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SOLUTIONS.

VOLUME 6 | ISSUE 1

SUMMER 2023

COVER STORY:
3-in-1 Solution in Sioux City, Iowa

► PAGE 8



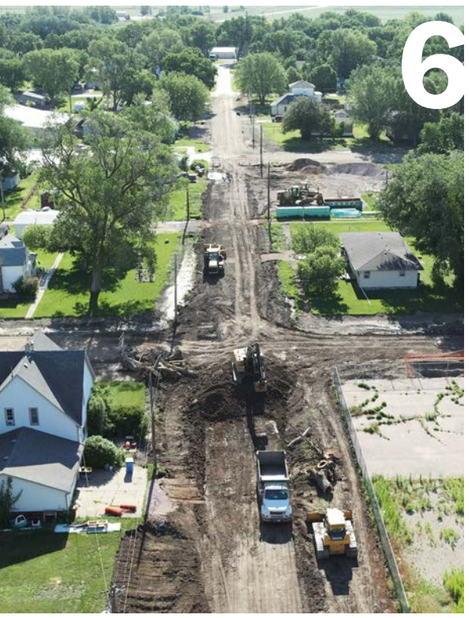
DGR ENGINEERING

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We are growing

Hello and welcome to our mid-Summer issue of *Solutions*!

I recently reached another employment anniversary here at DGR Engineering, the total of which are starting to add up to a relatively-large number. One of the benefits of having a long tenure in an organization, and reaching the age that I have, is being able to watch how our company continually adds younger staff, see them develop and contribute, and observe the positive results from making those additions.

Every Spring, as we add staff who recently have completed their schooling at an engineering or technical school, it seems as if the energy level within the firm increases, as the new team members come on board. As the number of faces shown on page 14 of this magazine attests, this year has been a particularly strong one in terms of moving our company forward. Nearly all our operating departments have grown by adding talented new staff, and we are excited to see what each of them will contribute to the firm.

Along with highlighting the new additions to our team, this issue covers the usual wide range of interesting projects for which our valued clients allow us to become a part. Two of the articles explore civil-oriented infrastructure projects for both a large (City of Sioux City, Iowa), and a small (Town of Chancellor, South Dakota) community. In the case of the Sioux City project, staff in our office there was tasked with coordinating among several project sponsors, and dealing with a challenging site. In the case of the Chancellor project, our Sioux Falls Office staff worked with the community to address multiple aspects of infrastructure over several years. These projects are great examples of the wide range of expertise possessed by DGR Engineering staff.

The other main article provides important information to our drinking water clients in Minnesota, specifically relating to how they can go about meeting the requirements of the U.S. Environmental Protection Agency rule related to lead and copper pipes. As noted in the article, our firm has been granted a master contract by the State of Minnesota to perform this work, and we are already doing so in a number of communities.

Thanks again for your interest in DGR Engineering, and we wish everyone a wonderful and safe remainder of Summer! ■



By Blair Metzger, PE
President



Minnesota Lead
Service Line Inventory

DEADLINE OCTOBER 16, 2024



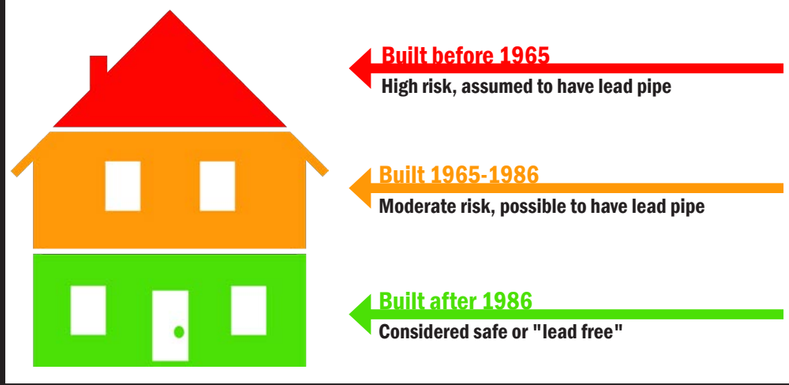
By Jaidyn Elbers, EI

The U.S. Environmental Protection Agency (EPA) announced in December 2021 that the Lead and Copper Rule will be modified in an attempt to improve drinking water quality. Due to this change, the EPA requires that every lead service line (LSL) in the United States and its territories be identified, and eventually removed and replaced. The first step implemented as part of this plan includes identifying the location of each lead service line. Every water system and municipality is required to create an inventory of service line materials by the EPA compliance date of October 16, 2024.

