STATE OF INDIANA

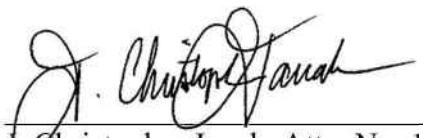
INDIANA UTILITY REGULATORY COMMISSION

PETITION OF THE CITY OF ANDERSON, INDIANA, FOR (1) AUTHORITY ADJUST ITS RATES AND CHARGES THROUGH A FIVE-STEP RATE IMPLEMENTATION; AND (2) FOR AUTHORITY TO ISSUE LONG-TERM DEBT TO FINANCE WATER SYSTEM IMPROVEMENTS	)))))))	**CAUSE NO. 46171**

PREFILED DIRECT TESTIMONY AND EXHIBITS OF LORI A. YOUNG, P.E.

Direct Testimony of Lori A. Young, P.E.	Petitioner's Exhibit 2
Professional Engineering Report (PER)	Attachment LAY-1

Respectfully submitted,



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PETITIONER'S EXHIBIT 2

STATE OF INDIANA

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PREFILED DIRECT TESTIMONY

OF LORI A. YOUNG, P.E.

ON BEHALF OF
CITY OF ANDERSON, INDIANA

I.
Introduction

1. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Lori A. Young, and my business address is 110 Commerce Drive, Danville, Indiana 46122.

2. MS. YOUNG, HOW ARE YOU EMPLOYED?

A. I am a Registered Professional Engineer in Indiana, and am currently employed by Fleis & VandenBrink Engineering, Inc. ("F&V"). I was employed by Curry & Associates, Inc. from 1996 through 2024 where I served as President from 2011 to September 2024. Curry & Associates became part of F&V on October 1, 2024. With this transition, I am now an employee of F&V, where I am a Senior Associate and Indiana Group Manager for Water and Wastewater. I continue to lead our Danville Office/former Curry & Associates office where we perform consulting engineering and architectural services.

3. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND, EXPERIENCE, AND PROFESSIONAL STATUS.

A. I have earned a Bachelor and Master of Science Degrees in Civil Engineering from Purdue University, West Lafayette, Indiana. These degrees were awarded in 1995 and 1996, respectively. I also earned a Master of Business Administration Degree at Indiana Wesleyan University in 2004. I became a licensed professional engineer in the State of Indiana in the year 2000, and my professional engineer registration number is PE IN10000117.

4. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE.

A. I have worked as a design engineer and project manager for Curry & Associates, Inc. (now F&V) since 1996. Throughout this time, I have worked on a wide array of water and wastewater projects. The projects have included such tasks as water and wastewater assessments and planning studies, utility relocations, infrastructure rehabilitation, water and wastewater treatment, water distribution systems, sanitary sewer collection systems, stormwater drainage, and advisory roles to governmental entities and private utilities. Although my role for a particular client may vary, I typically assist clients on all project phases from preliminary planning through budgeting, funding, design, obtaining regulatory approvals, bidding, and contract administration. As president of Curry & Associates, Inc., I was responsible for the business operations of our firm. In my new role with F&V, I will continue to be involved with the business operations of the firm as a Senior Associate and Group Manager.

5. HAVE YOU OR YOUR FIRM TESTIFIED AS EXPERT WITNESSES BEFORE VARIOUS INDIANA GOVERNMENTAL AGENCIES, INCLUDING THE INDIANA UTILITY REGULATORY COMMISSION ("COMMISSION")?

A. Yes, we have represented several clients before a variety of State agencies, including the Commission. I have previously testified as an expert witness on behalf of the Waldron Conservancy District, Brown County Water Utility, Inc., Jackson County Water Utility, Inc., Edwardsville Water Authority, North Dearborn Water Authority, and very recently on behalf of the City of Anderson in consolidated Cause Nos. 46087 and 46147.

6. MS. YOUNG, PLEASE EXPLAIN YOUR AND YOUR FIRM'S INVOLVEMENT WITH ANDERSON.

A. Our firm has served as consulting engineer for Anderson's Water Utility ("Utility") for approximately forty (40) years. Most recently, we have assisted Anderson in: (i) planning, seeking regulatory approvals for, and financing certain improvements ("Improvements") to its water system; and (ii) quantifying, and obtaining Commission approval, for an adjustment to its rates and charges. To assist with the Improvements, our firm prepared a 2024 preliminary engineering report dated March 27, 2024 ("Anderson PER"), which is included with my testimony as **Attachment LAY-1**. The Anderson PER provides specific details of the proposed Improvements and their estimated cost that form the basis for much of Anderson's request to adjust rates and for financing authority. Anderson submitted the Anderson PER to the Drinking Water State Revolving Fund Loan Program ("SRF Program") in March, 2024. The Anderson PER provides a technical basis upon which the SRF Program will hopefully finance the Improvements.

7. IS ANDERSON A PARTY TO OTHER PENDING IURC PROCEEDINGS?

A. Yes. Cause Nos. 46087 and 46147 are pending before this Commission and involve an overlapping water service territory (hereafter referred to as the "Disputed Area") where both Anderson and the Town of Pendleton, Indiana ("Pendleton"), are seeking authority to provide water service. I have filed testimony in Cause No. 46087, which I incorporate by reference into my testimony in this proceeding.

8. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CAUSE?

A. The purpose of my testimony is: (1) to describe Anderson's existing system, facilities, and challenges; (2) to explain Anderson's compliance with Commission's March 4, 2015 Order in Cause 44510 (the "2015 Rate Order") related to system operations; (3) to detail the needs

for the Improvements to Anderson's water utility system described in the Anderson PER and the associated estimated costs, which form the basis for Anderson's request to adjust its rates and for associated financing authority; (4) to show how the projects are grouped into three phases with an explanation of the estimated timeline for implementation and estimated cost of each project; and (5) to discuss Anderson's work with the SRF Program to seek the most favorable terms and conditions for financing the Improvements, including zero percent interest loans, forgivable loans, subsidized loans, and, if needed, participation in the SRFs pooling program.

II.
Anderson's Existing Facilities

9. PLEASE DESCRIBE ANDERSON'S EXISITNG FACILITIES.

A. Anderson has owned and operated its water system for over a century. The City of Anderson Water Department ("Utility") currently operates three well fields, two water treatment plants ("WTP's"), seven elevated water storage tanks, and a distribution system that includes approximately 420 miles of water mains that range in size from 2" to 30" diameter. (See **Attachment LAY-1**, FIGURE 1.1.1). At present, Anderson serves approximately 23,300 active customers.

The Lafayette Township Water Treatment Plant is located on the north side of Anderson, with raw water supply from eleven (11) wells in the "Lafayette Well Field". The Lafayette WTP has a design peak capacity of 10 million gallons per day ("MGD"). The Lafayette WTP is a new plant that was completed in 2019 with a safe capacity of 8 MGD and peak design capacity of 10 MGD. This plant was designed for expansion to 14 MGD.

The Wheeler Avenue Water Treatment Plant is located in downtown Anderson and is supplied raw water from the Norton and Ranney Well Fields. The Ranney Well Field includes four (4) collector wells and two (2) tubular wells. The Norton Well Field contains two rock wells. The Wheeler WTP currently has a peak capacity of 4.7 MGD.

The Utility has a very large water distribution system containing water mains of various materials ranging from cast iron, steel, PVC, asbestos-cement, prestressed concrete, and ductile iron pipe.

The Utility has seven (7) elevated water storage tanks consisting of the following:

1. Eighth Street Tank……..500,000 gallons multi-column
2. Cross Street Tank……500,000 gallons multi-column
3. East 10th Street Tank……..500,000 gallons multi-column
4. Fairview Street Tank……1,000,000 gallons multi-column
5. Columbus Avenue Tank……..1,000,000 gallon multi-column
6. Range Line Road Tank……1,000,000 gallon multi-column
7. Park Road Tank…….2,000,000 gallon composite

The total elevated water storage capacity is 6.5 MG. The 2,000,000 gallon capacity Park Road Tank is the most recent elevated water storage tank to be constructed by the Utility. Significant infrastructure improvements have been made to serve this area of the water distribution system to provide water service to the Flagship Industrial Park.

