BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water Company for a Certificate of Convenience and Necessity Authorizing it to Install, Own, Acquire, Construct, Operate, Control, Manage and Maintain a Water System and Sewer System in and around the City of Stewartsville, Missouri.	)	File No. WA-2022- File No. SA-2022-

APPLICATION AND MOTION FOR WAIVER

COMES NOW Missouri-American Water Company ("MAWC") pursuant to Sections 393.140, and 393.170 RSMo, and 20 CSR 4240-2.060, 20 CSR 4240-2.080 (14) 20 CSR 4240-3.305, 20 CSR 20 4240-3.600 and 20 CSR 4240-4.017(1)(D), and for its Application and Motion for Waiver, states as follows to the Missouri Public Service Commission:

BACKGROUND INFORMATION

1. This Application is being filed by MAWC to obtain a Certificate of Convenience and Necessity ("CCN") to install, own, acquire, construct, operate, control, manage and maintain a water system and sewer system in and around the City of Stewartsville, Missouri ("Stewartsville"), located in DeKalb and Clinton Counties.

2. MAWC is a Missouri corporation, active and in good standing with the Missouri Secretary of State, with its principal office and place of business at 727 Craig Road, St. Louis, Missouri 63141. Pursuant to Commission regulation 20 CSR 4240-2.060(1)(G), MAWC incorporates by reference the certified copies of its articles of incorporation and its certificate of good standing previously filed in File No. WO -2020-0190.

3. MAWC currently provides water service to approximately 474,000 customers and sewer service to approximately 16,500 customers in several counties throughout the state

of Missouri. MAWC is a "water corporation," a "sewer corporation" and a "public utility" as those terms are defined in Section 386.020 and is subject to the jurisdiction and supervision of the Commission as provided by law. MAWC has no overdue Commission annual reports or assessment fees. There is no pending action or final unsatisfied judgment or decision against MAWC from any state or federal agency or court which involves customer service or rates, which action, judgment, or decision has occurred within three years of the date of this Application.

4. Communications respecting this Application should be addressed to the undersigned counsel and:

Missouri-American Water Company:

Missouri-American Water Company
727 Craig Road
Creve Coeur, Missouri 63141
Attention: Ms. Mary Beth Hercules, Paralegal

Direct Dial 314-996-2343
marybeth.hercules@amwater.com

CERTIFICATE OF CONVENIENCE AND NECESSITY

5. MAWC proposes to purchase all the water and sewer assets of the currently unregulated system of Stewartsville, and requests permission, approval and a CCN to own, acquire, construct, operate, control, manage and maintain the water and sewer systems for the public in an area in and around Stewartsville, Missouri.

6. To provide service to the proposed area, MAWC will purchase the water and sewer systems from Stewartsville. Stewartsville is a fourth-class city located in DeKalb County. Stewartsville serves approximately 350 water accounts and 350 sewer accounts. The City of Stewartsville has a population of approximately 750.

7. The water system consists of an interconnect with DeKalb County PWSD #1 as

the only source of supply, one elevated 200,000-gallon water storage tank and approximately 52,000 feet of water mains of varying types and sizes.

The wastewater system consists of a collection system, two pump stations and a three cell treatment lagoon with two aerators/mixers. The collection system consists of approximately 37,000 feet of 8-inch gravity sewers and 2,000 feet of force main.

8. On August 23, 2021 the City of Stewartsville passed Ordinance No. 207 ("Ordinance"). *An Ordinance of the City of Stewartsville, Missouri calling an election to be held on Tuesday, November 2, 2021 for the purpose of submitting to the qualified voters of the City a proposition setting forth the terms of the sale of the water and wastewater utility systems.* A copy of the Ordinance is attached hereto as **Appendix A.** Section 3 of the Ordinance provided notice of an election to be held on November 2, 2021, to vote whether the water and wastewater systems should be sold to Missouri-American Water. Section 4 of the Ordinance provided that the City of Stewartsville had negotiated a contract with Missouri American Water for the sale of the municipal water and wastewater systems for a purchase price of $1,900,000. The question on the ballot was: ***Shall the City of Stewartsville sell the city-owned water and wastewater systems to Missouri American Water for $1,900,000 (One million nine hundred thousand dollars)?***

9. A Town Hall Meeting was held on October 18, 2021 to discuss the proposed sale. MAWC representatives attended the Town Hall Meeting and were available to answer any questions. Notification of the Town Hall Meeting which was sent to the residents is attached hereto as **Appendix B.** The ordinance provided notice of an election on November 2, 2021, to vote as to whether the water and wastewater utility owned by the City of Stewartsville should be sold.

10. An election was held on November 2, 2021 with 90% of the votes in favor of Stewartsville selling its water and sewer systems to MAWC. There were 180 total votes cast of which 162 voted "yes" and 18 voted "no".

11. On February 17, 2022, MAWC entered into an *Agreement for Purchase of Water and Wastewater System ("Purchase Agreement")* with Stewartsville. A copy of the *Purchase Agreement* is attached as **Appendix C.** The schedules and exhibits to the *Purchase Agreement* have not been created at this time. In most cases, they are prepared if and when approval is received from the Commission to proceed with the transaction since these items are part of the final closing process.

12. MAWC proposes to purchase the water and sewer utility assets of Stewartsville, as specifically described in, and under the terms and provisions of the *Purchase Agreement.* A legal description of the area sought to be certificated is attached as **Appendix D.** A map of the area sought to be certificated is attached to this Application as **Appendix E.**

13. Attached hereto and marked as **Appendix F-C** is a list of ten residents or landowners within the proposed service area. **Appendix F-C** has been identified as Confidential in accordance with Commission Rule 20 CSR 4240-2.135(2)(A)1, as it contains customer specific information.

APPRAISAL

14. MAWC seeks to establish the ratemaking rate base associated with the Stewartsville water and sewer assets pursuant to Section 393.320, RSMo. Section 393.320.2 states as follows:

> *The procedures contained in this section may be chosen by a large water public utility, and if so chosen shall be used by the public service commission*

to establish the ratemaking rate base of a small water utility during an acquisition.

14. MAWC is a "large water public utility" as it is a "public utility regularly provides water service or sewer service to more than eight thousand customer connections and that provides safe and adequate service." Section 393.320.1(1), RSMo. Stewartsville is a "small water utility" as it is a "water system or sewer system owned by a municipality that regularly provides water service or sewer service to eight thousand or fewer customer connections." Section 393.320.1(2), RSMo.

15. Section 393.320.3(1), RSMo requires an appraisal to be performed by three appraisers. Such an appraisal has been performed on the Stewartsville water and sewer systems and is attached hereto as **Appendix G.** The appraisal references the Flinn Engineering Report which is attached hereto as **Appendix H**. The appraisal contains a joint assessment of the fair market value of the water system and sewer system.

16. Section 393.320.5(1), RSMo states, in part, that the "lesser of the purchase price or the appraised value, together with the reasonable and prudent transaction, closing, and transition costs incurred by the large water public utility, shall constitute the ratemaking rate base for the small water utility as acquired by the acquiring large water public utility..." In this case, the purchase price is ($1,900,000 ($900,000 for water system assets, and $1,000,000 for sewer system assets)). Therefore, that amount together with the reasonable and prudent transaction, closing, and transition costs incurred by MAWC, shall constitute the ratemaking rate base.

ADDITIONAL INFORMATION

17. Attached hereto and marked as **Appendix I-C** is the feasibility study for the water system and **Appendix J-C** is the feasibility study for the sewer system. No external

financing is anticipated. **Appendix I-C** and **Appendix J-C** have been marked as "Confidential" in accordance with Commission Rule 20 CSR 4240-2.135(2)(A)3, 4 and 6 as they contain market specific information and information representing strategies employed in contract negotiations.

18. Attached hereto and marked as **Appendix K** is an Integration Appendix that includes information relevant to the integration process of this proposed acquisition.

19. MAWC will receive a franchise agreement from the City of Stewartsville as called for by the *Purchase Agreement.*

TARIFFS/RATES

20. MAWC proposes to provide water service pursuant to the existing rates currently applicable to MAWC's St. Joseph Service Area and to utilize the rules governing the rendering of water service currently found in MAWC's water tariff P.S.C. MO No. 13 until such time as the rates and rules are modified according to law. MAWC proposes to provide sewer service pursuant to the existing rates currently applicable to MAWC's Trimble Service Area and to utilize the rules governing the rendering of sewer service currently found in MAWC's sewer tariff P.S.C. MO No. 26, until such time as the rates and rules are modified according to law.

PUBLIC INTEREST

21. The grant of the requested CCN (and approval of the underlying transaction) is in the public interest and will result in the provision of regulated water and sewer service to the current and future residents of the service area. The water and sewer assets of Stewartsville would be acquired by MAWC, a Missouri public utility, and be subject to the jurisdiction of the Commission. MAWC has considerable expertise and experience in providing water and sewer utility services to residents of the State of Missouri and is fully qualified, in all respects, to own

and operate the water and sewer systems currently being operated in and around the City of Stewartsville.

22. The City of Stewartsville water and wastewater customers will benefit from this acquisition for various reasons, which include the need for investment to replace aging infrastructure, the need for investment to maintain compliance with existing and new regulations, to relieve the responsibility of operating and maintaining systems in the face of ever-increasing complexity and liability and the desire to maintain affordability.

MOTION FOR WAIVER

23. Commission Rule 20 CSR 4240-4.017(1) provides that "(a)ny person that intends to file a case shall file a notice with the secretary of the commission a minimum of sixty (60) days prior to filing such case." A notice was not filed 60 days prior to the filing of this Application. As such, and to the extent required, MAWC seeks a waiver of the 60-day notice requirement.

24. Rule 20 CSR 4240-4.017(l)(D) provides that a waiver may be granted for good cause. In this regard, MAWC declares (as verified below) that it has had no communication with the Office of the Commission (as defined by Commission Rule 20 CSR 4240-4.015(10)) within the prior 150 days regarding any substantive issue likely to be in this case, other than those pleadings filed for record. Accordingly, for good cause shown, MAWC moves for a waiver of the 60-day notice requirement of Rule 20 CSR 4240-4.017(1) and acceptance of this Application at this time.

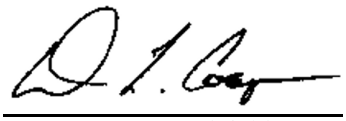
WHEREFORE, MAWC requests the Commission issue an order:

1. Granting MAWC permission, approval and a Certificate of Convenience and Necessity authorizing MAWC to install, acquire, build, construct, own, operate, control, manage and maintain water and sewer systems for the public within the area referred to above;

2. Granting MAWC permission to acquire the water and sewer assets identified herein of the City of Stewartsville, Missouri; and,

3. Authorizing MAWC to take such actions as may be deemed necessary and appropriate to accomplish the purposes of the *Purchase Agreement* and the Application and to consummate related transactions in accordance with the *Purchase Agreement*.

Respectfully submitted,



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MISSOURI-AMERICAN WATER COMPANY
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St. Louis, MO 63141
(314) 996-2279
timothy.luft@amwater.com

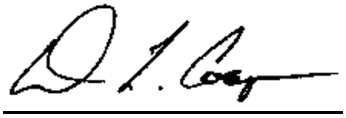
ATTORNEYS FOR MISSOURI-AMERICAN WATER COMPANY

CERTIFICATE OF SERVICE

I hereby certify that a copy of the above and foregoing document was sent via electronic mail on this 10th day of May, 2022 to:

Karen Bretz
Staff Counsel's Office
karen.bretz@psc.mo.gov
staffcounselservice@psc.mo.gov

Marc Poston
Office of the Public Counsel
opcservice@opc.mo.gov



VERIFICATION

State of Missouri)
) ss
County of St. Louis)

I, Timothy W. Luft, under penalty of perjury, and pursuant to Section 509.030, RSMo, state that I am Vice-President - Legal of Missouri-American Water Company, that I am duly authorized to make this affidavit on behalf of MAWC, that I have knowledge of the matters stated herein, and that said matters are true and correct to be best of my knowledge and belief. Additionally, no representative of MAWC has had any communication with the office of the Missouri Public Service Commission as defined in Commission Rule 20 CSR 4240-4.015(10) within the immediately preceding 150 days regarding the subject matter of this Application.

_____

List of Appendices

Appendix A	Ordinance
Appendix B	Town Hall Meeting
Appendix C	Purchase Agreement
Appendix D	Legal Description
Appendix E	Map
Appendix F-C	List of Ten Residents
Appendix G	Appraisal
Appendix H	Engineering Report
Appendix I-C	Feasibility Study – Water System
Appendix J-C	Feasibility Study – Sewer System
Appendix K	Integration

OFFICIAL BALLOT
CITY OF STEWARTSVILLE, MISSOURI
GENERAL ELECTION
TUESDAY, NOVEMBER 2, 2021
PROPOSITION S

Shall the City of Stewartsville sell the city-owned water and wastewater systems to Missouri American Water for 1,900,000 (one million nine hundred thousand dollars)?

[ ] YES [ ] NO

INSTRUCTIONS TO VOTERS:

Instructions to Voters: If you are in favor of the proposition, place an X in the box opposite "YES." If you are opposed to the proposition, place an X in the box opposite "NO."

BILL NO. 2021 **ORDINANCE NO. 207**

AN ORDINANCE OF THE CITY OF STEWARTSVILLE, MISSOURI CALLING AN ELECTION TO BE HELD ON TUESDAY, NOVEMBER 2, 2021 FOR THE PURPOSE OF SUBMITTING TO THE QUALIFIED VOTERS OF THE CITY A PROPOSITION SETTING FORTH THE TERMS OF THE SALE OF THE WATER AND WASTEWATER UTILITY SYSTEM.

WHEREAS, the City of Stewartsville is authorized to sell a public utility owned by the City, including water and wastewater systems pursuant to Section 88.770, RSMo; and

WHEREAS, the City has solicited and heard proposals for the purchase of the municipal water and wastewater utility; and

WHEREAS, the City has chosen to contract with Missouri American Water for the purchase of the municipal water and wastewater utility; and

WHEREAS, the City will hold a public meeting on such proposed sale at least thirty days prior to the vote; and

WHEREAS, the Board of Aldermen believes it is in the best interests of the City of Stewartsville and its residents to take all steps necessary to sell the municipal water and wastewater utility, if approved and authorized by the qualified voters.

NOW THEREFORE, BE IT ORDAINED BY THE BOARD OF ALDERMEN OF STEWARTSVILLE, MISSOURI, AS FOLLOWS:

Section 1. An election is hereby ordered to be held in the City of Stewartsville, Missouri, on Tuesday, November 2, 2021, for the purpose of submitting to the qualified voters of the City the following proposition:

> Shall the City of Stewartsville sell the city-owned water and wastewater systems to Missouri American Water?
>
> ☐ YES ☐ NO
>
> If you are in favor of the question, place an "X" in the box opposite "Yes". If you are opposed to the question, place an "X" in the box opposite "No".

Section 2. If a simple majority of the votes cast on the question by the qualified voters voting thereon are in favor of the question, then the City Clerk upon receipt of the election certificate from the Election Authority shall certify the results of such election.

Section 3. The City Clerk is hereby authorized and directed to notify the DeKalb County Clerk,

as the election authority of DeKalb County, Missouri, of the adoption of this ordinance and include in that notification all of the terms and provisions required by Chapter 115, RSMo, as amended, including a certified copy of the legal notice of election. This election shall be held and conducted and the result thereof shall be canvassed in all respects in conformity with the Constitution and laws of the State of Missouri, and in accordance with appropriate ordinances adopted by the Board of Aldermen of Stewartsville, Missouri. The Notice of Election and ballot to be used at this election shall be in substantially the same form as is attached hereto as **Exhibit A**.

Section 4. That the City of Stewartsville has negotiated a contract with Missouri American Water for the sale of the municipal water and wastewater power system, including certain distribution facilities and related secondary and service facilities for the purchase price in the amount of one million and nine hundred thousand dollars ($1,900,000.00) with a closing date of no later than August, 2022, if approved by the qualified voters, which contract substantially in the same form is attached hereto as **Exhibit B**.

Section 5. This Ordinance shall be in full force and effect from and after the date of its passage and approval.

PASSED BY THE BOARD OF ALDERMEN AND APPROVED BY THE MAYOR OF THE CITY OF STEWARTSVILLE, MISSOURI THIS 23rd DAY OF AUGUST, 2021.

Mark Francis, Mayor

ATTEST:

Meagan Foreman, City Clerk

EXHIBIT A

NOTICE OF ELECTION IN THE CITY OF STEWARTSVILLE, MISSOURI

Notice is hereby given to the qualified voters of the City of Stewartsville, Missouri, that the Board of Aldermen of said City has called an election to be held in the City on Tuesday, November 2, 2021, commencing at six o'clock A.M. and closing at seven o'clock P.M., local time, on the question contained in the following sample ballot:

OFFICIAL BALLOT
CITY OF STEWARTSVILLE, MISSOURI
GENERAL ELECTION
TUESDAY, NOVEMBER 2, 2021
PROPOSITION S

Shall the City of Stewartsville sell the city-owned water and wastewater systems to Missouri American Water for 1,900,000 (one million nine hundred thousand dollars)?

[ ] YES [ ] NO

INSTRUCTIONS TO VOTERS:

Instructions to Voters: If you are in favor of the proposition, place an X in the box opposite "YES." If you are opposed to the proposition, place an X in the box opposite "NO."

The polling places for all qualified voters of the City of Stewartsville, Missouri will be:

Independent Farmers Bank

1303 Main Street

Stewartsville, Missouri 64490

Done by order of the Board of Aldermen this 23 day of August, 2021.

_____
County Clerk, DeKalb County, Missouri

EXHIBIT B

WATER AND WASTEWATER PROPOSAL TO THE CITY OF STEWARTSVILLE

Water and Wastewater Proposal to the City of Stewartsville

August 23, 2021

MISSOURI
AMERICAN WATER

WE KEEP LIFE FLOWING®

EXECUTIVE SUMMARY

Purchase Price

Missouri American Water is offering to purchase the City of Stewartsville water and wastewater systems for a total price of $1.9 million. This offer will remain in effect until December 1, 2021.

Net Proceeds

After the City pays off an estimated $367,000 in system debt, it is anticipated the City would have $1.53 million in net proceeds.

Purchase Price	$1.9 million
- System Debt	- $.37 million
Net Proceeds	$1.53 million
+ System Investment	+ $3.2 million
TOTAL VALUE	$4.73 million

System Investment

Missouri American Water has also committed to investing approximately $3.2 million over the next 5 years to upgrade Stewartsville's water and wastewater systems, including a lift station pump station and an additional aerator at lagoon. Missouri American Water would also assume all future maintenance and all post-closing liabilities associated with the water and wastewater systems.

Proposed Rates

For water customers, Missouri American Water is proposing a fixed monthly charge of $9.00 (based on a 5/8" meter) plus a volumetric charge of $6.25 per 1,000 gallons, which means a typical residential customer using 3,000 gallons would pay a total of $27.74 per month for water service. For wastewater customers, Missouri American Water is proposing a flat rate of $44.03 per month for residential usage. All proposed rates are contingent on approval by the Missouri Public Service Commission (MoPSC).

Management and Employment

We are committed to providing exceptional, locally based service to the City of Stewartsville. We also have nearby operations in St. Joseph, MO and approximately 700 professionals throughout the state so Stewartsville will never face a water or wastewater issue alone.

Regulatory Compliance

Missouri American Water would be responsible for any capital investments, operations and maintenance needed to achieve compliance with all state and federal laws and regulations.

Customer Service

Customers are at the center of everything we do. We consistently rank in the top quartile of independent customer service surveys when compared to other utilities. J.D. Power ranked Missouri American Water 2nd highest in the Midwest for overall customer satisfaction in their 2020 Water Utility Residential Customer Satisfaction Study℠.

WATER AND WASTEWATER PROPOSAL

Purchase Price

Missouri American Water is pleased to make an offer to the City of Stewartsville to purchase its water and wastewater systems for $1.9 million and become the community's trusted water and wastewater service provider.

Missouri American proposes that the City of Stewartsville would receive cash in exchange for the water and wastewater system assets. Thereafter Missouri American would own, operate, and maintain the systems – all with regulatory oversight from the MoPSC. The cash offer is not dependent on financing.

The purchase offer is subject to the execution of a definitive Purchase Agreement (PA) and the following conditions:

- Acceptance by the City of the purchase price and proposed rates contained within the offer.
- Approval by the MoPSC of the terms and conditions of the PA, including proposed customer rates, purchase price, and rate base.
- Execution of a definitive PA, which would contain such representations, warranties, covenants, conditions and indemnities as are usual and customary in transactions similar to others entered into by Missouri American Water in connection with other acquisitions, including with respect to: the conveyance of all right, title and interest in and to the assets free and clear of all encumbrances; the acknowledgment that Missouri American Water would not assume any liabilities in connection with the transaction other than those that may be specifically identified in the PA.
- The City shall retain all assets associated with the water and wastewater systems, including any cash, reserves, and accounts receivable existing at closing of the transaction, other than the water and wastewater assets explicitly being sold as part of the system sale, including associated real estate.
- Resolution of any potential issues arising from the prior receipt of grant funding on terms and conditions acceptable to Missouri American Water.

- Transfer of Missouri Department of Natural Resources (DNR) permits for the water and wastewater systems, or negotiation of a new DNR permit, with terms and conditions acceptable to Missouri American Water and DNR.
- Proceeds from the sale will be used to repay all debt obligations associated with the water and wastewater systems being sold.

The offers contained herein will remain in effect until **December 1, 2021**

Net Proceeds for City of Stewartsville

After the City of Stewartsville repays $367,000 in debt obligations associated with the water and wastewater systems being sold, the City is expected to have $1.53 million in net proceeds.

System Investment

Carefully planning and investing in the water and wastewater systems we own and operate is important for maintaining safety and reliability, both now and for future generations. In 2020, Missouri American Water invested more than $265 million throughout the state. These investments included replacing aging water mains, lining wastewater pipes, replacing meters and fire hydrants, and upgrading water and wastewater treatment plants and equipment.

Missouri American Water has committed to investing approximately $3.2 million over the next 5 years to maintain and upgrade the City of Stewartsville water and wastewater systems. This investment includes sewer main replacement, installation of UV Disinfection system, pump station replacement, and additional lagoon aerators on wastewater system. For water system our investments will include looping in dead-end mains at systems' edge, replacing valves and mains, meter replacement, and new hydrants. Missouri American Water would also assume all future maintenance and liabilities associated with the water and wastewater systems. This includes the replacement of pipes, pumps, and treatment plant parts as they reach the end of their useful life.

Proposed Rates

Missouri American Water proposes placing the Stewartsville customers on our existing rates at the time of closing to support system improvements and maintenance costs. The current rates, which are included below, can change over time as the Company implements new rates after a Rate Review or includes new WSIRA surcharges. All proposed rates and future rate changes are contingent on approval by the MoPSC.

- **Water Rates** – For typical residential water customers with a 5/8" meter, Missouri American Water is proposing a fixed monthly rate of $9.00 plus a volumetric rate of $6.25 per 1,000 gallons. With these rates, a typical residential customer using 3,000 gallons would pay $27.74 per month.

- **Wastewater Rates** – For wastewater customers, Missouri American Water is proposing a flat rate of $44.03 per month for residential usage.

According to our projected rate estimates, an average residential customer would save approximately $350 over the next 2 years with Missouri American Water compared to the City of Stewartsville making needed water and wastewater improvements on its own.

Appendix A provides a projected rate comparison chart/graph for residents in Stewartsville.

Future Rates

The MoPSC, an independent state commission, sets customer rates after a thorough 11-month review process that includes an audit of our operations and investments and opportunities for public comment. Unlike public entities that often subsidize the cost of providing service, Missouri American Water rates reflect the true cost of providing reliable, high-quality water and wastewater service.

Management and Employment

We are committed to providing exceptional service to the City of Stewartsville, which starts with locally based employees.

Our employees have access to career advancement opportunities and participate in ongoing training classes that improve operational expertise, enhance safety, and develop leadership skills. We also offer a variety of employee benefit options including health insurance, dental insurance, vision insurance, prescription drug insurance, tuition reimbursement, 401(k) retirement savings plan, discounted employee stock purchase plan, life insurance, and pet insurance.

Missouri American Water employees also benefit from the operational experience and expertise of our team of approximately 700 professionals throughout the state that currently operates and maintains 36 water systems and 73 wastewater systems. The City of Stewartsville is in close proximity to our existing operations in St. Joseph, providing nearby assistance in the event of an emergency.

We also have access to additional resources and opportunities through our parent company American Water, which employs more than 7,000 dedicated professionals in 46 states.

Regulatory Compliance

Missouri American Water is proud to consistently meet or surpass federal and state regulations for drinking water and wastewater treatment. To do this, we closely monitor and test water every step of the way. Each year we perform more than water quality 500,000 tests, the equivalent of about one per minute.
We work closely with the U.S. Environmental Protection Agency and the Missouri Department of Natural Resources, and our team of scientists and water quality experts are at the forefront of research and compliance with ever-increasing health and environmental regulations.

Our commitment to exceptional water quality is recognized in Missouri and across the country. All six of Missouri American Water's surface water treatment plants are recognized by the Partnership for Safe Water, a water quality distinction achieved by less than 1% of all water utilities. Our parent company American Water has received more than 150 water quality awards.

For more information on annual water quality reports, visit missouriamwater.com and click the Water Quality tab.

Customer Service

Customers are at the center of everything we do. We consistently rank in the top quartile of independent customer service surveys when compared to other utilities. J.D. Power ranked Missouri American Water 2nd highest in the Midwest for overall customer satisfaction in their 2020 Water Utility Residential Customer Satisfaction Study℠.

What does great customer service look like? It's our employees working hard every day to provide safe, clean and reliable water service to our customers. Our water quality experts treat our water and wastewater to meet or surpass all state and federal standards, and our engineering and operation teams carefully plan and invest in our water and sewer systems as they age to maintain service and reliability.

Missouri American Water also provides convenient online options for reporting emergencies, checking usage, making a service request, paying bills, and learning about wise water use. Additionally, we have two U.S.-based customer service centers available anytime for emergencies and from 7 a.m. to 7 p.m. for non-emergency customer assistance. We also offer an alert system that notifies customers via text or phone in the event of a service emergency.

In short, providing good water and wastewater service goes beyond providing clean, safe, and reliable water. We strive to provide exceptional service every day to each customer.

PROPOSED TIMELINE

Below is a suggested timeline for moving forward with our proposal:

Proposed Timeline	
August 2021	Sign letter of intent
	Begin appraisal
August	Complete appraisal
August	Missouri American Water to submit offer
August	City Council vote to put on ballot
September/October	Voter outreach and education
November	Public vote
	Sign contract
December 2021	MoPSC filing
July 2022	MoPSC decision
August 2022	Closing date

NEXT STEPS

If our offer is accepted, the City Council would need to place the sale of the water and wastewater systems on the ballot for simple voter approval. The Council must vote to place the question on the ballot by the appropriate certification deadline. Typical ballot measure language is below for reference:

Sale of the City of Stewartsville Water and Wastewater Systems

Shall the city of Stewartsville, Missouri, be authorized to sell its water and wastewater systems to Missouri American Water for the sum of $1,900,000 (1.9 million dollars)?

RECOMMENDATIONS FROM CURRENT COMMUNITIES

"When we began working with Missouri American Water on a plan to sell our sewer collection system, it was a top priority for our city. It represented a critical step in our work to improve our City's financial picture and maintain reliable sewer service for our residents. I want to commend Missouri American Water for the outstanding planning and leadership that got us to our goal."

RONALD COUNTS
MAYOR
CITY OF ARNOLD

"We have a great working relationship with Missouri American Water. We've always had outstanding service, but it goes beyond that. As the mayor of Jefferson City, I know exactly who to call if we have any issues, any questions, and I know that our city staff feels the same way."

CARRIE TERGIN
MAYOR
CITY OF JEFFERSON

"Selling our water and sewer assets to Missouri American Water has given our community the ability to focus our priorities on roads, parks, stormwater, and the pursuit of economic development opportunities. We weren't experts at water and sewer, but Missouri American Water is. They have the knowledge, capital resources and expertise so we'll have reliable water and sewer service for years to come. Most importantly, they are committed to doing the right thing for their customers and the community."

MATT NOLKER
CITY ADMINISTRATOR
CITY OF LAWSON

"Water is obviously a critical tool for fighting fires, and Missouri American Water does a great job maintaining and investing in their system, so water is there when we need it the most. They also go above and beyond to support local fire districts. Not only do they have an annual fire fighter grant program that provides funding for training and equipment, but they also donated some land to us to help fulfill our need for advanced rescue training. We couldn't ask for a better community partner."

CARY SPIEGEL
FIRE CHIEF
MONARCH FIRE PROTECTION DISTRICT

WHO WE ARE

Missouri American Water is proud to provide clean, safe, reliable, and affordable water and/or wastewater service to approximately 1.5 million Missourians in 200 communities throughout the state.

Our history dates back more than a century to our first water system in St. Joseph, established in 1879. Today we are the largest publicly traded water services provider in Missouri, headquartered in St. Louis County with operations throughout the state.

Our team of nearly 700 employees efficiently operates and maintains 36 water systems and 73 wastewater systems, including 7,300 miles of pipe and 44,000 fire hydrants. The experience and expertise of our employees allows us to provide exceptional service and reliability to our customers.

Water and wastewater is all we do. We deliver approximately 200 million gallons of high-quality drinking water every day to more than 465,000 customers statewide. Our systems utilize both groundwater and surface water sources and range in size from fewer than 500 customers to 350,000 customers. We also treat wastewater for thousands of homes and businesses, with systems ranging in size from two customers to 7,000 customers. We operate a variety of wastewater treatment facilities, including extended aeration plants, sand filter plants, and lagoons.

Missouri American Water is a wholly owned subsidiary of American Water (NYSE: AWK), the largest and most geographically diverse publicly traded U.S. water and wastewater utility company. The company employs 7,100 dedicated professionals who provide regulated and market-based drinking water, wastewater, and other related services to an estimated 15 million people in 45 states and Ontario, Canada. Being part of a larger company provides many benefits, including greater purchasing power, economies of scale, technical expertise, and shared services.

LEADERSHIP TEAM

One of the greatest assets at Missouri American Water is our team of highly skilled employees who provide quality service to our customers. Our team consists of many professionals dedicated to customer service, production, maintenance, water quality and engineering, along with many other departments working together to keep the water flowing. The team below leads Missouri American Water's efforts and works closely with communities to provide pragmatic solutions to address both the immediate and long-term needs of water and wastewater systems.

DEBBIE DEWEY, PRESIDENT

Debbie Dewey became President of Missouri American Water in 2019. She joined American Water in 2015 as Vice President of Operations in Indiana, and in 2016 she was named president of Indiana and Michigan American Water. Debbie brings more than 30 years of leadership experience and knowledge to her position. Prior to joining American Water, she served as president of the Growth Alliance for Greater Evansville, and as president of Western Kentucky Energy/Louisville Gas & Electric.

JEFF KAISER, P.E., VICE PRESIDENT, OPERATIONS

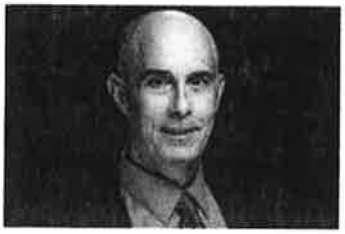
Jeff Kaiser became Vice President of Operations in 2021 after serving as Director of Engineering since 2019. He joined American Water in 2008 as Director of Engineering for Illinois American Water and Iowa American Water, and in 2018 became Director of State Procurement for American Water. Mr. Kaiser holds a Bachelor of Science in Civil Engineering from Washington University in St. Louis and is a registered professional engineer (P.E.) in the state of Missouri.

TIM LUFT, VICE PRESIDENT, LEGAL & CORPORATE SECRETARY

Tim Luft joined Missouri American Water in 2012 as Vice President Legal and Corporate Secretary. He is responsible for the company's legal function, including administrative agency and regulatory work, transactional matters, and general corporate issues. He is licensed to practice law in Missouri, Illinois, and Tennessee. He holds a JD from St. Louis University and a bachelor's in business administration from the University of Missouri-Columbia.

REBECCA LOSLI, P.E., DIRECTOR OF ENGINEERING

Rebecca Losli joined Missouri American Water in 2021 as Director of Engineering, where she is responsible for overseeing capital planning and investment. She brings a wealth of experience from both the public and private sectors. She has master's degrees in environmental engineering and business administration from Washington University, a bachelor's degree in civil engineering from Washington University, and a bachelor's degree in physics and mathematics from Samford University.



TIM GANZ, DIRECTOR OF WATER QUALITY AND ENVIRONMENTAL COMPLIANCE

Tim Ganz joined Missouri American Water in 2003. He oversees environmental compliance for the company's water and wastewater systems, directing environmental policy and stewardship programs. Tim is a Certified Hazardous Materials Manager, holds a Missouri "A" Drinking Water Treatment license, a "D" wastewater treatment license, and has degrees from the University of Missouri, Saint Louis University, and Maryville University in St. Louis.

JODY CARLSON, SENIOR OPERATIONS MANAGER

Jody Carlson joined Missouri American Water in 2015 and manages all operations in Northwest Missouri. Jody has more than 25 years of engineering experience gained from the private sector and state and municipal government. That experience has created excellent communication skills to assist customers and align employees on critical tasks. He holds a bachelor's degree in Civil Engineering from the University of Missouri and is a licensed professional engineer (P.E.) in the state of Missouri.

KEN FRANKLIN, MANAGER, GOVERNMENT AFFAIRS

Ken Franklin joined Missouri American water in 2019, bringing more than two decades of knowledge and experience in government and politics to the company. He is responsible for managing key relationships with local governments, business and civic groups, and community organizations. Ken has a Master of Business Administration from Washington University in St. Louis and a Bachelor of Arts from Morehouse College in Atlanta, GA.

NIKKI PACIFIC, MANAGER, ECONOMIC DEVELOPMENT

Nikki Pacific joined Missouri American water in 2020 as Manager of Economic Development, leading the company's efforts to provide water and wastewater solutions to communities throughout the state. She first joined American Water in 2002 and has worked in a variety of roles, including customer service, finance, and regulatory affairs. She has bachelor's in legal studies from Webster University and is working on a Master of Business Administration.

CONCLUSION

Missouri American Water appreciates the opportunity to present the City of Stewartsville with this proposal. We look forward to answering any questions you may have and further discussing how we can address your community's water and wastewater needs. We are confident that our 140 years of experience and exceptional service across the state

Confidentiality

It is understood and intended that this proposal constitutes a non-binding proposal and is not to be construed as commitment, representation or contract legally binding upon Missouri American or the City, and no cause of action shall arise from this proposal or be based thereon. Unless and until definitive agreements are entered into, neither Missouri American nor the City shall be under obligation to the other, irrespective of this proposal and irrespective of any negotiation, agreements, or undertaking between, or action taken by, the parties with respect to this proposal and/or the transaction.

This proposal is being delivered to you with the understanding that it and its contents will remain confidential and will be disclosed only to those executive officers and legal and financial advisors of the City who are directly involved in analyzing the transaction, and that neither this proposal nor its contents will be disclosed publicly or directly or indirectly discussed with or disclosed to any other perspective purchaser unless such disclosure is required by applicable laws. The City and Missouri American Water will consult each other and use good-faith efforts to obtain review and approval by the other party prior to any public disclosure.

Contact Information

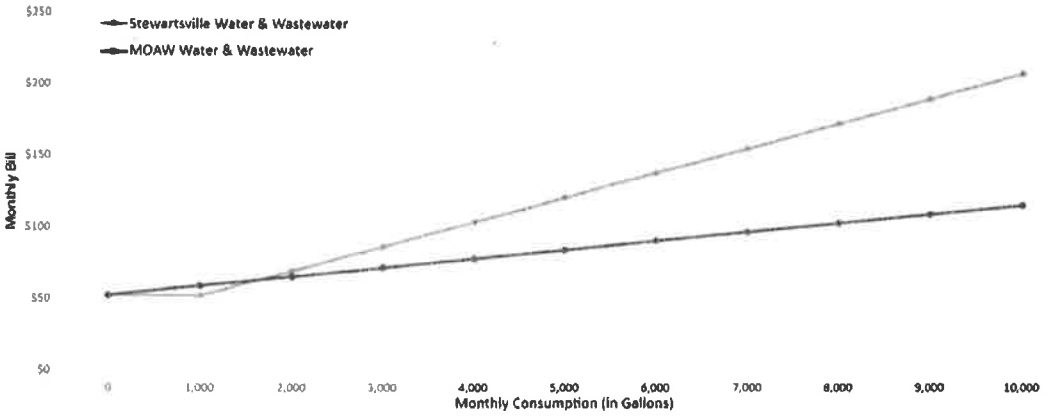
NIKKI PACIFIC
Manager of Economic Development
727 Craig Road
St. Louis, MO 63141
314-996-2215
nikki.pacific@amwater.com
www.amwater.com/moaw

Appendix A

Customer Bill Impact

MISSOURI AMERICAN WATER

	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
Stewartsville Water & Wastewater	$52.25	$52.25	$59.45	$86.65	$103.85	$121.05	$138.25	$155.45	$172.65	$189.85	$207.05
MOAW Water & Wastewater	$53.03	$59.28	$65.52	$71.77	$78.02	$84.26	$90.51	$96.76	$103.01	$109.25	$115.50
Difference	*$0.78*	*$7.03*	*-$3.93*	*-$14.88*	*-$25.83*	*-$36.79*	*-$47.74*	*-$58.69*	*-$69.64*	*-$80.60*	*-$91.55*



JOIN US FOR A TOWN HALL MEETING

Monday, October 18, 7:00 p.m.

STEWARTSVILLE FIRE STATION
631 Park Ave. | Stewartsville, MO

Come learn more about the proposed sale of Stewartsville's water and sewer systems to Missouri American Water.

MISSOURI
AMERICAN WATER

WE KEEP LIFE FLOWING™

missouriamwater.com

Agreement for Purchase of Water and Wastewater System

This Agreement for Purchase of Water and Wastewater System (the "Agreement") is made and entered into on the 17th day of February, 2022 by and between **Missouri-American Water Company**, a Missouri corporation ("Buyer"), and the **City of Stewartsville,** formed under Missouri law and located in DeKalb County, Missouri ("Seller"). Hereinafter, Buyer and Seller may be referred to individually as a "Party" or together as the "Parties".

RECITALS:

A. Seller currently owns and operates a water treatment and distribution system and a wastewater treatment facility and collection system (collectively, the "System") in DeKalb County, Missouri with approximately 360 water connections and 360 wastewater connections.

B. On November 2, 2021 there was a referendum on the sale of the System. Approximately 90% of the votes cast were "yes" to sell the System.

C. Seller desires to sell all of the assets that constitute or are used in furtherance of the System to Buyer pursuant to the terms and conditions of this Agreement.

NOW, THEREFORE, in consideration of the foregoing recitals, and the representations, warranties, and covenants contained herein, and in exchange for other consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties, intending to be legally bound, agree as follows:

ARTICLE 1
Definitions and Related Matters

For purposes of this Agreement, the capitalized terms used herein shall have the meanings assigned to them herein or in the attached Exhibit 1 and, for purposes of this Agreement and all other documents executed in connection herewith, the rules of construction set forth in Exhibit 1 shall govern.

ARTICLE 2
Purchase and Sale of Assets; Closing

2.1 Transfer of Assets. On and subject to the terms and conditions of this Agreement, at the Closing on the Closing Date and effective as of the Effective Time, Buyer shall purchase, acquire and accept from Seller, and Seller shall sell, convey, transfer, assign and deliver to Buyer, free and clear of all Encumbrances, the Acquired Assets. Notwithstanding anything to the contrary contained in this Section 2.1 or elsewhere in this Agreement, the Excluded Assets are not part of the sale and purchase contemplated hereunder, are excluded from the Acquired Assets, and shall remain the exclusive property of Seller subsequent to the Closing.

2.2 Consideration.

The consideration for the System and the Acquired Assets shall consist of the Purchase Price of **One Million Nine Hundred Thousand Dollars ($1,900,000.00).**

(a) At Closing, Buyer shall pay to the Seller and such other payees set forth on Schedule 2.2, in accordance with wire transfer instructions to be provided by the Seller to Buyer at least ten (10) Business Days prior to the Closing Date, in immediately available funds, an aggregate amount equal to the Purchase Price.

(b) Buyer shall deliver a Closing Statement to Seller at least three (3) Business Days prior to the Closing Date. Seller shall provide Buyer and its representatives reasonable access, during normal business hours of Seller, to all personnel, books and records of or related to the System or the Business within Seller's direction or control as reasonably requested by Buyer to assist it in its preparation of the Closing Statement. Buyer shall deliver to Seller a copy of the work papers prepared or used in connection with the Closing Statement's preparation as reasonably requested by Seller to assist in its review of the Closing Statement, and Seller shall have an opportunity, prior to the Closing Date, to review with representatives of Buyer and object to all or any part of the Closing Statement, such review to be reasonable and in good faith. Buyer shall consider such objections, if any, in good faith but Buyer's reasonable, good faith determination with respect to the Adjustment Amount shall be final and binding for the purpose of calculating the Purchase Price.

(c) Buyer shall prepare the Allocation, which Allocation shall be binding upon Seller. The Parties shall report, act, and file Tax Returns in all respects and for all Tax purposes consistent with the Allocation. No Party shall take any Tax position (whether in audits, Tax Returns, or otherwise) that is inconsistent with or contrary to the Allocation. In the event that the Allocation is disputed by any Governmental Authority, the Party receiving notice of such dispute will promptly notify the other Party, and the Parties will consult in good faith as to how to resolve such dispute in a manner consistent with the Allocation.

(d) **Economic Development.** Buyer shall be supportive of economic development in the City of Stewartsville, Missouri as such development is mutually beneficial to Buyer and Seller. Such support shall need to be in compliance with Buyer's existing tariff and Missouri Public Service Commission rules and regulations.

(e) **Payments.** Buyer shall allow for a variety of ways customers can pay their bills including by mail, on-line, by phone, and in person.

2.3 No Assumption of Liabilities. Any and all Liabilities of Seller, whether or not incurred in connection with the operation of the System, shall remain the sole responsibility of and shall be retained, paid, performed and discharged solely by Seller. Notwithstanding anything to the contrary contained in this Agreement, Buyer will not assume or be deemed to assume, and shall have no liability or obligation with respect to, any Liability of Seller, none of which Liabilities are part of the Contemplated Transaction.

2.4 Closing. Unless this Agreement is first terminated pursuant to Article 8 hereof, and subject to the satisfaction or, if permissible, waiver of each of the conditions set forth in Article 5 hereof, the Closing will take place at a mutually agreeable location in the City of Stewartsville or such other place or by such other means (e.g., e-mail/PDF or facsimile and overnight delivery of original execution documents) as is agreed to by the Parties at 10:00 A.M., Central time, on (a) such date as is three (3) Business Days after the date on which all of the conditions set forth in Article 5 hereof shall have been satisfied or (to the extent permissible) waived (other than those conditions which, by their nature are to be satisfied or waived at Closing but subject to their satisfaction or waiver at Closing) or, if Buyer shall so

elect, the final day of Seller's billing period of which such date is a part or (b) such other date as the Parties hereto may agree upon in writing. In any event, the Closing shall be effective as of the Effective Time.

2.5 Closing Obligations.

In addition to any other documents to be delivered under other provisions of this Agreement, at Closing:

(a) Seller shall deliver or cause to be delivered to Buyer, together with funds sufficient to pay all Taxes necessary for the transfer, filing or recording thereof, the following documents:

(i) the Bill of Sale, duly executed by Seller;

(ii) to the extent that Seller has the ability to do so, all Consents and approvals from Governmental Authorities, and third parties under Contracts, necessary to ensure that Buyer will continue to have the same full rights with respect to the Acquired Assets as Seller had immediately prior to the consummation of the Contemplated Transactions, including the written Consents, in form and substance reasonably acceptable to Buyer, of the Governmental Authorities and third parties set forth in Schedule 2.5(a)(ii) but excluding any permission from the Missouri Public Service Commission which will be the responsibility of the buyer;

(iii) a payoff letter from each lender from which Seller has incurred indebtedness for borrowed money which is outstanding, if any, and from each person or entity listed on Schedule 2.2, and a release of all Encumbrances relating to the Acquired Assets executed, filed and/or recorded by the holder of or parties to each such Encumbrance, if any, in each case in substance and form reasonably satisfactory to Buyer and its counsel;

(iv) for each interest in Real Property and each easement and/or right-of-way affecting any Real Property or Acquired Asset, whether or not identified on Schedule 3.4, a recordable special warranty deed or such other appropriate document or instrument of transfer or approval, as the case may require, each in form and substance reasonably satisfactory to Buyer;

(v) such other deeds, bills of sale, assignments, certificates of title, documents and other instruments of transfer and conveyance as may reasonably be requested by Buyer, each in form and substance reasonably satisfactory to Buyer;

(vi) a copy of each permit, license, easement, land-right and other necessary authority for the operation of the System and the Acquired Assets, in each case validly issued in the name of the Seller and in full force and effect;

(vii) a copy, certified by the Secretary of Seller to be true, complete and correct as of the Closing Date, of the governing documents and resolutions of the City and any required representatives of Seller authorizing and approving the Contemplated Transactions and as to the incumbency and signatures of the city council members of Seller executing this Agreement or any of the Transaction Documents on behalf of Seller;

(viii) to the extent such transfer is requested by Buyer, evidence satisfactory to Buyer of the transfer of all utilities with respect to the System from Seller to Buyer;

(ix) all other documents, instruments and writings required or reasonably requested by Buyer to be delivered at or prior to the Closing pursuant to this Agreement or otherwise required in connection herewith.

(b) At or prior to the Closing, Buyer shall deliver the following:

(i) to the Seller and such other payees set forth on Schedule 2.2, in accordance with wire transfer instructions to be provided by the Seller to Buyer at least ten (10) Business Days prior to the Closing Date, in immediately available funds, an aggregate amount equal to the Purchase Price;

(ii) to the Seller, the Intangible Assignments, duly executed by Buyer; and

(iii) to the Seller, all other documents, instruments and writings required or reasonably requested by Seller to be delivered at or prior to the Closing pursuant to this Agreement or otherwise required in connection herewith.

ARTICLE 3
Representations and Warranties of Seller

Seller hereby makes the following representations and warranties to Buyer, each of which is true and correct on the date hereof, will be true and correct at Closing and shall survive the Closing and the Contemplated Transactions hereby to the extent set forth herein:

3.1 Power and Authority. Seller has full power and authority to conduct the Business and the System as they are now being conducted and to own, lease and operate the System and the Acquired Assets.

3.2 Enforcement; Authority; No Conflict.

(a) This Agreement constitutes the legal, valid and binding obligation of Seller, enforceable against Seller in accordance with its terms except as such enforcement may be limited by bankruptcy, insolvency or other similar Laws affecting the rights of creditors generally and by general principles of equity. Seller has the absolute and unrestricted right, power and authority to execute and deliver this Agreement and the Transaction Documents and to consummate the Contemplated Transactions. The Board of Aldermen of the City of Stewartsville has duly authorized the execution, delivery, and performance of this Agreement by Seller and no other proceeding on the part of Seller is necessary to authorize the execution, delivery and performance of this Agreement, except the conditions precedent set forth herein

(b) This Agreement has been, and the Transaction Documents will be, duly executed and delivered by Seller.

(c) Neither the execution, delivery or performance by Seller of this Agreement or the Transaction Documents nor the consummation by it of the Contemplated Transactions will (i) contravene, conflict with or result in a violation of any provisions of the State Statutes or Ordinances of Seller, (ii) contravene, conflict with or result in a violation of or give any Governmental Authority or other Person the right to challenge any of the Contemplated Transactions or to exercise any remedy or obtain any relief under any Laws or any Order to which Seller or any of the Acquired Assets may be

subject, (iii) contravene, conflict with or result in a violation of any of the terms or requirements of or give any Governmental Authority the right to revoke, withdraw, suspend, cancel, terminate or modify any Permit or other authorization by a Governmental Authority that is held by Seller or that otherwise relates to the System or any of the Acquired Assets, (iv) contravene, conflict with or result in a violation or breach of any provision of, require the Consent of any Person under, or give any Person the right to declare a default or exercise any remedy under or to accelerate the maturity or performance of or to cancel, terminate or modify any Contract, indenture, mortgage, note, lease or other instrument or document to which Seller is a party or by which any of the Acquired Assets are bound or (v) result in the imposition or creation of any Encumbrance upon or with respect to any of the Acquired Assets.

(d) No filings or registrations with, notifications to, or authorizations, Consents or approvals of, a Governmental Authority or third party are required to be obtained or made by Seller in connection with the execution, delivery or performance by Seller of this Agreement or the Transaction Documents or the consummation by Seller of the Contemplated Transactions except related to the MoPSC approval. Neither the Contemplated Transactions nor the Transaction Documents will result in the creation of any Encumbrance against any of the Acquired Assets.

3.3 Assets. Seller has clear, good, and marketable title to, or a valid leasehold interest in, all of the Acquired Assets, free and clear of all Encumbrances. None of the Acquired Assets are leased or on loan by Seller to any third party. The Acquired Assets constitute all of the assets and property that, together with the rights granted or conveyed under the Transaction Documents, are necessary for the operation of the System, the Business and the Acquired Assets as conducted as of the date hereof. Upon the Closing, Buyer shall continue to be vested with good title or a valid leasehold interest in the System and all of the Acquired Assets. The Business constitutes all of the business conducted by any Person in connection with the System.

3.4 Real Property; Easements.

(a) Seller owns and has good and marketable title to the Real Property, free and clear of all options, leases, covenants, conditions, easements, agreements, claims, and other Encumbrances of every kind and there exists no restriction on the use or transfer of such property, in each case except as set forth on Schedule 3.4(b)(i) or Schedule 3.4(b)(ii). Set forth on Schedule 3.4(a) is a complete and accurate listing of all Real Property. Seller is not the lessor or lessee of any real property, and there are no outstanding options, rights of first refusal or rights of first offer to purchase any of the Real Property or any portion thereof or interest therein. Seller has made available to Buyer copies of all title reports, surveys, title policies and appraisals relating to the Real Property. At and after the Closing, Buyer shall have the right to maintain or use the Real Property, including the space, facilities or appurtenances outside the building lines, whether on, over or under the ground, and to conduct such activities thereon as maintained, used or conducted by Seller on the date hereof and such right is not subject to revocation. At and after the Closing, Buyer shall have all rights, easements and agreements necessary for the use and maintenance of water, sewer or other utility pipelines, poles, wires, conduits or other like facilities, and appurtenances thereto, over, across and under the Real Property.

(b) The Real Property is properly classified under applicable zoning Laws, ordinances, and regulations for the current and continued operation of the System on the Real Property. No Proceeding is pending or threatened which could adversely affect the zoning classification of the Real Property. There are sufficient parking spaces, loading docks and other facilities at such Real Property to comply with such zoning Laws, ordinances, and regulations and Seller's use or occupancy of the Real Property is

not dependent on any permitted non-conforming use or similar variance, exemption, or approval from any Governmental Authority. Seller's current use and occupancy of the Real Property and its operation of the System thereon does not violate any easement, covenant, condition, restriction or similar provision in any instrument of record or other unrecorded agreement affecting such Real Property. The present use and operation of the Real Property does not constitute a non-conforming use and is not subject to a variance. Seller has not received any notice of violation of any easements, covenants, restrictions or similar instruments and there is no basis for the issuance of any such notice or the taking of any action for such violation. Set forth on Schedule 3.4(b)(i) hereto is a true, correct and complete list of all easements relating to the Real Property or the Acquired Assets. All of such easements are valid and will be transferred to Buyer and remain in full force as of the Closing. Set forth on Schedule 3.4(b)(ii) hereto is a true, correct and complete list of all rights of way relating to the Real Property or the Acquired Assets. All of such rights of way are valid and will be transferred to Buyer and remain in full force as of the Closing. All Improvements located on, and the use presently being made of, the Real Property comply with all applicable zoning and building codes, ordinances and regulations and all applicable fire, environmental, occupational safety and health standards and similar standards established by Law and the same use thereof by Buyer following Closing will not result in any violation of any such code, ordinance, regulation or standard. There is no proposed, pending or threatened change in any such code, ordinance, regulation or standard which would adversely affect the Business, the System or the Acquired Assets.

(c) No Improvements encroach on any land that is not included in the Real Property or on any easements affecting such Real Property, or violate any building lines or set-back lines, and there are no encroachments onto the Real Property, or any portion thereof, which would interfere with the use or occupancy of such real Property or the continued operation of the System as currently conducted.

(d) There is no unpaid property Tax, levy or assessment against the Real Property (except for Encumbrances relating to Taxes not yet due and payable), nor is there pending or threatened any condemnation Proceeding against the Real Property or any portion thereof.

(e) Except as set forth in Schedule 3.4(e), there is no condition affecting the Real Property or the Improvements located thereon which requires repair or correction to restore the same to reasonable operating condition.

3.5 Personal Property. Set forth on Schedule 3.5(a) is a complete and accurate listing of all Acquired Assets which are personal property. Except as set forth in Schedule 3.5(b): (i) no Acquired Asset which is personal property is in the possession of others (other than immaterial items temporarily in the possession of others for maintenance or repair), (ii) neither Seller nor any of its Affiliates holds any such property on consignment, and (iii) each item of such Acquired Assets has been maintained in accordance with normal industry practice, is in good operating condition and repair (subject to normal wear and tear) and is suitable for the purposes for which it is presently used.

3.6 No Undisclosed Liabilities. Except as disclosed, Seller does not have any Liabilities whatsoever, known or unknown, asserted or unasserted, liquidated or unliquidated, accrued, absolute, contingent, or otherwise, there is no basis for any claim against Seller, the System or any of the Acquired Assets for any such Liability and there is no basis for any such Liability to become the Liability of Buyer from and after the Closing.

3.7 Tax Matters.

(a) Seller has timely and properly filed all Tax Returns that it was required to file. All such Tax Returns were complete and correct in all respects and were prepared in compliance with all applicable Laws. All Taxes owed by Seller have been paid. Seller is not the beneficiary of any extensions of time within which to file any Tax Return. No claim has ever been made by an authority in a jurisdiction where Seller does not file Tax Returns that Seller is or may be subject to taxation by that jurisdiction. There are no Encumbrances on any of the Acquired Assets that arose in connection with any failure (or alleged failure) to pay any Tax.

(b) Seller has withheld and paid all Taxes required to have been withheld and paid in connection with any amounts paid or owing to any employee, independent contractor, creditor, member, stockholder, or other third party. Forms W-2 and 1099 required with respect thereto have been properly completed and timely filed.

(c) There are no audits or examinations of any Tax Returns pending or threatened that relate to Seller's operation of the System or the Acquired Assets. Seller is not a party to any action or Proceeding by any Governmental Authority for the assessment or collection of Taxes relating to the operation of the System or Acquired Assets, nor has such event been asserted or threatened. There is no waiver or tolling of any statute of limitations in effect with respect to any Tax Returns relating to Seller's operation of the System or the Acquired Assets.

(d) None of the Acquired Assets (i) has been or could be treated as a partnership or corporation for United States federal income Tax purposes or (ii) is property that is required to be treated for Tax purposes as being owned by any other Person (other than those Acquired Assets that are leased).

(e) None of the Acquired Assets represent property or obligations of Seller, including but not limited to uncashed checks to vendors, customers or employees, non-refunded overpayments or unclaimed subscription balances, that is escheatable to any Governmental Authority under any applicable escheatment Laws as of the date hereof or that may at any time after the date hereof become escheatable to any Governmental Authority under any applicable escheatment Law.

3.8 Contracts. Set forth on Schedule 3.8 is a complete and correct list of all Contracts related to the System to which Seller is a party or is otherwise bound. Seller has delivered or caused to be delivered to Buyer correct and complete copies of each such Contract (including any and all amendments), a description of the terms of each such Contract which is not in writing, if any, and all documents affecting the rights or obligations of any party thereto.

3.9 Environmental Matters.

(a) To the best of its knowledge, Seller is and at all times has been in full compliance with and has not been and is not in violation of or liable under any applicable Environmental Law. Seller has no basis to expect nor has it received any actual or threatened Order, notice or other communication from any Governmental Authority or other Person of any actual or potential violation or failure to comply with any Environmental Law or of any actual or threatened obligation to undertake or bear the

cost of any Environmental, Health and Safety Liabilities with respect to the Real Property or any other properties or assets (whether real, personal or mixed) in which Seller has or has had an interest or with respect to the Real Property or any other real property at or to which Hazardous Materials were generated, manufactured, refined, transferred, imported, used or processed by Seller or any other Person for whose conduct it is or may be held responsible, or from which Hazardous Materials have been transported, treated, stored, handled, transferred, disposed, recycled or received.

(b) To the best of its knowledge, there are no pending or threatened claims, Encumbrances or other restrictions of any nature, resulting from any Environmental, Health and Safety Liabilities or arising under or pursuant to any Environmental Law with respect to or affecting the Real Property or any other properties and assets (whether real, personal or mixed) in which Seller has or had an interest.

(c) To the best of its knowledge, neither Seller nor any other Person for whose conduct it is or may be held to be responsible has any Environmental, Health and Safety Liabilities with respect to the Real Property or with respect to any other properties and assets (whether real, personal or mixed) in which Seller (or any predecessor) has or has had an interest or at any property geologically or hydrologically adjoining the Real Property or any such other property or assets that could reasonably be expected to have a material adverse effect thereon.

(d) To the best of its knowledge there are no Hazardous Materials, except those used in connection with the operation of the System and set forth in the list on Schedule 3.9(d), present on or in the Environment at the Real Property or at any geologically or hydrologically adjoining property, including any Hazardous Materials contained in barrels, above or underground storage tanks, landfills, land deposits, dumps, equipment (whether moveable or fixed) or other containers, either temporary or permanent and deposited or located in land, water, sumps or any other part of the Real Property or such adjoining property or incorporated into any structure therein or thereon. Neither Seller nor any other Person for whose conduct it is or may be held to be responsible has permitted or conducted, or is aware of, any Hazardous Activity conducted with respect to the Real Property or any other properties or assets (whether real, personal or mixed) in which Seller has or has had an interest except in material compliance with all applicable Environmental Laws. There has been no Release or threat of Release, of any Hazardous Materials at or from the Real Property or from or by any other properties and assets (whether real, personal or mixed) in which Seller has or has had an interest, or any geologically or hydrologically adjoining property, whether by Seller or any other Person.

(e) Except as set forth in Schedule 3.9(e), none of the following exists at the System or on the Real Property: (1) underground storage tanks; (2) asbestos-containing material in any form; (3) materials or equipment containing polychlorinated biphenyl; (4) groundwater monitoring wells; or (5) landfills, surface impoundments, or disposal areas.

(f) Except as set forth in Schedule 3.9(f) neither Seller nor any of its Affiliates is obligated to provide financial assurance in consideration of the System under Environmental Law.

(g) Seller has delivered to Buyer true and complete copies and results of any reports, studies, analyses, tests or monitoring possessed or initiated by Seller or its predecessors pertaining to Hazardous Materials or Hazardous Activities in, on or under the Real Property, or concerning compliance by Seller, its predecessors, or any other Person for whose conduct Seller is or may be held to be

responsible, with Environmental Laws, said reports, studies, etc. to include without limitation, any and all Phase I environmental reports now or hereafter in the possession or control of Seller.

3.10 Permits. Set forth on Schedule 3.10 is a complete and correct list of all Permits used by Seller in the continuing operation of the System. Such Permits constitute all those necessary for the continuing operation of the System and are all valid and subsisting and in full force and effect. No fact or circumstance exists which is reasonably likely to cause any such Permit to be revoked or materially altered subsequent to the execution of this Agreement and the Closing Date. Neither the execution of this Agreement nor the Closing do or will constitute or result in a default under or violation of any such Permit.

3.11 Insurance. Seller maintains and has maintained appropriate insurance necessary for the full protection of all of its assets, properties, the System, operations, products and services. All such policies are in full force and effect and Seller will use commercially reasonable efforts to cause such policies to be outstanding and in full force and effect as of Closing and immediately following the execution of this Agreement and the consummation of the Contemplated Transactions. There are no pending Proceedings arising out of, based upon or with respect to any of such policies of insurance and, to Seller's Knowledge, no basis for any such Proceedings exists. Seller is not in default with respect to any provisions contained in any such insurance policies and no insurance provider is in default with respect to such insurance policies. Set forth in Schedule 3.11 is a true and accurate list of all such insurance policies Seller maintains, and the premiums therefor have been paid in full as they have become due and payable.

3.12 Absence of Certain Changes. There has not been any occurrence or event which, individually or in the aggregate, has had or is reasonably expected to have any Material Adverse Effect. Seller has continually operated the System and the Business only in the Ordinary Course of Business. Without limitation of the foregoing, Seller has not entered into, amended, terminated or received notice of termination of any Permit necessary for the continued operation of the System. In addition, Seller has not taken any action in connection with the System or the Business which, if taken on or after the date hereof, would have required the prior written Consent of Buyer pursuant to Section 6.6 hereof.

3.13 Litigation and Proceedings. There are no Proceedings, either pending or threatened, anticipated or contemplated, against Seller or involving the operation of the System, any of the Acquired Assets, or any of Seller's agents or other personnel in their capacity as such, which could directly affect any of the Acquired Assets or the System. Seller has not been charged with, nor is it under investigation with respect to, any charge which has not been resolved to its favor concerning any violation of any applicable Law with respect to any of the Acquired Assets or the System and there is no valid basis for any such charge or investigation. Neither Seller nor any of its Affiliates has been subject to or threatened to be subject to any Proceeding or Order relating to personal injury, death or property or economic damage arising from products sold, licensed or leased and services performed by Seller or any of its Affiliates with respect to the System or the Business. No judgment, Order, writ, injunction, decree, assessment or other command of any Governmental Authority affecting Seller or any of the Acquired Assets or the System has been entered which is presently in effect. There is no Proceeding pending or, to Seller's Knowledge, threatened which challenges the validity of this Agreement or the Contemplated Transactions or otherwise seeks to prevent, directly or indirectly, the consummation of the Contemplated Transactions, nor is there any valid basis for any such Proceeding.

3.14 Compliance with Laws. To the best of its knowledge**,** Seller is in compliance with all Laws, Permits, Orders, ordinances, rules and regulations, whether civil or criminal, of any federal, state, local or foreign governmental authority applicable to the System or the Business and has not committed any violation of any Law or any provision of its Articles of Incorporation or Bylaws or equivalent governing documents applicable to the Acquired Assets and/or the operation of the System. Except as set forth in Schedule 3.14 neither Seller nor any of its Affiliates has received any notice alleging such default, breach or violation.