In Minnesota, the Department of Health (MDH) oversees the data collection process and administers the funds available for technical assistance. There are three phases of the MDH lead service line inventory process: review historical data, create a data collection template, and finally, identify service line material. DGR Engineering (DGR) has been granted a master contract by the MDH to provide water systems with technical assistance to perform their lead service line inventories.

The first step of the lead service line inventory is to use historical data and tax records from the county to identify the build year of the home, which will shrink the pool of service lines that need to be identified. Homes built after 1986 are assumed to not have utilized a lead service line, because of the 1986 Safe Drinking Water Act that prohibited the use of lead materials for any new construction or utilities repair. Due to the known possible dangers prior to the lead ban, homes built between 1966 and 1986 are considered moderately at risk, while homes built prior to 1966 are considered high risk. All this information can be found with the city or the county. At-risk homes must be notified of the possible presence of a lead service line in order for additional data collection to occur.

Build Year of Homes Helps Determine Risk Level for Lead



As part of the inventory process, DGR can assist the water system or municipality by creating a Geographical Information System (GIS) for data collection. GIS is a useful tool for not just LSL inventories but also other uses such as the ability to input data directly into the application, upload pictures of the service line, and color code the data for ease of use. Utility billing software can often be used to create unique points for each user to help track inventory progress. Water systems that decide not to use a GIS solution will have the option to enter lead service line data directly into an Excel spreadsheet prepared by the MDH.

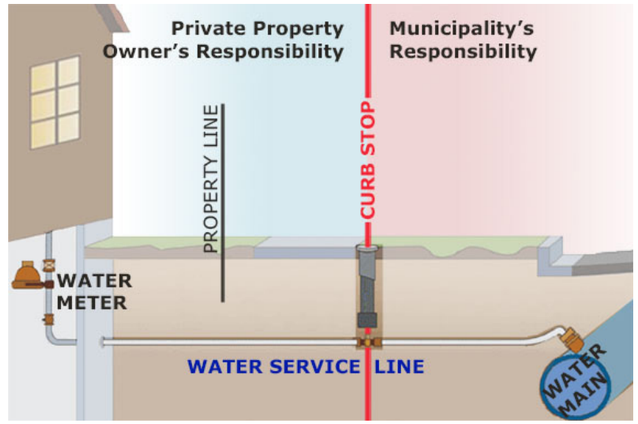
Once a data collection template has been created, DGR can aid the client in collecting data to determine service line material for at-risk homes. Material classification of each service line will fall under one of the following four categories:

1. Lead
2. Non-lead (copper, plastic, etc.)
3. Galvanized (requiring replacement if located previously or currently downstream of lead pipe or pipe of unknown status)
4. Lead status unknown

Identifying the material of service lines can be collected through a multitude of methods. Water systems can collect this data by:

- Water quality sampling for lead
- Visual inspections by trained utility representative
- Camera scopes
- Potholing or excavation
- Customer surveys to self-identify pipe material

It is important to note that service line material may not be consistent from the water main to the user's home. Replacements from the water main to the curb stop fall under the municipality's responsibility, while the section from the curb stop into the home is the owner's responsibility. The figure below shows the public and private portions of a service line transition. Both public and private sides of the service line need to be included in the LSL Inventory.
Once an inventory is complete, it will be sent into the MDH for review and recordkeeping.



