

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

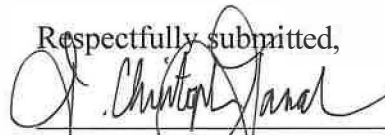
IN THE MATTER OF THE PETITION OF
THE CITY OF MARION, INDIANA, FOR
APPROVAL TO ISSUE BONDS AND ADJUST
ITS RATES AND CHARGES

CAUSE NO. 45838

PREFILED DIRECT TESTIMONY AND EXHIBITS
OF PATRICK R. PINKERTON, P.E.

Prefiled Direct Testimony of Patrick R. Pinkerton, P.E.	<u>Petitioner's Exhibit 6</u>
Resume of Patrick R. Pinkerton, P.E.	<u>Petitioner's Exhibit 7</u>
Preliminary Engineering Report	<u>Petitioner's Exhibit 8</u>

Respectfully submitted,



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*Counsel for Petitioner, City of Marion,
Indiana*

Petitioner's Exhibit 6

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

**IN THE MATTER OF THE PETITION OF
THE CITY OF MARION, INDIANA, FOR
APPROVAL TO ISSUE BONDS AND ADJUST
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CAUSE NO. _____

PREFILED DIRECT TESTIMONY

OF

PATRICK R. PINKERTON, P.E.

ON BEHALF OF

THE CITY OF MARION, INDIANA

I.

INTRODUCTION

- 1
- 2
- 3 **1. Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**
- 4 A. My name is Patrick R. Pinkerton and my business address is 1540 N. Washington
- 5 Street, Marion, Indiana 46952.
- 6 **2. Q. MR. PINKERTON, BY WHOM ARE YOU EMPLOYED?**
- 7 A. I am employed by the City of Marion, Indiana ("Marion"), as the Assistant Director
- 8 for Engineering of Marion Municipal Utilities.
- 9 **3. Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL**
- 10 **BACKGROUND.**
- 11 A. I received a Bachelor of Science degree from Ball State University in 1988. I was
- 12 a biology major and chemistry minor. Through a combination of education and
- 13 experience, I was able to sit for the Professional Engineering exams and received
- 14 my certification as a professional engineer in October, 1999, Professional Engineer
- 15 No. 10000105. I am also a Class II Wastewater Treatment Operator. A copy of
- 16 my current resume is attached to my testimony as Petitioner's Exhibit 7.
- 17 **4. Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE INDIANA**
- 18 **UTILITY REGULATORY COMMISSION ("COMMISSION")?**
- 19 A. Yes, I have. I testified on behalf of Marion Municipal Utilities in its prior financing
- 20 and rate case, Cause No. 42720.
- 21 **5. Q. MR. PINKERTON, WHAT IS THE PURPOSE OF YOUR TESTIMONY IN**
- 22 **THIS CAUSE?**

1 Street to the south, Pennsylvania Boulevard to the east, and Miller Avenue to the
2 west. A map depicting the service area is included as Figure 1.1. in my Preliminary
3 Engineering Report ("PER"). For the Commission's reference, a copy of my PER
4 is attached to my testimony as Petitioner's Exhibit 8.

5 **7. Q. PLEASE DESCRIBE THE UTILITY'S SOURCE OF SUPPLY AND THE**
6 **TREATMENT PROCESS USED AT THE FILTRATION PLANT.**

7 A. The raw water source is groundwater from a combination of twelve (12) production
8 wells located primarily to the north and east of the treatment plant. The existing
9 water treatment facility is located on Bond Ave and was built in 1970. Upgrades
10 were made in 1987 with the addition of the Claricones to improve the lime softening
11 process. The most recent upgrades involved replacement of the filtration system in
12 2014. Marion Municipal Utilities' drinking water treatment process consists of
13 lime softening, filtration, and disinfection with a maximum treatment capacity of
14 twelve million (12,000,000) gallons per day.

15 **8. Q. PLEASE DESCRIBE MARION'S EXISTING WATER STORAGE.**

16 A. Marion Municipal Utilities has a storage capacity of approximately four million
17 (4,000,000) gallons. The Butler and Meridian elevated tanks were installed in the
18 1950's and each have a capacity of five hundred thousand (500,000) gallons. The
19 26th St (High School) elevated tank was installed in 1970 and has a capacity of one
20 million (1,000,000) gallons. An additional two million (2,000,000) gallons of
21 storage is located at the treatment facility in a concrete underground tank that was
22 originally installed in 1970.

III.
CAPITAL IMPROVEMENTS

1
2
3
4 **9. Q. HAS MARION IDENTIFIED CERTAIN CAPITAL IMPROVEMENTS**
5 **THAT SHOULD BE MADE TO ENSURE SAFE, RELIABLE, AND**
6 **EFFICIENT SERVICE TO ITS CUSTOMERS?**

7 A. Yes, it has. Marion Municipal Utilities has continually made improvements to its
8 water facilities when appropriate, but, as is the case with many water systems in the
9 State of Indiana and across the country, many of its water mains are aged, aging,
10 and in need of repair and/or replacement. To this end, Marion Municipal Utilities
11 has prepared a list of capital improvements that need to be made to its system, some
12 of which will be funded by proceeds from the issuance of the long term debt or
13 bonds ("Bonds") proposed in this Cause and others will be funded through rates as
14 part of the proposed revenue requirement for extensions and replacements
15 ("Extensions and Replacements"). As more fully explained by Ms. Wilson in her
16 prefiled papers, Marion proposes to issue two series of Bonds in 2023 and 2025 to
17 complete the Bond-funded portion of the capital improvements.

18 **10. Q. MR. PINKERTON, CAN YOU EXPLAIN THE PROCESS BY WHICH**
19 **MARION DETERMINED THE NEED FOR AND PRIORITY OF THE**
20 **PROPOSED CAPITAL IMPROVEMENTS?**

21 A. Yes, I can. As I stated earlier, our records indicate that the average age of the
22 distribution system components is seventy-two (72) years. As is typical with aging
23 infrastructure, the number of failures is increasing in frequency. In some areas of

1 the city, fire protection needs have also changed over the years. In 2006, CDM
2 Consulting was asked to prepare a distribution system master plan ("Master Plan").
3 The Master Plan included a hydraulic model of the system which was last updated
4 in 2018. The information provided by this model (in the Master Plan), along with
5 records of structural failures, preventative maintenance records, and the
6 consequence of failures, have guided our decisions on all of the project priorities.

7 **11. Q. PLEASE EXPLAIN HOW MARION DETERMINED THE ESTIMATED**
8 **COST OF THE PROPOSED CAPITAL IMPROVEMENTS?**

9 A. Over the past few years construction costs have been very volatile and the
10 availability of materials, supplies, and labor has been unreliable. Despite the recent
11 volatility and uncertainty surrounding utility projects in general, I estimated the
12 anticipated cost of our proposed projects based on past projects of similar nature.
13 Some of the projects I reviewed were projects that we had previously completed
14 while others were projects that were done in other communities. We have tried to
15 account for more recent inflation by discussing these types of projects with local
16 contractors, suppliers, and industry experts. With the pricing volatility, we have
17 continued to update the cost estimates for all of the capital improvements up to the
18 date of this pre-filing. Unfortunately, the estimated prices for our projects have now
19 increased to the point where they are now greater than what Ms. Wilson originally
20 reflected in her revenue requirements report (dated August 15, 2022).

21 **12. Q. DOES MARION MUNICIPAL UTILITIES PLAN ON UPDATING THE**
22 **REVENUE REQUIREMENTS REPORT, AS WELL AS THE RATE AND**

BOND ORDINANCES, TO REFLECT THE NOW HIGHER COSTS?

A. No, we do not. The rate and bond ordinances have already been approved by the Common Council for the City of Marion, Indiana ("Council"), and the Council feels comfortable with the amount of the rate increase that was proposed at that time. If the prices for the proposed capital improvements continue to stay higher than what was originally estimated, then Marion will not be able to complete all of the capital improvements at this time. By the time this project will be bid, Marion Municipal Utilities hopes the prices will stabilize and we will be able to complete all the projects as anticipated.

13. Q. HOW DOES MARION PROPOSE TO FUND ITS PROPOSED CAPITAL IMPROVEMENTS?

A. As I mentioned earlier, Marion Municipal Utilities plans to fund its proposed capital improvements in two ways. First, we plan on issuing two series of Bonds, one in 2023 in the estimated amount of \$8,185,000, and another in 2025 with an estimate par amount of \$3,515,000. The Bond proceeds will fund the specific projects outlined on page 11 of Ms. Wilson's report. Second, Marion Municipal Utilities' municipal advisor, Ms. Wilson, has included an amount in rates for Extensions and Replacements which will be used to pay for certain capital improvements on a pay as you go basis. On page 11 of her revenue requirements report, Ms. Wilson also identified each project and its estimated cost that is part of the proposed Extensions and Replacements (i.e. Petitioner's Exhibits 10 and 11).

14. Q. DID YOU PROVIDE MS. WILSON WITH THE CAPITAL

1 **IMPROVEMENTS LISTED ON PAGE 11 OF HER REVENUE**
2 **REQUIREMENTS REPORT, PETITIONER'S EXHIBIT 10?**

3 A. Yes, I did. I provided Ms. Wilson with each of the projects identified on page 11
4 of her revenue requirements report, as well as the estimated cost of each project.
5 As I testified earlier, however, the estimates provided on page 11 of Ms. Wilson's
6 report are different than the cost estimates contained in my PER due to the recent
7 volatility in construction prices.

8 15. **Q. WHY DOES MS. WILSON'S REPORT CONTAIN DIFFERENT COST**
9 **ESTIMATES FOR THE PROPOSED CAPITAL IMPROVEMENTS AS**
10 **COMPARED TO YOUR PER?**

11 A. It is a question of timing. In order to begin our conversations with the Council, Ms.
12 Wilson had to complete her report and then share her report and its results with our
13 cost of service consultant, Mr. Andrew Burnham. Mr. Andrew Burnham then
14 completed his cost of service analysis and shared a copy of the same with the
15 working group. Counsel for Marion Municipal Utilities then prepared a proposed
16 rate ordinance reflecting the new rates. The proposed ordinance, along with the
17 supporting studies from Ms. Wilson and Mr. Burnham were shared and discussed
18 with the Council for several weeks and then the Council ultimately approved and
19 adopted the rate ordinance, Ordinance No. 25-2022, adopted on November 16,
20 2022.

21 In the meantime, I continued to work on my PER for submission to the SRF
22 Program on or before March 1, 2023 deadline. Since Ms. Wilson completed her

1 revenue requirements report on August 15, 2022, the estimated costs for the
2 proposed improvements have increased and such increases are reflected in my PER,
3 but not in the original revenue requirements report dated August 15, 2022 (i.e
4 Petitioner's Exhibit 10). Ms. Wilson has, however, prepared a revised capital
5 improvement plan, Petitioner's Exhibit 11, that is consistent with the cost estimates
6 contained in my PER.

7 **IV.**
8

9 **BOND – FUNDING FOR CAPITAL IMPROVEMENTS**
10

11 **16. Q. HAVE YOU PREPARED A REPORT THAT DESCRIBES THE PROJECTS**
12 **TO BE FUNDED WITH THE PROCEEDS FROM THE BONDS?**

13 A. Yes, I have. The PER, Petitioner's Exhibit 8, dated December 8, 2022, describes
14 the capital improvements that will be funded with the proceeds from the first series
15 of Bonds (in 2023).

16 **17. Q. WHAT IS THE PURPOSE OF THE PER?**

17 A. Marion Municipal Utilities will submit the PER to the Indiana Finance Authority
18 with the goal of obtaining a low interest loan or grant from the Indiana State
19 Revolving Fund Loan Program (“SRF Program”), the proceeds from which will be
20 used to make the contemplated improvements.

21 **18. Q. PLEASE DESCRIBE THE CONTENTS OF YOUR PER.**

22 A. The PER contains 8 sections. The first section describes the project location and
23 provides a general background of the various projects and their location within the
24 system. The second section describes the current needs of the Utility. The third

1 section describes the future needs of Marion Municipal Utilities over the next
2 twenty (20) years. The fourth section evaluates the various alternatives for
3 upgrading of our existing facilities. The fifth section evaluates the environmental
4 impacts that are anticipated as a result of the proposed projects. The sixth section
5 identifies the five different projects that Marion Municipal Utilities proposes to
6 complete, as well as provides a timeline for completion of the same. The seventh
7 section details the legal, financial, and financial capabilities of Marion Municipal
8 Utilities, and the eighth section describes the public participation.

9 **19. Q. PLEASE DESCRIBE THE CAPITAL IMPROVEMENT PROJECTS TO BE**
10 **FUNDED WITH PROCEEDS FROM THE BONDS?**

11 A. Listed below are summaries of the projects proposed to be funded with the proceeds
12 from the proceeds of the 2023 and 2025 Bonds: The information provided by the
13 hydraulic model along with records of structural failures places the follow areas at
14 the highest priority with regards to the distribution system:

15 Western, 10th St. to 7th St.: This project, in the 2023 Bond, will be located on
16 Western Ave. and will tie in dead-end mains, increase fire protection, improve
17 water pressure, and eliminate structural deficiencies with the existing main. The
18 proposed 12” water main will replace the existing 6” main connecting at 10th St.
19 and Western Ave., to a 12” water main that is proposed for the 2024 construction
20 year, then going north, on Western Ave., and ending at the intersection of Western
21 Ave. and 7th St.

Verified Direct Testimony of Patrick R. Pinkerton
Petitioner's Exhibit 6
City of Marion, Indiana
Page 10 of 13

1 Mason - 11th St. to Terrace Ave.: This project, in the 2023 Bond, will be located
2 on Mason Blvd. and will tie in dead-end mains, improve water pressure, and
3 eliminate structural deficiencies with the existing main. This water line project will
4 start on the east side of Baldwin Ave. at the intersection of 11th St. and Western
5 Ave. and connect into an existing 12” water main then go north to the intersection
6 of 10th St. and Western Ave., then go northeast on Mason Blvd. to the end at Terrace
7 Ave. and connect into an existing 8” water main.