3.15 Financial Statements. Attached as Schedule 3.15 are the Financial Statements. The Financial Statements have been prepared in accordance with GAAP and the Accounting Methodologies, subject in the case of the Unaudited Financial Statements to normal year-end adjustments and the absence of footnotes. The Financial Statements were derived from the books and records of Seller, are true, correct and complete in all material respects and present fairly in all material respects the financial condition, operating results and cash flows of Seller as of the dates and during the periods indicated therein (subject, in the case of the Unaudited Financial Statements, to normal year-end adjustments and the absence of footnotes).

3.16 Transactions with Related Parties. Except as set forth on Schedule 3.16, no city employee has any financial interest, direct or indirect, in any supplier or customer of, or other business which has any transactions or other business relationship with, Seller. Without limiting the generality of the foregoing, neither Seller nor any of its Affiliates nor any executive officer of Seller, any of its Affiliates or the Business owns, directly or indirectly, any interest in or is an owner, sole proprietor, member, stockholder, partner, director, officer, employee, consultant or agent of any Person which is a lessor, lessee, customer, licensee, or supplier of the Business and none of the employees of or servicing the Business owns, directly or indirectly, in whole or in part, any tangible property, patent, trademark, service mark, trade name, copyright, franchise, invention, Permit or license which was developed by or is used and necessary for the operation of the Business

3.17 Customer Advances. Set forth on Schedule 3.16 is a complete and accurate list of all unexpired Extension Deposit Agreements (or similar agreements) to which Seller is a party (each an "Extension Deposit Agreement") and which contain unexpired obligations of Seller to provide for the payment of periodic refunds to parties making advances for the construction of facilities for water service. Seller will provide to Buyer within 15 days of the execution of this Agreement (to be updated at Closing), true and complete copies of each such Extension Deposit Agreement. All records of Seller relating to each Extension Deposit Agreement is complete and accurate in all material respects and, together with the relevant Extension Deposit Agreement, is all the information reasonably required to determine Seller's, and, consequently, Buyer's obligations to each party to the Extension Deposit Agreements; and there are no disputes or disagreements with any party to an Extension Deposit Agreement relating to the amount due under that agreement or the method of calculating that amount. Schedule 3.16 may be updated at Closing only with the mutual consent of the parties.

3.18 Accounts Receivable. Set forth on Schedule 3.18 is a list of all the accounts receivable of Seller with respect to the System and an aging schedule related thereto, as of November 30, 2021. Such accounts receivable, together with any such accounts receivable arising between such date and the Closing Date (collectively, the "Accounts Receivable"), are (to the extent not yet paid in full) valid, genuine and existing and arose or will have arisen from bona fide sales of products or services actually made in the Ordinary Course of Business. The Accounts Receivable are not subject to, and Seller has received no notice of, any counterclaim, set-off, defense or Encumbrance with respect to the Accounts

Receivable. Except to the extent paid prior to Closing, the Accounts Receivable are and will be current and fully collectible. No agreement for deduction, free goods, discount or deferred price or quantity adjustment has been made with respect to any Accounts Receivable.

3.19 Brokers, Finders. Except as set forth in Schedule 3.19, no finder, broker, agent or other intermediary, acting on behalf of Seller or any of Seller's Affiliates, is entitled to a commission, fee or other compensation in connection with the negotiation or consummation of this Agreement or any of the transactions contemplated hereby.

3.20 Water or Sewer Utility Account Deposits. Buyer will not be acquiring any utility account deposits, and Seller shall return such deposits to customers prior to closing.

ARTICLE 4
Representations and Warranties of Buyer

Buyer hereby makes the following representations and warranties to Seller:

4.1 Organization. Buyer is a duly organized and validly existing corporation in good standing under the Laws of Missouri and has the power and authority to own, lease and operate its assets and properties and to conduct business of the System as now being conducted.

4.2 Enforcement; Authority; No Conflict.

(a) This Agreement constitutes the legal, valid and binding obligation of Buyer and is enforceable against Buyer in accordance with its terms, except as such enforcement may be limited by bankruptcy, insolvency or other similar Laws affecting the rights of creditors generally and by general principles of equity. Buyer has the absolute and unrestricted right, power and authority to execute and deliver this Agreement and the Transaction Documents to which it is a party and to perform its obligations hereunder and thereunder.

(b) Neither the execution or delivery of this Agreement nor the consummation of the Contemplated Transactions shall result in: (i) a violation of or a conflict with any provision of the articles of incorporation or the bylaws of Buyer; (ii) a material breach of or default under any term, condition or provision of any Contract to which Buyer is a party, or an event which, with the giving of notice, lapse of time, or both, would result in any such breach or default; or (iii) a material violation of any applicable Law, Order, judgment, writ, injunction, decree or award or any event which, with the giving of notice, lapse of time, or both, would result in any such violation.

4.3 Brokers, Finders. No finder, broker, agent or other intermediary, acting on behalf of Buyer or any of Buyer's Affiliates, is entitled to a commission, fee or other compensation in connection with the negotiation or consummation of this Agreement or any of the transactions contemplated hereby.

ARTICLE 5
Conditions Precedent to Closing

5.1 Conditions Precedent to the Obligations of Buyer. Buyer's obligations to consummate the Contemplated Transactions are subject to the satisfaction in full, unless expressly waived in writing by Buyer, of each of the following conditions:

(a) **Authorization of Contemplated Transactions.** Buyer shall have obtained all necessary corporate approvals to consummate the Contemplated Transactions, including but not limited to the approval of its Board of Directors;

(b) **Representations and Warranties.** Each of the representations and warranties of Seller contained in this Agreement or in any Transaction Document shall have been true, correct and accurate in all respects on and as of the date hereof and shall also be true, correct and accurate in all material respects (other than Section 3.5 and representations and warranties qualified as to materiality, which shall have been true, correct and accurate in all respects) on and as of the Closing Date with the same force and effect as though made by Seller on and as of the Closing Date (except to the extent that any such representation or warranty is made solely as of the date hereof or as of another date earlier than the Closing Date, which shall be accurate as of such date);

(c) **Covenants.** Seller shall have performed, observed and complied in all material respects with all of its obligations, covenants, undertakings and agreements contained in this Agreement or any Transaction Document and required to be performed, observed or complied with by Seller prior to or at the Closing;

(d) **Proceedings.** No provision of any Law or Order shall be in effect, and no Proceeding by any Person shall be threatened or pending before any Governmental Authority, or before any arbitrator, which would: (i) prevent consummation of the Contemplated Transactions; (ii) have a likelihood of causing the Contemplated Transactions to be rescinded following consummation; (iii) adversely affect the right of Buyer to own any of the Acquired Assets; or (iv) adversely affect the System prospects or the value or condition of any of the Acquired Assets or the System;

(e) **Closing Deliverables**. Seller shall have delivered or caused to be delivered to Buyer each of the items set forth in Section 2.5(a);

(f) **Governmental and Third Party Approvals.** (i) Buyer shall have obtained a certificate of convenience and necessity and all necessary regulatory approvals by the MoPSC, or any other applicable regulatory body, and all other applicable Consents and approvals from Governmental Authorities and other third parties which are required in connection with the Contemplated Transactions, each in form and substance (including without limitation with respect to the terms and conditions contained in any such approval) acceptable to Buyer in its sole and absolute discretion, and (ii) any waiting periods under existing Laws, and all extensions thereof, the passing of which is necessary to consummate the Contemplated Transactions, shall have expired;

(g) **Due Diligence.** Buyer shall have completed and be satisfied, in its sole and absolute discretion, with the results of its due diligence review of the Acquired Assets and Seller, including without limitation with the results of any Phase I Environmental Site Assessment or other environmental assessment performed with respect to the Real Property or the Acquired Assets or chain of title search, all material contracts and operating permits and licenses of the System, and the Seller's operations, contracts, employment practices, compliance, accounting and other items as Buyer deems necessary, as each of the foregoing items relate to the System or the Acquired Assets; and

(h) **No Material Adverse Effect.** Buyer shall have determined that there shall not have occurred any event or circumstance which, individually or in the aggregate, has had or could reasonably be expected to have a Material Adverse Effect.

5.2 Conditions Precedent to Obligations of Seller. Seller's obligation to consummate the Contemplated Transactions is subject to the satisfaction in full, unless expressly waived in writing by Seller, of each of the following conditions:

(a) **Representations and Warranties.** Each of the representations and warranties of Buyer contained in this Agreement or in any Transaction Document shall have been true, correct and accurate in all respects on and as of the date hereof and shall also be true, correct and accurate in all material respects (other than representations and warranties qualified as to materiality, which shall have been true, correct and accurate in all respects) on and as of the Closing Date with the same force and effect as though made by Buyer on and as of the Closing Date (except to the extent that any such representation or warranty is made solely as of the date hereof or as of another date earlier than the Closing Date, which shall be accurate as of such date);

(b) **Covenants.** Buyer shall have performed, observed and complied in all material respects with all of its obligations, covenants, undertakings and agreements contained in this Agreement or any Transaction Document and required to be performed, observed or complied with by Buyer prior to or at the Closing;

(c) **Proceedings.** No provision of any Law or Order shall be in effect which would prevent consummation of the Contemplated Transactions; and

(d) **Closing Deliverables.** Buyer shall have delivered or caused to be delivered to Seller each of the items set forth in Section 2.5(b).

ARTICLE 6
Covenants and Special Agreements

6.1 Access to Information; Confidentiality

(a) **Access.** Between the date of this Agreement and the Closing Date, Buyer may, directly and through its representatives, make such confirmatory investigation of the System and the Acquired Assets as each deems necessary or advisable. In furtherance of the foregoing, Buyer and its representatives shall have reasonable access, upon reasonable notice during normal business hours, to all employees, properties, books, Contracts, customer lists, commitments and records of the Business, and Seller shall furnish and cause to be furnished to Buyer and its representatives such financial and operating data and other information as may from time to time be reasonably requested relating to the System, shall permit Buyer or its representatives to conduct such physical inspections and environmental audits of the Real Property as requested by Buyer and shall permit Buyer or its representatives to conduct interviews of employees of or servicing the Business. Seller and the management, employees, accountants and attorneys of or servicing the Business shall cooperate fully with Buyer and its representatives in connection with such investigation.

(b) **Confidentiality.**

(i) Prior to Closing, each Party shall ensure that all Confidential Information which such Party or any of its respective officers, directors, employees, counsel, agents, or accountants may have obtained, or may hereafter obtain, from the other Party (or create using any such information) relating to the financial condition, results of operations, System, properties, assets, Liabilities or future prospects of the other Party, any Related Person of the other Party or any customer or supplier of such other Party or any such Related Person shall not be published, disclosed or made accessible by any of them to any other Person at any time or used by any of them, in each case without the prior written Consent of the other Party; provided, however, that the restrictions of this sentence shall not apply (i) as may otherwise be required by Law, including but not limited to the provisions of Chapter 610 RSMo, commonly known as the Sunshine Law (ii) to the extent such Confidential Information shall have otherwise become publicly available, and (iii) as to Buyer, to disclosure by or on its behalf to regulatory authorities or other third parties whose Consent or approval may be required to consummate the Contemplated Transactions and to its lenders and professionals for the purpose of obtaining financing of such transactions. Following Closing, Seller shall ensure that all Confidential Information relating to the financial condition, results of operations, System, properties, assets, Liabilities or future prospects of the Buyer, any Related Person of the Buyer or any customer or supplier of the Buyer or any such Related Person shall not be published, disclosed or made accessible by any of them to any other Person at any time or used by any of them, in each case without the prior written Consent of the Buyer; provided, however, that the restrictions of this sentence shall not apply (i) as may otherwise be required by Law, (ii) to the extent such Confidential Information shall have otherwise become publicly available, and (iii) as to Buyer, to disclosure by or on its behalf to regulatory authorities or other third parties whose Consent or approval may be required to consummate the Contemplated Transactions and to its lenders and professionals for the purpose of obtaining financing of such transactions.

(ii) In the event of termination of negotiations or failure of the Contemplated Transactions to close for any reason whatsoever, each Party promptly will destroy or deliver to the other Party and will not retain any documents, work papers and other material (and any reproductions thereof) obtained by each Party or on its behalf from such other Party or its subsidiaries as a result of this proposal or in connection therewith, whether so obtained before or after the execution hereof, and will not use any information so obtained and will cause any information so obtained to be kept confidential and not used in any way detrimental to such other Party.

6.2 Publicity; Announcements. Until after the Closing, no press release concerning this Agreement or the transactions contemplated hereby shall be issued or made without the prior approval of the parties hereto, except as required by applicable law.

6.3 Cooperation. Subject to the terms and conditions of this Agreement, the Parties shall cooperate fully with each other and their respective counsel and accountants in connection with, and take or cause to be taken and do or cause to be done, any actions required to be taken under applicable Law to make effective the Contemplated Transactions as promptly as practicable. Prior to the Closing, the parties shall proceed expeditiously and in good faith to make such filings and take such other actions as may be reasonably necessary to satisfy the conditions to Closing set forth in Section 5.1(f). Any and all filing fees in respect of such filings shall be paid by Seller. From and after the Closing, the parties shall do such acts and execute such documents and instruments as may be reasonably required to make effective the transactions contemplated hereby. On or after the Closing Date, the parties shall, on request, cooperate with one another by furnishing any additional information, executing and delivering any additional documents and instruments, including contract assignments, and doing any and all such other things as may be reasonably required by the parties or their counsel to consummate or otherwise

implement the transactions contemplated by this Agreement. Should Seller, in its reasonable discretion, determine after the Closing that books, records or other materials constituting Acquired Assets are still in the possession of Seller, Seller shall promptly deliver them to Buyer at no cost to Buyer. Seller hereby agrees to cooperate with Buyer to ensure a proper transition of all customers with respect to billing and customer service activities. Buyer shall take the lead in obtaining MoPSC approval with respect to the Contemplated Transactions.

6.4 Exclusivity. Seller will not and will not permit its affiliates, officers, directors, employees or other agents or representatives to, at any time prior to the termination of this Agreement, directly or indirectly, (i) take any action to solicit, initiate or encourage the making of any Acquisition Proposal, or (ii) discuss or engage in negotiations concerning any Acquisition Proposal with, or further disclose any non-public information relating to Seller to, any person or entity in connection with an Acquisition Proposal, in each case, other than Buyer and its representatives.

6.5 No Inconsistent Action. Prior to the Closing Date, no Party shall take any action, and each Party will use its commercially reasonable efforts to prevent the occurrence of any event (but excluding events which occur in the Ordinary Course of Business and events over which such Party has no control), which would result in any of its representations, warranties or covenants contained in this Agreement or in any Transaction Document not to be true and correct, or not to be performed as contemplated, at and as of the time immediately after the occurrence of such action or event. If at any time prior to the Closing Date, a Party obtains knowledge of any facts, circumstances or situation which constitutes a breach, or will with the passage of time or the giving of notice constitute a breach, of any representation, warranty or covenant of such Party under this Agreement or any Transaction Document or will result in the failure of any of the conditions contained in Article 5 to be satisfied, such Party shall give the other Party prompt written notice thereof; provided, however, that no such notice shall cure any breach of any representation, warranty or covenant contained herein or therein or will relieve any such Party of any obligations hereunder or thereunder unless specifically agreed to in writing by the other Party.

6.6 Conduct of Business. Between the date of this Agreement and the Closing Date, Seller shall carry on the operation of the System, the Business and the Acquired Assets in the Ordinary Course of Business and in compliance with Law, not introduce any materially new method of management or operation, use reasonable best efforts to preserve the System, the Business and the Acquired Assets, conserve the goodwill and relationships of its customers, suppliers, Governmental Authorities and others having business relations with it, maintain in full force and effect all policies of insurance now in effect for the benefit of Seller, maintain supplies at a level which is sufficient to operate the System in accordance with past practice and maintain the Acquired Assets in substantially the condition currently existing, normal wear and tear excepted. By way of illustration and not limitation, Seller will not, between the date hereof and the Closing Date, directly or indirectly do, or prepare to do, any of the following without the prior written Consent of Buyer, (a) sell, lease, transfer or otherwise dispose of, or license, mortgage or otherwise encumber, or give a security interest in or subject to any Encumbrances, any of the Acquired Assets, (b) merge or consolidate with or acquire, or agree to merge or consolidate with or acquire (by merging or consolidating with, or by purchasing a substantial portion of the stock or assets of, or by any other manner), any business or corporation, partnership, joint venture, association or other business organization or division thereof or otherwise change the overall character of the Business in any material way, (c) enter into any Contract other than in the Ordinary Course of Business, (d) abandon, sell, license, transfer, convey, assign, fail to maintain or otherwise dispose of any item of the transferred intellectual property, (e) make any change in any of its present accounting methods and

practices, (f) make any new Tax election, or change or revoke any existing Tax election, or settle or compromise any Tax liability or file any income Tax Return prior to the last day (including extensions) prescribed by Law, in the case of any of the foregoing, material to the business, financial condition or results of operations of Seller, (g) engage in any transactions with any Related Person which would survive Closing, (h) pay, discharge, settle or satisfy any material claims or Liabilities (absolute, accrued, asserted or unasserted, contingent or otherwise), other than the payment, discharge or satisfaction, in the Ordinary Course of Business or in accordance with their terms, of Liabilities reflected or reserved against in the Financial Statements (or the notes thereto), or not required by GAAP to be so reflected or reserved, or incurred since December 31, 2019 in the Ordinary Course of Business, or waive any material benefits of, or agree to modify any material confidentiality, standstill, non-solicitation or similar agreement with respect to the Business to which Seller or any of its Affiliates is a party, (i) engage in any activity with the purpose or intent of (A) accelerating the collection of accounts receivable or (B) delaying the payment of the accounts payable, (j) enter into commitments for new capital expenditures in excess of $25,000 in the aggregate, (k) create or issue or grant an option or other right to subscribe, purchase or redeem any of its securities or other equity interests (other than with Buyer), (l) adopt a plan of complete or partial liquidation or resolutions providing for or authorizing such a liquidation or dissolution, merger, consolidation, restructuring, recapitalization or reorganization or (m) enter into any agreement (conditional or otherwise) to do any of the foregoing.

6.7 No Transfer at Odds with Law. Notwithstanding anything to the contrary contained herein, nothing in this Agreement shall be deemed to require the conveyance, assignment or transfer of any Acquired Asset that by operation of applicable Law cannot be conveyed, assigned, transferred or assumed. Each Party shall continue to use reasonable best efforts to obtain at the earliest practicable date all unobtained Consents or approvals required to be obtained by it in connection with the transfer of the Acquired Assets or performance of any Transaction Document. If and when any such Consents or approvals shall be obtained, then Seller shall promptly, and hereby does, assign its rights and obligations thereunder to Buyer without payment of consideration and Buyer shall, and hereby does, without the payment of any consideration therefor, (i) assume such rights and obligations or (ii) perform (or agree to perform) under such Transaction Document, as applicable. Each Party shall execute such good and sufficient instruments as may be necessary to evidence such assignment and assumption. The entire beneficial interest in and to, and the risk of loss with respect to, the Acquired Assets shall, regardless of when legal title thereto shall be transferred to Buyer, pass to Buyer at Closing as of the Effective Time, and Seller shall, without consideration therefor, pay, assign and remit to Buyer all monies, rights and other consideration received in respect of such performance. To the extent permitted by Law, Seller shall exercise or exploit its rights in respect of such Acquired Assets only as directed by Buyer.

6.8 Release of Encumbrances. Seller promptly shall take such actions as shall be requested by Buyer to secure the release of all Encumbrances relating to the Acquired Assets, in each case in substance and form reasonably satisfactory to Buyer and its counsel.

6.9 Retention of Records. Subject to applicable Law and, subject to any applicable restrictions as to confidentiality (as to which Buyer does not provide indemnification, or the waiver of which Seller shall not have obtained after using reasonable best efforts), Seller shall preserve any books and records relating to the System or the Business that are not delivered to Buyer hereunder for a period no less than seven (7) years after the Closing Date (or such longer period as shall be required by applicable Law), and Seller shall make available such books and records for review and copying to Buyer and its authorized representatives following the Closing at Buyer's expense upon reasonable notice during normal business hours. During such period, Seller shall permit, to the extent permitted by

applicable Law and upon request of Buyer, Buyer and any of its agents, representatives, advisors or consultants reasonable access to employees of or servicing the Business for information related to periods up to and including the Closing.

6.10 Tax Covenants.

(a) Seller shall pay all Taxes of Seller, the System and the Acquired Assets for any Tax year or period (or portion thereof) ending at or before the Closing. For the purposes of this Section 6.10(a), the portion of such personal property or similar ad valorem Tax that relates to the Tax period ending as of the Closing shall be deemed to be the amount of such Tax for the entire Tax period multiplied by a fraction, the numerator of which is the number of days in the Tax period ending as of the Closing and the denominator of which is the number of days in the entire Tax period. For purpose of this Section 6.10(a), the portion of all other Taxes that relates to the Tax period ending as of the Closing shall be determined on the basis of an interim closing of the books.

(b) Each Party agrees to furnish or cause to be furnished to the other Party, upon request, as promptly as practical, such information (including reasonable access to books and records, Tax Returns and Tax filings) and assistance as is reasonably necessary for the filing of any Tax Return, the conduct of any Tax audit, and for the prosecution or defense of any claim, suit or Proceeding relating to any Tax matter. The Parties shall cooperate with each other in the conduct of any Tax audit or other Tax Proceedings and each shall execute and deliver such powers of attorney and other documents as are necessary to carry out the intent of this Section 6.10(b).

ARTICLE 7
Indemnification

7.1 Survival of Representations and Warranties and Covenants.

(a) All of the representations and warranties made by Seller in this Agreement, its Schedules, or any certificates or documents delivered hereunder shall survive the Closing Date and consummation of the Contemplated Transactions for a period of three (3) years; provided, however, that the representations and warranties contained in Sections 3.1, 3.2, 3.3, 3.5, 3.6, 3.7, 3.9 and 3.19 shall survive indefinitely.

7.2 Indemnification and Payment of Damages by Seller.

(a) Subject to the terms of this Article 7, and to the extent allowed under Missouri law, Seller hereby agrees to fully pay, protect, defend, indemnify and hold harmless the Indemnified Persons from any and all Damages arising out of, resulting from, relating to or caused by:

(i) Any representations and warranties made by seller in or pursuant to this Agreement not being true and correct when made or when required by this Agreement to be true and correct, or any breach or default by Seller in the performance of its covenants, agreements, or obligations under this Agreement required to be performed prior to Closing;

(ii) Any breach or default by Seller in the performance of its covenants, agreements, or obligations under this Agreement or any Related Document delivered pursuant hereto required to be performed on or after Closing; and

(iii) Any Retained Liabilities.

(b) Provided further, that no event shall the Seller be liable to Buyer for any consequential damages or damages representing lost profits.

7.3 Indemnification By Buyer. Buyer hereby agrees to fully pay, protect, defend, indemnify and hold harmless Seller and its respective successors and assigns, from any and all Damages incurred by any of them arising out of, resulting from, relating to or caused by (i) any inaccuracy in or breach of any representation or warranty of, or any failure to perform or nonfulfillment of any provision or covenant contained in this Agreement or any other Transaction Document by, Buyer or (ii) transaction costs and expenses incurred by or on behalf of Buyer in connection with this Agreement or the Contemplated Transactions.

7.4 Notice of Claim. In the event that either party seeks indemnification on behalf of an Indemnified Person, such party seeking indemnification (the "Indemnified Party") shall give reasonably prompt written notice to the indemnifying party (the "Indemnifying Party") specifying the facts constituting the basis for such claim and the amount, to the extent known, of the claim asserted; provided, however, that the right of a person or entity to be indemnified hereunder shall not be adversely affected by a failure to give such notice unless, and then only to the extent that, an Indemnifying Party is actually irrevocably and materially prejudiced thereby. Subject to the terms hereof, the Indemnifying Party shall pay the amount of any valid claim not more than 10 days after the Indemnified Party provides notice to the Indemnifying Party of such amount.

7.5 Right to Contest Claims of Third Persons. If an Indemnified Party is entitled to indemnification hereunder because of a claim asserted by any Third Person, the Indemnified Party shall give the Indemnifying Party reasonably prompt notice thereof after such assertion is actually known to the Indemnified Party; provided, however, that the right of a Person to be indemnified hereunder in respect of claims made by a Third Person shall not be adversely affected by a failure to give such notice unless, and then only to the extent that, an Indemnifying Party is actually irrevocably and materially prejudiced thereby. Buyer shall have the right, upon written notice to Seller, to investigate, contest or settle the Third Person Claim. Seller may thereafter participate in (but not control) the defense of any such Third Person Claim with its own counsel at its own expense. If Seller thereafter seeks to question the manner in which Buyer defended such Third Person Claim or the amount or nature of any such settlement, Seller shall have the burden to prove by clear and convincing evidence that conduct of Buyer in the defense and/or settlement of such Third Person Claim constituted gross negligence or willful misconduct. The Parties shall make available to each other all relevant information in their possession relating to any such Third Person Claim and shall cooperate in the defense thereof, provided that Buyer shall control the defense thereof. Promptly (and in any event within 10 days) following the resolution of any Third Person Claim, Seller shall pay to Buyer any amount to which Buyer is entitled pursuant to this Article 7 with respect to such Third Person Claim.

7.6 Certain Indemnification Matters.

(a) Notwithstanding anything contained herein or elsewhere to the contrary, all "material" and "Material Adverse Effect" or similar materiality type qualifications contained in the representations and warranties set forth in this Agreement shall be ignored and not given any effect for purposes of the indemnification provisions hereof, including, without limitation, for purposes of determining whether or

not a breach of a representation or warranty has occurred and/or determining the amount of any Damages.

(b) No information or knowledge acquired, or investigations conducted, by Buyer or its representatives, of Seller or the System or otherwise shall in any way limit, or constitute a waiver of, or a defense to, any claim for indemnification by any Indemnified Persons under this Agreement.

ARTICLE 8
Termination

8.1 Termination. This Agreement may be terminated at any time prior to the Closing only (a) by mutual written Consent of Seller and Buyer, (b) by Buyer, if the Seller is unable to obtain the transfer of the DNR permit within a reasonable time (c) by Buyer, if Buyer is not in material breach of any of its representations, warranties, covenants and agreements under this Agreement and there has been a material breach of any representation, warranty, covenant or agreement contained in this Agreement on the part of Seller and Seller has not cured such breach within five (5) Business Days after receipt of notice of such breach (provided, however, that, no cure period shall be required for a breach which by its nature cannot be cured), (d) by Buyer, if, at any time before Closing, Buyer is not satisfied with the results of its due diligence review of the System and the Acquired Assets, (e) by Seller if Seller is not in material breach of any of its representations, warranties, covenants and agreements under this Agreement and there has been a material breach of any representation, warranty, covenant or agreement contained in this Agreement on the part of Buyer and Buyer has not cured such breach within five (5) Business Days after receipt of notice of such breach (provided, however, that, no cure period shall be required for a breach which by its nature cannot be cured), (f) by Seller or Buyer upon written notice to the other, if any court of competent jurisdiction or other competent Governmental Entity shall have issued a statute, rule, regulation, Order, decree or injunction or taken any other action permanently restraining, enjoining or otherwise prohibiting the Contemplated Transactions, and such statute, rule, regulation, Order, decree or injunction or other action shall have become final and non-appealable, (g) by Buyer, if all necessary regulatory approvals (including rate treatment, refunds and setting of rate base and all approvals described in Section 5.1(f)) contemplated hereby or otherwise necessary to close the Contemplated Transactions have not been obtained within 270 days of the date hereof, or (h) by Buyer if any Material Adverse Effect shall have occurred or, in the reasonable judgment of Buyer, shall be reasonably likely to occur.

8.2 Effect of Termination. The right of each Party to terminate this Agreement under Section 8.1 is in addition to any other rights such Party may have under this Agreement or otherwise, and the exercise of a right of termination will not be an election of remedies. If this Agreement is terminated pursuant to Section 8.1, all further obligations of the Parties under this Agreement will terminate, except that the obligations set forth in the Confidentiality Agreement, Section 6.1(b) ("Confidentiality"), Section 6.2 ("Publicity; Announcements"), this Section 8.2 ("Effect of Termination") or Article 9 ("General Provisions") will survive; provided, however, that if this Agreement is terminated by a Party because of the breach of the Agreement by another Party or because one or more of the conditions to the terminating Party's obligations under this Agreement is not satisfied as a result of the other Party's failure to comply with its obligations under this Agreement, the terminating Party's right to pursue all legal remedies will survive such termination unimpaired.

ARTICLE 9
General Provisions

9.1 Amendment and Modification. No amendment, modification or supplement of any provision of this Agreement will be effective unless the same is in writing and is signed by the Parties.

9.2 Assignments. Seller may not assign or transfer any of its rights or obligations under this Agreement to any other Person without the prior written Consent of Buyer. Buyer may not assign its rights and obligations under this Agreement to any third party, without the prior written Consent of Seller, but may assign its rights and obligations under this Agreement to any Related Person or successor in interest without the Consent of Seller. Subject to this Section 9.2, all provisions of this Agreement are binding upon, inure to the benefit of and are enforceable by or against the Parties hereto and their respective heirs, executors, administrators or other legal representatives and permitted successors and assigns.

9.3 Captions; Construction. Captions contained in this Agreement and any table of contents preceding this Agreement have been inserted herein only as a matter of convenience and in no way define, limit, extend or describe the scope of this Agreement or the intent of any provision hereof. In the event of an ambiguity or question of intent or interpretation arises, this Agreement shall be construed as if drafted jointly by the Parties and no presumption or burden of proof shall arise favoring or disfavoring any Party by virtue of the authorship of any provisions of this Agreement.

9.4 Counterparts; Facsimile. This Agreement may be executed by the Parties hereto on any number of separate counterparts, and all such counterparts so executed constitute one agreement binding on all the Parties hereto notwithstanding that all the Parties hereto are not signatories to the same counterpart. For purposes of this Agreement, a document (or signature page thereto) signed and transmitted by e-mail, facsimile machine or telecopier is to be treated as an original document.

9.5 Entire Agreement. This Agreement and the other Transaction Documents constitute the entire agreement among the Parties hereto pertaining to the subject matter hereof and supersede all prior agreements, letters of intent, understandings, negotiations and discussions of the Parties hereto, whether oral or written, executed by the Parties pertaining to the subject matter hereof. All of the Exhibits and Schedules attached to this Agreement are deemed incorporated herein by reference.

9.6 Governing Law. This Agreement and the rights and obligations of the Parties hereunder are to be governed by and construed and interpreted in accordance with the Laws of the State of Missouri applicable to Contracts made and to be performed wholly within Missouri, without regard to choice or conflict of laws rules.

9.7 Legal Fees, Costs. Except as provided herein, all legal, consulting and advisory fees and other costs and expenses incurred in connection with this Agreement and the Contemplated Transactions are to be paid by the Party incurring such costs and expenses.

9.8 Notices. All notices, Consents, requests, demands and other communications hereunder are to be in writing and are deemed to have been duly given, made or delivered: (i) when delivered in person or by e-mail, (ii) three (3) Business Days after deposited in the United States mail, first class postage prepaid, or (iii) in the case of telegraph or overnight courier services, one (1) Business Day after delivery to the telegraph company or overnight courier service with payment provided, in each case addressed as follows:

(a) if to Seller, (i) to City of Stewartsville, Attention Mayor Mark Francis, City Hall, 501 S. Main Street, Stewartsville, Missouri 64490 with a copy to Mr. Anthony Hernandez at 250 NE Tudor Road, Lee's Summit, Missouri 64086 (ahernandez@laubermunicipal.com)

(b) if to Buyer, (i) to Missouri-American Water Company, 727 Craig Road, St. Louis, Missouri 63141, Attn: Rich Svindland, President (rich.svindland@amwater.com), (ii) with a copy to Missouri-American Water Company, 727 Craig Road, St. Louis, Missouri 63141, Attn: Legal Department (timothy.luft@amwater.com) or to such other address as any Party hereto may designate by notice to the other Parties in accordance with the terms of this Section.

9.9 Severability. This Agreement shall be deemed severable; the invalidity or unenforceability of any term or provision of this Agreement shall not affect the validity or enforceability of this Agreement or of any other term hereof, which shall remain in full force and effect, for so long as the economic or legal substance of the Contemplated Transactions is not affected in any manner materially adverse to any Party.

9.10 Specific Performance and Injunctive Relief; Remedies. The Parties hereto recognize that if any or all of them fail to perform, observe or discharge any of their respective obligations under this Agreement, a remedy at law may not provide adequate relief to the other Parties hereto. Therefore, in addition to any other remedy provided for in this Agreement or under applicable Law, any Party hereto may demand specific performance of this Agreement, and such Party shall be entitled to temporary and permanent injunctive relief, in a court of competent jurisdiction at any time when any of the other Parties hereto fail to comply with any of the provisions of this Agreement applicable to such Party. To the extent permitted by applicable Law, all Parties hereto hereby irrevocably waive any defense based on the adequacy of a remedy at law which might be asserted as a bar to such Party's remedy of specific performance or injunctive relief. Except as otherwise provided herein, all rights and remedies of the parties under this Agreement are cumulative and without prejudice to any other rights or remedies under Law. Nothing contained herein shall be construed as limiting the Parties' rights to redress for fraud.

9.11 No Third-Party Beneficiary. This Agreement is solely for the benefit of the Parties hereto and their respective successors and permitted assigns (and those Persons entitled to recover under the indemnity provisions hereof), and no other Person (other than those Persons entitled to recover under the indemnity provisions hereof) has any right, title, priority or interest under this Agreement or the existence of this Agreement.

9.12 Waiver of Compliance; Consents. Any failure of a Party to comply with any obligation, covenant, agreement or condition herein may be waived by the other Party only by a written instrument signed by the Party granting such waiver, but such waiver or failure to insist upon strict compliance with such obligation, covenant, agreement or condition shall not operate as a waiver of, or estoppel with respect to, any subsequent or other failure. Whenever this Agreement requires or permits Consent by or on behalf of any

9.13 Party hereto, such Consent shall be given in writing in a manner consistent with the

requirements for a waiver of compliance as set forth in this Section 9.12.

IN WITNESS WHEREOF, the Parties have executed this Asset Purchase Agreement as of the date first set forth above:

Missouri-American Water Company, a Missouri corporation

By: _____
Rich Svindland, President

Attest: _____

The City of Stewartsville

By: _____
Mayor Mark Francis

Attest: _____

EXHIBIT 1
Definitions

"Acquired Assets" means all right, title, and interest in and to all of the assets which are owned or held by Seller as of the Effective Time that constitute the System or that are used in the operation thereof, including, with respect to the System, all of its (a) Real Property now used and required in the ongoing operation of the System, (b) Tangible Personal Property, (c) intellectual property, goodwill associated therewith, licenses and sublicenses granted and obtained with respect thereto, and rights thereunder, remedies against past, present, and future interests therein under the Laws of all jurisdictions, (d) leases, subleases, easements, rights of way, and rights thereunder, (e) all rights of Seller in and to the Assumed Contracts, (f) all rights of Seller in and to any indentures, mortgages, instruments, Encumbrances, or guaranties secured for the operation of the System, (g) accounts, notes, and other receivables arising after the Effective Time, (h) claims, deposits, prepayments, refunds, causes of action, rights of recovery, rights of set-off, and rights of recoupment (including any such item relating to the payment of Taxes), (i) franchises, approvals, Permits, pending application for Permits and Permit renewals, exemptions from any Permits, licenses, Orders, registrations, certificates, variances, and similar rights obtained from governments and governmental agencies in each case to the extent assignable or transferable to Missouri-American, (j) books, data, records, ledgers, files, documents, correspondence, lists, plats, architectural plans, drawings, specifications, creative materials, studies, reports, and other printed or written materials related to Seller's construction, maintenance, and operation of the System, and (k) all of the intangible rights and property, if any, of Seller utilized in the operation of the System, provided that Acquired Assets shall not include any Excluded Assets.

"Acquisition Proposal" means any offer or proposal for the acquisition of Seller, the Acquired Assets or any portion thereof, whether by way of merger, consolidation or statutory share exchange or the acquisition of shares of capital stock, the acquisition of assets or similar transaction.

"Adjustment Amount" means the amount determined in the manner described on Exhibit 3. The Adjustment Amount may be a positive or negative number, and if the Adjustment Amount is a

negative number, the Purchase Price shall be less than **One Million Nine Hundred Thousand Dollars ($1,900,000.00).**

"Affiliate" means, with respect to any Person, any Person which, directly or indirectly controls, is controlled by, or is under common control with, such Person.

"Allocation" means a reasonable and supportable allocation of the Purchase Price and the Assumed Liabilities among the Acquired Assets in accordance with Code section 1060 and the Treasury regulations thereunder (and any similar provisions of state or local Law, as appropriate).

"Assignment and Assumption Agreement" means an Assignment and Assumption Agreement for the Assumed Liabilities in form and substance reasonably acceptable to Missouri-American.

"Assumed Contracts" means the Contracts listed on Exhibit 3.

"Assumed Liabilities" means only the Liabilities arising out of, resulting from or relating to the Assumed Contracts, but only to the extent such Liabilities (A) are to be performed after the Effective Time, (B) do not arise as a consequence of any breach or default prior to the Effective Time, and (C) are accompanied by a correlated duty of performance or payment on the part of the other party(s) thereto.

"Audited Financial Statements" means the audited balance sheets of Seller as of December 31, 2019 and 2020 and the related audited statements of income and cash flows for the twelve (12) month period ended December 31, 2019 and 2020, respectively.

"Bill of Sale" means a bill of sale for all of the Acquired Assets that are Tangible Personal Property in form and substance reasonably acceptable to Missouri-American.

"Business" means the business of Seller as the same is conducted by Seller as of the date hereof and as the same shall be conducted by Seller as of immediately prior to the Closing.

"Business Day(s)" means any day other than (i) Saturday or Sunday, or (ii) any other day on which governmental offices in the State of Missouri are permitted or required to be closed.

"Cleanup" means investigation, cleanup, removal, containment or other remediation or response actions.

"Closing" means the closing of the Contemplated Transactions.

"Closing Date" means the date on which the Closing actually occurs.

"Closing Statement" is a statement that sets forth the Purchase Price, closing costs and any payments to any parties (bonds, loans, etc) as set forth on Schedule 2.2.

"Code" means the Internal Revenue Code of 1986, as amended, and the regulations and other guidance promulgated thereunder.

"Confidential Information" means (i) information not available to the general public concerning the System and financial affairs with respect to a Party hereto or its Affiliates, and (ii) analyses, compilations, forecasts, studies and other documents prepared on the basis of such information by the Parties or their agents, representatives, any Related Person, employees or consultants.

"Consent" means any approval, consent, ratification, waiver or other authorization.

"Contemplated Transactions" means the transactions contemplated by this Agreement and the Transaction Documents.

"Contract" means any agreement, contract, obligation, legally binding commitment or undertaking (whether written or oral and whether express or implied).

"Damages" means any and all claims, losses and other liabilities, plus reasonable attorneys' fees and expenses, including court costs and expert witness fees and costs, incurred in connection with such claims, losses and other liabilities and/or enforcement of this Agreement.

"DNR" means the Missouri Department of Natural Resources.

"Effective Time" means 12:01 a.m. on the Closing Date.

"Encumbrance" means any charge, claim, community property interest, condition, easement, equitable interest, encumbrance, lien, mortgage, option, pledge, security interest, right of first refusal, right of way, servitude or restriction of any kind, including any restriction on use, transfer, receipt of income or exercise of any other attribute of ownership, or any repayment obligation under any grant.

"Environment" means soil, land surface or subsurface strata, surface waters (including navigable waters, ocean waters, streams, ponds, drainage basins and wetlands), groundwater, drinking water supply, stream sediments, ambient air (including indoor air), plant and animal life and any other environmental medium or natural resource.

"Environmental, Health and Safety Liabilities" means any cost, damages, expense, liability, obligation or other responsibility arising from or under Environmental Law or Occupational Safety and Health Law and consisting of or relating to (a) any environmental, health or safety matters or conditions (including on-site or off-site contamination, occupational safety and health and regulation of chemical substances or products), (b) fines, penalties, judgments, awards, settlements, legal or administrative Proceedings, damages, losses, claims, demands and response, investigative, remedial or inspection costs and expenses arising under Environmental Law or Occupational Safety and Health Law, (c) financial responsibility under Environmental Law or Occupational Safety and Health Law for cleanup costs or corrective action, including any Cleanup required by applicable Environmental Law or Occupational Safety and Health Law (whether or not such Cleanup has been required or requested by any Governmental Authority or any other Person) and for any natural resource damages, or (d) any other compliance, corrective, investigative or remedial measures required under Environmental Law or Occupational Safety and Health Law. The terms "removal," "remedial," and "response action," include the types of activities covered by the United States Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9601 et seq., as amended, and the United States Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 et seq., as amended.

"Environmental Law" means any Law relating to pollution or protection of human health, safety, the environment, natural resources or Law relating to releases or threatened releases of Hazardous Materials into the indoor or outdoor environment (including, without limitation, ambient air, surface water, groundwater, land, surface and subsurface strata) or otherwise relating to the manufacture, processing, distribution, use, treatment, storage, release, transport or handling of Hazardous Materials.

"Excluded Assets" means (a) all cash, cash equivalents and short-term investments of Seller, including all bank accounts, demand accounts, certificates of deposit, time deposits, marketable securities, negotiable instruments and the proceeds of accounts receivable paid prior to the Closing

Date, other than deposits and funds included in the Acquired Assets, (b) all accounts receivable of Seller accrued and payable prior to the Effective Time, (c) all intercompany accounts receivable of Seller and notes for those accounts receivable, (d) all Contracts to which the Seller is a party (other than the Assumed Contracts), including the Contracts listed on Schedule 3.8 (other than the Assumed Contracts listed thereon), (e) all equity interests owned or held by Seller, (f) all insurance policies of Seller and rights thereunder, (g) all causes of action, judgments, claims, reimbursements and demands of whatever nature (including rights under and pursuant to all warranties, representations and guarantees made by suppliers of products, materials or equipment, or components thereof) in favor of Seller to the extent related to any Excluded Asset or Excluded Liability, (h) all corporate minute books and stock Records of Seller and personnel Records and other Records that Seller is required by Law to retain in its possession, (i) all rights of Seller under this Agreement and the Transaction Documents and (j) all rights, properties and assets set forth on Schedule A.

"Excluded Liabilities" means any and all Liabilities of Seller, whether or not incurred in connection with the operation of the System, other than the Assumed Liabilities.

"Financial Statements" means the Audited Financial Statements and the Unaudited Financial Statements.

"Franchise Agreement" means that certain Franchise Agreement in form and substance reasonably acceptable to Missouri-American.

"Governmental Authority(ies)" means any (a) nation, state, county, city, village, district or other jurisdiction of any nature, (b) federal, state, local, municipal, foreign or other government, (c) governmental or quasi-governmental authority of any nature (including any governmental agency, branch, department, official or entity and any court or other tribunal), (d) multi-national organization or body or (e) body exercising, or entitled to exercise, any administrative, executive, judicial, legislative, police, regulatory or taxing authority or power of any nature. For purposes of this Agreement, Seller shall not be deemed included in the definition of a "Governmental Authority."

"Hazardous Activity" means the distribution, generation, handling, importing, management, manufacturing, processing, production, refinement, Release, storage, transfer, transportation, treatment or use (including any withdrawal or other use of groundwater) of Hazardous Materials in, on, under, about or from the System or any part thereof into the Environment, and any other act, system, operation or thing that increases the danger or risk of danger, or poses an unreasonable risk of harm to persons or property on or off the System, or that may affect the value of the System or the Business.

"Hazardous Materials" means any waste or other substance that is listed, defined, designated or classified as, or otherwise determined to be, hazardous, radioactive or toxic or a pollutant or a contaminant under or pursuant to any Environmental Law, including any admixture or solution thereof, and specifically including petroleum and all derivatives thereof or synthetic substitutes therefor and asbestos or asbestos-containing materials.

"Improvements" means all buildings, structures, fixtures, building systems and equipment, and all components thereof, including the roof, foundation, load-bearing walls, and other structural elements thereof, heating, ventilation, air conditioning, mechanical, electrical, plumbing, and other building systems, environmental control, remediation, and abatement systems, sewer, storm, and waste water systems, irrigation and other water distribution systems, parking facilities, fire protections, security, and surveillance systems, and telecommunications, computer, wiring, and cable installations, included in the Real Property.

"Indemnified Persons" means Missouri-American and Missouri-American's Affiliates and the past, present and future officers, directors, shareholders, partners, employees, agents, attorneys, representatives, successors and assigns of each of them in their capacities as such.

"Knowledge" means (i) the actual knowledge of a particular fact by any of the Persons listed on Schedule B (each, a "Knowledge Party"), and (ii) knowledge that would have been acquired by any Knowledge Party acting reasonably and diligently in the performance of such person's role with and duties to Seller. The words "know," "knowing" and "known" shall be construed accordingly.

"Law(s)" means any law, rule, regulation or ordinance of any federal, foreign, state or local Governmental Authority or other provisions having the force or effect of law, including all judicial or administrative Orders and determinations, and all common law.

"Lease" means that certain real property lease in form and substance reasonably acceptable to Missouri-American.

"Liability" or "Liabilities" means any liability, indebtedness or obligation of any kind, character or description, whether known or unknown, absolute or contingent, accrued or unaccrued, disputed or undisputed, liquidated or unliquidated, secured or unsecured, joint or several, due or to become due, vested or unvested, executory, determined, determinable or otherwise and whether or not the same is required to be accrued on the financial statements of a Person.

"Material Adverse Effect" means a material adverse effect on (a) the business, assets, Liabilities (contingent or otherwise), operations or condition (financial or otherwise) of the System, the Business and the Acquired Assets, taken as a whole; provided, however, that "Material Adverse Effect" shall not include any changes resulting from general business or economic conditions, including such conditions related to the industry in which the System is operated, which do not specifically relate to the System and which are not disproportionately adverse to the System than to other businesses being operated in the industries in which the System operates, or (b) the ability of Seller to consummate the Contemplated Transactions.

"MoPSC" means the Missouri Public Service Commission.

"Occupational Safety and Health Law" means any Law designed to provide safe and healthful working conditions and to reduce occupational safety and health hazards, and any program, whether governmental or private (including those promulgated or sponsored by industry associations and insurance companies), designed to provide safe and healthful working conditions.

"Order" means any award, decision, injunction, judgment, order, ruling, subpoena or verdict entered, issued, made or rendered by any court, administrative agency or other Governmental Authority or by any arbitrator.

"Ordinary Course of Business" means, with respect to the System and the Business, only the ordinary course of commercial operations customarily engaged in by the System and the Business consistent with past practices, and specifically does not include (a) activity (i) involving the purchase or sale of the System or the Business or any product line or business unit thereof, or (ii) that requires approval by governing persons or equity holders of Seller or any of its Affiliates, as applicable, or (b) the incurrence of any Liability for any tort or any breach or violation of or default under any Contract or Law.

"People With Knowledge" means any City employee including but not limited to the Mayor, City Administrator, City Clerk and Public Works Director, who may have Knowledge relating to as defined by these definitions.

"Permit" means any approval, Consent, license, permit, waiver or other authorization issued, granted, given or otherwise made available by or under the authority of any Governmental Authority or pursuant to any Law.

"Person" means any individual, corporation (including any non-profit corporation), general or limited partnership, limited liability company, joint venture, cooperative, estate, trust, association, organization, labor union or other entity or Governmental Authority.

"Proceeding" means any action, arbitration, audit, hearing, investigation, litigation or suit (whether civil, criminal, administrative, investigative or informal) commenced, brought, conducted or heard by or before, or otherwise involving, any Governmental Authority or arbitrator.

"Purchase Price" means One Million Nine Hundred Thousand Dollars ($1,900,000.00).

"Real Property" means those parcels of real property and those easements or any right-of-way used in the operation of the System, together with all fixtures, fittings, buildings, structures and other Improvements erected therein or thereon.

"Records" means information that is inscribed on a tangible medium or that is stored in an electronic or other medium and is retrievable in perceivable form.

"Related Person" means: (a) with respect to a particular individual, (i) each other member of such individual's Family, (ii) any Person that is directly or indirectly controlled by such individual or one or more members of such individual's Family, (iii) any Person in which such individual or members of such individual's Family hold (individually or in the aggregate) a Material Interest, and (iv) any Person with respect to which such individual or one or more members of such individual's Family serves as a director, officer, partner, executor or trustee (or in a similar capacity) and (b) with respect to a specified Person other than an individual, (i) any Person that directly or indirectly controls, is directly or indirectly controlled by, or is directly or indirectly under common control with such specified Person, (ii) any Person that holds a Material Interest in such specified Person, (iii) each Person that serves as a director, officer, partner, executor or trustee of such specified Person (or in a similar capacity), (iv) any Person in which such specified Person holds a Material Interest, (v) any Person with respect to which such specified Person serves as a general partner or a trustee (or in a similar capacity) and (vi) any Related Person of any individual described in clause (ii) or (iii). For purposes of this definition, (x) the "Family" of an individual includes (A) the individual, (B) the individual's spouse, (C) any other natural person who is related to the individual or the individual's spouse within the second degree, and (D) any other natural person who resides with such individual; and (y) "Material Interest" means direct or indirect beneficial ownership (as defined in Rule 13d-3 under the Securities Exchange Act of 1934) of voting securities or other voting interests representing at least five percent (5%) of the outstanding equity securities or equity interests in a Person.

"Release" means any spilling, leaking, emitting, discharging, depositing, escaping, leaching, dumping or other releasing into the Environment, whether intentional or unintentional.

"Statement" means a statement setting forth Buyer's determination and calculation, as of the Closing Date, of the Adjustment Amount, setting forth in reasonable detail the respective components

and calculations thereof and prepared in good faith and in accordance with GAAP and the Accounting Methodologies.

"Tangible Personal Property" means all machinery, equipment, tools, furniture, office equipment, computer hardware, supplies (including chemicals and spare parts), materials, vehicles and other items of tangible personal property of every kind owned or leased by Seller (wherever located and whether or not carried on Seller 's books), together with any express or implied warranty by the manufacturers or lessors of any item or component part thereof, and all maintenance records and other documents relating thereto.

"Tax" or "Taxes" means all taxes, charges, withholdings, fees, duties, levies, or other like assessments including, without limitation, income, gross receipts, ad valorem, value added, excise, property, sales, employment, withholding, social security, Pension Benefit Guaranty Corporation premium, environmental (under Section 59A of the Code) occupation, use, service, service use, license, payroll, franchise, transfer and recording taxes, fees and charges, windfall profits, severance, customs, import, export, employment or similar taxes, charges, fees, levies or other assessments, imposed by any Governmental Authority, whether computed on a separate, consolidated, unitary, combined or any other basis, and shall include any interest, fines, penalties, assessments, or additions to tax resulting from, attributable to, or incurred in connection with any such Tax or any contest or dispute thereof, and including any Liability for the Taxes of another Person under Treasury Regulation section 1.1502-6 (or any similar provisions of state, local, or foreign Law), as transferee or successor, by Contract or otherwise.

"Tax Return" or "Tax Returns" means any return, declaration, report, claim for refund, or information return or statement relating to, or required to be filed in connection with any Taxes, including any schedule or attachment thereto and including any amendment thereof.

"Third Person" means a claimant other than an indemnified person hereunder.

"Third Person Claim" means a claim alleged by a Third Person.

"Transaction Documents" means this Agreement, the Bill of Sale, the Assignment and Assumption Agreement, the Franchise Agreement, the Lease and all other documents, certificates, assignments and agreements executed and/or delivered in connection with this Agreement in order to consummate the Contemplated Transactions, as the same may be amended, restated, modified or otherwise replaced from time to time.

"Unaudited Financial Statements" means the unaudited balance sheet of Seller as of October 31, 2020 and the related compiled consolidated statements of income and cash flows for the three month period then ended.

Rules of Construction

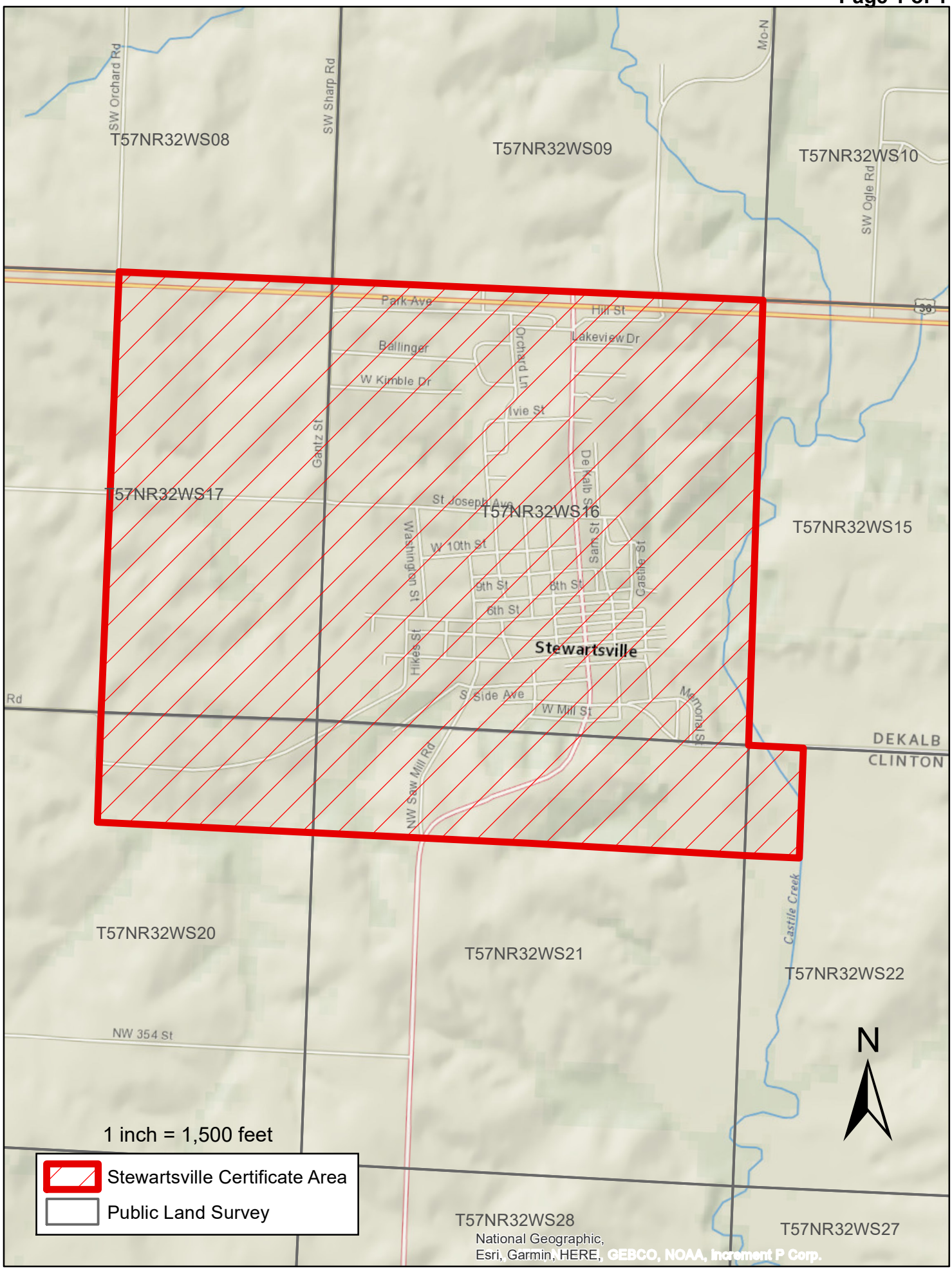
For purposes of this Agreement and the other documents executed in connection herewith, the following rules of construction shall apply, unless specifically indicated to the contrary: (i) wherever from the context it appears appropriate, each term stated in either the singular or plural shall include the singular and the plural, and pronouns stated in the masculine, feminine or neuter gender shall include the masculine, the feminine and the neuter; (ii) the term "or" is not exclusive; (iii) the term "including" (or any form thereof) shall not be limiting or exclusive; (iv) the terms "hereof," "herein" and

"herewith" and words of similar import shall, unless otherwise stated, be construed to refer to this Agreement as a whole (including the Schedules and Exhibits hereto) and not to any particular provision of this Agreement; (v) all references to statutes and related regulations shall include any amendments of same and any successor statutes and regulations as well as all rules and regulations promulgated thereunder, unless the context otherwise requires; (vi) all references in this Agreement or in the Schedules to this Agreement to sections, schedules, exhibits and attachments shall refer to the corresponding sections, schedules, exhibits and attachments of or to this Agreement; and (vii) all references to any instruments or agreements, including references to any of the documents executed in connection herewith, shall include any and all modifications or amendments thereto and any and all extensions or renewals thereof.

Legal Description

A tract of land in Section 16 and part of Sections, 21 and 22, Township 57 North, Range 32 West, in, City of Stewartsville, Dekalb County and Clinton County, Missouri and being more particularly described as follows:

Beginning at the Northwest corner of **Section 16, Township 57 North, Range 32 West**; thence East, along the north line of said **Section 16** to the Northeast corner thereof, being also the Northwest corner of **Section 15**; thence South, along the East line of said Section to the Southeast corner thereof, being also the Northeast corner of **Section 21** and the Northwest corner of **Section 22**; thence East, along the North line **Section 22** to the Northeast corner of the West Half of the Northwest Quarter of the Northwest Quarter said **Section 22**; thence South, along the East line of said West Half to the Southeast corner thereof; thence West, along the South line of said West Half to the Southwest corner thereof, being also on the West line of said **Section 22** and being the Southeast corner of the Northeast Quarter of the Northeast Quarter of **Section 21**; thence West, along the South line of said Quarter-Quarter Section and the West prolongation thereof to the Southwest corner of the Northwest Quarter of the Northwest Quarter of **Section 21,** being also on the West line of said **Section 21** and the East line of **Section 20**; thence continuing West, along the South line of said Quarter-Quarter Section and the West prolongation thereof to the Southwest corner of the Northwest Quarter of the Northeast Quarter of **Section 20**; thence North, along the West line of said Quarter-Quarter Section to the Northwest corner thereof, being also the Southwest corner of the Southeast Quarter of **Section 17**; thence North, along the West line of said Quarter section and the North prolongation thereof to the Northwest corner of the Northeast Quarter of said **Section 17,** being also the Southwest corner of the Southeast Quarter of **Section 8**; thence East, along the North line of said Quarter section to the Northeast corner thereof and the POINT OF BEGINNING. Containing 53,143,200 Square Feet or 1,200 acres more or less.


T57NR32WS08
T57NR32WS09
T57NR32WS10
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T57NR32WS16
T57NR32WS15
T57NR32WS20
T57NR32WS21
T57NR32WS22
T57NR32WS28
T57NR32WS27
SW Orchard Rd
SW Sharp Rd
Mo-N
SW Ogle Rd
Park Ave
Hill St
Lakeview Dr
Ballinger
W Kimble Dr
Orchard Ln
Ivie St
Gantz St
De Kalb St
St Joseph Ave
Washington St
W 10th St
Sam St
Castle St
9th St
8th St
6th St
Hikes St
Stewartsville
S Side Ave
W Mill St
Memorial St
NW Stewartsville Mill Rd
DEKALB
CLINTON
Castile Creek
NW 354 St
N
1 inch = 1,500 feet
Stewartsville Certificate Area
Public Land Survey
National Geographic,
Esri, Garmin, HERE, GEBCO, NOAA, Increment P Corp.

Appendix F-C has been marked CONFIDENTIAL in its entirety.

VALUATION REPORT

City of Stewartsville, Missouri
Water Delivery and Wastewater Collection Systems

Prepared for:

Ms. Nikki Pacific
Manager Business Development – Proposal & Integration
Missouri American Water Company
727 Craig Road
St. Louis, Missouri 63141

Prepared by:

Joseph E. Batis, MAI, AI-GRS, R/W-AC
Edward J. Batis & Associates, Inc.
313 N. Chicago Street
Joliet, Illinois 60432

Edward W. Dinan, CRE, MAI
Dinan Real Estate Advisors, Inc.
2023 South Big Bend Boulevard
St. Louis, Missouri 63117

Elizabeth Goodman Schneider, ASA
Goodman Appraisal Consultants, LLC
6260 S. Lake Drive, #718
Cudahy, WI 53110

DINAN REAL ESTATE ADVISORS, INC.	UTILITY VALUATION EXPERTS, INC.	GOODMAN APPRAISAL CONSULTANTS, LLC
2023 South Big Bend Boulevard	313 N. Chicago Street, Suite 101	6260 S. Lake Drive, #718
St. Louis, Missouri 63117	Joliet, Illinois 60432	Cudahy, Wisconsin 53110

October 29, 2021

Ms. Nikki Pacific
Manager Business Development – Proposal & Integration
Missouri American Water Company
727 Craig Road
St. Louis, Missouri 63141

Re: ***Valuation Report***
City of Stewartsville
DeKalb and Clinton Counties, Missouri
Water Delivery and Wastewater Collection Systems Appraisal

Dear Ms. Pacific:

In accordance with your request, we have made a physical inspection on August 4, 2021, of the facilities and real estate that comprise the City of Stewartsville water and wastewater systems' assets.[1]

The water delivery and wastewater collection systems (referred to herein as "the subject properties") are owned by the City of Stewartsville and are located partially in DeKalb County, Missouri and partially in Clinton County, Missouri. The customer count includes 357 water customers and 354 wastewater customers.

The purpose of the appraisal report was to arrive at opinions of market value of the subject water and wastewater systems as private systems (the intended use) as of the date of our inspection of the subject property systems.

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[1] *Throughout the attached appraisal report, any reference to the appraisers' "inspection", "subject property inspection", "inspection of the subject property", "inspection of the subject water and wastewater systems", etc., refers to the appraisers' customary task of viewing the subject property for purposes of observing the condition, layout, design, and utility of the real property (land and building), as is typical in the appraisal profession and in the framework of completing the appraisal process. The reference to the term "inspection" in the context of the appraisers' work should not be interpreted to suggest the appraisers have any expertise and/or qualifications in the assessment of the condition and functionality of any mechanical and non-mechanical components of the subject property water and wastewater systems. The appraisers refer the client and intended users of the attached appraisal report to the engineer's report for an assessment of the water and wastewater systems' infrastructure components. The three professional real estate appraisers co-signing the attached appraisal report are not qualified to independently detect and assess the condition and functionality of the water and wastewater systems' infrastructure components. However, the three professional real estate appraisers co-signing the attached appraisal report assume that the water and wastewater systems' components (including the plant, pumps, and all related facilities) are in proper working order and have been maintained adequately to meet all pertinent codes and regulatory requirements.*

This Appraisal Report is prepared in conformance with Standards Rule 2-2(a) of the 2020-2021 Edition of the *Uniform Standards of Professional Appraisal Practice* (USPAP). In addition to being prepared in compliance with USPAP, this appraisal has been prepared in accordance with the *Code of Ethics* and *Standards of Professional Practice* of the Appraisal Institute.