10. MS. YOUNG, HAS ANDERSON RECENTLY COMPLETED TESTS AND ACTIVITIES IN AN EFFORT TO DEVELOP FACILITIES TO SERVE CUSTOMERS?

A. Yes, it has. Anderson began a hydrogeological investigation study in 2017, which is still ongoing. Anderson has secured agreements with property owners for rights of access and options to purchase land and executed agreements with Eagon & Associates, Inc., an engineering and consulting firm that specializes in hydrogeology and groundwater development, for the purpose of identifying locations of potential ground water resources that are adequate to support the long-term water resources for the Utility. Over the last seven (7) years, the Utility has drilled approximately seventeen (17) test wells in an effort to find a new source of supply. Four of the 17 test wells are in the Disputed Area. This investigation has identified areas on the south side of Anderson (in the Disputed Area) with good potential for the needed water supply. A test production well was drilled in 2024 on the Cooper Property, and pump testing indicated that the test well would produce a sustainable source of supply. The Utility is continuing to perform test drilling in this area to confirm that the Utility can install additional wells with a sufficient and sustainable water supply for Anderson's planned south side water treatment plant.

11. WHY IS ANDERSON DEVELOPING NEW WATER SUPPLY AND TREATMENT FACILITIES?

A. Anderson is investigating and developing new water supply and treatment facilities (including in the Disputed Area) for two (2) reasons. First, the Wheeler WTP and Ranney and Norton well fields are more than 50 years old and have reached the end of their useful life. These facilities were originally rated to produce and treat 9,700,000 gallons per day. With the passage of time, the productivity of the wells in particular have decreased to the point where the wells and WTP only produce and treat a maximum of 4.8 MGD. The

proposed southside WTP and wells, including those being investigated in the Disputed Area would replace these facilities and provide additional capacity to serve existing and future customers, including customers throughout the Anderson Service Area. Second, the raw water quality in the Ranney Well Field is a public health concern. Recent testing has discovered PFAS exceeding the EPA's Maximum Contaminant Level of 4.0 ppt for PFOS, at the Ranney well field. Unfortunately, the levels of PFOS exceed EPA's limits and Anderson must implement remedial measures within five (5) years. Rather than installing granular activated carbon treatment facilities to treat the water produced from the Ranney and Norton well fields, Anderson is seeking to find an alternative supply that has not been impacted by the PFAS plume. Initial testing indicates that the new water supply in the Disputed Area is free from PFAS which will allow the Utility to meet EPA's mandates within the required five (5) year period.

Additionally, the Ranney Wells have been designated Groundwater Under the Direct Influence of Surface Water and have Volatile Organic Carbon ("VOC") contamination. The VOC contamination in the well field has resulted in the area being designated an EPA Superfund Site. Anderson implemented special treatment for VOC removal and special treatment and operations for the Groundwater Under the Influence of Surface Water designation, and the treated drinking water meets all regulatory standards. The addition of PFAS contamination to this well field further demonstrates the need to develop new water resources free of these contaminants.

12. DOES THE ANDERSON PER IDENTIFY THE PROPOSED FACILITIES, INCLUDING THOSE FACILITIES WITHIN THE ANDERSON SERVICE AREA?

A. Yes, it does. The PER details a number of facilities that will be constructed within and used to serve the Anderson service area. These facilities are as follows: Alternative No. 1 includes a new south side water treatment plant and well field. The proposed South Side water treatment plant and well field is planned to replace the existing Wheeler WTP and the Ranney and Norton Well Fields. The proposed South Side water treatment plant and well field is planned to provide 6 MGD water supply. The Utility has been working for more than five (5) years to locate wells in the Disputed Area and plans to finalize the proposed water treatment plant location upon completion of the well siting. This process has been moving steadily forward and Anderson anticipates final determination of the well locations and water treatment plant in the next six (6) months. The new WTP will supply water that benefits Anderson's existing customers and provide additional capacity to serve the Anderson Service Area. The new WTP project will also include new water transmission main construction to connect to Anderson's existing water transmission mains located adjacent to the Anderson Service Area.

The Anderson PER also identifies and recommends replacement of aged and deteriorated water mains and service lines in ten (10) regional areas within Anderson. These projects will replace aged water mains, eliminate several miles of 2" galvanized water mains, and focus on replacement of lead service lines and galvanized service lines with lead connectors. This project will also serve to reduce water loss.

The PER also identifies significant waterworks improvements projects currently underway and funded without a bond issue. The following projects identified will go into construction in early 2025, and include expansion of the Lafayette WTP to 14 MGD, construction of

two new wells in the Lafayette Well Field ("Fuller Wells"), and construction of large diameter water transmission main from the Lafayette WTP to 8th Street. These projects will increase the Lafayette WTP water production and distribution by 4 MGD.

13. MS. YOUNG, WILL THE FACILITIES IDENTIFIED IN THE ANDERSON PER HAVE SUFFICIENT CAPACITY TO SERVE THE ANDERSON SERVICE AREA?

A. Yes, they will. We have designed facilities with sufficient capacity to serve not only customers within the existing municipal limits, but also the current and anticipated customers located in the Anderson Service Area. I would further note that these facilities are a logical extension of Anderson's existing facilities that are adjacent to the Anderson Service Area.

III.
Anderson's Compliance with the Commission's 2015 Rate Order

14. PLEASE DESCRIBE ANDERSON'S PROGRESS TOWARD COMPLYING WITH THE COMMISSION'S 2015 RATE ORDER.

A. As Mr. McKee notes, I provide information on Anderson's compliance with five requirements of the Commission's 2015 Rate Order in the Operations and Planning category, which I summarize in **Table LAY-1**, and further explain in turn below.

Table LAY-1

Category	Subcategory	Requirement
Operations & Planning	Capital Improvement Plan	As part of, or in connection with, its strategic planning activities, within eighteen (18) months of the final order in this Cause, Anderson will, develop and implement a rolling short-term three-year capital improvement plan for its depreciation funds.
Operations & Planning	Wells & Tanks - Tanks	As part of, or in connection with, its strategic planning activities, Anderson will, within eighteen (18) months of the final order in this Cause: (a) work with a professional tank consultant to develop (i) a long-term tank maintenance prioritization plan and establish a forecasted maintenance schedule to assist in determining the financial cost to performing

		future tank maintenance, and (ii) the necessary documents, policies, and procedures to comply with the AWWA G200-09 Standard; and (b) comply with AWWA G200-09 Standard for Treated Water Storage Facilities, Section 4.3.1 (see VII.D.1 below regarding reporting).
Operations & Planning	Wells	Anderson will work with a professional well consultant to determine the annual cost of performing well maintenance on an ongoing basis.
Operations & Planning	Other Studies	As part of, or in connection with, its strategic planning activities, Anderson will, within eighteen (18) months of the final order in this Cause, also: Develop a Scope of Services and Study Schedule, consultant selection criteria and a solicitation process for the Qualification Based Selection of consultants for (a) hydraulic model, (b) hydrogeological study, (c) water resources alternatives study, and (d) bottom-up water audit to further the goal of reducing Anderson's non-revenue water. Anderson will issue Requests for Statements of Qualifications (SOQ) with separate sealed cost proposals to conduct the studies.
Operations & Planning	Portable Generator	Within ninety (90) days following the final order in this Cause, Anderson will procure or arrange for access to a portable generator to support the pump at Ranney Well No. 5.