8 7th St., Butler Ave. to Western Ave.: This project, in the 2023 Bond, will be located
9 on 7th St. and will tie in a dead-end main, improve fire protection and water
10 pressure, and eliminate structural deficiencies with the existing main. The proposed
11 12” water main will replace the existing 4” main connecting at 7th St. and Butler
12 Ave., then go east to the end of 7th St., at the intersection of 7th St. and Western
13 Ave.

14 Mason Blvd, 11th to 16th St.: This project, in the 2025 Bond, will be located along
15 Mason Blvd and will tie in dead-end mains, improve fire protection and water
16 pressure while eliminating structural deficiencies with the existing main. The
17 proposed 12” main will replace the existing 6” main starting at 16th St then go
18 northeast along Mason Blvd and connect to the existing 12” main at 11th and
19 Baldwin.

20 Elevated Storage Tank Rehab: Routine inspections of the Butler and Meridian
21 elevated tanks indicate that the last rehab/coating projects in 2004 and 2005 has

1 reached the end of their useful life. Both tanks will require attention to continue in
2 beneficial service. The tanks will require blasting to bare metal and new coatings
3 applied. At the same time, structural, safety, and operational deficiencies will be
4 corrected and brought up to code. Rehabilitation of the Butler tank is included in
5 the 2023 Bond whereas rehabilitation of the Meridian tank is included in the 2025
6 Bond.

7 Advanced Metering Infrastructure: As the distribution system has aged, so has the
8 metering system. The water utility would like to take advantage of the
9 advancements made with ultrasonic metering. The ability to better monitor water
10 usage and measure more accurately will result in better customer service and lower
11 water loss. With the 2023 Bond, Marion plans to implement an Advanced Metering
12 Infrastructure (“AMI”) system to collect water meter readings via a new fixed
13 communication network. The existing metering system is at the end of its useful
14 life, and the improvements will include an upgrade of portions of the existing water
15 meter reading and billing system.

16 Lead Service Line Abatement: Marion, like most communities, is facing more
17 stringent regulations regarding lead service lines. It is estimated that there are from
18 6,000 to 9,000 lead service lines in Marion’s system that need to be disconnected
19 or replaced. Therefore, the 2025 Bond includes an area of the city identified as
20 Phase I to start the removal and/or replacement of these old service lines.
21 Replacement of the lead service lines will not only result in better service for the
22 customer but also reduce the risk of exposing the residents to potentially hazardous

1 materials.

2 **20. Q. WHEN WILL MARION SUBMIT ITS APPLICATION TO THE SRF**
3 **PROGRAM FOR THE 2023 BONDS?**

4 A. Marion intends to submit its application and PER to the SRF Program on or before
5 March 1, 2023.

6 **21. Q. HAVE YOU PREPARED PLANS AND SPECIFICATIONS FOR THE**
7 **PROPOSED PROJECTS AND SUBMITTED THE NECESSARY**
8 **APPLICATIONS TO THE INDIANA DEPARTMENT OF**
9 **ENVIRONMENTAL MANAGEMENT ("IDEM")?**

10 A. Not yet. Upon completion of the application and PER and submission of the same
11 to the SRF Program, my staff and I will complete the design plans and
12 specifications and submit a construction permit application to IDEM.

13 **22. Q. IS IT YOUR OPINION THAT THE CAPITAL IMPROVEMENTS ARE**
14 **REASONABLE AND NECESSARY FOR MARION TO CONTINUE TO**
15 **PROVIDE RELIABLE SERVICE TO ITS CUSTOMERS?**

16 A. Yes. As I have previously stated, the capital improvements will provide more
17 reliable water service and quality. The capital improvements will serve to protect
18 public health by improving fire protection and reducing the ability for lead from
19 the old service lines to contaminate the water distribution system and reducing
20 interruptions to service that result from water main breaks along the Mason Blvd,
21 7th Street, and 16th Street areas. Similarly, the proposed improvements to the
22 elevated storage tanks will help keep adequate pressure within the system for fire

1 protection and safeguard the water quality.

2 **23. Q. DO YOU BELIEVE THE COST ESTIMATES FOR THE PROJECT AS SET**
3 **FORTH IN THE PER ARE REASONABLE ESTIMATES OF WHAT IT**
4 **WILL ACTUALLY COST TO MAKE THE PROPOSED**
5 **IMPROVEMENTS?**

6 A. Yes. I believe these are reasonable projections of the actual cost that will be
7 incurred for the capital improvement projects. Needless to say, they are estimated
8 costs, and there can no doubt be some variation in cost for most, if not all, the
9 components of the capital improvements. We have attempted to account for
10 marginal inflation as well. Therefore, I believe the cost estimates are reasonable.
11 The capital improvements will be put out to bid to reputable contractors, and the
12 actual cost will be trued-up with the estimates upon completion of the
13 improvements. The purpose of the estimate here is to provide the Commission with
14 an idea of what to expect, not to identify the exact, final cost that will be
15 incorporated into the financing.

16 **IV.**
17 **CONCLUSION**

18 **24. Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

19 A. Yes, it does.

VERIFICATION

I affirm under the penalties for perjury that the foregoing testimony is true to the best of my knowledge, information, and belief.


A handwritten signature in black ink, appearing to read 'Patrick R. Pinkerton', written over a horizontal line.

Patrick R. Pinkerton, P.E.
City of Marion, Indiana

CERTIFICATE OF SERVICE

I certify that a copy of the foregoing “Verified Direct Testimony and Exhibits of Patrick R. Pinkerton, P.E.” was served upon the following by electronic mail this 10th day of January, 2023:

Indiana Office of Utility Consumer Counselor
infomgt@oucc.in.gov



J. Christopher Janak

Petitioner's Exhibit 7

PATRICK R. PINKERTON P.E.

Addresses:

Home:
1386 E. 700 N.
Marion, IN 46952
(765)981-4972

Work:
1540 N. Washington St.
Marion, IN 46952
(765)664-2391

Education:

High School: Eastbrook High School, Marion, IN
1980-1984

College Ball State University, Muncie, IN
1984-1988; Bachelor of Science; Biology Major, Chemistry Minor

Indiana Purdue Fort Wayne, Fort Wayne, IN
1994-1995; Course work towards Engineering

Indiana Wesleyan University, Marion, IN
1995-1996; Course work towards Engineering

Certificates/Licenses:

Engineer Intern (E.I.) #1345, October, 1996

Municipal Wastewater Treatment Operator, Class II #13925
November, 1997

Indiana Professional Engineer (P.E.) #10000105, October, 1999

Work Experience:

January 2015-Present

Assistant Director for Engineering-Marion Utilities:
Responsibilities include: Overseeing the Engineering functions of water, sanitary, and storm main projects, maintenance of the sanitary, combined and storm sewer collection system focusing on combined sewer overflow reduction to remain in compliance with IDEM regulations. Overseeing the functions of the Storm Water, and Solid Waste Utilities. Recommend departmental structure and staffing. Aid in developing and implementing policies, procedures and goals. Responsible for financial

and budgetary planning of department, public relations, emergency functions, employee work activities, etc.

November 1998-January 2015

Engineering/System Maintenance Superintendent-Marion Utilities: Responsibilities include: Overseeing the Engineering functions of water, sanitary, and storm main projects, maintenance of the sewer collection system focusing on combined sewer overflow reduction to remain in compliance with IDEM regulations. Recommend departmental structure and staffing. Aid in developing and implementing policies, procedures and goals. Responsible for financial and budgetary planning of department, public relations, emergency functions, employee work activities, etc.

August 1998-November 1998

Utility Engineer-Marion Utilities; Responsibilities include: Overseeing design, construction, and management of water, sanitary and storm main projects, evaluating existing systems for improvements, review of plans and specifications for new developments, set project priorities.

May 1989-August 1998

Assistant Engineer-Marion Utilities; Assisted with design, drafting, coordination and inspection of water, sanitary and storm projects. Review and evaluate storm water detention pond and storm water runoff calculations for new developments.

Professional Organizations:

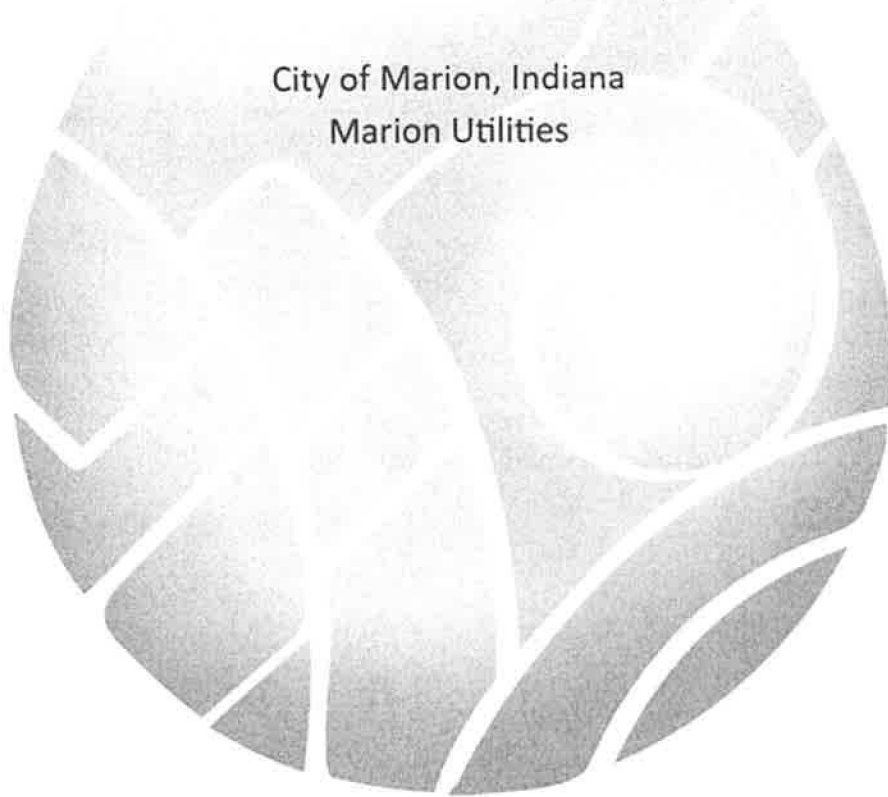
Water Environment Federation
Indiana Water Environment Association

Petitioner's Exhibit 8

**DRINKING WATER
STATE REVOLVING LOAN FUND**

Preliminary Engineering Report

City of Marion, Indiana
Marion Utilities



Prepared by Marion Utilities, 1540 N. Washington St., Marion, IN • December 8, 2022

Patrick R. Pinkerton, P.E.

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Appendices

- Appendix A: 2006 CDM Water Distribution Masterplan and 2018 Update Memorandum
- Appendix B: Marion Utilities 5-Year Distribution System Priority Projects
- Appendix C: T.I.C. Butler Ave Tank Evaluation Report
- Appendix D: T.I.C. Meridian St Tank Evaluation Report
- Appendix E: Advanced Meter Infrastructure Project Proposal
- Appendix F: Distribution System Maps
- Appendix G: Environmental Impact Documents
- Appendix H: Preliminary Design Summary (Attachment E)
- Appendix I: Legal and financial Documents
- Appendix J: Public Participation Documents
- Appendix K: Lead Service Line Abatement Documents

Ch. 1: Project Location

1. General Background

The City of Marion is located in Grant County, Indiana close by the neighboring communities of Gas City, Jonesboro, Sweetser, and Van Buren. The city is approximately 13 square miles and is primarily a residential and commercial community. The water system consists of 12 ground water wells, approximately 180 miles of distribution mains, 1700 fire hydrants, 2,000,000 gallons of elevated storage, 2,000,000 gallons of underground storage, and 1 booster station. The water treatment consists of lime softening, filtration and disinfection, and finished water reservoir and pumps. The system serves approximately 30,000 people consisting of 11,000 commercial, industrial, and residential accounts.

The City of Marion's service is primarily bounded by Chapel Pike to the North, 50th St to the south, Pennsylvania Blvd to the east, and Miller Ave to the west. The existing service area along with the proposed project areas are shown in Figure 1.1.

The 20-year service area is roughly the same as the existing with the exception of some growth towards the Marion Municipal Airport and contiguous subdivisions as shown in Figure 1.1.

2. Project Location

This Preliminary Engineering Report includes six projects. The projects are briefly described as follows:

Distribution Projects:

The water main replacement projects focus on one central part of the city that has experienced a high rate of structural fail and lower than desired available fire flow. These projects encompass an area of Mason Blvd from Terrace Ave to 16th St, Western Ave from 10th to 7th St, and Butler Ave from Western to Butler Ave. See Fig. 1.2.

The project area includes the following locations:

City: Marion

County: Grant

Civil Township: Franklin, Center

It also includes these USGS Quadrangle Map Locations:

Marion Quadrangle, Township: T24N, Range: 7E, Section: 12

Marion Quadrangle, Township: T25N, Range: 8E, Section: 6

Marion Quadrangle, Township: T25N, Range: 7E, Section: 1

Butler Tank Rehabilitation:

The Butler Ave tank is located in the area of 2nd St and Butler Ave. It was constructed in the 1950's and the last rehabilitation work on it was performed in 2005. In 2019, repairs to the riser foundations were performed. In 2022, an inspection by Tank Industry Consultants showed more rehabilitation work would be required. See Fig 1.3.

The project area includes the following locations:

City: Marion
County: Grant
Civil Township: Franklin

It also includes this USGS Quadrangle Map Location:
Marion Quadrangle, Township: T25N, Range: 7E, Section: 1

Meridian St Tank Rehabilitation:

The Meridian St tank is located in the area of 26th St and Meridian St. It was constructed in the 1950's and the last rehabilitation work on it was performed in 2004. In 2019, repairs to the riser foundations were performed. This tank serves mainly as storage capacity, however, in the event that one of the other two elevated tanks is out of service, it can also provide added pressure to the system. In 2022, an inspection by Tank Industry Consultants showed more rehabilitation work would be required. See Fig. 1.4.