In completing our analysis of the subject property water and wastewater systems, we relied on a report prepared by Flinn Engineering, dated August 16, 2021. The Flinn Engineering report is attached to this appraisal report. Based upon our analysis of the subject property systems and taking into consideration the independent report prepared by Flinn Engineering, our opinions of the market values of the City of Stewartsville systems are as follows:

Market Value of Water Delivery System	Market Value of Wastewater Collection System
$900,000	$1,400,000

This appraisal report is prepared subject to the Extraordinary Assumptions found on Pages 12-15. The assumptions address several significant issues that impact the analysis and conclusions presented in the attached report, including:

Each of the three appraisers co-signing this appraisal report (Mr. Dinan, Mr. Batis, and Ms. Goodman-Schneider) participated in the assignment by collecting and analyzing relevant data, and forming the opinions and final conclusions.

In addition, Mr. Jordan Leiner of Dinan Real Estate assisted in the collection of data for this assignment. While each of the appraisers performed different tasks and were responsible for different parts of this valuation assignment, the appraisers consulted throughout the assignment with each other, the client, and representatives from the City of Stewartsville.

We certify that we personally have no undisclosed interest, either present or contemplated, in the real estate described herein as the subject properties; furthermore, neither the procurement of this appraisal assignment nor the negotiated compensation was contingent upon predetermined conclusions of value, value estimates which advocate the client's position, or the occurrence of any subsequent event.

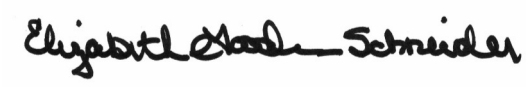
Ms. Pacific
Missouri American Water Company
October 29, 2021
Page 3

On behalf of Utility Valuation Experts, Inc., Goodman Appraisal Consultants, LLC, and Dinan Real Estate Advisors, Inc., we appreciate the opportunity to prepare this appraisal report for the Missouri American Water Company. Please feel free to contact the undersigned should you have any questions regarding the assignment.

Sincerely,

Joseph E. Batis, MAI, AI-GRS, R/W-AC
Utility Valuation Experts, Inc.
General Certification Lic. #553.000493 (IL; Expires 09/23)
General Certification Lic. #2016044083 (MO; Expires 06/22)
General Certification Lic. #CG03684 (IA; Expires 06/22)
General Certification Lic. #5660 (TN; Expires 06/23)
General Certification Lic. #4001017857 (VA; Expires 06/23)
General Certification Lic. #TX 131049 G (TX; Expires 11/22)
General Certification Lic. #A8416 (NC; Expires 06/22)
General Certification Lic. #CGA-1027103 (AZ ; Expires 07/23)

Edward W. Dinan, CRE, MAI
Dinan Real Estate Advisors, Inc.
State Certified General Real Estate Appraiser RA001300 (MO; Expires 06/22)



Elizabeth Goodman-Schneider, ASA
Goodman Appraisal Consultants, LLC
Colorado Certified General Appraiser No. CG.200001080 exp 12/31/2021
Florida State Certified General Real Estate Appraiser No. RZ4093 exp 11/30/2022
Illinois Certified General Real Estate Appraiser No. 553-001973 exp 9/30/2023
Indiana Certified General Real Estate Appraiser No. CG41700036 exp 6/30/2022
Iowa Certified General Appraiser No. CG02980 exp 6/30/2022
Kentucky Certified General Real Property Appraiser No. 5262 exp 6/30/2022
Louisiana Certified General Appraiser No. APR.04505-CGA exp 12/31/2021
Minnesota Certified General Real Property Appraiser No. 40232088 exp 8/31/2022
Missouri State Certified General Real Estate Appraiser No. 2016042105 exp 6/30/2022
Ohio Certified General Real Estate Appraiser No. ACGO.2017003680 exp 8/10/2022
Pennsylvania Certified General Appraiser No. GA004327 exp 6/30/2023
Rhode Island Certified General Appraiser No. CGA.0020068 exp 8/17/2023
Wisconsin Certified General Appraiser No. 1586-010 exp 12/14/2021

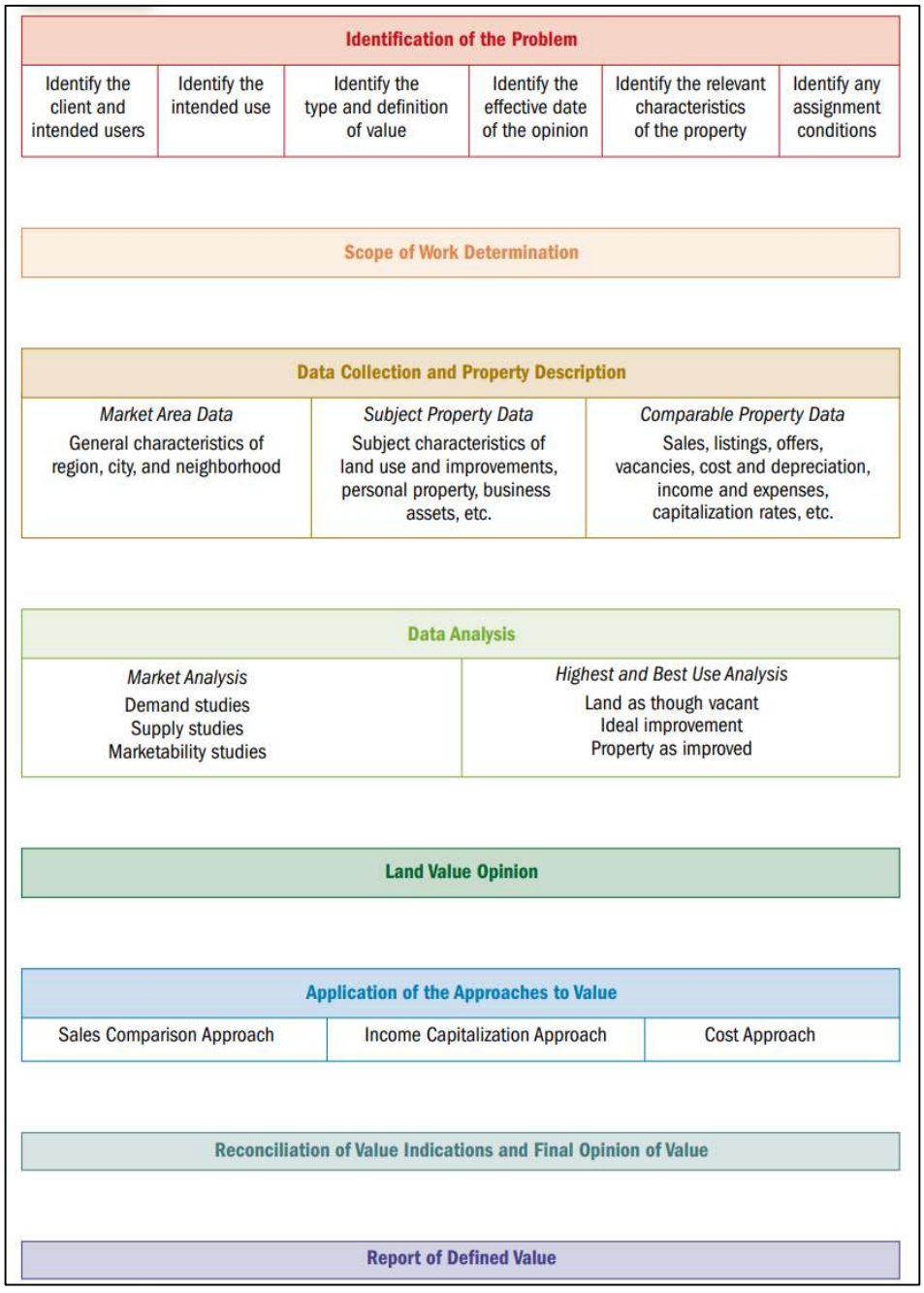
T A B L E O F C O N T E N T S

Summary of Salient Facts

Property Type:	Water and wastewater systems
Location:	City of Stewartsville DeKalb and Clinton Counties, Missouri
Facilities:	The subject property includes the facilities that comprise the delivery of public water and the collection and treatment of wastewater. The water delivery system serves 357 customers and the wastewater collection and treatment system serves 354 customers. Please refer to the attached report prepared by Flinn Engineering for a list of the infrastructure, system assets, and facilities.
Date of Inspection:	August 4, 2021
Date of Value:	August 4, 2021
Date of Report:	October 29, 2021
Type of Value:	Market Value
Property Rights:	Fee Simple Estate
Value Conclusions:	
Market Value of Water Delivery System:	$900,000 Nine Hundred Thousand Dollars
Market Value of Wastewater Collection System:	$1,400,000 One Million Four Hundred Thousand Dollars

The Appraisal Process

The client requested opinions of market value for the City of Stewartsville water delivery system and the wastewater collection and treatment system. In arriving at opinions of value for the two subject property systems, we followed an orderly set of steps that has led us to the final conclusions of market value. This procedure is known as the "Appraisal Process" and is summarized in the exhibit below.



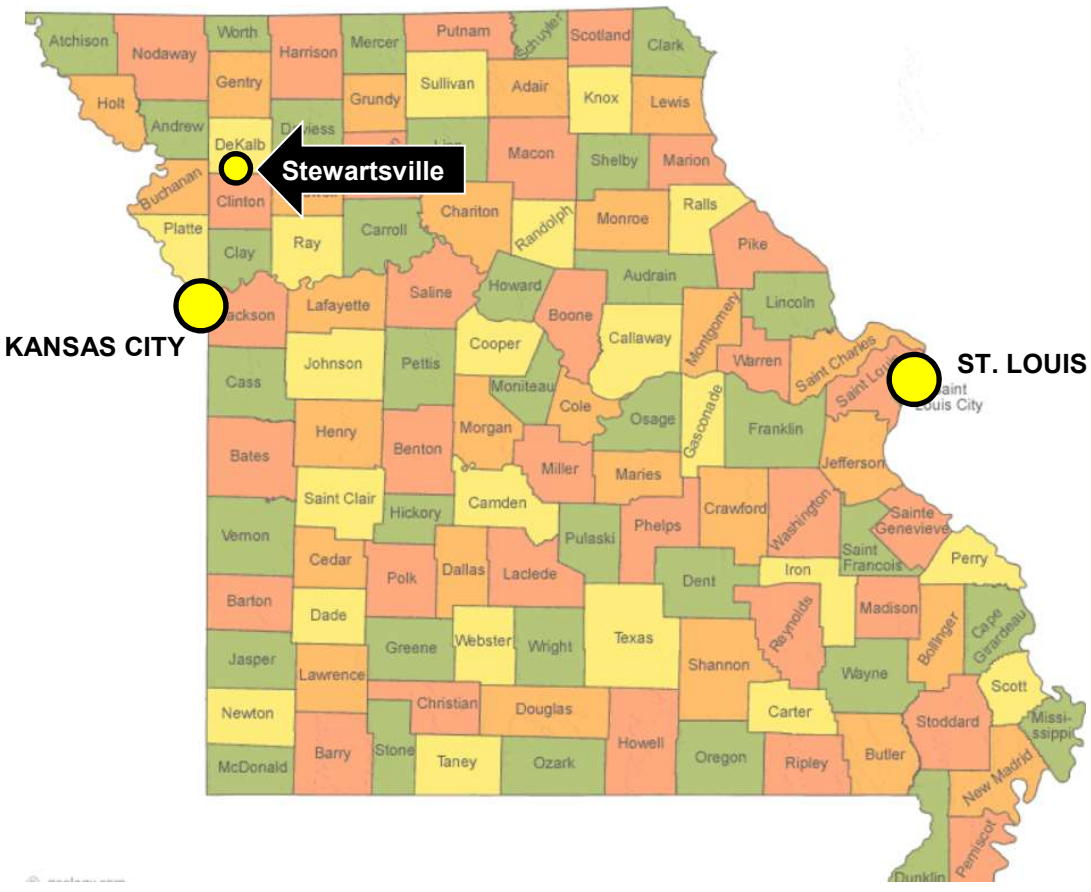
Source: The Appraisal of Real Estate, 15th Ed.,
Published by the *Appraisal Institute*, 2020; P. 31.

Identification of the Subject Properties

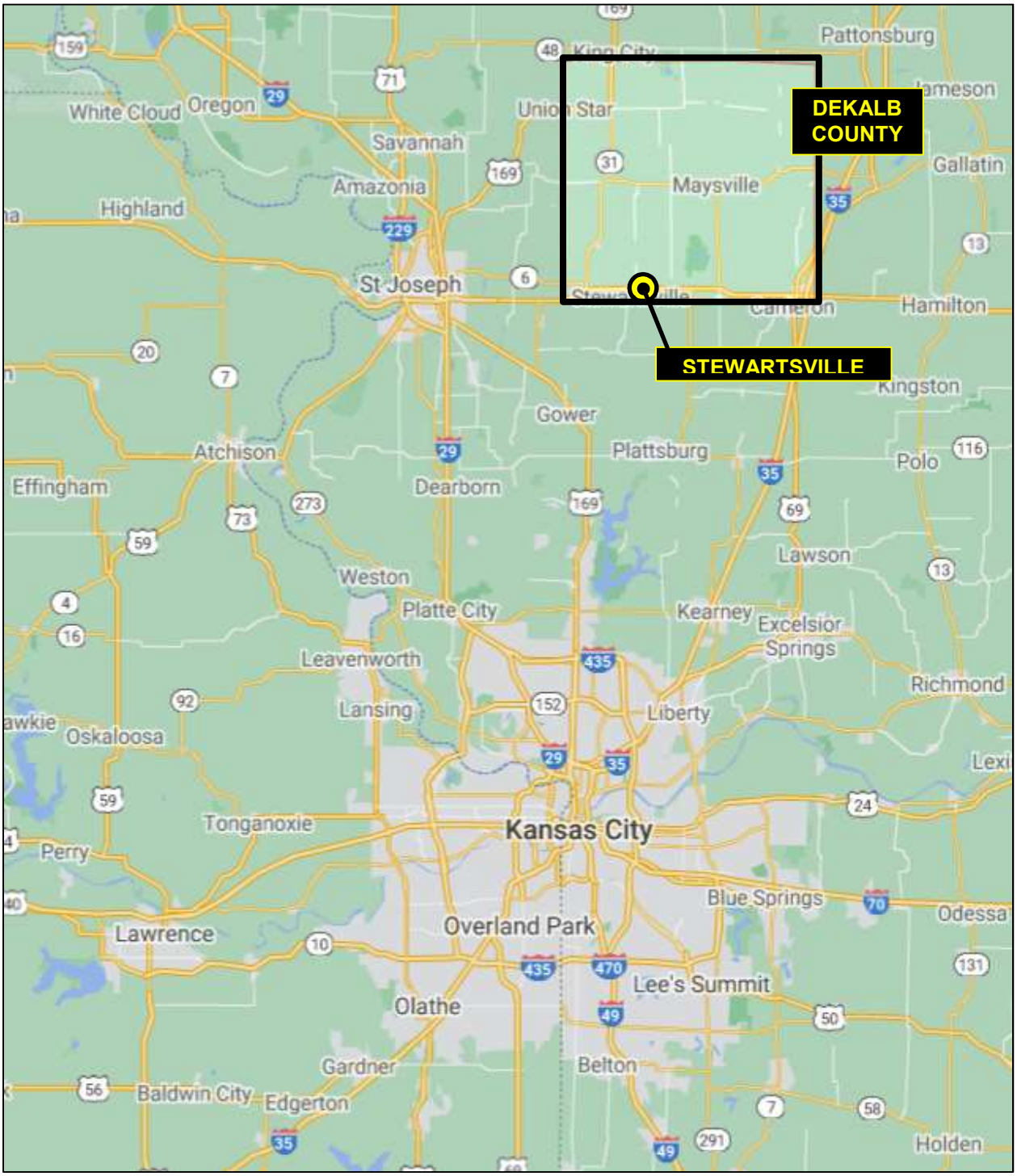
The subject properties are a combination of water and wastewater infrastructure and related components that are owned and operated by the City of Stewartsville. The systems provide services to residents of the Stewartsville (DeKalb and Clinton Counties), Missouri.

There are 357 customers for the water delivery system and 354 customers for the sewer collection system. The subject property assets include infrastructure and facilities associated with the two systems and includes four parcels of land to be conveyed in fee plus permanent easements (see Extraordinary Assumptions, Pages 12-14 of this report).

The City of Stewartsville is located in the southern part of DeKalb County approximately 45 miles north of Kansas City.

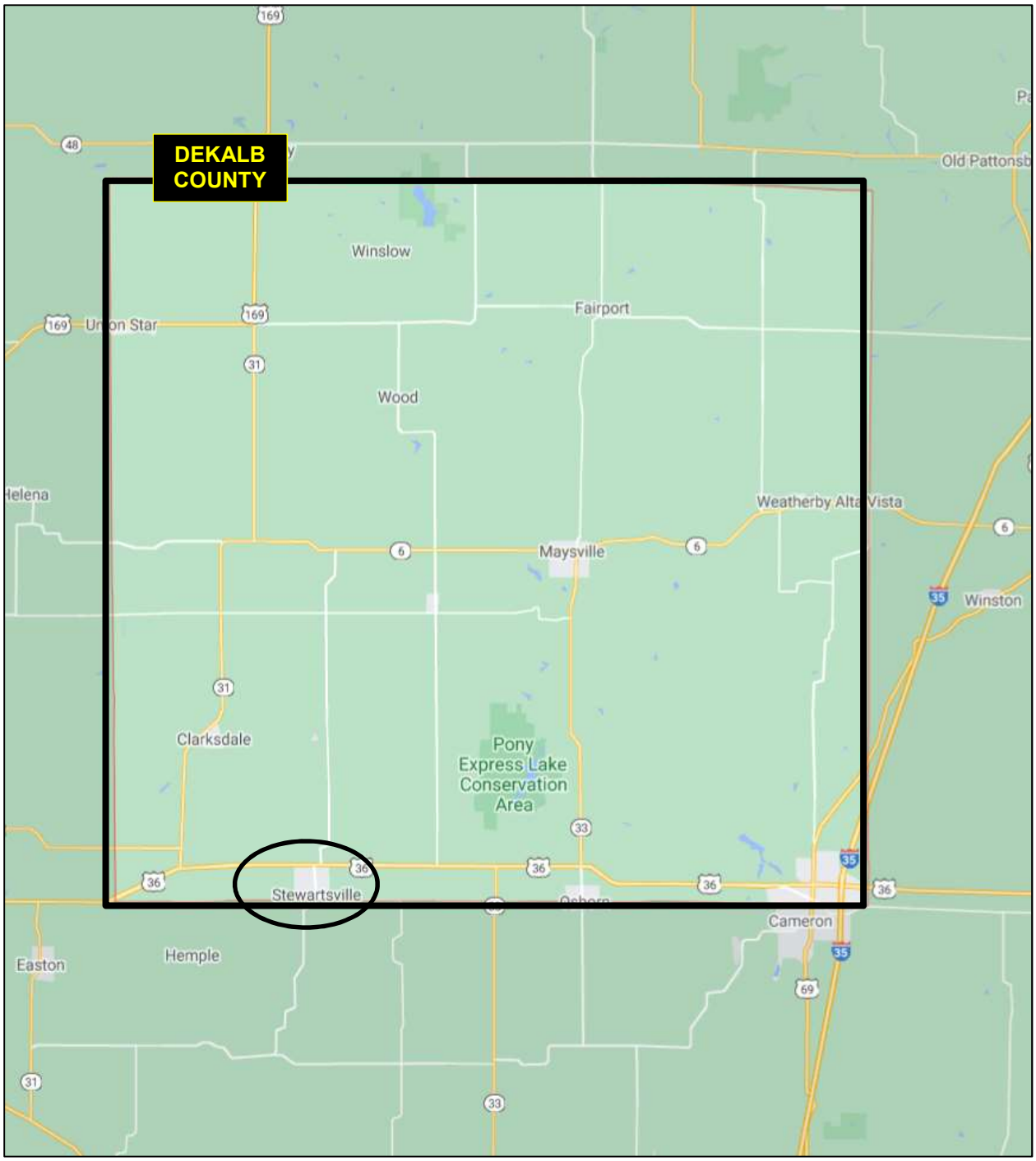


Identification of the Subject Properties
(Continued)



Identification of the Subject Properties
(Continued)

The City of Stewartsville is located in the far southern part of DeKalb County along the border between DeKalb County and Clinton County. The county seat of DeKalb County is the City of Maysville which is located near the center of the county approximately 12 miles northeast of Stewartsville.



Purpose of the Assignment and Definition of Market Value

The purpose of this appraisal assignment is to arrive at opinions of market value for the two subject property systems.

Market value is defined as:

The most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress.[2]

Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

1. Buyer and seller are typically motivated;

2. Both parties are well informed or well advised, and acting in what they consider their best interest;

3. A reasonable time is allowed for exposure in the open market;

4. Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto; and

5. The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

Relevant Assignment Dates

Date of physical inspection of the property:	August 4, 2021
Effective date of value:	August 4, 2021
Date of report:	October 29, 2021

[2] *The Appraisal of Real Estate,* 15th Edition, (Chicago, Illinois: Appraisal Institute, 2020), p. 48.

Property Rights Appraised

The property rights appraised for the subject properties include the Fee Simple Estate of the properties which is defined as:

> *Absolute ownership unencumbered by any other interest or estate, subject only to the limitations imposed by the governmental powers of taxation, eminent domain, police power, and escheat.*[3]

A fee simple estate implies absolute ownership unencumbered by any other interest or estate.

Legal Descriptions

No legal descriptions have been provided for this assignment. The real property included in this valuation assignment includes four parcels of land owned in fee and presumed permanent easements rights conveyed to Missouri American Water for all mains for the water and wastewater systems and related assets that are located throughout the City of Stewartsville. Please refer to the Extraordinary Assumptions section of this report for an explanation regarding the appraisal assignment assumptions relative to the presumed permanent easements. With respect to the four parcels owned in fee, the parcels have been identified based upon information provided by the representative of the City of Stewartsville at the inspection and county GIS data

[3] *The Appraisal of Real Estate,* 15th Edition, (Chicago, Illinois: Appraisal Institute, 2020), p. 60.

Exposure Time and Marketing Time

The estimated marketing time of a property implicitly assumes the property would be marketed in a manner typical in the market for that particular type of property, including utilization of the normal channels of exposure; also, implicit is the assumption that the asking price would be reasonably close to the market value of the property; and, the sale terms would conform to the market value definition included herein.

Based upon the conditions which prevailed in the local market effective August 4, 2021, we have concluded a reasonable market time for the subject property systems, each as a whole, is 12 to 24 months and the exposure time for the subject properties is also estimated to be from 12 to 24 months.

Intended Use and Intended User of the Appraisal

The intended use of this appraisal report is to assist the client (Missouri American Water Company) and the City of Stewartsville with the acquisition of the City of Stewartsville water and wastewater systems by the client. The intended users of this appraisal report include the client (for acquisition purposes), the City of Stewartsville (for asset disposition), and any regulatory agency with jurisdiction over the transfer of the water delivery and wastewater collection systems' assets from the City of Stewartsville to Missouri American Water Company.

History of the Subject Property

Pursuant to Standards Rule 1-5 of USPAP, we are required to consider and analyze any current Agreement of Sale, option, or listing of the property being appraised. We are also required to consider and analyze any sales of the subject property that have occurred within the last three years.

To the best of our knowledge, and based upon discussions with the client and a representative of the City of Stewartsville, the subject property has not been the subject of any sales, listings, offerings or contracts during the last three years.

Scope of Work

The subject property systems are reportedly owned and operated by the City of Stewartsville. In addition to receiving and reviewing numerous pertinent documents from the client pertaining to the subject property water and wastewater systems, we inspected the subject property, met with a representative from the City of Stewartsville, and collected market data for this assignment.

Proper and accepted appraisal methodology in the subject matter is (1) governed by Missouri legislation[4], and (2) guided by the binding requirements of the Uniform Standards of Professional Appraisal Practice (USPAP).[5]

Explicit in the SCOPE OF WORK RULE section of the current (2020-2021) edition of USPAP is the requirement of the real estate appraiser to include research and analysis necessary to develop credible assignment results. The standard for acceptability of Scope of Work is, in part, what an appraiser's peers' actions would be in performing the same or similar assignment.[6]

In accordance with USPAP, consideration was given to the market standards in the appraisal profession established in other market areas by qualified appraisers performing similar assignments. In our opinion, the applicable professional standards of valuation of utility systems generally in Missouri -- and specifically in the case of the valuation of the City of Stewartsville systems -- are similar to those established and utilized in other market areas, including Illinois.

Illinois has similar legislation in place regulating the procedures for acquisitions of public utility systems by investor-owned companies. Although not identical, the procedures and framework for valuation are considered to be very similar.[7]

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[4] The Missouri legislation mandates the inclusion and participation of three independent professional real estate appraisers, all of which shall be licensed in the State of Missouri. Missouri Revised Statutes, Chapter 393, Section 393.320 (August 28, 2016).

[5] USPAP is developed, interpreted, and amended by The Appraisal Standards Board (ASB) of The Appraisal Foundation. State and federal regulatory authorities enforce the content of the current or applicable edition of USPAP. All state licensed/certified professional real estate appraisers must perform services in compliance with USPAP.

[6] USPAP, 2020-2021 Edition, Page 14.

[7] On August 9, 2013, P.A. 98-0213, codified as 220 ILCS 5/9-210.5, went into effect in Illinois. That Section of the Public Utilities Act ("Act") provides an alternate procedure that a large public utility may choose in establishing the ratemaking rate base of a water or sewer utility that the large public utility is acquiring. Among other things, Section 9-210.5 requires that if the utility company elects the procedures of that Section of the Act, three appraisals shall be performed, the appraisers must be selected by the Illinois Commerce Commission, and each appraiser must be State certified general real estate appraiser under the Illinois Real Estate Licensing Act of 2002.

Scope of Work
(Continued)

The Illinois legislation has been in place since 2013. In Illinois, there have been several conveyances of utility systems from the public sector to investor-owned companies that were subject to the recently-enacted legislation governing such transactions.

The standards for valuation in Illinois have been established by the market and are consistently followed by the professional appraisers who engage in valuation assignments of public utility systems pursuant to the applicable governing legislation. The industry-accepted framework for the valuation of utility system assets includes the application of the Cost Approach and the application of the Sales Comparison Approach, and the omission of the Income Capitalization Approach.

The Income Capitalization Approach is not relied on in the typical appraisals of the utility systems due to the generally limited information available from the market necessary for the credible and reliable application of the Income Capitalization Approach. For instance, a proper application of the Income Capitalization Approach would require substantial detail from competing/alternate utility systems in the market, including, but not limited to, income levels from all sources (historic and future expectations), operating expense details, and market-derived capitalization rates used to convert projected net operating income into present value.

One of the factors impacting the challenges of obtaining necessary income and expense data from other systems pertains to the fact that most of the municipal-owned utility systems include public water and sanitary sewer, and often the management and budget operations for the two systems are not separated. Therefore, we have not applied the Income Capitalization Approach in the valuation of the subject property system. The omission of the Income Capitalization Approach does not result in a misleading analysis or conclusion of value. The omission of the Income Capitalization Approach is in compliance with USPAP, and is consistent with the actions of peers for similar assignments.

We applied the cost approach in arriving at an opinion of value for the system. The cost approach included an analysis and valuation of the parcels in fee, the permanent easements necessary for the water delivery and wastewater systems, the contributory value of the buildings and improvements situated on the fee parcels, and the infrastructure and components that comprise the City of Stewartsville water and wastewater systems.

Scope of Work
(Continued)

We then reviewed limited market data pertaining to sales of other utility systems in order to apply the Sales Comparison Approach. In our selection of market data, we included transactional data pertaining to utility systems located in Illinois. The market data available for utility systems acquired in Missouri is very limited, with Missouri American Water Company being the primary entity acquiring systems. Therefore, it is reasonable and acceptable to expand the search for comparable market data to areas outside the borders of Missouri. We selected the Illinois market due to the following factors: proximity, availability of relatively current market data, similarity of legislative rules governing the valuation process, and the existence of a competitive market environment with multiple buyers influencing the balance of supply and demand.

Also required by Missouri statute pertaining to the valuation is the inclusion of a professional engineer's report addressing the depreciated cost estimates for the components and infrastructure relating to the water delivery and wastewater system. For purposes of this appraisal report, we are relying, in part, on a report prepared by Flinn Engineering, dated August 16, 2021, in which Flinn Engineering arrives at an opinion of the depreciation cost new of the infrastructure components of the City of Stewartsville water and wastewater systems. We reviewed the Flinn Engineering report, consulted with its author, and reviewed the data Flinn relied on in forming their opinions. Furthermore, we reviewed other engineering data and reports pertaining to the subject system as well as several other water and wastewater systems. Based upon our reviews and independent research, we find the report prepared by Flinn Engineering to be thorough, prepared in compliance with industry standards, and credible. Therefore, we have relied on the opinions rendered in the Flinn Engineering report. Our reliance on the Flinn report in consistent with the Appraisal Institute's Guide Note 4 which addresses the conditions for an appropriate reliance by appraisers of reports prepared by others.[8]

The Flinn Engineering report does not give any value consideration to the permanent easement rights being acquired by Missouri American Water Company as part of its acquisition of the City of Stewartsville water and wastewater systems, nor does the Flinn report include any contributory value for the parcels owned in fee that are included with the systems. Therefore, we arrived at an independent opinion of the market value of the easements and fee parcels being acquired as part of the purchase of the subject property water and wastewater systems by Missouri American Water Company.

Finally, we prepared this appraisal report in compliance with the applicable standards as set forth in the 2020-2021 Edition of USPAP.

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[8] The Appraisal Institute has adopted Guide Notes to the Institute's Standards of Professional Practice ("SPP"). The Guide Notes are not part of the SSP but provide guidance on how the standards requirements may apply to specific situations.

Extraordinary Assumptions

The 2020-2021 Edition of the *Uniform Standards of Professional Appraisal Practice* (USPAP) defines an extraordinary assumption as follows:

> *An assignment-specific assumption as of the effective date regarding uncertain information used in an analysis which, if found to be false, could alter the appraiser's opinions and conclusions.*

This appraisal report is prepared subject to the following Extraordinary Assumptions.

INFORMATION PROVIDED BY THE CLIENT AND THE CITY OF STEWARTSVILLE

We have been provided information for this assignment by the client (Missouri American Water Company) and from the City of Stewartsville. The information is assumed to be correct, accurate, and complete. This includes, but is not limited to, all information pertaining to the subject property systems (financial, physical, legal) as well as all information pertaining to other systems acquired by American Water.

We reserve the right to revise all opinions and conclusions presented herein upon receiving or becoming aware of any information that is inconsistent with and/or contradicts the information provided by the client and the City of Stewartsville. The client and intended users are advised that if this assumption is found to be false, it could impact the analysis and opinions.

WATER AND SEWER MAINS PRESUMED TO BE LOCATED IN PUBLIC RIGHTS OF WAY

The valuation of the subject property water delivery and wastewater collection systems includes the water and sewer mains that are located throughout the community and that connect the facilities. According to City of Stewartsville officials, the water mains and sewer mains are located in public rights of way.

We reserve the right to revise all opinions and conclusions presented herein upon receiving or becoming aware of any information that is inconsistent with and/or contradicts the assumption outlined above. The client and intended users are advised that if this assumption is found to be false, it could impact the analysis and opinions.

Extraordinary Assumptions
(Continued)

IDENTIFICATION OF THE PARCELS OWNED IN FEE

Part of this analysis includes the valuation of four parcels of land owned in fee. Surveys of the parcels had not been performed at the time of this report; therefore, the parcels are described herein based upon information from public sources, namely the county GIS data. The information obtained from the public sources is assumed to be correct.

We reserve the right to revise all opinions and conclusions presented herein upon receiving or becoming aware of any information that is inconsistent with and/or contradicts the land sizes/characteristics as reported herein for the parcels owned by the City of Stewartsville. The client and intended users are advised that if this assumption is found to be false, it could impact the analysis and opinions.

THE FLINN ENGINEERING REPORT

The Flinn Engineering report, dated August 16, 2021, referenced in the Scope of Work section of this report is assumed to be accurate, complete, and prepared in compliance with applicable industry standards.

We reserve the right to revise all opinions and conclusions presented herein upon receiving or becoming aware of any information that is inconsistent with and/or contradicts the information, analysis, opinions, and conclusions presented in the Flinn report. We also reserve the right to revise all opinions and conclusions presented herein upon receiving more detailed and complete information regarding the age and condition of the existing water and sewer mains. The client and intended users are advised that if this assumption is found to be false, it could impact the analysis and opinions.

THE TERM “INSPECTION”

Throughout this appraisal report, any reference to the appraisers' "inspection", "subject property inspection", "inspection of the subject property", "inspection of the subject water and wastewater systems", etc., refers to the appraisers' customary task of viewing the subject property for purposes of observing the condition, layout, design, and utility of the real property (land and building), as is typical in the appraisal professional and in the framework of completing the appraisal process.

The reference to the term "inspection" in the context of the appraisers' work should not be interpreted to suggest the appraisers have any expertise and/or qualifications in the assessment of the condition and functionality of any mechanical and non-mechanical components of the subject water delivery and wastewater systems.

Extraordinary Assumptions
(Continued)

The appraisers refer the client and intended/authorized users of this appraisal report to the Flinn Engineering report for an assessment of the water and wastewater systems' infrastructure components. The three professional real estate appraisers co-signing this appraisal report are not qualified to independently detect and assess the condition and functionality of the water and wastewater systems' infrastructure components. However, the three professional real estate appraisers co-signing this appraisal report assume that the water delivery and wastewater systems' components (including the plant, pumps, and all related facilities) are in proper working order and have been maintained adequately to meet all pertinent codes and regulatory requirements. The client and intended users are advised that if this assumption is found to be false, it could impact the analysis and opinions.

CUSTOMER COUNTS

According to the City of Stewartsville, the subject property water delivery system serves 357 customers and the wastewater collection system serves 354 customers. This appraisal is based upon the assumption that the customer counts provided by City of Stewartsville are accurate. The client and intended users are advised that if this assumption is found to be false, it could impact the analysis and opinions.

Hypothetical Conditions

The 2020-2021 Edition of the *Uniform Standards of Professional Appraisal Practice* (USPAP) defines a hypothetical condition as follows:

> *A condition, directly related to a specific assignment, which is contrary to what is known by the appraiser to exist on the effective date of the assignment results, but is used for the purpose of analysis.*

This appraisal assignment did not include any hypothetical conditions.

Regional Overview

The City of Stewartsville is a municipality located within DeKalb County, a third class county in the State of Missouri. DeKalb County comprises the St. Joseph, MO-KS Metropolitan Statistical Area. There is one interstate (I-35) crossing DeKalb County, three U.S. highways (Routes 36, 69, and 169), and three state highways (Routes 6, 31, and 33) crossing the county.

DeKalb County is bordered by Gentry County to the north, Daviess County to the east, Caldwell County to the southeast, Clinton County to the south, Buchanan County to the southwest, and Andrew County to the West.

Statistical and demographical data for DeKalb County is found below and on the following page.

DeKalb County Overview

DeKalb County, Missouri *July 2021*			
Population Data			
Total County Population			**13,093**
Population in households	*9,633*	*73.6%*	
Population in group quarters	*3,460*	*26.4%*	
Housing Data			
Total Housing Units			**4,563**
Owner-occupied	*3,052*	*66.9%*	
Renter-occupied	*967*	*21.2%*	
Vacant units	*544*	*11.9%*	
County Income Data			
Median Household Income			**$53,719**
Average Household Income			**$63,646**
Population Growth Trend			
Growth Rate per Year	**2010 to 2021**	**2021 to 2026**	
Population	*0.14%*	*-0.06%*	
Population and Income Rankings			
State Rankings (out of 115 counties)			
Total Population	*#78*		
Population Density	*#60*		
Median Household Income	*#31*		
Housing Affordability Index	*#58*		
Per Capita Income	*#109*		
Diversity Index	*#25*		

Stewartsville Overview

Incorporated in 1869, the city of Stewartsville is a fourth class city in the State of Missouri. Stewartsville is located approximately eleven miles southwest of the City of Maysville, the Dekalb County Seat, and approximately thirty miles north of Kansas City, Missouri and is generally bordered by State Highway 36 to the north, Southwest Platte Road to the south, Castile Creek to the east, and Gantz Street to the west. Nearby communities include Clarksdale, Easton, Hemple, and Osborn.

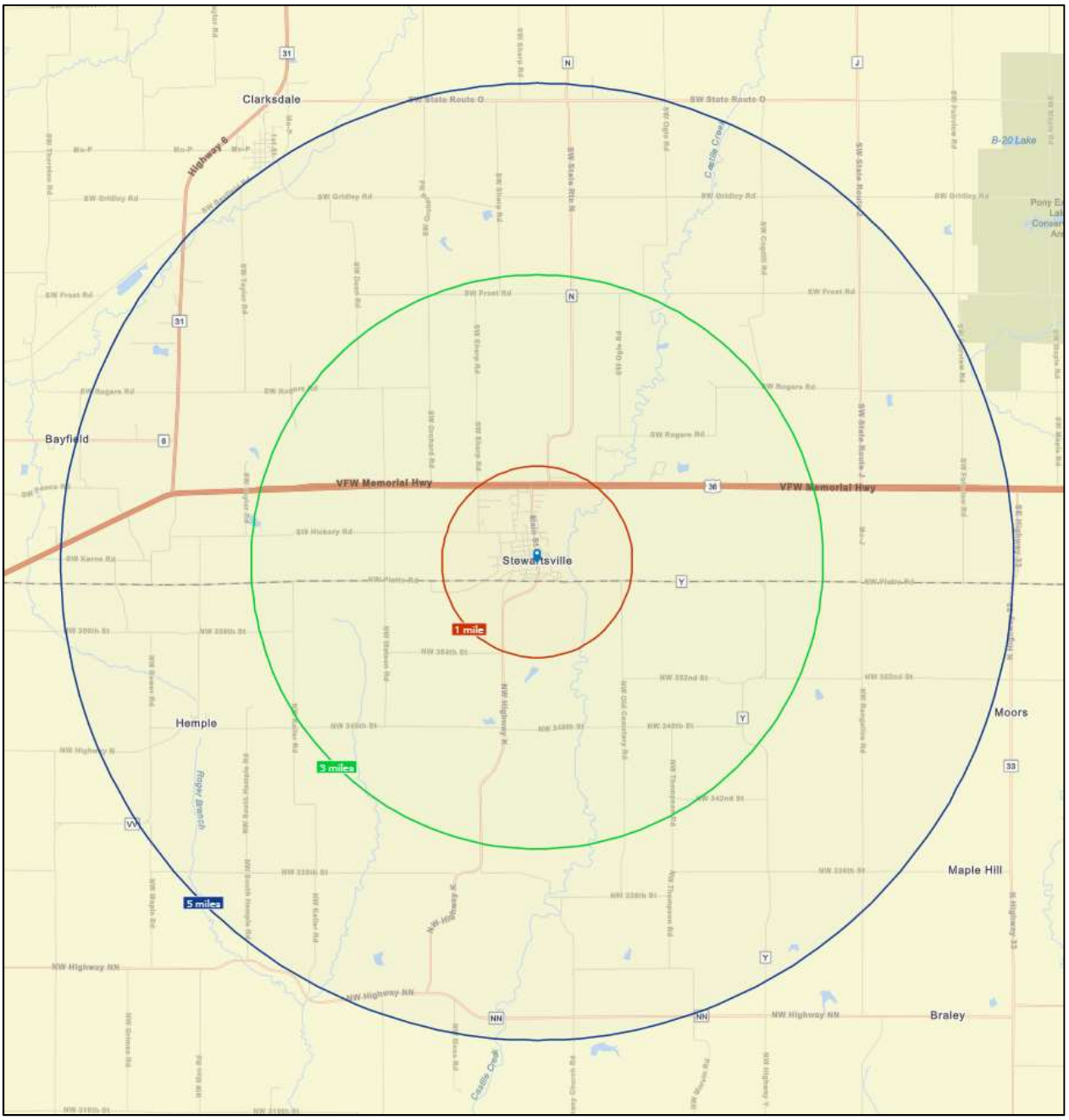
Stewartsville was platted in 1854 by George Tetherow. It was named after Robert M. Stewart, the 14th Governor of the State of Missouri.

Major employers include Stewartsville C-2 School District, and the City of Stewartsville. In summary, the subject neighborhood is an established area with adequate access to Interstate 29 to the west and 35 to the east. The overall outlook for the neighborhood is one of relative stability with little to modest growth taking place in the foreseeable future.

According to census bureau data, there approximately 789 people living within approximately one mile of the approximate center of Stewartsville. Within the same general area, there are approximately 344 housing units of which 74% are owner-occupied.

The map on the following page shows rings that are approximately one, three, and five miles from the approximate center of the community with corresponding demographic data on the following pages.

Stewartsville Overview
(Continued)



Stewartsville Overview
(Continued)

esri

Executive Summary

Stewartsville, Missouri
Rings: 1, 3, 5 mile radii

Prepared by Esri
Latitude: 39.75060
Longitude: -94.49643

	1 mile	3 miles	5 miles
Population			
2000 Population	776	1,102	1,805
2010 Population	770	1,091	1,791
2021 Population	789	1,118	1,828
2026 Population	785	1,116	1,830
2000-2010 Annual Rate	-0.08%	-0.10%	-0.08%
2010-2021 Annual Rate	0.22%	0.22%	0.18%
2021-2026 Annual Rate	-0.10%	-0.04%	0.02%
2021 Male Population	49.9%	50.5%	50.8%
2021 Female Population	50.1%	49.6%	49.1%
2021 Median Age	42.2	43.5	45.0

In the identified area, the current year population is 1,828. In 2010, the Census count in the area was 1,791. The rate of change since 2010 was 0.18% annually. The five-year projection for the population in the area is 1,830 representing a change of 0.02% annually from 2021 to 2026. Currently, the population is 50.8% male and 49.1% female.

Median Age

The median age in this area is 42.2, compared to U.S. median age of 38.5.

Race and Ethnicity			
2021 White Alone	96.2%	96.3%	96.4%
2021 Black Alone	0.6%	0.6%	0.5%
2021 American Indian/Alaska Native Alone	0.1%	0.2%	0.3%
2021 Asian Alone	0.0%	0.1%	0.1%
2021 Pacific Islander Alone	0.1%	0.1%	0.1%
2021 Other Race	1.5%	1.3%	1.1%
2021 Two or More Races	1.4%	1.3%	1.4%
2021 Hispanic Origin (Any Race)	3.7%	3.5%	3.2%

Persons of Hispanic origin represent 3.2% of the population in the identified area compared to 18.9% of the U.S. population. Persons of Hispanic Origin may be of any race. The Diversity Index, which measures the probability that two people from the same area will be from different race/ethnic groups, is 12.8 in the identified area, compared to 65.4 for the U.S. as a whole.

Households			
2021 Wealth Index	42	56	69
2000 Households	295	416	693
2010 Households	306	434	726
2021 Total Households	321	454	756
2026 Total Households	321	456	760
2000-2010 Annual Rate	0.37%	0.42%	0.47%
2010-2021 Annual Rate	0.43%	0.40%	0.36%
2021-2026 Annual Rate	0.00%	0.09%	0.11%
2021 Average Household Size	2.46	2.46	2.42

The household count in this area has changed from 726 in 2010 to 756 in the current year, a change of 0.36% annually. The five-year projection of households is 760, a change of 0.11% annually from the current year total. Average household size is currently 2.42, compared to 2.47 in the year 2010. The number of families in the current year is 536 in the specified area.

Data Note: Income is expressed in current dollars. Housing Affordability Index and Percent of Income for Mortgage calculations are only available for areas with 50 or more owner-occupied housing units.
Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026. Esri converted Census 2000 data into 2010 geography.

Stewartsville Overview
(Continued)

esri

Executive Summary

Stewartsville, Missouri
Rings: 1, 3, 5 mile radii

Prepared by Esri
Latitude: 39.75060
Longitude: -94.49643

	1 mile	3 miles	5 miles
Mortgage Income			
2021 Percent of Income for Mortgage	7.6%	9.7%	12.0%
Median Household Income			
2021 Median Household Income	$52,084	$54,450	$58,482
2026 Median Household Income	$54,139	$57,556	$63,450
2021-2026 Annual Rate	0.78%	1.12%	1.64%
Average Household Income			
2021 Average Household Income	$55,801	$63,459	$71,254
2026 Average Household Income	$61,583	$70,701	$80,102
2021-2026 Annual Rate	1.99%	2.18%	2.37%
Per Capita Income			
2021 Per Capita Income	$22,668	$25,986	$29,193
2026 Per Capita Income	$25,143	$29,131	$32,953
2021-2026 Annual Rate	2.09%	2.31%	2.45%
Households by Income			

Current median household income is $58,482 in the area, compared to $64,730 for all U.S. households. Median household income is projected to be $63,450 in five years, compared to $72,932 for all U.S. households

Current average household income is $71,254 in this area, compared to $90,054 for all U.S. households. Average household income is projected to be $80,102 in five years, compared to $103,679 for all U.S. households

Current per capita income is $29,193 in the area, compared to the U.S. per capita income of $34,136. The per capita income is projected to be $32,953 in five years, compared to $39,378 for all U.S. households

Housing			
2021 Housing Affordability Index	307	242	194
2000 Total Housing Units	315	442	743
2000 Owner Occupied Housing Units	221	323	555
2000 Renter Occupied Housing Units	74	93	139
2000 Vacant Housing Units	20	26	49
2010 Total Housing Units	328	463	784
2010 Owner Occupied Housing Units	228	335	580
2010 Renter Occupied Housing Units	78	99	146
2010 Vacant Housing Units	22	29	58
2021 Total Housing Units	344	486	821
2021 Owner Occupied Housing Units	254	370	631
2021 Renter Occupied Housing Units	66	84	125
2021 Vacant Housing Units	23	32	65
2026 Total Housing Units	350	495	837
2026 Owner Occupied Housing Units	255	373	637
2026 Renter Occupied Housing Units	65	83	123
2026 Vacant Housing Units	29	39	77

Currently, 76.9% of the 821 housing units in the area are owner occupied; 15.2%, renter occupied; and 7.9% are vacant. Currently, in the U.S., 57.3% of the housing units in the area are owner occupied; 31.2% are renter occupied; and 11.5% are vacant. In 2010, there were 784 housing units in the area - 74.0% owner occupied, 18.6% renter occupied, and 7.4% vacant. The annual rate of change in housing units since 2010 is 2.07%. Median home value in the area is $167,659, compared to a median home value of $264,021 for the U.S. In five years, median value is projected to change by 2.14% annually to $186,400.

Data Note: Income is expressed in current dollars. Housing Affordability Index and Percent of Income for Mortgage calculations are only available for areas with 50 or more owner-occupied housing units.
Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026. Esri converted Census 2000 data into 2010 geography.

Stewartsville Overview
(Continued)

Stewartsville, Missouri *July 2021*			
Population Data			
Total Population			**770**
Population in households	*770*	*100.0%*	
Population in group quarters	*0*	*0.0%*	
Housing Data			
Total Housing Units			**336**
Owner-occupied	*248*	*73.8%*	
Renter-occupied	*65*	*19.3%*	
Vacant units	*23*	*6.8%*	
Income Data			
Median Household Income			**$51,698**
Average Household Income			**$54,517**
Population Growth Trend			
Growth Rate per Year	**2010 to 2021**	**2021 to 2026**	
Population	*2.30%*	*-0.10%*	
Population and Income Rankings			
State Rankings (out of 1,032 cities/towns)			
Total Population	*#419*		
Population Density	*#518*		
Median Household Income	*#472*		
Housing Affordability Index	*#966*		
Per Capita Income	*#745*		
Diversity Index	*#513*		

Description of the Subject Properties

The subject property systems include the assets and facilities that comprise the delivery of purchased water and the collection and treatment of wastewater. There are four locations that are part of the subject property systems. Below and on the following pages are exhibits pertaining to the four locations.

Please refer to the attached report prepared by Flinn Engineering for more details pertaining of the infrastructure, system assets, and facilities.

Description of the Subject Properties

(Properties)

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(Properties)

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(Properties)

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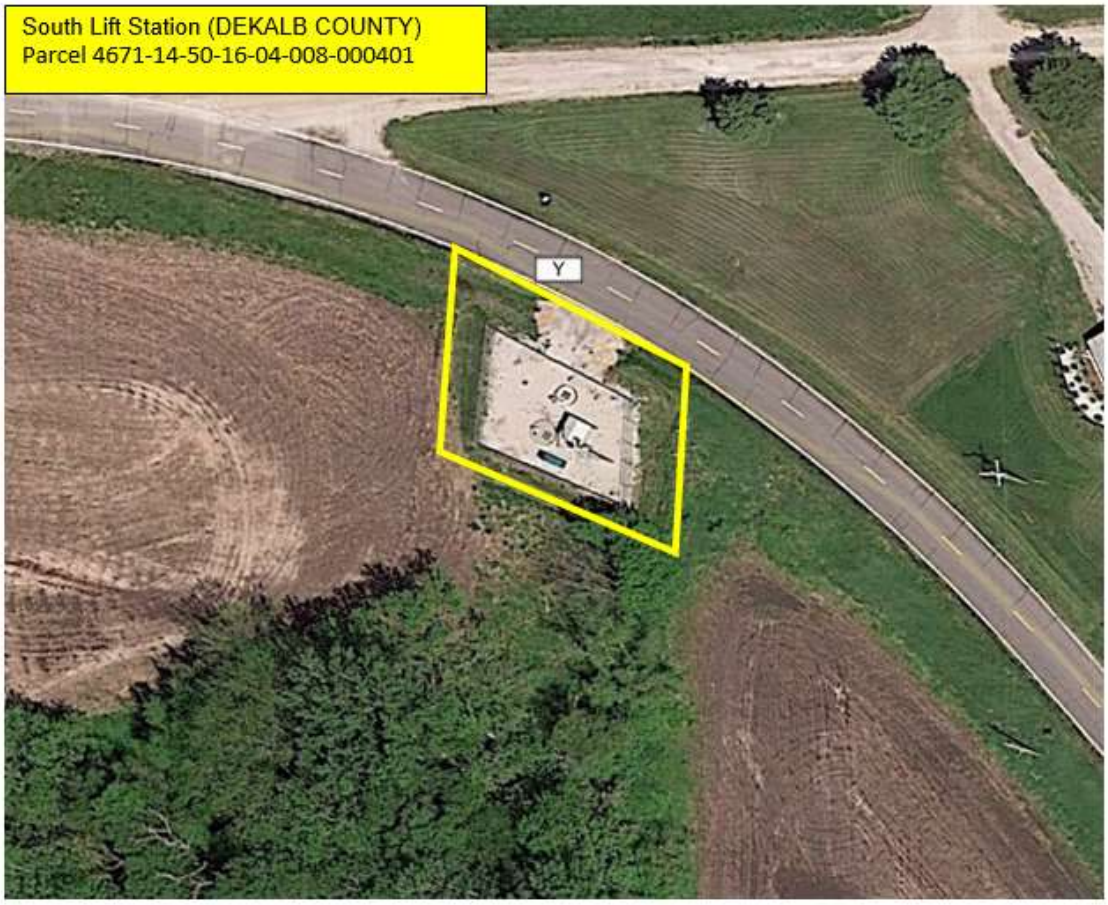
(Properties)



Highest and Best Use Analysis

The beginning point in the valuation of any real estate is the determination of the property's highest and best use. Highest and Best Use is defined in the 15th Edition of *The Appraisal of Real Estate* as follows:

> *The reasonably probable and legal use of vacant land or an improved property that is physically possible, appropriately supported, and financially feasible and that results in the highest value.*

The 15th Edition states that there are four implicit steps as part of the analysis that are applied in the following order: (1) Legally Permissible, (2) Physically Possible, (3) Financially Feasible, and (4) Maximally Productive.

The subject property includes land owned in fee, permanent easements, and infrastructure/facilities associated with the City of Stewartsville water delivery and wastewater systems. After considering the components of the subject property systems as a whole, and taking into account the analysis and report prepared by Flinn Engineering, it is our opinion the highest and best use of the subject property as of August 4, 2021, is its present use as a water delivery and wastewater system. Furthermore, it is our opinion the market value of the land, as vacant, is also for its present use as part of a utility infrastructure system.

Application of the Approaches to Value

Normally included within the steps of the valuation process are the three classic approaches to a value estimate: the Cost Approach, the Sales Comparison Approach and the Income Capitalization Approach. Each of these approaches tends to independently serve as a guide to the valuation of the property with varying degrees of validity.

The Cost Approach gives recognition to the fact that buyers have available to them the alternative of constructing a new building when contemplating the purchase of an existing building. Thus, the cost to reproduce the property is utilized as a measure of value.

However, most properties experience varying degrees of accrued depreciation which result from physical depreciation, functional obsolescence and external obsolescence. Any of these three types of depreciation (or a combination thereof) from which the property suffers must be deducted from the estimated cost new of the improvements. The difficulty, then, in applying the Cost Approach is the ability of the appraiser to accurately extract or estimate the amount of depreciation the property being appraised suffers.

The Sales Comparison Approach is based upon the theory that the value of a property is determined by the actions of buyers and sellers in the market for comparable types of property. Recognizing no two properties are identical and that properties sell at different times under different market conditions, the application of the Sales Comparison Approach requires the appraiser to consider any differences between a respective sale and the subject property which may affect value. After the relevant differences are adjusted for, an indicated range of value results.

The theory of the Sales Comparison Approach also realizes that buyers and sellers often have motivations that are unknown to the appraiser and difficult to quantify in the adjustment process. Therefore, while this approach has certain strengths and foundation, it must be carefully applied in order to lead the appraiser to a realistic opinion of value.

And lastly, the Income Capitalization Approach is typically given very much consideration in the appraisal process for income-producing properties. The Income Capitalization Approach gives recognition to the subject property's capabilities of producing an income and that investors in the real estate market will pay a specific amount of cash, or its equivalency, to receive that income, as well as the rights of ownership of the property at the end of the income period.

The Income Capitalization Approach is applied based upon market-extracted information, most notably the income and expenses that prevail in the market for the type of property being appraised. After an appropriate estimate of income is arrived at, the income is converted to an estimate of value via a capitalization rate. The capitalization rate is also either extracted from the market or may be derived based upon a built-up method.

Application of the Approaches to Value
(Continued)

After the appraiser independently applies each approach to value, the three resultant value estimates are reconciled into an overall estimate of value. In the reconciliation process, the appraiser analyzes each approach with respect to its applicability to the property being appraised. Also considered in the reconciliation process is the strength and weakness of each approach with regards to supporting market data.

Regarding the valuation of the subject property, we have applied the Cost Approach and the Sales Comparison Approach. The Income Capitalization Approach was not applied due to the unavailability of the significant amount of market data pertaining to income and expenses that would be necessary to arrive at a credible conclusion.

Following this section is a more detailed explanation of the Cost Approach and the Sales Comparison Approach.

Cost Approach

The Cost Approach to Value is a technique in the appraisal process which recognizes that a prudent purchaser/investor of real estate may consider constructing a new building as an alternative to buying an existing property.

Although it holds true that a prudent purchaser would not pay more for a building than the cost of buying the land and constructing a new building which would offer similar utility, the estimated cost new of the property must be adjusted for items of depreciation which the property being appraised has suffered. Only then will the Cost Approach yield an indication of value which can be correlated with the other two approaches to arrive at the Market Value of the property.

The beginning point of the typical Cost Approach is to arrive at an estimate of the land value as vacant. The land value is arrived at by applying the Direct Comparison Approach utilizing vacant land sales from the market.

The next step is to estimate the cost new of the building. There are two primary types of cost: the Reproduction Cost and the Replacement Cost.

Reproduction Cost is defined as:

The cost of construction, at current prices, of an exact duplicate, or replica, using the same materials, construction standards, design, layout, and quality of workmanship, and embodying all of the deficiencies, superadequacies, and obsolescence of the subject building. [9]

Replacement Cost is defined as:

The cost of construction, at current prices, of a building having utility equivalent to the building being appraised but built with modern materials and according to current standards, design, and layout. [10]

If a property suffers any functional obsolescence, it is necessary to utilize the Reproduction Cost estimate. The measure of loss of value from the functional inadequacy (or superadequacy) would then be deducted as an item of depreciation.

After the cost of the property is estimated, all items of depreciation are measured and deducted from the cost to arrive at an estimate of the depreciated cost new of the improvements. The land value as vacant is then added to arrive at a total estimate of the property via the Cost Approach.

Cost Approach
(Continued)

Thus, to accurately estimate the value of the property, the appraiser must:

1). Estimate the value of the land as vacant;
2). Estimate the cost new of the building;
3). Estimate the amount of all items of depreciation, if any;
4). Deduct the depreciation estimate from the cost new estimate; and
5). Add the estimated land value to the depreciated value of the improvements.

The starting point in the application of the Cost Approach is to arrive at an estimate of the subject property land as vacant. The land value is estimated based upon the Direct Sales Comparison theory which basically states that no one will pay more for a parcel of land than the cost of acquiring an equally suitable parcel. Therefore, the value of the site is arrived at by measuring the actions of buyers and sellers in the market for comparable parcels of land.

Land Value Contribution

The subject property land values (fee parcels and easements for mains and access rights) are concluded to be $100,000 total ($75,000 for the wastewater system and $25,000 for the water system). On the following pages are summaries of land transactions that were relied on in developing the land value opinions.

Cost Approach
(Continued)

Comparable Land Sale Number One

Location:	7726 Southwest Ketchum Unincorporated Dekalb County, Missouri 64490
Sale Date:	December 27, 20019
Sale Price:	$59,000
Land Area:	9.0± Acres, or 392,040 Square Feet
Unit Price:	$6,556/Acre, or $0.15/Square Foot
Current Use:	Agriculture
Verification:	MLS#2195066
Comments:	This property is located 6 miles north of the subject property on the south side of Southwest Ketchem Road, 0.5 miles west of its intersection with State Highway N. This site has topography that is generally rolling. No on-site utilities are present at the site. There is approximately six acres of pasture land with the remaining three acres being timberland.

Comparable Land Sale Number Two

Location:	6400 Block Southwest Ogle Road Unincorporated Dekalb County, Missouri 64490
Sale Date:	July 15, 2021
Sale Price:	$113,000
Land Area:	20.0± Acres, or 871,200 Square Feet
Unit Price:	$4,400/Acre, or $0.10/Square Foot
Current Use:	Agriculture
Verification:	MLS#2320012
Comments:	This property is located just northeast of the subject property on the south west of Southwest Ogle Road, just north of its intersection with State Highway 36. This site has topography that is generally rolling. No on-site utilities are present at the site. Approximately seventy percent of the site is pasture land with the remainder being timberland.

Comparable Land Sale Number Three

Location:	5560 Northwest 312th Street Unincorporated Clinton County, Missouri 64490
Sale Date:	May 14, 2021
Sale Price:	$374,652
Land Area:	60.0± Acres, or 2,613,600 Square Feet
Unit Price:	$6,200/Acre, or $0.14/Square Foot
Current Use:	Agriculture/Recreation
Verification:	MLS#2236833
Comments:	This property is located approximately 6 miles south of the subject property on the north side of Northwest 312th Street, just east of its intersection with State Highway K. This site has topography that is generally rolling. No on-site utilities are present at the site. This property was part of a larger tract of land.

Cost Approach
(Continued)

Contributory Value of Wastewater System Assets

The Flinn Report includes a detailed inventory of the water and wastewater system assets that are part of this analysis, and concludes an opinion of the estimated depreciated value for the water system of $786,760 and an opinion of the estimated depreciated value for the wastewater system of 593,840.

The land value for the wastewater system includes the fee simple value of Parcels B (Lift Station #2) and C (Lift Station #4) and the contributory value of the presumed permanent easements for Parcels A (Lift Station #1) and D (Lift Station #5). In addition, Parcel A has land improvements (fencing) that have a contributory value of $534 and the property identified as Lift Station #3 has fencing that has a contributory value of $3,372. Based upon our analysis of the real property rights, combined with the Flinn analysis, the total value of the wastewater system by the Replacement Cost New Less Depreciation is summarized below.

Summary

The final step in the Cost Approach is to add the depreciated value of the assets for the water and wastewater systems.

With respect to the subject property system facilities, we have utilized the depreciated asset values from the Flinn report. The Flinn values are summarized on Page 5 of the Flinn Report.

Based upon our analysis of the land, combined with the Flinn analysis, the total value by the Replacement Cost New Less Depreciation is summarized below.

SUMMARY OF COST APPROACH VALUATIONS	
WATER SYSTEM	
Contributory Value of Land and Easements Rights:	$25,000
Flinn Engineering opinion:	$786,760
TOTAL FOR WATER SYSTEM:	$811,760
ROUNDED TO:	**$810,000**
WASTEWATER SYSTEM	
Contributory Value of Land and Easements Rights:	$75,000
Flinn Engineering opinion (after adjustment for buildings):	$593,840
TOTAL FOR WATER SYSTEM:	$668,840
ROUNDED TO:	**$670,000**

Sales Comparison Approach

The Sales Comparison Approach is an approach to value which measures the actions and activity of buyers and sellers in the market and relates those actions to the property being appraised. Also referred to as the Market Approach, the underlying premise of this approach to value is that no prudent purchaser will pay more for a property than the cost of acquiring an equally suitable parcel. The fundamental concept of the Sales Comparison Approach is the Principle of Substitution, which is defined as:

> *A valuation principle that states that a prudent purchaser would pay no more for real property than the cost of acquiring an equally desirable substitute on the open market. The Principle of Substitution presumes that the purchaser will consider the alternatives available and will act rationally or prudently on the basis of the information about those alternatives, and that reasonable time is available for the decision. Substitution may assume the form of the purchase of an existing property, with the same utility, or of acquiring an investment which will produce an income stream of the same size with the same risk as that involved in the property in question.*

Research of the area, state and national real estate market was completed in order to find sales of water distribution systems that included comparable features to the subject property. There have been several sale properties selected from all available sale transactions for analysis in this approach. The sales data was provided through information from the Missouri Public Service Commission, Illinois Commerce Commission, Aqua America Inc., American Water Company, and Hartman Consultants LLC.

