



P.O. Box 352 • 150 S. Bridge St. • Markesan, WI 53946 • P: (920) 398-3031 • F: (920) 398-3991

STREETS, BUILDINGS & UTILITIES COMMITTEE

Markesan City Hall

December 5, 2023

Immediately Following Finance, Personnel & Safety Meeting

AMENDED AGENDA

Call to Order

Roll Call

Citizen's Comments

Public Works Report

- Update on Streets Punch List

Water & Sewer Department Report

- Discussion and Action on Core & Main Invoices for Special Meters: \$500.00 and \$521.63
- Discussion and Action on Constructing of Road for Slug Hauling Bids
- Discussion and Action on Sanitary Survey and Cross Connections

New Business

Review Land Use Permits

Adjournment

A quorum of the Markesan Common Council may be in attendance at this meeting to gather information about a subject over which they have decision making responsibility. Under Wisconsin Open Meeting Law, this may constitute a meeting of the Common Council pursuant to the Badtke Decision, however, the Council will not take action at this meeting.

Any person requiring special assistance to participate in this meeting should contact the Clerk-Treasurer at 398-3031 at least 24 hours prior to the meeting so appropriate accommodations can be made.

Posted: City Hall
ERGO Bank Post Office
www.markesanwi.gov

Dated December 4, 2023
Elizabeth Amend, Clerk-Treasurer

Street Updates as December 1st 2023:

Not much to report on the streets. While picking up leaves we also cleaned storm sewer drains that were plugged by leaves. We also vacuumed the curbs while we were out.

LRIP is complete and submitted at the beginning of November to the County Highway Commissioner. The County Highway Commissioner has until January 1st for submission to the state.

Plowing season is upon us. I have familiarized Jim with routes, where to push excess snow from the downtown. I also had him salt the streets while I rode along.



DUPLICATE
INVOICE

1830 Craig Park Court
St. Louis, MO 63146

Invoice # T952242
 Invoice Date 11/16/23
 Account # 098368
 Sales Rep ALAN KUNZ
 Phone # 608-834-1311
 Branch #233 Sun Prairie, WI
 Total Amount Due \$500.00

Remit To:
 CORE & MAIN LP
 PO BOX 28330
 ST LOUIS, MO 63146

MARKESAN WATER DEPARTMENT
 150 S BRIDGE ST
 PO BOX 352
 MARKESAN WI 53946-0352

Shipped To:
 461 WEST MANCHESTER STREET
 MARKESAN, WI

Thank you for the opportunity to serve you! We appreciate your prompt payment.

Date Ordered	Date Shipped	Customer PO #	Job Name	Job #	Bill of Lading	Shipped Via	Invoice#
11/14/23	11/15/23	5/8 ALLY #1				UPS	T952242

Product Code	Description	Quantity		Price	UM	Extended Price
		Ordered	Shipped			
43V1VPX3XSFD	ALLY 5/8 3TS 1CF SM 6WHL MFG S/N F/MTR ID & CVR V1VPX3XSFD ***** REPROGRAM TO 100 GALLON S/N 95871512	1	1	500.00000	EA	500.00

Freight Delivery Handling Restock Misc

Subtotal: 500.00
 Other: .00
 Tax: .00

Terms: NET 30
 Ordered By: JEFF

Invoice Total: \$500.00

This transaction is governed by and subject to Core & Main's standard terms and conditions, which are incorporated by reference and accepted.
 To review these terms and conditions, please visit: <http://tandc.coreandmain.com/>

RECEIVED NOV 17 2023



DUPLICATE

INVOICE

1830 Craig Park Court
St. Louis, MO 63146

Invoice # T952243
Invoice Date 11/16/23
Account # 098368
Sales Rep ALAN KUNZ
Phone # 608-834-1311
Branch #233 Sun Prairie, WI
Total Amount Due \$521.63

Remit To:
CORE & MAIN LP
PO BOX 28330
ST LOUIS, MO 63146

MARKESAN WATER DEPARTMENT
150 S BRIDGE ST
PO BOX 352
MARKESAN WI 53946-0352

Shipped To:
461 WEST MANCHESTER STREET
MARKESAN, WI

Thank you for the opportunity to serve you! We appreciate your prompt payment.

Date Ordered	Date Shipped	Customer PO #	Job Name	Job #	Bill of Lading	Shipped Via	Invoice#
11/14/23	11/15/23	5/8 ALLY #2				UPS	T952243

Product Code	Description	Quantity		Price	UM	Extended Price
		Ordered	Shipped			
43V1VPX3XSFDD	ALLY 5/8 3TS 1CF SM 6WHL MFG S/N F/MTR ID & CVR V1VPX3XSFDD ***** REPROGRAM TO 100 GALLON S/N 95871513	1	1	500.00000	EA	500.00

Freight Delivery Handling Restock Misc

\$21.63

Terms: NET 30
Ordered By: JEFF

Subtotal: 500.00
Other: 21.63
Tax: .00

Invoice Total: \$521.63

This transaction is governed by and subject to Core & Main's standard terms and conditions, which are incorporated by reference and accepted.
To review these terms and conditions, please visit: <http://tandc.coreandmain.com/>

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
 2984 Shawano Avenue
 Green Bay WI 54313-6727

Tony Evers, Governor
Adam N. Payne, Secretary
 Telephone 608-266-2621
 Toll Free 1-888-936-7463
 TTY Access via relay - 711