The project area includes the following locations:

City: Marion
County: Grant
Civil Township: Center

It also includes this USGS Quadrangle Map Location:
Marion Quadrangle, Township: T24N, Range: 8E, Section: 7

Water Meter Replacement/AMI:

The distribution system contains approximately 11,000 water meters throughout the entire service area. These primarily consist of positive displacement and velocity flow meters. In terms of age, it is estimated that many have been in use longer than twice their usual life expectancy. See Fig. 1.5.

The project area includes the following locations:

City: Marion
County: Grant
Civil Township: Pleasant, Washington, Franklin, Center

It also includes these USGS Quadrangle Map Location:
Marion Quadrangle, Township: T24N, Range: 9E, Section: 5-8
Marion Quadrangle, Township: T24N, Range: 8E, Section: 1-12, 16-21,30

Marion Quadrangle, Township: T24N, Range: 7E, Section: 11-14, 22, 25
Marion Quadrangle, Township: T25N, Range: 7E, Section: 25, 26, 35, 36
Marion Quadrangle, Township: T25N, Range: 8E, Section: 20, 28-33

Lead/Copper Service Line Abatement:

It is estimated that the City of Marion's distribution system contains 6,000 to 9,000 lead service lines. These service lines are located throughout the service area concentrating in the older areas of town. Historically, sampling shows that action levels for lead and copper have never been reached. Regardless, with future mandates, the city wishes to start addressing the situation. See Fig. 1.6.

The project area includes the following locations:

City: Marion

County: Grant

Civil Township: Pleasant, Washington, Franklin, Center

It also includes these USGS Quadrangle Map Location:

Marion Quadrangle, Township: T24N, Range: 9E, Section: 5-8

Marion Quadrangle, Township: T24N, Range: 8E, Section: 1-12, 16-21,30

Marion Quadrangle, Township: T24N, Range: 7E, Section: 11-14, 22, 25

Marion Quadrangle, Township: T25N, Range: 7E, Section: 25, 26, 35, 36

Marion Quadrangle, Township: T25N, Range: 8E, Section: 20, 28-33

3. Legal Access

The distribution, lead service line, and meter replacement projects will be installed within the city's street Right-of-way. Similarly, the Butler Ave and Meridian St tanks are located on property owned by the city. The city does not foresee the need of any property or easement purchases.

Ch. 2: Current Needs

1. Description of Facilities

- a. The distribution system consists of over 180 miles of water main ranging in size from 4" to 24". Materials consist mainly of C.I.P. and D.I.P. with smaller amounts of PVC and HDPE. The system contains 1 booster station that controls pressure along S.R. 18 to 169. In general, the dates of installation range from approximately 1900 to present day. In 2006, CDM Consulting was asked to prepare a distribution system masterplan. The masterplan included a hydraulic model of the distribution system and helped identify areas of the system that needed attention with regards to fire flow. The model has been updated as recently as 2018 (2006 Masterplan Executive Summary and 2018 Model Update Memorandum is included in Appendix A) and proves to be a valuable guide in planning projects to address pressure and fire flow within the system. The Masterplan, along with records of main breaks has been used to develop the 5-year Plan and Distribution Project Priority List in Appendix B.

- b. Butler Ave. Tank is a 500,000-gallon elevated water tank that was built by the Pittsburgh-Des Moines Steel Company in the 1950s. The tank is of all welded double ellipsoidal design with eight tubular columns, two struts, and a six-foot diameter riser. Operationally, Butler Ave. Tank helps to regulate pressure throughout the distribution system while also providing additional storage capacity. In 2005, a full rehabilitation was performed whereby the interior and exterior of the tank was blasted to bare metal then repainted. Then in 2019, major repairs to the foundations of each riser was performed. Regular inspections have occurred periodically as required, but no other substantial updates have been completed. Earlier in 2022, Tank Industry Consultants inspected the tank once again and reported that the interior coatings and condition of the metal were of great concern. Other problems included a potentially significant structural deficiency, a long list of ANSI/OSHA and safety-related deficiencies, and three AWWA, sanitary, and operational deficiencies. (See Appendix C)

- c. Meridian Street Tank is a 500,000-gallon elevated water tank that was built by the Pittsburgh-Des Moines Steel Company in the 1950s. The tank is of all welded double ellipsoidal design with eight tubular columns, two struts, and a six-foot diameter riser. Operationally, Meridian Street Tank serves as storage capacity. But when one of the other two elevated tanks is out of service, it also serves to add pressure to the system. In 2004, a full rehabilitation was performed whereby the interior and exterior of the tank was blasted to bare metal then repainted. Then in 2019, major repairs to the foundations of each riser was performed. Regular inspections have occurred periodically as required, but no other substantial updates have been completed. Earlier in 2022, Tank Industry Consultants inspected the tank once again and reported that both the interior and exterior coatings would need to be

repainted in the near future. Other problems included a long list of ANSI/OSHA and safety-related deficiencies and three AWWA, sanitary, and operational deficiencies. (See Appendix D)

- d. The distribution system of Marion Utilities is home to approximately 11,000 water meters. They consist primarily of positive displacement and velocity flow meters from vendors such as Neptune, Badger, Sensus, etc. For the last three years, we have changed out an average of 316 per year. At that rate, we can assume that some of our meters have been in the ground nearly twice their typical useful life expectancy. As with anything containing mechanical components, over time they wear out and slow down. Operationally, maintaining a system with that many aging water meters means a great deal of manpower must be dedicated to reading, rereading, testing, rebuilding, and changing out those meters. Additionally, metering inaccuracies could be responsible for lost revenue and water loss miscalculations. Given the improvements in metering technology over the last three decades, Marion Utilities wishes to upgrade the entire system. Ultrasonic meters are more accurate and will not decline in performance over time. These can also be equipped with acoustic leak detection capabilities with data being collected continuously using radio signals. The meters can be interrogated in real time by customer service representatives or other administrative staff. From a financial perspective, metering technology is cheaper now than it was when first developed. More accurate meters should also mean increased revenue. Faster leak detection means customers can be alerted and the situation addressed sooner to eliminate unnecessary waste. (See Appendix E)

- e. In response to the EPA's Revised Lead and Copper Rule, Marion Utilities must conduct a survey of our distribution system then develop a plan for removing service lines as required. Pre-survey estimates indicate more than 80% of our services may contain lead. Historically, we have never approached the action levels for lead and copper and do not anticipate that occurring in the future. However, we also wish to stay as far from it as possible. Regardless, with future mandates approaching, this is a project we must plan to handle. An area of the City containing approximately 145 lead service lines has been identified for **phase I** of this project. This area has been chosen based on age of the service lines as well as density of residential customers in the area.

2. Current Population

- a. Based on estimates from the United States Census Bureau, the current population of Marion is 28,177.

3. 12 Month Consumption Records

- a. Based upon the available data over the last 12 months, it is estimated that the total yearly water loss is approximately 23%. See Table 2.1 for 12-month water consumption and calculations.
- b. The Utility is aware of the amount of non-revenue water and is taking steps to accurately measure the pumped vs. sold water by doing the following:
 - i. Monitor and calibrate the water plant meter
 - ii. System-wide replacement of customer meters
 - iii. Monitoring of backflow prevention devices
 - iv. Document fire hydrant flushing

Table 2.1 Consumption Records

Consumption Records (units = 1,000 gallons)

Peak Design Flow of 12 MGD

	Treated Water Pumped	Total Water Sold	Residential	Commercial/ Institutional	Industrial	Average Daily Flow	Backwash Water Monthly Total	Peak Daily Flow	1-hour Peak Flow	Peaking Factor Peak Daily Flow:Avg Daily Flow
Nov 21	109,549	67,660	35,360	24,270	5,939	3,652	3,747	4,355	8,366	1.19:1
Dec 21	117,897	62,436	30,644	22,525	7,161	3,803	2,905	4,236	8,426	1.11:1
Jan 22	131,516	57,679	29,532	19,832	5,595	4,242	3,489	4,898	8,530	1.15:1
Feb 22	128,328	60,636	30,067	29,391	5,951	4,583	4,092	4,976	8,710	1.09:1
Mar 22	131,091	65,434	31,450	26,113	5,314	4,370	3,352	4,970	8,482	1.14:1
Apr 22	117,871	69,851	33,010	26,760	6,227	3,932	2,789	4,228	7,987	1.08:1
May 22	115,002	69,014	36,262	23,437	6,588	3,710	2,877	4,469	8,080	1.2:1
Jun 22	122,490	76,482	32,433	25,739	6,429	4,083	3,545	4,572	8,041	1.12:1
Jul 22	119,734	70,073	31,628	27,897	7,819	3,862	3,764	4,758	7,958	1.23:1
Aug 22	115,912	73,464	36,282	28,125	6,942	3,864	3,223	4,121	8,192	1.07:1
Sep 22	114,309	73,140	34,203	29,740	6,929	3,810	3,253	4,216	8,589	1.11:1
Oct 22	109,307	67,562	30,349	26,994	7,997	3,526	2,964	4,033	8,432	1.14:1
TOTAL	1,433,006	813,431								

Total Non Revenue Water:	619,575
Main flushing (not metered):	100,000
Fire protection (not metered):	50,000
Street cleaning/sewer flushing:	15,000
In-house authorized consumption:	125,000
Estimated Public Water Use:	290,000
Water Loss:	329,575
%Water Loss:	23%

4. Significant Water Users

- a. Table 2.2 is a list of the City’s current top 20 water users. This list is based on data from November 2021 through October 2022. On average, the sum of these users equals approximately 1/3 of the Utility’s average use.

Table 2.2 Marion Water Utility Top 20 Users by Average Monthly Volume

Ranking	Customer	Rate Class	Volume, CCF
1	Indiana Wesleyan University	Institutional	4,363
2	Marion Health	Institutional	2,322
3	BICC	Industrial	2,248
4	Café Valley	Industrial	2,225
5	Veteran’s Medical Center	Institutional	1,998
6	Stonecrest Mobile Home Park	Commercial	1,425
7	Atlas Foundry	Industrial	1,208
8	Marion Housing	Institutional/Residential	978
9	Metal Fabricating Division (General Motors)	Industrial	801
10	Top Dog Car Wash	Commercial	587
11	Prestwick Square	Commercial	586
12	Grant County Complex	Institutional	471
13	Steve’s Car Wash	Commercial	466
14	Wesleyan Nursing Home	Institutional	412
15	Woodlands Mobile Home Park	Commercial	387
16	Marion Splash House (City of Marion)	Commercial	379
17	Miller’s Health System	Institutional	355
18	Marion Schools	Institutional	334
19	Crandall Properties	Commercial	312
20	Summerset Apartments	Commercial	276
Total Hundred Cubic Feet			22,033
Total Gallons			16,480,684

5. Existing Water Distribution System Layout

Please Refer to Appendix F for the existing water system layout

Ch. 3: Future Needs

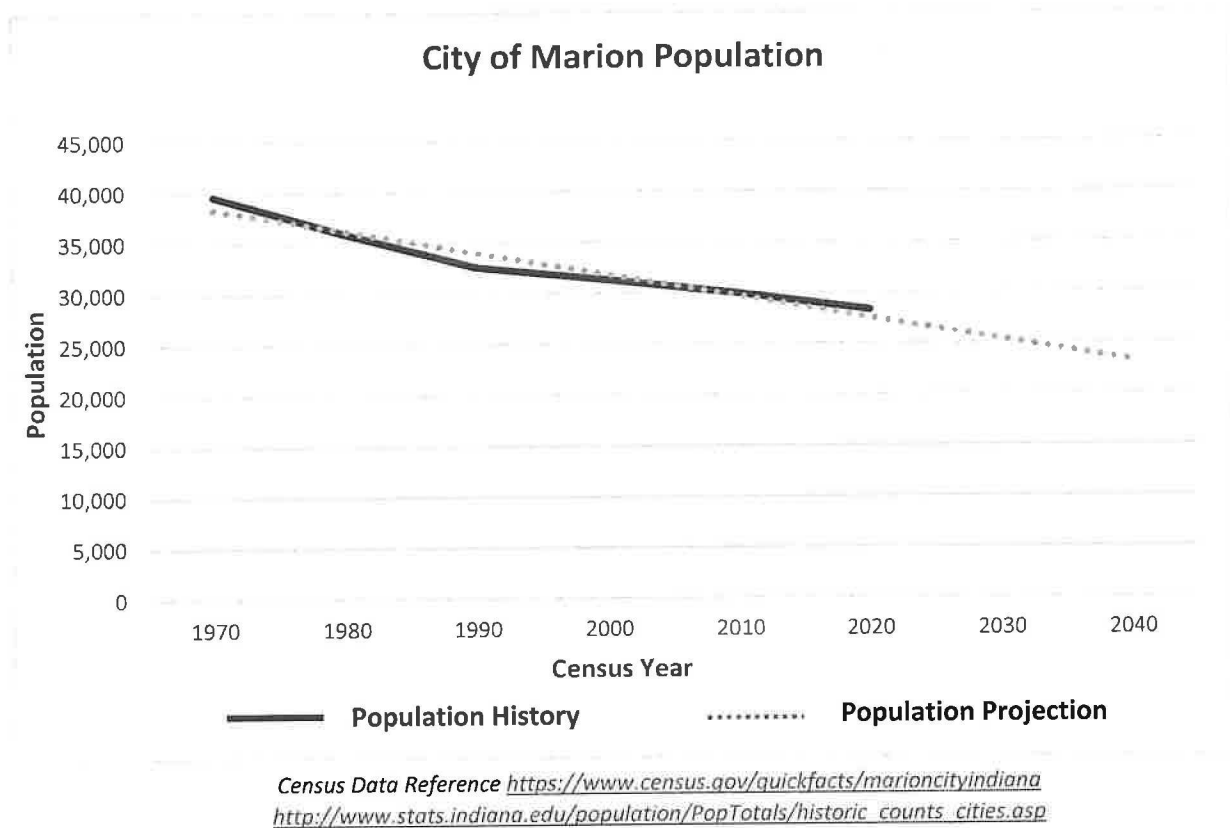
1. 20 Year Population Projection

The City of Marion is the county seat of Grant County, Indiana. In earlier days, the discovery of large supplies of natural gas in the area propelled the development of industry and surging population growth. Between 1900 and 1970 the population of Marion grew from 17,300 to its peak of 39,600 in 1970. Since that time however, US Census Bureau data indicates a steady population decline. 2020 Census Data indicates that the population of Marion was 28,310 at that time. The most current census projection (2021) is 27,982.