The sales were considered to be the most comparable to the subject property in terms of arms-length sales transactions, location of the system, capital improvements supporting the water system and number of water customer accounts in the entire system. All information of the sale transactions and properties was confirmed by the previously mentioned party or parties to the transaction.

As explained in the Scope of Work section of this report, we included transactional data pertaining to utility systems located in Illinois. We did consider transactions by Missouri American Water of systems in Missouri. However, the market data available for utility systems acquired in Missouri is very limited, with Missouri American Water Company being the primary entity acquiring systems. Therefore, it is reasonable and acceptable to expand the search for comparable market data to areas outside the borders of Missouri. The following is a summary of the market data relied on for this assignment.

Sales Comparison Approach
(Continued)

Sale 1

Country Meadows Water Utility (Water)
Village of Swansea, St. Clair County, Illinois

Pending
Asset Purchase Agreement signed June 30, 2021
Price: $400,000
Water system with 230 customers ($1,739 per customer)

Seller: Jim McDonald Sales, Inc.
Buyer: Illinois American

The water system includes approximately 17,784 linear feet of water mains, 67 valves, one master meter vault, one tapping saddle and valve, and approximately 230 water meters. There are no land or easements applicable to this water system. This is a water system for a mobile home park.

Sales Comparison Approach
(Continued)

Sale 2

Village of Hardin Water & Wastewater Utility (Water & Sewer)
Village of Hardin, Calhoun County, Illinois

Pending
Asset Purchase Agreement signed June 10, 2021
Price: $2,300,000 Water
$1,000,000 Sewer
Water system with 435 customers ($5,287 per customer)
Wastewater system with 405 customers ($2,469 per customer)
.
Seller: Village of Hardin, Illinois
Buyer: Illinois American
ICC Docket #21-0511

The water system includes five parcels of land owned in fee, one water treatment plant, two active wells, one water storage tank, one pressure reducing station, one booster pump station, meters, hydrants, and approximately 49,800 linear feet of water mains. The land parcels owned in fee include 1 Lions Lane (a water treatment plant), Dripping Springs Hollow Road (a water storage tank), the east side of County Hwy 1 (two wells), S County Road (booster pump station), and W Main St and Stone Hill Road (pressure reducing station).

The wastewater system includes six parcels of land owned in fee, five wastewater lift stations, a wastewater treatment plant, and approximately 57,400 linear feet of mains. The land parcels owned in fee include 21415 Illinois River Road (wastewater treatment plant), 2 Braun St (lift station #1), South of North Side Grocery on Rt 100 (lift station #2), North of North Side Grocery on Rt 100 (lift station #3), South of Calhoun Auto on Rt 100 (lift station #4), East of Water Treatment Plant on Rt 100 (lift station #5).

Sales Comparison Approach
(Continued)

Sale 3

City of Mount Pulaski Water & Wastewater Utility (Water & Sewer)
City of Mount Pulaski, Logan County, Illinois

Pending
Asset Purchase Agreement signed April 1, 2021
Price: $3,800,000 Water
$1,450,000 Sewer
Water system with 834 customers ($4,556 per customer)
Wastewater system with 800 customers ($1,813 per customer)
.
Seller: City of Mount Pulaski, Illinois
Buyer: Illinois American
ICC Docket #21-0309

The water system includes three parcels of land owned in fee, one water treatment plant, three active wells, one water tower, meters, hydrants, and approximately 68,000 linear feet of water mains.

The wastewater system includes four wastewater lift stations, a wastewater treatment plant, and approximately 71,600 linear feet of mains.

Sales Comparison Approach
(Continued)

Sale 4

City of Livingston Water & Wastewater Utility (Water & Sewer)
City of Livingston, Logan County, Illinois

Pending
Asset Purchase Agreement signed June 19, 2020
Price: $550,000 Water
$1 Sewer
Water system with 375 customers ($1,467 per customer)
Wastewater system with 340 customers ($NA per customer)
.
Seller: City of Livingston, Illinois
Buyer: Illinois American
ICC Docket #20-0680

The water system includes one parcels of land owned in fee, one water treatment plant, one water tower, two booster pumps, meters, hydrants, and approximately 45,000 linear feet of water mains.

The wastewater system includes four wastewater lift stations, one wastewater treatment plant, and approximately 34,000 linear feet of mains.

Sales Comparison Approach
(Continued)

Sale 5

City of Hallsville Wastewater Utility (Sewer)
City of Hallsville, Missouri

Pending
Price: $2,000,000 Sewer
Wastewater system with 664 customers ($3,012 per customer)
.
Seller: City of Hallsville, Missouri
Buyer: Missouri American
MO Docket #SA-2021-0017

The Hallsville wastewater system is unique in that it utilizes a land application process to dispose of its wastewater. Large irrigation systems distribute untreated wastewater onto farmland. This process has resulted in some compliance issues with the Missouri Department of Natural Resources. When irrigation is not possible, wastewater is held and accumulates in three holding cells or lagoons. The collection system has just over 13 miles of pipe and 256 manholes.

There is a capital commitment of $3,300,000 over five years, including terms that provide for future service, maintenance, capital improvements and other terms and conditions.

Sales Comparison Approach
(Continued)

Sale 6

City of Bourbonnais Wastewater Utility (Sewer)
City of Bourbonnais, Logan County, Illinois

Pending
Price: $32,100,000 Sewer
Wastewater system with 6,491 customers ($4,945 per customer)
.
Seller: City of Bourbonnais, Illinois
Buyer: Aqua Illinois
ICC Docket #20-0866

The wastewater system includes 14 wastewater lift stations, and approximately 530,000 linear feet of mains. The system provides sewage collection, and pumps the sewage to the Kankakee Regional Metropolitan Authority (KRMA) Wastewater Treatment Plant. The Village of Bourbonnais recently constructed $14.5 million of improvements to the wastewater system which was an interceptor extension to accommodate planned growth at the new Interstate 57 interchange at 6000N. The subject property includes easements, facilities and buildings, and the wastewater system personal property assets.

Sales Comparison Approach
(Continued)

Sale 7

City of Bolivar Water & Wastewater Utility (Water & Sewer)
City of Bolivar, Missouri

Pending
Price: $20,000,000 Water & Sewer
Water and wastewater system with 9,000 customers ($2,222 per customer)
.
Seller: City of Bolivar, Missouri
Buyer: Liberty Utilities
MO Docket # WA-2020-0397

Water and wastewater system with two wastewater treatment plants, eight wells, 14 lift stations.

Sale 8

City of Taos Wastewater Utility (Sewer)
City of Taos, Missouri

Closed July 2021
Price: $4,100,000 Sewer
Wastewater system with 421 customers ($9,739 per customer)
.
Seller: City of Taos, Missouri
Buyer: Missouri American
MO Docket #SA-2021-0120

The Taos system consists of approximately 1/3 pressure sewer lines and 2/3 gravity sewer lines with five lift stations, as well as 22 duplex and 5 simplex pumping stations.

Sales Comparison Approach
(Continued)

Sale 9

City of Trimble Wastewater Utility (Sewer)
City of Trimble, Missouri

Closed April 2021
Price: $1,000,000 Sewer
Wastewater system with 200 customers ($5,000 per customer)
.
Seller: City of Trimble, Missouri
Buyer: Missouri American
MO Docket #SA-2021-0074

The Trimble sewer system consists of approximately 24,200 linear feet of sewer line, five pumping stations and a three-cell treatment lagoon.

Sale 10

City of Jerseyville Water & Wastewater Utility (Water & Sewer)
City of Jerseyville, Jersey County, Illinois

Closed October 2020
Price: $26,250,000 Water
$17,000,000 Sewer
Water system with 4,259 customers ($6,163 per customer)
Wastewater system with 3,959 customers ($4,294 per customer)
.
Seller: City of Jerseyville, Illinois
Buyer: Illinois American
ICC Docket #19-1139

The water system includes three parcels of land owned in fee, one water treatment plant, three active wells, one water tower, one water storage tank, meters, hydrants, and approximately 649,000 linear feet of water mains.

The wastewater system includes 10 wastewater lift stations, two wastewater treatment plants, and approximately 438,000 linear feet of mains.

Sales Comparison Approach
(Continued)

Sale 11

Four Lakes Condominium Association Water Utility (Water)
City of Lisle, Jersey County, Illinois

Closed October 2020
Price: $900,000 Water
Water system with 1,266 customers ($711 per customer)
.
Seller: Four Lakes Village Condominium Homeowners' Association
Buyer: Illinois American

The water system includes meters, hydrants, and approximately 16,000 linear feet of water mains.

Sale 12

City of Granite City Wastewater Utility (Sewer)
City of Granite City, Madison County, Illinois

Closed September 2020
Price: $18,000,000 Sewer
Wastewater system with 12,783 customers ($1,408 per customer)
.
Seller: City of Granite City, Illinois
Buyer: Illinois American
ICC Docket #19-1134

The wastewater system assets for sale include 27 wastewater lift stations, gravity sewers, force mains, and manholes. The subject property includes easements, facilities and buildings, and the wastewater collection system personal property assets.

Sales Comparison Approach
(Continued)

Sale 13

City of Rosiclare Water and Wastewater Utility (Water & Sewer)
City of Rosiclare, Hardin County, Illinois

Closed May 2020
Asset Purchase Agreement signed June 4, 2019
Price: $480,000 Water
$120,000 Sewer
Water system with 525 customers ($914 per customer)
Wastewater system with 400 customers ($300 per customer)

Seller: City of Rosiclare, IL
Buyer: Illinois American
ICC Docket #19-0733

This sale included the transfer of a water treatment and sewer system. The water system includes two parcels of land owned in fee, one water treatment plant built in 1934, two active wells built in 1995, one 150,000 gallon water tower, one settling basin and one overflow basin. The water system purchase does not include the distribution system. The water treatment plant design maximum capacity is 350,000 gpd. The wastewater system includes four parcels of land owned in fee, one wastewater lift station built in 2017, one wastewater treatment plant built in 1951 with major improvements in 1987, and approximately 46,000 linear feet of mains.

Sales Comparison Approach
(Continued)

Sale 14

Village of Sidney Water Utility (Water)
Village of Sidney, Champaign County, Illinois

Closed May 2020
Asset Purchase Agreement signed April 25, 2019
Price: $2,300,000
Water system with 567 customers ($4,056 per customer)

Seller: Village of Sidney, IL
Buyer: Illinois American
ICC Docket #19-0653

This sale included the transfer of a water system. The water system includes a 150,000 gallon elevated storage tank built in 1953, 92 hydrants, approximately 220 valves, 546 meters, approximately 100,000 linear feet of water mains, a booster pump station, and rechlorination buildings. The system is a sequential system purchasing bulk water from Illinois American Water Company.

Sales Comparison Approach
(Continued)

Sale 15

Village of Andalusia Water and Wastewater Utility (Water & Sewer)
Village of Andalusia, Rock Island County, Illinois

Closed May 2020
Asset Purchase Agreement signed May 7, 2019
Price: $1,800,000 Water
$1,500,000 Sewer
Water system with 490 customers ($3,673 per customer)
Wastewater system with 460 customers ($3,261 per customer)

Seller: Village of Andalusia, IL
Buyer: Illinois American
ICC Docket #19-0732

This sale included the transfer of a water treatment and distribution system, and sewer system. The water system includes a 310,000 gallon storage tank built in 1980, a chlorination and fluoridation water treatment plant operating in the 60 to 80 psi range, 106 hydrants, a booster pump station, and approximately 55,000 linear feet of water mains. The sewer system includes three lift stations, approximately 6,000 linear feet of force mains, 34,800 linear feet of gravity collection mains, 140 manholes, and a three cell wastewater treatment plant. The sanitary system does not include stormwater and is not a CSO type facility.

Sales Comparison Approach
(Continued)

Sale 16

Village of Leonore Water Utility (Water)
Village of Leonore, Rock Island County, Illinois

Closed May 2020
Asset Purchase Agreement signed July 10, 2019
Price: $100,000
Water system with 68 customers ($1,471 per customer)

Seller: Village of Leonore, IL
Buyer: Illinois American
ICC Docket #19-0854

This sale included the transfer of a water treatment system. The water system was built in 1958 and includes one operating well, approximately 11,000 linear feet of water mains, 16 flushing hydrants (not fire hydrants), 68 meters, a 7,500 gallon hydrotank built in 1978, a 10,000 gallon hydrotank built in 1983, and a water treatment plant built in 1976.

Sales Comparison Approach
(Continued)

Sale #17

Village of Godfrey Wastewater Utility (Sewer)
Village of Godfrey, Madison County, Illinois

Closed November 2019
Asset Purchase Agreement signed November 9, 2018
Price: $13,550,000
Wastewater System with 6,250 Customers ($2,168 per customer)

Seller: Village of Godfrey, IL
Buyer: Illinois American
ICC Docket #18-1830

This sale included the transfer of a sewer system. The sale includes a wastewater treatment plant with a current average flow of 0.80 MGD, a 2.2 MGD average capacity and 5.5 MGD maximum flow capacity providing secondary treatment, discharging into the Mississippi River; 16 lift stations; 32,000 linear feet of force mains; 498,000 linear feet of gravity sewer mains; 2,107 manholes; two sanitary sewer detention facilities; 13 parcels of land owned in fee; and permanent easements pertaining to wastewater mains located on private property, and properties that are utilized for lift stations. Approximately 65% of the gravity sewer linear feet, located west of Godfrey Road, flow to the wastewater treatment plant; the other 35%, located east of Godfrey Road, flow to the Alton Treatment Plant.

Sales Comparison Approach
(Continued)

Sale #18

Village of Glasford Water & Wastewater Utility (Water & Sewer)
Village of Glasford, Peoria County, Illinois

Closed September 2019
Asset Purchase Agreement signed August 28, 2018
Water System Price: $800,000
Water System with 492 Customers ($1,626 per customer)
Wastewater System Price: $1,100,000
Wastewater System with 482 Customers ($2,282 per customer)

Seller: Village of Glasford, IL
Buyer: Illinois American
ICC Docket #18-1498

This sale included the transfer of a water and wastewater system.

The water system is in average condition and includes a water treatment plant with a capacity of 200 gpm or 288,000 gpd with attained capacity of 150 gpm or 216,000 gpd; two active wells and one well not in service; a 125,000 gallon elevated storage tank; a 50,000 gallon ground storage tank; meters; hydrants; approximately 48,000 linear feet of water mains; four parcels of land owned in fee; and permanent easements pertaining to water mains located on private property. Well #1 is 876 feet deep; Well #2 is not in service (radium) and is 1,750 feet deep; Well #3 is 1,000 feet deep with 1,300 linear feet of 4" raw water main.

The wastewater system is in average condition and includes a 0.26 MGD DAF wastewater treatment plant with a MDF of 0.65 MGD with basic secondary treatment with filtration and sludge treatment; one lagoon; one wastewater lift station; and approximately 47,000 linear feet of mains.

Sales Comparison Approach
(Continued)

Sale #19

Village of Manteno Wastewater Utility (Sewer)
Village of Manteno, Kankakee County, Illinois

Sold July 2018
Asset Purchase Agreement signed September 18, 2017
Price: $25,000,000
Wastewater System with 4,300 Customers ($5,814 per customer)

Seller: Village of Manteno, IL
Buyer: Aqua Illinois
ICC Docket #17-0813

This sale included the transfer of a sewer system. The sale includes a wastewater treatment plant, seven lift stations, force and gravity sewer mains, four parcels of land owned in fee and permanent easements pertaining to wastewater mains located on private property, and properties that are utilized for lift stations.

The sewer system was built in 1945 with additional constructed between 1945 and 2006. The sewer system includes a sewer treatment facility, seven lift stations, and the sewer collection system.

Testimony of Paul J. Hanley states expected expenditures after sale of $4,300,000 over five years.

Sales Comparison Approach
(Continued)

Sale #20

Grant Park Wastewater Utility (Sewer)
Village of Grant Park, Kankakee County, Illinois

Closed November 2019
Asset Purchase Agreement signed May 17, 2018
Price: $2,300,000
Wastewater System with 535 Customers ($4,299 per customer)

Seller: Village of Grant Park, IL
Buyer: Aqua Illinois
ICC Docket #18-1093

This sale included the transfer of a sewer system. The sale includes a wastewater treatment plant, one lift station, portions of two parcels of land owned in fee and permanent easement interests, and a wastewater collection system. The permanent easements pertain to properties that are utilized for the lift station, wastewater mains located on private property, an access road, and septic tanks located on private property.

Sales Comparison Approach
(Continued)

Sale #21

Skyline Water and Wastewater Utility System (Water and Sewer)
Kane County, Illinois

Closed November 2019
Asset Purchase Agreement signed March 27, 2018
Price: $3,550,000
Combined water and wastewater system - 752 customers ($4,721 per customer)

Seller: Fox River Water Reclamation District
Buyer: Aqua Illinois
ICC Docket #18-0785

This sale included the transfer of a water system and a sewer system. The water system includes five parcels of land owned in fee, a water treatment plant, two wells, a 600,000 gallon elevated storage tank, and a water delivery system. The wastewater system includes one lift station and a sewage collection system.

Sales Comparison Approach
(Continued)

Sale #22

Alton Wastewater System (Sewer)
City of Alton, Madison County, Illinois

Closed June 2019
Asset Purchase Agreement signed April 13, 2018
Price: $53,800,000
Wastewater system with 11,456 customers ($4,696 per customer)

Seller: City of Alton, IL
Buyer: Illinois American
ICC Docket #18-0879

This sale included the transfer of a sewer system. The sale includes 14 lift stations and related easements, a sewage collection system, two excess flow wastewater detention facilities, two flow meters, one parcel of land, and one wastewater treatment plant with a rated flow capacity of 10.5 MGD and a design maximum flow capacity of 26.25 MGD..

Sales Comparison Approach
(Continued)

Sale #23

Lawson Water and Wastewater Utilities (Water and Sewer)
City of Lawson, Clay and Ray Counties, Missouri

Sold August 2018 (Letter of Intent signed April 21, 2017)
Price: $4,000,000
Price breakout per appraisal of this system:
$2,619,000 for Water System with 970 Customers ($2,700 per customer)
$1,356,000 for Sewer System with 904 Customers ($1,500 per customer)
$3,975,000 for both Water and Sewer System, rounded within client documentation to $4,000,000

Seller: City of Lawson, MO
Buyer: Missouri American

This sale included the transfer of a water system sewer system. The sale includes three parcels of land owned in fee and a permanent easement interest in nine additional tracts. The permanent easements pertain to properties that are utilized for lift stations, a water tower, and a pump station.

The water system was built in 1956 and includes two elevated water storage tanks, a pump system, and the water distribution system. The 300,000 gallon tank was constructed in the 1990-1991. The 50,000 gallon tank was constructed in the 1940s or 1950s. The sewer system includes a sewer treatment facility including a four-cell lagoon system, eight lift stations, and the sewer collection system.

An appraisal report dated July 7, 2017 of the Lawson system indicated the following expected expenditures after sale:

> According to information from Lawson's current permit (MO-0091031) and the Missouri Department of Natural Resources affordability study, the regulations regarding the sewer system operations will be changing in 2020. The water will be required to be disinfected prior to discharge. In addition, a different chemical will need to be added to offset the disinfectant that was added before it can be released into a stream. This will require either a new system to be built or significant changes will need to be made to the existing facility. The chemical added is to control the ammonia levels and nutrient levels. Also, an in-cell aeration system will be needed to help remove the sludge the 1st and 2nd cells. Cost at this time are not known.

Sales Comparison Approach
(Continued)

Sale #24

Sundale Utilities (Water and Sewer)
Washington, Tazewell County, Illinois

Sold May 2018 (Asset Purchase Agreement Signed January 9, 2017)
Price: $2,000,000
$1,500,000 for Water System with 550 Customers ($2,727 per customer)
$500,000 for Sewer System with 1,410 Customers ($355 per customer)

Seller: Sundale Utilities, Inc.
Buyer: Illinois American Water
ICC Docket #17-0113

This sale included the transfer of a water system and three sewer systems. The water system is Washington Estates (552 customers), and the sewer systems are Washington Estates (552 customers), Sundale Hills (713 customers), and Highland Hills (141 customers). The sale included 10 parcels of land owned in fee by Sundale Utilities which included office building, sewage treatment parcels, lagoons, lift stations, and water treatment facility.

In addition, permanent easements encumbering private property included approximately 5.17 acres for the water delivery system and 9.47 acres for the wastewater collection system. The water system's primary assets include two wells, a water treatment plant, a 75,000-gallon elevated water tower, and a 150 kw generator.

The wells were drilled in 1970 and 1985 and are 350' deep. A new well was drilled in 1995 and replaced the 1970 well. The wells are rated at 460 gallons-per-minute. The elevated tank was placed in service in 1960. The sewer systems reportedly were in fair to poor condition and required substantial capital investment.

According to testimony by an official from Illinois American Water at an Illinois Commerce Commission hearing, the buyer intends on investing $900,000 in the water system and $1,700,000 in the sewer systems, all within the first five years.

Sales Comparison Approach
(Continued)

Sale #25

City of Farmington Water System (Water)
Farmington, Fulton County, Illinois

Sold April 2018 (Asset Purchase Agreement Signed April, 2017)
Price: $3,750,000
Water System with 1,063 Customers ($3,528 per customer)

Seller: City of Farmington
Buyer: Illinois American Water
ICC Docket #17-0246

This sale includes a water delivery system that includes two wells. One was drilled in 1918 and is 1,710' deep. It has a capacity of 350 gallons-per-minute, and was improved with a new submersible pump in 1997. The second well was drilled in 1955 and is 1,743' deep. It has a capacity of 385 gallons-per-minute, and had a new pump installed in 2006. The water treatment plant includes the treatment process, two clearwells, and two high-service pumps. The two clearwells (underground storage tanks) each have a capacity of 125,000 gallons. The system also includes two elevated water storage tanks constructed in 1992 and 1997, respectively. Each has a capacity of 156,000 gallons.

Per testimony of Jeffrey Kaiser, Director of Engineering for Illinois American Water Company, there are expected expenditures after sale totaling $5,540,000 for the following:

> *Capital improvements anticipated for the water system in the first five years of ILAW ownership are projected to total approximately Five Million Five Hundred Forty Thousand Dollars ($5,540,000.00). These improvements include security and safety improvements, SCADA systems integration, customer meter replacements, water main replacement and dead end elimination, and miscellaneous water treatment plant related capital expenditures such as reverse osmosis membrane replacement and conversion from gas to liquid chlorine.*

Sales Comparison Approach
(Continued)

Sale #26

Village of Fisher Water and Sewer System (Water & Sewer)
Fisher, Champaign County, Illinois

Sold March 2018 (Asset Purchase Agreement Signed July, 2017)
Water System Price: $3,700,000 with 890 Customers ($4,157 per customer)
Sewer System Price: $3,100,000 with 890 Customers ($3,483 per customer)

Seller: Village of Fisher
Buyer: Illinois American Water
ICC Docket #17-0339

This sale includes a water delivery system that includes a water treatment facility, two elevated water storage tanks and two groundwater supply wells. The water treatment plant includes the treatment process, one 30,000 gallon capacity clearwell, and three pumps rated 167 GPM. The clearwell (underground storage tank) has a capacity of 30,000 gallons. Tank #1 has a capacity of 50,000 gallons and was constructed in 1936. Tank #2 has a capacity of 100,000 gallons and was constructed in 1973. The wells are both 236' deep and rated 125 GPM, drilled in 1936 and 1959. Average daily production is 135,000 per day.

This sale includes a wastewater system that includes a wastewater treatment facility with an average daily flow between 170,000 and 180,000 gallons per day.

Expenditures during the first five years after sale are estimated at $610,000 for the water utility and $2,300,000 for the sewer utility.

Sales Comparison Approach
(Continued)

Sale #27

Village of Peotone Water and Sewer System (Water & Sewer)
Village of Peotone, Will County, Illinois

Sold October 1, 2018 (Asset Purchase Agreement Signed July 2017)
Price: $12,300,000 with 3,000 Customers ($4,100 per customer)

Seller: Village of Peotone
Buyer: Aqua Illinois
ICC Docket #17-0314

This sale includes a water delivery system that includes a water treatment facility, two elevated water storage tanks and two groundwater supply wells. The water treatment plant includes the treatment process, one 30,000 gallon capacity clearwell, and three pumps rated 167 GPM. The clearwell (underground storage tank) has a capacity of 30,000 gallons. Tank #1 has a capacity of 50,000 gallons and was constructed in 1936. Tank #2 has a capacity of 100,000 gallons and was constructed in 1973. The wells are both 236' deep and rated 125 GPM, drilled in 1936 and 1959. Average daily production is 135,000 per day.

This sale includes a wastewater system that includes a wastewater treatment facility with an average daily flow between 170,000 and 180,000 gallons per day.

Expenditures during the first five years after sale are estimated at $610,000 for the water utility and $2,300,000 for the sewer utility.

Sales Comparison Approach
(Continued)

Sale #28

Forest Homes Maple Park (Water)
Cottage Hills, Madison County, Illinois

Sold July 2017 (Asset Purchase Agreement Signed November 03, 2016)
Price: $900,000
Water System with 525 Customers ($1,714 per customer)

Seller: Forest Homes Maple Park District
Buyer: Illinois American Water
ICC Docket #16-0581

The Forest Homes Maple Park system includes one elevated storage tank, one storage tank control system, approximately 9 miles of pipeline, telemetry equipment, and various hydrants, valves, service connections, and other appurtenances. The system became operational in 1959. The water distribution system used wells until 1983 when the district started purchasing water from Illinois American Water. Per information from the water district, there are 525 customer connections, of which approximately 495 were installed in 1994 and 30 were installed in 2004. The elevated water tank has a capacity of 75,000 gallons and is approximately 57 years old. Located on the site with the water tower is the storage tank control structure, an office building, and storage buildings. The water distribution system includes 47,272 lineal feet of pipeline. The mains range from 13 to 58 years old. Most the mains are 6” with the balance being 4”. Included in the sale were two small lots owned in fee, permanent easements across two parcels, and mains located in public roads and rights of way. According to an assessment completed by an engineer familiar with the system, there was approximately $250,000 worth of deficiencies and deferred maintenance items that required immediate attention.

Sales Comparison Approach
(Continued)

Sale #29

Lake Region Water and Sewer Company (Water and Sewer)
Camden County and Miller County, Missouri

Sold June, 2017 (Asset Purchase Agreement Signed December, 2016)
Price: $6,084,000
Total Customers: 1,608 ($3,784 per customer)
683 Water Customers, 925 Sewer Customers (1,608 total customers) per Joint Application for Transfer of Assets

Seller: Lake Region Water and Sewer Company
Buyer: Camden County Public Water District
MO Docket #WM-2017-0186

Operating in the Lake of the Ozarks area, Lake Region Water & Sewer Company ("Lake Region") was originally granted a Certificate of Convenience and Necessity (CCN) to provide water and sewer service in the 1970s. After various name changes, sales, and the granting of an additional CCN, Lake Region now serves approximately 683 water customers in the Shawnee Bend area and 925 sewer customers in the Shawnee Bend and Horseshoe Bend area.

On December 28, 2016, Lake Region filed a Joint Application with the Camden County Public Water Supply District Number 4 seeking authority to sale, transfer, and assign Lake Region's water and sewer assets to the District. Staff contends that under the terms of the Purchase Agreement, the District is paying an acquisition premium of approximately $3.7 million.

The Missouri Public Service Commission Staff recommended in February, 2017, that the Commission does not approve the transfer of the assets. According to Staff, were the purchaser of Lake Region's assets a Commission-regulated entity, they would not be allowed to recover the acquisition premium cost in a customer rate increase. However, since the Commission does not regulate the District, Staff fears that the District may choose to recover the acquisition premium costs through a customer rate increase.

The Commission does not share Staff's concern. The Commission does not regulate the District, nor does it have jurisdiction over the District's board of directors or the future rates set by that board. On April 27, 2017, the Commission approved the transfer.

Sales Comparison Approach
(Continued)

Sale #30

Village of Wardsville Utility System (Water and Sewer)
Wardsville, Cole County, Missouri

Sold May, 2017 (Asset Purchase Agreement Signed December 8, 2016)
Price: $2,750,000 ($2,750,003 for both Water and Sewer System, rounded within client documentation to $2,750,000)
$795,428 for Water System with 480 Customers ($1,657 per customer)
$1,954,575 for Sewer System with 407 Customers ($4,802 per customer)

Seller: Village of Wardsville
Buyer: Missouri American Water
MO Docket #WA-2017-0181

According to a press release on April 11, 2017, from the Board of Trustees of the Village of Wardsville, Wardsville has three sewage treatment plants (Deer Haven, Churchview, and Northwest), none of which reportedly are able to meet the Missouri Department of Natural Resources and the EPA requirements regarding limitations of the amount of ammonia that can be discharged from sewage treatment plants. After a study by an engineering firm, it was determined that the three options to meet the EPA limits ranged from $4 million to $12 million. According to Missouri American Water, the expected capital investment after the sale includes $305,000 for the water system and $395,000 for the sewer system, all of which is projected to be invested over a five-year period.

Wardsville's water system (MO3010831) produces an average of 90,000 gpd. Water system assets include two (2) wells, 150,000-gallon elevated tank, 250,000-gallon ground storage tank, 300 gpm booster pump, 63 hydrants, 146 valves and over 15 miles of distribution main ranging in size from 2" to 8" in diameter.

The wastewater system includes the following treatment facilities:

Churchview WWTP (NPDES MO-0109118) is a packaged extended aeration system with a design flow of 30,000 gpd and actual flow of 15,000 gpd. It services 102 connections.
Deerhaven WWTP (NPDES MO-119326) is a packaged extended aeration system with a design flow of 21,368 gpd and actual flow of 17,000 gpd. It serves 81 connections.
Northwest WWTF (NPDES MO-0129658) is an aerated lagoon system with design flow of 151,000 gpd and actual flow of 44,000 gpd. It serves 212 connections.

The collection system includes five (5) pump stations, 38 brick manholes , 238 concrete manholes, approximately 9 miles of gravity sewers and 1.7 miles of force main.

Sales Comparison Approach
(Continued)

Sale #31

Village of Sadorus of Water System (Water)
Village of Sadorus, Champaign County, Illinois

Sold March, 2017 (Asset Purchase Agreement Signed April, 2016)
Price: $240,000 - Water System with 384 Customers ($625 per customer)

Seller: Village of Sadorus, IL
Buyer: Illinois American Water Company
ICC Docket #16-0341

This sale includes a water delivery system that includes a 40,000 gallon elevated storage tank, two wells and one water treatment plant.

Sale #32

Woodland Manor Water System (Water)
Kimberling City, Stone County, Missouri

Sold June 2016
Price: $200,000 - Water System with 164 Customers ($1,220 per customer)

Seller: Woodland Manor Water System
Buyer: Missouri American Water
MO Docket #WM-2016-0169

Sales Comparison Approach
(Continued)

Sale #33

Village of Ransom Water System (Water)
Village of Ransom, LaSalle County, Illinois

Sold April, 2016
Price: $175,000 - Water System with 170 Customers ($1,029 per customer)

Seller: Village of Ransom, IL
Buyer: Illinois American Water Company
ICC Docket #15-0544

The water delivery system includes a water treatment plant constructed in 1995 including aerator and, 16,700 gallon ground storage tank, a 75,000 gallon elevated water tank constructed in 1990, a 915' primary supply well installed in 1971 and rehabilitated in 2014 with a production rate of 88 gpm, and a 280' secondary supply well installed in 1946 with a production rate of 20 gpm.

Expenditures after sale are estimated at $2,000,000 in the first five years after sale.

Sales Comparison Approach
(Continued)

Sale #34

Ozark Shores Water Company (Water)
Camden County, Missouri

Sold July, 2015 (Asset Purchase Agreement Signed March 5, 2015)
Price: $5,252,781
Total of 1,869 Customers ($2,810 per customer)

Seller: Ozark Shores Water Company
Buyer: Public Water Supply District of Camden County
MO Docket #WM-2015-0231

The Staff recommended the Commission deny the application.[1] During the approval process before the Missouri Public Service Commission, the Staff had concerns regarding the sale that pertained to the purchase price exceeding the value of Oak Shore's net rate base by more than $2.6 million, the possibility of rate increases due to the acquisition premium, and the history of an overly-close relationship between Ozark Shores and the buyer.[2] On July 3, 2015, the Commission rejected the Staff's recommendations and granted the application.[3]

Included in the sale were 12 parcels of land that were reported to have a total market value of $448,580.

[1] Document: Staff Recommendation to Deny Transfer of Assets and Request for Local Public Hearing; Date: May 5, 2015
[2] Document: Suggestions in Support of Staff's Motion for Evidentiary Hearing; Date: May 25, 2015
[3] Document: Order Granting Application; Date: July 3, 2015

Sale #35

City of Water System (Sewer)
City of Arnold, St Louis County, Missouri

Sold May, 2015
Price: $27,200,000 - Sewer System with 7,500 Customers ($3,627 per customer)

Seller: City of Arnold, MO
Buyer: Missouri American Water
MO Docket #SA-2015-0150

Sales Comparison Approach
(Continued)

Sale #36

North Maine Water & Sewer System (Water and Sewer)
Village of Glenview, Unincorporated Cook County, Illinois

Sold April, 2015
Price:
$18,590,000 Water System with 4,724 Customers ($3,935 per customer)
$3,410,000 Sewer System with 2,494 Customers ($1,367 per customer)

Seller: Village of Glenview, IL
Buyer: Aqua Illinois
ICC Docket #14-0396

This sale is a water and sewer system located in Unincorporated Cook County, IL with portions of the area within the municipal boundaries of Des Plaines, Park Ridge, Morton Grove, Niles, and Glenview covering a population of approximately 44,000 and a mixed residential/commercial customer base, primarily residential. The water system includes a 750,000 gallon storage tank and other water delivery system assets. The system does not include a water treatment plant. The sewer system includes sanitary sewer system assets but does not include a wastewater treatment plant.

Expected expenditures after purchase are estimated at $9,300,000: $6,300,000 for water main reinforcement and $3,000,000 to purchase a reservoir for fire protection.

Sales Comparison Approach
(Continued)

Water

Below is a summary of the water sales transactions that were considered in this analysis. These sales are included on the previous pages. These sales transactions were reported to be cash to the seller at closing unless otherwise noted in the specific sale transaction description. There is not adequate income information available for the sale properties to extract income multipliers and overall rates. The best method of comparison for the subject property in this appraisal is the sale price per customer.

SUMMARY OF SALES OF WATER DELIVERY SYSTEMS
(INCLUDES ALLOCATIONS FROM SALES OF WATER/SEWER SYSTEMS)

Sale #	Grantor	Grantee	Location		Sale Date	Sale Price	# of Cust	Sale Price / Customer
1	Country Meadows/Jim McDonald Sale	Illinois American	Village of Swansea	IL	Pending	$ 400,000	230	$ 1,739
2	City of Hardin	Illinois American	City of Hardin	IL	Pending	$ 2,300,000	435	$ 5,287
3	City of Mount Pulaski	Illinois American	City of Mount Pulaski	IL	Pending	$ 3,800,000	834	$ 4,556
4	City of Livingston	Illinois American	City of Livingston	IL	Pending	$ 550,000	375	$ 1,467
10	City of Jerseyville	Illinois American	City of Jerseyville	IL	Oct-2020	$ 26,250,000	4,259	$ 6,163
11	Four Lakes Condominium Association	Illinois American	City of Lisle	IL	Oct-2020	$ 900,000	1,266	$ 711
13	City of Rosiclare	Illinois American	City of Rosiclare	IL	May-2020	$ 480,000	525	$ 914
14	Village of Sidney	Illinois American	Village of Sidney	IL	May-2020	$ 2,300,000	567	$ 4,056
15	Village of Andalusia	Illinois American	Village of Andalusia	IL	May-2020	$ 1,800,000	490	$ 3,673
16	Village of Leonore	Illinois American	Village of Leonore	IL	May-2020	$ 100,000	68	$ 1,471
18	Village of Glasford	Illinois American	Village of Glasford	IL	Sep-2019	$ 800,000	492	$ 1,626
23	City of Lawson	Missouri American	City of Lawson	MO	Aug-2018	$ 2,619,000	970	$ 2,700
24	Village of Sundale, Illinois	Illinois American	Village of Sundale	IL	May-2018	$ 1,500,000	550	$ 2,727
25	City of Farmington	Illinois American	Fulton County	IL	Apr-2018	$ 3,750,000	1,063	$ 3,528
26	Fisher Water & Wastewater System	Illinois American	City of Fisher	IL	Mar-2018	$ 3,700,000	890	$ 4,157
28	Forest Homes Maple Park	Illinois American	Cottage Hills	IL	Jul-2017	$ 900,000	525	$ 1,714
30	Village of Wardsville	Missouri American	Cole County	MO	May-2017	$ 795,428	480	$ 1,657
31	Village of Sadorus	Illinois American	Village of Sadorus	IL	Mar-2017	$ 240,000	384	$ 625
32	Woodland Manor	Missouri American	Kimberling City/Branson	MO	Jun-2016	$ 200,000	164	$ 1,220
33	Village of Ransom	Illinois American	Village of Ransom	IL	Apr-2016	$ 175,000	170	$ 1,029
34	Ozark Shores Water Company	Camden County Public Water Supply District Number Four	Camden County	MO	Jul-2015	$ 5,252,781	1,869	$ 2,810
36	Village of Glenview	Aqua Illinois	Village of Glenview	IL	Apr-2015	$ 18,590,000	4,724	$ 3,935
						High	4,724	$ 6,163
						Low	68	$ 625
						Median	525	$ 2,220
						Mean	970	$ 2,626

Of the 22 examples of market data, 18 are closed sales and 4 are pending sales. The analysis of the sale properties for comparison with the subject property is ultimately based on the number of customers within the water system, the age of the system, and the overall general condition of the system. The Missouri and Illinois sale properties indicate a range of sale prices from $625 to $6,163 per customer.

The most comparable properties would be those that include a similar number of customer accounts for the water system, although other differences such as age/condition, location and market area must be reconciled. The sales utilized were of water systems that were pending, relatively recent, or took place within the last six years. The dates of sale and market conditions at the time of sale do not appear to significantly impact the unit sale prices of the sale properties selected for analysis in this approach.

Sales Comparison Approach
(Continued)

The Stewartsville water system has 357 customers. Sales of systems with customer counts greater than 1,000 were excluded from the analysis.

SUMMARY OF SALES OF WATER DELIVERY SYSTEMS
EXCLUDING SALES WITH CUSTOMER COUNTS GREATER THAN 1,000
(INCLUDES ALLOCATIONS FROM SALES OF WATER/SEWER SYSTEMS)

Sale #	Grantor	Grantee	Location		Sale Date	Sale Price	# of Cust	Sale Price / Customer
1	Country Meadows/Jim McDonald Sale	Illinois American	Village of Swansea	IL	Pending	$ 400,000	230	$ 1,739
2	City of Hardin	Illinois American	City of Hardin	IL	Pending	$ 2,300,000	435	$ 5,287
3	City of Mount Pulaski	Illinois American	City of Mount Pulaski	IL	Pending	$ 3,800,000	834	$ 4,556
4	City of Livingston	Illinois American	City of Livingston	IL	Pending	$ 550,000	375	$ 1,467
13	City of Rosiclare	Illinois American	City of Rosiclare	IL	May-2020	$ 480,000	525	$ 914
14	Village of Sidney	Illinois American	Village of Sidney	IL	May-2020	$ 2,300,000	567	$ 4,056
15	Village of Andalusia	Illinois American	Village of Andalusia	IL	May-2020	$ 1,800,000	490	$ 3,673
16	Village of Leonore	Illinois American	Village of Leonore	IL	May-2020	$ 100,000	68	$ 1,471
18	Village of Glasford	Illinois American	Village of Glasford	IL	Sep-2019	$ 800,000	492	$ 1,626
23	City of Lawson	Missouri American	City of Lawson	MO	Aug-2018	$ 2,619,000	970	$ 2,700
24	Village of Sundale, Illinois	Illinois American	Village of Sundale	IL	May-2018	$ 1,500,000	550	$ 2,727
26	Fisher Water & Wastewater System	Illinois American	City of Fisher	IL	Mar-2018	$ 3,700,000	890	$ 4,157
28	Forest Homes Maple Park	Illinois American	Cottage Hills	IL	Jul-2017	$ 900,000	525	$ 1,714
30	Village of Wardsville	Missouri American	Cole County	MO	May-2017	$ 795,428	480	$ 1,657
31	Village of Sadorus	Illinois American	Village of Sadorus	IL	Mar-2017	$ 240,000	384	$ 625
32	Woodland Manor	Missouri American	Kimberling City/Branson	MO	Jun-2016	$ 200,000	164	$ 1,220
33	Village of Ransom	Illinois American	Village of Ransom	IL	Apr-2016	$ 175,000	170	$ 1,029
						High	970	$ 5,287
						Low	68	$ 625
						Median	490	$ 1,714
						Mean	479	$ 2,389

Sales with a similar customer count are most comparable. Primary weight is placed on the pending and 2020 transactions with lesser weight on other recent Missouri and Illinois sales.

The Village of Sundale allocation, at $2,729 per water customer and $355 per sewer customer, reflects the substantially higher water contribution versus the sewer contribution as the Sundale sewer system was in fair to poor condition. Therefore, the Village of Sundale sale is given the least weight in our analysis of the subject property water system.

Using unit prices that result from allocations are generally less reliable than sales of individual systems. And, in cases such as Sundale – where one component of the system has an allocation substantially higher than the other component – it is important to use the allocations with caution as internal bookkeeping purposes may have been a factor in the diverse allocations.

Sales Comparison Approach
(Continued)

We have concluded a unit value of $2,700 per water customer for the subject property water system. Based on the 357 reported water customers, the indicated value of the Stewartsville Water System is $964,000 (NINE HUNDRED SIXTY FOUR THOUSAND DOLLARS).

SUMMARY OF WATER DELIVERY SYSTEM VALUATION	
Number of Water System Customers for Stewartsville System	357
Unit Value (value per customer) Concluded from Market Data	$2,700
Value of Stewartsville Water Delivery System (rounded)	**$964,000**

Sewer

We were able to determine a unit value (price per sewer customer) for 21 sewer or water and sewer system sales transactions. The table below summarizes the transactions for which a price per sewer customer was calculated. In 11 cases, the unit values are developed based upon an allocation of a sale price that included a water and sewer system. The other 10 sales were of sewer systems.

SUMMARY OF SALES OF SEWER SYSTEMS
(INCLUDES ALLOCATIONS FROM SALES OF WATER/SEWER SYSTEMS)

Sale #	Grantor	Grantee	Location		Sale Date	Sale Price	# of Cust	Sale Price / Customer
2	City of Hardin	Illinois American	City of Hardin	IL	Pending	$ 1,000,000	405	$ 2,469
3	City of Mount Pulaski	Illinois American	City of Mount Pulaski	IL	Pending	$ 1,450,000	800	$ 1,813
5	City of Hallsville	Missouri American	City of Hallsville	MO	Pending	$ 2,000,000	664	$ 3,012
6	City of Bourbonnais	Aqua Illinois	City of Bourbonnais	IL	Pending	$ 32,100,000	6,491	$ 4,945
8	City of Taos	Missouri American	City of Taos	MO	Jul-2021	$ 4,100,000	421	$ 9,739
9	City of Trimble	Missouri American	City of Trimble	MO	Apr-2021	$ 1,000,000	200	$ 5,000
10	City of Jerseyville	Illinois American	City of Jerseyville	IL	Oct-2020	$ 17,000,000	3,959	$ 4,294
12	City of Granite City	Illinois American	City of Granite City	IL	Sep-2020	$ 18,000,000	12,783	$ 1,408
13	City of Rosiclare	Illinois American	City of Rosiclare	IL	May-2020	$ 120,000	400	$ 300
15	Village of Andalusia	Illinois American	Village of Andalusia	IL	May-2020	$ 1,500,000	460	$ 3,261
17	Village of Godfrey	Illinois American	Village of Godfrey	IL	Nov-2019	$ 13,550,000	6,250	$ 2,168
18	Village of Glasford	Illinois American	Village of Glasford	IL	Sep-2019	$ 1,100,000	482	$ 2,282
19	Village of Manteno	Aqua Illinois	Village of Manteno	IL	Jul-2018	$ 25,000,000	4,300	$ 5,814
20	Village of Grant Park	Aqua Illinois	Village of Grant Park	IL	Nov-2019	$ 2,300,000	535	$ 4,299
22	City of Alton	Illinois American	City of Alton	IL	Jun-2019	$ 53,800,000	11,456	$ 4,696
23	City of Lawson	Missouri American	City of Lawson	MO	Aug-2018	$ 1,356,000	904	$ 1,500
24	Village of Sundale	Illinois American	Village of Sundale	IL	May-2018	$ 500,000	1,410	$ 355
26	Fisher Water & Wastewater System	Illinois American	City of Fisher	IL	Mar-2018	$ 3,100,000	890	$ 3,483
30	Village of Wardsville	Missouri American	Cole County	MO	May-2017	$ 1,954,575	407	$ 4,802
35	City of Arnold	Missouri American	St Louis County	MO	May-2015	$ 27,200,000	7,500	$ 3,627
36	Village of Glenview	Aqua Illinois	Village of Glenview	IL	Apr-2015	$ 3,410,000	2,494	$ 1,367
						High	12,783	$ 9,739
						Low	200	$ 300
						Median	890	$ 3,261
						Mean	3,010	$ 3,364

Sales Comparison Approach
(Continued)

Of the 21 examples of market data, 17 are closed sales and 4 are pending sales that are under contract. The analysis of the sale properties for comparison with the subject property is ultimately based on the number of customers within the sewer system, the age of the system, and the overall general condition of the system. The Missouri and Illinois sale properties indicate a range of sale prices from $300 to $9,739 per customer.

The most comparable properties would be those that include a similar number of customer accounts for the sewer system, although other differences such as age/condition, location and market area must be reconciled. The sales utilized were of sewer systems that were pending or took place within the last five years. The dates of sale and market conditions at the time of sale do not appear to significantly impact the unit sale prices of the sale properties selected for analysis in this approach.

Sewer systems with more than 1,000 customers, in comparison to the subject property sewer system's 354 customers, are less comparable to the subject property based on number of customers. When the sales with more than 1,000 customers are omitted from the analysis, market data indicates an average sale price of $3,497 per customer with a range of sale prices from $300 to $9,739 per sewer customer.

We have given most consideration to the pending and 2021 transactions based on overall comparability including number of customers, location, type of system, and system condition. Lesser consideration is given the remaining sales.

SUMMARY OF SALES OF SEWER SYSTEMS
EXCLUDING SALES WITH CUSTOMER COUNTS GREATER THAN 1,000
(INCLUDES ALLOCATIONS FROM SALES OF WATER/SEWER SYSTEMS)

Sale #	Grantor	Grantee	Location		Sale Date	Sale Price	# of Cust	Sale Price / Customer
5	City of Hardin	Illinois American	City of Hardin	IL	Pending	$ 1,000,000	405	$ 2,469
2	City of Mount Pulaski	Illinois American	City of Mount Pulaski	IL	Pending	$ 1,450,000	800	$ 1,813
3	City of Hallsville	Missouri American	City of Hallsville	MO	Pending	$ 2,000,000	664	$ 3,012
9	City of Taos	Missouri American	City of Taos	MO	Jul-2021	$ 4,100,000	421	$ 9,739
8	City of Trimble	Missouri American	City of Trimble	MO	Apr-2021	$ 1,000,000	200	$ 5,000
13	City of Rosiclare	Illinois American	City of Rosiclare	IL	May-2020	$ 120,000	400	$ 300
15	Village of Andalusia	Illinois American	Village of Andalusia	IL	May-2020	$ 1,500,000	460	$ 3,261
18	Village of Glasford	Illinois American	Village of Glasford	IL	Sep-2019	$ 1,100,000	482	$ 2,282
20	Village of Grant Park	Aqua Illinois	Village of Grant Park	IL	Nov-2019	$ 2,300,000	535	$ 4,299
23	City of Lawson	Missouri American	City of Lawson	MO	Aug-2018	$ 1,356,000	904	$ 1,500
26	Fisher Water & Wastewater System	Illinois American	City of Fisher	IL	Mar-2018	$ 3,100,000	890	$ 3,483
30	Village of Wardsville	Missouri American	Cole County	MO	May-2017	$ 1,954,575	407	$ 4,802
						High	904	$ 9,739
						Low	200	$ 300
						Median	471	$ 3,137
						Mean	547	$ 3,497

Sales Comparison Approach
(Continued)

We have concluded a unit value of $4,100 per sewer customer for the subject property sewer system. Based on the 354 reported sewer customers, the indicated value of the Stewartsville Sewer System is $1,450,000 (ONE MILLION FOUR HUNDRED FIFTY THOUSAND DOLLARS).

SUMMARY OF SEWER SYSTEM VALUATION	
Number of Sewer System Customers for Stewartsville System	354
Unit Value (value per customer) Concluded from Market Data	$4,100
Value of Stewartsville Sewer System (rounded)	**$1,450,000**

Water Delivery and Wastewater Collection Systems Combined

The combined value opinion of the water delivery and wastewater collection systems is $2,414,000. Based upon the subject property system having a total of 711 customers (357 water customers, 354 sewer customers), the overall value per customer is approximately $3,400.

SUMMARY OF STEWARTSVILLE WATER AND SEWER SYSTEMS COMBINED		
Value of Stewartsville Water System	$ 964,000	
Value of Stewartsville Wastewater System	$ 1,450,000	
TOTAL VALUE OF WATER AND WASTEWATER SYSTEMS		**$2,414,000**
Number of Customers for Water System	357	
Number of Customers for Wastewater System	354	
TOTAL NUMBER OF CUSTOMERS		**711**
VALUE PER CUSTOMER (COMBINED WATER AND SEWER)		**$3,400**

Our market data included 15 examples of transactions that included both water and sewer systems.

Sales Comparison Approach
(Continued)

SUMMARY OF SALES OF COMBINED WATER & SEWER SYSTEMS

Sale #	Grantor	Grantee	Location		Sale Date	Sale Price	# of Cust	Sale Price / Customer
2	City of Hardin	Illinois American	City of Hardin	IL	Pending	$ 3,300,000	840	$ 3,929
3	City of Mount Pulaski	Illinois American	City of Mount Pulaski	IL	Pending	$ 5,250,000	1,634	$ 3,213
7	City of Bolivar	Liberty Utilities	City of Bolivar	MO	Pending	$ 20,000,000	9,000	$ 2,222
10	City of Jerseyville	Illinois American	City of Jerseyville	IL	Oct-2020	$ 43,250,000	8,218	$ 5,263
13	City of Rosiclare	Illinois American	City of Rosiclare	IL	May-2020	$ 600,000	925	$ 649
15	Village of Andalusia	Illinois American	Village of Andalusia	IL	May-2020	$ 3,300,000	950	$ 3,474
18	Village of Glasford	Illinois American	Village of Glasford	IL	Sep-2019	$ 1,900,000	974	$ 1,951
21	Fox River Water Reclamation District	Aqua Illinois	Kane County	IL	Nov-2019	$ 3,550,000	752	$ 4,721
23	City of Lawson	Missouri American	City of Lawson	MO	Aug-2018	$ 4,000,000	1,874	$ 2,134
24	Village of Sundale	Illinois American	Village of Sundale	IL	May-2018	$ 2,000,000	1,960	$ 1,020
26	Fisher Water & Wastewater System	Illinois American	City of Fisher	IL	Mar-2018	$ 6,800,000	1,780	$ 3,820
27	Peotone Water & Sewer System	Aqua Illinois	Village of Peotone	IL	Oct-2018	$ 12,300,000	3,000	$ 4,100
29	Lake Region Water & Sewer Co	Camden County Public Water Supply District Number Four	Camden & Miller Counties	MO	Jun-2017	$ 6,084,000	1,608	$ 3,784
30	Village of Wardsville	Missouri American	Cole County	MO	May-2017	$ 2,750,000	887	$ 3,100
36	Village of Glenview	Aqua Illinois	Village of Glenview	IL	Apr-2015	$ 22,000,000	7,218	$ 3,048
						High	9,000	$ 5,263
						Low	752	$ 649
						Median	1,634	$ 3,213
						Mean	2,775	$ 3,095

The above market data indicates a water and sewer system sale price of $649 to $5,263 per customer. A review of the market data pertaining to utility systems that included water and sewer shows the subject property's unit value of $3,400 per customer is within the range indicated by the market data.

Based upon this analysis, it is our opinion the market value of the subject property systems (water and sewer) as a whole is supported at $2,414,000 (TWO MILLION FOUR HUNDRED FOURTEEN THOUSAND DOLLARS) based upon the Sales Comparison Approach.

Income Capitalization Approach

The income capitalization approach has its strengths and weaknesses, similar to the inherent weaknesses and strengths that exist in the application of the cost approach and the market approach. The valuation expert's reconciliation of the value(s) indicated by the income approach takes into consideration various factors.

The income capitalization approach is a technique in which the value of assets are arrived at by capitalizing future (anticipated) benefits into a present value. The capitalization process includes one of two methods: (1) direct capitalization or (2) yield capitalization. The distinction between the two capitalization methods pertains to the perspective of the future benefits (cash flows).

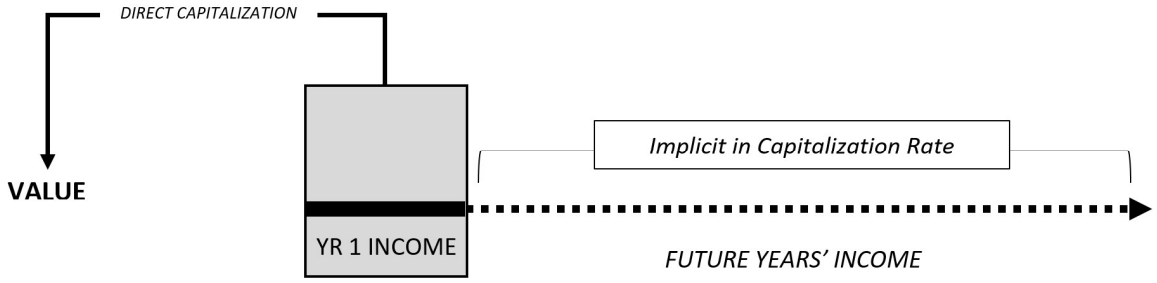
Direct Capitalization

Direct capitalization involves the conversion of a single-year's income (referred to as "first-year income") by applying an overall capitalization rate and using the following formula.

VALUE = INCOME ÷ RATE

*Where **INCOME** = First Year Income and **RATE** = Capitalization Rate*

The capitalization rate may be developed through a market extraction process or by utilizing built-up techniques in which the rates of return (dividend rates) of the respective property components are weighted (for example, debt and equity investment returns, land and building investment returns, etc.). In direct capitalization, change in value (over the investment/holding term) and change in income (over the investment/holding term) are implicit in the capitalization rate.



Income Capitalization Approach
(Continued)

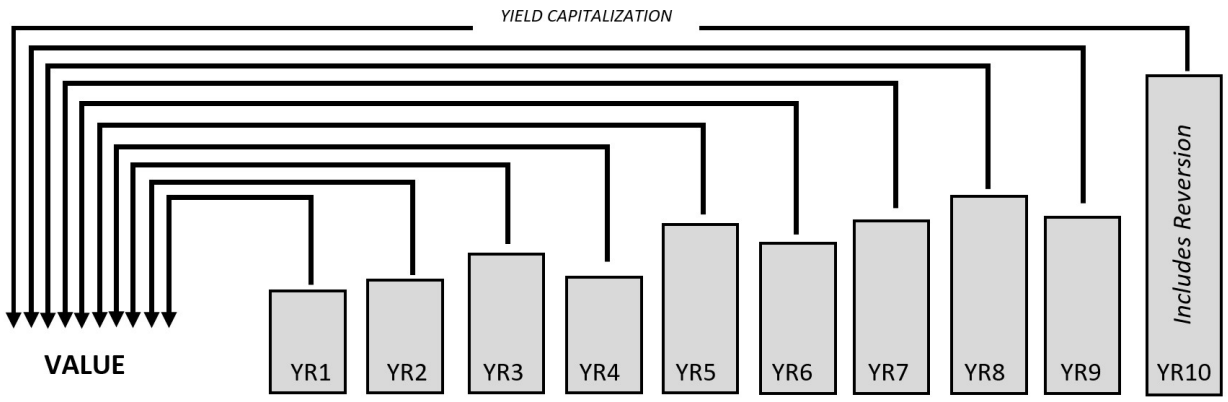
Yield Capitalization

Yield capitalization involves a more detailed analysis of the projected income of the asset. Anticipated changes in (1) income patterns and (2) overall value are explicitly stated. In yield capitalization, the conversion of each anticipated future cash flow (plus the reversion at the end of the income/investment period) is by means of discounting using a discount rate (also referred to as a yield rate). The resultant net present value is the sum of the present value calculations for each individual periodic cash flow plus the present value of the reversion.

Below is the formula for the discounting process followed by an illustration depicting the discounting of each individual periodic cash flow.

$$PV = \frac{P_1}{1+r} + \frac{P_2}{(1+r)^2} + \ldots + \frac{P_n}{(1+r)^n}$$

Where P = Income, r = discount rate, and n = term (years)



Income Capitalization Approach
(Continued)

Factors significant to the income capitalization methodology

A proper analysis in the valuation of a utility system will take into account the fact that there are many issues relating to the income capitalization process, whether that process includes direct capitalization or yield capitalization.

The issues that are inherent in the projection of cash flows for the income capitalization process pertaining to the valuation of public utility systems include:

(1) the fact that revenue (potential income) generated through customer rates is determined based upon the tariff or service area of which the subject system becomes part and impacted by rate cases;

(2) the changes in revenue resulting from changes in the level of income and expenses for the tariff resulting from, amongst other issues, the management and operational efficiencies of the IOU;

(3) changes in the rate base of the tariff resulting from acquisitions, mergers, and consolidations, and consequently the revenues that are generated by tariffs tend to experience irregular patterns of change over time;

(4) the changes in the rate base of the tariff resulting from qualified capital investment projects impacting systems within the tariff;

(5) the concept of *investment value* (value to a *particular* purchaser based on buyer-specific investment returns and criteria) v*. market value* (value of the system to a *typical* purchaser and not influenced by that particular buyer's specific returns generated by its respective tariffs).

The last factor (6) that impacts yield capitalization (DCF) exclusively goes to the issue of assumptions that are incorporated into the discounting model and how sensitive net present values can be to seemingly subtle variances in the valuation expert's inputs (DCF assumptions).

Additionally, yield capitalization models that use a pre-tax cash flow are not impacted by changes in tax rates and tax codes. However, after-tax DCF models can be affected by changing tax rates, similar to the situation that might occur in the near future based upon the current administration's proposed revisions to the federal tax code.

The following provides additional explanations regarding the issues inherent in the income capitalization approach.

Income Capitalization Approach
(Continued)

(1) Revenue influenced by systems in the tariff and rate cases

Tariffs often include assets from multiple systems, combined for investment, management, operational, and regulatory agency-influenced purposes. In many cases, the applicable customer rates are the same for all customers in the tariff, regardless of the system or service area of which they were part prior to acquisition and placement in the tariff; and, the applicable customer rates for the tariff are impacted by financial and regulatory components for the systems in the tariff collectively. Thus, often there is no tariff revenue (income and expense) data that can be credibly attributed to one particular system that is part of a multiple-system tariff. Additionally, the customer rates (income) and operating expenses for one IOU may vary amongst that IOU's different tariffs, and likewise there may be no correlation between the projected income and expenses of a service area as part of one IOU's holdings as opposed to the projected income and expenses for that same service area that would pertain to a different IOU's tariff in the same general geographical location or market area.

Tariffs are highly regulated and changes in allowed revenues, and ultimately changes in rates, can be granted provided the applicant meets extensive application and regulatory requirements. Rate cases provide mechanisms for the applicants to have allowed revenues and customer rates adjusted by the regulating authority. It is the role of the regulating authority (commission, for example) to review the applicant's request and, assuming the applicant and its operations meet the requirements established by the agency, adjust the revenues and rates, if deemed appropriate by the agency, in an effort to provide the applicant the opportunity to receive a fair and reasonable rate of return on its investment. As part of the rate case process, IOUs are required to validate operating expenses and operational efficiencies, which contribute to the respective commission's decision and determination regarding a rate change. Rate cases can impact all of a tariff's customers -- even though the customers may have come from various independent service areas. Examples of approved rate cases impacting multiple service areas include the 2016 rate case in Illinois involving Illinois American Water[9] and the 2017 rate case in Illinois involving Aqua Illinois.[10]

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[9] In January 2016, Illinois American Water requested a change in its water and wastewater rates of $340 million, due to substantial capital investments including a $76 million investment in its Chicago Metro service area. The Illinois Commerce Commission (ICC) issued an Order in 2016 that allowed Illinois American Water to adjust its rates effective January 1, 2017. The Order provided a decrease in monthly water rates applicable to its customers in Arlington Heights, Bolingbrook, Des Plaines, Elk Grove, Homer Glen, Homer Township, Lemont, Lockport, Mount Prospect, Norwood Park Township, Orland Hills, Orland Park, Prospect Heights, Romeoville, Wheeling, and Woodridge; but, increases (ranging from $6.51 per month to $17.70 per month) for wastewater services. For Illinois American Water customers in Carol Stream, Elmhurst, Glen Ellyn, Lisle, Lisle Township, Lombard, Villa Park, Winfield, and Wheaton, the monthly water rates decreased by $5.57 while wastewater service rates had increases by up to $17.70 per month on top of the pre-existing rates; and, for its water customers in Glenview and Rolling Meadows, the wastewater rates increased by $6.57 per month.

[10] In May 2017, Aqua Illinois, Inc., filed revised tariff sheets with the Illinois Commerce Commission which included

Income Capitalization Approach
(Continued)

(2) Operational efficiencies impact income and expenses of the tariff

IOUs generate revenues for services provided by the IOU that are directly impacted by management and operational efficiencies. For example, it is reasonable to expect certain line item expenses to be generally lower for a tariff consisting of multiple utility systems as compared to the sum of the line item expenses for each system if operated and managed independently. The ability of the IOU to spread certain costs among all customers in a tariff and to benefit from economies of scale generally results in a lower expense unit cost (cost per customer) for the individual systems; and, the extent of the benefit tends to be greater for the smaller systems due to the economies of scale.

