster through the salary ranges. The Department of Public Works and the Human Resources Department have been working together with the wage study vendor to meet this goal. The vendor recently recommended, instead of creating separate positions based on job responsibilities and duties, that zones could be established in the salary range for levels of expertise. This same approach could be implemented across the board to all positions, or limited to positions based on need.

Internship/Training Opportunities

As the job market changes, the City may need to adjust its expectations for entry-level positions in particular. Currently, only the positions of Water Maintainer and Bus Operator are willing to accept candidates with no higher education or experience requirements; they accept individuals who are willing to learn and provide the necessary training. As we start to struggle to fill positions, the City may need to pivot and begin hiring candidates for training. For example, since 2020:

- 48 Street Maintainer candidates have been rejected for not holding a CDL
- 45 Sewer Maintainer candidates have been rejected for the same reason.

With a CDL training program and a willingness to hire inexperienced candidates, it is likely that our vacancies in those positions would be filled.

The Fire Department is currently investigating the possibility of internship programs with NCTC and Midstate College.

Prioritize Changes

I recommend a multi-pronged approach to addressing the City's recruitment and retention concerns:

- As I mentioned earlier, the Human Resource has included a supplemental request in the 2022 budget for a culture survey. This is the first step in identifying and improving the City's employment culture.
- Increasing the amount of paid time off will aid in both recruitment and retention, and have minimal budget impact depending on the implementation. I have two recommendations in this area:
 - Allow new hires to borrow up to half of their vacation allotment in their first year. This will allow full time new hires to take one week of paid vacation in their first year. An employee who separates before earning the used paid time off will be required to pay the City back for any unaccrued vacation time used.
 - Increase either vacation amounts or paid holidays. Increasing floating holidays should be budget neutral as long as the time off does not incur overtime for coverage, as this time is not eligible to be paid out upon separation, but would apply across the board to all employees. Increasing vacation time accruals will have a fiscal impact as this time is paid out if proper notice is given, but allows the City to target additional time off for employees who have not yet had an opportunity to accrue much vacation time.
- The labor market, especially in the private market, is extremely competitive. An adjustment to the City's pay, whether permanent or temporary, across the board or targeted, should be seriously considered. The Council will need to decide which measures should be implemented

immediately (requiring amendment to the current budget) and which should be considered in the upcoming budget process.

- Staff recommendation for consideration of immediate implementation:
 - Temporarily remove Steps 1 and 2 from the salary scale. This will aid in retention and recruitment. This temporary solution would be reconsidered as part of the 2024 wage study. Any employee currently occupying those steps would be moved to Step 3.
- Staff recommendations for consideration in the 2022 budget process:
 - Allow employees below midpoint to receive two increases annually (every 6 months). This will halve the amount of time employees need to reach midpoint, but also reduce the budgetary impact of the change. This adjustment should aid the City in both recruitment and retention.
 - Establish training and internship programs, and review entry-level positions for removal of education and experience requirements.
 - Grant a lump sum increase to employees who do not receive an increase under the recommendation above. This lump sum increase would not be base building, and because it is a one-time increase a non-recurring budget source could be used to fund this item. This adjustment would aid in retention.
- The City is currently rejecting large number of candidates for lack of experience or training. The City should rethink its hiring practices and establish robust training and development programs. The days when the City had hundreds of candidates with previous experience and education are behind us, and based on current population trends I do not anticipate this to change. With a training program in place, entry level positions could and should be adjusted to allow the hiring of candidates with an interest and willingness to learn, but no previous experience or training.