Many factors have contributed to the decline over the past 5 decades including advancements in technologies that resulted in certain manufactured products becoming obsolete. Various economic drivers are to blame for significant job loss in the community particularly between 1998 and 2005. Job loss is the most prominent factor associated with population decline in the community.

US Census Bureau statistics indicate that the population in Marion has been declining over time at an annual rate of -0.58. Since the 2020 Census, the City's population has declined by -1.16%. See Table 3.1.

Table 3.1 City of Marion Population



While the statistical population trend predicts a steady decline over the next 20 years, a review of building permits and numbers of active Drinking Water User accounts over the past 5 years suggests that the declining trend could actually be less pronounced in the coming years. However, overall positive growth is not anticipated.

There are discussions within the community regarding the possible expansion of drinking water services south toward the Marion Airport. If this were to occur, the result could be an addition of as many as 200 new water system users over the course of the next 10 – 20 years. Development in the area of State Road 18 and I69 could result in the addition of another 100 users over the same period.

2. Identification of 20-Year Design Flows

The drinking water system design capacity for the City of Marion is 12 MGD. Considering current demands and declining to static population growth, 20-year flows are not anticipated to exceed current system capacity.

3. 20-Year System Needs

Distribution System

- a. With the completion of the Water Distribution Masterplan in 2006, there has been a concerted effort to improve areas of the system based on structural integrity and improved fire protection. The model has been used as a tool to guide decisions on where to focus those efforts. Taking these 2 criteria into account, it has been determined that replacing a 6" main in the area of 10th and Baldwin should be the highest priority with regards to the distribution system.
- b. The distribution system of Marion Utilities is home to approximately 11,000 water meters. They consist primarily of positive displacement and velocity flow meters from vendors such as Neptune, Badger, Sensus, etc. Operationally, maintaining a system with that many aging water meters means a great deal of manpower must be dedicated to reading, rereading, testing, rebuilding, and changing out those meters. Additionally, metering inaccuracies could be responsible for lost revenue and water loss miscalculations.
- c. In response to the EPA's Revised Lead and Copper Rule, Marion Utilities must conduct a survey of our distribution system then develop a plan for removing service lines as required. Pre-survey estimates indicate more than 80% of our services may contain lead. Historically, we have never approached the action levels for lead and copper and do not anticipate that occurring in the future. However,

with future mandates approaching, the Utility feels that it would be in the community's best interest to start replacing these service lines.

Supply

There are no specific supply improvements identified at this time.

Storage

- a. The Butler Ave. water tank is a 500,000-gallon elevated steel water tank. An inspection performed in 2022 by Tank Industry Consultants found that the interior coatings and condition of the metal were of great concern. Other problems included a potentially significant structural deficiency, as well as ANSI/OSHA and safety-related deficiencies, and three AWWA, sanitary, and operational deficiencies.
- b. The Meridian St water tank is a 500,000-gallon elevated steel water tank. An inspection in 2022 by Tank Industry Consultants found that both the interior and exterior coatings need to be repainted in the near future. Other problems included ANSI/OSHA and safety-related deficiencies and three AWWA, sanitary, and operational deficiencies.

Treatment

There are no specific treatment process improvements identified at this time.

Ch. 4: Evaluation of Alternatives

1. Distribution Projects:

No Action Alternative

No action would result in continued repairs to water mains due to breaks and compromised fire protection in that area. Due to the age, condition, and size of the pipe, this is not a viable option.

Rehabilitation

Marion Utilities has successfully lined a number of water mains in the past. The benefit of using such technology is mainly financial. Significant savings are usually seen in site restoration due to the fact that a continuous trench is not needed along the street or right-of-way. In this case, cured in place pipe ("CIPP") has been ruled out due to the need to increase fire protection in this area. While, in theory, CIPP could increase flow and pressure to some extent, restrictions in existing pipe size would not allow sufficient fire protection.

Replacement

Due to the age, condition, and size of the existing pipe, replacement with a larger pipe will be necessary to meet all of our goals on this project.

2. Butler Ave. Tank:

No Action Alternative

If no action is performed, it is predicted that the interior coatings will fail within two years. Furthermore, interior coatings were tested and indicated a presence of lead. Additional inspections would need to be completed to determine if the tank is in compliance with present structural codes.

Optimum Operation of Existing Facility

Optimum operation of the existing tank would have no effect on its current condition.

Rehabilitation vs Replacement

Tank Industry Consultants estimates the cost for replacing the existing tank with a new equivalent tank to be \$3,000,000 (which does not include cost associated with tank demolition or distribution interruptions). Rehabilitation should have the same or similar impact on water loss reduction as replacement.

The prospect of rehabilitation to a level of optimum operation, while costly, is significantly less expensive than the alternative of replacing the tank. And considering current supply chain issues, rehabilitating the existing structure would also allow problems to be addressed much sooner than replacement. Warranties, regular

inspections (already required), and regular maintenance hereafter would promote the longevity and reliability of the tank for years to come. Marion Utilities' ability to implement the plan for rehabilitation, as detailed in Appendix C: Butler Ave. Tank, relies solely on the availability of required funding. Environmental impact would remain unchanged unless coatings removed during blasting would be deemed hazardous. If testing reveals that to be an issue, then additional steps would be taken to collect the hazardous materials, dispose of them accordingly, then remediate the site following project completion.

3. Meridian Street Tank:

No Action Alternative

If no action is performed, the exterior coatings will likely last another three to four years while the interior coatings will likely last two more years. Additional inspections would need to be completed to determine if the tank is in compliance with present structural codes.

Optimum Operation of Existing Facility

Optimum operation of the existing tank would have no effect on its current condition.

Rehabilitation vs Replacement

Tank Industry Consultants estimates the cost for replacing the existing tank with a new equivalent tank to be \$3,000,000 (which does not include cost associated with tank demolition or distribution interruptions). Rehabilitation should have the same impact on water loss reduction as replacement.

The prospect of rehabilitation to a level of optimum operation, while costly, is significantly less expensive than the alternative of replacing the tank. And considering current supply chain issues, rehabilitating the existing structure would also allow problems to be addressed much sooner than replacement. Warranties, regular inspections (already required), and regular maintenance hereafter would promote the longevity and reliability of the tank for years to come. Marion Utilities' ability to implement the plan for rehabilitation, as detailed in Appendix: Meridian Street Tank, relies solely on the availability of required funding. Environmental impact would remain unchanged unless coatings removed during blasting would be deemed hazardous. If testing reveals that to be an issue, then additional steps would be taken to collect the hazardous materials, dispose of them accordingly, then remediate the site following project completion.

4. Water Meter Replacement:

No Action Alternative

If no action is performed, meters will continue to deteriorate, becoming less and less accurate. The implications of this are decreased water revenue, steady or increasing manpower, and incorrect water loss calculations.

Optimum Operation of Existing Facility

Optimum operation would have no effect on aging water meters.

Rehabilitation vs Replacement

Given the improvements in metering technology over the last three decades, it only makes sense to upgrade the entire system. Ultrasonic meters are more accurate and will not decline in performance over time. They can also be equipped with acoustic leak detection capabilities. Additionally, data is collected continuously using radio signals and can be interrogated in real time by customer service representatives or other administrative staff. Human meter readers will no longer be necessary. Research done by reputable organizations such as Water World, AWWA, and the Water Research Foundation as well as many independent case studies agree the benefits of smart meter technology are worth the investment. Such benefits include metering accuracy, water loss reduction, faster leak detection, and prioritization of infrastructure needs.

From a financial perspective, metering technology is cheaper now than it was when it was first developed. In addition, more accurate meters should also mean increased revenue. Faster leak detection means customers can be alerted faster and services could be shut off sooner to eliminate unnecessary waste. Technically speaking, new meters will dramatically improve our ability to interrogate the system, and with less manpower. Kamstrup meters (our choice for replacement) come with a 20-year warranty (10 years full and 10 years prorated), and will continue to function properly as long as they are not damaged. Implementation should take approximately one year. A pilot study has already been conducted, however, so collection devices are already in place and functional. This means the meters will be online at the moment of installation. Environmental impact should be less than or equal to the impact from meters previously installed.

5. Lead and Copper Abatement:

No Action Alternative

If no action is taken, Marion Utilities runs the risk of exposing the community to hazardous materials which are likely to be present in service line materials and facing the associated health concerns and repercussions from IDEM and EPA.

Optimum Operation of Existing Facility

Optimum operation of the existing Lead service lines would not resolve the associated risks.

Rehabilitation vs Replacement

There is no known rehabilitation of Lead service lines that would remove the risk associated with Lead in the system as much as complete removal/replacement of the old service lines. Likewise, In the process of replacing lead service lines, it is possible that system leaks could be discovered and repaired that would result in some manner of water loss reduction.

Ch. 5 Evaluation of Environmental Impacts

1. Location

There are six separate projects selected for SRF funding. The locations of these projects encompass the entire service area of the Marion Utilities Water Utility. Further details on project location are provided in Section 1.1 and Section 6.1-5.

2. Disturbed/Undisturbed Land

All construction for the selected projects will occur within existing easements, road ROW's, or land already owned by the City/Marion Utilities. These six selected projects are all either replacement or rehabilitation projects, therefore each project location has been significantly disturbed during previous construction activities.

3. Historical Resources

The Grant County Interim Report was reviewed to determine the potential presence of historic properties. Since the meter replacement project essentially affects every property within the service area, the list of historic properties is extensive. The list is located in Appendix G, page 1 – 67. Construction, operation, and maintenance of the proposed projects will all take place within ROW or property owned by the City/Marion Utilities. Since these areas have all been previously disturbed by construction, no historic or architectural properties will be affected.

4. Wetlands

Appendix G, page 68 shows the Indiana Map NWI Wetlands data layer in the area of the project sites. Wetlands will not be impacted by construction or operation of these projects.

5. Surface Waters

Review of the Indiana Map NWI Wetlands data layer (Appendix G, page 68) indicates that these projects will not involve crossing any surface waters. The projects will not require impacts to surface waters, therefore will not adversely affect waters of high quality listed in 327 IAC 2-1-2(3), exceptional use stream listed in 327 IAC 2-1-11(b), Natural Scenic and Recreational Rivers and Streams listed in 327 IAC 7-2, Salmon Streams listed in 327 IAC 2-1.5-5(a)(3), or waters on the Outstanding Rivers list (Natural Resources Commission Non-rule Policy Document).

6. 100-Year Floodplain

Appendix G, pages 69 - 78 contain the floodway maps for the project areas. The Water Meter Replacement Project is the only project that will be located in a portion of the floodways. Since minimal, if any, excavation is required with replacing water meters and no new structures will be located above the surface of the ground, the floodway will be unaffected by the selected projects.

7. Groundwater

For the selected projects that require it, excavation is expected to be no more than 5-6' of depth. Therefore, these projects are expected to have no effect on groundwater.

8. Plants and Animals

The selected projects will primarily disturb areas that have been previously disturbed by construction of the existing facilities and roads. These projects will not impact scrub/shrub, wooded, aquatic habitats, or state/federal-listed endangered species or their habitat.

9. Farmland

The Farmland Conversion Impact Rating form is included in Appendix G, page 79. The selected projects construction and operation will not affect prime farmland.

10. Air Quality

The Clean Air Act established six criteria pollutants and required the USEPA to set National Ambient Air Quality Standards. The criteria pollutants are carbon monoxide, ozone, particulate matter, nitrogen dioxide, lead, and Sulphur dioxide. An online review of the November 30, 2022 data at www3.epa.gov/airquality/greenbook/anayo_in.html indicates that Grant County Indiana is classified as an "Attainment Area" (areas that have never exceeded the NAAQS for any of the six criteria).

The construction activity for the selected projects may generate some noise, fumes, and dust as may normal construction activity. To reduce noise impacts, construction activities can be limited to normal daytime hours. Noise, dust, and fumes are anticipated to be short-term impacts during construction and no long-term impacts are anticipated. Construction, operation, and maintenance activities are not anticipated to affect ozone, airborne pollutants, or other current or future air quality concerns.

11. Open Space and Recreational Opportunities

The construction, operation, or maintenance of the selected projects will neither create or destroy open space and recreational opportunities.

12. Lake Michigan Coastal Management Zone

The selected projects are located within Grant County Indiana and therefore will not affect the Lake Michigan Coastal Zone.

13. National Natural Landmarks

An online review of the National Park Service data for National Natural Landmarks in Indiana at www.nps.gov/subjects/nnlandmarks indicates that the selected projects are not located near any National Natural Landmark.

14. Secondary Impacts (Induced or Cumulative)

The selected projects will address the needs of the City with regards to maintaining the existing system. The potential to cause secondary impacts is not anticipated. The City/Utility will ensure that future development, future distribution system, and future treatment works projects connecting to SRF-funded facilities will not adversely affect sensitive environmental resources. New development and treatment works projects will be required to be constructed within the guidelines of the USFWS, IDNR, IDEM, and other environmental review authorities.

15. Mitigation Measures

The construction documents will require that proper measures be implemented to control stormwater runoff and erosion control the sites. The specifications will require measures to reduce the creation of dust, odor, airborne particulates, and other nuisances due to construction activities. Construction-related impacts will be avoided where possible, and where not, proper mitigation measures will be utilized to reduce the impact.