(3) Changes to the rate base and customer rates are impacted by mergers, acquisitions, and consolidations; revenue streams typically do not remain constant or demonstrate level/patterned increases

The rate base of a tariff is also subject to change if the IOU acquires additional systems that are incorporated into the tariff or by consolidation of two or more tariffs. In the latter, it is reasonable to expect some of the customers may experience increases in rates while others may experience decreases in rates. Also significant is the fact that rate changes often occur within the first few years of the service area's acquisition, demonstrated by the March 2021 consolidation of service areas in Missouri into the Elm Hills tariff.[11]
I have researched this issue in public filings and dockets in several states where IOUs have acquired public utility systems.

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the request for increases in water and wastewater service rates affecting numerous service areas throughout Illinois and a consolidation of multiple service areas into one extensive service area. (Case 17-0259). In its Final Order, filed March 7, 2018, the Commission authorized Aqua to file new tariff sheets for its Consolidated Sewer Division and Consolidated Water Division and further amended the original cost of plant for the water division of more than $382 million and amended the original cost of the plant for the sewer division of more than $76 million.

[11] Four Missouri service areas -- Missouri Utilities, Rainbow Acres, State Park Village, and Twin Oaks -- were acquired between May 2018 and December 2018. In each case, the rate change and consolidation occurred within 3 years of the acquisitions. Substantial rate increases were also realized for the service areas that comprise the Elm Hills tariff. The four service areas had monthly rates from $3.18 (applies to Twin Oaks/Preserve and is estimated as the customers were not previously individually billed for sewer service) to $45 per month (State Park Village), and all customer rates were set at $99.88 per month as a result of the consolidation.

Income Capitalization Approach
(Continued)

Some of the additional relevant recent examples include a Missouri rate case from 2020[12], a pending case in Missouri for establishing a new service area[13], and a Missouri consolidation including recent (2021) acquisitions by the consolidated district[14].

(4) Changes to the rate base impacted by capital improvements

Qualifying capital investments can impact the rate base of a tariff that consequently could impact all of the customers within the tariff. For instance, a substantial capital investment program to replace, repair, or add infrastructure to a particular system's assets can, subject to regulatory approval, have a direct influence on all of the customers in the tariff, including those customers from different systems that are not the subject of the capital investment project. Consequently, customer rates for one service area in a tariff are subject to change over time based upon qualifying capital projects necessary for the maintenance and/or improvements to other service areas in the tariff.

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[12] On April 7, 2021, the State of Missouri Public Service Commission issued an ORDER APPROVING STIPULATION AND AGREEMENT for the matter of Missouri American Water's 2020 application to implement a general rate increase for water and sewer services in its Missouri service areas. (Case No. WR-2020-0344.) The stipulation, filed on March 5, 2021, provides for an increase in Missouri American Water's revenue requirement of $30 million over revenues authorized in its last general rate case. The $30 million increase results in Missouri American Water's annual revenue requirement being increased to $348 million. The Commission's Order became effective May 7, 2021.

[13] An example of a possible change in customer rates is evident in the docket filing by Missouri American Water of its PROPOSAL OFFER TO CITY OF HALLSVILLE dated July 18, 2019. (File No. SA-2021-0017.) On July 20, 2020, Missouri American Water filed its application for a certificate of convenience and necessity (CCN) to essentially operate a wastewater system in and near Hallsville, Missouri. In its offer to Hallsville, Missouri American Water proposed placing the City of Hallsville system in its existing tariff that would result in a 3% reduction in the Hallsville customer rates.

[14] 12 utility service areas located in Missouri that were consolidated in a July 2020 rate case into a tariff known as Confluence Rivers. All 12 service areas that comprise the Confluence Rivers tariff were purchased between April 2019 and June 2019. In each case, consolidation and rate change occurred less than 16 months after the system's acquisition date. The 12 service areas (systems) include the Auburn Lake Service Area, the Calvey Brook Service Area, the City of Eugene Service Area, the Evergreen Lake Subdivision Service Area, the Whispering Pines Subdivision Service Area (formerly Gladlo), the Lake Virginia Service Area, the Majestic Lakes Service Area, the Mill Creek Service Area, the Roy-L Service Area, the Bon-Gor Lake Estates Subdivision Service Area (formerly Smithview H2O), the Villa Ridge Service Area, and Chalet City West Subdivision/Alpine Village Community Service Area (formerly The Willows Utility Company). The rate changes for the service areas that comprise the Confluence Rivers Service Area ranged from increases of approximately 127% (Roy-L) to 807% (The Willows Utility System). Examples of customer rate increases for systems in Confluence Rivers include the Evergreen Lake Subdivision Service Area (water system) in which rates were increased from $7.71 per month to $42.20 per month and The Willows Utility Company (water system) in which rates were $5.23 per month and increased to $42.20 per month as a result of the consolidation and rate case. On May 3, 2021, the Missouri Public Service Commission approved the acquisition of five additional systems by the Company (Branson Cedars Resort Utility Company, DeGuire Subdivision, Freeman Hills Subdivision, Prairie Heights Water Company, and Terre du Lac.

Income Capitalization Approach
(Continued)

Capital Improvement Projects (CIPs) often can add substantially to the total investment of an IOU in an acquired service area or utility system. In the case of the proposal by Missouri American Water to acquire the City of Hallsville wastewater system, the proposal offer included a $2 million cash purchase price payable at closing with an additional $3.3 million committed to a five-year CIP. In this case, the CIP represented 62% of the total anticipated investment.

Another important consideration relating to CIPs and their impact on potential revenue streams over an investment period is that very often the actual investments by the IOU can be considerably higher or lower than the anticipated or projected investments prior to acquisition. For instance, a CIP might require less than anticipated based solely on more efficient management and operations due to IOU ownership after acquisition; or, the CIP might include substantially more investment than projected based upon an acquired system operating at levels that exceed capacity -- which might require substantial upgrades and improvements not contemplated at the time the Asset Purchase Agreement was executed.

(5) Investment Value v. Market Value

Implicit in the definition of market value is the concept that the value conclusion pertains to “typical” purchasers under “typical” circumstances based upon “typical” market forces and influences. Investment value, by contrast, is an opinion of value developed based upon particular investment criteria, returns, or requirements that are unique and/or specific to an investor and not necessarily representative of the market in general. If the objective of the valuation assignment is to develop a market value opinion, discounted cash flow analysis and other yield capitalization models must, by definition, incorporate and be based upon *market* inputs: market income levels, market expense ratios, market returns for the investors, etc.

Utilizing a system’s projected income for a specific purchaser, based upon that purchaser’s anticipated income resulting from that purchaser’s tariff, and using that investor’s projected increases and/or decreases in income and expenses, respectively, during the investment period, and based upon that investor’s allowed rate of return for the investment period, may or may not be consistent with market levels for the same inputs (income, expenses, periodic rates of change, rate of return, etc.). If the investor’s particular income and expense projections are not consistent with or based upon market levels, the resultant value opinion would be *investment* value.

Income Capitalization Approach
(Continued)

(6) Sensitivity inherent in DCF analysis

Discounted cash flow analysis (DCF) is a method of yield capitalization in which anticipated/projected future cash flows, identified for a particular investment period, are discounted to a present value, often referred to as a net present value. The process requires a number of investment assumptions, all of which impact the level of periodic cash flows and the net present value of the investment as a whole.

Seemingly insignificant changes in one input can have a significant impact on the final calculation/opinion; and, changes in multiple assumptions can compound the effect of the change on the conclusions.

Conclusion of DCF analysis

DCF analysis is sensitive to subtle changes in the assumptions. Valuation experts need to exercise caution in selecting inputs (assumptions) as what seemingly are small/insignificant changes in the inputs can have a significant impact on the final conclusion. Credible assignment results for a market value opinion using DCF requires careful analysis of comparable market data to assist in determining appropriate assumptions.

Summary of Income Approach

The Income Capitalization Approach is not considered applicable in the subject property valuation assignment. It is not possible to project accurate and credible cash flows for the subject property system due to the number of variables that are unknown. Projecting future cash flows attributable to the subject property would not be realistic or credible, and could result in assignment results that are misleading.

Final Reconciliation

The purpose of this appraisal report was to arrive at an estimate of market value for the City of Stewartsville water delivery and wastewater systems based upon conditions evident in the market as of August 4, 2021. We inspected the subject property, reviewed numerous reports and documents provided by the client and the City of Stewartsville, conducted research with regard to land values and easement valuation, and reviewed a report prepared by Flinn Engineering.

Our analysis of the City of Stewartsville water delivery and wastewater collection systems included the application of the Cost Approach and the Sales Comparison Approach. As explained in the report, the Income Capitalization Approach is not customarily relied on for the valuation of water delivery and wastewater collection systems acquired by investor-owned entities.

The Sales Comparison Approach included an analysis of transactions from Missouri and transactions from Illinois. As explained in this report, the Illinois market is more representative of a competitive market with balance the supply and demand forces. The market approach resulted in opinions of $964,000 for the subject property water delivery system and $1,450,000 for the subject property wastewater collection system.

The Cost Approach included the analysis and valuation of the system by its components: land (fee owned parcels and permanent easements), and facilities/infrastructure associated with the water delivery and wastewater collection systems. The Cost Approach resulted in a conclusion of value for the water delivery system of $810,000 and a conclusion of value for the wastewater collection system of $670,000.

Based upon a review of the market data available for both applications, we have concluded that primary emphasis should be placed on the value opinions indicated by the Sales Comparison Approach. The Cost Approach was not considered to be reliable due to the fully depreciated assets that still have significant remaining economic life.

Therefore, our final value opinions for the subject property systems are as follows:

Market Value of Water Delivery System	Market Value of Wastewater Collection System
$900,000	$1,400,000

These valuation opinions are developed subject to the extraordinary assumptions and hypothetical conditions explained in this appraisal report.

Statement of Certification – Joseph E. Batis

I certify that, to the best of my knowledge and belief:

- -- the statements of fact contained in this report are true and correct.
- -- the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.
- -- I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved.
- -- I have not completed a real estate appraisal of the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment.
- -- I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
- -- my engagement in this assignment was not contingent upon developing or reporting predetermined results.
- -- my compensation for completing this assignment is not contingent upon the developing or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
- -- my analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the *Uniform Standards of Professional Appraisal Practice* and in conformity with the requirements of the *Code of Professional Ethics* and the *Standards of Professional Appraisal Practice* of the Appraisal Institute.
- -- I have made a personal inspection of the property that is the subject of this report.
- -- no one other than Chris Stallings, Jordan Leiner, and Edward Dinan provided significant real property professional assistance to the person signing this certification.

As of the date of this report, Joseph E. Batis has completed the requirements of the continuing education program of the Appraisal Institute.

Furthermore, I certify that the use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.

October 29, 2021

Joseph E. Batis, MAI, AI-GRS, R/W-AC
Edward J. Batis & Associates, Inc.
General Certification Lic. #553.000493 (IL; Expires 09/21)
General Certification Lic. #2016044083 (MO; Expires 06/22)
General Certification Lic. #CG03684 (IA; Expires 06/22)
General Certification Lic. #5660 (TN; Expires 06/21)
General Certification Lic. #4001017857 (VA; Expires 06/21)
General Certification Lic. #TX 131049 G (TX; Expires 11/22)

Statement of Certification – Elizabeth Goodman-Schneider

I certify that, to the best of my knowledge and belief:

The statements of fact contained in this report are true and correct.

The analyses, opinions, and conclusions in this review report are limited only by the reported assumptions and limiting conditions and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.

I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved.

I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.

My engagement in this assignment was not contingent upon developing or reporting predetermined results.

My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favor the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.

My analyses, opinions, and conclusions were developed and this appraisal report was prepared in conformity with the *Uniform Standards of Professional Appraisal Practice*.

Elizabeth Goodman Schneider did not make a personal inspection of the property that is the subject of this appraisal report.

No one provided significant real property appraisal assistance to the person signing this certification.

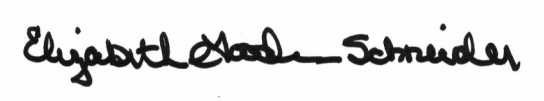
My engagement for this assignment, and my conclusions as well as other opinions expressed herein are not based on a required minimum value, a specific value, or approval of a loan.

Elizabeth Goodman Schneider has performed no services, as an appraiser or in any other capacity, regarding the property that is the subject of this appraisal report within the past three-year period immediately preceding acceptance of this assignment.

As of the date of this report, Elizabeth Goodman Schneider has completed the Standards and Ethics Education Requirement of the Appraisal Institute for Associate Members.

As of the date of this report, Elizabeth Goodman Schneider has completed the continuing education programs of the State of Missouri and the State of Wisconsin.

All individuals who participated in the preparation of this report and who are Senior Members of the American Society of Appraisers are recertified as required by the mandatory recertification as set out in the constitution by-laws and administrative rules of the American Society of Appraisers.



Elizabeth Goodman Schneider, ASA

Colorado Certified General Appraiser No. CG.200001080 exp 12/31/2021
Florida State Certified General Real Estate Appraiser No. RZ4093 exp 11/30/2022
Illinois Certified General Real Estate Appraiser No. 553-001973 exp 9/30/2023
Indiana Certified General Real Estate Appraiser No. CG41700036 exp 6/30/2022
Iowa Certified General Appraiser No. CG02980 exp 6/30/2022
Kentucky Certified General Real Property Appraiser No. 5262 exp 6/30/2022
Louisiana Certified General Appraiser No. APR.04505-CGA exp 12/31/2021
Minnesota Certified General Real Property Appraiser No. 40232088 exp 8/31/2022
Missouri State Certified General Real Estate Appraiser No. 2016042105 exp 6/30/2022
Ohio Certified General Real Estate Appraiser No. ACGO.2017003680 exp 8/10/2022
Pennsylvania Certified General Appraiser No. GA004327 exp 6/30/2023
Rhode Island Certified General Appraiser No. CGA.0020068 exp 8/17/2023
Wisconsin Certified General Appraiser No. 1586-010 exp 12/14/2021

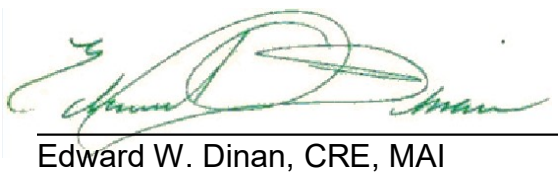
Statement of Certification – Edward Dinan

I certify that, to the best of my knowledge and belief:

- -- the statements of fact contained in this report are true and correct.
- -- the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.
- -- I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved.
- -- I have not completed a real estate appraisal of the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment.
- -- I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
- -- my engagement in this assignment was not contingent upon developing or reporting predetermined results.
- -- my compensation for completing this assignment is not contingent upon the developing or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
- -- my analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the *Uniform Standards of Professional Appraisal Practice* and in conformity with the requirements of the *Code of Professional Ethics* and the *Standards of Professional Appraisal Practice* of the Appraisal Institute.
- -- I have made a personal inspection of the property that is the subject of this report.
- -- no one other than Chris Stallings, Jordan Leiner, and Joseph Batis provided significant real property professional assistance to the person signing this certification.

As of the date of this report, Edward Dinan has completed the requirements of the continuing education program of the Appraisal Institute.

Furthermore, I certify that the use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.



October 29, 2021

Edward W. Dinan, CRE, MAI
Dinan Real Estate Advisors, Inc.

ADDENDA

Statement of Assumptions and Limiting Conditions

Qualifications of the Appraisers

Flinn Engineering Report

STATEMENT OF ASSUMPTION AND LIMITING CONDITIONS

The value herein estimated and/or other opinions presented are predicated on the following:

1. No responsibility is assumed for matters of a legal nature concerning the appraised property -- especially those affecting title. It is considered that the title is marketable for purposes of this report. The legal description as used herein is assumed to be correct.

2. The improvement is considered to be within the lot lines (unless otherwise stated); and, except as herein noted, is presumed to be in accordance with local zoning and building ordinances. Any plots, diagrams, and drawings found herein are to facilitate and aid the reader in picturing the subject property and are not meant to be used as references in matters of survey.

3. The appraiser assumes that there are no hidden or unapparent conditions of the property, subsoil or structure which would render it more or less valuable than otherwise comparable properties. The appraiser assumes no responsibility for such conditions or for engineering which might be required to discover such things.

4. Any description herein of the physical condition of improvements including, but not limited to, the heating, plumbing, and electrical systems, is based on visual inspection only, with no demonstration performed, and they are thus assumed to be in normal working condition. No liability is assumed for same, nor for the soundness of structural members for which no engineering tests were made.

5. The appraiser shall not be required to give testimony or appear in court by reason of this appraisal with reference to the property herein described unless prior arrangements have been made.

6. The distribution of total valuation in this report between land and improvements applies only under the existing program of utilization under the conditions stated. This appraisal and the allocations of land and building values should not be used as a reference for any other purpose and are invalid if used so.

7. That this report is to be used in its entirety and only for the purpose for which it was rendered.

8. Information, estimates, and opinions furnished to us and considered in this report were obtained from sources considered reliable and believed to be true and correct; however, no responsibility for guaranteed accuracy can be assumed by the appraiser.

9. The property is appraised as though under responsible ownership and competent management.

10. The report rendered herein is based upon the premise that the property is free and clear of all encumbrances, all mortgage indebtedness, special assessments, and liens--unless specifically set forth in the description of property rights appraised.

11. No part of this report is to be reproduced or published without the consent of its author.

12. The appraisal covers only the property described herein. Neither the figures therein, nor any analysis thereof, nor any unit values thereof derived, are to be construed as applicable to any other property, however similar it may be.

13. Neither all, nor any part, of the contents of this report, or copy thereof, shall be used for any purpose by any but the client without the previous written consent of the appraiser and/or the client; nor shall it be conveyed by any including the client to the public through advertising, public relations, news, sales, or other media, without the written consent and approval of the author--particularly as to value conclusions, the identity of the appraiser or a firm with which he is connected, or any reference to any professional society or institute or any initialed designations conferred upon the appraiser, as stated in his qualifications attached hereto.

14. Any cash flow calculations included in this report are developed from but one of a few alternatives of a possible series and are presented in that context only. Specific tax counsel should be sought from a C.P.A., or attorney, for confirmation that this data is the best alternative. This is advised since a change in value allocation, method or rate of depreciation or financing will have consequences in the taxable income.

15. This appraisal has been made in accordance with the Code of Ethics of the Appraisal Institute.

16. This report has not taken into consideration the possibility of the existence of asbestos, PCB transformers, or other toxic, hazardous or contaminated substances, and/or underground storage tanks (hazardous materials), or the cost of encapsulation or removal thereof. Should client have concern over the existence of such substances on the property, the appraiser considers it imperative for the client to retain the services of a qualified, independent engineer or contractor to determine the existence and extent of any hazardous materials, as well as the cost associated with any required or desirable treatment or removal thereof. The valuation stated herein would therefore be void, and would require further analysis to arrive at a market estimate of value.

EDWARD J. BATIS & ASSOCIATES

UTILITY VALUATION EXPERTS

Professional Profile

Joseph E. Batis, MAI, AI-GRS, R/W-AC

EMPLOYMENT

Owner and President of EDWARD J. BATIS & ASSOCIATES, INC.

Owner and President of UTILITY VALUATION EXPERTIS, INC.

Real Estate Appraiser and Consultant since 1983

PROFESSIONAL AFFILIATIONS, MEMBERSHIPS, AND CERTIFICATIONS

Member of the Appraisal Institute
MAI designation, AI-GRS designation (Member #63637)

Member of the International Right of Way Associations
R/W-AC certification (Member #7482)

Member of the American Water Works Association
(Member #03666505)

Member of the Illinois Chapter of the National Association of Water Companies (NAWC)

Approved Instructor
Appraisal Institute - multiple continuing education and qualifying education courses

DEVELOPMENT OF STATE-ACCREDITED CONTINUING EDUCATION SEMINARS

- *The Valuation of Water of Wastewater Systems (2020)*
- *Pipeline and Corridor Easements – Aren't They All the Same? (2020)*
- *Understanding Easements – What is Being Acquired? (2003)*
- *Pipelines and Easements – Can They Co-Exist? (2003)*

STATE – GENERAL CERTIFICATION APPRAISAL LICENSES

Illinois - Missouri - Tennessee - Virginia - Iowa - Texas - North Carolina

PRIVATE AND PUBLIC UTILITY ASSET VALUATION (2013-PRESENT)

Valuation and consulting services of public water treatment and distribution assets, public wastewater collection and treatment assets, shared assets (treatment plants), natural gas delivery systems, and other public infrastructure and assets for acquisition, disposition, allocation, or resolution of value disputes for more than 75 assignments during the last 7 years.

EDWARD J. BATIS ASSOCIATES

UTILITY VALUATION EXPERTS

SPECIALIZED VALUATION SERVICES AND EXPERIENCE

- Right of Way / Energy Transmission Lines / Fiber Optic Corridors / Railroad Corridors
- Power Transmission Line Corridors / Solar Energy Fields / Underground Gas Storage Fields
- Public and Investor-Owned Utility Systems (water distribution and wastewater collection)
- Valuation of Permanent and Temporary Easements
- Market Impact Studies for Corridors (Power Transmission Lines, Underground Pipelines)
    - Remainder Properties / Proposed Projects / Expansion of Infrastructure Systems

LITIGATION, ARBITRATION, AND CONSULTING SERVICES

- Expert Testimony (Federal and Circuit Courts, Commerce Commission Hearings)
- Value Dispute Resolution Services - Review and Rebuttal Services
- Litigation Consultation and Support Services

IMPACT STUDIES – SOLAR FIELD PROJECTS (2018)

Market impact studies pertaining to the proposed development of solar energy fields in several counties in the Chicago metropolitan area. Each market study included a site analysis and "before and after" analysis to determine the impact from the proposed solar projects to properties in the immediate and general market areas of the proposed facilities.

IMPACT STUDIES – PROPERTY VALUES AFFECTED BY INTERMODAL FACILITIES (2020)

Market impact studies pertaining to 15 warehouse, industrial, and intermodal facilities developed from 1988-2020 and their impact on more than 6,000 residences. Analysis included a review of traffic reports, proposed infrastructure developments, and independent study of proximity impacts. Scope of work included multiple appearances in front of multiple village and city committees to provide testimony.

MARKET STUDY AND APPRAISAL REVIEW - CONTAMINATION (2018)

Appraisal review services and market data research pertaining to the impact to the market values of numerous properties resulting from the contamination of underground water sources. Scope of work included technical reviews of multiple appraisals, independent market research, and consultation with clients to assist with settlement strategy.

MARKET IMPACT STUDY – CONTAMINATION FROM UNDERGROUND LEAK AT NUCLEAR POWER GENERATING STATION (2007)

Coordinated the market research, analysis, and valuation services pertaining to the impact of more than 500 properties affected by an underground leak of tritium from the Braidwood Nuclear Power Plant. Market Study included a before and after statistical analysis including market development patterns and value trends in 20 communities during a five-year time frame.

Analysis and Allocation of the Contributory Values of Multiple Permanent Easements Co-Located in a Transmission Corridor (2019-2020)

An analysis and valuation of the easement values for multiple contiguous and overlapping permanent easements within a right-of-way corridor, including gas pipeline easements, power transmission lines, public utility (water line) easements, and recreational easements. Scope of work included preliminary valuation, consultation, and technical reviews of multiple appraisal reports to assist client is settlement strategy.

Management and Supervision of Valuation Services for Simultaneous Acquisition of Easements for Multiple Oil Pipelines (2012-2020)

Valuation and consulting services including the coordination and management of preliminary land value studies, market impact studies to support "good-faith" offers, appraisal services for acquisition and condemnation hearings, appearance and testimony at Illinois Commerce Commission hearings, expert testimony at trial, appraisal review services, preparation of rebuttal reports and appearance for rebuttal testimony, and preparation for settlement conferences. Project involved acquisition of permanent and temporary easements for the simultaneous construction of three interstate oil transmission lines. Market research included an analysis of statistical data pertaining to 18 residential subdivisions impacted by underground pipelines. Responsible for management of the projects' valuation services pertaining to more than 2,000 properties in 22 counties including the managing, training, and supervising of 35 appraisers, consultants, and researchers that participated in the acquisition projects.

Interstate Natural Gas Pipeline Project (2000-2003)

Valuation and consulting services including the coordination and management of appraisal services for acquisition and condemnation hearings in federal court, appraisal review services, rebuttal report/testimony, and settlement conferences. Project involved acquisition of permanent and temporary easements for the construction of a natural gas transmission line. Responsible for management of the project's valuation services including more than 600 properties in 4 counties.

Valuation Review Services and Expert Testimony for 1,000+ Mile Railroad Corridor

In 2019, provided valuation and consulting services including the review of appraisals and consulting reports pertaining to the valuation of a 1,000+ mile fiber optic corridor within a railroad corridor extending through Virginia, North Carolina, South Carolina, Tennessee and Illinois.

EDWARD J. BATIS ASSOCIATES

UTILITY VALUATION EXPERTS

RECENT AND PENDING PRESENTATIONS, DISCUSSION PANEL APPEARANCES, AND OFFERINGS OF SELF-DEVELOPED SEMINARS

Appraisal Institute - Chicago Chapter
Midwest Easements - Aren't They All the Same?
Chicago, IL; 2020

Illinois Municipal League Association - 2018 Annual Conference
What's the Value of Your Public Utility System?
Chicago, IL; 2019

Appraisal Institute - Chicago Chapter
The Valuation of Water and Wastewater Systems
Chicago, IL; 2021

Will County Estate Planning Council
Valuation and Regulatory Issues - Updates
Lockport, IL; 2018

Appraisal Institute - 2019 National Conference
Valuation of Easements - Litigation Issues
Denver, CO; 2019

International Right of Way Association - Chapter 12
Valuation of Easements for Pipelines
Aurora, IL; 2020

Southwest Suburban Water Coalition
Valuation of Easements within Easements in Right-of-Way Corridors
Orland Park, IL; 2019

Illinois Property Assessment Institute - 2021 Annual Conference
Highest and Best Use Analysis
Bloomington, IL; 2021

Illinois Property Assessment Institute - 2021 Annual Conference
The Valuation of Privately-Owned Water and Wastewater Utility Systems
Bloomington, IL; 2021

Appraisal Institute - Chicago Chapter
Illinois Appellate Court Cases - Impacts to Valuation Experts
Chicago, IL; Pending 2021

ELIZABETH GOODMAN SCHNEIDER, ASA

goodmanappraisal@gmail.com • 414-559-5898 • www.linkedin.com/in/elizabethgoodmanschneider

CERTIFIED GENERAL APPRAISER

Certified General Appraiser with 32 years experience in utility appraisal, commercial appraisal and appraisal review.

- Significant experience using the cost, market/sales and income approaches to value.
- Outstanding analytical skills.
- Superior oral and written communication.
- Public utility appraisal experience totaling 32 years.
- Knowledge of appraisals of commercial property types obtained through reviewing real property appraisals.

Public utility appraisal experience of the following property types:

- Water Systems
- Wastewater/Sewer Systems
- Hydroelectric Plants
- Natural Gas Pipelines
- Ip Gas Pipelines
- Oil Pipelines
- Products Pipelines
- Gas Transmission Assets
- Gas Distribution Assets
- Electric Transmission Assets
- Electric Distribution Assets
- Coal-Fired Power Plants
- Gas-Fired Power Plants
- Nuclear Power Plants
- Telecommunication Assets

Appraisal review experience of the following property types:

- Water Systems
- Wastewater/Sewer Systems
- Multi-Family
- Public Utilities
- Retail
- Office
- Commercial Condominium
- Industrial Condominium
- Office Condominiums
- Residential Condominium Units
- Retail Condominiums
- Shopping Centers
- Small Marinas
- Mobile Home Parks
- Subdivisions
- Industrial / Warehouse
- Mixed-Use
- Vacant Land
- Restaurant
- Tavern
- Funeral Home
- Day Care Center
- Special Purpose Property

PROFESSIONAL EXPERIENCE

PRESIDENT AND OWNER, Goodman Appraisal Consultants LLC, Cudahy, WI. 2010 to present

Goodman Appraisal Consultants provides valuation of public utilities including water and wastewater/sewer systems as well as commercial real estate appraisal review services.

- Appraisals of water and wastewater/sewer systems for purchase.
- Appraisals of public utilities and desktop technical appraisal reviews.
- Use of the Cost, Sales Comparison, and Income Approaches to Value.
- Consistently increasing experience with different real property types through reviews of real property appraisals completed by many different appraisers and appraisal firms.

SENIOR ASSOCIATE, AUS Consultants, Greenfield, WI. 1989 to 2011

AUS Consultants provides ad valorem valuation of public utilities. As Senior Associate at AUS Consultants, I performed and assisted with appraisals of public utility property for property tax purposes in a number of states.

- Pursued appropriate licensing and became the only Certified General Appraiser employed by the company.
- Increasing responsibility and autonomy.
- Experience with attorneys as clients.

ELIZABETH GOODMAN SCHNEIDER, ASA

goodmanappraisal@gmail.com • 414-559-5898 • www.linkedin.com/in/elizabethgoodmanschneider

LICENSES

- Certified General Appraiser, State of Colorado, #CG.200001080, exp 12/31/2021
- State-Certified General Real Estate Appraiser, State of Florida, #RZ4093, exp 11/30/2022
- Certified General Real Estate Appraiser, State of Illinois, #553.001973, exp 9/30/2023
- Certified General Appraiser, State of Indiana, #CG41700036, exp 6/30/2022
- Certified General Appraiser, State of Iowa, #CG02980, exp 6/30/2022
- Certified General Real Property Appraiser, State of Kentucky, #5262, exp 6/30/2022
- Certified General Appraiser, State of Louisiana, #APR.04505-CGA, exp 12/31/2021
- Certified General Appraiser, State of Minnesota, #40232088, exp 8/31/2022
- State Certified General Real Estate Appraiser, State of Missouri, #2016042105, exp 6/30/2022
- Certified General Real Estate Appraiser, State of Ohio, #ACGO.2017003680, exp 8/10/2022
- Certified General Appraiser, State of Pennsylvania, #GA004327, exp 6/30/2023
- Certified General Appraiser, State of Rhode Island, #CGA.0020068, exp 8/17/2023
- Certified General Appraiser, State of Wisconsin, #1586-010, exp 12/14/2021

CREDENTIALS & PROFESSIONAL AFFILIATIONS

- ASA - Machinery and Technical Specialties - Public Utilities, American Society of Appraisers
- SBA Going Concern Registry
- Accredited Senior Appraiser - American Society of Appraisers, #41144
- National Association of Water Companies - Illinois Chapter Associate Member
- American Water Works Association - Member #03443739
- Board of Directors - Appraisal Institute, Wisconsin Chapter, 2017
- General Associate Liaison - Appraisal Institute, Wisconsin Chapter, 2010 to 2014
- Nominating Committee Member - Appraisal Institute, Region III, 2011 to 2013

EDUCATION

Master of Arts in Economics, University of Wisconsin – Milwaukee. Completed in 2003.
Specializing in monetary policy and labor relations.

Bachelor of Arts in Economics, University of Wisconsin – Milwaukee. Completed in 1998.
Honors in the Major. Appointed to the Dean's Advisory Council.

CONTACT INFORMATION

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ELIZABETH GOODMAN SCHNEIDER, ASA

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WISCONSIN CERTIFIED GENERAL APPRAISER LICENSE

NO. 1586 - 10

EXPIRES: 12/14/2021

The State of Wisconsin
Department of Safety and Professional Services

Hereby certifies that

ELIZABETH KATHLEEN COMTE GOODMAN SCHNEIDER

was granted a certificate to practice as a

CERTIFIED GENERAL APPRAISER ELIGIBLE TO APPRAISE FEDERALLY RELATED TRANSACTIONS IS AQB COMPLIANT

in the State of Wisconsin in accordance with Wisconsin Law on the 21st day of November in the year 2003.

This authority granted herein must be renewed each biennium by the granting authority.

In witness thereof, the State of Wisconsin Department of Safety and Professional Services has caused this certificate to be issued under its official seal.

This certificate was printed on the 22nd day of December in the year 2019

MISSOURI CERTIFIED GENERAL APPRAISER LICENSE

State of Missouri

Missouri Department of Commerce and Insurance
Division of Professional Registration
Real Estate Appraisers Commission

State Certified General Real Estate Appraiser

VALID THROUGH JUNE 30, 2022
ORIGINAL CERTIFICATE/LICENSE NO. 2016042105

ELIZABETH GOODMAN SCHNEIDER
6260 S LAKE DR #718
CUDAHY WI 53110
USA

EXECUTIVE DIRECTOR

DIVISION DIRECTOR

DINAN REAL ESTATE ADVISORS, INC.

EDWARD W. DINAN, MAI, CRE®
PRESIDENT

ACADEMIC

Rockhurst College, Kansas City, Missouri, A.B., 1972
American Institute of Real Estate Appraisers
- Course 1A, Memphis State University - May 1975
- Course 1B, Tulane University - July 1975
- Course II, University of Georgia - February 1976
- Course VI, Chicago Education Center - March 1977

Appraisal Institute
- Standards of Professional Practice, Parts A and B
- Seminars include: Cash Equivalency, Subdivision Analysis, Rates Ratios and Reasonableness, Feasibility, Valuation of Leasehold Interests, Americans with Disability Act Review, Condemnation Process and Appraisal, Condemnation Appraising: Advanced Topics and Applications, Standards of Professional Practice, Parts A and B, Corridors And Rights-Of-Way II Symposium Valuation and Policy

Harvard Law School, Program of Instruction for Lawyers
- Advanced Negotiation: Deal Design and Implementation

University of Houston
- Dispute Resolution Institute

EXPERIENCE

Professional experience includes market and financial feasibility studies, highest and best use analyses, transient housing and convention market surveys, analysis of redevelopment potential of existing communities, lease analysis and consultation, as well as the appraisal and evaluation of many types of properties including:

Airports
Apartments (high rise, garden, townhouse)
Banks
Casinos
Cemeteries
Condemnation Appraisals
Condominiums/Co-op/Timeshare
Duck Clubs
Farms
Golf Courses/Country Clubs
Hotels and Motels
Industrial Plants and Warehouses
Mobile Home Parks
Office Buildings
Planned Communities
Quarries/Mines
Railroad Properties
Resorts
Restaurants
Sales and Service Buildings
Schools (private, parochial, secondary, higher education)
Shopping Centers (regional, community, neighborhood)
Single Family Residential
Special Use Properties
Subdivisions
Surgical Centers
Theaters
Urban Renewal (acquisition, reuse)
Vacant Land (commercial, industrial, residential, rural, agricultural)
Vessels

2023 South Big Bend Boulevard · Saint Louis, Missouri 63117 · 314-647-9900 · Fax 314-647-9922
email: edinan@dinanreal.com

In addition, Mr. Dinan has been approved as a fee appraiser for the U.S. Department of Justice, Missouri Department of Natural Resources, Missouri Department of Highways and Transportation, Illinois Department of Transportation, Probate Court of St. Louis City, as well as FNMA, FDIC, RTC, HUD, SBA, OTS, along with numerous other governmental agencies and is qualified in court as an expert witness. Mr. Dinan has also served as a hearing officer for the St. Louis County Board of Equalization.

Prior to forming Dinan Real Estate Advisors, Inc., Mr. Dinan was employed by the Turley Martin Company as Vice President of their Consulting and Appraising Division. Mr. Dinan has also participated as a guest lecturer on real estate appraising at Washington University, as well as several seminars sponsored jointly by the University of Missouri - St. Louis and the Home Builders Association of Greater St. Louis, Counselors of Real Estate®, and Law Seminars International. In addition, Mr. Dinan is approved as an instructor for the Missouri Real Estate Commission's Continuing Education Program, and has been a lectured speaker for the Bar Association of Metropolitan St. Louis. Mr. Dinan has also delivered seminars on appraisal reviews to loan officers at several financial institutions in the St. Louis area.

GEOGRAPHICAL AREAS OF EXPERIENCE

Territory covered is primarily Metropolitan St. Louis, but also includes professional experience in the following 27 states: Arizona, Arkansas, California, Colorado, Connecticut, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Mississippi, Missouri, Nebraska, New York, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Virginia, Wisconsin and Wyoming.

PROFESSIONAL AFFILIATION

Mr. Dinan has held virtually every position as an officer and has served on the Board of Directors for the local chapter of the Appraisal Institute. In 1990, Mr. Dinan served as President of the former American Institute of Real Estate Appraisers and coordinated its unification with the local Society Chapter. Mr. Dinan also served as a Regional Representative for Region II of the Appraisal Institute. Mr. Dinan currently serves on the Board of Directors and is a National Liaison Membership Chair for the Counselors of Real Estate® as well as serving on the Advisory Board of Great Southern Bank. In addition, Mr. Dinan has the following affiliations:

Counselor of Real Estate® - 1996
- 2010 National Chairman - Dispute Resolution
- 2011 National Liaison Vice Chair
- 2011 National Co-Chair - Litigation Support
- 2012-2017 Board of Directors
- 2013 Recipient of the Chairs Award presented by The Counselors of Real Estate
- 2013 -2014 National Liaison Membership Chair

Appraisal Institute MAI Designation, Certificate Number 6103 -1980
St. Louis Association of Realtors
Royal Institution of Chartered Surveyors - 2006

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Flinn Engineering, LLC
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618-550-8427
ksimpson@flinnengineering.com

August 16, 2021

Mr. Joseph E. Batis, MAI, R/W-AC
Edward J. Batis & Associates
313 N. Chicago Street
Joliet, IL 60432

Re: Engineering Report
Water and Wastewater System Appraisal
Stewartsville, Missouri

Dear Mr. Batis:

Flinn Engineering, LLC is pleased to present the following information regarding the water and wastewater systems owned by the City of Stewartsville, Missouri (City) as part of the appraisal process you are completing for Missouri American Water. The purpose of this Engineering Report is to provide a high-level review of the condition of the system, estimate the 2021 installation cost, and estimate the depreciated book value of the assets based on 2021 installation costs and the age of the assets. The City provided limited information on the assets. The original installation costs and installation dates were not documented by the City. The 2021 estimated cost of installation was calculated using a combination of an engineering opinion of cost to install the assets based on knowledge of other systems of similar size, as well as correspondence from the City, vendors, and contractors. Some of the original installation costs were available. The average annual inflation rate was downloaded from the US Department of Labor – Bureau of Labor Statistics (**Attachment A**). The estimated original installation cost was inflated to 2021 using the average annual inflation rate. The 2021 estimated installation cost was depreciated based on the estimated age of each asset. Based on the "Census of Missouri Public Water Systems 2020" (excerpt in **Appendix B**) from the Missouri Department of Natural Resources, the Stewartsville original water system was placed in service in 1954.

A site visit was conducted on August 4, 2021. The above ground assets were observed to determine a high-level condition for this report. No additional testing was conducted beyond the visual observation of condition.

Water System

The water system includes a meter vault (not owned by the City), an elevated storage tank, and the water distribution system. The meter vault was not visited since the City does not own it. The City provided an "Engineering Report-Distribution System Improvements" completed by Snyder & Associates dated May 2011, revised January 2012 (Engineering Report-Water). This report was the basis for several items as indicated below. The report is not attached but is on file in our office and can be provided if requested.

Water Storage Tank

The water system includes a 200,000-gallon elevated tank. The tank is a welded steel,

pedisphere tank. Based on the Engineering Report-Water, the tank was installed in 1994. The City provided a recent "Condition Assessment Report" completed by Utility Service Company, Inc. The City has an annual contract with Utility Service Company, Inc. to inspect/clean the tank regularly. The City indicated that the inside was painted in 2019 and the outside is scheduled to be painted in 2022. The original installation cost was not documented by the City. Based on conversations with tank manufacturers, the estimated cost for supplying and constructing a storage tank in 2021 would be in the range of $2.00 to $2.50 per gallon depending on the height of the tank. We estimated the cost of the tank to be $2.50 per gallon because of the height. We estimated the cost of the foundation to be 10% of the tank cost, the site piping to be 5% of the tank cost, and the site work (grading, fencing, etc) to be $5,000. The engineering is estimated at 10% of the subtotal for the tank, foundation, etc. **Table 1** summarizes the estimated cost to install the tank in 2021.

Table 1 – Tank Estimated Installation Cost in 2021

Description of Work	Elevated Tank (200,000 gallons)
Tank ($2.50 per gallon)	$ 500,000.00
Foundation (10% of Tank)	$ 50,000.00
Site Piping (5% of Tank)	$ 25,000.00
Site Work (Lump sum $5,000)	$ 5,000.00
Subtotal	$ 580,000.00
Engineering (10% of Subtotal)	$ 58,000.00
Total	**$ 638,000.00**

Based on the site visit, the annual contract with Utility Services Co, Inc. and the recent Condition Assessment Report the tank appears to be in very good condition.

Water Distribution System

The Engineering Report-Water included an assessment of the distribution system. The report includes a table showing the water main by size and material. Other than normal maintenance and leak repairs, one significant improvement was completed in the distribution system since the completion of the Engineering Report-Water. The Hill Street water main was completed in 2017 at a reported cost of $140,000. **Table 2** summarizes the water main inventory.

Table 2 – Water Distribution System Inventory

Pipe Diameter and Material	Length (feet)
2-inch (cast iron)	1,700
2-inch (PVC)	16,000
4-inch (PVC)	2,300
4-inch (transite)	26,700
6-inch (PVC)	4,800
6-inch (Hill Street Imp.-PVC)	~900[1]
Total	52,400

Note 1 – Project Quantities for Hill Street Imp shows 760 feet excluding 2 borings under roads – each road bore is assumed to be about 70'

The original system was installed in 1954 based on the "Census of Missouri Public Water Systems 2020" (excerpt in **Appendix B**). We assumed all the 4-inch transite main was part of the original system. We assumed the cast iron and PVC main was installed equally in 1980, 1990, 2000, and 2010. **Table 3** summarizes the estimated 2021 cost of the water distribution system. The estimated cost assumes the average depth of the water main is approximately 3 feet deep. The estimate includes design, excavation, materials, installation, backfill, and restoration. The number of fire hydrants is based on a map of the distribution system provided by the City (**Appendix C**). The Engineering Report-Water indicates that the hydrants are part of the original system. The number of services and meters is based on the information provided by Missouri American and assumed to be part of the original system.

Table 3 – Distribution System Estimated Installation Cost in 2021

Asset Description	Quantity	Unit	Estimated Unit Cost 2021	2021 Estimated Installation Cost
2-inch Water Main	17,700	feet	$ 30.00	$ 531,000
4-inch Wate Main	29,000	feet	$ 45.00	$ 1,305,000
6-inch Water Main	4,800	feet	$ 50.00	$ 240,000
2017 Hill Street 6-inch	-			$ 151,242
Fire Hydrants	21	each	$ 3,500.00	$ 73,500
Services and Meters	397	each	$ 1,500.00	$ 595,500
			Total	**$ 2,896,242**

The water distribution system was not observed for condition. The non-revenue water (NRW) is reportedly 12% and the Engineering Report-Water indicates that the NRW is low. About half of the distribution system is assumed to be original. Based on the assumed age of the water distribution system and the low level of NRW the water distribution system is in good condition.

Wastewater System

The wastewater system includes a wastewater treatment plant, two (2) lift stations, and the sewer collection system. The City provided a "Sanitary Sewer Capital Improvements Analysis" completed by Schulte Engineering & Consulting, LLC dated March 12, 2013 (Engineering Report-Sewer). This report was the basis for several items as indicated below. The report is not attached but is on file in our office and can be provided if requested.

Wastewater Treatment Plant

The wastewater treatment plant is a three-cell lagoon system with two (2) aerators in the primary lagoon. The design flow is 104,600 gallons per day, according to the MDNR Operating Permit (**Appendix D**). The City did not provide documentation on the lagoons. There is no chemical feed at the lagoons and sludge is retained in the lagoon. The plant was originally constructed in 1980's (assumed 1985) according to the Engineering Report-Sewer.

The USEPA published a Technology Fact Sheet on lagoons (**Appendix E**). The Fact Sheet does not list typical installation costs because the costs vary significantly based on the cost of the land, excavation, grading, berm construction, inlet and outlet structures, and permeability of the soil. Based on some recent projects and discussions with contractors, we estimate the 2021 installation cost at $3.00 per gallon treated ($313,800).

The two (2) aerators were installed in 2015 according to City staff. The Engineering Report-Sewer recommended the installation of the aerators and estimated the cost to be $130,000 in 2012. The estimated 2021 cost is based on the estimate from 2012 inflated to 2021 ($154,500). One aerator was rebuilt in the spring of 2021 with the other scheduled for the fall of 2021. According to City staff the cost of the aerator rebuild was $6,000 for parts with City staff performing the labor. The estimated cost including labor is $10,000.

Although the value of the original wastewater treatment plant is nearly depreciated, the aerators are fairly new and the plant appears to be well-maintained and in good condition.

Sewer Lift Stations

The wastewater system includes two (2) sewer lift stations. The City provided recent inspection reports on the sewer lift stations (**Appendix F**). Both stations include two (2) submersible pumps that are each 3 hp.

The North Lift Station is located at the east end of 6th Street. According to the Engineering Report-Sewer the station was installed with the original system in the 1970's (assumed 1975). The City staff reported that the pumps have been replaced but not within the last 6 years. We assumed the pumps were replaced in 2014 since the inspection reports show the station to be in good working condition. The station does not include a generator but has a connection for a portable generator. The 2021 estimated cost for the original installation is $75,000. The 2021 estimated cost for the pump replacement is $10,000. The North Lift Station is in fair condition.

The South Lift Station is located on Highway Y near East Walnut Street. According to City staff, the South Lift Station was installed in 2012 for $270,000. The estimated 2021 cost is based on the 2012 cost inflated to 2021 ($320,800). The station includes an emergency generator and appears to be in excellent condition.

Sewer Collection System

The City provided a map and CCTV inspection results from 2015 of the sewer collection system (**Appendix G**). The inspection included all known gravity mains in the system. The gravity mains are 8-inch and the material includes vitrified clay pipe (VCP), PVC, and ductile iron (DI). The forcemain was estimated by measuring on Google Earth and is assumed to be 6-inch PVC. **Table 4** summarizes the sewer inventory.

Table 4 – Sewer Collection System Inventory

Pipe Diameter and Material	Length (feet)
8-inch gravity(PVC)	5,371
8-inch gravity (DI)	521
8-inch gravity (VCP)	31,314
6-inch forcemain (PVC)	1,960
Total	39,166

The Engineering Report-Sewer indicates that the original gravity sewer collection system was installed in the early part of the 1970's (assumed 1975) with additions in the mid 1990's (assumed 1995) and mid 2000's (assumed 2005). We assumed the VCP is part of the original system and the DI and PVC gravity pipe was equally installed in 1995 and 2005. We assumed the forcemain was installed in 1985 with the new wastewater treatment plant. The Engineering Report-Sewer indicates that there are 154 manholes. We assumed about 10% (15 manholes) were installed

with each year of improvements in 1995 and 2005 and the remaining 124 manholes are part of the original system. The number of service laterals came from information provided by Missouri American and it was assumed they are all part of the original system. **Table 5** summarizes the inventory of the sewer collection system and the estimated installation cost in 2021.

Table 5 - Sewer Collection System Estimated Installation Cost in 2021

Asset Description	Quantity	Unit	Estimated Unit Cost 2021	2021 Estimated Installation Cost
Gravity Sewer (8" VCP, PVC, and DI)	37,206	feet	$ 55.00	$ 2,046,330
Forcemain (assumed 6" PVC)	1,960	feet	$ 45.00	$ 88,200
Manholes	154	each	$ 3,500.00	$ 539,000
Service Laterals	397	each	$ 300.00	$ 119,100
			Total	$ 2,792,630

The 2021 cost to install the gravity sewer is estimated to be $55 per foot. The estimated cost assumes the average depth of the sewer is approximately 6 feet deep. The 2021 cost to install the forcemain is estimated to be $45 per foot. The estimated cost assumes the average depth of the sewer is approximately 3 feet deep. The cost to install manholes in 2021 is estimated to be $3,500 each. Service laterals are assumed to be 4-inch are estimated at $300 each. The estimate includes design, excavation, materials, installation, backfill, and restoration.

The sewer collection system was not observed for condition. The Engineering Report-Sewer indicates that the collection system experiences significant Infiltration/Inflow (I/I) issues. Based on the age, material, and significant (I/I) issues the collection system is assumed to be in fair condition.

Estimated Book Value

Table 6 shows a summary of the estimated cost for installation in 2021 and the depreciated value based on the age of the assets. The depreciation calculation is included in **Appendix H**. The depreciation periods are based on depreciation periods used by the Missouri Public Service Commission (PSC) during recent rate cases. The depreciation schedules from six (6) recent rate cases are included in **Appendix I**. Three (3) are from water systems and three (3) are from wastewater systems. The depreciation periods used are summarized in **Table 7**.

Table 6 - Summary of Estimated Book Value

	Estimated 2021 Installation Cost	Depreciated from 2021 Estimate
Stewartsville Water System	$ 3,534,242.35	$ 786,760.10
Stewartsville Wastewater System	$ 3,676,730.00	$ 593,840.40
Total	$ 7,210,972.35	$ 1,380,600.50

Table 7 – Depreciation Periods

Asset	Depreciation Period (years)
Tanks	42
Water Main	50
Fire Hydrants	50
Services and Meters	35
WWTP-Lagoon	40
Lift Station	10
Sanitary Sewer, Manholes, Laterals	50

Overall the water and wastewater systems appear to be in good condition and well-maintained. Although many of the assets are fully or nearly depreciated, they are still in operation and could continue to stay in operation well beyond the depreciation period.

Thank you for the opportunity to assist you on this project. Please let me know if you have any questions.

Sincerely,

Kelly A. Simpson

Kelly A. Simpson, PE, LEED® AP
Owner

Enclosures:
Appendix A – Average Annual Inflation Rates
Appendix B – MDNR Census of Water Utilities 2021
Appendix C – Water Distribution Map with Fire Hydrants Highlighted
Appendix D – MDNR Operating Permit
Appendix E – USEPA Fact Sheet on Lagoons
Appendix F – Lift Station Inspection Reports
Appendix G – Sewer Collection System Map and CCTV Inspection Results
Appendix H – Depreciation Calculation
Appendix I – Missouri PSC Depreciation Schedules

CPI-All Urban Consumers (Current Series)
12-Month Percent Change
US Department of Labor - Bureau of Labor Statistics
Series Id: CUUR0000SA0L1E
Not Seasonally Adjusted
Series Title: All items less food and energy in U.S. city
Area: U.S. city average
Item: All items less food and energy
Base Period: 1982-84=100
Years: 1958 to 2020

https://data.bls.gov/pdq/SurveyOutputServlet
Search for CUUR0000SA0L1E
More Formatting Options
12-month percent change

Added Columns to Calculate Inflation Factor

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	HALF1	HALF2	Annual Factor	Factor to 2021
1958	3.2	3.2	2.8	2.4	2.4	2.1	2.4	2.1	1.7	1.7	1.7	1.7	2.4			1.024	9.246
1959	1.7	1.7	1.7	1.7	2.0	2.0	2.0	2.0	2.4	2.7	2.0	2.0	2.0			1.020	9.029
1960	2.0	2.3	2.0	2.0	1.7	1.7	1.3	1.3	1.0	1.0	1.0	1.0	1.3			1.013	8.852
1961	1.0	0.7	0.7	1.0	1.0	1.0	1.3	1.3	1.6	1.3	1.3	1.3	1.3			1.013	8.739
1962	1.3	1.3	1.6	1.3	1.6	1.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3			1.013	8.627
1963	1.0	1.0	1.0	1.3	1.0	1.3	1.3	1.6	1.3	1.3	1.6	1.6	1.3			1.013	8.516
1964	1.9	1.9	1.9	1.6	1.6	1.6	1.6	0.9	1.3	1.3	1.2	1.2	1.6			1.016	8.407
1965	1.6	1.6	1.2	1.6	1.6	1.2	1.2	1.6	1.5	1.5	1.2	1.5	1.2			1.012	8.274
1966	0.9	1.2	1.5	1.8	2.1	2.4	2.8	3.1	3.0	3.3	3.6	3.3	2.4			1.024	8.176
1967	3.6	3.6	3.6	3.3	3.3	3.3	3.3	3.3	3.6	3.5	3.5	3.8	3.6			1.036	7.985
1968	4.1	4.1	4.4	4.4	4.3	4.6	4.9	4.9	4.9	4.8	5.1	5.1	4.6			1.046	7.707
1969	5.1	5.3	5.6	6.1	6.1	5.8	5.8	5.8	6.0	6.0	5.9	6.2	5.8			1.058	7.368
1970	6.2	6.1	6.1	5.8	6.0	6.5	6.2	6.2	6.2	6.4	6.6	6.6	6.3			1.063	6.964
1971	6.3	5.8	5.2	5.0	5.2	4.9	4.9	4.6	4.4	3.8	3.3	3.1	4.7			1.047	6.551
1972	3.1	3.3	3.3	3.3	3.1	2.8	2.8	3.3	2.8	3.0	3.0	3.0	3.0			1.030	6.257
1973	2.8	2.8	3.0	3.2	3.2	3.2	3.2	3.2	3.8	4.3	4.5	4.7	3.6			1.036	6.075
1974	4.9	5.4	5.8	6.2	6.8	7.9	8.8	9.6	10.2	10.6	11.2	11.1	8.3			1.083	5.864
1975	11.5	11.7	11.4	11.3	10.5	9.6	9.1	8.2	7.7	7.0	6.8	6.7	9.1			1.091	5.415
1976	6.7	6.5	6.6	6.4	6.5	6.5	6.7	6.8	6.8	6.7	6.5	6.1	6.5			1.065	4.963
1977	6.3	6.3	6.2	6.3	6.3	6.6	6.3	6.2	6.2	6.0	5.9	6.5	6.3			1.063	4.660
1978	6.4	6.2	6.3	6.5	6.8	7.0	7.4	7.5	7.9	8.4	8.7	8.5	7.4			1.074	4.384
1979	8.6	9.2	9.3	9.3	9.4	9.3	9.6	10.0	9.9	10.1	10.6	11.3	9.8			1.098	4.082
1980	12.0	12.0	12.5	13.0	13.3	13.6	12.4	11.8	12.0	12.3	12.1	12.2	12.4			1.124	3.718
1981	11.4	10.9	10.0	9.5	9.5	9.4	11.1	11.6	11.8	10.9	10.2	9.5	10.4			1.104	3.307
1982	9.3	9.1	8.8	8.9	8.7	8.6	7.6	7.1	5.9	5.9	5.3	4.5	7.4			1.074	2.996
1983	4.7	4.7	4.7	4.3	3.6	2.9	3.0	3.0	3.5	3.7	4.3	4.8	4.0			1.040	2.789
1984	4.8	4.8	5.0	5.0	5.2	5.1	5.0	5.1	5.1	4.9	4.6	4.7	5.0			1.050	2.682
1985	4.5	4.7	4.8	4.5	4.5	4.4	4.2	4.1	4.0	4.1	4.4	4.3	4.3	4.7	4.3	1.043	2.554
1986	4.4	4.2	4.1	4.2	4.0	4.0	4.1	4.0	4.1	4.0	3.8	3.8	4.0	4.1	4.0	1.040	2.449
1987	3.8	3.8	4.0	4.2	4.2	4.1	4.0	4.2	4.3	4.3	4.4	4.2	4.1	4.0	4.2	1.041	2.355
1988	4.3	4.3	4.4	4.3	4.3	4.5	4.5	4.4	4.4	4.5	4.4	4.7	4.4	4.4	4.5	1.044	2.262
1989	4.6	4.8	4.7	4.6	4.6	4.5	4.6	4.4	4.3	4.3	4.4	4.4	4.5	4.6	4.3	1.045	2.167
1990	4.4	4.6	4.9	4.8	4.8	4.9	5.0	5.5	5.5	5.3	5.3	5.2	5.0	4.8	5.3	1.050	2.074
1991	5.6	5.6	5.2	5.1	5.1	5.0	4.8	4.6	4.5	4.4	4.5	4.4	4.9	5.3	4.6	1.049	1.975
1992	3.9	3.8	3.9	3.9	3.8	3.8	3.7	3.5	3.3	3.5	3.4	3.3	3.7	3.8	3.4	1.037	1.883

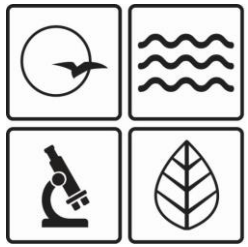
CPI-All Urban Consumers (Current Series)
12-Month Percent Change
US Department of Labor - Bureau of Labor Statistics
Series Id: CUUR0000SA0L1E
Not Seasonally Adjusted
Series Title: All items less food and energy in U.S. city
Area: U.S. city average
Item: All items less food and energy
Base Period: 1982-84=100
Years: 1958 to 2020

https://data.bls.gov/pdq/SurveyOutputServlet
Search for CUUR0000SA0L1E
More Formatting Options
12-month percent change

Added Columns to Calculate Inflation Factor

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	HALF1	HALF2	Annual Factor	Factor to 2021
1993	3.5	3.6	3.4	3.5	3.4	3.3	3.2	3.3	3.2	3.0	3.1	3.2	3.3	3.4	3.2	1.033	1.815
1994	2.9	2.8	2.9	2.8	2.8	2.9	2.9	2.9	3.0	2.9	2.8	2.6	2.8	2.8	2.9	1.028	1.757
1995	2.9	3.0	3.0	3.1	3.1	3.0	3.0	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.0	1.030	1.710
1996	3.0	2.9	2.8	2.7	2.7	2.7	2.7	2.6	2.7	2.6	2.6	2.6	2.7	2.7	2.7	1.027	1.660
1997	2.5	2.5	2.5	2.7	2.5	2.4	2.4	2.3	2.2	2.3	2.2	2.2	2.4	2.6	2.2	1.024	1.616
1998	2.2	2.3	2.1	2.1	2.2	2.2	2.2	2.5	2.5	2.3	2.3	2.4	2.3	2.2	2.4	1.023	1.578
1999	2.4	2.1	2.1	2.2	2.0	2.1	2.1	1.9	2.0	2.1	2.1	1.9	2.1	2.1	2.0	1.021	1.543
2000	2.0	2.2	2.4	2.3	2.4	2.5	2.5	2.6	2.6	2.5	2.6	2.6	2.4	2.3	2.5	1.024	1.511
2001	2.6	2.7	2.7	2.6	2.5	2.7	2.7	2.7	2.6	2.6	2.8	2.7	2.6	2.6	2.7	1.026	1.476
2002	2.6	2.6	2.4	2.5	2.5	2.3	2.2	2.4	2.2	2.2	2.0	1.9	2.4	2.5	2.2	1.024	1.438
2003	1.9	1.7	1.7	1.5	1.6	1.5	1.5	1.3	1.2	1.3	1.1	1.1	1.4	1.7	1.3	1.014	1.404
2004	1.1	1.2	1.6	1.8	1.7	1.9	1.8	1.7	2.0	2.0	2.2	2.2	1.8	1.6	2.0	1.018	1.385
2005	2.3	2.4	2.3	2.2	2.2	2.0	2.1	2.1	2.0	2.1	2.1	2.2	2.2	2.2	2.1	1.022	1.361
2006	2.1	2.1	2.1	2.3	2.4	2.6	2.7	2.8	2.9	2.7	2.6	2.6	2.5	2.2	2.7	1.025	1.331
2007	2.7	2.7	2.5	2.3	2.2	2.2	2.2	2.1	2.1	2.2	2.3	2.4	2.3	2.4	2.3	1.023	1.299
2008	2.5	2.3	2.4	2.3	2.3	2.4	2.5	2.5	2.5	2.2	2.0	1.8	2.3	2.3	2.3	1.023	1.270
2009	1.7	1.8	1.8	1.9	1.8	1.7	1.5	1.4	1.5	1.7	1.7	1.8	1.7	1.8	1.6	1.017	1.241
2010	1.6	1.3	1.1	0.9	0.9	0.9	0.9	0.9	0.8	0.6	0.8	0.8	1.0	1.1	0.8	1.010	1.220
2011	1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.0	2.1	2.2	2.2	1.7	1.3	2.0	1.017	1.208
2012	2.3	2.2	2.3	2.3	2.3	2.2	2.1	1.9	2.0	2.0	1.9	1.9	2.1	2.2	2.0	1.021	1.188
2013	1.9	2.0	1.9	1.7	1.7	1.6	1.7	1.8	1.7	1.7	1.7	1.7	1.8	1.8	1.7	1.018	1.164
2014	1.6	1.6	1.7	1.8	2.0	1.9	1.9	1.7	1.7	1.8	1.7	1.6	1.7	1.8	1.7	1.017	1.143
2015	1.6	1.7	1.8	1.8	1.7	1.8	1.8	1.8	1.9	1.9	2.0	2.1	1.8	1.7	1.9	1.018	1.124
2016	2.2	2.3	2.2	2.1	2.2	2.2	2.2	2.3	2.2	2.1	2.1	2.2	2.2	2.2	2.2	1.022	1.104
2017	2.3	2.2	2.0	1.9	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.8	1.8	2.0	1.7	1.018	1.080
2018	1.8	1.8	2.1	2.1	2.2	2.3	2.4	2.2	2.2	2.1	2.2	2.2	2.1	2.1	2.2	1.021	1.061
2019	2.2	2.1	2.0	2.1	2.0	2.1	2.2	2.4	2.4	2.3	2.3	2.3	2.2	2.1	2.3	1.022	1.039
2020	2.3	2.4	2.1	1.4	1.2	1.2	1.6	1.7	1.7	1.6	1.6	1.6	1.7	1.8	1.6	1.017	1.046
2021	1.4	1.3	1.6	3	3.8	4.5	4.3						2.84286			1.02843	1.000

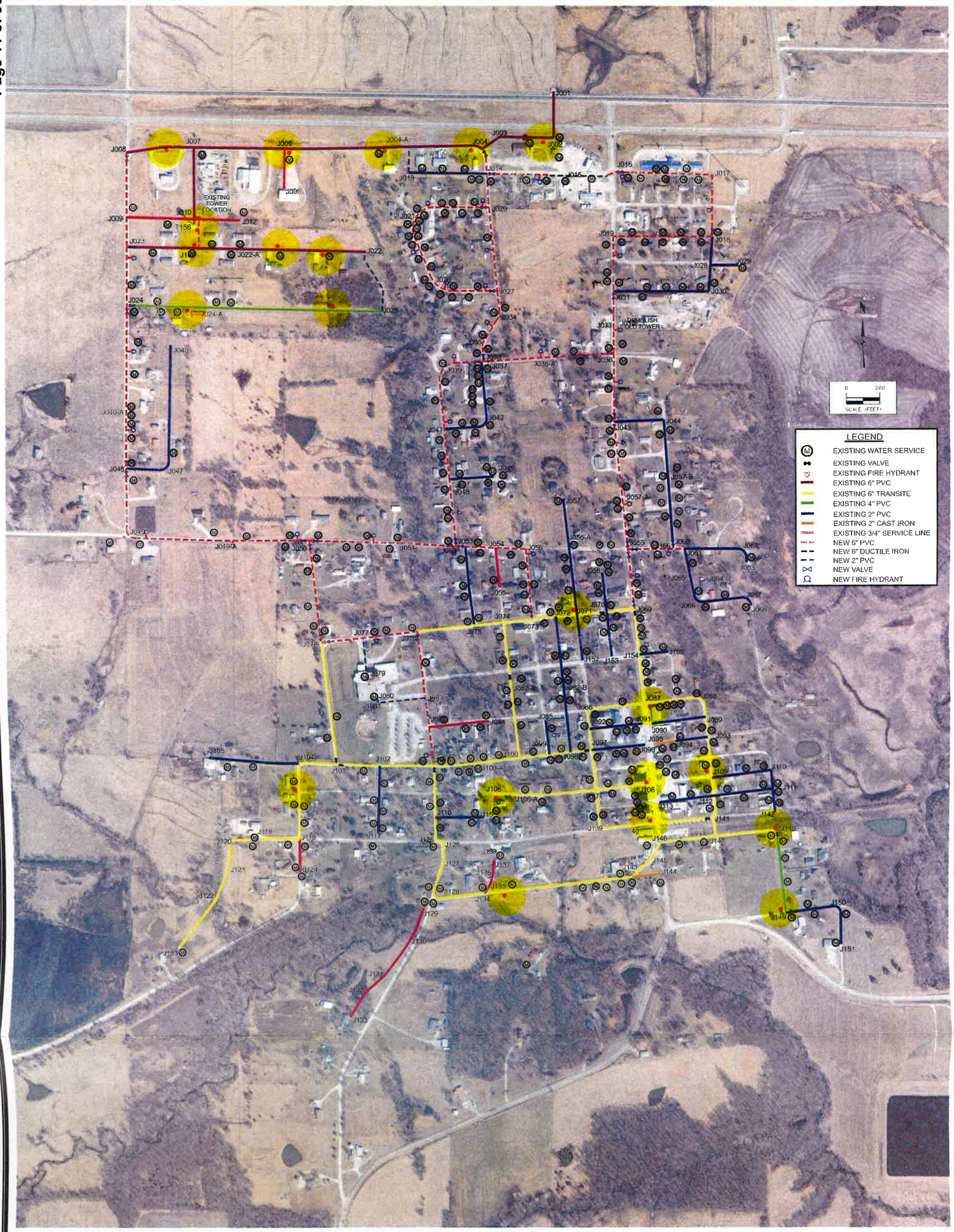
CENSUS OF MISSOURI PUBLIC WATER SYSTEMS 2021



Missouri Department of Natural Resources
Division of Environmental Quality
Water Protection Program
Public Drinking Water Branch

City Water Systems

Community Water System Name		Year Began	Operator Level	Owner Code	Population Served	Service Connections	Pct Sur Water	Pct Grd Water	Pct GW Under Infl	Pct Pur Sur Water	Pct Pur Grd Water	Pct Pur GW Und Infl	Supply Capacity MGD	Avg Daily Consumption MGD	Finished Water Storage
STEWARTSVILLE PWS															
System ID Number	County Location														
MO1010762	DEKALB	1954	1	L	750	347	0	0	0	0	100	0		0.0410	0.2000
STOCKTON PWS															
System ID Number	County Location														
MO5010763	CEDAR	1936	2	L	1,892	963	0	100	0	0	0	0	0.9500	0.1900	0.3500
STOTTS CITY PWS															
System ID Number	County Location														
MO5010765	LAWRENCE	1930	1	L	225	78	0	100	0	0	0	0	0.5040	0.0180	0.0370
STOVER PWS															
System ID Number	County Location														
MO3010767	MORGAN	1939	2	L	1,094	450	0	100	0	0	0	0	0.3450	0.0720	0.2000
STRAFFORD PWS															
System ID Number	County Location														
MO5010768	GREENE	1967	2	L	2,600	1,034	0	100	0	0	0	0	1.7780	1.6800	0.3000
STURGEON PWS															
System ID Number	County Location														
MO3010771	BOONE	1955	1	L	872	422	0	0	0	0	100	0	0.5000	0.0500	0.0000
SUGAR CREEK PWS															
System ID Number	County Location														
MO1010773	JACKSON	1922	1	L	2,500	992	0	0	0	0	100	0		0.1710	0.0000
SULLIVAN PWS															
System ID Number	County Location														
MO6010775	FRANKLIN	1921	D2	L	7,081	3,442	0	100	0	0	0	0	2.0500	0.8670	1.2580
SUMMERSVILLE PWS															
System ID Number	County Location														
MO4010777	TEXAS	1961	2	L	502	264	0	100	0	0	0	0	0.5320	0.0600	0.1160
SUNRISE BEACH VILLAGE OF PWS															
System ID Number	County Location														
MO5031591	CAMDEN	2009	2	L	220	220	0	100	0	0	0	0			0.4530



Sheet 1 of 1

City of Stewartsville, MO

DISTRIBUTION SYSTEM IMPROVEMENTS MODEL LAYOUT

SNYDER & ASSOCIATES
ENGINEERS & PLANNERS, L.L.C.