December 1, 2023

PWSID #42402184
 Markesan Waterworks-MC
 Green Lake County

Ms. Elizabeth Amend, Clerk-Treasurer
 City of Markesan
 150 S Bridge Street
 Markesan, WI 53946

Subject: 2023 Sanitary Survey Report of the City of Markesan's Drinking Water System and Notice of Non-Compliance

Dear Ms. Amend:

On November 7, 2023, I met with Jeff Heberer to conduct a sanitary survey of your water system, Markesan Waterworks. Also present were Maggi Reid from the Department and Matt Mace from the City. The purpose of a sanitary survey is to evaluate the City's source, facilities, equipment, operation, maintenance, and management as they relate to providing safe drinking water. The sanitary survey is also an opportunity to update the Department's records, provide technical assistance, and identify potential risks that may adversely affect drinking water quality. Because deficiencies were identified, this Sanitary Survey Report also serves as a Notice of Non-Compliance.

At the completion of the survey Mr. Heberer was briefed on the preliminary findings. This report outlines the final findings, discusses problems that need to be addressed, and timelines for corrective action where appropriate.

This report also includes existing, non-conforming features and recommendations that the City should review and address as appropriate. Depending on the type of action you take to correct these issues; you may need to obtain prior approval and submit additional plans to the Department.

Required Action

A response to this report and a plan for corrective action, including a work schedule must be received by the Department by **January 15, 2024**. The response shall include a notification that the deficiencies have been corrected or that you agree to correct the deficiencies identified in this letter by the due dates, or with an alternative date for correcting these deficiencies. Failure to respond to this letter by **January 15 2024**, may result in enforcement actions. A corrective action plan and schedule is included below for your consideration. Depending on the type of corrective action you employ, you may need to obtain prior plan approval and submit additional plans to the department.

Within 30 days of correcting each significant deficiency, please provide written notification to Wendy Anderson of the date each correction was completed. This notification can be sent via email, or regular mail. If using regular mail, the postmarked date will serve as the date of your notification. Failure to provide this notification within 30 days of correcting each significant deficiency will result in a violation.

Significant Deficiencies

During the sanitary survey, one (1) significant deficiency was identified. Significant deficiencies indicate noncompliance with one or more Wisconsin Administrative Codes and/or represent an immediate health risk to consumers.

Significant Deficiency	Compliance Due Date	Code Citation
<p>1. Markesan failed to obtain prior department plan approval in accordance with sections NR 108.03 and NR 811.08, Wisconsin Administrative Code for the replacement of the chlorine chemical feed pumps at Well 2 and Well 3. The capacity of the previous pumps were 0.42 gph (10.1 gpd) and the new pumps are 0.68 gph (16.2 gpd) - a 40 percent increase in capacity.</p> <p>By January 15, 2024, submit a request for an After-The-Fact Plan and Specification Review for the replacement chlorine feed pumps at Wells 2 and 3 using the process outlined on the department's website at Public water system plan review Wisconsin DNR and in accordance with ss. NR 108.03 and NBR 811.08, Wis. Adm. Code.</p>	1/15/2024	108.03 811.08

Deficiencies

During the sanitary survey, three (3) deficiencies were identified. Deficiencies are problems in the drinking water system that have the potential to cause serious health risks or represent long-term health risks to consumers. These deficiencies may indicate noncompliance with one or more Wisconsin Administrative Codes. Corrective action should be completed for these deficiencies as soon as possible.

Deficiency	Compliance Due Date	Code Citation
<p>1. As a result of the change in chlorine chemical pumps at Wells 2 and 3, the City does not have an Emergency Chlorination Plan that reflects the equipment in use at each well house as required under s. NR 810.26(8), Wis. Adm. Code.</p> <p>By June 30, 2024, submit an updated Emergency Chlorination Plan that meets the requirements of s. NR 810.26(8), Wis. Adm. Code.</p>	6/30/2024	810.26(8)
<p>2. Markesan has not been properly implementing a cross connection control (CCC) program that meets the requirements of s. NR 810.15, Wis. Adm. Code. Markesan has not completed inspections at all commercial, industrial, and public authority customers within the last two years.</p> <p>If City staff do not feel qualified to complete the inspections themselves, the City must either hire a qualified inspector or require the customer to hire the inspector. The second option may require a change to section 345-4C of the City's cross connection control ordinance.</p>	6/30/2024	810.15

Deficiency	Compliance Due Date	Code Citation
<p>The department, under s. NR 810.15 Wis. Adm. Code, allows the City to reduce the inspection frequency of customer that have plumbing no more complex than a single family home, to match the schedule used for residential customers. Please review the City's written cross connection control plan to determine if the plan needs to be revised.</p> <p>By June 30, 2024, provide me with documentation showing the City has completed all required commercial, industrial, and public authority cross connection inspections and the inspection reports show these customers are fully compliant or that the City has taken proper enforcement steps. If changes to the ordinance or written plan are needed to accomplish this, send copies of these updated documents.</p>		
<p>3. Markesan has not been properly implementing the Private Well Permitting requirements under ordinance section 345-5, the City requires an annual permit; however staff issue permits once a bacti sample from the well is submitted. The remaining requirements found in the City's ordinance and s. NR 810.16, Wis. Adm. Code are not being provided before the permit is issued. These include:</p> <ol style="list-style-type: none"> a. Justification that the well is necessary. b. Verification, by a licensed well driller or licensed pump installer, that the well meets the requirements of Ch NR 812, Wis. Adm. Code. The department requires this be documented on DNR Form 3300-305. c. Verification that the plumbing from the well is not also connected to fixtures or piping that is connected to the City's water system. This shall be documented by either the waterworks staff or the licensed well driller or licensed pump installer. <p>While reviewing the City's ordinance, I identified the following requirements that are more restrictive than the department's requirements. The City may want to address theses by revising the ordinance.</p> <ol style="list-style-type: none"> a. The ordinance applies to <u>all wells located on premises within the City</u>. The language contained in the department's code is specific to regulating only wells located on premises <u>served by the municipal water system</u>. You may want to discuss this language with your legal counsel. b. Section NR 810.16(2)(b) allows the verification the well is in compliance with Ch. NR 812, Wis. Adm. Code to be completed once every other permit and no less than every 10 years. c. The permits are good for only one year. The language in the department's code notes the permit shall be good for no less than five years. 	12/31/2024	810.16