Ch. 6 Proposed Projects

1. Water Main Replacement

As a result of the 2006 water Distribution Masterplan and Water Model Update in 2018 by CDM Smith (Appendix A), a list of priority projects was developed. The Priority Project list is located in Append B. Four areas were decided to be the most critical with regards to improving fire protection and reducing water main failures. The existing mains in this area were installed in the 1940's and contain lead service lines which will be replaced as part of this project. These areas are as follows:

- a. **Western, 10th St. to 7th St.:** This project will be located on Western Ave. and will tie in dead end hydrants and increase fire protection, improve water pressure, and eliminate water main break issues. The proposed 12" water main will replace the existing 6" main that connects at 10th St. and Western Ave. to a 12" water main that is proposed for the 2023 construction year, then going north on Western Ave. and ending at the intersection of Western Ave. and 7th St.
- b. **Mason - 11th St. to Terrace Ave.:** This project will be located along Mason Blvd. and will tie in dead end hydrants and increase fire protection, improve water pressure, and eliminate water main break issues. Starting on the east side of Baldwin Ave. at the intersection of 11th St. and Western Ave. and connecting into an existing 12" water main; then going north to the intersection of 10th St. and Western Ave.; then going northeast on Mason Blvd. to the end at Terrace Ave.; and finally connecting into an existing 8" water main.
- c. **7th St., Butler Ave. to Western Ave.:** This project will be located on 7th St. and will tie in dead end hydrants and increase fire protection, improve water pressure, and eliminate water main break issues. The proposed 12" water main will replace the existing 4" main connecting at 7th St. and Butler Ave., then going east to the end of 7th St. at the intersection of 7th St. and Western Ave.

Since these 3 areas are all contiguous, it is our intent that they be designed and bid as one project. See **Fig. 6.1** for a map of the proposed tie-ins and mains. Target construction dates and the engineer's estimate are contained in Table 6.1.

Table 6.1 Distribution System Phase 1 Construction Cost

Item	Quantity	Unit Cost	Total
6" D.I.P.	100	\$88	\$8,800
12" D.I.P.	3,850	\$131	\$504,350
24" Boring w/ 12" D.I.P.	170	\$500	\$85,000
Fire Hydrant Ass'y	8	\$7,000	\$56,000
6X12 TS&V	6	\$7,000	\$42,000
8X12 TS&V	2	\$8,000	\$16,000
12X12 TS&V	3	\$10,000	\$30,000
12" Gate Valve	8	\$5,000	\$40,000
6" Gate Valve	4	\$3,000	\$6,000
Service Replacement	64	\$2,500	\$160,000
Restoration	1	\$51,000	\$270,860
Contingencies			\$130,000
Construction Cost Sub-Total			\$1,350,010
Administrative/Legal			N/A
Land/ROW Acquisition			N/A
Engineering Fees			N/A
Design			N/A
Project Inspection			N/A
Costs Related to Start-up			\$0
Non-construction Cost Sub-Total			\$0
Total Project Cost			\$1,350,010

Project Schedule/Milestone Dates

Plans & Specifications Submittal	September 2023
Land/Easement Acquisition	N/A
Bid Advertisement	November 2023
Loan Closing	December 2023
Contract Award	January 2024
Initiation of Construction	February 2024
Substantial Completion	March 2025
Initial Operation	March 2025

As part of the second bond in 2025, the following project will complete this area in regards to fire protection and structural failures:

- d. **Mason Blvd, 11th to 16th St.:** This project will be located along Mason Blvd and will tie-in dead-end mains and increase fire protection and water pressure while

eliminating main break issues. The proposed 12" main will replace the existing 6" main starting at 16th St then going northeast along Mason Blvd and connecting to the existing 12" main at 11th and Baldwin.

See Fig. 6.2 for a map of the proposed tie-ins and mains. Target construction dates and the engineer's estimate are contained in Table 6.2. See Attachment E: Preliminary Design Summary in Appendix H.

Table 6.2 Distribution System Phase 2 Construction Cost

Item	Quantity	Unit Cost	Total
6" D.I.P.	80	\$88	\$7,040
12" D.I.P.	2,923	\$132	\$385,836
Fire Hydrant Ass'y	4	\$7,000	\$28,000
6X12 TS&V	4	\$7,000	\$28,000
8X12 TS&V	1	\$8,000	\$8,000
12X12 TS&V	1	\$10,000	\$10,000
12" Gate Valve	8	\$5,000	\$40,000
Service Replacement	33	\$2,500	\$82,500
Restoration	1	\$211,909	\$211,909
Contingencies		\$80,000	\$80,000
Construction Cost Sub-Total			\$881,285
Administrative/Legal			N/A
Land/ROW Acquisition			N/A
Engineering Fees			N/A
Design			N/A
Project Inspection			N/A
Costs Related to Start-up			0
Non-construction Cost Sub-Total			\$0
Total Project Cost			\$881,285

Project Schedule/Milestone Dates

Plans & Specifications Submittal	September 2025
Land/Easement Acquisition	N/A
Bid Advertisement	November 2026
Loan Closing	December 2025
Contract Award	January 2026
Initiation of Construction	February 2026
Substantial Completion	September 2026
Initial Operation	September 2026

2. Butler Tank Rehabilitation

Marion Utilities will contract with Tank Industry Consultants for preparation of project specifications and project inspections as appropriate. We will blast to bare metal and apply new coatings to the interior and exterior of the tank. All concerns from the most recent inspection (potential significant structural deficiency, all ANSI/OSHA and safety-related deficiencies, and three AWWA, sanitary, and operational deficiencies), including any additional concerns discovered during the rehabilitation process will be corrected or brought up to code accordingly. See **Fig. 6.3** for a map of the proposed project area. Target construction dates and the engineer's estimate are contained in Table 6.3. and further estimate details are contained in Appendix C. Also, see Attachment E: Preliminary Design Summary in Appendix H.

Table 6.3 Butler Tank Construction Cost

Item	Quantity	Unit Cost	Total
Spot Repair/Topcoat on Exterior			
Heavy Metal Abatement/Disposal/Interior			
Miscellaneous Repairs	1	LS	\$740,000
Contingencies			\$35,000
Construction Cost Sub-Total			\$775,000
Administrative/Legal	N/A		N/A
Land/ROW Acquisition	N/A		N/A
Engineering Fees	1	LS	\$10,000
Design	1	LS	\$16,000
Project Inspection	1	LS	\$120,000
Costs Related to Start-up	N/A		N/A
Non-construction Cost Sub-Total			\$146,000
Total Project Cost			\$921,000

Project Schedule/Milestone Dates

Plans & Specifications Submittal	N/A
Land/Easement Acquisition	N/A
Bid Advertisement	November 2023
Loan Closing	December 2023
Contract Award	January 2024
Initiation of Construction	April 2024
Substantial Completion	July 2024
Initial Operation	July 2024

3. Meridian Tank Rehab

Marion Utilities will contract with Tank Industry Consultants for preparation of project specifications and project inspections as appropriate. We will blast to bare metal and apply new coatings to the interior and exterior of the tank. All concerns from the most recent inspection (all ANSI/OSHA and safety-related deficiencies, and three AWWA, sanitary, and operational deficiencies), including any additional concerns discovered during the rehabilitation process will be corrected or brought up to code accordingly. See Fig. 6.4 for a map of the proposed tie-ins and mains. Target construction dates and the engineer's estimate are contained in Table 6.4 and further estimate details are contained in Appendix D. Also, see Attachment E: Preliminary Design Summary in Appendix H.

Table 6.4 Meridian Tank Construction Cost

Item	Quantity	Unit Cost	Total
SP 6 Exterior/ SP 10 Interior Coatings			
CP System			
Miscellaneous Repairs	1	LS	\$902,000
Contingencies			\$60,000
Construction Cost Sub-Total			\$962,000
Administrative/Legal	N/A		N/A
Land/ROW Acquisition	N/A		N/A
Engineering Fees	1	LS	\$11,000
Design	1	LS	\$14,500
Project Inspection	1	LS	\$125,000
Costs Related to Start-up	N/A		\$0
Non-construction Cost Sub-Total			\$150,500
Total Project Cost			\$1,112,500

Project Schedule/Milestone Dates

Plans & Specifications Submittal	N/A
Land/Easement Acquisition	N/A
Bid Advertisement	November 2025
Loan Closing	December 2025
Contract Award	January 2026
Initiation of Construction	April 2026
Substantial Completion	July 2026
Initial Operation	July 2026

4. Water Meter Replacement/AMI

Marion Utilities will contract HydroCorp Inc. for the procurement of Kamstrup water meters, delivery of products, installation, and start-up related to the Water Meter Replacement Project. Meters will be installed at a rate of approximately 1,000 per month over the course of one year. See **Fig. 6.5** for a map of the proposed area of service. Target construction dates and the engineer’s estimate are contained in Table 6.5 and further estimate details are in Appendix E. See Attachment E: Preliminary Design Summary in Appendix H.

Table 6.5 Water Meter Replacement Construction Cost

Item	Quantity	Unit Cost	Total
5/8" x 1/2" FlowIQ2200ALD water meter	2694	\$ 299.38	\$ 806,518.94
5/8" x 1/2" FlowIQ2250AMI water meter	2694	\$ 249.48	\$ 672,099.12
3/4" x 9" FlowIQ2200ALD water meter	47	\$ 389.00	\$ 18,283.12
3/4" x 9" FlowIQ2250AMI water meter	46	\$ 344.25	\$ 15,835.50
1" FlowIQ2200ALD water meter	63	\$ 404.35	\$ 25,474.18
1" FlowIQ2250AMI water meter	63	\$ 349.92	\$ 22,044.96
1 1/2" x 13" FlowIQ3200AMI water meter	48	\$ 816.48	\$ 39,191.04
2" x 17" FlowIQ3200AMI water meter	93	\$ 1,049.76	\$ 97,627.68
3" x 12" FlowIW3200AMI water meter	13	\$ 2,325.03	\$ 30,225.39
4" x 14" FlowIQ3200AMI water meter	5	\$ 3,335.91	\$ 16,679.55
Spool Pieces for 3" meters	13	\$ 472.50	\$ 6,142.50
Spool Pieces for 4" meters	10	\$ 506.25	\$ 5,062.50

READY Initial Fee <7,500 meters	1	\$ 34,118.00	\$ 34,118.00
READY Annual Hosting <7,500 meters	1	\$ 10,931.00	\$ 10,931.00
Notification Service Annual Fee	1	\$ 573.00	\$ 573.00
Leak Detector Software Fee	1	\$ 9,887.00	\$ 9,887.00
AMI System Roll Out <10,000 meters	1	\$ 28,910.00	\$ 28,910.00
5/8" x 1/2" meter installation	5388	\$ 58.00	\$ 312,504.00
3/4" meter installation	93	\$ 58.00	\$ 5,394.00
1" meter installation	126	\$ 58.00	\$ 7,308.00
1.5" meter installation	48	\$ 150.00	\$ 7,200.00
2" meter installation	93	\$ 150.00	\$ 13,950.00
3" meter installation	13	\$ 585.00	\$ 7,605.00
4" meter installation	10	\$ 585.00	\$ 5,850.00
5/8" x 1/2" FlowIQ2200ALD water meter	2694	\$ 359.00	\$ 967,146.00
5/8" x 1/2" FlowIQ2250AMI water meter	2693	\$ 299.38	\$ 806,230.34
3/4" x 9" FlowIQ2200ALD water meter	47	\$ 476.28	\$ 22,385.16
3/4" x 9" FlowIQ2250AMI water meter	46	\$ 413.10	\$ 19,002.60
1" FlowIQ2200ALD water meter	62	\$ 525.53	\$ 32,582.86
1" FlowIQ2250AMI water meter	62	\$ 437.20	\$ 27,106.40
1 1/2" x 13" FlowIQ3200AMI water meter	47	\$ 1,061.43	\$ 49,887.21
2" x 17" FlowIQ3200AMI water meter	92	\$ 1,364.69	\$ 125,551.48
3" x 12" FlowIW3200AMI water meter	12	\$ 1,788.48	\$ 21,461.76
4" x 14" FlowIQ3200AMI water meter	5	\$ 2,566.08	\$ 12,830.40
Spool Pieces for 3" meters	12	\$ 472.50	\$ 5,670.00
Spool Pieces for 4" meters	5	\$ 506.25	\$ 2,531.25
READY Initial Fee <15,000 meters	1	\$ 56,285.00	\$ 56,285.00
READY Annual Hosting <15,000 meters	1	\$ 19,849.00	\$ 19,849.00
Notification Service Annual Fee	1	\$ 880.00	\$ 880.00
Leak Detector Software Annual Fee	1	\$ 21,877.00	\$ 21,877.00
AMI System Roll Out <15,000 meters	1	\$ 33,556.00	\$ 33,556.00
5/8" x 1/2" meter installation	5388	\$ 61.00	\$ 328,668.00
3/4" meter installation	93	\$ 61.00	\$ 5,673.00
1" meter installation	126	\$ 61.00	\$ 7,686.00
1.5" meter installation	48	\$ 158.00	\$ 7,584.00
2" meter installation	93	\$ 158.00	\$ 14,694.00
3" meter installation	13	\$ 615.00	\$ 7,995.00
4" meter installation	10	\$ 615.00	\$ 6,150.00
Contingencies			\$ 200,000.00
Construction Cost Sub-Total			\$ 5,002,700

Administrative/Legal			N/A
Land/ROW Acquisition			N/A
Engineering Fees			N/A
Design			N/A
Project Inspection			N/A
Costs Related to Start-up			\$0
Non-construction Cost Sub-Total			\$0
Total Project Cost			\$5,002,700

Project Schedule/Milestone Dates

Plans & Specifications Submittal	N/A
Land/Easement Acquisition	N/A
Bid Advertisement	N/A
Loan Closing	December 2023
Contract Award	January 2024
Initiation of Construction	January 2024
Substantial Completion	December 2025
Initial Operation	Each, Upon Installation

5. Lead/Copper Abatement

Marion Utilities will identify lead service lines throughout its Distribution System by completing the EPA required Lead and Copper Survey using in-house Professional Engineering staff. An area of the City containing approximately 145 lead service lines has been identified for Phase I of this project. This area has been chosen based on age of the service lines as well as density of residential customers in the area. Once identified, local contractors will be utilized to remove existing lead lines from the main to the meter, repair or replace the meter setting as necessary, reconnect using approved materials, and restore the disturbed ground/pavement/concrete. Implementation will occur as funds are available in order to maintain or exceed LCRR compliance. See **Fig. 6.6** for a map of the proposed area. Target construction dates and the engineer's estimate are contained in Table 6.6 and further estimate details (from a similar area) are in Appendix K. See Attachment E: Preliminary Design Summary in Appendix H.