Funding

The MDH has established technical assistance funding for consultants to assist communities with their LSL Inventory. Entities can apply for funding and assistance through an MDH application. The first window to submit an application for technical assistance is June 20 - July 20, 2023. The application details the type of assistance being requested and an estimated cost of the work, also referred to as an engagement value. Engagement values under $75,000 will allow the client to choose their own consultant, otherwise the MDH will appoint one for them. For engagement values over $75,000, the client must request price quotations from a minimum of three consultants. ► Continued on Page 11

ADDITIONAL INFORMATION about the Lead and Copper Rule Revisions can be found at epa.gov or by contacting the Minnesota Department of Health.



Small Town, Big Improvements for Town of Chancellor



By Derek Lee, PE
Project Engineer

Beginning in 2019, DGR Engineering (DGR) began working with the Town of Chancellor on a storm sewer, sanitary sewer, and water facilities plan to determine current needs and develop a plan for future infrastructure improvements. The facilities plan was completed in June of 2020, and set the stage for the Town to apply for funding. For Chancellor, with a population of approximately 300, obtaining funding assistance was critical. DGR worked closely with the Town to plan the project phases, timelines, and assist with funding applications to DANR and SDDOT.

The facilities plan looked at the entire sanitary sewer collection and treatment system, the water distribution system, and existing drainage to provide a series of solutions. The Town of Chancellor had experienced overloading at their wastewater lagoons, and as a result were not meeting required discharge limits. A sanitary sewer project, completed in 2016, replaced the sanitary sewer interceptor gravity line out to the main lift station and eliminated a lift station on the east side of town by installing deeper gravity sanitary sewer. Despite these improvements, many of the remaining sanitary sewer mains were Vitrified Clay Pipe (VCP) and were still causing issues. A review of sanitary sewer system digital inspection videos revealed several issues including pipe sags, offset pipe joints, cracks in pipe walls, intruding laterals, and root intrusion that was leading to high inflow and infiltration to the existing system. In addition, a few of the pipe joints were found to be offset by nearly 20% of the cross-sectional pipe area. It was assumed that inflow and infiltration was also occurring in the VCP sanitary services.

FUNDING

Phase 1 Total Project Cost:	**$6,377,000**
DANR Grant/Principle Forgiveness:	$5,069,000
Community Access Grant:	$600,000
SRF Loans:	$708,000
Total Phase 1 project: 88.9% Grant funded	
Phase 2 Total Project Cost:	**$2,700,000**
DANR Grant/Principal Forgiveness:	$2,295,000
SRF Loans:	$405,000
Total Phase 2 Project: 85% Grant funded	
Phase 3 Total Project Cost:	**$2,356,000**
DANR Grant/Principal Forgiveness:	$2,003,100
SRF Loans:	$352,900
Total Phase 3 Project: 85% Grant funded	

Total Project Cost: $11,433,000 - 87.2% Grant funded

With poor drainage and no existing storm sewer system, water collected on roadways and private properties in the community. There was no clear path for a drainage outlet outside of town, and water ponding was common after rainfall events. While some intersections and private property driveways had culverts, culvert sizing was inconsistent and inadequate. Many of the culverts were installed throughout the years to improve a specific area without consideration of the overall drainage.

In the past 15 years, Chancellor completed improvements to the water distribution system to replace four-inch water mains with six-inch water mains and to provide some additional water service looping. Despite the improvements made to replace and add sections of water main to the system, there were still over 16 blocks of four-inch diameter or smaller cast iron pipe. A few streets had no existing water main to complete the looping or redundancy in the system. Previous studies and repairs to the system showed that the cast iron water main had buildup inside the pipe, which further reduced the actual diameter of the pipe.

Throughout the planning process, DGR and the Town of Chancellor worked together to plan an infrastructure improvements project and ultimately, solutions were divided into three project phases which would cover the entire town. Public involvement was a priority, with public meetings held prior to each of the project phases and funding applications. The public meetings engaged feedback from the residents, but more importantly, informed them of the upcoming changes and benefits. Beginning in 2020, Clean Water and Drinking Water State Revolving Funds were secured for the planned Phase 1 project improvements. Phase 1 included Main Street and the west half of the community. The Town of Chancellor received funding which included nearly 89% in grants and principal loan forgiveness.