Deficiency	Compliance Due Date	Code Citation
<p>Considering the remaining permit requirements listed above that your customers must immediately begin providing , a permit that expires annually will be costly for your customers and time consuming for your staff to review.</p> <p>The City may want to consider modifying the ordinance to extend the permit renewal to five years.</p> <p>d. Consider requiring a permit fee.</p> <p>By December 31, 2024, provide me with documentation showing the City has appropriately permitted all private wells after receiving the documentation required in s. NR 810.16, Wis. Adm. Code. If the City pursues changes to the ordinance, send me a copy of the updated ordinance. I provided Jeffrey Heberer with copies of the department's model ordinance, a well tracking sheet and an example permit.</p>		

Recommendations

During the sanitary survey, four (4) recommendations were identified. Recommendations are problems in the water system that may hinder your public water system from consistently providing safe drinking water to consumers.

Recommendation
<p>1. The City should immediately begin planning to either replace Well 3 or install nitrate treatment. The nitrate levels have steadily risen and will likely exceed the Maximum Contaminant Level (MCL) of 10 mg/L within the next five years.</p> <p>If a quarterly nitrate sample exceeds 10.5 mg/L¹, the City will be required to collect a confirmation sample within 24 hours of obtaining the results from the lab. If the average of these two samples is greater than 10.5 mg/L, the City is in violation of a nitrate MCL and must remove the well from service; the department typically recommends removing the well from service immediately after collecting the confirmation sample to reduce additional exposure while the sample is being analyzed.</p> <p>An MCL violation requires the City to issue an immediate public notification - within 24 hours. The department will issue a Notice of Violation and invite the City to an enforcement conference.</p> <p>While the owner of an upgradient animal feed lot removed all the animals in 2019, nitrates are typically trapped in the soil and continue to leach into the groundwater for decades resulting in a continuous source of nitrates. In addition, the surrounding land use around the City is agriculture, with a significant amount of corn planted. Corn requires nitrogen-based fertilizers, and this may also be a source of nitrates in the well water.</p>

¹ The MCL for nitrate is 10 mg/L. In order to exceed the MCL, the result must be over 10.5 mg/L due to rounding of significant figures.

Recommendation

Even if the animals in the feedlot were not a significant source of nitrates, the department recommends the City review the allowed activities in the well head protection overlay district and, if possible, notify this landowner that bringing animals back to this property will not be allowed.

The department also encourages you to contact the landowners with corn to discuss minimizing fertilizer application in this area. Figure 1 below shows the upward trend of nitrate levels between 1998 and 2023. Figure 2 shows the trend for the last 7 years and while improvements can be seen, there is still an upward trend.