4730 FREDERICK AVENUE
ST. JOSEPH, MO 64506
816-364-5222

123 EAST FOURTH STREET
MARYVILLE, MO 64468
660-582-8808

MARK	REVISION	DATE	BY
Engineer: DS	Checked By:	Scale: NOTED	
Technician: DH	Date: MAY 2011	Field Bk:	Pg:
Project No: 110.0837		Sheet 1 of 1	
File No:			

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0108880
Owner:	City of Stewartsville
Address:	P.O. Box 270, Stewartsville, MO 64490
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Stewartsville Wastewater Treatment Facility
Facility Address:	East of intersection of Memorial Street and State Highway Y, Stewartsville, MO 64490
Legal Description:	Sec. 22, T57N, R32W, Clinton County
UTM Coordinates:	X = 372621, Y = 4400605
Receiving Stream:	Castile Creek (C)
First Classified Stream and ID:	Castile Creek (C) (322)
USGS Basin & Sub-watershed No.:	(10240012-0501)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Outfall #001 – POTW
The use or operation of this facility shall be by or under the supervision of a Certified "D" Operator.
Three-cell lagoon / primary cell is aerated by (2) Reliant Water Technologies Model WQA Water Moving Aerator (WQA) Units / sludge retained in lagoon.
Design population equivalent is 1,046.
Design flow is 104,600 gallons per day.
Actual flow is 41,500 gallons per day.
Design sludge production is 15.7 dry tons/year.

Permitted Feature INF – Influent Monitoring Location – Influent manhole

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 621.250 RSMo, Section 640.013 RSMo and Section 644.051.6 of the Law.

November 1, 2019 — Effective Date
August 1, 2020 — Modification Date

Edward B. Galbraith, Director, Division of Environmental Quality

September 30, 2024 — Expiration Date

Chris Wieberg, Director, Water Protection Program

OUTFALL #001	**TABLE A** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations in **Table A** shall become effective on **November 1, 2019** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Limit Set: Q						
Flow	MGD	*		*	once/quarter***	24 hr. estimate
Biochemical Oxygen Demand$_5$	mg/L		55	45	once/quarter***	grab
Total Suspended Solids	mg/L		65	65	once/quarter***	grab
E. coli (Note 1)	#/100mL		1,030	206	once/quarter***	grab
Ammonia as N (Jan 1 – Mar 31) (Apr 1 – Jun 30) (Jul 1 – Sep 30) (Oct 1 – Dec 31)	mg/L	 12.1 12.1 12.1 12.1		 3.1 1.8 1.4 3.1	 once/quarter***	 grab
Oil & Grease	mg/L	15		10	once/quarter***	grab
Total Phosphorus	mg/L	*		*	once/quarter***	grab
Total Kjeldahl Nitrogen	mg/L	*		*	once/quarter***	grab
Nitrite + Nitrate	mg/L	*		*	once/quarter***	grab

EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units**	SU	6.5		9.0	once/quarter***	grab

EFFLUENT PARAMETER(S)	UNITS	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand$_5$ – Percent Removal (Note 2)	%	65	once/quarter***	calculated
Total Suspended Solids – Percent Removal (Note 2)	%	65	once/quarter***	calculated

MONITORING REPORTS SHALL BE SUBMITTED **QUARTERLY**; THE FIRST REPORT IS DUE JANUARY 28, 2020. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

* Monitoring requirement only.
** pH is measured in pH units and is not to be averaged.
*** See table on Page 4 for quarterly sampling.

Table A Notes:
Note 1 – Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

Note 2 – Influent sampling for BOD_5 and TSS is not required when the facility does not discharge effluent during the reporting period. Samples are to be collected prior to any treatment process. Calculate Percent Removal by using the following formula: [(Average Influent –Average Effluent) / Average Influent] x 100% = Percent Removal. Influent and effluent samples are to be taken during the same month. The Average Influent and Average Effluent values are to be calculated by adding the respective values together and dividing by the number of samples taken during the month. Influent samples are to be collected as a grab sample.

Quarterly Minimum Sampling Requirements				
Quarter	**Months**	***E. coli***	**All Other Parameters**	**Report is Due**
First	January, February, March	Not required to sample.	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	October 28th
Fourth	October	**Sample once during October**	Sample at least once during any month of the quarter	January 28th
	November & December	Not required to sample.		

PERMITTED FEATURE INF	**TABLE B** **INFLUENT MONITORING REQUIREMENTS**

The monitoring requirements in **Table B** shall become effective on **November 1, 2019** and remain in effect until expiration of the permit. The influent wastewater shall be monitored by the permittee as specified below:

PARAMETER(S)	**UNITS**	**MONITORING REQUIREMENTS**				
		DAILY MAXIMUM	**WEEKLY AVERAGE**	**MONTHLY AVERAGE**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
Limit Set: IQ						
Biochemical Oxygen Demand$_5$	mg/L			*	once/quarter***	grab
Total Suspended Solids	mg/L			*	once/quarter***	grab
Ammonia as N	mg/L	*		*	once/quarter***	grab
Total Phosphorus	mg/L	*		*	once/quarter***	grab
Total Kjeldahl Nitrogen	mg/L	*		*	once/quarter***	grab
Nitrite + Nitrate	mg/L	*		*	once/quarter***	grab

MONITORING REPORTS SHALL BE SUBMITTED **QUARTERLY**; THE FIRST REPORT IS DUE JANUARY 28, 2020.

* Monitoring requirement only.
*** See table below for quarterly sampling requirements.

Quarterly Minimum Sampling Requirements			
Quarter	**Months**	**Quarterly Influent Parameters**	**Report is Due**
First	January, February, March	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

C. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Parts I, II, & III standard conditions dated August 1, 2014, May 1, 2013, and August 1, 2019, and hereby incorporated as though fully set forth herein.

D. SPECIAL CONDITIONS

1. Electronic Discharge Monitoring Report (eDMR) Submission System.
   (a) Discharge Monitoring Reporting Requirements. The permittee must electronically submit compliance monitoring data via the eDMR system. In regards to Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit.
   (b) Programmatic Reporting Requirements. The following reports (if required by this permit) must be electronically submitted as an attachment to the eDMR system until such a time when the current or a new system is available to allow direct input of the data:
      (1) Collection System Maintenance Annual Reports; and
      (2) Any additional report required by the permit excluding bypass reporting.
      After such a system has been made available by the Department, required data shall be directly input into the system by the next report due date.
   (c) Other actions. The following shall be submitted electronically after such a system has been made available by the Department:
      (1) Notices of Termination (NOTs); and
      (2) Bypass reporting, See Special Condition #9 for 24-hr. bypass reporting requirements.
   (d) Electronic Submissions. To access the eDMR system, use the following link in your web browser: https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx.
   (e) Waivers from Electronic Reporting. The permittee must submit compliance monitoring data and reports electronically. The Department may grant a waiver to a permittee in compliance with 40 CFR Part 127. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: http://dnr.mo.gov/forms/780-2692-f.pdf. The Department will either approve or deny this electronic reporting waiver request within 120 calendar days. Only permittees with an approved waiver request may submit monitoring data and reports on paper to the Department for the period that the approved electronic reporting waiver is effective.

2. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with all applicable federal and state statutes and regulations in accordance with §644.051.16, RSMo, and the Clean Water Act (CWA) section 402(k); however, this permit may be reopened and modified, or alternatively revoked and reissued:
   (a) To comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) To incorporate an approved pretreatment program or modification thereto pursuant to 40 CFR 403.8(c) or 40 CFR 403.18(e), respectively.

3. All outfalls must be clearly marked in the field.

4. Report as no-discharge when a discharge does not occur during the report period.

5. Reporting of Non-Detects:
   (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
   (b) The permittee shall not report a sample result as “Non-Detect” without also reporting the detection limit of the test. Reporting as “Non Detect” without also including the detection limit will be considered failure to report, which is a violation of this permit.
   (c) The permittee shall provide the “Non-Detect” sample result using the less than sign and the minimum detection limit (e.g. <10).
   (d) Where the permit contains a Minimum Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter (conventional, priority pollutants, metals, etc.), then zero (0) is to be reported for that parameter.
   (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
   (f) When calculating monthly averages, use one-half of the method detection limit (MDL) instead of a zero. Where all data are below the MDL, the “<MDL” shall be reported as indicated in item (c).

D. SPECIAL CONDITIONS (continued)

6. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

7. The permittee shall comply with any applicable requirements listed in 10 CSR 20-9, unless the facility has received written notification that the Department has approved a modification to the requirements. The monitoring frequencies contained in this permit shall not be construed by the permittee as a modification of the monitoring frequencies listed in 10 CSR 20-9. To request a modification of the operational control testing requirements listed in 10 CSR 20-9, the permittee shall submit a permit modification application and fee to the Department requesting a deviation from the operational control monitoring requirements. Upon approval of the request, the Department will modify the permit.

8. The permittee shall develop and implement a program for maintenance and repair of its collection system. The permittee may compare collection system performance results and other data with the benchmarks used in the Departments' Capacity, Management, Operation, And Maintenance (CMOM) Model located at http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc. Additional information regarding the Departments' CMOM Model is available at http://dnr.mo.gov/pubs/pub2574.htm.

   The permittee shall also submit a report via the Electronic Discharge Monitoring Report (eDMR) Submission System annually, by January 28th, for the previous calendar year. The report shall contain the following information:
   (a) A summary of the efforts to locate and eliminate specific sources of excessive infiltration and inflow into the collection system serving the facility for the previous year.
   (b) A summary of the general maintenance and repairs to the collection system serving the facility for the previous year.
   (c) A summary of any planned maintenance and repairs to the collection system serving the facility for the upcoming calendar year. This list shall include locations (GPS, 911 address, manhole number, etc.) and actions to be taken.

9. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2. Bypasses are to be reported to the Kansas City Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: https://dnr.mo.gov/mogem/ or the Environmental Emergency Response spill-line at 573-634-2436 outside of normal business hours. Once an electronic reporting system compliant with 40 CFR Part 127, the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, is available all bypasses must be reported electronically via the new system. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.

10. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.

11. An Operation and Maintenance (O & M) manual shall be maintained by the permittee and made available to the operator. The O & M manual shall include key operating procedures and a brief summary of the operation of the facility.

12. An all-weather access road to the treatment facility shall be maintained.

13. The outfall sewer shall be protected and maintained against the effects of floodwater, ice, or other hazards as to reasonably insure its structural stability, freedom from stoppage, and that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.

14. Sludge treatment, storage and disposal practices shall be conducted in accordance with Standard Conditions Part III. The permittee shall receive approval for any sludge treatment, storage, or disposal practices not identified in the facility description of the operating permit.

15. The lagoons shall be operated and maintained to ensure their structural integrity, which includes maintaining adequate freeboard and keeping the berms free of deep-rooted vegetation, animal dens, or other potential sources of damage.

16. The facility shall ensure that adequate provisions are provided to prevent or minimize surface water intrusion into the lagoons and to divert stormwater runoff around the lagoons and protect embankments from erosion.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATEMENT OF BASIS
MO-0108880
STEWARTSVILLE WASTEWATER TREATMENT FACILITY

This Statement of Basis (Statement) gives pertinent information regarding modification(s) to the above listed operating permit. A Statement is not an enforceable part of a Missouri State Operating Permit.

Part I – Facility Information

Facility Type: POTW
Facility Description: Three-cell lagoon / primary cell is aerated and mixed by (2) Reliant Water Technologies Model WQA Water Moving Aerator (WQA) Units / sludge retained in lagoon.

Part II – Modification Rationale

This operating permit is hereby modified to reflect a change in BOD_5 and TSS limits and percent removal requirements, and ammonia limits. In the November 2019 renewal of this operating permit the permit writer designated this treatment facility as having a secondary treatment level and assigned secondary treatment limits for BOD_5 and TSS as is consistent with current Department policy for lagoon systems that have installed Reliant Water Technologies Model WQA Water Moving Aerator (WQA) Units. However, at the time that this project was reviewed and CP0001592 was issued in November 2013, it was determined that permit limits would not change as a result of the installation of the WQA Units, and that the purpose of the project was to prevent effluent limit exceedances of the equivalent to secondary effluent limits the facility had at the time. With this in mind, it has been determined that performance based limits derived in accordance with 10 CSR 20-7.015(8)(A)D., and based on the treatment capability of the upgraded technology are appropriate. This permit modification will incorporate BOD_5 and TSS limits based off of the 99th percentile weekly average and the 95th percentile monthly average DMR reported values from the time period of 4th quarter 2014 to 4th quarter 2019. At this time, it is not the Department's intention to recalculate these limits at each permit renewal as the dataset is sufficiently representative of the facility's treated effluent. The removal efficiency requirement for these parameters will also be kept at 65%. Additionally, ammonia limits have been updated using the 2020 Total Ammonia Nitrogen Criteria Implementation Guidance as demonstrated below. No other changes were made at this time.

Total Ammonia Nitrogen. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L. No mixing considerations allowed; therefore, WLA = appropriate criterion.

The Department previously followed the 2007 Ammonia Guidance method for derivation of ammonia limits. However, the EPA's Technical Support Document for Water Quality-based Toxic Controls (TSD) establishes other alternatives to limit derivation. The Department has determined that the approach established in Section 5.4.2 of the TSD, which allows for direct application of both the acute and chronic wasteload allocations (WLA) as permit limits for toxic pollutants, is more appropriate limit derivation approach. Using this method for a discharge to a waterbody where mixing is not allowed, the criterion continuous concentration (CCC) and the criterion maximum concentration (CMC) will equal the chronic and acute WLA respectively. The WLAs are then applied as effluent limits, per Section 5.4.2 of the TSD, where the CMC is the Daily Maximum and the CCC is the Monthly Average. The direct application of both acute and chronic criteria as WLA is also applicable for facilities that discharge into receiving waterbodies with mixing considerations. The CCC and CMC will need to be calculated into WLA with mixing considerations using the mass-balance equation:

Quarter	Temp (˚C)*	pH (SU)*	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
1st	7.0	7.8	5.1	12.1
2nd	23.5	7.8	1.8	12.1
3rd	27.6	7.8	1.4	12.1
4th	14.0	7.8	3.1	12.1

* Ecoregional Data (Central Irregular Plains)

1st Quarter
Chronic WLA:
C_e = ((0.162 + 0.0)5.0 – (0.0 * 0.01))/0.162 = 5.0 mg/L

Acute WLA:
C_e = ((0.162 + 0.0)12.1 – (0.0 * 0.01))/0.162 = 12.1 mg/L

Chronic WLA = AML = **3.1** mg/L
Acute WLA = MDL = **12.1** mg/L

2nd Quarter
Chronic WLA:
C_e = ((0.162 + 0.0)1.8 – (0.0 * 0.01))/0.162 = 1.8 mg/L

Acute WLA:
C_e = ((0.162 + 0.0)12.1 – (0.0 * 0.01))/0.162 = 12.1 mg/L

Chronic WLA = AML = **1.8** mg/L
Acute WLA = MDL = **12.1** mg/L

3rd Quarter
Chronic WLA:
C_e = ((0.162 + 0.0)1.8 – (0.0 * 0.01))/0.162 = 1.8 mg/L

Acute WLA:
C_e = ((0.162 + 0.0)12.1 – (0.0 * 0.01))/0.162 = 12.1 mg/L

Chronic WLA = AML = **1.4** mg/L
Acute WLA = MDL = **12.1** mg/L

4th Quarter
Chronic WLA:
C_e = ((0.162 + 0.0)3.2 – (0.0 * 0.01))/0.162 = 3.2 mg/L

Acute WLA:
C_e = ((0.162 + 0.0)12.1 – (0.0 * 0.01))/0.162 = 12.1 mg/L

Chronic WLA = AML = **3.1** mg/L
Acute WLA = MDL = **12.1** mg/L

Part III – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

PUBLIC NOTICE:
The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing. The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit. For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- ✓ The Public Notice period for this operating permit was from May 15, 2020 to June 15, 2020. No responses received. After public notice, the department identified errors in the calculations for ammonia monthly averages during the first, third and fourth quarters. These errors have been corrected and the limit set updated.

DATE OF FACT SHEET: MARCH 10, 2020

COMPLETED BY:

SAM BUCKLER, ENVIRONMENTAL SPECIALIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT
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MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0108880
STEWARTSVILLE WASTEWATER TREATMENT FACILITY

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollutant Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of stormwater from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)(A)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

A Factsheet is not an enforceable part of an operating permit.

This Factsheet is for a Minor facility.

Part I – Facility Information

Facility Type: POTW

Facility Description: Three-cell lagoon / aerated and mixed primary cell / sludge retained in lagoon.

Have any changes occurred at this facility or in the receiving water body that affects effluent limit derivation?
✓ No.

Application Date: 04/15/2019
Expiration Date: 08/30/2019

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	0.162	Secondary	Domestic

Facility Performance History:
This facility was last inspected on October 29, 2013. The inspection showed the following unsatisfactory features: Failed to maintain the lagoon berms, failed to provide an all-weather access road, and failed to provide a calibrated flow measurement device.
A review of discharge monitoring reports (DMRs) revealed the following (month/year):
E. coli exceedances: 4/15, 6/15, 8/18
Ammonia as N exceedances: 9/14, 9/15, 12/16, 6/17, 3/18, 9/18, 3/19.

Comments:
The following changes were made during the drafting of this permit: the establishment of default Ammonia as N limits due to absence of sufficient data to conduct a Reasonable Potential Analysis (RPA); pH was set at 6.5-9.0 from ≥ 6.5; the addition of influent monitoring for Total Nitrogen (speciated) and Total Phosphorus per new State Regulations; reporting for influent BOD_5 and TSS was added; the removal of a once per permit cycle Acute Whole Effluent Toxicity (WET) test; the addition of a Cost Analysis for Compliance (CAFCom) to determine the affordability of new sampling costs; BOD_5 Percent Removal and TSS Percent Removal were changed from 65% to 85% removal efficiency; and treatment level was changed from equivalent to secondary to secondary.
Several changes were to the Special Conditions including: the removal of general criteria as a special condition as the permit writer evaluated each narrative statement in Part VI – Effluent Limits Determination for reasonable potential to cause or contribute to an excursion of the criteria and established numeric effluent limitations where necessary; removal of notifications for changes in

discharges of toxic substances; removal of special conditions requiring gates and warning signs, but the facility must remain sufficiently secured to restrict access per special condition 10; and the removal of the special condition for a once per permit cycle Acute WET test.

Note that the facility was upgraded in February 2014 to add two (2) Reliant Water Technologies WQA aeration/mixing units. The units were installed to reduce BOD_5, Ammonia as N, *E. coli*, and for sludge level reduction. Due to the modifications made to the facility, several changes were made during the drafting of this permit to reflect the facility changes and ensure that this permit appropriately follows applicable state and federal laws and regulation and the Department's procedures. The permit modifications made specifically to address the facility changes include: BOD_5 and TSS limits being set at 45 mg/L weekly average and 30 mg/L monthly average; treatment type being changed to secondary treatment; percent removal being established at 85% removal to match treatment type; and Ammonia as N limits being set to default values until sufficient data is collected to make an RPA determination.

Part II – Operator Certification Requirements

✓ This facility is required to have a certified operator.

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], the permittee shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.020(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

Owned or operated by or for a

- ☒ - Municipality
- ☐ - County
- ☐ - Public Sewer District
- ☐ - State agency
- ☐ - Public Water Supply Districts
- ☐ - Private Sewer Company regulated by the Public Service Commission

Each of the above entities are only applicable if they have a Population Equivalent greater than two hundred (200).

This facility currently requires a chief operator with a D Certification Level. Please see **Appendix - Classification Worksheet**. Modifications made to the wastewater treatment facility may cause the classification to be modified.

Operator's Name: Ernie Griffin
Certification Number: 15185
Certification Level: WW-D

The listing of the operator above only signifies that staff drafting this operating permit have reviewed appropriate Department records and determined that the name listed on the operating permit application has the correct and applicable Certification Level.

Part III – Operational Control Testing Requirements

Missouri Clean Water Commission regulation 10 CSR 20-9.010 requires certain publically owned treatment works and privately owned facilities regulated by the Public Service Commission to conduct internal operational control monitoring to further ensure proper operation of the facility and to be a safeguard or early warning for potential plant upsets that could affect effluent quality. This requirement is only applicable if the publically owned treatment works and privately owned facilities regulated by the Public Service Commission has a Population Equivalent greater than two hundred (200).

10 CSR 20-9.010(3) allows the Department to modify the monitoring frequency required in the rule based upon the Department's judgement of monitoring needs for process control at the specified facility.

✓ As per [10 CSR 20-9.010(4))], the facility is required to conduct operational monitoring. These operational monitoring reports are to be submitted to the Department along with the MSOP discharge monitoring reports.

✓ The facility is a lagoon that is designed to discharge and is required to conduct operational control monitoring as follows:

Operational Monitoring Parameter	Frequency
Precipitation	Twice/Week
Flow – Influent or Effluent	Twice/Week

pH – Primary Cell	Twice/Week

Part IV – Receiving Stream Information

RECEIVING STREAM(S) TABLE: OUTFALL #001

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Castile Creek	C	322	AQL, WBC-B, SCR, HHP, IRR, LWW	10240012-0501	Direct Discharge

*As per 10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission's water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and 1st classified receiving stream's beneficial water uses to be maintained are in the receiving stream table in accordance with [10 CSR 20-7.031(1)(C)].

Uses found in the receiving streams table, above:

10 CSR 20-7.031(1)(C)1.:
AQL = Protection of aquatic life (Current narrative use(s) are defined to ensure the protection and propagation of fish shellfish and wildlife, which is further subcategorized as: WWH = Warm Water Habitat; **CDF** = Cold-water fishery (Current narrative use is cold-water habitat.); **CLF** = Cool-water fishery (Current narrative use is cool-water habitat); EAH = Ephemeral Aquatic Habitat; MAH = Modified Aquatic Habitat; LAH = Limited Aquatic Habitat. This permit uses AQL effluent limitations in 10 CSR 20-7.031 Table A for all habitat designations unless otherwise specified.)

10 CSR 20-7.031(1)(C)2.: Recreation in and on the water
WBC = Whole Body Contact recreation where the entire body is capable of being submerged;
WBC-A = Whole body contact recreation that supports swimming uses and has public access;
WBC-B = Whole body contact recreation that supports swimming;
SCR = Secondary Contact Recreation (like fishing, wading, and boating).

10 CSR 20-7.031(1)(C)3. to 7.:
HHP (formerly HHF) = Human Health Protection as it relates to the consumption of fish;
IRR = Irrigation for use on crops utilized for human or livestock consumption;
LWW = Livestock and wildlife watering (Current narrative use is defined as LWP = Livestock and Wildlife Protection);
DWS = Drinking Water Supply;
IND = Industrial water supply

10 CSR 20-7.031(1)(C)8-11.: Wetlands (10 CSR 20-7.031 Table A currently does not have corresponding habitat use criteria for these defined uses)
WSA = Storm- and flood-water storage and attenuation; WHP = Habitat for resident and migratory wildlife species; WRC = Recreational, cultural, educational, scientific, and natural aesthetic values and uses; WHC = Hydrologic cycle maintenance.

10 CSR 20-7.031(6): **GRW** = Groundwater

RECEIVING STREAM(S) LOW-FLOW VALUES:

RECEIVING STREAM	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Castile Creek	0	0	0

MIXING CONSIDERATIONS TABLE:

MIXING ZONE (CFS) [10 CSR 20-7.031(5)(A)4.B.(I)(a)]			ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(5)(A)4.B(I)(b)]		
1Q10	7Q10	30Q10	1Q10	7Q10	30Q10
0	0	0	0	0	N/A

RECEIVING STREAM MONITORING REQUIREMENTS:
No receiving water monitoring requirements recommended at this time.

Receiving Water Body's Water Quality
Currently, the Department has not conducted a stream survey for this waterbody. When a stream survey is conducted, more information may be available about the receiving stream.

Part V – Rationale and Derivation of Effluent Limitations & Permit Conditions

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:
As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream, and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

✓ The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(40)] & [10 CSR 20-7.031(1)(O)], or is an existing facility.

ANTI-BACKSLIDING:
A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(o); 40 CFR Part 122.44(l)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

✓ Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.
✓ Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

- **Ammonia as N**. Effluent limitations were re-calculated for Ammonia based on new information derived from discharge monitoring reports and on the current Missouri Water Quality Standards for Ammonia. The newly established limitations are still protective of water quality.
- **Acute Whole Effluent Toxicity (WET) test.** The previous permit included requirements to conduct an Acute WET test once during the permit cycle. The permit writer has conducted reasonable potential determinations for all anticipated pollutants and established numeric effluent limitations where reasonable potential exists. Also, the facility has passed a previous Acute WET test. Therefore, the permit writer has made a reasonable potential determination which concluded the facility does not have reasonable potential to exceed narrative water quality standards for acute toxicity at this time and the acute WET testing requirements have been removed from this permit. This determination will be reevaluated during the next permit renewal.

✓ The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).

- **General Criteria**. The previous permit contained a special condition which described a specific set of prohibitions related to general criteria found in 10 CSR 20-7.031(4). In order to comply with 40 CFR 122.44(d)(1), the permit writer has conducted reasonable potential determinations for each general criterion and established numeric effluent limitations where reasonable potential exists. While the removal of the previous permit special condition creates the appearance of backsliding, since this permit establishes numeric limitations where reasonable potential to cause or contribute to an excursion of the general criteria exists the permit maintains sufficient effluent limitations and monitoring requirements in order to protect water quality, this permit is equally protective as compared to the previous permit. Therefore, given this new information, and the fact that the previous permit special condition was not consistent with 40 CFR 122.44(d)(1), an error occurred in the establishment of the general criteria as a special condition of the previous permit. Please see Part VI – Effluent Limits Determination for more information regarding the reasonable potential determinations for each general criterion related to this facility.

ANTIDEGRADATION:
In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)], for domestic wastewater discharge with new, altered, or expanding discharges, the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. In accordance with Missouri's water quality regulations for antidegradation [10 CSR 20-7.031(3)], degradation may be justified by documenting the socio-economic importance of a discharge after determining the necessity of the discharge. Facilities must submit the antidegradation review request to the Department prior to establishing, altering, or expanding discharges. See http://dnr.mo.gov/env/wpp/permits/antideg-implementation.htm

✓ No degradation proposed and no further review necessary. Facility did not apply for authorization to increase pollutant loading or to add additional pollutants to their discharge.

For stormwater discharges, the stormwater BMP chosen for the facility, through the antidegradation analysis performed by the facility, must be implemented and maintained at the facility. Failure to implement and maintain the chosen BMP alternative is a permit violation; see SWPPP.

✓ The facility does not have stormwater discharges or the stormwater outfalls onsite have no industrial exposure.

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:
As per [10 CSR 20-6.010(2)(C)], …An applicant may utilize a lower preference continuing authority by submitting, as part of the application, when a higher level authority is available, must submit information to the Department for review and approval, provided it does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

BIOSOLIDS & SEWAGE SLUDGE:
Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works

✓ Permittee is not authorized to land apply biosolids. Sludge/biosolids are stored in the lagoon. The permittee must receive approval for any treatment, removal, and disposal of sludge or biosolids that not identified in the facility description of the operating permit.

COMPLIANCE AND ENFORCEMENT:
Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

✓ The facility is not currently under Water Protection Program enforcement action.

ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:
The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize Clean Water Act reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. This final rule requires regulated entities and state and federal regulators to use information technology to electronically report data required by the National Pollutant Discharge Elimination System (NPDES) permit program instead of filing paper reports. To comply with the federal rule, the Department is requiring all permittees to begin submitting discharge monitoring data and reports online. In an effort to aid facilities in the reporting of applicable information electronically, the Department has created several new forms including operational control monitoring forms and an I&I location and reduction form. These forms are optional and found on the Department's website at the following locations:

Operational Monitoring Lagoon: http://dnr.mo.gov/forms/780-2801-f.pdf
Operational Monitoring Mechanical: http://dnr.mo.gov/forms/780-2800-f.pdf
I&I Report: http://dnr.mo.gov/forms/780-2690-f.pdf

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to 5 years or a permanent waiver from electronic reporting from the Department. To obtain an electronic reporting waiver, a permittee must first submit an eDMR Waiver Request Form: http://dnr.mo.gov/forms/780-2692-f.pdf. Each facility must make a request. If a single entity owns or operates more than one facility, then the entity must submit a separate request for each facility based on its specific circumstances. An approved waiver is non-transferable.

The Department must review and notify the facility within 120 calendar days of receipt if the waiver request has been approved or rejected [40 CFR 124.27(a)]. During the Department review period as well as after a waiver is granted, the facility must continue submitting a hard-copy of any reports required by their permit. The Department will enter data submitted in hard-copy from those facilities allowed to do so and electronically submit the data to the EPA on behalf of the facility.

✓ The permittee/facility is currently using the eDMR data reporting system.

NUMERIC LAKE NUTRIENT CRITERIA

✓ This facility does not discharge into a lake watershed where numeric lake nutrient criteria are applicable.

PRETREATMENT PROGRAM:
The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

Pretreatment programs are required at any POTW (or combination of POTW operated by the same authority) and/or municipality with a total design flow greater than 5.0 MGD and receiving industrial wastes that interfere with or pass through the treatment works or are otherwise subject to the pretreatment standards. Pretreatment programs can also be required at POTWs/municipals with a design flow less than 5.0 MGD if needed to prevent interference with operations or pass through.

Several special conditions pertaining to the permittee's pretreatment program may be included in the permit, and are as follows:

- Implementation and enforcement of the program,
- Annual pretreatment report submittal,
- Submittal of list of industrial users,
- Technical evaluation of need to establish local limitations, and
- Submittal of the results of the evaluation

✓ The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

REASONABLE POTENTIAL ANALYSIS (RPA):
Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard.

In accordance with [40 CFR Part 122.44(d)(1)(iii)] if the permit writer determines that any given pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

✓ An RPA was not conducted for this facility. Ammonia is a constituent of domestic wastewater. A reasonable potential to violate water quality standards is assumed. Absent sufficient data, a default Coefficient of Variation of 0.6 was utilized per the Technical Support Documents for Water Quality-Based Toxics Control. Please see Derivation and Discussion of Limits.

REMOVAL EFFICIENCY:
Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

✓ Secondary Treatment is 85% removal [40 CFR Part 133.102(a)(3) & (b)(3)].

SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):
Sanitary Sewer Overflows (SSOs) are defined as untreated sewage releases and are considered bypassing under state regulation [10 CSR 20-2.010(12)] and should not be confused with the federal definition of bypass. SSOs result from a variety of causes including blockages, line breaks, and sewer defects that can either allow wastewater to backup within the collection system during dry weather conditions or allow excess stormwater and groundwater to enter and overload the collection system during wet weather conditions. SSOs can also result from lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs include overflows out of manholes, cleanouts, broken pipes, and other into waters of the state and onto city streets, sidewalks, and other terrestrial locations.

Inflow and Infiltration (I&I) is defined as unwanted intrusion of stormwater or groundwater into a collection system. This can occur from points of direct connection such as sump pumps, roof drain downspouts, foundation drains, and storm drain cross-connections or through cracks, holes, joint failures, faulty line connections, damaged manholes, and other openings in the collection system itself. I&I results from a variety of causes including line breaks, improperly sealed connections, cracks caused by soil erosion/settling, penetration of vegetative roots, and other sewer defects. In addition, excess stormwater and groundwater entering the collection system from line breaks and sewer defects have the potential to negatively impact the treatment facility.

Missouri RSMo §644.026.1.(13) mandates that the Department issue permits for discharges of water contaminants into the waters of this state, and also for the operation of sewer systems. Such permit conditions shall ensure compliance with all requirements as established by sections 644.006 to 644.141. Standard Conditions Part I, referenced in the permit, contains provisions requiring proper operation and maintenance of all facilities and systems of treatment and control. Missouri RSMo §644.026.1.(15) instructs the Department to require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities. To ensure that public health and the environment are protected, any noncompliance which may endanger public health or the environment must be reported to the Department within 24 hours of the time the permittee becomes aware of the noncompliance. Standard Conditions Part I, referenced in the permit, contains the reporting requirements for the permittee when

bypasses and upsets occur. The permit also contains requirements for permittees to develop and implement a program for maintenance and repair of the collection system. The permit requires that the permittee submit an annual report to the Department for the previous calendar year that contains a summary of efforts taken by the permittee to locate and eliminate sources of excess I & I, a summary of general maintenance and repairs to the collection system, and a summary of any planned maintenance and repairs to the collection system for the upcoming calendar year.

✓ At this time, the Department recommends the US EPA's Guide for Evaluating Capacity, Management, Operation and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (Document # EPA 305-B-05-002) or the Departments' CMOM Model located at http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at http://dnr.mo.gov/pubs/pub2574.htm. The CMOM identifies some of the criteria used to evaluate a collection system's management, operation, and maintenance and was intended for use by the EPA, state, regulated community, and/or third party entities. The CMOM is applicable to small, medium, and large systems; both public and privately owned; and both regional and satellite collection systems. The CMOM does not substitute for the Clean Water Act, the Missouri Clean Water Law, and both federal and state regulations, as it is not a regulation.

SCHEDULE OF COMPLIANCE (SOC):

Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit may include interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1), 10 CSR 20-7.031(11), and 10 CSR 20-7.015(9), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

An SOC is not allowed:

- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.
- For a newly constructed facility in most cases. Newly constructed facilities must meet applicable effluent limitations when discharge begins, because the facility has installed the appropriate control technology as specified in a permit or antidegradation review. An SOC is allowed for a new water quality based effluent limit that was not included in a previously public noticed permit or antidegradation review, which may occur if a regulation changes during construction.
- To develop a TMDL, UAA, or other study that may result in site-specific criteria or alternative effluent limits. A facility is not prohibited from conducting these activities, but an SOC may not be granted for conducting these activities.

In order to provide guidance to Permit Writers in developing SOCs, and attain a greater level of consistency, on April 9, 2015 the Department issued an updated policy on development of SOCs. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as a Cost Analysis for Compliance.

✓ This permit does not contain an SOC.

SEWER EXTENSION AUTHORITY SUPERVISED PROGRAM:

In accordance with [10 CSR 20-6.010(6)(A)], the Department may grant approval of a permittee's Sewer Extension Authority Supervised Program. These approved permittees regulate and approve construction of sanitary sewers and pump stations, which are tributary to this wastewater treatment facility. The permittee shall act as the continuing authority for the operation, maintenance, and modernization of the constructed collection system. See http://dnr.mo.gov/env/wpp/permits/sewer-extension.htm.

✓ The permittee does not have a Department approved Sewer Extension Authority Supervised Program.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities: (2) Authorized under section 402(p) of the CWA for the control of stormwater discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Stormwater Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of stormwater discharges. The purpose of a SWPPP is to comply with all applicable stormwater regulations by creating an adaptive management plan to control and mitigate stream pollution from stormwater runoff. Developing a SWPPP provides opportunities to employ appropriate BMPs to minimize the risk of pollutants being discharged during storm events. The following paragraph outlines the general steps the permittee should take to determine which BMPs will work to achieve the benchmark values or limits in the permit. This section is not intended to be all encompassing or restrict the use of any physical BMP or operational and maintenance procedure assisting in pollution control. Additional steps or revisions to the SWPPP may be required to meet the requirements of the permit.

Areas which should be included in the SWPPP are identified in 40 CFR 122.26(b)(14). Once the potential sources of stormwater pollution have been identified, a plan should be formulated to best control the amount of pollutant being released and discharged by each activity or source. This should include, but is not limited to, minimizing exposure to stormwater, good housekeeping measures, proper facility and equipment maintenance, spill prevention and response, vehicle traffic control, and proper materials handling. Once a plan has been developed the facility will employ the control measures determined to be adequate to achieve the benchmark values discussed above. The facility will conduct monitoring and inspections of the BMPs to ensure they are working properly and re-evaluate any BMP not achieving compliance with permitting requirements. For example, if sample results from an outfall show values of TSS above the benchmark value, the BMP being employed is deficient in controlling stormwater pollution. Corrective action should be taken to repair, improve, or replace the failing BMP. This internal evaluation is required at least once per month but should be continued more frequently if BMPs continue to fail. If failures do occur, continue this trial and error process until appropriate BMPs have been established.

For new, altered, or expanded stormwater discharges, the SWPPP shall identify reasonable and effective BMPs while accounting for environmental impacts of varying control methods. The antidegradation analysis must document why no discharge or no exposure options are not feasible. The selection and documentation of appropriate control measures shall serve as an alternative analysis of technology and fulfill the requirements of antidegradation [10 CSR 20-7.031(3)]. For further guidance, consult the antidegradation implementation procedure (http://dnr.mo.gov/env/wpp/docs/AIP050212.pdf).

Alternative Analysis (AA) evaluation of the BMPs is a structured evaluation of BMPs that are reasonable and cost effective. The AA evaluation should include practices that are designed to be: 1) non-degrading; 2) less degrading; or 3) degrading water quality. The glossary of AIP defines these three terms. The chosen BMP will be the most reasonable and effective management strategy while ensuring the highest statutory and regulatory requirements are achieved and the highest quality water attainable for the facility is discharged. The AA evaluation must demonstrate why "no discharge" or "no exposure" is not a feasible alternative at the facility. This structured analysis of BMPs serves as the antidegradation review, fulfilling the requirements of 10 CSR 20-7.031(3) Water Quality Standards and *Antidegradation Implementation Procedure* (AIP), Section II.B.

If parameter-specific numeric exceedances continue to occur and the permittee feels there are no practicable or cost-effective BMPs which will sufficiently reduce a pollutant concentration in the discharge to the benchmark values established in the permit, the permittee can submit a request to re-evaluate the benchmark values. This request needs to include 1) a detailed explanation of why the facility is unable to comply with the permit conditions and unable to establish BMPs to achieve the benchmark values; 2) financial data of the company and documentation of cost associated with BMPs for review and 3) the SWPPP, which should contain adequate documentation of BMPs employed, failed BMPs, corrective actions, and all other required information. This will allow the Department to conduct a cost analysis on control measures and actions taken by the facility to determine cost-effectiveness of BMPs. The request shall be submitted in the form of an operating permit modification; the application is found at: http://dnr.mo.gov/forms/index.html.

✓ At this time, the permittee is not required to develop and implement a SWPPP.

VARIANCE:
As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

✓ This operating permit is not drafted under premises of a petition for variance.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:
As per [10 CSR 20-2.010(86)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant that may be discharged into that stream without endangering its water quality.

✓ Wasteload allocations were calculated where applicable using water quality criteria or water quality model results and the dilution equation below:

$$Ce = \frac{(Qe + Qs)C - (Qs \times Cs)}{(Qe)}$$ (EPA/505/2-90-001, Section 4.5.5)

Where C = downstream concentration Ce = effluent concentration
Cs = upstream concentration Qe = effluent flow
Qs = upstream flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Number of Samples "n":
Additionally, in accordance with the TSD for water quality-based permitting, effluent quality is determined by the underlying distribution of daily values, which is determined by the Long Term Average (LTA) associated with a particular Wasteload Allocation (WLA) and by the Coefficient of Variation (CV) of the effluent concentrations. Increasing or decreasing the monitoring frequency does not affect this underlying distribution or treatment performance, which should be, at a minimum, be targeted to comply with the values dictated by the WLA. Therefore, it is recommended that the actual planned frequency of monitoring normally be used to determine the value of "n" for calculating the AML. However, in situations where monitoring frequency is once per month or less, a higher value for "n" must be assumed for AML derivation purposes. Thus, the statistical procedure being employed using an assumed number of samples is "n = 4" at a minimum. For Total Ammonia as Nitrogen, "n = 30" is used.

WLA MODELING:
There are two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs). If TBELs do not provide adequate protection for the receiving waters, then WQBEL must be used.

✓ A WLA study was either not submitted or determined not applicable by Department staff.

WHOLE EFFLUENT TOXICITY (WET) TEST:

A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with or through synergistic responses when mixed with receiving stream water.

Under the federal Clean Water Act (CWA) §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits for discharges to waters of the state issued under the National Pollutant Discharge Elimination System (NPDES). WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures that the provisions in the 10 CSR 20-6.010(8)(A) and the Water Quality Standards 10 CSR 20-7.031(4)(D),(F),(G),(J)2.A & B are being met. Under [10 CSR 20-6.010(8)(B)], the Department may require other terms and conditions that it deems necessary to assure compliance with the Clean Water Act and related regulations of the Missouri Clean Water Commission. In addition the following MCWL apply: §§§644.051.3 requires the Department to set permit conditions that comply with the MCWL and CWA; 644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc…); and 644.051.5 is the basic authority to require testing conditions. WET test will be required by facilities meeting the following criteria:

- ☐ Facility is a designated Major.
- ☐ Facility continuously or routinely exceeds its design flow.
- ☐ Facility that exceeds its design population equivalent (PE) for BOD_5 whether or not its design flow is being exceeded.
- ☐ Facility (whether primarily domestic or industrial) that alters its production process throughout the year.
- ☐ Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
- ☐ Facility has Water Quality-based Effluent Limitations for toxic substances (other than NH_3)
- ☐ Facility is a municipality with a Design Flow ≥ 22,500 gpd.
- ☐ Other – please justify.

- ✓ At this time, the permittee is not required to conduct WET test for this facility. The previous permit included requirements to conduct an Acute WET test once during the permit cycle. The permit writer has conducted reasonable potential determinations for all anticipated pollutants and established numeric effluent limitations where reasonable potential exists. Also, the facility has passed a previous Acute WET test. Therefore, the permit writer has made a reasonable potential determination which concluded the facility does not have reasonable potential to exceed narrative water quality standards for acute toxicity at this time and the acute WET testing requirements have been removed from this permit.

40 CFR 122.41(M) - BYPASSES:

The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from "bypassing" untreated or partially treated sewage (wastewater) beyond the headworks. A bypass is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-7.015(9)(G) states a bypass means the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending, to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri's Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

- ✓ This facility does not anticipate bypassing.

303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):

Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation

- ✓ This facility does not discharge to a 303(d) listed stream.

Part VI – Effluent Limits Determination

CATEGORIES OF WATERS OF THE STATE:
As per Missouri's Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall's Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

- ☐ Missouri or Mississippi River [10 CSR 20-7.015(2)]
- ☐ Lakes or Reservoirs [10 CSR 20-7.015(3)]
- ☐ Losing Streams [10 CSR 20-7.015(4)]
- ☐ Metropolitan No-Discharge Streams [10 CSR 20-7.015(5)]
- ☐ Special Streams [10 CSR 20-7.015(6)]
- ☐ Subsurface Waters [10 CSR 20-7.015(7)]
- ☒ All Other Waters [10 CSR 20-7.015(8)]

OUTFALL #001 – MAIN FACILITY OUTFALL
Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Flow	MGD	1	*		*	*/*	1/quarter	quarterly	E
BOD_5	mg/L	1		45	30	65/45	1/quarter	quarterly	G
TSS	mg/L	1		45	30	110/70	1/quarter	quarterly	G
*Escherichia coli***	#/100mL	1, 3		1,030	206	1,030/ 206	1/quarter	quarterly	G
Ammonia as N (Apr 1 –Sep 30)	mg/L	2, 3	3.6		1.4	5.4/1.3	1/quarter	quarterly	G
Ammonia as N (Oct 1 – Mar 31)	mg/L	2, 3	7.5		2.9	7.5/2.9	1/quarter	quarterly	G
Oil & Grease	mg/L	1, 3	15		10	15/10	1/quarter	quarterly	G
Total Phosphorus	mg/L	1	*		*	*/*	1/quarter	quarterly	G
Total Kjeldahl Nitrogen	mg/L	1	*		*	*/*	1/quarter	quarterly	G
Nitrite + Nitrate	mg/L	1	*		*	*/*	1/quarter	quarterly	G
PARAMETER	Unit	Basis for Limits	Minimum		Maximum	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
pH	SU	1	6.5		9.0	≥ 6.5	1/quarter	quarterly	G
PARAMETER	Unit	Basis for Limits	Daily Minimum		Monthly Avg. Min	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
BOD_5 Percent Removal	%	1			85	65	1/quarter	quarterly	M
TSS Percent Removal	%	1			85	65	1/quarter	quarterly	M

* - Monitoring requirement only.
** - #/100mL; the Monthly Average for *E. coli* is a geometric mean.
*** - Parameter not previously established in previous state operating permit.

**** - C = 24-hour composite
G = Grab
T = 24-hr. total
E = 24-hr. estimate
M = Measured/calculated

Basis for Limitations Codes:
1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Antidegradation Review
5. Antidegradation Policy
6. Water Quality Model
7. Best Professional Judgment
8. TMDL or Permit in lieu of TMDL
9. WET Test Policy
10. Multiple Discharger Variance
11. Nutrient Criteria Implementation Plan

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Flow**. In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.

- **Biochemical Oxygen Demand (BOD_5).** This permit established new limits for BOD_5. 45 mg/L as a Weekly Average and 30 mg/L as a Monthly Average. Facility has upgraded from a 3-cell lagoon system to a 3-cell lagoon with an aerated primary cell and suspended media in the second cell.

- **Total Suspended Solids (TSS).** This permit established new limits for TSS. 45 mg/L as a Weekly Average and 30 mg/L as a Monthly Average. Facility has upgraded from a 3-cell lagoon system to a 3-cell lagoon with an aerated primary cell and suspended media in the second cell.

- ***Escherichia coli (E. coli)***. Monthly average of 206 per 100 mL as a geometric mean and Weekly Average of 1,030 per 100 mL as a geometric mean during the recreational season (April 1 – October 31), for discharges within two miles upstream of segments or lakes with Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR 20-7.015(9)(B). An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five *E. coli* samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = 5^{th} root of (1)(4)(6)(10)(5) = 5^{th} root of 1,200 = 4.1 #/100mL.

- **Total Ammonia Nitrogen**. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L. No mixing considerations allowed; therefore, WLA = appropriate criterion.

Season	Temp (˚C)	pH (SU)	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
Summer	26	7.8	1.5	12.1
Winter	6	7.8	3.1	12.1

Summer: April 1 – September 30
Chronic WLA: $C_e = ((0.16 + 0.0)1.5 – (0.0 * 0.01))/0.16$
$C_e = 1.5$ mg/L

Acute WLA: $C_e = ((0.16 + 0.0)12.1 – (0.0 * 0.01))/0.16$
$C_e = 12.1$ mg/L

$LTA_c = 1.5$ mg/L (0.780) = 1.17 mg/L [CV = 0.6, 99^{th} Percentile, 30 day avg.]
$LTA_a = 12.1$ mg/L (0.321) = 3.89 mg/L [CV = 0.6, 99^{th} Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 1.17 mg/L (3.11) = **3.6** mg/L [CV = 0.6, 99^{th} Percentile]
AML = 1.17 mg/L (1.19) = **1.4** mg/L [CV = 0.6, 95^{th} Percentile, n =30]

Winter: October 1 – March 31
Chronic WLA: $C_e = ((0.16 + 0.0)3.1 – (0.0 * 0.01))/0.16$
$C_e = 3.1$ mg/L

Acute WLA: $C_e = ((0.16 + 0.0)12.1 – (0.0 * 0.01))/0.16$
$C_e = 12.1$ mg/L

$LTA_c = 3.1$ mg/L (0.780) = 2.42 mg/L [CV = 0.6, 99^{th} Percentile, 30 day avg.]
$LTA_a = 12.1$ mg/L (0.321) = 3.89 mg/L [CV = 0.6, 99^{th} Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 2.42 mg/L (3.11) = **7.5** mg/L [CV = 0.6, 99^{th} Percentile]
AML = 2.42 mg/L (1.19) = **2.9** mg/L [CV = 0.6, 95^{th} Percentile, n =30]

- **Oil & Grease**. Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.

- **Total Phosphorus and Total Nitrogen (Speciated)**. Effluent monitoring for Ammonia, Total Phosphorus, Total Kjeldahl Nitrogen, and Nitrite + Nitrate are required per 10 CSR 20-7.015(9)(D)8.

- **pH**. 6.5-9.0 SU. pH limitations of 6.0-9.0 SU [10 CSR 20-7.015] are not protective of the in-stream Water Quality Standard, which states that water contaminants shall not cause pH to be outside the range of 6.5-9.0 SU. 10 CSR 20-7.015 allows pH for lagoons to be maintained above 6.0 SU. Due to the classification of the receiving stream, the Department has determined that there is no assimilative capacity during critical low flow periods, therefore the water quality standard must be met at the outfall.

- **Biochemical Oxygen Demand (BOD_5) Percent Removal**. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for BOD_5.

- **Total Suspended Solids (TSS) Percent Removal**. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for TSS.

Parameters Removed.

- ✓ **Acute Whole Effluent Toxicity (WET) test.** The previous permit included requirements to conduct an Acute WET test once during the permit cycle. The permit writer has conducted reasonable potential determinations for all anticipated pollutants and established numeric effluent limitations where reasonable potential exists. Also, the facility has passed a previous Acute WET test. Therefore, the permit writer has made a reasonable potential determination which concluded the facility does not have reasonable potential to exceed narrative water quality standards for acute toxicity at this time and the acute WET testing requirements have been removed from this permit.

Sampling Frequency Justification: Sampling and Reporting Frequency was retained from previous permit for previously established parameters while new parameters were established at quarterly sampling. Weekly sampling is required for *E. coli*, per 10 CSR 20-7.015(9)(D)7.A.

Sampling Type Justification: As per 10 CSR 20-7.015, BOD_5 and TSS collected for lagoons may be grab samples. Grab samples must be collected for pH, *E. coli*, and Oil & Grease in accordance with recommended analytical methods. For further information on sampling and testing methods please review 10 CSR 20-7.015(9)(D) 2.

PERMITTED FEATURE INF – INFLUENT MONITORING

The monitoring requirements established in the below Monitoring Requirements Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including the monitoring requirements listed in this table.

INFLUENT MONITORING TABLE:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
BOD_5	mg/L	1			*	***	1/quarter	quarterly	G
TSS	mg/L	1			*	***	1/quarter	quarterly	G
Ammonia as N	mg/L	1	*		*	***	1/quarter	quarterly	G
Total Phosphorus	mg/L	1	*		*	***	1/quarter	quarterly	G
Total Kjeldahl Nitrogen	mg/L	1	*		*	***	1/quarter	quarterly	G
Nitrite + Nitrate	mg/L	1	*		*	***	1/quarter	quarterly	G

* - Monitoring requirement only.
*** - Parameter not previously established in previous state operating permit.
**** - C = Composite
G = Grab

Basis for Limitations Codes:

1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Antidegradation Review
5. Antidegradation Policy
6. Water Quality Model
7. Best Professional Judgment
8. TMDL or Permit in lieu of TMDL
9. WET Test Policy
10. Multiple Discharger Variance
11. Nutrient Criteria Implementation Plan

Influent Parameters

- **Biochemical Oxygen Demand (BOD_5)**. An influent sample is required to determine the removal efficiency. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

- **Total Suspended Solids (TSS)**. An influent sample is required to determine the removal efficiency. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

- **Total Phosphorus, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia**. Influent monitoring for Total Phosphorus, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia required per 10 CSR 20-7.015(9)(D)8.

Sampling Frequency Justification: The sampling and reporting frequencies for Total Phosphorus and Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia parameters were established to match the required sampling frequency of these parameters in the effluent, per [10 CSR 20-7.015(9)(D)8.]. The sampling and reporting frequencies for influent BOD_5 and TSS have been established to match the required sampling frequency of these parameters in the effluent.

Sampling Type Justification: Sample types for influent parameters were established to match the required sampling type of these parameters in the effluent. Samples should be analyzed as soon as possible after collection and/or properly preserved according to method requirements.

OUTFALL #001 – GENERAL CRITERIA CONSIDERATIONS:
In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into the permit for those pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. The rule further states that pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above a narrative criterion within an applicable State water quality standard, the permit shall contain a numeric effluent limitation to protect that narrative criterion. In order to comply with this regulation, the permit writer will complete reasonable potential determinations on whether the discharge will violate any of the general criteria listed in 10 CSR 20-7.031(4). These specific requirements are listed below followed by derivation and discussion (the lettering matches that of the rule itself, under 10 CSR 20-7.031(4)). It should also be noted that Section 644.076.1, RSMo as well as Section D – Administrative Requirements of Standard Conditions Part I of this permit states that it shall be unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri that is in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule or regulation promulgated by the commission.

(A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses. The discharge from this facility is made up of treated domestic wastewater. Based upon review of the recent Report of Compliance Inspection for the inspection conducted on October 29, 2013 no evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, this facility utilizes secondary treatment technology and is currently in compliance with secondary treatment technology based effluent limits established in 40 CFR 133 and there has been no indication to the Department that the stream has had issues maintaining beneficial uses as a result of this discharge. Based on the information reviewed during the drafting of this permit, these final effluent limitations appear to have protected against the excursion of this criterion in the past. Therefore, the discharge does not have the reasonable potential to cause or contribute to an excursion of this criterion.
(B) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
(C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
(D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life. This permit contains final effluent limitations which are protective of both acute and chronic toxicity for various pollutants that are either expected to be discharged by domestic wastewater facilities or that were disclosed by this facility on the application for permit coverage. Based on the information reviewed during the drafting of this permit, it has been determined if the facility meets final effluent limitations established in this permit, there is no reasonable potential for the discharge to cause an excursion of this criterion.
(E) Waters shall provide for the attainment and maintenance of water quality standards downstream including waters of another state. Please see (D) above as justification is the same.
(F) There shall be no significant human health hazard from incidental contact with the water. Please see (D) above as justification is the same.

(G) There shall be no acute toxicity to livestock or wildlife watering. Please see (D) above as justification is the same.
(H) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community. Please see (A) above as justification is the same.
(I) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247. The discharge from this facility is made up of treated domestic wastewater. No evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, any solid wastes received or produced at this facility are wholly contained in appropriate storage facilities, are not discharged, and are disposed of offsite. This discharge is subject to Standard Conditions Part III, which contains requirements for the management and disposal of sludge to prevent its discharge. Therefore, this discharge does not have reasonable potential to cause or contribute to an excursion of this criterion.

Part VII – Cost Analysis for Compliance

Pursuant to Section 644.145, RSMo, when issuing permits under this chapter that incorporate a new requirement for discharges from publicly owned combined or separate sanitary or storm sewer systems or publicly owned treatment works, or when enforcing provisions of this chapter or the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., pertaining to any portion of a publicly owned combined or separate sanitary or storm sewer system or [publicly owned] treatment works, the Department of Natural Resources shall make a "finding of affordability" on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the Federal Water Pollution Control Act. This process is completed through a cost analysis for compliance. Permits that do not include new requirements may be deemed affordable.

✓ The Department is required to determine "findings of affordability" because the permit applies to a combined or separate sanitary sewer system for a publically-owned treatment works.

Cost Analysis for Compliance - The Department has made a reasonable search for empirical data indicating the permit is affordable. The search consisted of a review of Department records that might contain economic data on the community, a review of information provided by the applicant as part of the application, and public comments received in response to public notices of this draft permit. If the empirical cost data was used by the permit writer, this data may consist of median household income, any other ongoing projects that the Department has knowledge, and other demographic financial information that the community provided as contemplated by Section 644. 145.3.

The following table summarizes the results of the cost analysis. See **Appendix – Cost Analysis for Compliance** for detailed information.

Summary Table. Cost Analysis for Compliance Summary for the City of Stewartsville

New Permit Requirements			
Quarterly Total Phosphorus and Speciated Nitrogen for the influent.			
Estimated Annual Cost	Annual Median Household Income (MHI)	Estimated Monthly User Rate	User Rate as a Percent of MHI
$468	$48,091	$29.65	0.74%

Part VIII – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

WATER QUALITY STANDARD REVISION:
In accordance with section 644.058, RSMo, the Department is required to utilize an evaluation of the environmental and economic impacts of modifications to water quality standards of twenty-five percent or more when making individual site-specific permit decisions.

- ✓ This operating permit does not contain requirements for a water quality standard that has changed twenty-five percent or more since the previous operating permit.

PERMIT SYNCHRONIZATION:
The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the Department to explore a watershed based permitting effort at some point in the future. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit. With permit synchronization, this permit will expire in the 3rd Quarter of calendar year 2024.

PUBLIC NOTICE:
The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing. The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit. For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- ✓ The Public Notice period for this operating permit was from August 23, 2019 to September 23, 2019. No responses received.