15. HAS ANDERSON DEVELOPED AND IMPLEMENTED A ROLLING SHORT-TERM CAPTIAL IMPROVEMENT PLAN FOR ITS DEPRECIATION FUNDS?

A. Yes, they have. Anderson's capital improvement plan includes an annual extensions and replacement budget covering four major categories, which are shown below:

Water Meter Replacement	$820,000/year
Water Main & Service Line Replacement	$1,500,000/year
Hydrogeological Investigation	$150,000/year
Service Fleet Replacement	$372,400/year
Total Annual Rolling Short-Term Cap	$2,842,400 per year

The hydrogeological investigation includes efforts to locate and drill test wells. Anderson proposes to build up to this amount through the phased rate increase, with funding of $1,000,000 per year for Phases I – IV, then full funding in Phase V. This is further explained in the testimony of Ms. Wilson.

16. WHY WERE THESE ITEMS AND BUDGETS IDENTIFIED AS NECESSARY FOR ANDERSON'S ANNUAL CAPITAL IMPROVEMENT NEEDS?

A. All of the items identified are important for the on-going operations of the water system.

Water Meter Replacement: Meter replacement needs to be performed on a regular cyclical basis to ensure accurate metering and billing. Meter life is typically 10-15 years. Anderson has over 23,000 water meters in the distribution system. The annual water meter replacement budget of $820,000 will enable Anderson to purchase approximately 2,300 meters each year to replace old meters (approximately 10% each year). This will provide approximately a 10-year meter replacement cycle.

Water Main and Service Line Replacement: Due to on-going deterioration of water mains and service lines, Anderson must continue to invest in replacement of critical infrastructure. The planned funding of $1,500,000 per year will allow Anderson to complete small water main and service line replacement projects on an annual basis. Focus will be on elimination of 2" steel water mains and galvanized water service lines.

Hydrogeological Investigation is included in the annual capital improvements budget to provide funds for future water resource development. As wells continue to age, additional wells will be necessary in the future. Potential future increased water demand could also require additional water resources. Due to the length of time required to locate potential well sites, test the area and verify resources, these operations need to be on-going. This will allow Anderson to acquire well field property when ground water supplies are found in order to provide long-term sustainability of the overall groundwater supply. The annual budget of $150,000 has been based on Anderson's hydrogeological investigation costs over the past seven(7) years.

Service Fleet Replacement: The Anderson Water Department needs trucks, dump trucks,

service vehicles and excavation equipment in order to perform the regular tasks of operating a water utility of this size. The vehicles and equipment are used on a daily basis and must be replaced periodically in order to maintain the utility operations. The annual Service Fleet Replacement budget is $372,400/year. Table LAY-2 provides a summary of planned equipment replacement costs for 2025 – 2029. The total cost of equipment replacement for the 5 year period is $1,862,000. The average annual cost is $372,400 per year.

TABLE LAY-2 SERVICE FLEET REPLACEMENT PLAN

Description	2025	2026	2027	2028	2029
(1) Single Axle Dump Truck	$140,000.00	$150,000.00	$154,000.00		
(3) 4X4 crew cab pick-up trucks	$90,000.00	$93,000.00	$96,000.00	$99,000.00	$102,000.00
(1) crew service truck	$40,000.00		$44,000.00		$48,400.00
(1) hydro excavator			$310,000.00		
(1) Backhoe		$150,000.00	$150,000.00		
(1) trenchless boring machine		$100,000.00			
(1) combination valve exerciser/vac unit		$75,000.00			
(3) hydraulic units (for service trucks to power tools, etc.)			$20,600.00		
Total Cost of Equipment					**$1,862,000.00**
Annual Average Cost					**$372,400.00**

17. HAS ANDERSON WORKED WITH A PROFESSIONAL TANK CONSULTANT TO DEVELOP (i) A LONG-TERM TANK MAINTENANCE PRIORITIZATION PLAN, FORECASTED MAINTENANCE SCHEDULE, AND DOCUMENTS, POLICIES AND PROCEDURES TO COMPLY WITH AWWA STANDARDS G200-09, INCLUDING FOR TREATED WATER STORAGE?

A. Yes, they have. Anderson worked with tank consultant Tank Industry Consultants pursuant

to a contract dated August 25, 2015. Anderson has entered into a long-term tank maintenance contract with Suez for regular inspections and tank maintenance. The contract is based on a 20-year schedule for recommended regular inspection and maintenance, including painting and repairs.

18. HAS ANDERSON WORKED WITH A PROFESSIONAL WELL CONSULTANT TO DETERMINE THE ANNUAL COST OF PERFORMING WELL MAINTENANCE ON AN ONGOING BASIS?

A. Yes. The City of Anderson has worked with Bastin-Logan Water Services, a company that performs well drilling, well maintenance, and a wide range of services specific to drinking water supply and treatment. Bastin-Logan Services performs regular well cleaning and maintenance of well pumps and equipment on an annual basis. The regular on-going maintenance services performed annually provide a verified source of documentation of well maintenance costs.

19. PLEASE IDENTIFY ANDERSON'S PROGRESS IN STRATEGIC PLANNING INCLUDING PLANNING FOR (A) HYDRAULIC MODELING, (B) A HYDROGEOLOGICAL STUDY, (C) A WATER RESOURCES ALTERNATIVE STUDY, AND (D) WATER LOSS AUDIT?

A. Anderson has selected qualified consultants to perform the identified technical services. (A) Hydraulic Model: CHA Consulting, Inc. has developed a hydraulic model of Anderson's water distribution system. This effort started in approximately 2016, and over time the city has continued to build-out the detail of the model. The model was expanded in 2024 to include the raw water mains in the Lafayette Well Field.

(B) Hydrogeological Study: Eagon & Associates, along with Curry & Associates have served the City of Anderson in development of the hydrogeological study. Bastin-Logan Water Services has supported this effort performing the physical test well drilling.

(C) Water Resources Alternative Study: The water resources alternative study has been combined with the Hydrogeological Study. The City of Anderson is the largest water user in the region, and there are no neighboring water utilities that could provide enough water to serve as an alternative resource. Anderson has met with Citizen's Energy Group, and determined that the volume of water they could provide would be limited to approximately 1 MGD, and significant water main infrastructure construction would be required for the connection. With no other options for water purchase, the feasible water resources alternatives are limited to water resources that can be developed by the City of Anderson. The hydrogeological investigations are being performed to identify viable and sustainable water resources for the City of Anderson.

(D) Water Loss Audit: The Anderson Water Department has performed Water Loss Audits and Validations in 2020, 2022 and 2024, in accordance with IC 8-1-30.8. Mr. McKee and Curry & Associates performed the Water Loss Audit, and Curry & Associates performed the Water Loss Audit Validation for each of these years.

20. HAS ANDERSON PROCURED OR ARRANGED FOR ACCESS TO A PORTABLE GENERATOR TO SUPPORT THE PUMP AT RANNEY WELL NO. 5?

A. Yes, the City of Anderson purchased the portable generator for Ranney Well No. 5. The generator is used when needed for emergency power to Well No. 5.

IV.
System Needs Driving Rate Adjustment Request

21. PLEASE PROVIDE AN OVERVIEW OF THE MOST NOTABLE CONDITIONS OF ANDERSON'S WATER SYSTEM THAT ARE NECESSITATING THE IMPROVEMENTS THAT REQUIRE ANDERSON TO ADJUST ITS RATES AND SEEK FINANCING APPROVAL.