Table 6.6 Lead Service Line Abatement Construction Cost

Item	Quantity	Unit Cost	Total
Water Service Replacement	145	\$9,000	\$1,305,000
Contingencies			\$200,000
Construction Cost Sub-Total			\$1,505,000
Administrative/Legal			N/A
Land/ROW Acquisition			N/A
Engineering Fees			N/A
Design			N/A
Project Inspection			N/A
Costs Related to Start-up			\$0
Non-construction Cost Sub-Total			\$0
Total Project Cost			\$1,505,000

Project Schedule/Milestone Dates

Plans & Specifications Submittal	N/A
Land/Easement Acquisition	N/A
Bid Advertisement	November 2025
Loan Closing	December 2025
Contract Award	January 2026
Initiation of Construction	February 2026
Substantial Completion	September 2026
Initial Operation	Upon installation of each

6. Green Project Reserve

No Green Project Reserve items are included in these projects.

Ch. 7 Legal, Financial and Managerial Capabilities

1. Resolutions
 - a. Signatory Authority – See Appendix I for the Marion Utility Service Board Resolution 7-2022
 - b. PER Acceptance – See Appendix I for the Marion Utility Service Board Resolution 8-2022
2. SRF Financial Information Form (Attachment C)
 - a. See Appendix I for the DWSRF Loan Program Financial Information Form
3. Asset Management Plan Certification
 - a. The City's existing Asset Management Program (AMP) meets the requirements defined by the State Revolving Fund's Asset Management Program Guidelines pursuant to I.C. 5-1.2-10-16. See Appendix I for the completed AMP Certification form.
4. Prior to SRF Closing
 - a. Proof of Land Ownership/Easements – All proposed work is located within existing utility easements and/or property owned by Marion Utilities.
 - b. Agreements with Significant Users – No significant users are involved with the projects and therefore no Significant User Agreements are required.
Water Agreements with other Public Water Systems – There are no other Public Water Systems associated with these projects.

Ch. 8 Public Participation

1. Public Hearing
 - a. A public hearing was held on Monday, December 19, 2022 at 11AM in the Marion Utilities L.E.A.D. room.
2. Public Hearing Notice Affidavit
 - a. The Public Hearing Notice Affidavit is included in Appendix J.
3. Sign-In Sheet
 - a. The Sign-In Sheet for the public meeting is in Appendix J.
4. Copy of Minutes
 - a. Completed minutes of the public meeting are included in Appendix J.
5. Public Comments
 - a. The public was given through December 28th to submit written comments on the P.E.R., however none were submitted.
6. Mailing Labels
 - a. Mailing labels are be provided for attendees, interested parties and local media.