When designing their Main Street, the Town of Chancellor selected concrete surfacing for the north two blocks, from SD Highway 44 through the business sector. The new road section includes curb and gutter, parking on each side of the street, and sidewalks which meet ADA standards. A Community Access Grant through the SDDOT in the amount of $600,000 was awarded to Chancellor for the reconstruction of this portion of Main Street.

► Continued on Page 12



Project Owner:
Town of Chancellor, SD

Key Features:

- ► Three phase project will make infrastructure improvements throughout the community
- ► Addition of a storm sewer system with new storm water outlet location
- ► Project funding:
  - $600,000 SDDOT Community Access Grant for Main Street
  - Grants and loans through SRF programs
- ► While not every street was fully reconstructed, the improvements will include work being done on each street in town
- ► Multi-phase project, with multiple funding sources
- ► Concrete surfacing on Main Street (north two blocks)
- ► Storm sewer outlet installed with the Phase 1 project will set up drainage for Phase 2 and Phase 3

3-in-1 Solution IN SIOUX CITY, IOWA

Iowa DOT, Siouxland Regional Transit System and SIMPCO Facility Share a Location



By Bryan Wells, PE
Project Manager

The Iowa Department of Transportation (IDOT) was looking to consolidate and update its Sioux City administration and engineering field services into one location. After comparing and considering options, the site chosen was approximately 60 acres located at the northeast quadrant of the Highway 20 and 75 interchange on the east side of Sioux City. The facility includes an administration/office building with materials lab, a maintenance building, a pole/hoop building, parking lots, and other lay down areas.

IDOT decided to proceed in three phases:

Phase I improvements include the administration building, the vast majority of the entire site grading (including necessary storm water detention basins), utilities, and common paved areas within the site including driveways, drive lanes, and office parking lot.

Phase II involves the off-site utilities (lift station, force main and water main, grading and erosion control) improvements.

Phase III improvements include additional site improvements related to the maintenance building, including parking, the pole/hoop building and containment areas. Only minor grading work and utility service extensions from the Phase I installed mains are expected in and around the maintenance building. Gravel/paved areas will be included around the building to accommodate drive-through doors and for nearby parking/storage areas. ►

Project Owner:
State of Iowa

Key Experiences:

- ► Coordinated with two governmental entities sharing a site and each with its own architect
- ► Worked with several utilities
- ► Performed site survey, site design services and limited construction administration
- ► Consolidated/Upgraded facilities for SRTS/SIMPCO

Key Features:

- ► Sanitary lift station
- ► Two detention basins
- ► Consolidation of facilities for IDOT
  - Office space
  - Maintenance facility
  - Cold storage building
  - Outbuildings for maintenance facility





3-in-1 Solution in Sioux City

► Continued from Page 9

At the same time as IDOT was planning its project, Siouxland Interstate Metropolitan Planning Council (SIMPCO) and its division Siouxland Regional Transit System (SRTS) were looking to update and consolidate their facilities. These facilities were added to the project site as well.

The new setup includes an administration/office area and a bus storage facility on approximately six acres of property owned by Iowa DOT at the Highway 20 location. Site improvements for this portion of the project include fine grading, utilities including sanitary sewer, storm sewer, water main, and paved areas within the site including drive lanes and office parking lot.

Challenges

An existing Magellan Midstream Partners gas pipeline runs through the middle of the site. The buildings added in this project were placed to work around the pipeline and its easement. Some of the abandoned pipeline was removed by a separate contract to facilitate grading. Grading, paving, and utility improvements were coordinated with Magellan pipeline engineering staff.

Site grading included moving approximately 500,000 cubic yards of earthwork. Grading on the east portion of the site was prioritized due to the timeline of the district office construction. This was complicated by Magellan restricting the earthwork contractor to one crossing of the easement while agreements were still being finalized with IDOT. Final grading was completed once the contractor Magellan hired for the limited pipeline removal completed their contract.