A. Eight of Anderson's 17 drinking water wells are over 50 years old and have lost as much as 70% of their capacity. The cost to maintain these wells is not feasible because the capacity cannot be restored. For the long-term benefit of Anderson's system, it is critical to locate and develop new sources of supply. The Norton North well has experienced its fifth leak in the past 2 years, and the Tuxford well in the Lafayette wellfield was drilled in 1968 with a capacity of 900 GPM, but can now only pump 125 GPM. Anderson's Wheeler Avenue Treatment Plant is also aging and suffering from declining performance. The Wheeler plant is over 75 years old, and while it was designed with a 9.7 MGD treatment capacity, it is now only rated at 4.5 MGD. The Wheeler plant is identified as groundwater under the direct influence of surface water and requires additional chemical and physical treatment techniques, along with requiring an operator with WT5 licensure to be on-site at all times when water is treated, which is 24 hours a day, 7 days a week. The Wheeler's interior piping suffers from corrosion and leaks, and the exterior filter walls are leaking. Anderson's distribution system averages 104 main breaks and 245 service line breaks annually, and a 34% water loss rate, costing Anderson approximately $440,000 annually in operating costs. Significant portions of water main infrastructure is past its useful life,

having been in service for well over 50 years. There are documented instances of severe corrosion and leaks in the distribution system. Anderson is also focused on lead service line replacement. Source water quality concerns in the Ranney Well Field due to PFAS contamination and regulatory compliance mandates further define the need for these waterworks improvements.

22. PLEASE DESCRIBE THE PROJECTS RECOMMENDED IN THE ANDERSON PER AND THE ASSOCIATED ESTIMATED COST OF EACH PROJECT.

A. Please see **Attachment LAY-1** (Preliminary Engineering Report) for details of the recommended alternatives. **Table LAY-3** below provides a summary of recommended projects and preliminary opinion of probable construction cost for each project. The total preliminary estimate of probable construction cost for these projects is $95,368,803. This includes the preliminary construction cost estimate plus design contingency.

Table LAY-3 Proposed Projects and Preliminary Opinion of Probable Construction Cost

	Proposed Water Infrastructure Project	Estimated Construction Cost	Design Contingency	Probable Construction Cost
1	Replacement Water Treatment Plant & Wells, South Side	$18,820,000	$ 5,764,000	$ 24,584,000
2	Cross Street Water Main Replacement (CR 200 W to Broadway)	$5,077,900	$ 1,015,580	$ 6,093,480
3	8th Street Water Main and Service Lines, Raible to John St	$7,139,470	$ 1,427,894	$ 8,567,364
4	North Anderson Cross A - Water Mains & Service Lines	$5,789,560	$ 1,157,912	$ 6,947,472
5	North Anderson Cross B - Water Mains & Service Lines	$6,126,532	$ 1,225,306	$ 7,351,838
6	West Central (Madison-Sycamore) Water Mains & Service Lines	$10,149,718	$ 2,029,944	$ 12,179,662
7	Park Place Water Mains & Service Lines	$8,722,620	$1,744,524	$ 10,467,144
8	Belmont Water Mains & Service Lines	$5,045,384	$ 1,009,077	$ 6,054,461

9	Brentwood Service Line Replacements	$1,633,240	$ 326,648	$ 1,959,888
10	Indian Meadows Service Line Replacements	$4,873,912	$ 974,782	$ 5,848,694
11	Historic District Service Line Replacement	$4,429,000	$ 885,800	$ 5,314,800
	Preliminary Opinion of Probable Construction Cost	**$77,807,336**	**$17,561,467**	**$ 95,368,803**

23. PLEASE DESCRIBE HOW THE COST ESTIMATES IN TABLE LAY-2 WERE DEVELOPED

A. The cost estimates were developed based on preliminary concept design of the various projects, and development of cost estimates for the project components.

Project 1 – South Side Water Treatment Plant and Wells includes four (4) proposed water supply wells, and a new water treatment plant facility to provide iron and manganese removal, and all typical components of a 6 MGD drinking water treatment facility. The cost estimates for various components are based on my experience with other recent bids for similar projects. I also contacted Bastin-Logan Water Services for budget estimates for well construction and iron removal units. Because the site has not yet been selected and the actual raw water quality is not known, we included a 30% design contingency. The final location of the water treatment plant and wells was not known at the time of project cost estimates were prepared for the PER, thus the planned routes of raw water mains and finished water transmission mains were not defined. I included estimates of $2M for raw water mains and $3M for finished water transmission mains, but the final cost could be greater or less than these estimates. The Additional Contingency described in Q-23 is planned to cover potential cost increases for the raw and finished water transmission mains required for the proposed South Side Water Treatment Plant and Well Field.

Projects 2-11, Water Main and Service Line Replacement Projects include water main replacement, retirement of water mains to be removed from service and replacement of service lines. Detailed cost estimates were prepared for each proposed water main project, as provided in **Attachment LAY-1** PER Appendix B. The unit costs were estimated based on three (3) recent similar project bids. The service line replacement project shall include replacement of all service lines from the new water main to the water meter, replacement of the meter pit and setter, and replacement of all existing service lines from the meter to the house premise plumbing for all service lines that are galvanized steel or lead service lines. Lead Service Line Replacement along with galvanized steel service lines with lead connectors upstream shall be replaced in the project areas. In project areas 3-11, we have estimated that 80% of the water service lines will be replaced on the customer side from the water meter to the house. The PER additionally provides cost estimate breakdown to identify the lead service line replacement related costs for each project. Design contingency of an additional 20% is recommended for each of the water main projects due to the preliminary phase of concept design at the PER stage.

24. PLEASE DESCRIBE ANY NON-CONSTRUCTION AND CONTINGENCY COSTS FOR WHICH ANDERSON IS SEEKING RECOVERY THROUGH A RATE ADJUSTMENT IN THIS PROCEEDING.

A. Non-construction costs include professional services required to accomplish the waterworks improvements.

a. Funding Support: Professional Services of municipal financial advisors, legal advisors, bond council, engineering and financing fees necessary to apply for

funding and to support the City of Anderson through the petition for rate increase and issuance of bonds. This includes professional services for Proposed Waterworks Revenue Bond Anticipation Notes and Waterworks Revenue Bonds (three series of SRF Revenue Bonds). Due to federal funding with SRF, labor standards monitoring and reporting is required throughout the construction of the projects. Fees associated with the SRF loan closing and IURC Regulatory fees are also included in the overall non-construction costs.

b. Environmental Review: SRF funding requires environmental review and approval of the project areas. This includes archaeological investigation of previously undisturbed areas and can include additional wetland investigations. Geotechnical investigations may also be required.

c. Project Engineering Services: Professional Services for Design, Bidding and Construction Phase Professional Services include engineering, preliminary planning, project design, surveying, permitting, bidding, and construction administration services. Resident project representative services are necessary through the construction phase of each project.

d. Land Acquisition: Land must be acquired for the proposed south side water treatment plant and well field. Easements for water mains will also likely be required.

e. Contingencies: **Table LAY-2** identifies design contingency recommended for each project. The design contingency is recommended for total project construction budget to accommodate for field conditions and final design requirements that are

not fully understood at the preliminary planning phase and development of the Preliminary Engineering Report. The recommended design contingency for the water treatment plant and wells is 30% and the recommended design contingency for the water main projects is 20%. Total design contingency of $17,561,467 is recommended for these projects.

Additional Contingency of $16,538,000 is included in the Bond Ordinance. These additional contingency funds are necessary for coverage of the following costs that are necessary for the project but not yet defined:

i. Unknown market conditions and inflation through the project horizon could result in cost increases above the preliminary opinion of probable cost. This is particularly important for the planned phasing of the Anderson Water Projects for this rate case due to the bidding schedule of projects in 2025, 2026 and 2027. Building in adequate contingency funds into the rates will provides coverage so that the projects can proceed in the future without time delay and additional expense associated with another rate case.

ii. Land acquisition for the proposed south side well field and water treatment plant property. Additionally, easements will likely be required for water mains. As Anderson finalizes the location of the new south side well field, the finished water transmission main routes to connect to the existing distribution shall be determined. Contingency is built into the overall plan to provide funding for the finished water main from the planned south side water treatment plant to the existing south side water transmission mains.

These costs include the land purchase, title searches, appraisals and legal counsel.

iii. Construction of water transmission mains from the south side water treatment plant to the existing water distribution system shall be determined upon final selection of the south side water treatment plant site. The cost of the water transmission mains exceeding the cost estimate budget shall be covered by the Additional Contingency funds.