DATE OF FACT SHEET: MAY 20, 2019

COMPLETED BY:

KYLE WILLENBURG, ENVIRONMENTAL SPECIALIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT
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Appendices

APPENDIX - CLASSIFICATION WORKSHEET:

Item	Points Possible	Points Assigned
Maximum Population Equivalent (P.E.) served , peak day	1 pt./10,000 PE or major fraction thereof. (Max 10 pts.)	-
Design Flow (avg. day) or peak month's flow (avg. day) whichever is larger	1 pt. / MGD or major fraction thereof. (Max 10 pts.)	-
Effluent Discharge		
Missouri or Mississippi River	0	-
All other stream discharges except to losing streams and stream reaches supporting whole body contact recreation	1	-
Discharge to lake or reservoir outside of designated whole body contact recreational area	2	-
Discharge to losing stream, or stream, lake or reservoir area supporting whole body contact recreation	3	3
Direct reuse or recycle of effluent	6	-
Land Application/Irrigation		
Drip Irrigation	3	-
Land application/irrigation	5	-
Overland flow	4	-
Variation in Raw Wastes (highest level only)		
Variations do not exceed those normally or typically expected	0	0
Reoccurring deviations or excessive variations of 100 to 200 percent in strength and/or flow	2	-
Reoccurring deviations or excessive variations of more than 200 percent in strength and/or flow	4	-
Department-approved pretreatment program	6	-
Preliminary Treatment		
STEP systems (operated by the permittee)	3	-
Screening and/or comminution	3	-
Grit removal	3	-
Plant pumping of main flow	3	-
Flow equalization	5	-
Primary Treatment		
Primary clarifiers	5	-
Chemical addition (except chlorine, enzymes)	4	-
Secondary Treatment		
Trickling filter and other fixed film media with or without secondary clarifiers	10	-
Activated sludge (including aeration, oxidation ditches, sequencing batch reactors, membrane bioreactors, and contact stabilization)	15	-
Stabilization ponds without aeration	5	-
Aerated lagoon	8	-
Advanced Lagoon Treatment – Aerobic cells, anaerobic cells, covers, or fixed film	10	10
Biological, physical, or chemical	12	-
Carbon regeneration	4	-
Total from page **ONE (1)**	----	13

APPENDIX - CLASSIFICATION WORKSHEET (CONTINUED):

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Solids Handling		
Sludge Holding	5	-
Anaerobic digestion	10	-
Aerobic digestion	6	-
Evaporative sludge drying	2	-
Mechanical dewatering	8	-
Solids reduction (incineration, wet oxidation)	12	-
Land application	6	-
Disinfection		
Chlorination or comparable	5	-
On-site generation of disinfectant (except UV light)	5	-
Dechlorination	2	-
UV light	4	-
Required Laboratory Control Performed by Plant Personnel (highest level only)		
Lab work done outside the plant	0	-
Push – button or visual methods for simple test such as pH, settleable solids	3	-
Additional procedures such as DO, COD, BOD, titrations, solids, volatile content	5	5
More advanced determinations, such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	7	-
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	-
Total from page **TWO (2)**	----	5
Total from page **ONE (1)**	---	13
Grand Total	---	18

☐ - A: 71 points and greater
☐ - B: 51 points – 70 points
☐ - C: 26 points – 50 points
☒ - D: 0 points – 25 points

APPENDIX – ALTERNATIVE:

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community 5/30/2019, 12:01:33 PM 12:01:45 PM CDT

MISSOURI DEPARTMENT OF NATURAL RESOURCES

APPENDIX – COST ANALYSIS FOR COMPLIANCE:

Missouri Department of Natural Resources
Water Protection Program
Cost Analysis for Compliance
(In accordance with RSMo 644.145)

Stewartsville Wastewater Treatment Facility
Missouri State Operating Permit #MO-0108880

Section 644.145 RSMo requires the Department of Natural Resources (Department) to make a "finding of affordability" when "issuing permits under" or "enforcing provisions of" state or federal clean water laws "pertaining to any portion of a combined or separate sanitary sewer system for publicly-owned treatment works." This cost analysis does not dictate how the permittee will comply with new permit requirements.

New Permit Requirements

The permit requires compliance with new monitoring requirements for Total Kjeldahl Nitrogen, Nitrate + Nitrite, and Total Phosphorus.

Connections

The number of connections was reported by the permittee on the permit renewal application.

Connection Type	Number
Residential	380
Commercial	30
Industrial	0
Total	**410**

Data Collection for this Analysis

This cost analysis is based on data available to the Department as provided by the permittee and data obtained from readily available sources. For the most accurate analysis, it is essential that the permittee provides the Department with current information about the City's financial and socioeconomic situation. The financial questionnaire available to permittees on the Department's website (http://dnr.mo.gov/forms/780-2511-f.pdf) is a required attachment to the permit renewal application. If the financial questionnaire is not submitted with the renewal application, the Department sends a request to complete the form with the welcome correspondence. Though the Department has made attempts to gather financial information from the City of Stewartsville; no information has been provided. The Department has relied heavily on readily available data to complete this analysis. If certain data was not provided by the permittee to the Department and the data is not obtainable through readily available sources, this analysis will state that the information is "unknown".

Eight Criteria of 644.145 RSMo

The Department must consider the eight (8) criteria presented in subsection 644.145 RSMo to evaluate the cost associated with new permit requirements.

(1) A community's financial capability and ability to raise or secure necessary funding;

Criterion 1 Table. Current Financial Information for the City of Stewartsville	
Current Monthly User Rates per 5,000 gallons*	$29.55
Median Household Income (MHI)[1]	$48,091
Current Annual Operating Costs (excludes depreciation)	Unknown

*User Rates were obtained from the 2018 Missouri Public Utility Alliance Water and Wastewater Rate Survey.

(2) Affordability of pollution control options for the individuals or households at or below the median household income level of the community;

The following tables outline the estimated costs of the new permit requirements:

Criterion 2A Table. Estimated Cost Breakdown of New Permit Requirements			
New Requirement	Frequency	Estimated Cost	Estimated Annual Cost
Total Phosphorus – Influent	Quarterly	$24	$96
Total Kjeldahl Nitrogen - Influent	Quarterly	$33	$132
Nitrate + Nitrite - Influent	Quarterly	$40	$160
Ammonia - Influent	Quarterly	$20	$80
Total Estimated Annual Cost of New Permit Requirements			$468

Criterion 2B Table. Estimated Costs for New Permit Requirements		
(1)	Estimated Annual Cost	$468
(2)	Estimated Monthly User Cost for New Requirements [2]	$0.10
	Estimated Monthly User Cost for New Requirements as a Percent of MHI [3]	0.002%
(3)	Total Monthly User Cost*	$29.65
	Total Monthly User Cost as a Percent of MHI [4]	0.740%

* Current User Rate + Estimated Monthly Costs of New Sampling Requirements

Due to the minimal cost associated with new permit requirements, the Department anticipates an extremely low to no rate increase will be necessary, which could impact individuals or households of this community.

(3) An evaluation of the overall costs and environmental benefits of the control technologies;

This analysis is being conducted based on new requirements in the permit, which will not require the addition of new control technologies at the facility. However, the new sampling requirements are being established in order to provide data regarding the health of the receiving stream's aquatic life and to ensure that the existing permit limits are providing adequate protection of aquatic life. Improved wastewater provides benefits such as avoided health costs due to water-related illness, enhanced environmental ecosystem quality, and improved natural resources. The preservation of natural resources has been proven to increase the economic value and sustainability of the surrounding communities. Maintaining Missouri's water quality standards fulfills the goal of restoring and maintaining the chemical, physical, and biological integrity of the receiving stream; and, where attainable, it achieves a level of water quality that provides for the protection and propagation of fish, shellfish, wildlife, and recreation in and on the water.

Nutrient Monitoring

Nutrients are mineral compounds that are required for organisms to grow and thrive. Of the six (6) elemental macronutrients, nitrogen and phosphorus are generally not readily available and limit growth of organisms. Excess nitrogen and phosphorus will cause a shift in the ecosystem's food web. Once excess nitrogen and phosphorous are introduced into a waterbody, some species' populations will dramatically increase, while other populations will not be able to sustain life. Competition and productivity are two factors in which nutrients can alter aquatic ecosystems and the designated uses of a waterbody. For example, designated uses, such as drinking water sources and recreational uses, become impaired when algal blooms take over a waterbody. These blooms can cause foul tastes and odors in the drinking water, unsightly appearance, and fish mortality in the waterbody. Some algae also produce toxins that may cause serious adverse health conditions such as liver damage, tumor promotion, paralysis, and kidney damage. The monitoring requirements for nitrogen and phosphorus have been added to the permit to provide data regarding the health of the receiving stream's aquatic life. A healthy ecosystem is beneficial as it provides reduced impacts on human and aquatic health as well as recreational opportunities.

(4) Inclusion of ongoing costs of operating and maintaining the existing wastewater collection and treatment system, including payments on outstanding debts for wastewater collection and treatment systems when calculating projected rates:

The community did not provide the Department with this information, nor could it be found through readily available data.

(5) An inclusion of ways to reduce economic impacts on distressed populations in the community, including but not limited to low and fixed income populations. This requirement includes but is not limited to:

(a) Allowing adequate time in implementation schedules to mitigate potential adverse impacts on distressed populations resulting from the costs of the improvements and taking into consideration local community economic considerations.
(b) Allowing for reasonable accommodations for regulated entities when inflexible standards and fines would impose a disproportionate financial hardship in light of the environmental benefits to be gained.

The following table characterizes the current overall socioeconomic condition of the community as compared to the overall socioeconomic condition of Missouri. The following information was compiled using the latest U.S. Census data.

Criterion 5 Table. Socioeconomic Data [1, 5-9] for the City of Stewartsville

No.	Administrative Unit	Stewartsville City	Missouri State	United States
1	Population (2017)	801	6,075,300	321,004,416
2	Percent Change in Population (2000-2017)	5.5%	8.6%	14.1%
3	2017 Median Household Income (in 2018 Dollars)	$48,091	$52,801	$59,060
4	Percent Change in Median Household Income (2000-2017)	-9.0%	-7.7%	-6.7%
5	Median Age (2017)	38.4	38.4	37.8
6	Change in Median Age in Years (2000-2017)	2.3	2.3	2.5
7	Unemployment Rate (2017)	3.2%	5.8%	6.6%
8	Percent of Population Below Poverty Level (2017)	5.6%	14.6%	14.6%
9	Percent of Household Received Food Stamps (2017)	5.0%	12.2%	12.6%
10	(Primary) County Where the Community Is Located	DeKalb County		

(6) An assessment of other community investments and operating costs relating to environmental improvements and public health protection;

The community did not report any other investments relating to environmental improvements.

(7) An assessment of factors set forth in the United States Environmental Protection Agency's guidance, including but not limited to the "Combined Sewer Overflow Guidance for Financial Capability Assessment and Schedule Development" that may ease the cost burdens of implementing wet weather control plans, including but not limited to small system considerations, the attainability of water quality standards, and the development of wet weather standards;

The new requirements associated with this permit will not impose a financial burden on the community, nor will they require the City of Stewartsville to seek funding from an outside source.

(8) An assessment of any other relevant local community economic conditions.

Based on the assessment tool, the City of Stewartsville has been determined to be a category 2 community. This means that the City of Stewartsville could potentially face more challenging socioeconomic circumstances over time and may have significant declines in population in the future. The Department has determined an adequate schedule of compliance that will alleviate the potential financial burdens that the City of Stewartsville may face due to the necessary upgrades required to meet the new permit requirements. If this community experiences a decline in population, which results in the inability to secure the necessary funding for an upgrade to meet the new requirements within this permit, a modification to the schedule of compliance may be necessary. The community may contact the Department and send an application for a modification to the schedule of compliance with justification for the time necessary to comply with this permit.

Conclusion and Finding

As a result of new regulations, the Department is proposing modifications to the current operating permit that may require the permittee to increase monitoring. The Department has considered the eight (8) criteria presented in subsection 644.145 RSMo to evaluate the cost associated with the new permit requirements.

This analysis examined whether the new sampling requirements affect the ability of an individual customer or household to pay a utility bill without undue hardship or unreasonable sacrifice in the essential lifestyle or spending patterns of the individual or household. After reviewing the above criteria, the Department finds that the new sampling requirements may result in a low burden with regard to the community's overall financial capability and a low financial impact for most individual customers/households; therefore, the new permit requirements are affordable.

References

1. (A) 2017 MHI in 2017 Dollar: United States Census Bureau. United States Census Bureau. 2013-2017 American Community Survey 5-Year Estimates, Table B19013: Median Household Income in the Past 12 Months (in 2017 Inflation-Adjusted Dollars). http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_B19013&prodType=table.
   (B) 2000 MHI in 1999 Dollar: (1) For United States, United States Census Bureau (2003) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-2-1 Part 1. United States Summary, Table 5. Work Status and Income in 1999: 2000, Washington, DC. https://www.census.gov/prod/cen2000/phc-2-1-pt1.pdf. (2) For Missouri State, United States Census Bureau (2003) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-2-27, Missouri, Table 10. Work Status and Income in 1999: 2000, Washington, DC. https://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.
   (C) 2018 CPI, 2017 CPI and 1999 CPI: U.S. Department of Labor Bureau of Labor Statistics (2018) Consumer Price Index - All Urban Consumers, U.S. City Average. All Items. 1982-84=100. http://data.bls.gov/timeseries/CUUR0000SA0?data_tool=Xgtable.
   (D) 2017 MHI in 2018 Dollar = 2017 MHI in 2017 Dollar x 2018 CPI /2017 CPI; 2000 MHI in 2018 Dollar = 2000 MHI in 1999 Dollar x 2018 CPI /1999 CPI.
   (E) Percent Change in Median Household Income (2000-2017) = (2017 MHI in 2018 Dollar - 2000 MHI in 2018 Dollar) / (2000 MHI in 2018 Dollar).
2. ($468/410)/12 = $0.10 (Estimated Monthly User Cost for New Requirements)
3. ($0.10/($48,091/12))100% = 0.002% (New Sampling Only)
4. ($29.64/($48,091/12))100% = 0.740% (Total User Cost)
5. (A) Total Population in 2017: United States Census Bureau. 2013-2017 American Community Survey 5-Year Estimates, Table B01003: Total Population - Universe: Total Population. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_B01003&prodType=table. (B) Total Population in 2000: (1) For United States, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-1-1 Part 1. United States Summary, Table 1. Age and Sex: 2000, Washington, DC. https://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf. (2) For Missouri State, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Age and Sex: 2000, Washington, DC. http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.
   (C) Percent Change in Population (2000-2017) = (Total Population in 2017 - Total Population in 2000) / (Total Population in 2000).
6. (A) Median Age in 2017: United States Census Bureau. 2013-2017 American Community Survey 5-Year Estimates, Table B01002: Median Age by Sex - Universe: Total population. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_B01002&prodType=table.
   (B) Median Age in 2000: (1) For United States, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-1-1 Part 1. United States Summary, Table 1. Age and Sex: 2000, Washington, DC., Page 2. https://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf. (2) For Missouri State, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Age and Sex: 2000, Washington, DC., Pages 64-92. http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.
   (C) Change in Median Age in Years (2000-2017) = (Median Age in 2017 - Median Age in 2000).
7. United States Census Bureau. 2013-2017 American Community Survey 5-Year Estimates, B23025: Employment Status for the Population 16 Years and Over - Universe: Population 16 years and Over. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_B23025&prodType=table.
8. United States Census Bureau. 2013-2017 American Community Survey 5-Year Estimates, Table S1701: Poverty Status in the Past 12 Months. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_S1701&prodType=table.
9. United States Census Bureau. 2013-2017 American Community Survey 5-Year Estimates, Table B22003: Receipt of Food Stamps/SNAP in the Past 12 Months by Poverty Status in the Past 12 Months for Households - Universe: Households. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_B22003&prodType=table

STANDARD CONDITIONS FOR NPDES PERMITS ISSUED BY THE MISSOURI DEPARTMENT OF NATURAL RESOURCES MISSOURI CLEAN WATER COMMISSION REVISED AUGUST 1, 2014

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

Part I – General Conditions

Section A – Sampling, Monitoring, and Recording

1. **Sampling Requirements.**
   a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
   b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.

2. **Monitoring Requirements**.
   a. Records of monitoring information shall include:
      i. The date, exact place, and time of sampling or measurements;
      ii. The individual(s) who performed the sampling or measurements;
      iii. The date(s) analyses were performed;
      iv. The individual(s) who performed the analyses;
      v. The analytical techniques or methods used; and
      vi. The results of such analyses.
   b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.

3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

4. **Test Procedures**. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is "sufficiently sensitive" when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.

5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

6. **Illegal Activities.**
   a. The Federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
   b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

Section B – Reporting Requirements

1. **Planned Changes.**
   a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
      i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
      ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42;
      iii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
      iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.

2. **Non-compliance Reporting.**
   a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

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b. The following shall be included as information which must be reported within 24 hours under this paragraph.
   i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
   ii. Any upset which exceeds any effluent limitation in the permit.
   iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.
c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.

3. **Anticipated Noncompliance**. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.

4. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.

5. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.

6. **Other Information**. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

7. **Discharge Monitoring Reports.**
   a. Monitoring results shall be reported at the intervals specified in the permit.
   b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
   c. Monitoring results shall be reported to the Department no later than the 28th day of the month following the end of the reporting period.

Section C – Bypass/Upset Requirements

1. **Definitions.**
   a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending.
   b. *Severe Property Damage*: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
   c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2. **Bypass Requirements.**
   a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.
   b. Notice.
      i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
      ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
   c. Prohibition of bypass.
      i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
         1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
         2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
         3. The permittee submitted notices as required under paragraph 2. b. of this section.
      ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.

3. **Upset Requirements.**
   a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
   b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
      i. An upset occurred and that the permittee can identify the cause(s) of the upset;
      ii. The permitted facility was at the time being properly operated; and
      iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
      iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
   c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section D – Administrative Requirements

1. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
   a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
   b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement

imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed $10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

2. **Duty to Reapply.**
   a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
   b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
   c. A permittees with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

5. **Proper Operation and Maintenance**. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

6. **Permit Actions.**
   a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
      i. Violations of any terms or conditions of this permit or the law;
      ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
      iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
      iv. Any reason set forth in the Law or Regulations.
   b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. **Permit Transfer.**
   a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
   b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.
   c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.

8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

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10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
    a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
    b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
    c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
    d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

12. **Closure of Treatment Facilities.**
    a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
    b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.

13. **Signatory Requirement.**
    a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
    b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
    c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.

14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.

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MISSOURI CLEAN WATER COMMISSION
REVISED
MAY 1, 2013

PART II - SPECIAL CONDITIONS – PUBLICLY OWNED TREATMENT WORKS
SECTION A – INDUSTRIAL USERS

1. Definitions

Definitions as set forth in the Missouri Clean Water Laws and approved by the Missouri Clean Water Commission shall apply to terms used herein.

Significant Industrial User (SIU). Except as provided in the *General Pretreatment Regulation* 10 CSR 20-6.100, the term Significant Industrial User means:

1. All Industrial Users subject to Categorical Pretreatment Standards; and
2. Any other Industrial User that: discharges an average of 25,000 gallons per day or more of process wastewater to the Publicly-Owned Treatment Works (POTW) (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority on the basis that the Industrial User has a reasonable potential for adversely affecting the POTW's or for violating any Pretreatment Standard or requirement.

Clean Water Act (CWA) is the the federal Clean Water Act of 1972, 33 U.S.C. § 1251 et seq. (2002).

2. Identification of Industrial Discharges

Pursuant to 40 CFR 122.44(j)(1), all POTWs shall identify, in terms of character and volume of pollutants, any Significant Industrial Users discharging to the POTW subject to Pretreatment Standards under section 307(b) of the CWA and 40 CFR 403.

3. Application Information

Applications for renewal or modification of this permit must contain the information about industrial discharges to the POTW pursuant to 40 CFR 122.21(j)(6)

4. Notice to the Department

Pursuant to 40 CFR 122.42(b), all POTWs must provide adequate notice of the following:

1. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging these pollutants; and
2. Any substantial change into the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
3. For purposes of this paragraph, adequate notice shall include information on:
   i. the quality and quantity of effluent introduced into the POTW, and
   ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

For POTWs without an approved pretreatment program, the notice of industrial discharges which was not included in the permit application shall be made as soon as practicable. For POTWs with an approved pretreatment program, notice is to be included in the annual pretreatment report required in the special conditions of this permit. Notice may be sent to:

Missouri Department of Natural Resources
Water Protection Program
Attn: Pretreatment Coordinator
P.O. Box 176
Jefferson City, MO 65102

STANDARD CONDITIONS FOR NPDES PERMITS ISSUED BY THE MISSOURI DEPARTMENT OF NATURAL RESOURCES MISSOURI CLEAN WATER COMMISSION

August 1, 2019

PART III – BIOSOLIDS AND SLUDGE FROM DOMESTIC TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. PART III Standard Conditions pertain to biosolids and sludge requirements under the Missouri Clean Water Law and regulations for domestic and municipal wastewater and also incorporates federal sludge disposal requirements under 40 CFR Part 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR Part 503 for domestic biosolids and sludge.
2. PART III Standard Conditions apply only to biosolids and sludge generated at domestic wastewater treatment facilities, including public owned treatment works (POTW) and privately owned facilities.
3. Biosolids and Sludge Use and Disposal Practices:
    a. The permittee is authorized to operate the biosolids and sludge generating, treatment, storage, use, and disposal facilities listed in the facility description of this permit.
    b. The permittee shall not exceed the design sludge/biosolids volume listed in the facility description and shall not use biosolids or sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
    c. For facilities operating under general operating permits that incorporate Standard Conditions PART III, the facility is authorized to operate the biosolids and sludge generating, treatment, storage, use and disposal facilities identified in the original operating permit application, subsequent renewal applications or subsequent written approval by the department.
4. Biosolids or Sludge Received from other Facilities:
    a. Permittees may accept domestic wastewater biosolids or sludge from other facilities as long as the permittee's design sludge capacity is not exceeded and the treatment facility performance is not impaired.
    b. The permittee shall obtain a signed statement from the biosolids or sludge generator or hauler that certifies the type and source of the sludge
5. Nothing in this permit precludes the initiation of legal action under local laws, except to the extent local laws are preempted by state law.
6. This permit does not preclude the enforcement of other applicable environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable biosolids or sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Act or under Chapter 644 RSMo.
8. In addition to Standard Conditions PART III, the Department may include biosolids and sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Exceptions to Standard Conditions PART III may be authorized on a case-by-case basis by the Department, as follows:
    a. The Department may modify a site-specific permit following permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR § 124.10, and 40 CFR § 501.15(a)(2)(ix)(E).
    b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR Part 503.

SECTION B – DEFINITIONS

1. Best Management Practices are practices to prevent or reduce the pollution of waters of the state and include agronomic loading rates (nitrogen based), soil conservation practices, spill prevention and maintenance procedures and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food, feed or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR Part 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with 40 CFR Part 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Feed crops are crops produced primarily for consumption by animals.
8. Fiber crops are crops such as flax and cotton.
9. Food crops are crops consumed by humans which include, but is not limted to, fruits, vegetables and tobacco.
10. Industrial wastewater means any wastewater, also known as process wastewater, not defined as domestic wastewater. Per 40 CFR Part 122.2, process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product. Land application of industrial wastewater, residuals or sludge is not authorized by Standard Conditions PART III.
11. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological contact systems, and other similar facilities. It does not include wastewater treatment lagoons or constructed wetlands for wastewater treatment.
12. Plant Available Nitrogen (PAN) is nitrogen that will be available to plants during the growing seasons after biosolids application.
13. Public contact site is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
14. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks or equivalent facilities. Sludge does not include carbon coal byproducts (CCBs), sewage sludge incinerator ash, or grit/screenings generated during preliminary treatment of domestic sewage.
15. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen or concrete lined basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
16. Septage is the sludge pumped from residential septic tanks, cesspools, portable toilets, Type III marine sanitation devices, or similar treatment works such as sludge holding structures from residential wastewater treatment facilities with design populations of less than 150 people. Septage does not include grease removed from grease traps at a restaurant or material removed from septic tanks and other similar treatment works that have received industrial wastewater. The standard for biosolids from septage is different from other sludges. See Section H for more information.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Biosolids or sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and the requirements of Standard Conditions PART III or in accordance with Section A.3.c., above.
2. The permittee shall operate storage and treatment facilities, as defined by Section 644.016(23), RSMo, so that there is no biosolids or sludge discharged to waters of the state. Agricultural storm water discharges are exempt under the provisions of Section 644.059, RSMo.
3. Mechanical treatment plants shall have separate biosolids or sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove biosolids or sludge from these storage compartments on the required design schedule is a violation of this permit.

SECTION D – BIOSOLIDS OR SLUDGE DISPOSED AT OTHER TREATMENT FACILITY OR BY CONTRACT HAULER

1. Permittees that use contract haulers, under the authority of their operating permit, to dispose of biosolids or sludge, are responsible for compliance with all the terms of this permit. Contract haulers that assume the responsibility of the final disposal of biosolids or sludge, including biosolids land application, must obtain a Missouri State Operating Permit unless the hauler transports the biosolids or sludge to another permitted treatment facility.
2. Testing of biosolids or sludge, other than total solids content, is not required if biosolids or sludge are hauled to a permitted wastewater treatment facility, unless it is required by the accepting facility.

SECTION E – INCINERATION OF SLUDGE

1. Please be aware that sludge incineration facilities may be subject to the requirements of 40 CFR Part 503 Subpart E, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or, if the ash is determined to be hazardous, with 10 CSR 25.
3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, mass of sludge incinerated and mass of ash generated. Permittee shall also provide the name of the ash disposal facility and permit number if applicable.

SECTION F – SURFACE DISPOSAL SITES AND BIOSOLIDS AND SLUDGE LAGOONS

1. Please be aware that surface disposal sites of biosolids or sludge from wastewater treatment facilities may be subject to other laws including the requirements in 40 CFR Part 503 Subpart C, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
2. Biosolids or sludge storage lagoons are temporary facilities and are not required to obtain a permit as a solid waste management facility under 10 CSR 80. In order to maintain biosolids or sludge storage lagoons as storage facilities, accumulated biosolids or sludge must be removed routinely, but not less than once every two years unless an alternate schedule is approved in the permit. The amount of biosolids or sludge removed will be dependent on biosolids or sludge generation and accumulation in the facility. Enough biosolids or sludge must be removed to maintain adequate storage capacity in the facility.
    a. In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of biosolids or sludge on the bottom of the lagoon, upon prior approval of the Department; or
    b. Permittee shall close the lagoon in accordance with Section I.

SECTION G – LAND APPLICATION OF BIOSOLIDS

1. The permittee shall not land apply biosolids unless land application is authorized in the facility description, the special conditions of the issued NPDES permit, or in accordance with Section A.3.c., above.
2. This permit only authorizes "Class A" or "Class B" biosolids derived from domestic wastewater to be land applied onto grass land, crop land, timber, or other similar agricultural or silviculture lands at rates suitable for beneficial use as organic fertilizer and soil conditioner.
3. Class A Biosolids Requirements: Biosolids shall meet Class A requirements for application to public contact sites, residential lawns, home gardens or sold and/or given away in a bag or other container.
4. Class B biosolids that are land applied to agricultural and public contact sites shall comply with the following restrictions:
    a. Food crops that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 14 months after application of biosolids.
    b. Food crops below the surface of the land shall not be harvested for 20 months after application of biosolids when the biosolids remain on the land surface for four months or longer prior to incorporation into the soil.
    c. Food crops below the surface of the land shall not be harvested for 38 months after application of biosolids when the biosolids remain on the land surface for less than four months prior to incorporation into the soil.
    d. Animal grazing shall not be allowed for 30 days after application of biosolids.
    e. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of biosolids.
    f. Turf shall not be harvested for one year after application of biosolids if used for lawns or high public contact sites in close proximity to populated areas such as city parks or golf courses.
    g. After Class B biosolids have been land applied to public contact sites with high potential for public exposure, as defined in 40 CFR § 503.31, such as city parks or golf courses, access must be restricted for 12 months.
    h. After Class B biosolids have been land applied public contact sites with low potential for public exposure as defined in 40 CFR § 503.31, such as a rural land application or reclamation sites, access must be restricted for 30 days.

5. Pollutant limits
    a. Biosolids shall be monitored to determine the quality for regulated pollutants listed in Table 1, below. Limits for any pollutants not listed below may be established in the permit.
    b. The number of samples taken is directly related to the amount of biosolids or sludge produced by the facility (See Section J, below). Samples should be taken only during land application periods. When necessary, it is permissible to mix biosolids with lower concentrations of biosolids as well as other suitable Department approved material to achieve pollutant concentration below those identified in Table 1, below.
    c. Table 1 gives the ceiling concentration for biosolids. Biosolids which exceed the concentrations in Table 1 may not be land applied.

TABLE 1

Biosolids ceiling concentration	
Pollutant	Milligrams per kilogram dry weight
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

d. Table 2 below gives the low metal concentration for biosolids. Because of its higher quality, biosolids with pollutant concentrations below those listed in Table 2 can safely be applied to agricultural land, forest, public contact sites, lawns, home gardens or be given away without further analysis. Biosolids containing metals in concentrations above the low metals concentrations but below the ceiling concentration limits may be land applied but shall not exceed the annual loading rates in Table 3 and the cumulative loading rates in Table 4. The permittee is required to track polluntant loading onto application sites for parameters that have exceeded the low metal concentration limits.

TABLE 2

Biosolids Low Metal Concentration	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2,800

e. Annual pollutant loading rate.

Table 3

Biosolids Annual Loading Rate	
Pollutant	Kg/ha (lbs./ac) per year
Arsenic	2.0 (1.79)
Cadmium	1.9 (1.70)
Copper	75 (66.94)
Lead	15 (13.39)
Mercury	0.85 (0.76)
Nickel	21 (18.74)
Selenium	5.0 (4.46)
Zinc	140 (124.96)

f. Cumulative pollutant loading rates.

Table 4

Biosolids Cumulative Pollutant Loading Rate	
Pollutant	Kg/ha (lbs./ac)
Arsenic	41 (37)
Cadmium	39 (35)
Copper	1500 (1339)
Lead	300 (268)
Mercury	17 (15)
Nickel	420 (375)
Selenium	100 (89)
Zinc	2800 (2499)

6. Best Management Practices. The permittee shall use the following best management practices during land application activities to prevent the discharge of biosolids to waters of the state.
   a. Biosolids shall not be applied to the land if it is likely to adversely affect a threatened or endangered species listed under § 4 of the Endangered Species Act or its designated critical habitat.
   b. Apply biosolids only at the agronomic rate of nitrogen needed (see 5.c. of this section).
   c. The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop

nitrogen removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kgTN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.

i. PAN can be determined as follows:

(Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).

[1] Volatilization factor is 0.7 for surface application and 1 for subsurface application. Alternative volitalization factors and mineralization rates can be utilized on a case-by-case basis.

ii. Crop nutrient production/removal to be based on crop specific nitrogen needs and realistic yield goals. **NOTE:** There are a number of reference documents on the Missouri Department of Natural Resources website that are informative to implement best management practices in the proper management of biosolids, including crop specific nitrogen needs, realistic yields on a county by county basis and other supporting references.

iii. Biosolids that are applied at agronomic rates shall not cause the annual pollutant loading rates identified in Table 3 to be exceeded.

d. Buffer zones are as follows:

i. 300 feet of a water supply well, sinkhole, water supply reservoir or water supply intake in a stream;

ii. 300 feet of a losing stream, no discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstandingstate resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;

iii. 150 feet of dwellings or public use areas;

iv. 100 feet (35 feet if biosolids application is down-gradient or the buffer zone is entirely vegetated) of lake, pond, wetlands or gaining streams (perennial or intermittent);

v. 50 feet of a property line. Buffer distances from property lines may be waived with written permission from neighboring property owner.

vi. For the application of dry, cake or liquid biosolids that are subsurface injected, buffer zones identified in 5.d.i. through 5.d.iii above, may be reduced to 100 feet. The buffer zone may be reduced to 35 feet if the buffer zone is permanently vegetated. Subsurface injection does not include methods or technology reflective of combination surface/shallow soil incorporation.

e. Slope limitation for application sites are as follows:

i. For slopes less than or equal to 6 percent, no rate limitation;

ii. Applied to a slope 7 to 12 percent, the applicator may apply biosolids when soil conservation practices are used to meet the minimum erosion levels;

iii. Slopes > 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.

iv. Dry, cake or liquid biosolids that are subsurface injected, may be applied on slopes not to exceed 20 percent. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation.

f. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.

g. Biosolids may be land applied to sites with soil that are snow covered, frozen, or saturated with liquid when site restrictions or other controls are provided to prevent pollutants from being discharged to waters of the state during snowmelt or stormwater runoff. During inclement weather or unfavorable soil conditions use the following management practices:

i. A maximum field slope of 6% and a minimum 300 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be utilized for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not include the use of mthods or technology refletive of combination surface/shallow soil incorporation;

ii. A maximum field slope of 2% and 100 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be used for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not included the use of methods or technology refletive of combination surface/shallow soil incorporation;

iii. Other best management practices approved by the Department.

SECTION H – SEPTAGE

1. Haulers that land apply septage must obtain a state permit. An operating permit is not required for septage haulers who transport septage to another permitted treatment facility for disposal.
2. Do not apply more than 30,000 gallons of septage per acre per year or the volume otherwise stipulated in the operating permit.
3. Septic tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to mechanical treatment facilities.
4. Septage must comply with Class B biosolids regarding pathogen and vector attraction reduction requirements before it may be applied to crops, pastures or timberland. To meet required pathogen and vector reduction requirements, mix 50 pounds of hydrated lime for every 1,000 gallons of septage and maintain a septage pH of at least 12 pH standard units for 30 minutes or more prior to application.
5. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.
6. As residential septage contains relatively low levels of metals, the testing of metals in septage is not required.

SECTION I– CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical and lagoons) and sludge or biosolids storage and treatment facilities. It does not apply to land application sites.
2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all sludges and/or biosolids. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6. 010 and 10 CSR 20 – 6.015.
3. Biosolids or sludge that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
    a. Biosolids and sludge shall meet the monitoring and land application limits for agricultural rates as referenced in Section G, above.
    b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
    c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre. Alternative, site-specific application rates may be included in the closure plan for department consideration.
        i. PAN can be determined as follows:
        (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).
        [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application. Alternative volitalization factors and mineralization rates can be utilized on a case-by-case basis
4. Domestic wastewater treatment lagoons with a design treatment capacity less than or equal to 150 persons, are "similar treatment works" under the definition of septage. Therefore the sludge within the lagoons may be treated as septage during closure activities. See Section B, above. Under the septage category, residuals may be left in place as follows:
    a. Testing for metals or fecal coliform is not required.
    b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
    c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.
5. Biosolids or sludge left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, and unless otherwise approved, the lagoon berm shall be demolished, and the site shall be graded and contain ≥70% vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion. Alternative biosolids or sludge and soil mixing ratios may be included in the closure plan for department consideration.
6. Lagoon and earthen structure closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200.
7. When closing a mechanical wastewater plant, all biosolids or sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
    a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain ≥70% vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate

surface water drainage without creating erosion.

b. Hazardous Waste shall not be land applied or disposed during mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations pursuant to 10 CSR 25.

c. After demolition of the mechanical plant, the site must only contain clean fill defined in Section 260.200.1(6) RSMo as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill, reclamation, or other beneficial use. Other solid wastes must be removed.

8. If biosolids or sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or I, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR Part 503, Subpart C.

SECTION J – MONITORING FREQUENCY

1. At a minimum, biosolids or sludge shall be tested for volume and percent total solids on a frequency that will accurately represent sludge quantities produced and disposed. Please see the table below.

TABLE 5

Biosolids or Sludge produced and disposed (Dry Tons per Year)	Monitoring Frequency (See Notes 1, and 2)		
	Metals, Pathogens and Vectors, Total Phosphorus, Total Potassium	Nitrogen TKN, Nitrogen PAN[1]	Priority Pollutants[2]
319 or less	1/year	1 per month	1/year
320 to 1650	4/year	1 per month	1/year
1651 to 16,500	6/year	1 per month	1/year
16,501+	12/year	1 per month	1/year

[1] Calculate plant available nitrogen (PAN) when either of the following occurs: 1) when biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.

[2] Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) are required only for permit holders that must have a pre-treatment program. Monitoring requirements may be modified and incorporated into the operating permit by the Department on a case-by-case basis.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids. This data shall be used to calculate the dry tons of sludge applied per acre.
Note 2: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

2. Permittees that operate wastewater treatment lagoons, peak flow equalization basins, combined sewer overflow basins or biosolids or sludge lagoons that are cleaned out once a year or less, may choose to sample only when the biosolids or sludge is removed or the lagoon is closed. Test one composite sample for each 319 dry tons of biosolids or sludge removed from the lagoon during the reporting year or during lagoon closure. Composite sample must represent various areas at one-foot depth.
3. Additional testing may be required in the special conditions or other sections of the permit.
4. Biosolids and sludge monitoring shall be conducted in accordance with federal regulation 40 CFR § 503.8, Sampling and analysis.

SECTION K – RECORD KEEPING AND REPORTING REQUIREMENTS

1. The permittee shall maintain records on file at the facility for at least five years for the items listed in Standard Conditions PART III and any additional items in the Special Conditions section of this permit. This shall include dates when the biosolids or sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
2. Reporting period
   a. By February 19th of each year, applicable facilities shall submit an annual report for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and biosolids or sludge disposal facilities.
   b. Permittees with wastewater treatment lagoons shall submit the above annual report only when biosolids or sludge are removed from the lagoon during the report period or when the lagoon is closed.
3. Report Form. The annual report shall be prepared on report forms provided by the Department or equivalent forms approved by the Department.
4. Reports shall be submitted as follows:
   Major facilities, which are those serving 10,000 persons or more or with a design flow equal to or greater than 1 million gallons per day or that are required to have an approved pretreatment program, shall report to both the Department and EPA if the facility land applied, disposed of biosolids by surface disposal, or operated a sewage sludge incinerator. All other facilities shall maintain their biosolids or sludge records and keep them available to Department personnel upon request. State reports shall be submitted to the address listed as follows:

   DNR regional or other applicable office listed in the
   permit (see cover letter of permit)
   ATTN: Sludge Coordinator

Reports to EPA must be electronically submitted online via the Central Data Exchange at: https://cdx.epa.gov/ Additional information is available at: https://www.epa.gov/biosolids/compliance-and-annual-reporting-guidance-about-clean-water-act-laws

5. Annual report contents. The annual report shall include the following:
    a. Biosolids and sludge testing performed. If testing was conducted at a greater frequency than what is required by the permit, all test results must be included in the report.
    b. Biosolids or sludge quantity shall be reported as dry tons for the quantity produced and/or disposed.
    c. Gallons and % solids data used to calculate the dry ton amounts.
    d. Description of any unusual operating conditions.
    e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
        i. This must include the name and address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
        ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
    f. Contract Hauler Activities:
    If using a contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate biosolids or sludge use permit.
    g. Land Application Sites:
        i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest ¼, ¼, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
        ii. If the "Low Metals" criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
        iii. Report the method used for compliance with pathogen and vector attraction requirements.
        iv. Report soil test results for pH and phosphorus. If no soil was tested during the year, report the last date when tested and the results.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

FORM B2 – APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY

FACILITY NAME	
Stewarstville WWTF	
PERMIT NO.	COUNTY
MO-010888	DeKalb

APPLICATION OVERVIEW

Form B2 has been developed in a modular format and consists of Parts A, B and C and a Supplemental Application Information (Parts D, E, F and G) packet. All applicants must complete Parts A, B and C. Some applicants must also complete parts of the Supplemental Application Information packet. The following items explain which parts of Form B2 you must complete. Submittal of an incomplete application may result in the application being returned.

BASIC APPLICATION INFORMATION

A. Basic application information for all applicants. All applicants must complete Part A.

B. Additional application information for all applicants. All applicants must complete Part B.

C. Certification. All applicants must complete Part C.

SUPPLEMENTAL APPLICATION INFORMATION

D. Expanded Effluent Testing Data. A treatment works that discharges effluent to surface water of the United States and meets one or more of the following criteria must complete *Part D - Expanded Effluent Testing Data*:

1. Has a design flow rate greater than or equal to 1 million gallons per day.
2. Is required to have or currently has a pretreatment program.
3. Is otherwise required by the permitting authority to provide the information.

E. Toxicity Testing Data. A treatment works that meets one or more of the following criteria must complete *Part E - Toxicity Testing Data*:

1. Has a design flow rate greater than or equal to 1 million gallons per day.
2. Is required to have or currently has a pretreatment program.
3. Is otherwise required by the permitting authority to provide the information.

F. Industrial User Discharges and Resource Conservation and Recovery Act / Comprehensive Environmental Response, Compensation and Liability Act Wastes. A treatment works that accepts process wastewater from any significant industrial users, also known as SIUs, or receives a Resource Conservation and Recovery Act or CERCLA wastes must complete *Part F - Industrial User Discharges and Resource Conservation and Recovery Act /CERCLA Wastes*.

SIUs are defined as:

1. All Categorical Industrial Users, or CIUs, subject to Categorical Pretreatment Standards under 40 Code of Federal Regulations 403.6 and 40 Code of Federal Regulations 403.6 and 40 CFR Chapter 1, Subchapter N.
2. Any other industrial user that meets one or more of the following:
   - i. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions).
   - ii. Contributes a process waste stream that makes up five percent or more of the average dry weather hydraulic or organic capacity of the treatment plant.
   - iii. Is designated as an SIU by the control authority.
   - iv. Is otherwise required by the permitting authority to provide the information.

G. Combined Sewer Systems. A treatment works that has a combined sewer system must complete *Part G - Combined Sewer Systems.*

ALL APPLICANTS MUST COMPLETE PARTS A, B and C

rec'd 03/04/2020 AP34541

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

FORM B2 – APPLICATION FOR AN OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY

FOR AGENCY USE ONLY	
CHECK NUMBER	
DATE RECEIVED	FEE SUBMITTED
JET PAY CONFIRMATION NUMBER	

PART A – BASIC APPLICATION INFORMATION

1. THIS APPLICATION IS FOR:

- ☐ An operating permit for a new or unpermitted facility. Construction Permit # _____
  (Include completed Antidegradation Review or request to conduct an Antidegradation Review, see instructions)
- ☐ An operating permit renewal: Permit #MO- _____ Expiration Date _____
- ☑ An operating permit modification: Permit #MO-_____ Reason: review limits and type of treatment

1.1 Is the appropriate fee included with the application (see instructions for appropriate fee)? ☑ YES ☐ NO

2. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
Stewartsville WWTF		816-669-3278	
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
4304 NW Y Hwy	Stewartsville	MO	64490

2.1 LEGAL DESCRIPTION (Facility Site): Sec. 21 , T 57n , R 32w — COUNTY: Clinton

2.2 UTM Coordinates Easting (X): 372193 Northing (Y): 4400565
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: Casile Creek

2.4 Number of Outfalls: 1 wastewater outfalls: 1 stormwater outfalls: 0 instream monitoring sites: 1

3. OWNER: The owner of the regulated activity/discharge being applied for and is not necessarily the owner of the real property on which the activity or discharge is occurring.

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
City of Stewartsville	cityhallofstewartsville@gmail	816-669-3278	
ADDRESS	CITY	STATE	ZIP CODE
box270	Stewartsville	MO	64490

3.1 Request review of draft permit prior to Public Notice? ☑ YES ☐ NO

3.2 Are you a Publically Owned Treatment Works (POTW)? ☑ YES ☐ NO
If yes, is the Financial Questionnaire attached? ☐ YES ☐ NO See: https://dnr.mo.gov/forms/780-2511-f.pdf

3.3 Are you a Privately Owned Treatment Facility? ☐ YES ☐ NO

3.4 Are you a Privately Owned Treatment Facility regulated by the Public Service Commission (PSC)? ☐ YES ☐ NO

4. CONTINUING AUTHORITY: Permanent organization which will serve as the continuing authority for the operation, maintenance and modernization of the facility.

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
City of Stewartsville	cityhallofstewartsville@gmail	816-669-3278	
ADDRESS	CITY	STATE	ZIP CODE
box270	Stewartsville	MO	64490

If the Continuing Authority is different than the Owner, include a copy of the contract agreement between the two parties and a description of the responsibilities of both parties within the agreement.

5. OPERATOR

NAME	TITLE	CERTIFICATE NUMBER (IF APPLICABLE)
Ernie Griffin	Superintendent	15185
EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
bigeazy6651@gmail.com	816-337-9418	

6. FACILITY CONTACT

NAME	TITLE		
Ernie Griffin	superintendent		
EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE		
stewpublicworks@gmail.com	816-669-3278		
ADDRESS	CITY	STATE	ZIP CODE
box270	Stewartsville	MO	64490

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Stewartsville	MO- 0108880	1

PART A – BASIC APPLICATION INFORMATION

7. FACILITY INFORMATION

7.1 Process Flow Diagram or Schematic. Provide a diagram showing the processes of the treatment plant. Show all of the treatment units, including disinfection (e.g. – Chlorination and Dechlorination), influents, and outfalls. Specify where samples are taken. Indicate any treatment process changes in the routing of wastewater during dry weather and peak wet weather. Include a brief narrative description of the diagram.
Attach sheets as necessary.

seeattached

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Stewartsville	MO- 0108880	1

PART A – BASIC APPLICATION INFORMATION

7. FACILITY INFORMATION (continued)

7.2 **Map.** Attach to this application an aerial or topographic map of the area extending at least one mile beyond facility property boundaries. This map must show the outline of the facility and the following information. A map can be obtained by visiting the following website: https://modnr.maps.arcgis.com/apps/webappviewer/index.html?id=1d81212e085447 8ca0dae87c33c8c5ce

a. The area surrounding the treatment plant, including all unit processes.
b. The major pipes or other structures through which wastewater enters the treatment works and the pipes or other structures through which treated wastewater is discharged from the treatment plant. Include outfalls from bypass piping, if applicable.
c. The actual point of discharge.
d. Wells, springs, other surface water bodies and drinking water wells that are: 1) within ¼ mile of the property boundaries of the treatment works, and 2) listed in public record or otherwise known to the applicant.
e. Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed.
f. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act (RCRA) by truck, rail, or special pipe, show on the map where that hazardous waste enters the treatment works and where it is treated, stored, or disposed.

7.3	Facility SIC Code:	Discharge SIC Code: 4952

7.4 Number of people presently connected or population equivalent (P.E.): 350 Design P.E. 1046

7.5 Connections to the facility:

Number of units presently connected: 350

Residential: 320 Commericial: 30 Industrial 0

7.6	Design Flow 104600	Actual Flow 41500

7.7 Will discharge be continuous through the year? Yes ☑ No ☐
Discharge will occur during the following months: Jan-Dec
How many days of the week will discharge occur? daily till june

7.8 Is industrial wastewater discharged to the facility? Yes ☐ No ☑
If yes, describe the number and types of industries that discharge to your facility. Attach sheets as necessary

Refer to the APPLICATION OVERVIEW to determine whether additional information is needed for Part F.

7.9	Does the facility accept or process leachate from landfills?	Yes ☐	No ☑
7.10	Is wastewater land applied? **If yes**, please attach Form I See: https://dnr.mo.gov/forms/780-1686-f.pdf	Yes ☐	No ☑
7.11	Does the facility discharge to a losing stream or sinkhole?	Yes ☐	No ☑
7.12	Has a wasteload allocation study been completed for this facility?	Yes ☐	No ☑

8. LABORATORY CONTROL INFORMATION

LABORATORY WORK CONDUCTED BY PLANT PERSONNEL

Lab work conducted outside of plant.	Yes ☑	No ☐
Push–button or visual methods for simple test such as pH, settleable solids.	Yes ☑	No ☐
Additional procedures such as Dissolved Oxygen, Chemical Oxygen Demand, Biological Oxygen Demand, titrations, solids, volatile content.	Yes ☑	No ☐
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	Yes ☐	No ☑
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph.	Yes ☐	No ☑

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Stewartsville	MO- 0108880	1

PART A – BASIC APPLICATION INFORMATION

9. SLUDGE HANDLING, USE AND DISPOSAL

9.1 Is the sludge a hazardous waste as defined by 10 CSR 25? Yes ☐ No ☑

9.2 Sludge production (Including sludge received from others): Design Dry Tons/Year 15.7 Actual Dry Tons/Year

9.3 Sludge storage provided: _____ Cubic feet; _____ Days of storage; _____ Average percent solids of sludge;

☐ No sludge storage is provided. ☑ Sludge is stored in lagoon.

9.4 Type of storage:

☐ Holding Tank ☐ Building
☐ Basin ☑ Lagoon
☐ Concrete Pad ☐ Other (Describe) _____

9.5 Sludge Treatment:

☐ Anaerobic Digester ☐ Storage Tank ☐ Lime Stabilization ☑ Lagoon
☐ Aerobic Digester ☐ Air or Heat Drying ☐ Composting ☐ Other (Attach Description)

9.6 Sludge use or disposal:

☐ Land Application ☐ Contract Hauler ☐ Hauled to Another Treatment Facility ☐ Solid Waste Landfill
☐ Surface Disposal (Sludge Disposal Lagoon, Sludge Held For More Than Two Years) ☐ Incineration
☐ Other (Attach Explanation Sheet) _____

9.7 Person responsible for hauling sludge to disposal facility:
☐ By Applicant ☐ By Others (complete below)

NAME	EMAIL ADDRESS		
ADDRESS	CITY	STATE	ZIP CODE
CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO.	
		MO-	

9.8 Sludge use or disposal facility:
☐ By Applicant ☐ By Others (Complete below)

NAME	EMAIL ADDRESS		
ADDRESS	CITY	STATE	ZIP CODE
CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO.	
		MO-	

9.9 Does the sludge or biosolids disposal comply with Federal Sludge Regulation 40 CFR 503?
☐ Yes ☐ No (Explain)

END OF PART A

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Stewartsville	MO- 0108880	1

PART B – ADDITIONAL APPLICATION INFORMATION

10. COLLECTION SYSTEM

10.1 Are there any municipal satellite collection systems connected to this facility? ☐ Yes ☑ No

If yes, please list all connected to this facility, contact phone number and length of each collection system

FACILITY	CONTACT PHONE NUMBER	LENGTH OF SYSTEM (FEET OR MILES)

10.2 Length of sanitary sewer collection system in miles (If available, include totals from satellite collection systems) 7.5 miles

10.3 Does significant infiltration occur in the collection system? ☑ Yes ☐ No
If yes, briefly explain any steps underway or planned to minimize inflow and infiltration:

See Attached

11. BYPASSING

Does any bypassing occur anywhere in the collection system or at the treatment facility? Yes ☑ No ☐
If yes, explain:

SEE ATTACHED

12. OPERATION AND MAINTENANCE PERFORMED BY CONTRACTOR(S)

Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of the contractor?
Yes ☐ No ☑
If Yes, list the name, address, telephone number and status of each contractor and describe the contractor's responsibilities. (Attach additional pages if necessary.)

NAME	
MAILING ADDRESS	
TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
RESPONSIBILITIES OF CONTRACTOR	

13. SCHEDULED IMPROVEMENTS AND SCHEDULES OF IMPLEMENTATION

Provide information about any uncompleted implementation schedule or uncompleted plans for improvements that will affect the wastewater treatment, effluent quality, or design capacity of the treatment works. If the treatment works has several different implementation schedules or is planning several improvements, submit separate responses for each.

SEE ATTACHED

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Stewartsville	MO- 0108880	1

PART B – ADDITIONAL APPLICATION INFORMATION

14. EFFLUENT TESTING DATA

Applicants must provide effluent testing data for the following parameters. Provide the indicated effluent data **for each outfall through which effluent is discharged**. Do not include information of combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least **three samples** and must be no more than four and one-half years apart. See 40 CFR 136.3 for sufficiently sensitive methods: https://www.ecfr.gov/cgi-bin/text-idx?SID=2d29852e2dcdf91badc043bd5fc3d4df&mc=true&node=se40.25.136_13&rgn=div8

Outfall Number

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)	7.4	S.U.	7.9	S.U.	19
pH (Maximum)	9.8	S.U.	8.3	S.U.	19
Flow Rate	.0076	MGD	.0031	MGD	19

*For pH report a minimum and a maximum daily value

POLLUTANT		MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML/MDL
		Conc.	Units	Conc.	Units	Number of Samples		
Conventional and Nonconventional Compounds								
BIOCHEMICAL OXYGEN DEMAND (Report One)	BOD_5	30	mg/L	20.91	mg/L	4		
	$CBOD_5$		mg/L		mg/L			
E. COLI		95.9	#/100 mL	14.5	#/100 mL	19		
TOTAL SUSPENDED SOLIDS (TSS)		80	mg/L	37	mg/L	4		
TOTAL PHOSPHORUS		5.58	mg/L	5.58	mg/L	4		
TOTAL KJELDAHL NITROGEN		13.6	mg/L	13.6	mg/L	4		
NITRITES + NITRATES		10.1	mg/L	2.5	mg/L	4		
AMMONIA AS N		18.8	mg/L	3.02	mg/L	4		
CHLORINE* (TOTAL RESIDUAL, TRC)			mg/L		mg/L			
DISSOLVED OXYGEN		10.02	mg/L	4.8	mg/L	19		
OIL and GREASE		6.0	mg/L	4.88	mg/L	4		
OTHER: _____			mg/L		mg/L			

*Report only if facility chlorinates

END OF PART B

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Stewartsville	MO- 0108880	1

PART C – CERTIFICATION

15. ELECTRONIC DISCHARGE MONITORING REPORT (eDMR) SUBMISSION SYSTEM

Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent limits and monitoring shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally-consistent set of data. **One of the following must be checked in order for this application to be considered complete.** Please visit https://dnr.mo.gov/forms/780-2204-f.pdf to access the eDMR application.

☐ - You have completed and submitted with this permit application the required documentation to participate in the eDMR system.

☑ - You have previously submitted the required documentation to participate in the eDMR system and/or you are currently using the eDMR system.

☐ - You have submitted a written request for a waiver from electronic reporting. See instructions for further information regarding waivers.

16. JETPAY

Permit fees may be payed online by credit card or eCheck through a system called JetPay. Use the URL provided to access JetPay and make an online payment.

New Site Specific Permit: https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/591/
Construction Permits: https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/592/
Modification Fee: https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/596/

17. CERTIFICATION

All applicants must complete the Certification Section. This certification must be signed by an officer of the company or city official. All applicants must complete all applicable sections as explained in the Application Overview. By signing this certification statement, applicants confirm that they have reviewed the entire form and have completed all sections that apply to the facility for which this application is submitted.

ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

PRINTED NAME	OFFICIAL TITLE (MUST BE AN OFFICER OF THE COMPANY OR CITY OFFICIAL)
ERIK GRIFFIN	

SIGNATURE

TELEPHONE NUMBER WITH AREA CODE

DATE SIGNED

Upon request of the permitting authority, you must submit any other information necessary to assess wastewater treatment practices at the treatment works or identify appropriate permitting requirements.

Send Completed Form to:

Department of Natural Resources
Water Protection Program
ATTN: NPDES Permits and Engineering Section
P.O. Box 176
Jefferson City, MO 65102-0176

END OF PART C
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH PARTS OF FORM B2 YOU MUST COMPLETE.

Do not complete the remainder of this application, unless at least one of the following statements applies to your facility:

1. Your facility design flow is equal to or greater than 1,000,000 gallons per day.
2. Your facility is a pretreatment treatment works.
3. Your facility is a combined sewer system.

Submittal of an incomplete application may result in the application being returned. Permit fees for returned applications shall be forfeited. Permit fees for applications being processed by the department that are withdrawn by the applicant shall be forfeited.

7.1

The city of Stewartsville WWTF is 7.6 miles of collection system with two lift stations. The north lift station pumps into the south (primary) lift station. We completely rebuilt and updated with flow monitoring which will help us with our monitoring and with our I&I. It also has it own source of power.From the south lift station it goes into our three cell facultative lagoon .The primary (cell 1) is aerated and designed for 122+ days of retention from there it goes into cell 2 whih has suspended media for ammonia removal enhancement and from there to cell 3 the treated water from cell 3 runs to the weir plate box where it passes over a v notch weir to the outfall and then into Castile creek.

11

Occasional bypasses occure during heavy rains. This was happening 2-3 times ayear in the last permit cycle up until 2014 2015 after the improvements to the lift station ,the location of several i&I issues and the leveling& inspection of manholes, we have not had any in the last three years.

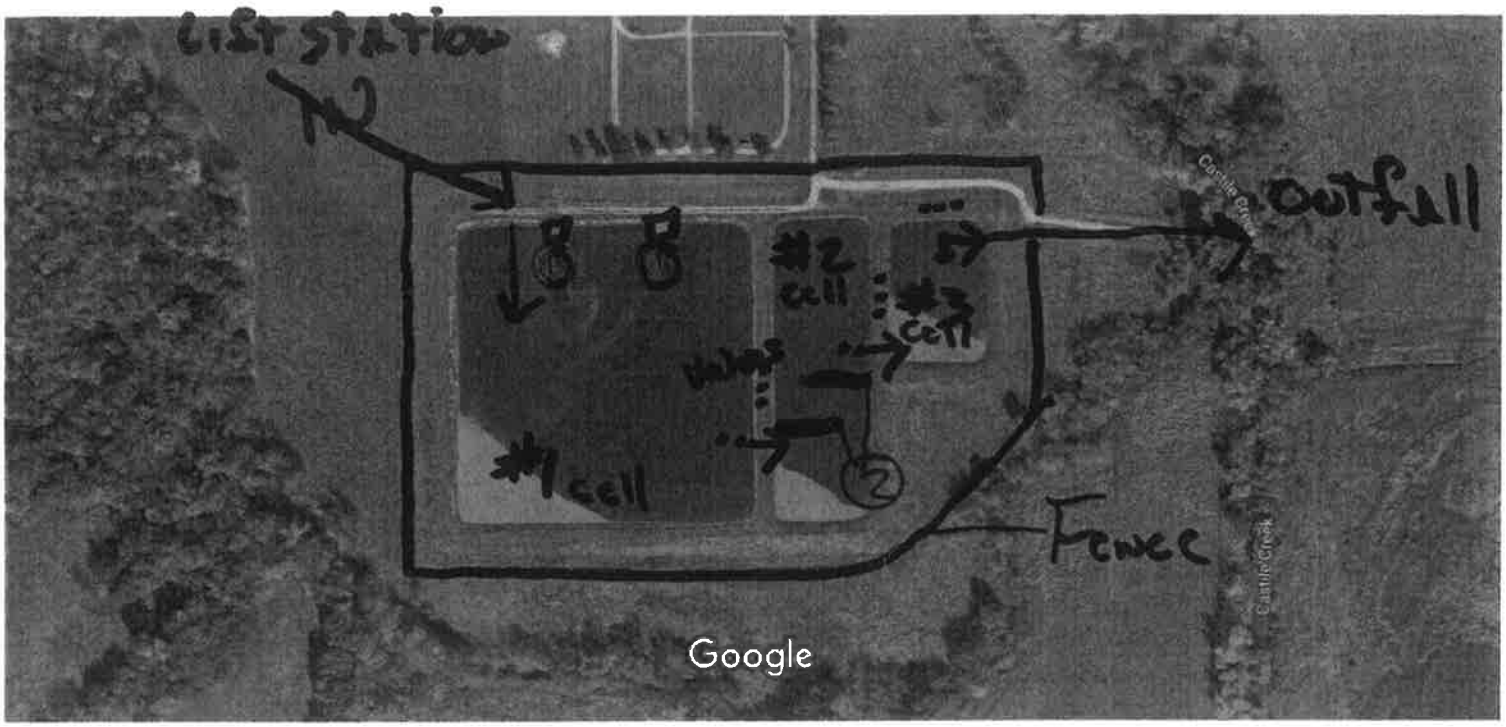
10.2

We will continue to implement our I&I plan. Reparing manholes, inspecting mains, smoke testing .Since the overhaul of our south lift station the repair of manholes and several mains and service line repairs we have had no bypasses in the last 3 years.

13

At this time the city of Stewartsville does not have any scheduled or unscheduled plans for treatment. With the reduction in I&I we are hopeful that this will increase our retention time resulting in better effluent quality. We will continue to inspect maintain and repair major problems in the collection system and maintenance of our lagoon.

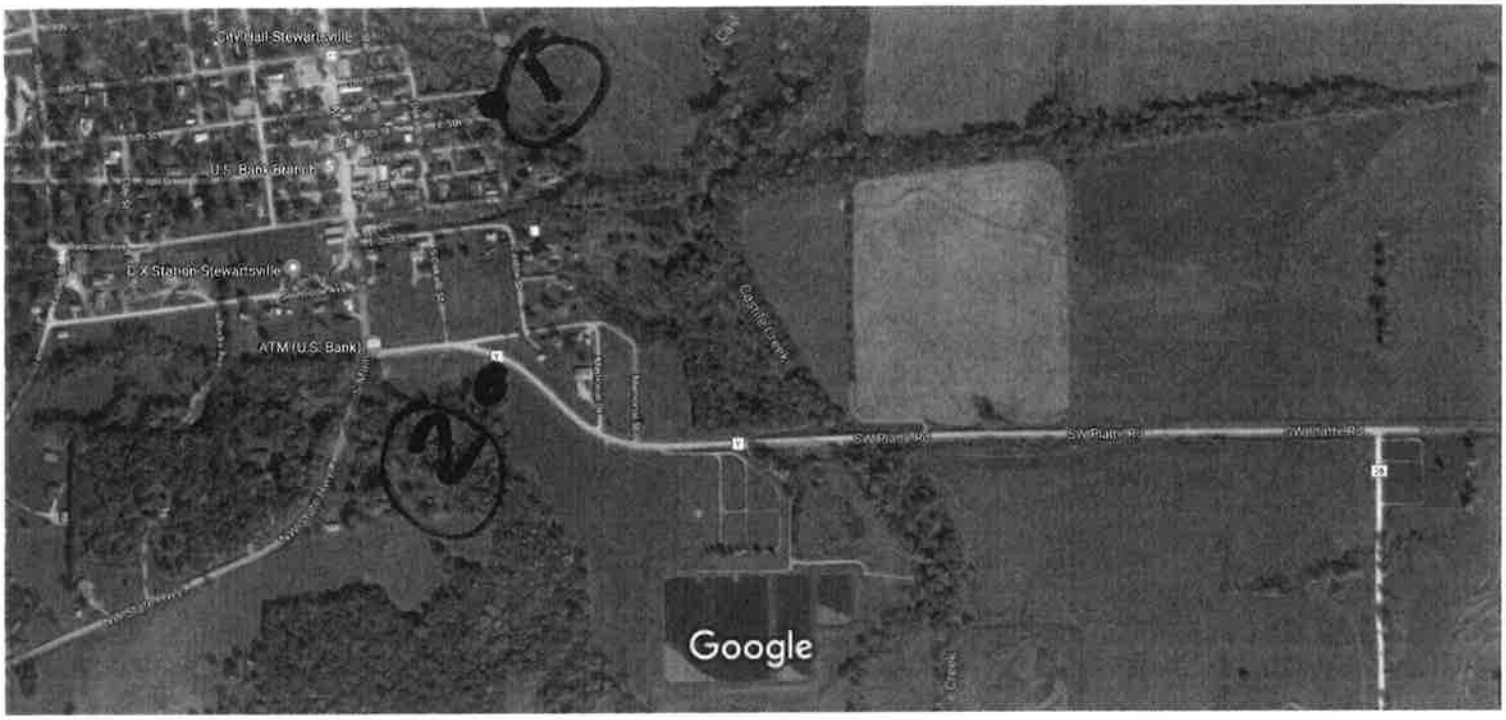
Google Maps



Imagery ©2019 Google, Map data ©2019 Google 100 ft

① WQA Aerators

② Suspended media (Ammonia Removal Enhancement) Trial



Imagery ©2019 Google, Map data ©2019 Google 200 ft

① North Lift Station

② South Lift Station

City of Stewartsville, Missouri

3-Cell Wastewater Stabilization Lagoon

Ammonia Removal Enhancement Trial

November 15, 2017

Introduction

Two (2) Reliant Water Technologies WQA aeration units were installed in the primary cell of the lagoon system in February, 2014. The units were installed for reduction of BOD, ammonia, *E. coli*, and for the contained sludge level reduction.