The site was in Woodbury County jurisdiction prior to the project, with no public utilities. IDOT sought to annex the property to the City of Sioux City and connect to a 24-inch City water transmission main located approximately 1,700 feet away from the site. The water service designed was 12-inch to accommodate three buildings on site and IDOT's brine-making operations during the winter. The site sanitary sewer was connected to a dry City gravity sanitary sewer that had been laid in a previous project 15 years ago. Connection for the site sewer was accomplished by a sanitary lift station on site and 2,800 feet of 4-inch force main, both of which were designed by partnering with DGR Engineering's Electrical Power & Water Services Departments.



The force main outlets to the southeast into a City-owned 8-inch gravity sanitary sewer located in Glenn Ellen Road. The tie-in location is approximately 2,800 linear feet southeast from proposed lift station location. The proposed water main will run along the north side of U.S. Hwy. 20 and tie into the existing City-owned 24-inch water main that runs along the east side of Buchanan Avenue. Design for both the sewer force main and water main will need to accommodate future lowering and reconstruction of U.S. Hwy. 20 by IDOT. ■

Minnesota Lead Service Line Inventory

► Continued from Page 5

Once a consultant has been selected to complete work for a particular community, the MDH will provide the consultant with an “engagement request” that will include a description of the work requested and timeline to complete the work.

The consultant will then respond to the engagement request in the form of a proposed “scope of work” that will include the intended work plan, task breakdown, and fee proposal. Work may begin only after a work order contract between the consultant and MDH has been agreed upon. MDH anticipates that work orders will be issued in August 2023.

Additional information about the Lead and Copper Rule Revisions can be found on the EPA’s website or by contacting the Minnesota Department of Health. ■







Big Improvements for Chancellor

► Continued from Page 7

The Town of Chancellor, along with DGR and the Contractor, were selected as winners of the 2022 Concrete Award of Excellence through the South Dakota Ready Mix Concrete Association, demonstrating quality planning, design, and construction for the work done on Main Street.

The Phase 1 project included the beginning of a new storm sewer system. DGR and the Town of Chancellor worked with adjacent landowners in the southwest and southern portions of town to acquire the needed land and easements for a new storm sewer outlet at the southwest corner of the community.

The storm sewer outlet allowed the storm sewer to be extended across the southern end of town in each of the phases of construction, connecting each of the street's drainage to a larger diameter storm pipe to improve drainage.

With Phase 1 well underway through design and construction, the Town of Chancellor continued to move forward with funding applications to complete Phase 2 and Phase 3. In 2022, the Town was awarded Clean Water and Drinking Water State Revolving Funds for their planned Phase 2 project, which covered the central part of the community. They followed with funding in 2023 for their Phase 3 project and were successful in securing approximately 85% grant and principal loan forgiveness for both Phase 2 and Phase 3 projects.

Each of the project phases includes the replacement of sanitary sewer main and services with PVC pipe, replacement of all sanitary manholes with new concrete manholes, replacement and up-sizing of PVC pipe water main and water services as well as adding additional water services to areas that previously did not have existing water main. All new street surfacing is being placed after the underground improvements. While Main Street included concrete surfacing on the north two blocks, the remaining streets in town will maintain a rural section paved with asphalt surfacing.

The rural section is designed with minor ditches graded along the roadways and culvert replacement at the driveways and intersections to allow the stormwater to flow to the storm sewer system, located at the southern portions of the streets to reduce the stormwater ponding that was occurring in town.

The Phase 1 project was constructed in 2021-2022. The Phase 2 project is under construction with a planned completion in the summer of 2023 and the Phase 3 project, which includes the eastern portion of Town, is planned for construction in 2024. DGR completed the design and plan preparation for all three phases and is providing the construction administration and observation for the construction. The infrastructure investment will significantly improve and benefit the community and all residents. They are looking forward to project completion and many years ahead with reliable infrastructure to support their Town. ■