Table LAY-4 below provides a summary of engineering related non-construction costs. Please reference testimony of Ms. Jennifer Wilson for details of other non-construction costs associated with Bond Counsel, Municipal Advisor, Parity Report, SRF Counsel, Labor Standards and IURC Regulatory Fees.

Table LAY-4: Summary of Engineering Non-Construction Costs

Alt.	Anderson Water Utility Improvements	Probable Construction Cost	Engineering Design, Bidding & Contract Admin	Construction Resident Project Representative	Phase
	Water Supply and Treatment Alternatives				
1	Replacement Water Treatment Plant South Side *	$ 24,584,000	$ 2,640,000	$ 740,000	2
	Distribution System - Water Main & Service Line Replacement				
2	Cross Street Water Transmission Main Replacement (CR 200 W to Broadway)	$ 6,093,480	$ 609,000	$ 180,000	3
3	8th Street Water Main and Service Lines, Raible to John St	$ 8,567,364	$ 855,000	$ 257,000	1
4	North Anderson Cross A - Water Mains & Service Lines	$ 6,947,472	$ 695,000	$ 208,000	1
5	North Anderson Cross B - Water Mains & Service Lines	$ 7,351,838	$ 735,000	$ 221,000	1
6	West Central (Madison-Sycamore) Water Mains & Service Lines	$ 12,179,662	$ 1,215,000	$ 365,000	1
7	Park Place Water Mains & Service Lines	$ 10,467,144	$ 1,045,000	$ 314,000	2

8	Belmont Water Mains & Service Lines	$ 6,054,461	$ 605,000	$ 182,000	3
9	Brentwood Service Line Replacements	$ 1,959,888	$ 196,000	$ 59,000	3
10	Indian Meadows Service Line Replacements	$ 5,848,694	$ 585,000	$175,000	3
11	Historic District Service Line Replacement	$ 5,314,800	$ 530,000	$ 159,000	3
	Total	**$95,368,803**	**$9,710,000**	**$2,860,000**	

**Note: Construction and Non-Construction Cost of water transmission mains for Alternative 1 to be determined based on final water treatment plant location.*

IV.

Project Phases

25. PLEASE DESCRIBE THE PROPOSED PHASES FOR THE IMPROVEMENTS.

A. We have identified three phases for implementing the projects, which are shown in **Table LAY-5** below. **Table LAY-5** includes an estimate of probable construction cost for each project and total for each phase. The projects are proposed to be implemented in three phases. Phasing of the projects is beneficial for funding, allowing the city to phase in the necessary rate adjustments over time. The first phase of projects is recommended based on water main and service line leak history, lead service lines replacement needs and elimination of 2" galvanized water mains. The proposed south side water supply wells and treatment plant are recommended for Phase II in order to provide time to complete well siting, complete land acquisition and design the water treatment plant and wells.

Table LAY-5 Proposed Project Phases

	Project	Phase I	Phase II	Phase III
1	Replacement Water Treatment Plant South Side		$ 24,584,000	
2	Cross Street Water Main Replacement (CR 200 W to Broadway)			$ 6,093,500

3	8th Street Water Main and Service Lines, Raible to John St	$ 8,567,400		
4	North Anderson Cross A - Water Mains & Service Lines	$ 6,947,500		
5	North Anderson Cross B - Water Mains & Service Lines	$ 7,351,800		
6	West Central (Madison-Sycamore) Water Mains & Service Lines	$ 12,179,700		
7	Park Place Water Mains & Service Lines		$ 10,467,100	
8	Belmont Water Mains & Service Lines			$ 6,054,500
9	Brentwood Service Line Replacements			$ 1,959,900
10	Indian Meadows Service Line Replacements			$ 5,848,700
11	Historic District Service Line Replacement			$ 5,314,800
	Preliminary Opinion of Probable Construction Cost	**$ 35,046,400**	**$ 35,051,100**	**$ 25,271,400**

**Note: Costs are rounded.*

VI.
Financing the Necessary Improvements

26. HAS ANDERSON TAKEN ANY STEPS TO CONSTRUCT AND FINANCE THE FACILTIES IN THE ANDERSON PER?

A. Yes, it has. Anderson has retained our firm to plan and complete the Anderson PER which is a prerequisite to obtaining funding for the proposed facilities from the SRF Program. In fact, we submitted the Anderson PER to the SRF Program in March, 2024 for their review, consideration, and approval. Further, the current projects of the Fuller Wells and large diameter water transmission main projects are bidding in November of 2024, and are expected to begin construction in early 2025. The Lafayette WTP expansion project will be bid in January 2025, with construction starting in Spring 2025.

27. HAS ANDERSON DISCUSSED THESE PROPOSED FACILITIES WITH THE

SRF PROGRAM?

A. Yes, we have spent a significant amount of time and energy over the past year discussing the proposed facilities with the SRF Program. The SRF Program has indicated willingness to finance these facilities in three (3) different bond issues with the first issue being done in the SRF Program's 2025 Fiscal Year. The SRF Program has, in turn, reviewed the Anderson PER and formal approval is expected in the next few months.

28. PLEASE BRIEFLY DESCRIBE THE BORROWING OPTIONS WITH THE SRF PROGRAM.

A. Anderson is exploring borrowing options with SRF that include zero percent interest loans, forgivable loans, subsidized loans, and, if needed, participation in the SRFs pooling program. Anderson qualifies for special funding as a Disadvantaged Community with Median Household Income of $44,974. Anderson also qualifies for Lead Service Line Replacement SRF funding for replacement of lead service lines and galvanized service lines in need of replacement. Anderson will apply for these programs and strive to access funding to the extent possible in each of the three project phases. Anderson will pursue funding through these programs and the SRF subsidized funds, but anticipate due to the amount of funding required, the SRF pooled funds will be necessary for a portion of the project funding.

29. WILL ANDERSON BE ABLE TO BORROW THE REQUISITE FUNDS TO CONSTRUCT THE FACILITIES IDENTIFIED?

A. Yes. As further explained by Ms. Wilson in her testimony, Anderson adopted rate and bond ordinances supporting its request in this proceeding for approval to change its rates and charges and borrow the funds necessary to construct the facilities in the Anderson PER.

VII.
Recommendation and Conclusion

30. WHAT DO YOU RECOMMEND TO THE COMMISSION?

A. I recommend that the Commission approve Anderson's request for a rate adjustment and financing authority in order to implement the projects and initiatives identified in the Anderson PER.

31. DOES THIS CONCLUDE YOUR TESTIMONY?

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.

Lori A. Young

Lori A. Young, P.E.
Curry & Associates, Inc., now part of
FLEIS & VANDENBRINK

CERTIFICATE OF SERVICE

I certify that a copy of the foregoing document was served upon the following by electronic mail this 5th day of December, 2024:

William I. Fine
Daniel M. LeVay
Indiana Office of Utility Consumer Counselor
wfine@oucc.in.gov
dlevay@oucc.in.gov
infomgt@oucc.in.gov

J. Christopher Janak

Bose McKinney & Evans LLP
111 Monument Circle, Suite 2700
Indianapolis, IN 46204
(317) 684-5000

4895813.1

Attachment LAY-1

Professional Engineering Report

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

CURRY & ASSOCIATES, INC
CONSULTING ENGINEERS & ARCHITECTS

November 25, 2024

Via Email

Jennifer Pence
SRF Program Manager
PERSubmittal@ifa.in.gov

RE: City of Anderson PER Revision

Dear SRF Program Manager:

The City of Anderson has revised the proposed project phasing for the 2023 Drinking Water Preliminary Engineering Report to include the below proposed phases, schedule, and cost estimates.

The location for the proposed Phase II South Side Water Treatment Plant & Wells continues to be determined based on test well drilling. Attached Exhibits identify possible parcels/locations for the water treatment plant and wells.