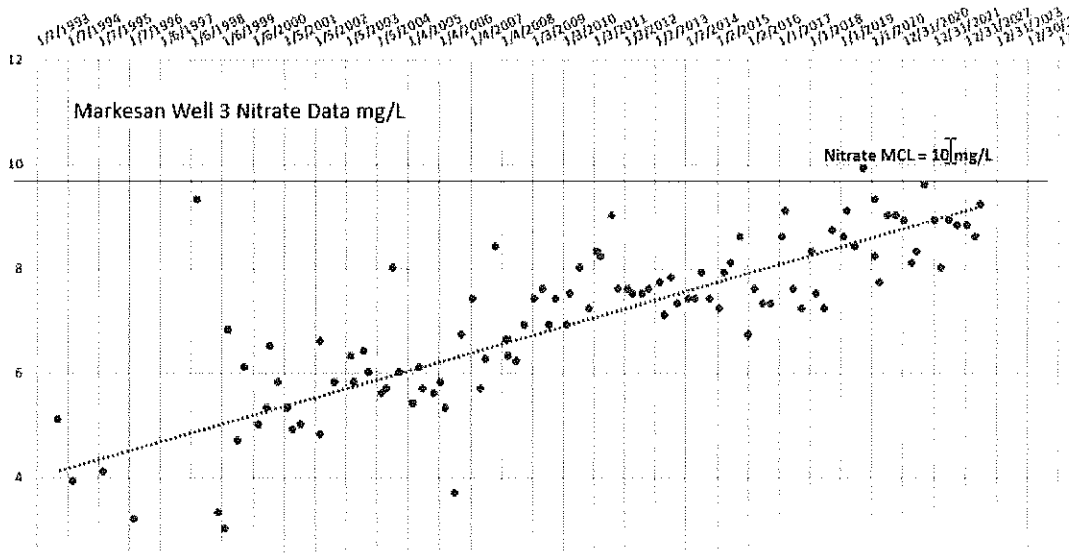


Figure 1

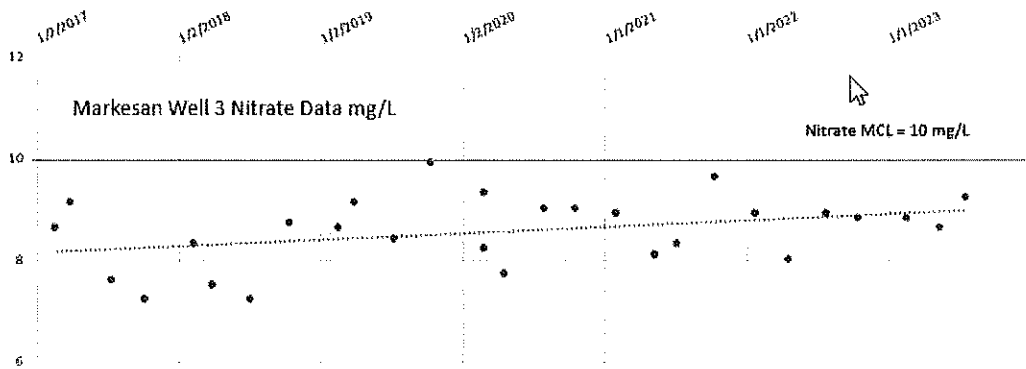
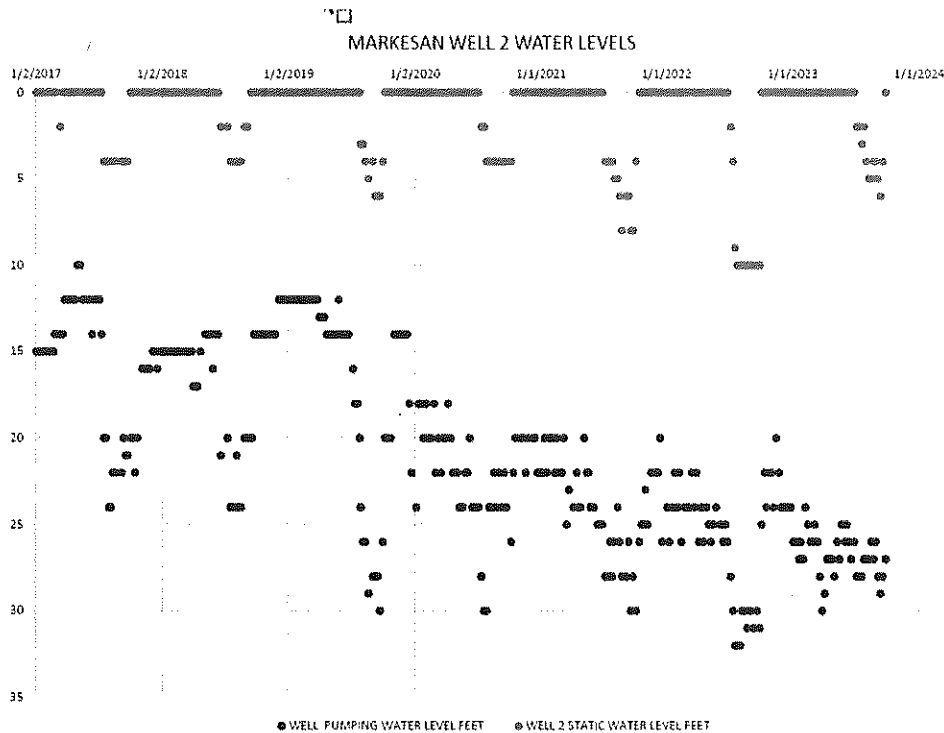


Figure 2

2. All vertical turbine pumps shall be removed from the well and inspected on a routine basis, with 10 years as the recommended interval. Drop pipes can corrode, impellers can wear, screens, etc. can break or malfunction.

Recommendation

The pump at Well 2 was last inspected in 2000 and pumping water levels (blue) have been decreasing, indicating possible issues. The City should discuss this with a well driller to determine the cause.



The pump at Well 3 has never been inspected. It is best to perform preventative maintenance on a routine schedule rather than wait for something to require a major repair at an inopportune time, which usually results in increased costs. In addition, pulling this pump and televising the well and casing could help determine if a well fracture or casing failure is contributing to the elevated nitrate levels and allow the City time to correct the issue before a nitrate exceedance occurs.

3. The department recommends that the floor drains in the well houses be labeled "Clear Water Drain Only" to clearly show that they discharge to the nearby waterways. Typically, water flowing to these drains is from the well as a result of the pump running, samples being collected or general cleaning/mopping the well house floor. Posting a sign will remind anyone working in the well house not to discharge chemicals when cleaning the chlorine tank and chlorine injector or dispose of any other inappropriate waste into the drain.
4. Cyber-attacks have been striking critical infrastructure across the United States with increased frequency, including attacks to public water systems. The department recommends the City evaluate the existing cybersecurity practices and make improvements to reduce vulnerability to cyber-attacks. Consider using the following resources to determine if improvements can be made to the City's existing systems. A copy of the EPA assessment tool was provided to Jeff Heberer and discussed in detail during the inspection.

Recommendation

- The U.S. EPA [Water Cybersecurity Assessment Tool and Risk Mitigation Plan](#) can be used to assess your existing cybersecurity practices and provides a risk mitigation plan.
- The U.S. EPA offers [cybersecurity technical assistance for water utilities](#) to help water systems improve their cybersecurity practices.
- Additional information and resources on water system cybersecurity can be found at the U.S. EPA [Cybersecurity Webpage](#).