Marion Utilities Water Utility

2022 Preliminary Engineering Report

Figures



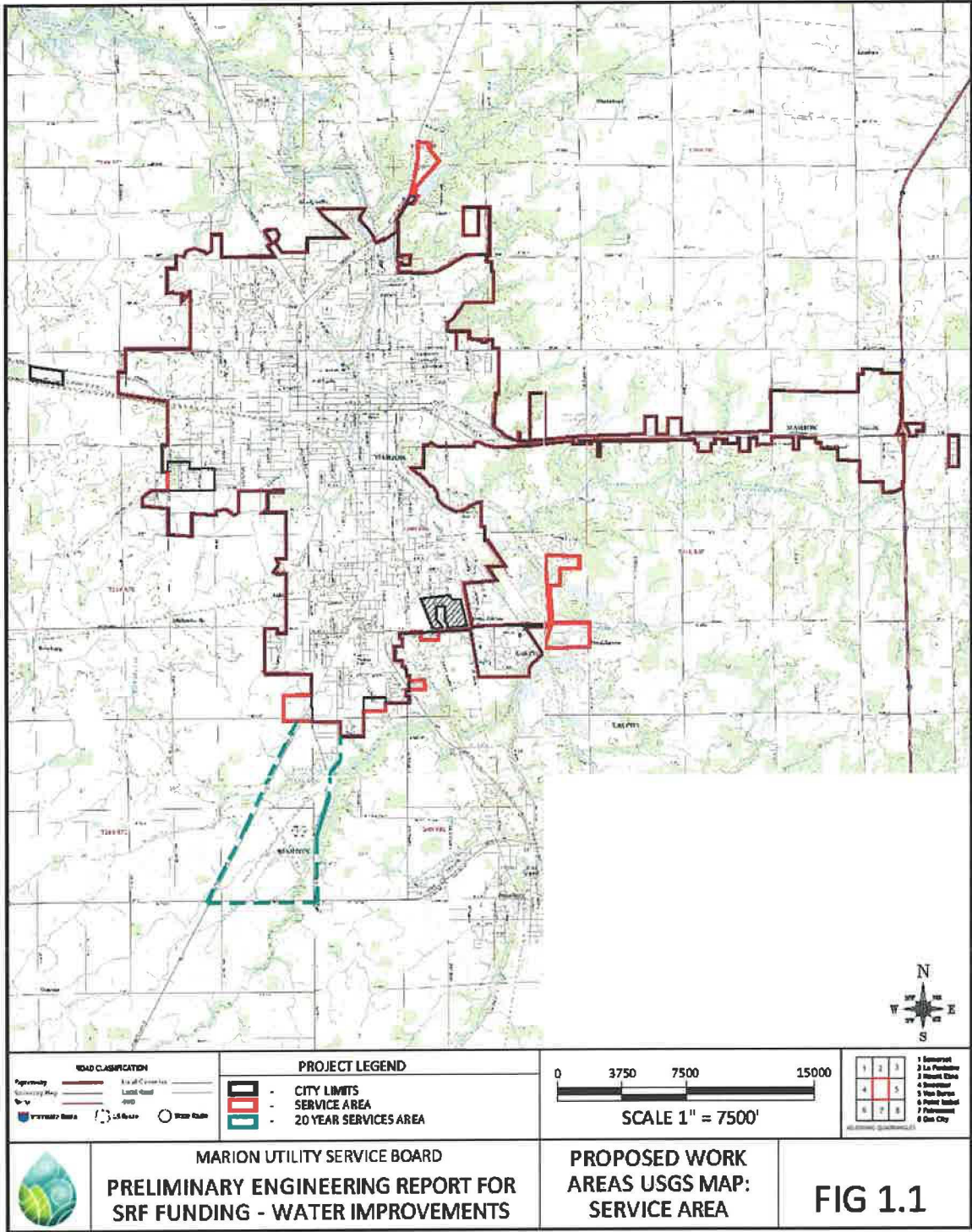


Figure 1.1 Service Area



Figure 1.2 Distribution Projects Phase 1 & 2 Area

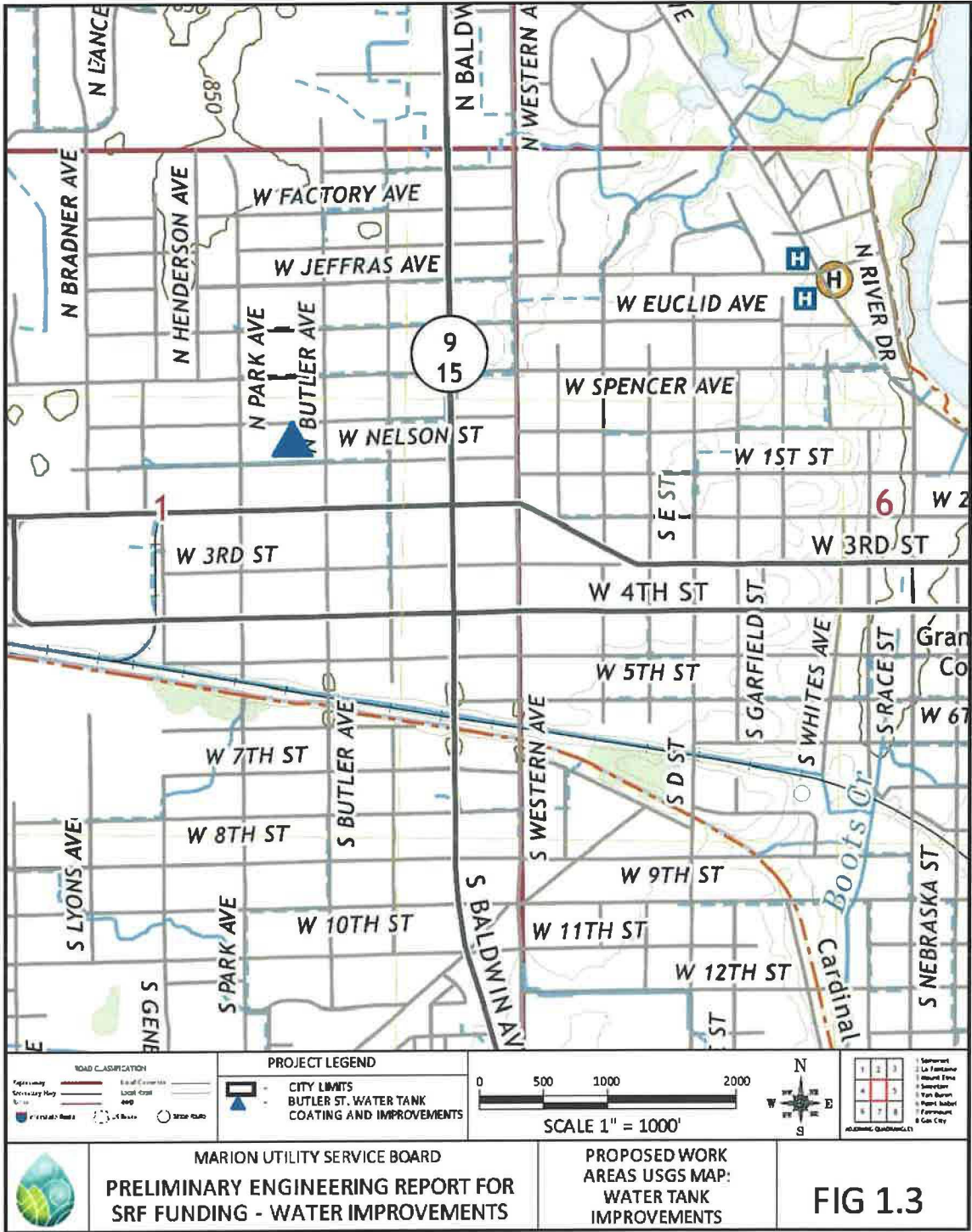


Figure 1.3 Butler Avenue Water Tank Area

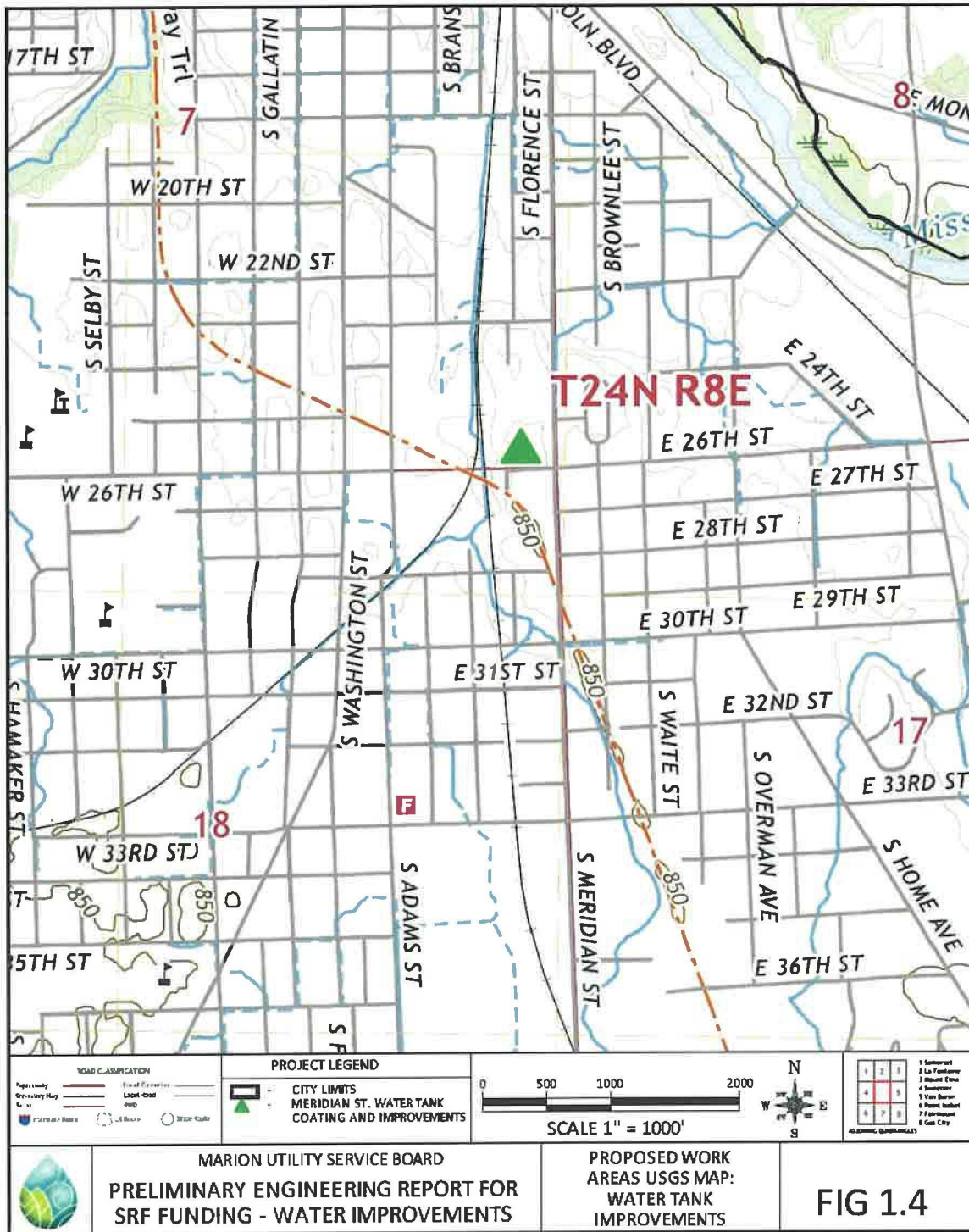


Figure 1.4 Meridian Street Water Tank Area

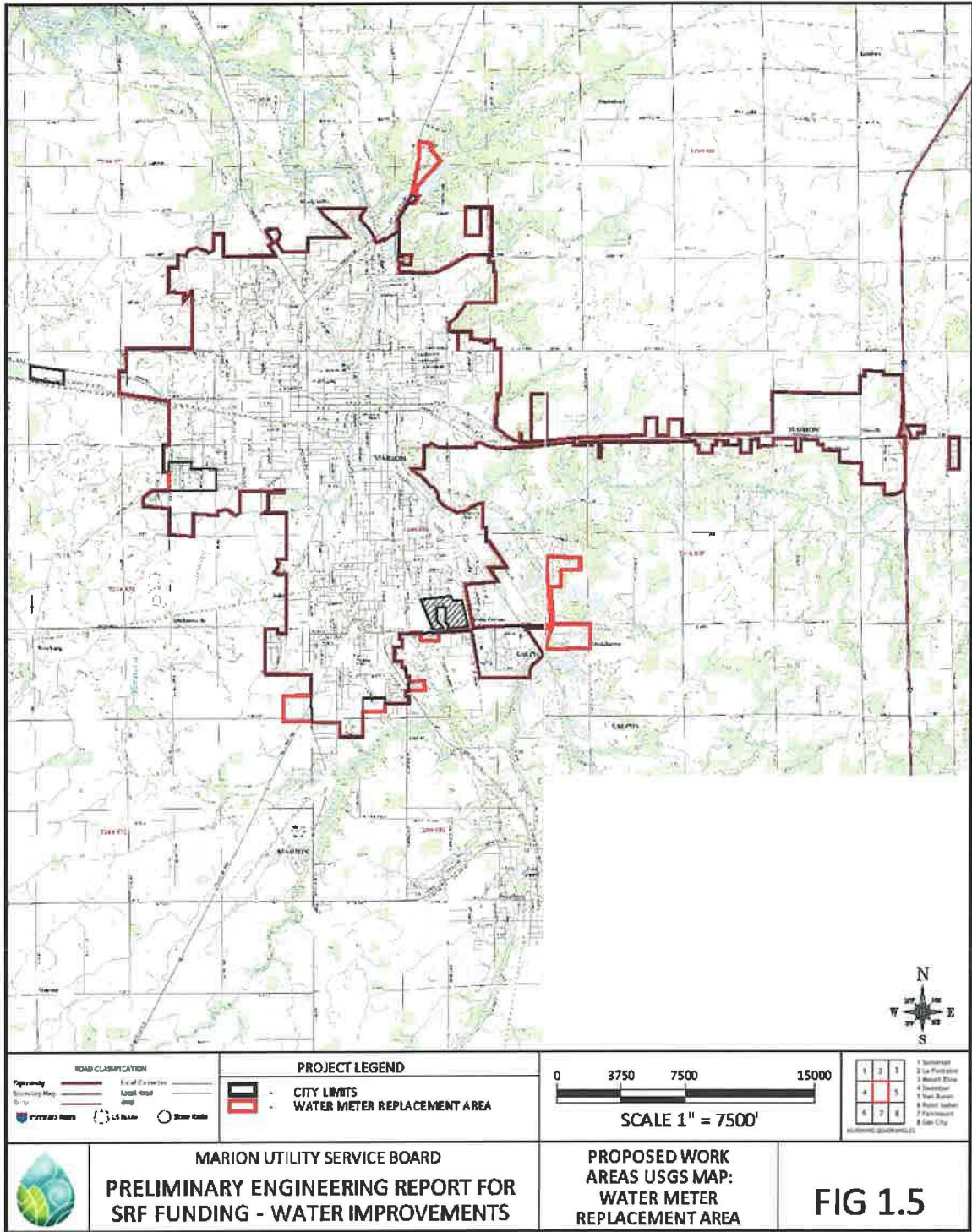


Figure 1.5 Water Meter Replacement Project Area

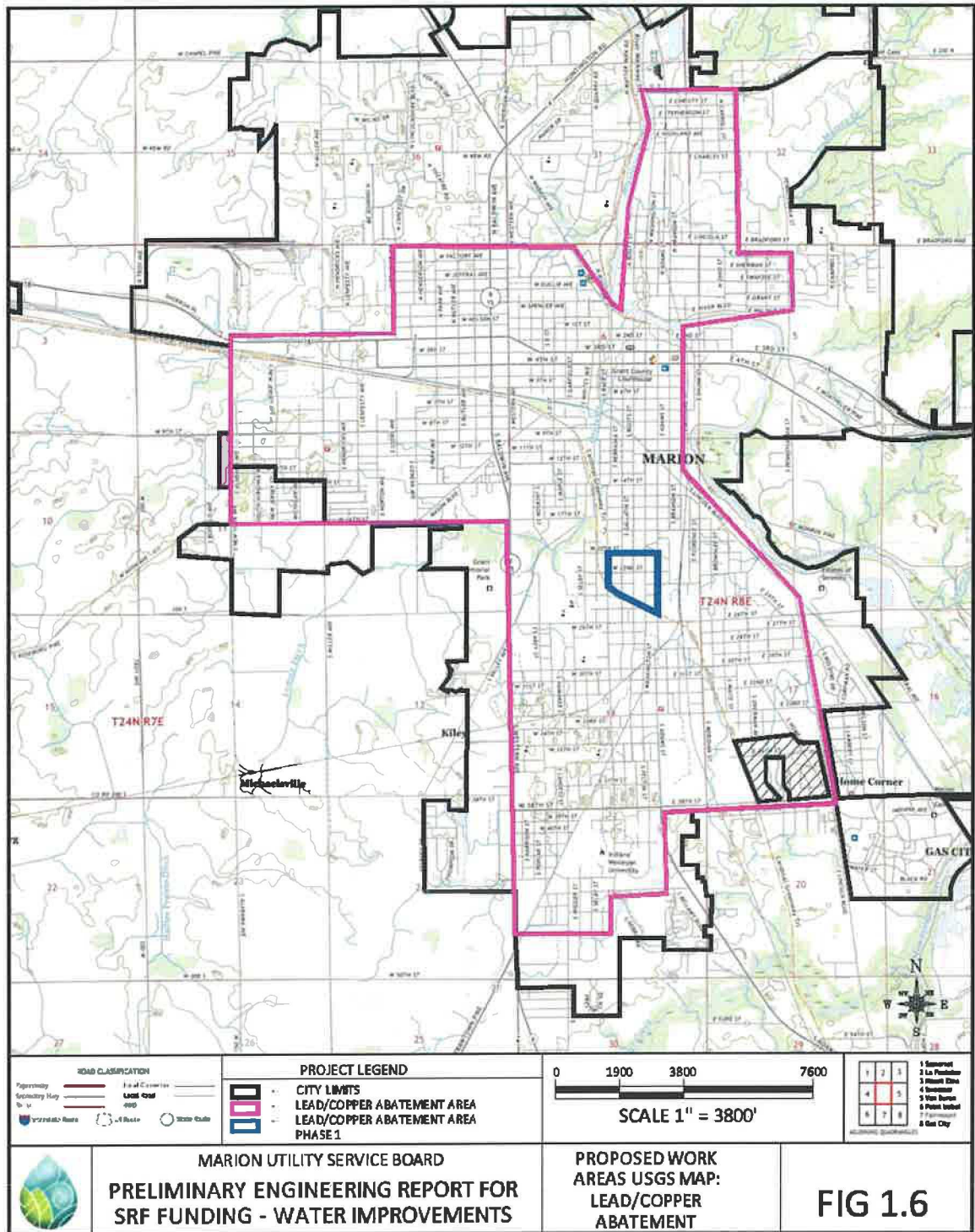


Figure 1.6 Lead Service Line Abatement Area