Proposed phasing for projects includes the below:

Phase I Proposed Projects

- **Alternative 3:** 8th Street Water Main & Service Line Replacement
- **Alternative 4:** North Anderson Cross A Water Main & Service Line Replacement
- **Alternative 5:** North Anderson Cross B Water Main & Service Line Replacement
- **Alternative 6:** West Central Water Main & Service Line Replacement

Phase II Proposed Projects

- **Alternative 1:** South Side Water Treatment Plant & Wells
- **Alternative 7:** Park Place Water Main & Service Line Replacement

Phase III Proposed Projects

- **Alternative 2:** Cross Street Water Transmission Main & Service Line Replacement
- **Alternative 8:** Belmont Water Main & Service Line Replacement
- **Alternative 9:** Brentwood Water Main & Service Line Replacement
- **Alternative 10:** Indian Meadows Water Main & Service Line Replacement
- **Alternative 11:** Historic District Water Main & Service Line Replacement

110 Commerce Drive
Danville, IN 46122
P: 317.745.6995
www.fveng.com

Proposed project scheduling is updated as per the below:

Project Schedule

Project Component	Phase I Anticipated Date	Phase II Anticipated Date	Phase III Anticipated Date
Submit Preliminary Engineering Report	March 2024 Update November 2024		
Public Hearing	January 2025	January 2025	January 2025
IURC Filing	November 2024		
Archaeological/Wetlands Investigations Complete	N/A	April 2025	N/A
Land and Easement Acquisition Complete	N/A	April 2025	N/A
Anticipated PER Approval	July 2025		
IDEM Permit Submittal	June 2025	June 2026	June 2027
IDEM Construction Permit Approval	July 2025	July 2026	July 2027
Front End Document Certification Submittal to SRF	June 2025	June 2026	June 2027
Bid Opening	August 2025	August 2026	August 2027
IURC Approval	July 2025		
Loan Closing	September 2025	September 2026	September 2027
Sign Contracts	October 2025	October 2026	October 2027
Begin Construction	November 2025	November 2026	November 2027
Complete Construction	2027	2028	2029

Cost estimate updates per phase are listed below:

Project	Phase I	Phase II	Phase III
Replacement Water Treatment Plant South Side		$24,584,000.00	
Cross Street Water Main Replacement			$6,093,500.00
8th Street Water Main/Service Lines	$8,567,400.00		
North Anderson Cross A Water Main/Service Lines	$6,947,500.00		
North Anderson Cross B Water Main/Service Lines	$7,351,800.00		
West Central Water Main/Service Lines	$12,179,700.00		
Park Place Water Main/Service Lines		$10,467,100.00	
Belmont Water Main/Service Lines			$6,054,500.00
Brentwood Water Main/Service Lines			$1,959,900.00
Indian Meadows Water Main/Service Lines			$5,848,700.00
Historic District Water Main/Service Lines			$5,314,800.00
Preliminary Opinion of Probable Construction Cost	**$35,046,400.00**	**$35,051,100.00**	**$25,271,400.00**
Non-Construction Cost	**$11,907,000.00**	**$4,457,700.00**	**$1,715,000.00**
Total Project Cost	**$46,953,400.00**	**$39,508,800.00**	**$26,986,400.00**

Note: Project costs are rounded.

Please don't hesitate to contact us with questions.