Non-Conforming Features

Nonconforming features are items that existed in a water system before a code change became effective. The following are not deficiencies, but do not meet current standards for community systems. Correction of these features is not required until a health risk is identified, the feature causes problems with the operation of the water system or the feature is located within a reviewable project.

Non-Conforming Features

1. Well 2 is located within the floodplain of the Grand River. The flood elevation of the Grand River is 847.4-847.9 feet msl between South Bridge and South Main and the floor of the Well 2 pump house is at 847.18 feet msl. Wellhouses must be located outside of the floodway provided the pumphouse floor is at least 2 feet above the flood elevation in accordance with s. NR 811.12(5)(b), Wis. Adm. Code. If Well 2 is ever flooded or needs significant repair, it may not be able to be reconstructed or replaced in its current location. The City should begin planning for replacement of this well in a new location.
2. Neither well has a true entry point sample tap that is far enough downstream of the chemical addition to provide well mixed entry point samples. The next time work is done on the well houses, a water service lateral shall be connected to the finished water main outside the building and brought back into the building. This service shall be fitted with a sampling faucet so that it may be used as an entry point sample tap in accordance with s. NR 811.37(5)(b), Wis. Adm. Code.
3. Wells with vertical turbine pumps in casings 10-inches and larger are required to be equipped with a well vent that is 2-inches in diameter or larger installed through the well pump casing, well seal, or concrete pump base to ensure adequate venting. One adequately sized well vent shall be installed in accordance with s. NR 811.36(1), Wis. Adm. Code the next time Wells 2 and 3 pumps are pulled for inspection. This work requires prior plan approval.
4. The chemical feed injector at Well 3 is not installed in accordance with s. NR 811.39(7)(f), Wis. Adm. Code. Chemical feed injectors installed in a horizontal pipe must be installed up into the bottom half of the pipe to minimize corrosion and potential leaks from dripping injectors. When changes are made to the discharge piping at Well 3, the injector must be moved. Prior DNR plan approval is not required since this can be corrected by simply rotating the piping.

Non-Conforming Features
5. Secondary containment of liquid chlorine is not provided in accordance with s. NR 811.39(3) (d), Wis. Adm. Code. All chemical feed equipment must be located within a containment basin capable of receiving accidental spills, drainage, or overflows without an uncontrolled discharge outside of the containment basin. When changes to the chlorination systems are made, containment must be added at both well houses.
6. The tower does not have protective bars/grating over the riser opening inside the tank as required in s. NR 811.64(11)(c), Wis. Adm. Code. This shall be corrected the next time the tank is drained for an inspection.
7. There are currently 7,351 feet of sand cast water mains with leaded joints from the 1920s, 4,300 feet of which will be replaced during the 2025 construction season.
8. Water mains are not adequately separated from sewerage components. There are locations where water mains and sewer mains are located within the same trench.
9. All river crossings greater than 15 feet shall have valves and test ports as required in s. NR 811.76(2), Wis. Adm. Code. There are some river crossings located in the City with valves, but no test ports. When future work is done near these river crossing, the test ports shall be installed. This work will require prior plan approval.

Reminders and Other Follow-Up

1. Send me an updated paper and electronic copy of the distribution system map once General Engineering has made the changes to the map for the 2022 construction projects.
2. Immediately discontinue using the entry point taps at the well houses for monthly distribution system bacteriological sampling.
3. The City shall provide me with 48-hour prior notice of the date and time of all water storage facility inspections per s. NR 810.14(3), Wis. Adm. Code.
4. Following all water storage facility inspections, the City shall submit a completed Department inspection report (Form 3300-248) to me per s. NR 810.14(4), Wis. Adm. Code. Supplemental reports, photos or videos provided by the inspection company shall also be provided. Submit Lane's report for the recent tower inspection as soon as the report is complete.
5. Annually, the City must conduct and document inspections of the screening on the vents and overflows, watertight seals on the inspection hatches on your tower and make repairs as necessary, in accordance with s. NR 810.14(1), Wis. Adm. Code. Documentation of these annual inspections can be a notation in your daily logbook, monthly report, receipt by a private contractor or any other method to show the date the work was completed.
6. Revisions to Ch. NR 811, Wis. Adm. Code go into effect next year. This code revision includes a requirement for the discharge piping from air and vacuum relief valves to be constructed of metal. The piping at Wells 2 and 3 is currently PVC. These will be identified in future Sanitary Survey reports as a Non-Conforming Feature.
7. Relays of water mains require plan approval if any of the following have changed: size, material, or location (i.e. if it is not in the same trench as the original pipe).

8. Record retention requirements are as follows:

DNR

- i. Bacti results for 5 years
- ii. Chemical results for 10 years
- iii. Sanitary survey correspondence for 10 years
- iv. Lead and copper results and related issues for 12 years

PSC

- i. Maps for 6 years
- ii. Engineering and construction cost records for 6 years after plant retired
- iii. Station pumpage records for 15 years
- iv. Interruption records for 6 years
- v. Meter test records until next test
- vi. Meter history for the life of the meter
- vii. Annual meter accuracy summary for 10 years
- viii. Pressure records for 6 years
- ix. Complaint records for 3 years
- x. Customer refunds for 6 years after the refund
- xi. Meter reading sheets or cards for 6 years or from one test to the next, whichever is longer
- xii. Billing records for 6 years or from one test to the next, whichever is longer

System Summary

The City of Markesan water system currently operates as a single pressure zone with two wells, a tower, and the distribution system. The water is chlorinated prior to distribution.