The treatment being provided by the WQA's for nutrient and *E. coli* reduction has been positive with good results being obtained. However, it has been observed that the primary cell's effluent nutrient levels can be lower than the effluent from the second cell. Spikes in effluent quality have been observed along with off- gassing bubbles in the second cell during the summer months.

In response to the above observations, its felt that options should be explored for possible future treatment enhancement addition.

It's noted that the successful operation of the lagoon system is a collective action of maintaining a lagoon environment conducive to biological nutrient and *E. coli* reduction, along with a maintained collection system preceding it.

A maintained collection system will reduce pumping costs and reduce periodic high flows to the lagoon system that can cause biological washout of biological solids and the upsetting of the established treatment environment. Over the past 5-years the City has made repairs and improvements to both the collection and lagoon systems. The following is a discussion of improvements and observations for the systems.

Observation and Actions

The South Lift Station that pumps the collected wastewater from the City and pumps it to the wastewater lagoon system was renovated in 2014.

The high water operating level of the primary cell was raised to a 5-feet depth in May 2015. This was accomplished by putting an extension section in the effluent discharge piping.

This was done to correct a construction error in the effluent structure that had the high water level set exactly one (1) foot low lower than shown on the original construction plans. The additional primary cell volume increased the detention time and mixing volume for treatment.

The City's wastewater collection system was cleaned and televised in 2015. Repairs were made to damaged collection lines and service connections. The replacement and raising of Manhole No.3 that is subject to flooding and infiltration has resulted in decreased wastewater flow to and grit debris collection at the South Lift Station servicing the lagoon.

The City's plan is to continue to locate points of I/I and make repairs/replacement as funding is available.

The west WQA unit was removed for visual inspection and cleaned in May 2017. The unit was covered with aquatic growth below the waterline, with the heaviest accumulation on the fine bubble diffusers ceramics. The coarse bubble diffuser arms had growth buildup on them, but there was no clogging at the orifice points. The City has on their work schedule to remove and clean the east WQA unit. It has been recommended that the units be removed, inspected, and cleaned on a 12-18 month cycle to maintain operational efficiency.

Testing of the primary cell has shown a dispersal of oxygen throughout both the vertical and horizontal planes of the cell. The contained sludge level in the cell has been reduced and evenly dispersed throughout the cell bottom. The observed sludge contained in the "Sludge-Judge" used for testing was of a very light and had a weak consistency.

Additional Ammonia Removal

It has been discussed with the City the possibility of adding additional treatment for ammonia reduction in the second cell. One option is the addition of one (1) WQA unit to the second cell. This option would reduce the sludge contained within the cell, and put the organics contained in the sludge and nutrients passing from Cell No.1 in suspension along with oxygen and ammonia reducing bacteria for nutrient reduction and improved operation.

However, the WQA addition comes with an expensive frontend capital cost and continuing operating expenses.

The second option discussed and chosen to move forward for evaluation is the use of suspended media in the second cell.

The use of suspended media in wastewater lagoons for nutrient reduction has been previously used for a period of time. The researched sources have shown different degrees of success in lagoons located in cold weather operating locations in Colorado, northeastern U.S., and Canada.

The reduction of ammonia in lagoons during cold weather operation can be problematic. One of the main factors is that bacteria ammonia reduction when the water temperature approaches and falls below 55° F is significantly lower than at warmer temperatures. It's noted from testing results that cold weather ammonia reduction is being obtained at the Stewartsville lagoon. Another factor considered is the contact between the bacteria that will use the ammonia as a food source and the ammonia contained. It's logical to assume the mechanism in a non-aerated lagoon is from the ammonia reduction bacteria in suspension and attached bacteria growth around the perimeter of the berm. It has been noted in literature that ammonia reducing bacteria have a preference for growing (multiplying) on attached surfaces. This is the factor used in obtaining performance from trickling filters, rotating bio-contactors (RBC), and the SAGR system.

The use of suspended media in the second cell will provide a surface for the bacteria to attach and grow and increase the potential for the increase in ammonia reducing bacteria population interface and nutrient reduction.

The City adds Sewper Rx as supplied by Reliant Water Technologies to the primary cell on a yearly basis. Sewper Rx is a propriety poly-microbial blend of common natural microbes mixed with nutrients and enzymes. The Sewper-Rx is used as a tool to maintain a healthy environment of bacteria for nutrient reduction. The amount added is based upon the lagoon performance. The use of this additive should provide an inventory of bacteria passed from the primary cell for suspended media bacteria growth.

Past testing of the second cell has shown dissolved oxygen content. It's assumed that the contained oxygen content was from a combination of algae contribution in the second cell and the excess oxygen carryover from the primary cell. This carryover action will be a plus in that a constant stream of oxygen will be supplied to the second cell from the primary cell. This is a particular advantage during winter operation when the second cell is ice covered and algae oxygen contribution is reduced.

Suspended Media System-Second Cell

The suspended media system will be comprised of two (2) lines of suspended media units spanning the short axis of the second cell. The lines of media will be located between the cell's influent and effluent points. It's planed that each media line will contain 35 units for a total of 70 units for both lines.

The dimensions of each panel for bacteria growth will be 3 ft. x 4 ft. = 12 sq.ft. / panel. The use of 70 panels will equal to 840 sq.ft. of potential bacteria growth area.

The media units shall be constructed of 52" long x 2- 3/8" diameter swim noodles for buoyancy, bacteria growth media sheets of heavy duty woven fabric landscaping cloth that will be 3 ft. long x 4ft. wide, assembled with nylon cable ties.

The woven fabric cloth has a slick side showing the woven fabric, the opposite side is covered with a short nap "fuzzy" material to anchor into the ground. All of the listed items are black in color to slow UV deterioration. Weights will be attached to media sheets to submerge them. The media units will be strung on 3/8" diameter poly rope and anchored on the berm sides with driven fence T-post or pipe.

A prototype media panel was constructed this summer and placed at Lake Perry, Ks. and observed. Light growth became apparent within 2-weeks on the fuzzy side. After 2-months of submergence the fuzzy side had a healthy growth covering 90% of the sheet. The slick side had a light growth over approximately 40% of the sheet. The media unit has now been installed for over 3-months and is holding firmly together after being exposed to waves and chop at the dock installation. The "fuzzy" side of the media will be placed facing towards the second cell's influent point.

Proposed Testing

The proposed observation time for the installed suspended media would be over a 12-18 month period depending on results.

Testing would be on a monthly basis and consist of obtaining data for water temperature, pH, BOD, and ammonia. The required MoDNR operating permit testing will give results for the influent and effluent to the lagoon system. The listed additional testing would be made at the effluent point for the primary cell and effluent point of the second cell. A baseline set of testing would be made at the time of installation of the suspended media.

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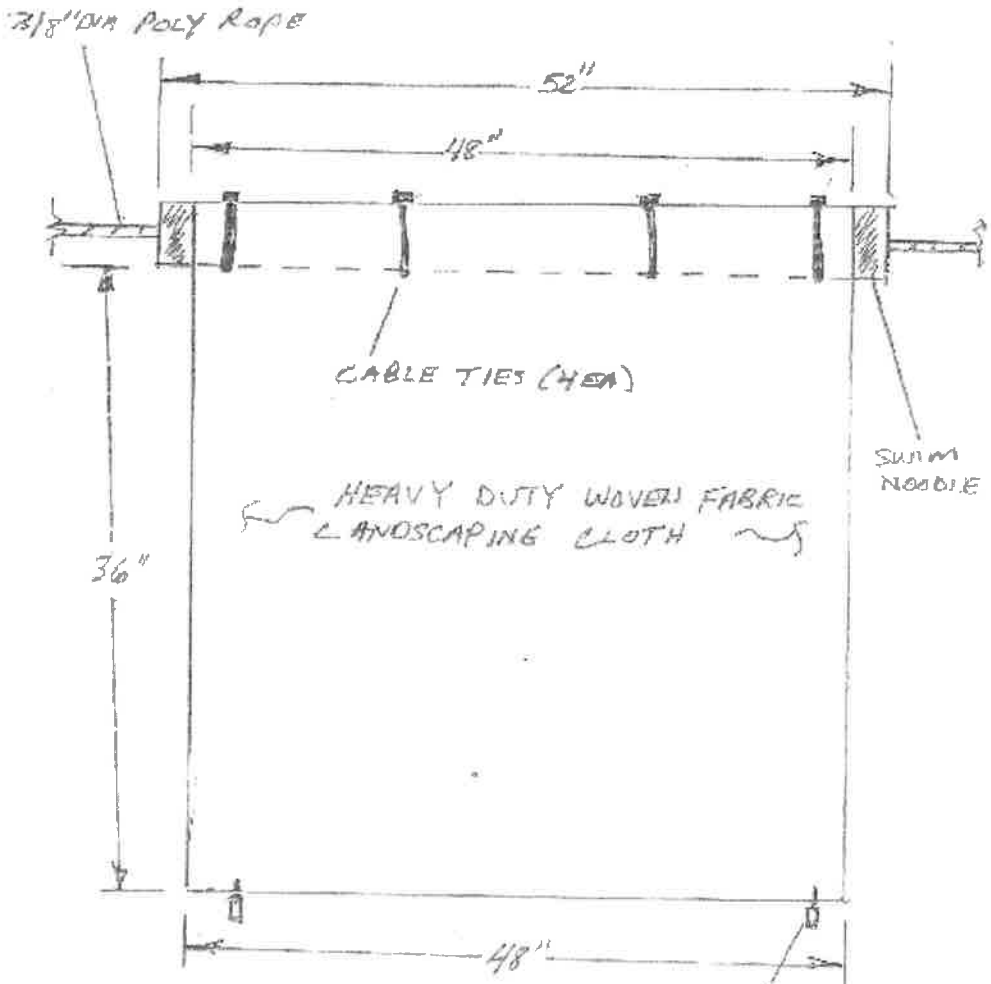
Prepared By

Ron Hochreiter

Schulte Engineering & Consulting, LLC

DETAIL - SUSPENDED MEDIA UNIT



NOTE: PROVIDE 1-WRAP OF LANDSCAPING CLOTH AROUND SWIM NOODLE BEFORE ATTACHING WITH WIRE TIES.

City of Stewartsville, Missouri

3-Cell Wastewater Stabilization Lagoon

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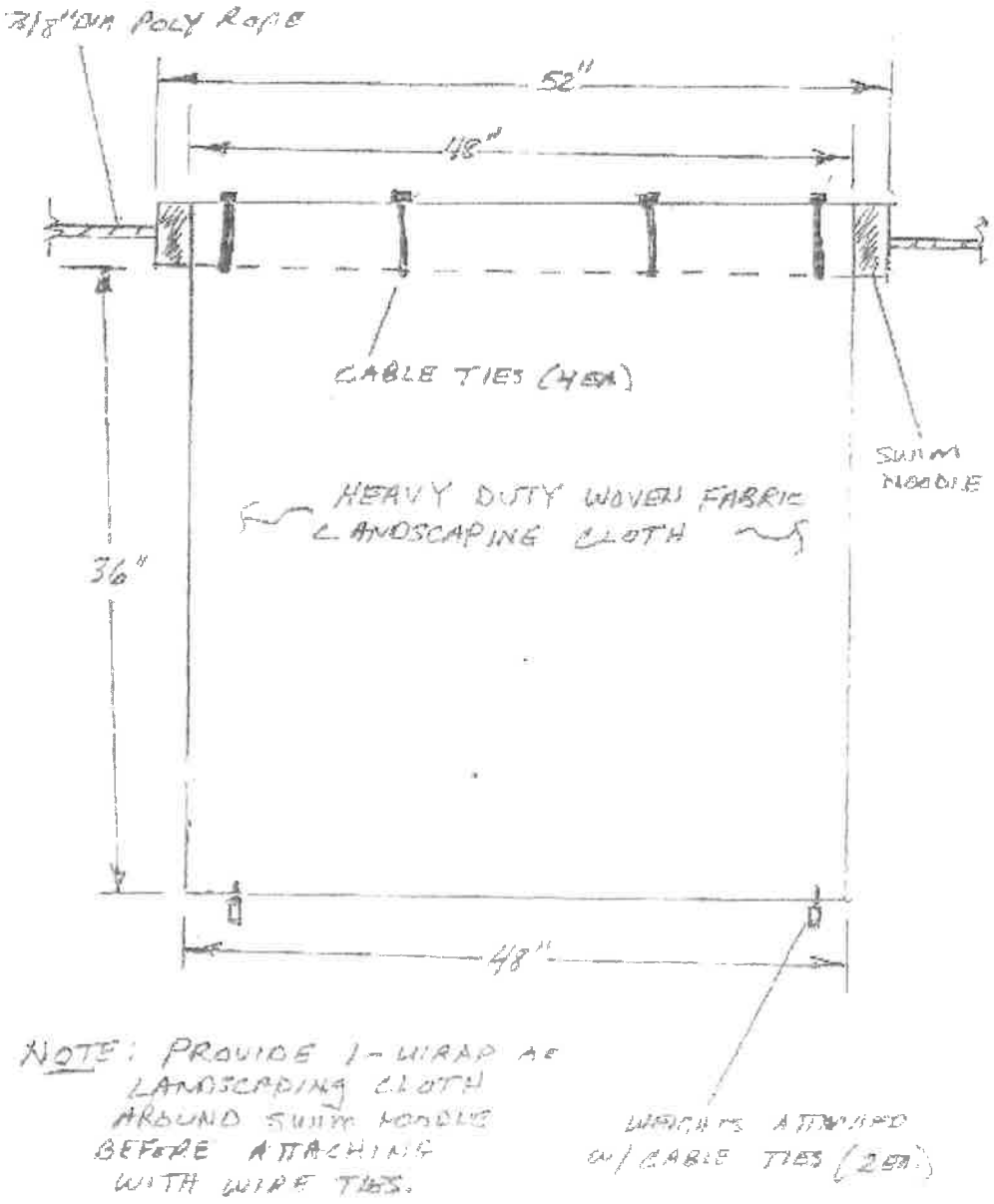
The resulting data will be compiled and evaluated. The results of the suspended media trail will be used in the decision making process for the City to decide on the possible future action to pursue.

Prepared By

Ron Hochreiter

Schulte Engineering & Consulting, LLC

DETAIL - SUSPENDED MEDIA UNIT



NOTE: PROVIDE 1-WRAP OF LANDSCAPING CLOTH AROUND SWIM NOODLE BEFORE ATTACHING WITH WIRE TIES.

United States
Environmental Protection
Agency

Wastewater Technology Fact Sheet

Facultative Lagoons

DESCRIPTION

Facultative waste stabilization ponds, sometimes referred to as lagoons or ponds, are frequently used to treat municipal and industrial wastewater in the United States. The technology associated with facultative lagoons has been in widespread use in the United States for at least 90 years, with more than 7,000 facultative lagoons in operation today. These earthen lagoons are usually 1.2 to 2.4 m (4 to 8 feet) in depth and are not mechanically mixed or aerated. The layer of water near the surface contains dissolved oxygen due to atmospheric reaeration and algal respiration, a condition that supports aerobic and facultative organisms. The bottom layer of the lagoon includes sludge deposits and supports anaerobic organisms. The intermediate anoxic layer, termed the facultative zone, ranges from aerobic near the top to anaerobic at the bottom. These layers may persist for long periods due to temperature-induced water-density variations. Inversions can occur in the spring and fall when the surface water layer may have a higher density than lower layers due to temperature fluctuations. This higher density water sinks during these unstable periods, creates turbidity, and produces objectionable odors.

The presence of algae in the aerobic and facultative zones is essential to the successful performance of facultative ponds. In sunlight, the algal cells utilize CO_2 from the water and release O_2 produced from photosynthesis. On warm, sunny days, the oxygen concentration in the surface water can exceed saturation levels. Conversely, oxygen levels are decreased at night. In addition, the pH of the near surface water can exceed 10 due to the intense use of CO_2 by algae, creating conditions favorable for ammonia removal via volatilization. This photosynthetic activity occurs on a diurnal basis, causing both oxygen and pH levels to shift from a maximum in daylight hours to a minimum at night.

The oxygen, produced by algae and surface reaeration, is used by aerobic and facultative bacteria to stabilize organic material in the upper layer of water. Anaerobic fermentation is the dominant activity in the bottom layer in the lagoon. In cold climates, oxygenation and fermentation reaction rates are significantly reduced during the winter and early spring and effluent quality may be reduced to the equivalent of primary effluent when an ice cover persists on the water surface. As a result, many states in the northern United States and Canada prohibit discharge from facultative lagoons during the winter.

Although the facultative lagoon concept is land intensive, especially in northern climates, it offers a reliable and easy-to-operate process that is attractive to small, rural communities.

Common Modifications

A common operational modification to facultative lagoons is the "controlled discharge" mode, where pond discharge is prohibited during the winter months in cold climates and/or during peak algal growth periods in the summer. In this approach, each cell in the system is isolated, then discharged sequentially. A similar modification, the “hydrograph controlled release” (HCR), retains liquid in the pond until flow volume and conditions in the receiving stream are adequate for discharge.

A recently developed physical modification uses plastic curtains, supported by floats and anchored to the bottom, to divide lagoons into multiple cells and/or to serve as baffles to improve hydraulic conditions. Another recent development uses a floating plastic grid to support the growth of duckweed (*Lemna* sp.) plants on the surface of the final cell(s) in the lagoon system, which restricts the penetration of light and thus reduces algae (with

sufficient detention time ≥ 20 days), improving the final effluent quality.

APPLICABILITY

The concept is well suited for rural communities and industries where land costs are not a limiting factor. Facultative lagoons can be used to treat raw, screened, or primary settled municipal wastewater and biodegradable industrial wastewaters.

ADVANTAGES AND DISADVANTAGES

Some advantages and disadvantages of facultative lagoons are listed below:

Advantages

Moderately effective in removing settleable solids, BOD, pathogens, fecal coliform, and ammonia.

Easy to operate.

Require little energy, with systems designed to operate with gravity flow.

The quantity of removed material will be relatively small compared to other secondary treatment processes.

Disadvantages

Settled sludges and inert material require periodic removal.

Difficult to control or predict ammonia levels in effluent.

Sludge accumulation will be higher in cold climates due to reduced microbial activity.

Mosquitos and similar insect vectors can be a problem if emergent vegetation is not controlled.

Requires relatively large areas of land.

Strong odors occur when the aerobic blanket disappears and during spring and fall lagoon turnovers.

Burrowing animals may be a problem.

DESIGN CRITERIA

Waste stabilization pond systems are simplistic in appearance, however, the reactions are as complicated as any other treatment process. Typical equipment used in facultative lagoons includes lining systems to control seepage to groundwater (if needed), inlet and outlet structures, hydraulic controls, floating dividers, and baffles. Many existing facultative lagoons are large, single-cell systems with the inlet constructed near the center of the cell. This configuration can result in short-circuiting and ineffective use of the design volume of the system. A multiple-cell system with at least three cells in series is recommended, with appropriate inlet and outlet structures to maximize effectiveness of the design volume. Most states have design criteria that specify the areal organic loading (kg/ha/d or lbs/acre/d) and/or the hydraulic residence time. Typical organic loading values range from 15 to 80 kg/ha/d (13 to 71 lbs/acre/d). Typical detention times range from 20 to 180 days depending on the location. Detention times can approach 200 days in northern climates where discharge restrictions prevail. Effluent biochemical oxygen demand (BOD) ≤ 30 mg/L can usually be achieved, while effluent TSS may range from ≤ 30 mg/L to more than 100 mg/L, depending on the algal concentrations and design of discharge structures.

A number of empirical and rational models exist for the design of simple and series constructed facultative lagoons. These include first-order plug flow, first-order complete mix, and models proposed by Gloyna, Marais, Oswald, and Thirumurthi. None of these has been shown to be clearly superior to the others. All provide a reasonable design as long as the basis for the formula is understood, proper parameters are selected, and the hydraulic detention and sludge retention characteristics of the system are known. This last element is critical because short circuiting in a poorly designed cell can result in

detention time of 40 percent or less than the theoretical design value.

PERFORMANCE

Overall, facultative lagoon systems are simple to operate, but only partially reliable in performance. BOD_5 removal can range up to 95 percent. However, the TSS range may exceed 150 mg/L. Removal of ammonia nitrogen can be significant (up to 80 percent), depending on temperature, pH, and detention time in the system. However, the removal cannot be sustained over the winter season. Due to precipitation reactions occurring simultaneously with the daily high pH (alkaline) conditions in the lagoon, approximately 50 percent phosphorus removal can be expected. Removal of pathogens and coliforms can be effective, depending on temperature and detention time.

Limitations

Limitations may include the inability of the process to meet a 30 mg/L limit for TSS due to the presence of algae in the effluent, particularly during warm weather, and not meeting effluent criteria consistently throughout the year. In cold climates, low temperatures and ice formation will limit process efficiency during the winter. Odors may be a problem in the spring and fall during periods of excessive algal blooms and unfavorable weather conditions.

OPERATION AND MAINTENANCE

Most facultative lagoons are designed to operate by gravity flow. The system is not maintenance intensive and power costs are minimal because pumps and other electrically operated devices may not be required. Although some analytical work is essential to ensure proper operation, an extensive sampling and monitoring program is usually not necessary. In addition, earthen structures used as impoundments must be inspected for rodent damage.

COSTS

Cost information for facultative lagoons varies significantly. Construction costs include cost of the land, excavation, grading, berm construction, and inlet and outlet structures. If the soil is permeable, an additional cost for lining the lagoon should be considered.

REFERENCES

Other Related Fact Sheets

Other EPA Fact Sheets can be found at the following web address:

http://ww.epa.gov/owm/mtb/mtbfact.htm

1. Middlebrooks, E.J., et al., 1982. *Wastewater Stabilization Lagoon Design, Performance and Upgrading*, McMillan Publishing Co., New York, NY.

2. Pano, A. and Middlebrooks, E.T., 1982. Ammonia Nitrogen Removal in Facultative Wastewater Stabilization Ponds. Water Pollution Control Federation Journal, 54 (4) 344-351.

3. Reed, S.C., et al., 1995, 2nd Ed. *Natural Systems for Waste Management and Treatment*, McGraw Hill Book Co., New York, NY.

4. Reed, S.C., 1985. *Nitrogen Removal in Wastewater Stabilization Ponds*, Water Pollution Control Federation Journal. 57(1)39-45.

5. U.S. EPA, 1983. *Design Manual - Municipal Wastewater Stabilization Ponds*, EPA-625/1-83-015, US EPA CERI. Cincinnati, OH.

6. WPCF, 1990. MOP FD-16, *Natural Systems for Wastewater Treatment*, Water Pollution Control Federation, Alexandria, VA.

ADDITIONAL INFORMATION

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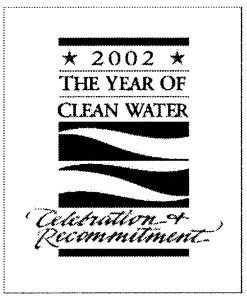
Office of Water
EPA 832-F-02-014
September 2002

For more information contact:

Municipal Technology Branch
U.S. EPA
1200 Pennsylvania Ave., NW
Mail Code 4201M



OWM MTB
Excellence in compliance through optimal technical solutions
MUNICIPAL TECHNOLOGY BRANCH

Alliance Pump and Mechanical service, Inc
Phone 816-833-8109 Fax 816-833-8035

SUBMERSIBLE PUMP PREVENTATIVE MAINTENANCE REPORT

Customer Stewartsville, MO Date 9/20/2017 Job Number: 217208 HP: 3

Manufacturer: Tsurami AMP: 8.8 RPM: n/a Voltage: 220 Phase: 3

Pump Model: 100C42-2-CR Serial No: B-10063986 Tech. Josh Turner

Location of Installation: North Station Unit #: 2

1) Megger insulation check through power cable (s) at control panel using megger:

Red to Ground: infinity meg ohms White to Ground: infinity meg ohms Black to Ground: infinity meg ohms OK x

2) Ohms Resistance using volt ohms meter:

Red to White: 0.8 ohms Red to Black: 0.8 ohms Black to White: 0.8 ohms OK x

3) Faulty control connections? None

4) Line voltage supply (Pump Off) L1-L2 251 L2-L3 242 L1-L3 243 OK

5) Load voltage checks (Pump on) L1-L2 250 L2-L3 241 L1-L3 241 OK x

6) Amperage draw L1 6.1 L2 8 L3 8 OK x

7) Thermal protection circuit operation Internal, no thermal protection in the panel OK x

8) Problems with lifting the pump? none OK x

9) Stator chamber condition good OK x

10) Leakage detector system condition? none OK x

11) Oil condition? good and clear OK x

12) Amount of oil installed ? none OK x

13) Condition of impeller? good OK x

14) Condition of wear rings? n/a face to face OK x

15) Condition of Cutter rings? good OK x

16) Condition of bearings? ran smooth OK x

17) Any damage to the power cable(s)? none OK x

18) Level sensor condition? good, floats operated properly OK x

19) Shaft rotation? correct rotation OK x

20) Condition of discharge connection? good OK x

21) Test of operating cycle: takes about 5 minutes/cycle Estimated starts per hour? 1-2 OK x

22) Items requiring attention? Everthing appeared good, pumps ran good, controls worked properly.

Alliance Pump and Mechanical service, Inc
Phone 816-833-8109 Fax 816-833-8035

SUBMERSIBLE PUMP PREVENTATIVE MAINTENANCE REPORT

Customer Stewartsville, MO Date 9/20/2017 Job Number: 217208 HP: 3

Manufacturer: Tsurami AMP: 8.8 RPM: n/a Voltage: 220 Phase: 3

Pump Model: 100C42-2-cr Serial No: B-10063985 Tech. Josh Turner

Location of Installation: North Station Unit #: 1

1) Megger insulation check through power cable (s) at control panel using megger:

Red to Ground: infinity meg ohms White to Ground: infinity meg ohms Black to Ground: infinity meg ohms OK x

2) Ohms Resistance using volt ohms meter:

Red to White: 0.8 ohms Red to Black: 0.8 ohms Black to White: 0.8 ohms OK x

3) Faulty control connections? None

4) Line voltage supply (Pump Off) L1-L2 251 L2-L3 242 L1-L3 243 OK x

5) Load voltage checks (Pump on) L1-L2 250 L2-L3 240 L1-L3 241 OK x

6) Amperage draw L1 6 L2 8.1 L3 8 OK x

7) Thermal protection circuit operation Internal, no thermal protection in panel OK x

8) Problems with lifting the pump? none OK x

9) Stator chamber condition good OK x

10) Leakage detector system condition? none OK x

11) Oil condition? good and clear OK x

12) Amount of oil installed ? none OK x

13) Condition of impeller? good OK x

14) Condition of wear rings? na-face to face OK x

15) Condition of Cutter rings? good OK x

16) Condition of bearings? ran smooth OK x

17) Any damage to the power cable(s)? none OK x

18) Level sensor condition? good-floats operated properly OK x

19) Shaft rotation? correct rotation OK x

20) Condition of discharge connection? good OK x

21) Test of operating cycle: takes about 5 minutes/cycle Estimated starts per hour? 1-2 OK x

22) Items requiring attention? everything appeared good, pumps ran good, controls work properly.

Alliance Pump and Mechanical service, Inc
Phone 816-833-8109 Fax 816-833-8035

SUBMERSIBLE PUMP PREVENTATIVE MAINTENANCE REPORT

Customer Stewartsville, MO Date 9/20/2017 Job Number: 217208 HP: 3

Manufacturer: Hydromatic AMP: 21.9 RPM: 1750 Voltage: 230 Phase: 3

Pump Model: S4MRC750M3-4 Serial No: 10068455 Tech. Josh Turner

Location of Installation: South Station Unit #: 1

1) Megger insulation check through power cable (s) at control panel using megger:

Red to Ground: infinity meg ohms White to Ground: infinity meg ohms Black to Ground: infinity meg ohms OK x

2) Ohms Resistance using volt ohms meter:

Red to White: 0.7 ohms Red to Black: 0.7 ohms Black to White: 0.7 ohms OK x

3) Faulty control connections? None

4) Line voltage supply (Pump Off) L1-L2 247 L2-L3 243 L1-L3 246 OK

5) Load voltage checks (Pump on) L1-L2 247 L2-L3 241 L1-L3 246 OK x

6) Amperage draw L1 19.1 L2 14.2 L3 16.8 OK x

7) Thermal protection circuit operation good OK x

8) Problems with lifting the pump? floats & transducer need to be moved OK x

9) Stator chamber condition good OK x

10) Leakage detector system condition? good OK x

11) Oil condition? good and clear OK x

12) Amount of oil installed ? none OK x

13) Condition of impeller? good OK x

14) Condition of wear rings? good OK x

15) Condition of Cutter rings? n/a OK

16) Condition of bearings? ran smooth OK x

17) Any damage to the power cable(s)? none OK x

18) Level sensor condition? good, floats and transducer operate good OK x

19) Shaft rotation? correct rotation OK x

20) Condition of discharge connection? good OK x

21) Test of operating cycle: takes about 3 minutes/cycle Estimated starts per hour? 3-4 OK x

22) Items requiring attention? Float tree needs to be moved. It is in the way when the pump is pulled. Pump runs good, controls work properly.

Alliance Pump and Mechanical service, Inc
Phone 816-833-8109 Fax 816-833-8035

SUBMERSIBLE PUMP PREVENTATIVE MAINTENANCE REPORT

Customer Stewartsville, MO Date 9/20/2017 Job Number: 217208 HP: 3

Manufacturer: Hydromatic AMP: 21.9 RPM: 1750 Voltage: 230 Phase: 3

Pump Model: S4MRC750M3-4 Serial No: 10068454 Tech. Josh Turner

Location of Installation: South Station Unit #: 2

1) Megger insulation check through power cable (s) at control panel using megger:

Red to Ground: infinity meg ohms White to Ground: infinity meg ohms Black to Ground: infinity meg ohms OK x

2) Ohms Resistance using volt ohms meter:

Red to White: 0.7 ohms Red to Black: 0.7 ohms Black to White: 0.7 ohms OK x

3) Faulty control connections? None

4) Line voltage supply (Pump Off) L1-L2 247 L2-L3 243 L1-L3 246 OK

5) Load voltage checks (Pump on) L1-L2 247 L2-L3 240 L1-L3 246 OK x

6) Amperage draw L1 19.3 L2 14.4 L3 16.7 OK x

7) Thermal protection circuit operation good OK x

8) Problems with lifting the pump? floats & transducer need to be moved OK x

9) Stator chamber condition good OK x

10) Leakage detector system condition? good OK x

11) Oil condition? good and clear OK x

12) Amount of oil installed ? none OK x

13) Condition of impeller? good OK x

14) Condition of wear rings? good OK x

15) Condition of Cutter rings? n/a OK

16) Condition of bearings? ran smooth OK x

17) Any damage to the power cable(s)? none OK x

18) Level sensor condition? good, floats and transducer operate good OK x

19) Shaft rotation? correct rotation OK x

20) Condition of discharge connection? good OK x

21) Test of operating cycle: takes about 3 minutes/cycle Estimated starts per hour? 3-4 OK x

22) Items requiring attention? Float tree needs to be moved. It is in the way when the pump is pulled. Pump runs good, controls work properly.

Sanitary Sewer System

City of Stewartsville, MO

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The Environmental Protection Specialists

Table of Contents

Total Footage: 37205.5 FT

PG	Date	Length	US MH	Dir.	DS MH	Dia.	Type	QSR	QMR	Street
1	9/17/2015	27.0	113	D/S	21	8	DIP	0000	0000	GROOM ST
4	9/25/2015	93.2	95	D/S	94	8	DIP	0000	2C00	RAILROAD AVE
9	9/29/2015	54.3	138	D/S	133	8	DIP	0000	0000	ST JOSEPH AVE
13	9/30/2015	48.7	112	U/S	111	8	DIP	0000	0000	SOUTHSIDE AVE
16	10/1/2015	95.6	167	D/S	LIFT	8	DIP	1100	2100	HWY Y
19	10/1/2015	91.3	3	D/S	3	8	DIP	0000	0000	SOUTHSIDE AVE
24	10/2/2015	110.7	8	D/S	7	8	DIP	0000	0000	RAILROAD AVE
26	9/15/2015	127.4	38	D/S	38	8	PVC	0000	0000	MAIN ST
29	9/15/2015	118.8	38	U/S	38	8	PVC	0000	0000	MAIN ST
33	9/16/2015	114.8	152	D/S	153	8	PVC	0000	0000	KIMBLE DR
37	9/16/2015	343.2	153	D/S	154	8	PVC	0000	0000	KIMBLE DR
40	9/16/2015	346.2	154	D/S	155	8	PVC	0000	0000	KIMBLE DR
42	9/16/2015	347.3	155	D/S	156	8	PVC	0000	0000	KIMBLE DR
45	9/16/2015	172.4	156	D/S	113	8	PVC	0000	0000	KIMBLE DR
48	9/16/2015	140.2	157	U/S	155	8	PVC	0000	0000	KIMBLE DR
51	9/16/2015	345.4	158	D/S	157	8	PVC	0000	2400	KIMBLE DR
54	9/16/2015	226.0	159	D/S	158	8	PVC	4100	0000	KIMBLE DR
57	9/16/2015	352.1	160	U/S	159	8	PVC	0000	0000	GANTZ ST
59	9/16/2015	23.7	167	D/S	160	8	PVC	0000	2100	GANTZ ST
61	9/16/2015	244.5	167	U/S	160	8	PVC	0000	3222	GANTZ ST
64	9/17/2015	106.6	113	D/S	113	8	PVC	2100	0000	KIMBLE DR
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92	9/28/2015	126.8	142	U/S	141	6	VCP	0000	2200	MAIN ST
95	9/14/2015	153.8	41	D/S	40	8	VCP	2100	0000	MEADOWBROOK LN
98	9/14/2015	275.7	42	D/S	41	8	VCP	5111	2214	MEADOWBROOK LN
101	9/14/2015	399.3	43	D/S	42	8	VCP	5122	0000	MEADOWBROOK LN
104	9/14/2015	183.9	44	D/S	40	8	VCP	2100	0000	LAKEVIEW DR
107	9/14/2015	164.3	45	D/S	44	8	VCP	1100	2100	LAKEWIEW DR
110	9/14/2015	393.7	46	D/S	45	8	VCP	0000	2312	LAKEWIEW DR
112	9/14/2015	173.6	47	U/S	44	8	VCP	0000	0000	LAKEWIEW DR
115	9/15/2015	156.3	165	D/S	37	8	VCP	0000	2100	HILL ST
118	9/15/2015	359.9	29	D/S	28	8	VCP	0000	2311	LOVELAND DR
120	9/15/2015	123.4	30	U/S	29	8	VCP	4100	2A00	LOVELAND DR
122	9/15/2015	294.3	32	D/S	31	8	VCP	0000	2100	ORCHARD LN
126	9/15/2015	208.0	33	D/S	32	8	VCP	0000	0000	ORCHARD LN
131	9/15/2015	208.3	34	D/S	33	8	VCP	0000	0000	ORCHARD LN
135	9/15/2015	34.3	35	D/S	33	8	VCP	0000	2400	LOVELAND DR
139	9/15/2015	219.4	35	U/S	33	8	VCP	0000	2111	LOVELAND DR
142	9/15/2015	148.0	36	D/S	31	8	VCP	0000	3100	ORCHARD DR

The Environmental Protection Specialists

Table of Contents

Total Footage: 37205.5 FT

PG	Date	Length	US MH	Dir.	DS MH	Dia.	Type	QSR	QMR	Street
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149	9/15/2015	114.6	38	D/S	38	8	VCP	3100	0000	MAIN ST
152	9/15/2015	298.2	38	D/S	32	8	VCP	2211	0000	MAIN ST
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164	9/18/2015	376.2	145	D/S	148	8	VCP	5200	2100	IVIE DR
168	9/18/2015	305.0	148	D/S	149	8	VCP	1100	0000	IVIE DR
170	9/18/2015	268.2	149	U/S	19	8	VCP	0000	2200	IVIE DR
174	9/18/2015	384.1	150	D/S	149	8	VCP	3121	0000	MATYLDA DR
177	9/18/2015	403.4	18	D/S	17	8	VCP	0000	2100	IVIE DR
180	9/18/2015	310.8	19	D/S	18	8	VCP	4100	0000	IVIE DR
184	9/18/2015	258.4	20	D/S	19	8	VCP	0000	3100	LOVELAND DR
188	9/18/2015	190.3	27	D/S	20	8	VCP	2100	2111	LOVELAND DR
190	9/18/2015	73.4	28	U/S	27	8	VCP	0000	0000	LOVELAND DR
193	9/18/2015	320.4	31	U/S	27	8	VCP	3111	1100	LOVELAND DR
197	9/21/2015	130.0	14	D/S	13	8	VCP	0000	0000	ST JOSEPH AVE
200	9/21/2015	271.6	151	D/S	17	8	VCP	2100	0000	PATRICIA DR
203	9/21/2015	394.0	15	D/S	14	8	VCP	0000	0000	ST JOSEPH AVE
205	9/21/2015	194.6	16	U/S	15	8	VCP	0000	2400	ST JOSEPH AVE
209	9/21/2015	399.7	17	D/S	16	8	VCP	2200	2100	IVIE DR
212	9/21/2015	99.1	52	U/S	15	8	VCP	0000	0000	ST JOSEPH AVE
215	9/21/2015	299.3	53	D/S	52	8	VCP	0000	2K00	ST JOSEPH AVE
219	9/21/2015	399.7	54	U/S	53	8	VCP	5100	312A	ST JOSEPH AVE
222	9/21/2015	374.6	55	D/S	54	8	VCP	0000	2111	ST JOSEPH AVE
225	9/21/2015	10.3	55	U/S	54	8	VCP	1100	2100	ST JOSEPH AVE
229	9/22/2015	47.1	13	U/S	58	8	VCP	0000	0000	10TH ST
233	9/22/2015	358.0	56	D/S	13	8	VCP	0000	2J00	10TH ST
237	9/22/2015	307.3	57	D/S	56	8	VCP	2111	2300	10TH ST
239	9/22/2015	216.1	59	D/S	58	8	VCP	0000	2H00	10TH ST
242	9/22/2015	351.0	60	D/S	59	8	VCP	0000	312L	10TH ST
245	9/22/2015	268.5	61	D/S	60	8	VCP	0000	2100	10TH ST
247	9/22/2015	263.0	62	U/S	61	8	VCP	2100	0002	10TH ST
250	9/22/2015	392.4	63	U/S	61	8	VCP	0000	2J00	WEST ST
254	9/22/2015	430.0	64	U/S	60	8	VCP	1100	2O00	CLINTON ST
257	9/22/2015	323.4	65	U/S	59	8	VCP	3121	2K00	CLAY ST
259	9/23/2015	37.6	11	D/S	10	8	VCP	0000	0000	8TH ST
263	9/23/2015	279.5	12	D/S	11	8	VCP	0000	0000	9TH ST
266	9/23/2015	223.2	21	U/S	20	8	VCP	0000	0000	IVIE DR
269	9/23/2015	362.2	58	D/S	12	8	VCP	0000	0000	10TH ST
272	9/23/2015	351.5	68	D/S	12	8	VCP	0000	2F00	9TH ST
275	9/23/2015	270.2	69	D/S	68	8	VCP	0000	2D00	9TH ST
279	9/23/2015	37.1	70	D/S	69	8	VCP	0000	2100	9TH ST
281	9/23/2015	46.2	70	U/S	69	8	VCP	0000	2100	9TH ST
283	9/23/2015	235.1	72	D/S	11	8	VCP	0000	2312	8TH ST
286	9/23/2015	81.6	72	U/S	11	8	VCP	0000	2100	8TH ST
289	9/23/2015	239.6	73	D/S	10	8	VCP	0000	2G00	8TH ST

The Environmental Protection Specialists

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Total Footage: 37205.5 FT

PG	Date	Length	US MH	Dir.	DS MH	Dia.	Type	QSR	QMR	Street
292	9/23/2015	138.6	74	D/S	73	8	VCP	0000	2C00	8TH ST
295	9/23/2015	244.6	75	D/S	10	8	VCP	0000	2B00	6TH ST
300	9/23/2015	348.6	77	D/S	76	8	VCP	0000	3114	6TH ST
306	9/24/2015	234.0	10	D/S	10	8	VCP	0000	0000	8TH ST
309	9/24/2015	53.4	10	D/S	168	8	VCP	0000	0000	6TH ST
311	9/24/2015	268.4	168	U/S	9	8	VCP	2100	0000	4TH ST
314	9/24/2015	109.4	76	D/S	168	8	VCP	0000	0000	6TH ST
318	9/24/2015	317.0	78	U/S	9	8	VCP	2100	1100	4TH ST
321	9/24/2015	346.1	79	D/S	78	8	VCP	0000	3100	4TH ST
324	9/24/2015	442.1	80	D/S	79	8	VCP	3100	0002	4TH ST
326	9/24/2015	450.3	88	D/S	86	8	VCP	2111	312H	HIKES ST
329	9/24/2015	259.6	89	U/S	88	8	VCP	1100	2G00	6TH ST
332	9/25/2015	246.1	81	D/S	8	8	VCP	0000	0000	RAILROAD AVE
334	9/25/2015	229.1	82	D/S	81	8	VCP	0000	0000	RAILROAD AVE
336	9/25/2015	348.9	83	D/S	82	8	VCP	2100	0000	RAILROAD AVE
339	9/25/2015	355.7	84	D/S	83	8	VCP	3200	2213	RAILROAD AVE
341	9/25/2015	269.6	85	D/S	84	8	VCP	3121	2100	RAILROAD AVE
344	9/25/2015	199.1	86	D/S	85	8	VCP	0000	0000	RAILROAD AVE
347	9/25/2015	191.9	93	D/S	8	8	VCP	0000	0000	RAILROAD AVE
352	9/25/2015	311.4	94	D/S	93	8	VCP	3100	0000	RAILROAD AVE
356	9/25/2015	313.2	96	D/S	95	8	VCP	0000	0000	RAILROAD AVE
360	9/25/2015	308.5	9	D/S	8	8	VCP	0000	0000	4TH ST
363	9/28/2015	131.6	104	D/S	93	8	VCP	0000	0000	WEST ST
366	9/28/2015	233.9	105	D/S	104	8	VCP	0000	2G00	WEST ST
369	9/28/2015	244.5	106	D/S	105	8	VCP	0000	0000	WEST ST
372	9/28/2015	263.3	107	D/S	106	8	VCP	3121	2F00	7TH ST
375	9/28/2015	232.4	108	D/S	105	8	VCP	2111	1200	5TH ST
378	9/28/2015	251.9	109	U/S	104	8	VCP	2100	2H00	3RD ST
381	9/28/2015	275.1	135	D/S	134	8	VCP	0000	2F00	DEKALB ST
384	9/28/2015	332.6	136	D/S	135	8	VCP	0000	2111	DEKALB ST
386	9/28/2015	197.0	137	D/S	135	8	VCP	0000	2100	12TH ST
389	9/28/2015	140.1	139	U/S	138	8	VCP	0000	0000	ST JOSEPH AVE
393	9/28/2015	226.8	140	D/S	140	8	VCP	1100	2100	MAIN ST
397	9/28/2015	363.7	140	U/S	138	8	VCP	0000	0000	MAIN ST
399	9/28/2015	275.1	141	D/S	140	8	VCP	0000	0000	MAIN ST
402	9/29/2015	249.1	130	U/S	96	8	VCP	0000	0000	6TH ST
404	9/29/2015	187.5	131	D/S	144	8	VCP	2200	0000	ST JOSEPH AVE
408	9/29/2015	329.6	132	U/S	131	8	VCP	3100	1300	DEKALB AVE
411	9/29/2015	239.6	133	U/S	133	8	VCP	0000	2F00	ST JOSEPH AVE
414	9/29/2015	77.1	133	U/S	132	8	VCP	0000	0000	DEKALB ST
419	9/29/2015	300.3	134	D/S	133	8	VCP	0000	3121	DEKALB ST
423	9/29/2015	274.1	144	U/S	146	8	VCP	5111	2400	ST JOSEPH AVE
426	9/29/2015	289.9	146	D/S	147	8	VCP	1100	2100	8TH ST
429	9/29/2015	371.6	96	D/S	LIFTSTATION 2	8	VCP	4131	3121	6TH ST
432	9/29/2015	247.1	99	U/S	96	8	VCP	0000	200000000000	6TH ST
436	9/30/2015	147.6	100	U/S	97	8	VCP	1100	0000	4TH ST
440	9/30/2015	242.6	101	D/S	97	8	VCP	3100	0000	4TH ST

The Environmental Protection Specialists

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Total Footage:
37205.5 FT

PG	Date	Length	US MH	Dir.	DS MH	Dia.	Type	QSR	QMR	Street
443	9/30/2015	89.1	102	U/S	101	8	VCP	0000	0000	4TH ST
445	9/30/2015	115.3	103	U/S	101	8	VCP	1100	2312	4TH ST
448	9/30/2015	266.7	111	U/S	111	8	VCP	0000	3127	SOUTHSIDE AVE
453	9/30/2015	296.5	111	D/S	6	8	VCP	5100	2100	SOUTHSIDE AVE
456	9/30/2015	152.8	122	U/S	122	8	VCP	1100	1100	CASTILE ST
459	9/30/2015	333.1	122	D/S	LIFT STATION 2	8	VCP	4231	2214	CASTILE ST
462	9/30/2015	333.6	6	D/S	5	8	VCP	0000	1100	SOUTHSIDE AVE
466	9/30/2015	246.7	97	D/S	96	8	VCP	0000	0000	DEKALB AVE
469	10/1/2015	117.1	118	U/S	167	8	VCP	0000	0000	HWY Y
472	10/1/2015	8.1	120	D/S	118	8	VCP	3100	2100	CASTILE ST
475	10/1/2015	157.3	120	U/S	118	8	VCP	5141	3122	CASTILE ST
477	10/1/2015	421.9	121	D/S	118	8	VCP	0000	1100	CASTILE ST
480	10/1/2015	165.2	2	D/S	LIFT STATION 1	8	VCP	0000	0000	HWY Y
483	10/1/2015	355.3	3	D/S	2	8	VCP	2200	0000	HWY Y
485	10/1/2015	192.2	4	D/S	3	8	VCP	2700	0000	SOUTHSIDE AVE
487	10/1/2015	321.5	5	D/S	4	8	VCP	2100	0000	SOUTHSIDE AVE
490	10/2/2015	167.2	7	D/S	6	8	VCP	5122	0000	RAILROAD AVE

Stewartsville, MO
Asset Value Report
Depreciated Value

Asset Description	Year Installed	Estimated Installation Cost 2021	Age (2020)	Depreciation Period [1]	Depreciation [2]	Depreciated Value [3]
Elevated Tank	1994	$ 638,000.00	27	42	$ 410,142.86	$ 227,857.14
Water Main-1954	1954	$ 1,201,500.00	67	50	$ 1,610,010.00	$ -
Water Main-1980	1980	$ 218,625.00	41	50	$ 179,272.50	$ 39,352.50
Water Main-1990	1990	$ 218,625.00	31	50	$ 135,547.50	$ 83,077.50
Water Main-2000	2000	$ 218,625.00	21	50	$ 91,822.50	$ 126,802.50
Water Main-2010	2010	$ 218,625.00	11	50	$ 48,097.50	$ 170,527.50
Hill Street 6-inch Water Main	2017	$ 151,242.35	4	50	$ 12,099.39	$ 139,142.96
Hydrants	1954	$ 73,500.00	67	50	$ 98,490.00	$ -
Water Services and Meters	1954	$ 595,500.00	67	35	$ 1,139,957.14	$ -
Total Water Assets		$ 3,534,242.35				$ 786,760.10
Wastewater Treatment Plant	1985	$ 313,800.00	36	40	$ 282,420.00	$ 31,380.00
Wastewater Treatment Plant - New Aerators	2015	$ 154,500.00	6	10	$ 92,700.00	$ 61,800.00
Aerator - Rebuild	2021	$ 10,000.00	0	10	$ -	$ 10,000.00
North Lift Station	1975	$ 75,000.00	46	10	$ 345,000.00	$ -
North Lift Station Pump Replacement	2014	$ 10,000.00	7	10	$ 7,000.00	$ 3,000.00
South Lift Station	2012	$ 320,800.00	9	10	$ 288,720.00	$ 32,080.00
Sewer-1975	1975	$ 1,722,270.00	46	50	$ 1,584,488.40	$ 137,781.60
Sewer-1985	1985	$ 88,200.00	36	50	$ 63,504.00	$ 24,696.00
Sewer-1995	1995	$ 162,030.00	26	50	$ 84,255.60	$ 77,774.40
Sewer-2005	2005	$ 162,030.00	16	50	$ 51,849.60	$ 110,180.40
Manholes-1975	1975	$ 434,000.00	46	50	$ 399,280.00	$ 34,720.00
Manholes-1995	1995	$ 52,500.00	26	50	$ 27,300.00	$ 25,200.00
Manholes-2005	2005	$ 52,500.00	16	50	$ 16,800.00	$ 35,700.00
Service Laterals	1975	$ 119,100.00	46	50	$ 109,572.00	$ 9,528.00
Total Wastewater Assets		$ 3,676,730.00				$ 593,840.40

Note 1 - Based on Missouri PSC Rate Case Dockets WR-2015-0138 Village Greens Water Company; WR-2016-0169 Woodland Manor Water Company; WR-2015-0104 Spokane Highlands Water Company; SR-2014-0105 Terre Du Lac Utility Company; SR-2014-0068 P.C.B., Inc.; and SR-2013-0435 Rogue Creek Sewer.

Note 2 - Depreciation = Age/Depreciation Period X Estimated Installation Cost

Note 3 - Depreciated Value = Estimated Installation Cost - Depreciation

APPENDIX I in Engineering Report Prepared by Flinn Engineering, LLC dated 08/16/2021

VILLAGE GREENS WATER COMPANY

SCHEDULE of DEPRECIATION RATES

(WATER Class D)

WR-2015-0138 Attachment D

NARUC USOA ACCOUNT NUMBER	ACCOUNT DESCRIPTION	DEPRECIATION RATE	AVERAGE SERVICE LIFE (YEARS)	NET SALVAGE
	Source of Supply			
311	Structures & Improvements	2.5%	44	-10%
314	Wells & Springs	2.0%	55	-8%
	Pumping Plant			
321	Structures & Improvements	2.5%	44	-10%
325.1	Submersible Pumping Equipment	10.0%	12	-20%
	Water Treatment Plant			
331	Structures & Improvements	2.5%	44	-10%
332	Water Treatment Equipment	2.9%	35	0%
	Transmission and Distribution			
342	Distribution Reservoirs & Standpipes	2.5%	42	-5%
343	Transmission & Distribution Mains	2.0%	50	0%
345	Customer Services	2.5%	40	0%
346.1	Customer Meters, Plastic (Throw Aways)	10.0%	10	0%
347	Customer Meter Pits & Installation	2.5%	40	0%
348	Hydrants	2.0%	50	0%
	General Plant CLASS D			
371	Structures & Improvements	2.5%	40	0%
372	Office Furniture & Equipment	5.0%	20	0%
372.1	Office Electronic & Computer Equip.	14.3%	7	0%
373	Transportation Equipment	13.0%	7	9%
379	Other General Equipment (tools, shop equip., backhoes, trenchers, etc.)	10.0%	8.7	13%

https://www.efis.psc.mo.gov/mpsc/commoncomponents/view_itemno_details.asp?caseno=WR-2015-0138&attach_id=2015030930

*Revised 1/23/2015

APPENDIX I in Engineering Report Prepared by Flinn Engineering, LLC dated 08/16/2021

For Staff Proposed Adoption by Missouri-American Water Company
WM-2016-0169

Woodland Manor Water Company
SCHEDULE of DEPRECIATION RATES dated 4/1/2013
(WATER Class D)
WR-2013-0326

USOA ACCOUNT NUMBER	ACCOUNT DESCRIPTION	DEPRECIATION RATE	AVERAGE SERVICE LIFE (YEARS)	NET SALVAGE
	Source of Supply			
311	Structures & Improvements	2.5%	44	-10%
314	Wells & Springs	2.0%	55	-8%
	Pumping Plant			
321	Structures & Improvements	2.5%	44	-10%
325	Electric Pumping Equip. (Plus Generator)	6.7%	15	0%
328	Other Pumping Equipment	5.0%	20	0%
	WaterTreatment Plant			
332	Water Treatment Equipment	2.9%	35	$0
	Transmission and Distribution			
342	Distribution Reservoirs & Standpipes	2.5%	42	-5%
343	Transmission & Distribution Mains	2.0%	50	0%
345	Customer Services	2.9%	35	0%
346.1	Customer Meters (Installed after 2012)*	10.0%	10	0%
346.2	Bronze Meters and Installs prior 2013	3.3%	30	0%
347	Meter Installations (Meter Pits after 2012)	2.5%	40	0%
348	Hydrants	2.5%	40	0%
349	Other Transmission & Distribution Plant	3.3%	30	0%
	General Plant			
372	Office Equipment & Furniture	5.0%	20	0%
372.1	Office Electronic Equipment	14.3%	7	0%
373	Transportation Equipment	13.0%	7	9%
379	Other General Equipment	6.7%	13	13%

Customer Meters (Installed after 2012)* Plus 18 plastic meters installed in 2007

The above recommended depreciation rates are based on Staff's review of the Company's operation and records.

https://www.efis.psc.mo.gov/mpsc/commoncomponents/view_itemno_details.asp?caseno=WM-2016-0169&attach_id=2016015052

SPOKANE HIGHLANDS WATER COMPANY
DEPRECIATION RATES
(WATER)
CASE NO. WR-2015-0104

ACCOUNT NUMBER	ACCOUNT	DEPRECIATION RATE %	AVERAGE SERVICE LIFE (YEARS)	SALVAGE %
311	Structures & Improvements	2.5%	44	-10%
314	Wells & Springs	2.0%	55	-8%
325	Electric Pumping Equipment			
325.1	Submersible (Well Pump) Equipment	10.0%	12	-20%
325.2	High Service or Booster Pumps	2.0%	7	0%
342	Distribution Reservoirs & Standpipes	2.5%	42	-5%
343	Transmission & Distribution Mains	2.0%	50	0%
345	Services	2.9%	35	0%
346	Meters	2.0%	10	0%
347	Meter Installations	1.0%	50	0%
348	Hydrants	2.5%	40	0%
372	Office Furniture & Equipment	5.0%	20	0%
379	Other General Equipment	6.7%	13	13%

Terre Du Lac Utility Company

DEPRECIATION RATES

(SEWER)

SR-2014-0105

ACCOUNT NUMBER	ACCOUNT DESCRIPTION	DEPRECIATION RATE	AVERAGE SERVICE LIFE (YEARS)	NET SALVAGE
300	Stipulated Plant	2.5%	40	0%
311	Structures and Improvements	2.5%	44	-10%
352.1	Collection Sewers (Force)	2.0%	50	0%
352.2	Collection Sewers (Gravity)	2.0%	50	0%
353	Services	2.0%	50	0%
354	Flow Measurement Devices	3.3%	30	0%
362	Receiving Wells	5.0%	26	-5%
363	Electric Pumping Equipment	10.0%	10	0%
371	Treatment Plant Shed	2.5%	44	-10%
372	Treatment & Disposal Equipment	5.0%	22	-10%
390	Structures & Improvements Office/Shop	2.5%	44	-10%
391	Office Furniture & Equipment	5.0%	20	0%
391.1	Electronic Office Equipment	0.0%	Excessively Accrued	
392	Transportation Equipment	13.0%	7	9%
393	Stores Equipment	4.0%	25	0%
394	Tools, Shop, and Garage Equipment	5.0%	18	10%
395	Laboratory Equipment	8.3%	12	0%
396	Power Operated Equipment	6.7%	13	13%
397	Communication Equipment	3.3%	Over Accrued	

Reviewed, 1/7/2014. The above are standard small company depreciation rates modified as a result of Staff's investigation of the Company's operation, records, and physical plant, and are dependent on the Company's implementation of the end of test year adjustments to the Company's plant in service and accumulated reserves as shown in the Staff accounting schedules.

https://www.efis.psc.mo.gov/mpsc/commoncomponents/view_itemno_details.asp?caseno=SR-2014-0105&attach_id=2014014505

P.C.B., Inc.

SCHEDULE of DEPRECIATION RATES
(SEWER Class C & D)

SR-2014-0068 Attachment D

ACCOUNT NUMBER	ACCOUNT DESCRIPTION	DEPRECIATION RATE	AVERAGE SERVICE LIFE (YEARS)
	COLLECTION PLANT		
311	Structures & Improvements	3.3%	33
352.2	Collection Sewers (Gravity)	2.0%	50
355	Flow Measurement Devices	3.3%	30
	PUMPING PLANT		
362	Receiving Wells	4.0%	26
363	Electric Pumping Equipment	10.0%	10
	TREATMENT & DISPOSAL PLANT		
372	Oxidation Lagoons	4.0%	40
373	Treatment & Disposal Facilities	5.0%	22
375	Outfall Sewer Lines	2.0%	50
	GENERAL PLANT		
391	Office Furniture & Equipment	5.0%	20

Reviewed, 1/07/2014. The above are standard small company depreciation rates modified as a result of Staff's investigation of the Company's operation, records, and physical plant, and are dependent on the Company's implementation of the end of test year adjustments to the Company's plant in service and accumulated reserves as shown in the Staff accounting schedules.

https://www.efis.psc.mo.gov/mpsc/commoncomponents/view_itemno_details.asp?caseno=SR-2014-0068&attach_id=2014016258

Rogue Creek Sewer
Interim Rate Case
SR-2013-0435
Test Year Ending 12-31-2012
Depreciation Expense - Sewer

Line Number	A Account Number	B Plant Account Description	C Adjusted Jurisdictional	D Depreciation Rate	E Depreciation Expense
1		INTANGIBLE PLANT			
2	301.000	Organization	$135	0.00%	$0
3	302.000	Franchises	$1,127	0.00%	$0
4	303.000	Miscellaneous Intangible Plant	$0	0.00%	$0
5		TOTAL INTANGIBLE PLANT	$1,262		$0
6		SOURCE OF SUPPLY PLANT			
7	310.000	Land & Land Rights	$0	0.00%	$0
8	311.000	Structures & Improvements	$2,532	3.00%	$76
9		TOTAL SOURCE OF SUPPLY PLANT	$2,532		$76
10		COLLECTION PLANT			
11	352.100	Collection Sewers - Force	$12,827	2.00%	$257
12	352.200	Collection Sewers - Gravity	$105,094	2.00%	$2,102
13	353.000	Other Collection Plant Facilities	$0	0.00%	$0
14	354.000	Services to Customers	$18,120	2.00%	$362
15	355.000	Flow Measuring Devices	$0	0.00%	$0
16		TOTAL COLLECTION PLANT	$136,041		$2,721
17		PUMPING PLANT			
18	362.000	Receiving Wells and Pump Pits	$1,804	5.00%	$90
19	363.000	Pumping Equipment (Elec.,Diesel, other)	$24,068	10.00%	$2,407
20		TOTAL PUMPING PLANT	$25,872		$2,497
21		TREATMENT & DISPOSAL PLANT			
22	372.000	Oxidation Lagoon	$0	0.00%	$0
23	373.000	Treatment and Disposal Equipment	$31,190	4.50%	$1,404
24	374.000	Plant Sewers	$0	0.00%	$0
25	375.000	Outfall Sewer Lines	$0	0.00%	$0
26	376.000	Other Treatment & Disposal Plant Equip.	$0	0.00%	$0
27		TOTAL TREATEMENT & DISPOSAL PLANT	$31,190		$1,404
28		GENERAL PLANT			
29	391.000	Office Furniture & Equipment	$467	5.00%	$23
30	391.100	Office Computer Equipment	$371	20.00%	$74
31	392.000	Transportation Equipment	$228	13.00%	$30
32	394.000	Tools Shop & Garage Equipment.	$15	5.00%	$1
33		TOTAL GENERAL PLANT	$1,081		$128
34		Total Depreciation	$197,978		$6,826

https://www.efis.psc.mo.gov/mpsc/commoncomponents/view_itemno_details.asp?caseno=SR-2013-0435&attach_id=2013018070

Accounting Schedule:06
Sponsor: Paul R. Harrison

Appendix I-C has been marked CONFIDENTIAL in its entirety.

Appendix J-C has been marked CONFIDENTIAL in its entirety.

Appendix K

Customer Service Transition
City of Stewartsville Acquisition

Current Stewartsville Practice		Proposed MAWC Practice	
Customer Service Physical Location			
Office Location: Stewartsville City Hall 1307 Main Street Stewartsville, MO 64490	Hours of Operation: Monday - Friday 8:00 am – 4:30 pm	Office Location: Missouri-American Water 3524 S. Leonard Road St. Joseph, MO 64503	Hours of Operation: Monday - Friday 7:00 am to 3:30 pm
Customer Service Contact Information			
Contact: Stewartsville City Hall 1307 Main Street Stewartsville, MO 64490 Mailing Address: P.O. Box 270 Stewartsville, MO 64490	Hours Available: Monday - Friday 8:00 am – 4:30 pm	Contact: Customer Service Center (866-430-0820) *OR* Customer Portal www.missouriamwater.com *OR* Direct E-mail welcomemoaw@amwater.com	Hours Available: Customer Service Center Monday – Friday 7:00 am – 7:00 pm (24/7 for emergencies)
Payment Options			
Cash, Check, Credit/Debit Card Pay via mail, online, or at City Hall		Cash or Check Debit/Credit Card Electronic Funds Transfer ("EFT") Pay via mail, telephone, online or at select third party payment locations. No transaction fees for debit/credit cards	
Billing Process			
Meters are read on the 15th of each month; bills are mailed 4 days prior to the first of the month to reach the customers by the first. Bills are due on the 15th. If not paid by the first day of the following month, service is disconnected. There is a $25 reconnect fee or $50 reconnect fee after hours. Customers are also charged 10% of their bill if payment is not received by the 16th.		Standard MAWC billing process Bill generated within 3 days of meter read, with due date of 21 days from invoice date.	

Note: Customers will be integrated into the MAWC systems, and do not need to apply for service at the time of transition.