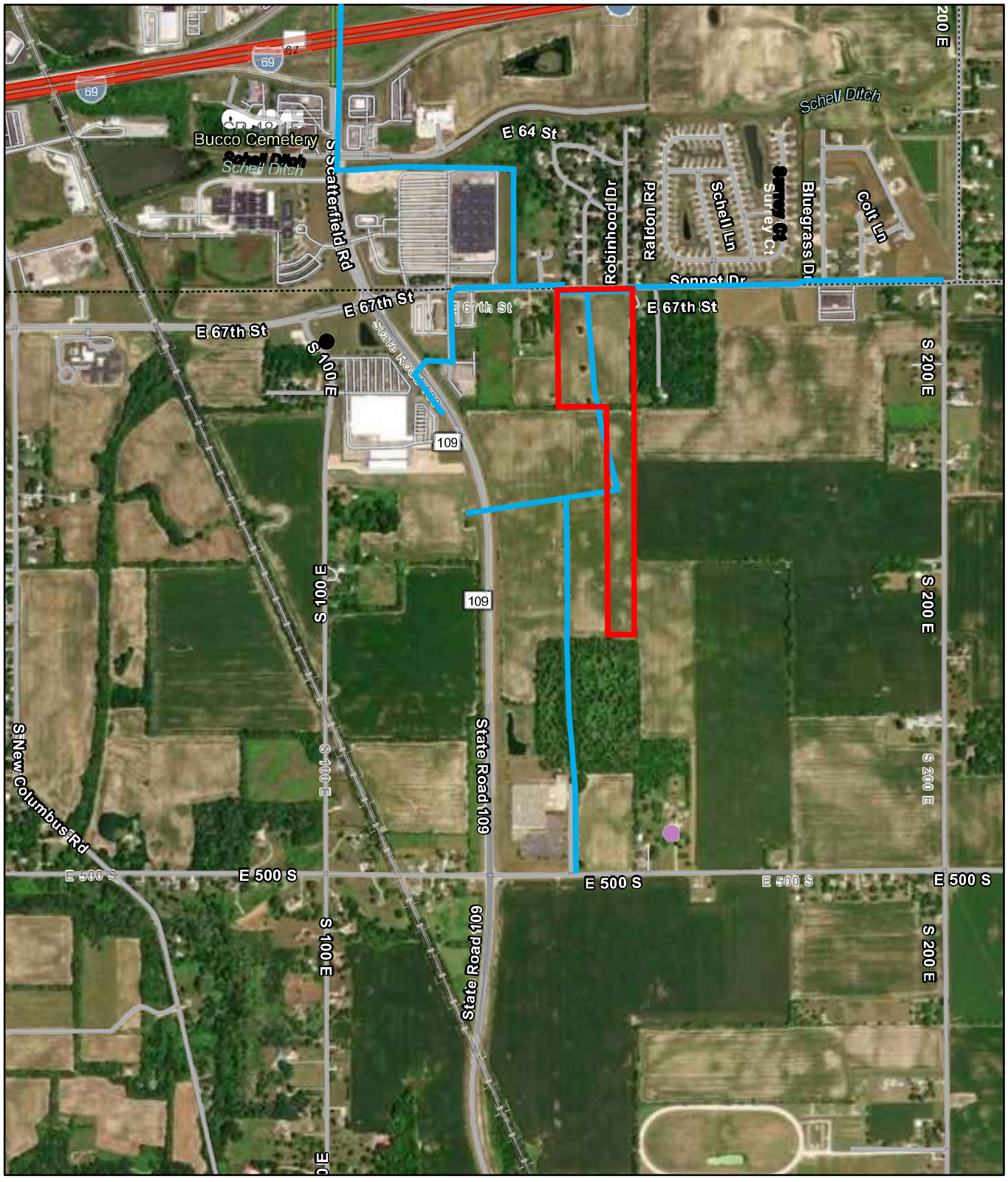
Sincerely,

Fleis & VandenBrink / Curry & Associates

Lori A. Young

Lori A. Young, P.E.
Indiana Group Manager – Water & Wastewater

Figure 5.1b - South Side WTP & Well Field Historic Resources



11/24/2024, 10:35:15 PM

1:18,056

0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

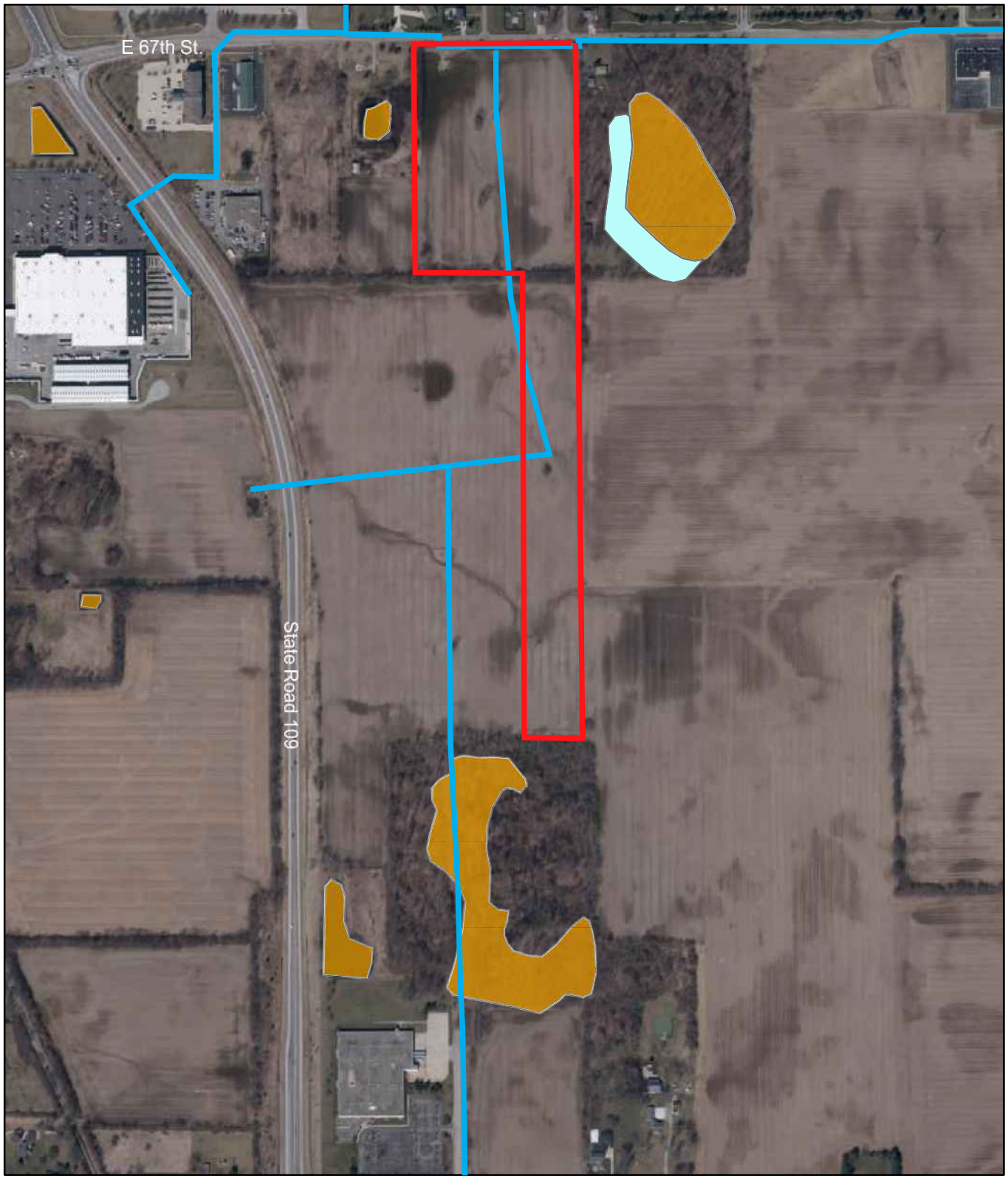
N

- Counties
- Cemeteries
- County Survey Sites
- Contributing
- Demolished
- Civil Township Boundaries
- Existing Water Main
- Proposed Project Area

Esri Community Maps Contributors, MCCOG, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, Maxar

Indiana DNR DHPA
Indiana DNR

5.1c - South Side WTP and Well Field Wetlands Floodplains



November 25, 2024

1:9,028

0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

National Wetlands Inventory - NWI Wetlands Historic Map Info

National Wetlands Inventory - NWI Indiana Area

National Wetlands Inventory - NWI Historic Wetlands

National Wetlands Inventory - NWI Historic Wetlands Project Metadata

National Wetlands Inventory - NWI Wetlands Project Metadata

National Wetlands Inventory - NWI Wetlands

Palustrine

Existing Water Main

Proposed Project Area

N

Indiana Viewer

Mayor, Thomas J. Broderick Jr.

City of Anderson
Mayor's Office

120 East Eighth Street
Anderson, Indiana 46016
765.648.6000 Office
765.648.5933 Fax
Email: mayorbroderick@cityofanderson.com

www.cityofanderson.com

March 27, 2024

SRF Program Manager
State Revolving Fund Loan Program
100 N. Senate Ave. Rm 1275
Indianapolis, IN 46204
PERSubmittal@ifa.in.gov

RE: City of Anderson
Drinking Water Preliminary Engineering Report

SRF Program Manager,

This letter serves as a transmittal letter for the City of Anderson's Drinking Water Preliminary Engineering Report (PER).

The City of Anderson authorizes Curry & Associates, Inc. to submit the PER on behalf of the City. Two hard copies and one electronic copy will be submitted on our behalf by Curry & Associates, Inc., under separate cover.

Thank you for your assistance in this matter.

Sincerely,

Thomas J. Broderick Jr.
Mayor
City of Anderson

APPLICATION FORM
Drinking Water State Revolving Fund Loan Program (DWSRF)

Return completed form to:
DWSRF Administrator
100 North Senate Avenue, Rm. 1275
Indianapolis, IN 46204

Section I. APPLICANT and SYSTEM INFORMATION

1. Applicant Name (community or water system name): City of Anderson
2. Type of Applicant (check one):

   ☒ Municipality (City, Town, County, Township) ☐ For-profit Utility
   ☐ Regional Water District ☐ School
   ☐ Non-profit Water Corporation ☐ Other_____
3. Public Water Supply ID Number: IN5248002
4. Location of the Proposed Project: City / Town: Anderson

   County(ies): Madison Civil Township(s) : Anderson, Adams, Fall Creek, Lafayette, Richland, Union

   State Representative District: 36- Kyle Pierce State Senate District: 25- Mike Gaskill Congressional District: 5- Spartz
5. Population Served (https://myweb.in.gov/IDEM/DWW): 58,942
6. Population Trend (http://data.census.gov): ☐ Increasing ☐ Decreasing
7. Median Household Income for Service Area (http:/data.census.gov): $44,974
8. Unemployment Rate Data (http://data.bls.gov): 2.8%
9. Number of Connections (Current): 23,279 (Post-Project):23,279
10. Current User Rate/4,000 gal.:$21.98 Estimated Post-Project Rate/4,000 gal.:TBD
11. Average Residential User Bill for the last 12 months: $25.47 (per month)
12. Is the utility regulated by the Indiana Utility Regulatory Commission (IURC)?: ☒ Yes ☐ No
13. Applicant's Unique Entity Identifier[1]:PEXKUKAMGDZ3
14. Does the Utility have any Interlocal agreements?: ☐ Yes ☒ No

    If yes, will they expire after final maturity of the SRF Loan?: ☐ Yes ☐ No

    If no, agreements will need to be renewed to ensure they expire after the final maturity of the SRF Loan.

Section II. CAPACITY DEVELOPMENT

Pursuant to the Safe Drinking Water Act, a DWSRF Loan Program Participant must certify that the Participant possesses the technical, managerial, and financial capacity to operate the water system or that the DWSRF Loan Program assistance will ensure compliance with the Safe Drinking Water Act (40 CFR 35.3520(d)(2)).

1. Does your system currently possess technical, managerial and financial capacity? ☒ Yes ☐ No
2. If no, will technical, managerial and financial capacity be achieved after the implementation of the water system's DWSRF project? ☐ Yes ☐ No

To assess the technical, managerial, and financial capacity of the water system, the Participant is encouraged to complete the "Indiana Department of the Environmental Management (IDEM) Capacity Development Self-Assessment", available at **www.srf.in.gov** .