History: The system was installed in 1921 and at that time consisted of Well 1, a 40,000-gallon concrete reservoir and a 40,000-gallon steel standpipe. In 1958, Well 2 was drilled and in 1973 Well 3 and a 200,000-gallon elevated tank were added to the system. In 1974 Well 1, the concrete reservoir and the standpipe were abandoned.

Description of System Components

System Operation: The system operates with Well 3 running in the lead position completing three cycles before Well 2 runs. A well will typically run for 4 hours a day.

Wells: Well 2 is a 301-foot deep sandstone well, constructed in 1958 with a 10-inch casing grouted to 105 feet, and has a vertical turbine pump with pumping capacity of 400 gpm. The well pump was last inspected in 2000 when a new pump was installed. In 2013 the motor was replaced and a VFD for soft start was installed.

Well 3 is a 400-foot deep sandstone well, constructed in 1973 with a 16-inch casing grouted to 109 feet, and has a vertical turbine pump with pumping capacity of 400 gpm. The well pump has never been inspected; the City plans to inspect it when it fails. In 2003 the motor was replaced and a VFD for soft start was installed.

Auxiliary Power: The City has a portable generator that can operate Well 2 with a PTO capable of running the well and chlorine system. There is also a natural gas-fueled, right-angled engine drive located at Well 3 to run the well. The generators are run monthly and tested under load quarterly. A log is kept.

Chemical Addition: The City began adding chlorine for continuous disinfection in 1984.

Storage: The 200,000-gallon, spherical pedestal elevated storage tank, constructed in 1973, was painted inside and out in 2011, was drained for an inspection in 2018 and this fall Lane Tank conducted a partial drain inspection. Lane will submit the report when it is complete.

Water Quality Monitoring and Reporting

The City has an exceptionally good record of compliance with monitoring and reporting requirements. The department appreciates your sampler's continued efforts in complying with these Safe Drinking Water Act requirements.

The most recent organic, inorganic, volatile organic, synthetic organic and radionuclide chemical analyses of the water from the entry points to the distribution system indicate that the water meets all applicable drinking water standards. The City has infrequent water quality complaints, keeps a log and addresses them immediately.

The nitrate level at Well 3 is rising and, as an acute contaminant, once the nitrate level exceeds the Maximum Contaminant Level (MCL) of 10 mg/L, the well can no longer be used. This is discussed in further detail under Recommendation 1 of this report.

Distribution system monitoring consists of routine bacteriological sampling, free chlorine residuals, lead and copper and disinfection by-products (DPB) sampling.

The City is required to collect two bacteriological water samples from the distribution system every month. The City has identified ten available bacti locations and staff rotate through six of these, collecting samples on the first and third Monday of each month. The sites are appropriately spread out within the distribution system.

Free chlorine residuals are measured at least twice a week in the distribution system – usually at the bacti sites. The chlorine residual is typically around 0.2-0.3 mg/L. Verification of the calibration of the chlorine analyzer is conducted monthly and a logbook is kept.

The 2023 90th percentiles were 7.1ug/L lead, and 95 ug/L copper, based on 10 samples. All samples are collected at unfiltered/unsoftened cold water taps at single family homes containing a lead service line. The City is currently on reduced triennial monitoring.

The City has 48 utility-owned lead services, 13 customer-owned lead services and 7 customer-owned galvanized services remaining in the distribution system. Of note, the results of sequential sampling conducted in 2022 at three customers with lead service lines did not show the typical peak in lead from samples collected directly from the lead portion of the service line. The lead results ranged from 0.3 mg/L to 4.3 mg/L.

The City conducts Stage 2 DBP Rule monitoring annually at one location. The results do not indicate any problems.

Required Reports, Records, and Utility Programs

The City has an excellent record of compliance with completion and submission of monthly operating reports, distribution and submission of the annual Consumer Confidence Reports (CCRs) and the annual cross connection inspection report, auxiliary power maintenance, valve and hydrant maintenance and documentation of the programs, meter testing and map updates.

Annually the City distributes their CCR electronically by including it electronically in their Spring Newsletter, using a link to their CCR and a paragraph to encourage customers to click the link along with a method to request a paper copy. The CCR is also posted on their website, at the library and at City Hall.

Distribution System: The distribution system consists of 9.6 miles of water mains and exists as one pressure zone. There are a few water main crossings of the Grand River and a tributary to the Grand River and there is a well on each side of the river. These crossings include the required valves, but no test ports.

In recent years the City removed/reconstructed all areas where water mains flowed through sanitary sewer manholes. The distribution system includes one remaining area of water main that was constructed with lead joints, which will be upgraded in 2025.

While the distribution system contains areas of 4-inch water main, there are hydrants served by adjacent larger water main that can meet the minimum flow of 500 gpm at 20 psi.

The City's average daily usage for 2022 was 111,230 gallons and the water loss was 11 percent. The City's maximum daily use in 2022 was 261,000 gallons, which occurred during a water main break in March. The City has 200,000 gallons in elevated storage and can supply 1.2 MGD with both wells running using auxiliary power.