CONFERENCE / TRADE SHOW /CAREER FAIR SCHEDULE

- **August 21-23**
  Minnesota Municipal Utilities Assoc. Summer Conference and Trade Show
  Duluth, MN mmua.org
- **August 23-25**
  Four-State Airport Conference
  Kansas City, MO
  4statesairportconference.com
- **August 26**
  Luverne Airport Fly-In
  Luverne, MN dot.state.mn.us.com
- **September 12-13**
  Iowa Rural Water Fall Water/Wastewater Conference
  Okoboji, IA iowaruralwater.org
- **September 13**
  Iowa State University Career Fair
  Ames, IA engineering.iastate.edu
- **September 13-15**
  South Dakota Water & Wastewater Annual Conference
  Spearfish, SD sdwwa.org
- **September 20**
  North Dakota State University Career Fair
  Fargo, ND
  career-advising.ndsu.edu
- **September 20**
  South Dakota State University Career Fair
  Brookings, SD sdstate.edu
- **September 20-22**
  Iowa League of Cities Annual Conference
  Cedar Rapids, IA iowaleague.org
- **September 26**
  South Dakota School of Mines & Technology Career Fair
  Rapid City, SD sdsmt.edu
- **September 27-29**
  Minnesota Rural Electric Association Engineers & Operations Conference
  Duluth, MN mrea.org

NEW EMPLOYEES



Alex Andresen, LSIT
Technician
Civil/Survey
Sioux Falls, SD Office



Kolten Bus
Technician
Electrical Power
Rock Rapids, IA Office



Brady Cork, EI
Engineer
Civil/Survey
Sioux Falls, SD Office



Joshua Deines, EI
Engineer
Civil/Survey
Sioux Center, IA Office



Jesse Elgert, EI
Engineer
Civil/Survey
Sioux Falls, SD Office



Aidyn Feldhaus, EI
Engineer
Civil/Survey
Sioux Falls, SD Office



Kaden Frick
Technician
Civil/Survey
Sioux Falls, SD Office



DJ Gonzalez, EI
Engineer
Water Services
Rock Rapids, IA Office



Kade Griesse, EI
Engineer
Electrical Power
Rock Rapids, IA Office



Travis Kielty
Technician
Electrical Power
Rock Rapids, IA Office



Jaxson Kurth
Technician
Electrical Power
Rock Rapids, IA Office



Jarrett Meyer, EI
Engineer
Electrical Power
Rock Rapids, IA Office



Carson Popkes, LSIT
Technician
Civil/Survey
Rock Rapids, IA Office



Nathan Verros, EI
Engineer
Civil/Survey
Sioux City, IA Office



Jaden Wendland, LSIT
Technician
Civil/Survey
Sioux Falls, SD Office



Ryan Wood, PE
Engineer
Civil/Survey
Sioux Falls, SD Office



Sioux Falls Office Summer Interns
Alex Foley, Sam Elliott, Kaylee Updegraff and Justus Poppinga



Rock Rapids Office Summer Interns
(Front row) Reed Frerichs, Cody Kramer, Kalen Meyer.
(Back row) Jadon Poppinga, Luke Rasmussen, Nathan Springer & Caleb Kramer



Sioux City Office Summer Interns
Cody Christensen, Aden Gomez and Nick Wells



Rock Rapids Office Summer Intern
Autumn Bergum, Field Intern working in Montana for the Water Services Department

THREE BECOME LAND SURVEYORS-IN-TRAINING

Alex Andresen



Carson Popkes



Jaden Wendland

Alex Andresen, Carson Popkes and Jaden Wendland recently passed the Fundamentals of Surveying exam and earned the title of Land Surveyor-in-Training (LSIT)!

Alex and Jaden work as engineering technicians in the Sioux Falls office and Carson works as a survey technician in the Rock Rapids office.

ENGINEERING

Rock Rapids & Sioux City, IA
Sioux Falls, SD
800-446-2531

dgr.com

What Is It?

DO YOU KNOW WHAT THIS IS?



This is a Trimble R12 GPS receiver that is used by DGR Engineering survey crews to collect horizontal and vertical measurements. The receiver is mounted on a survey rod and is connected to a wireless data collector to store the measurements. The receiver can track satellites from the GPS, GLONASS, Galileo and Beidou networks. The receiver needs to connect to a minimum of four satellites to calculate its position.

Measurements are made to less than a centimeter precision. DGR Engineering uses GPS receivers for collecting topographical data and property boundary monuments. There are some limitations, such as tree canopies and buildings can block the direct signal line from the satellites. ■