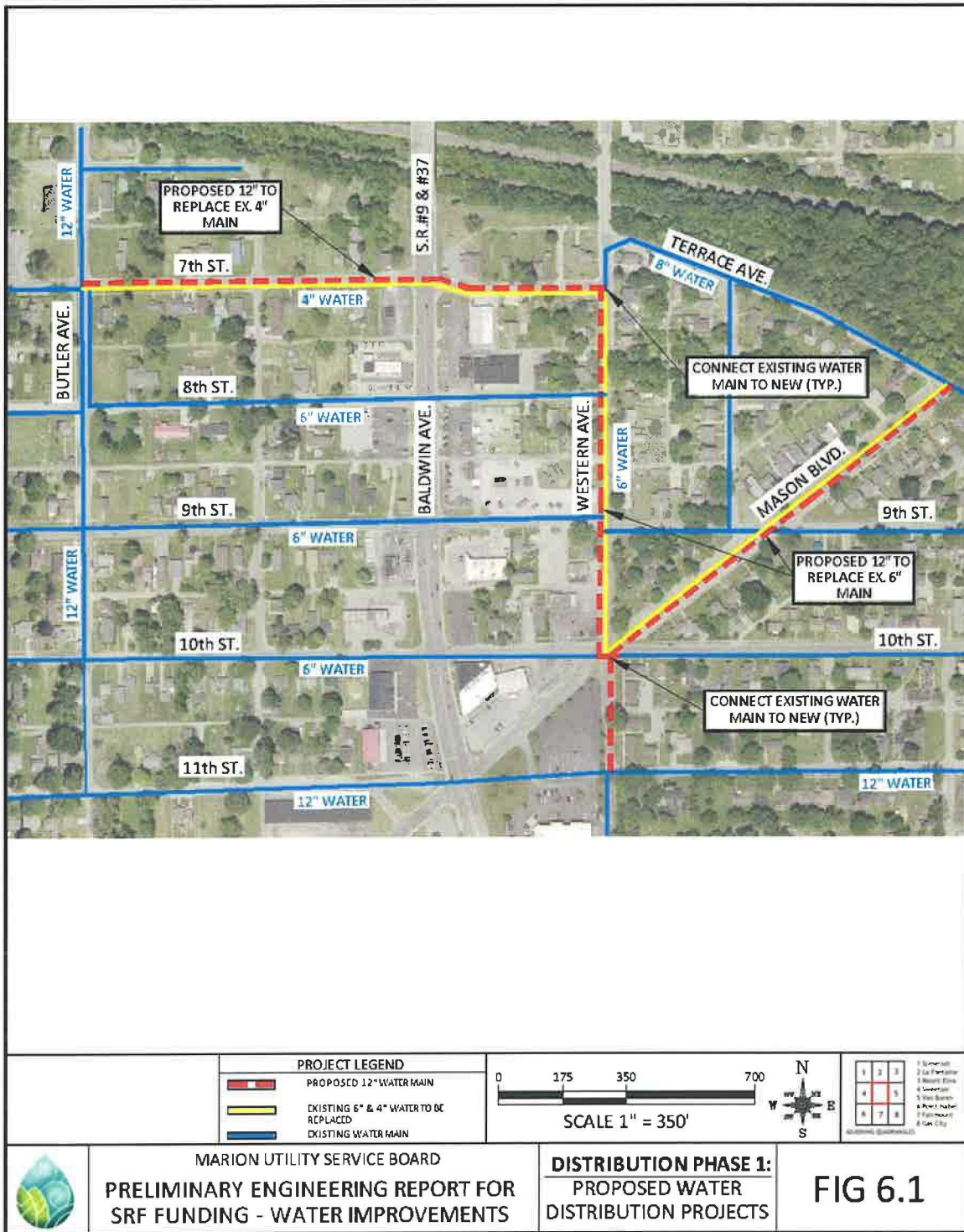


Figure 6.1 Water Distribution Project Phase I Project

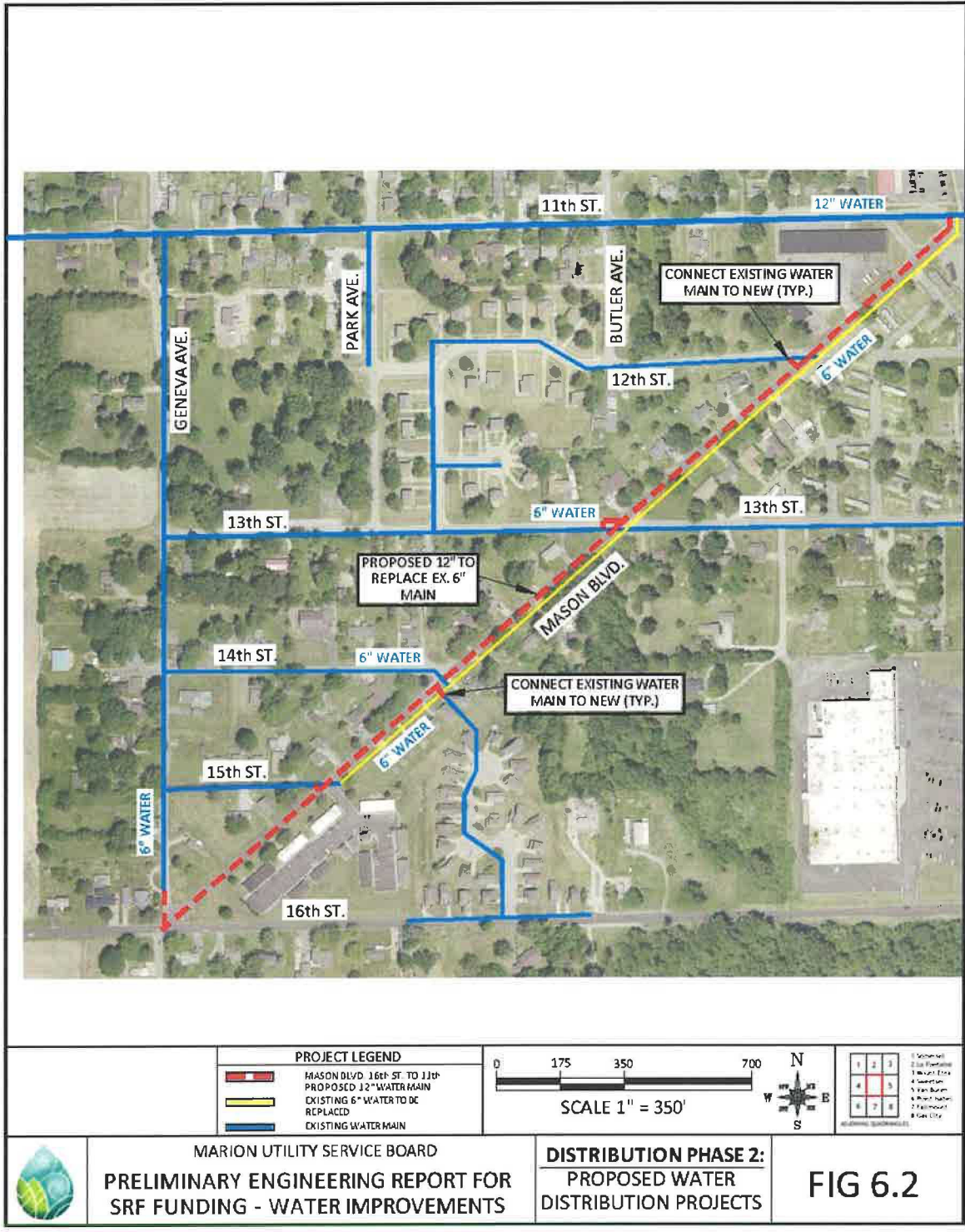


Figure 6.2 Water Distribution Project Phase II Project

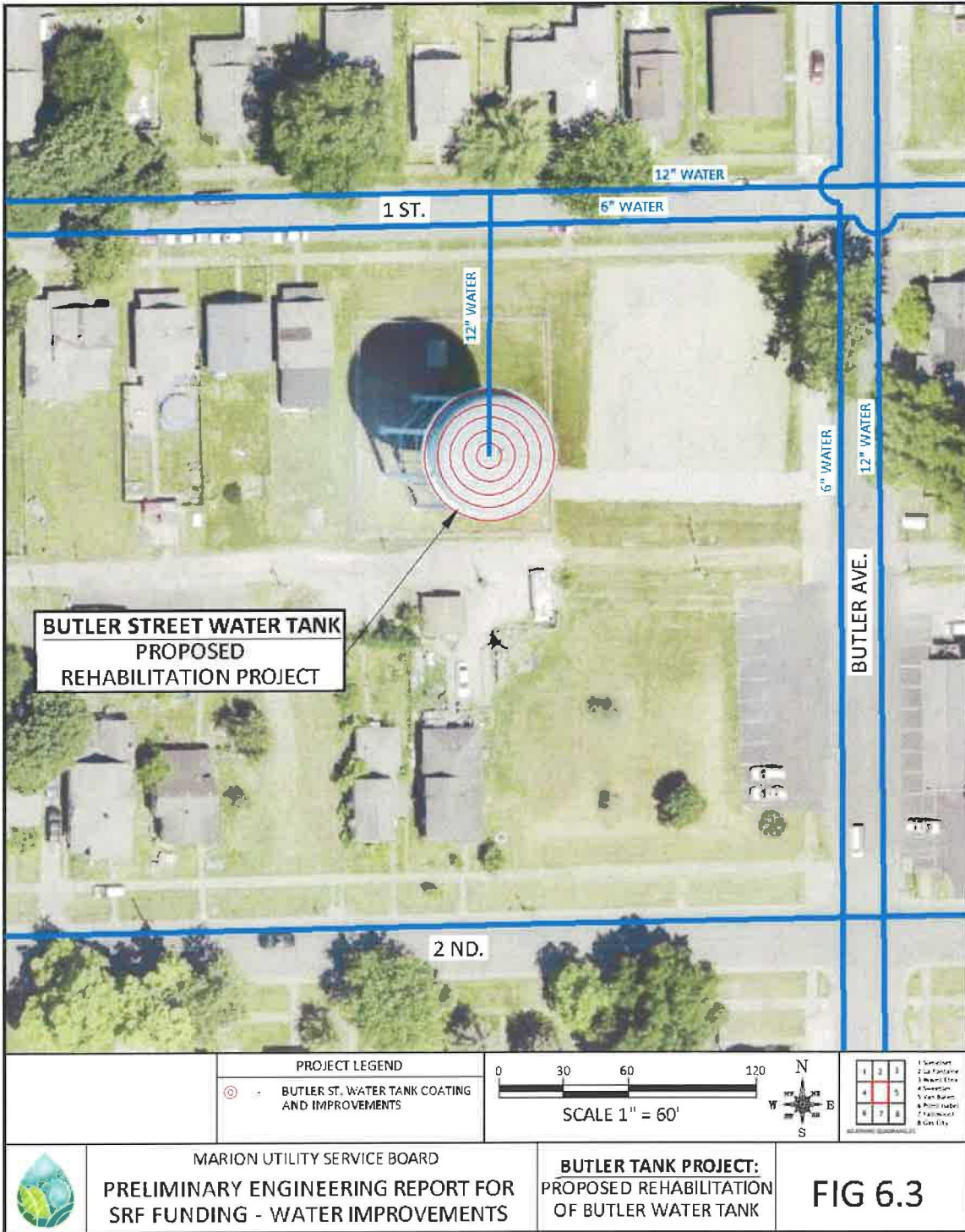


Figure 6.3 Butler Avenue Water Tank Rehabilitation Project

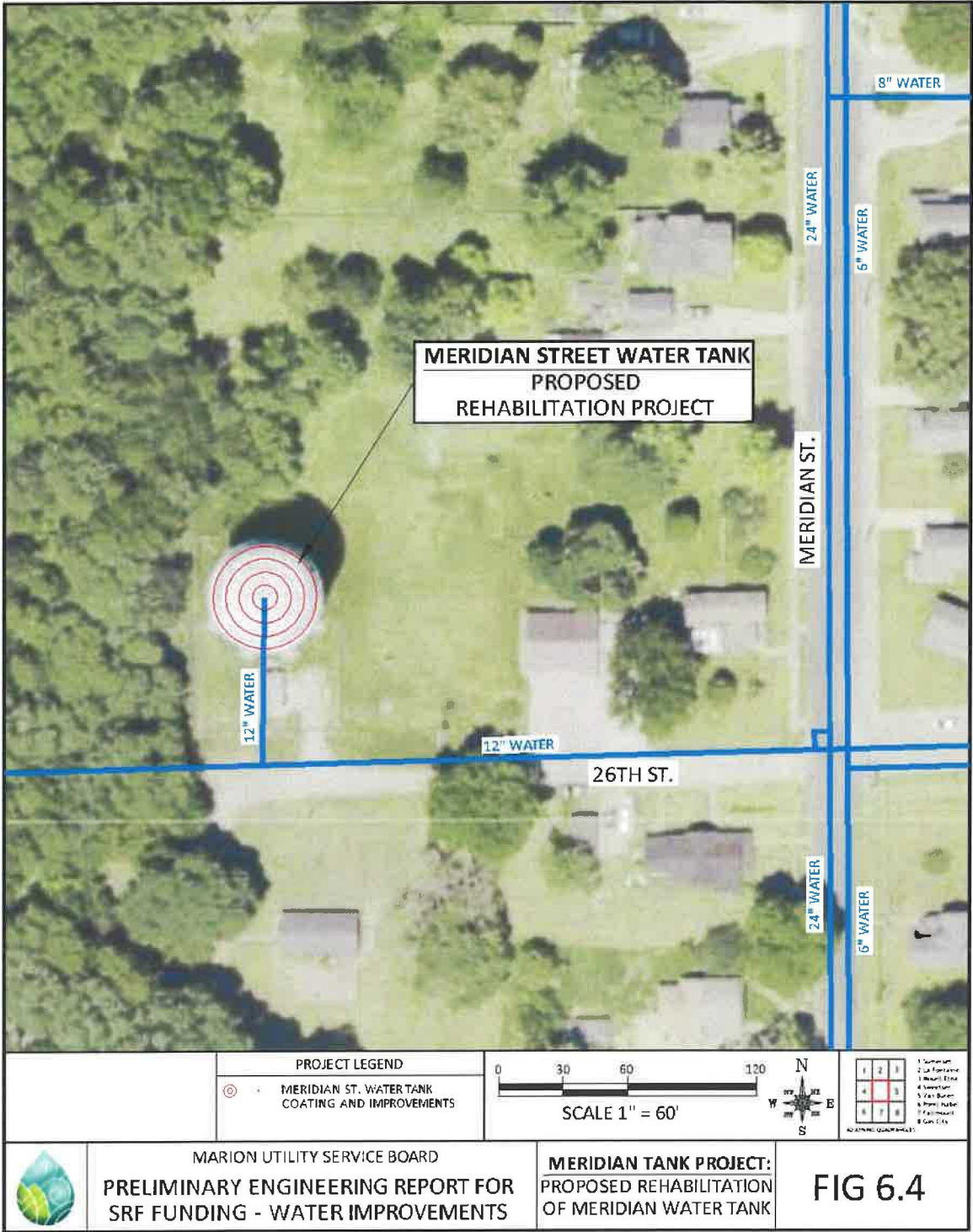


Figure 6.4 Meridian Street Water Tank Rehabilitation Project

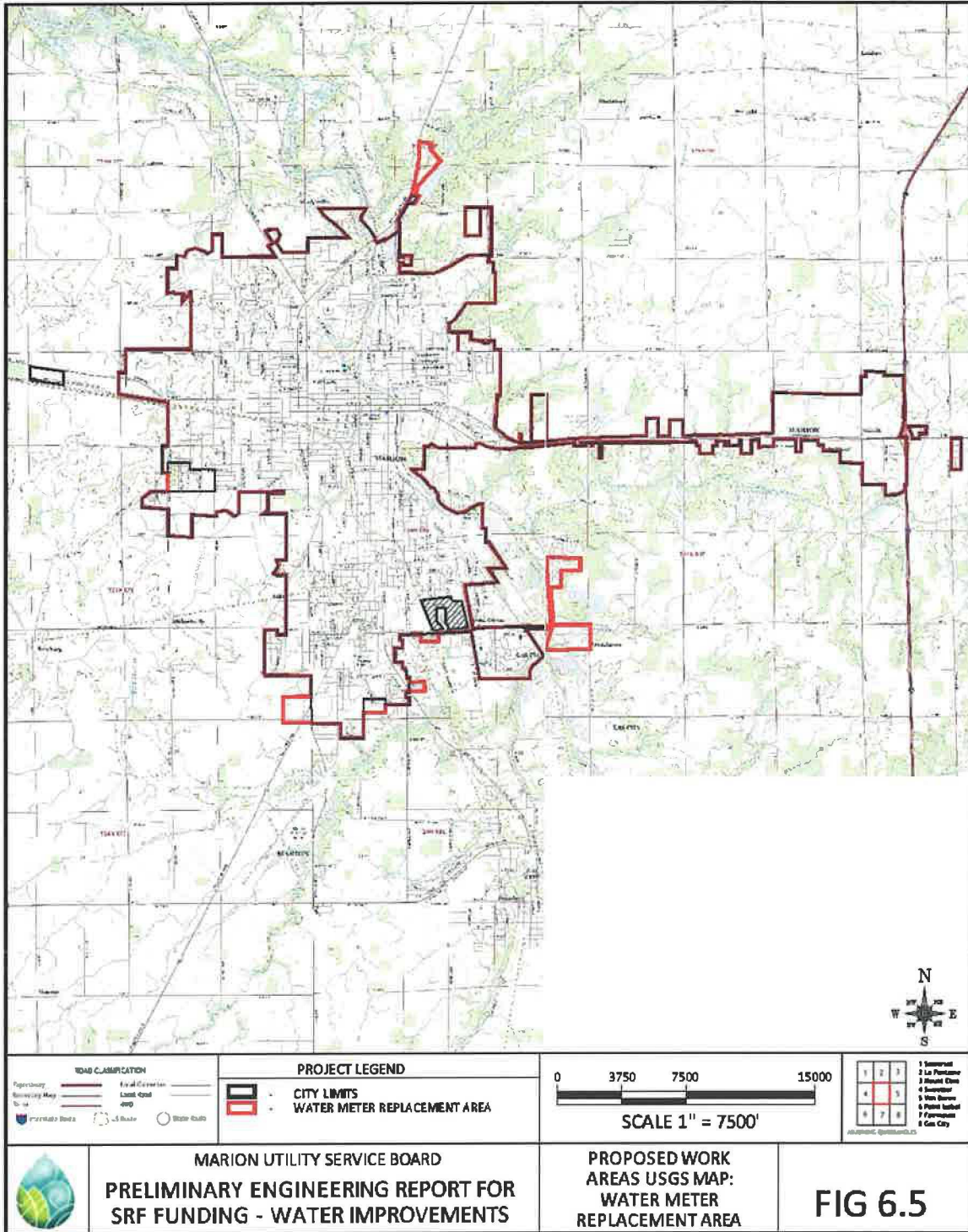


Figure 6.5 Water Meter Replacement Project



Figure 6.6 Lead Service Line Abatement Project Phase I