The system is looped appropriately, and all dead-end mains have flushing devices at their termination. Every hydrant is flushed annually and if repairs are needed, they are fixed immediately. Hydrants on dead ends are included in the annual flushing. The City exercises a third to half the valves, including hydrant valves, each year.

The normal pressure within the distribution system is 45 to 100 psi, with the school and a few other customers using pressure reducing valves on their service lines. The most recent ISO review was conducted in 2004 with some additional pressure and flow testing completed in 2022. The City has a Class 4 designation.

The City routinely sells bulk water by supervising the filling to ensure an air gap is maintained and the amount of water is recorded.

Meters: All meters larger than 1.5-inch are tested on a schedule consistent with s. PSC 185.76, Wis. Adm. Code. The City replaces all small meters on a 20-year schedule.

Ordinances: The City adopted a cross-connection control ordinance July 6, 1982. The City conducts all inspections every 20 years at residential customers during meter changes and every two years at non-residential customers; however non-residential inspections are behind, as discussed in Deficiency 2.

The City adopted a private well abandonment ordinance July 6, 1982 and requires all property owners located within the City with a private well to permit the well annually. In practice staff are only requiring an annual bacti test for each well in order to issue a permit. The City cannot issue a new permits and renewal without also requiring an inspection by a licensed well driller or licensed pump installer, a cross connection inspection by the well driller or pump installed and a stated need for the well. The City must improve the permitting process, as discussed in Deficiency 3. The City currently has 11 wells, and 23 well abandonment reports on file.

Certified Operator

The Operator in Charge for the system is Jeff Heberer for both Groundwater (G) and Distribution (D). The City has another operator certified as a 1 in the G and D subclasses.

Water System Security

Access: All doors to the pumphouses and tower have intrusion alarms and dusk to dawn lighting and each facility is inspected daily.

Emergency Operations Plan: The City maintains an Emergency Response Plan, which is dated April 2009 and was last updated May 2023. The City has an emergency chlorination plan, also updated April 2020, that describes the steps necessary to increase the chlorine residual at the limits of the distribution system within four hours, however, with the change in chemical pumps this plan must be updated, as discussed in Deficiency 1.

Cybersecurity: The City may complete a self-assessment using EPA's Cybersecurity Assessment process and implement changes to address potential cyber risk, as appropriate. A copy of the assessment was provided to the operator.

System Summary Information

A water system summary is attached. Please review for accuracy and if there are changes that need to be made, contact me.

Capacity Development Evaluation

This sanitary survey serves as an evaluation of the capabilities of your water system. This system has been determined to have adequate technical, managerial, and financial capacity to provide safe drinking water based on the City's ability to plan for, achieve, and maintain compliance with applicable drinking water standards.

The next sanitary survey of your system is scheduled to take place in 2026. You will be contacted prior to the survey to schedule a date that is convenient for you.

If you have any questions, you can reach me by e-mail at wendy.anderson@wiconsin.gov or by phone at (920) 360-0462.

Sincerely,

A handwritten signature in black ink that reads "Wendy Anderson". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Wendy Anderson, P.E.
Public Drinking Water Engineer

Encl.

ecc: FILE
Jeff Heberer, Markesan

Water System Summary – Markesan Waterworks PWSID 42402184

County	Population	Owner Name	Owner Address	ERP Complete	ERP Last Updated
Green Lake	1496	Elizabeth Amend, Clerk	Markesan, WI 53946	4/1/2009	5/1/2023

Certified Operators

Operator Name	License #	License Expire Date	Subclasses	O/C Role
Jeffery Heberer	35075	11/1/2025	D1, G1	D, G

Affiliations

Name	Affiliation
Wendy Anderson	DNR_REP
Jeffery Heberer	EMERGENCY
Elizabeth Amend	OWNER
Elizabeth Amend	PLAN CON
Jeffery Heberer	SAMPLER

Entry Points and Sources

ID	Source Name	Water Source	Well Construction	Aquifer	Casing (in)	Pump Cap (gpm)	Depth (ft)	Cased (ft)	Pump Type
2	Well 2	Groundwater	7/1/1958	Sandstone	10	400	301	105	Vert Turbine
3	Well 3	Groundwater	2/2/1973	Sandstone	16	400	400	224	Vert Turbine

Storage

Desc	Type	Volume (gal)	Overflow to Ground	Overflow Elev (ft)	Manufacturer	Model
Precision Dr	Elev.	200,000	30"	104	CBI	Pedestal Spheroid

Storage - Additional Information

Interior Last Painted	Exterior Last Painted	Interior Last Inspected	Inspect Type	Date Last Drained
2011	2011	2023	Partial drain	4/30/2018

Treatment

ID	Treatment	Objective	Pump Model	Capacity (gpm)	Stroke %	Speed %	Solution Tank Cap (gal)	Dilution Ratio
2	Hypochlorination, Post	Disinfection	P741-D50HI	10	50	100	50	5
3	Hypochlorination, Post	Disinfection	P741-D50HI	10	100	50	50	5

System Evaluation Summary

Inspector/Reviewer	Date	Report Date	Type	Response Due	Response Rec'd
ANDERSON, W	11/5/2020	11/17/2020	SURVEY	1/1/2021	12/15/2020
KUBLY, A	10/13/2017	10/19/2017	SURVEY	12/1/2017	11/22/2017

Bacteriological Sampling History

Year	Distribution Safe	Distribution Unsafe	Confirmed Unsafe	Triggered Unsafe	Raw Water Safe	Missed Samples	Fecal Positive?
2023	20				7		N
2022	24				8		N
2021	24				8		N
2020	24				8		N
2019	24				8		N
2018	24				8		N

11 Chemical Sampling History

Year	Sample Group	Source ID	Samples Taken	Missed Samples	MCL Violations	Sample Group	Last Sampled
2023	DBP		1			BACTI	2023
2023	IOC	2	1			DBP	2023
2023	IOC	3	1			IOC	2023
2023	NITRATE	3	2			NITRATE	2023
2023	PCBU		10			PBCU	2023
2023	SOC	2	1			PBCU RULE	2020
2023	SOC	3	1			PFAS	2023
2023	VOC	2	1			RAD	2020
2023	VOC	3	1			SOC	2023
2022	NITRATE	2	1			VOC	2023
2022	NITRATE	3	4				
2020	RAD	2	1				
2020	RAD	3	1				

Subject: Cross Connection Inspections Due; Markesan

From: "Anderson, Wendy D - DNR" <Wendy.Anderson@wisconsin.gov>

Date: 11/16/2023, 7:29 AM

To: "Markesan - Jeffrey Heberer (markesan001@centurytel.net)" <markesan001@centurytel.net>

Jeff,

Here is the information I have regarding your non-residential customers that must be inspected by June 30, 2024. It looks like 47 inspections are due every 2 years. I added the 5 we did yesterday to the table.

I'd start by making sure you really have the correct number of customers listed.

If the facility is vacant in 2023 and 2024, you will note this on your spreadsheet as the explanation why the inspection wasn't done.

Type of Customer	Total Cust.	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Com (2)	28				11		4	5	8	10		5
Ind (2)	8				4	5	3	5	3	6		
PA (2)	11				5	6	5	6	5	6	1	

SCHOOLS

We are committed to service excellence.

Visit our survey at <http://dnr.wi.gov/customersurvey> to evaluate how I did.

Wendy Anderson, P.E.

Pronouns: she/her/hers

Water Supply Engineer – Drinking and Groundwater

Wisconsin Department of Natural Resources

2984 Shawano Avenue, Green Bay, WI 54313

Phone: (920)360-0462

wendy.anderson@wisconsin.gov



Subject: Markesan Cross Connection

From: Elizabeth Shumate <eshumate@generalengineering.net>

Date: 11/29/2023, 8:46 AM

To: "Jeff Heberer (jheberer@markesanwi.gov)" <jheberer@markesanwi.gov>

CC: "Jeff Heberer (markesan001@centurytel.net)" <markesan001@centurytel.net>

Good Morning, Jeff!

I wasn't sure which email you check more often, so I sent this to both. Per our conversation, GEC could complete the City's commercial, industrial, and public authority cross connection inspections for an amount not to exceed \$5,000 for 2024. This would include the administration fees and expenses for full coordination with you and your businesses. You and/or Matt could ride along with my inspector for the inspections for additional training.

I will also keep you updated on our possible residential inspection training seminar that my inspectors and I are planning to have over the winter months. This would be a half day training at our office.

Please let me know if you have any questions or concerns.

Thank you,

Elizabeth A.F. Shumate

Grants & Funding Coordinator/Cross Connection Administrator | **General Engineering Company**

916 Silver Lake Drive | PO Box 340 | Portage, WI 53901

P 608-742-2169

eshumate@generalengineering.net

www.generalengineering.net

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Chapter 345. Utilities

Article II. Water Utility

§ 345-5. Private well operation and abandonment.

[Amended 6-9-2015 by Ord. No. 234]

- A. Well operation permits. To ensure proper maintenance and operation of wells that remain in use on any premises within the City, an annual well operation permit shall be required. Permits not obtained by established deadlines shall be subject to a late fee as set from time to time by resolution of the Common Council. To obtain a permit, application shall be made on forms provided by the City Clerk-Treasurer, and such wells shall meet the following requirements:
- (1) The well and pump installation meets the requirements of the applicable Wisconsin Administrative Code, and a well constructor's report is on file with the Wisconsin Department of Natural Resources (WDNR), or certification of the acceptability of the well has been granted by the WDNR.
 - (2) The well has a history of producing safe water and presently produces bacteriologically safe water as evidenced by submitting water test results to the City, once annually, prior to the issuance of the permit.
 - (3) The proposed use of the well can be justified as being necessary in addition to water provided by the public water system.
 - (4) No physical connection shall exist between the piping of the public water system and the private well unless such method of connection and use of such supply shall have been approved by the Markesan Municipal Water Utility and WDNR, in accordance with the Wisconsin Administrative Code.
- B. Well abandonment. All private wells located on any premises within the City shall be properly filled and sealed within 60 days of notification by the Common Council if they are no longer in use, or are bacteriologically unsafe, or do not meet the requirements as set forth in Ch. NR 812, Wis. Adm. Code.
- (1) Wells being abandoned shall be filled according to the procedures outlined in the applicable Wisconsin Administrative Code. The pump and piping must be removed and the well checked for obstructions prior to plugging. Any obstruction or liner must be removed. The filling must be observed by a representative of the City.
 - (2) A well abandonment report must be submitted by the well owner to WDNR on forms provided by that agency. The report shall be submitted immediately upon completion of the filling of the well.
- C. Violations and penalties. Except as otherwise specifically provided in this chapter, any person who shall violate any provision of this chapter or any order, rule or regulation made hereunder shall be subject to a forfeiture as provided in § 1-3 of the Code of the City of Markesan.