[1] SRF Participants must register with the SAM.gov to secure a Unique Entity Identifier (UEI). For more information about how to obtain a UEI and register in SAM.gov, see **www.srf.in.gov** .
By submitting this form, the Community is applying to multiple funding sources administered by the Authority, including the state Water Infrastructure Assistance Program. The Authority will determine the fund source that best serves the proposed project.

Section III. CONTACT INFORMATION

Authorized Signatory (an official of the Community or water system that is authorized to contractually obligate the applicant with respect to the proposed project):

Name: Thomas Broderick, Jr.
Title: Mayor
Address: 120 E 8th St
City, State, Zip Code: Anderson, IN 46016
Telephone # (include area code): 765.648.6000
E-mail: mayorbroderick@cityofanderson.com

Applicant Staff Contact (person to be contacted directly for information if different from authorized signatory):

Name: Neal McKee
Title: Director
Address: 550 Dale Keith Jones Rd
City, State, Zip Code: Anderson, IN 46011
Telephone # (include area code): 765.602.6060
E-mail: nmckee@cityofanderson.com

Certified Operator:

Name: Neal McKee
Telephone # (include area code): 765.602.6060
E-mail: nmckee@cityofanderson.com

Grant Administrator (if applicable):

Contact: N/A
Firm:
Address:
City, State, Zip Code:
Telephone # (include area code):
E-mail:

Consulting Engineer:

Contact: Lori Young, P.E.
Firm: Curry & Associates, Inc.
Address: 110 Commerce Dr
City, State, Zip Code: Danville, IN 46122
Telephone # (include area code): 317.695.7445
E-mail: lyoung@recurry.com

Bond Counsel:

Contact: Chris Janak
Firm: Bose McKinney & Evans, LLP
Address: 111 Monument Circle, Suite 2700
City, State, Zip Code: Indianapolis, IN 46204
Telephone # (include area code): 317-684-5249
E-mail: cjanak@boselaw.com

Financial Advisor:

Contact: Jennifer Wilson
Firm: Crowe LLP
Address: 3815 River Crossing Pkwy, Suite 300
City, State, Zip Code: Indianapolis, IN 46240
Telephone # (include area code): 317-269-6696
E-mail: Jennifer.wilson@crowe.com

Local Counsel:

Contact: Tim Lanane
Firm: City of Anderson Attorney
Address: 120 E. Eigth Street
City, State, Zip Code: Anderson, IN 46016
Telephone # (include area code): 765-648-6000
E-mail: tlanane@cityofanderson.com

Section IV. PROJECT INFORMATION

1. **Project Need -** Describe the facility needs in terms of age, condition, date of most recent rehabilitation/replacement, and any public health or Safe Drinking Water Act compliance issues or violations (if applicable):

In order to meet current and projected 20-year demand, treatment capacity must be expanded. The older of the City's two water treatment plants has exceeded its useful life, but cannot be decommissioned until new treatment capacity is available. The aging Wheeler Water Treatment Plant (WTP) is supplied by two (2) well fields, Ranney and Norton, that are each more than 70 years old and have been classified as Groundwater Under the Direct Influence of Surface Water (GWUDI). The Ranney wells operate well below original rated capacity, while the low-production rock wells at the Norton Well Field, each constructed in the 1890s, have even lower actual pumping capacities. VOCs and PFAS have also been identified in wells that supply the Wheeler WTP. The first feasible alternative proposes to replace the City's aging Wheeler WTP, located in the central part of the city, with a new package water treatment.
The remaining ten (10) feasible alternatives address distribution system needs. Water mains that are failing and/or undersized limit the flow that can be conveyed from each respective WTP to customers as well as to elevated storage towers. A significant percentage of water that is pumped and treated is either lost to water main leaks or diverted to non-revenue usage such as backwash, water main flushing, and fire protection. Water main leaks are responsible for the majority of lost water, and most of these leaks could be prevented by replacing older water mains and service lines in neighborhoods that are known for frequent and/or significant leaks. Water main replacements are also necessary in areas where the existing water main diameter cannot effectively convey sufficient flow. The City is completing its lead service line inventory and a majority of the service lines in project areas are believed to be lead or galvanized with a lead gooseneck. This project will seek to protect public health by removing these sources of lead in service lines.

2. **Proposed Project -** Describe the scope of the proposed project and how it will address the applicant's needs as enumerated above. Please provide a map showing proposed work areas, if possible. Note: Projects that are solely for fire suppression or economic development are not eligible for funding under the Safe Drinking Water Act.

Phase I Proposed Projects
- Alternative 2: Cross Street Water Transmission Main & Service Line Replacement
- Alternative 3: 8th Street Water Main & Service Line Replacement
- Alternative 4: North Anderson Cross A Water Main & Service Line Replacement
- Alternative 5: North Anderson Cross B Water Main & Service Line Replacement
- Alternative 6: West Central Water Main & Service Line Replacement
- Alternative 7: Park Place Water Main & Service Line Replacement
- Alternative 8: Belmont Water Main & Service Line Replacement
- Alternative 9: Brentwood Water Main & Service Line Replacement
- Alternative 10: Indian Meadows Water Main & Service Line Replacement
- Alternative 11: Historic District Water Main & Service Line Replacement

Phase II Proposed Project
- Alternative 1: South Side Water Treatment Plant & Wells

- Has a copy of the utility's Asset Management Program Certification been attached?[2] ☒ Yes ☐ No
- What was the date of the last IFA Regional Planning Meeting attended by the utility?[3] 11/2/23
- What was the end date of the last full State Board of Accounts Audit? 12/31/22
- What was the date of the utility's last Non-Revenue Water Audit?[4] Last validated 2022

  Was the last Non-Revenue Water Audit submitted to the IFA? ☒ Yes ☐ No

[2] Per IC 5-1.2-10-16, all PERs submitted to the IFA's SRF Programs must include a completed Asset Management Program (AMP).
[3] Per IC 5-1.2-11.5-7 and 5-1.2-11-8, the Applicant has or will participate in a cooperative/ regional activity (e.g., attend an IFA Regional Planning Meeting [www.in.gov/ifa/3035] or cooperative activity) acceptable to the Authority.
[4] Per IC 8-1-30.8-8 and IC 5-1.2-11-8, for Drinking Water systems to apply to Authority programs a utility must demonstrate to the Authority that it has completed annual audits of non-revenue water, and submitted to the Authority as outlined in IC 8-1-30.8-6.

- Is land acquisition and/or easements needed for this project? ☒ Yes ☐ No

  If yes, have all land rights been acquired? ☐ Yes ☒ No

3. **Project Cost Estimate:**

Source (intake or wells)	$ 4,500,000.00 (Phase II)
Treatment	$ 14,270,000 (Phase II)
Storage	$
Distribution/Transmission	$ $58,987,336.00 (Phase I)
Other: Contingency	$ 17,562,000.00 (Phase I and II)
TOTAL CONSTRUCTION:	**$** $95,369,336.00 (Phase I & II)
Non-construction Costs	$ 13,600,000.00 (Phase I and II)
TOTAL ESTIMATED PROJECT COST:	$ 108,969,336.00 (Phase I and II)

Other Funding Sources:

	Application Submittal (date)	Amount Requested (dollars)	Amount Awarded (if applicable)
Office of Community and Rural Affairs			
U.S. Dept. of Commerce Economic Development Administration			
U.S. Dept. of Agriculture Rural Development			
Local Funds			
Other:			

4. Will this project proceed if other funding sources are not in place?: ☐ Yes ☐ No

5. Anticipated SRF Loan Amount (after other funding): $ 108,969,336.00 (Phase I and II)

Section V. ADDITIONAL FINANCIAL QUESTIONS

Please confirm your answers with the utility's legal and financial advisers prior to submitting your responses.

A. Will this SRF loan be repaid from net revenue of the applicant's utility being improved by the SRF project?:

☒ Yes ☐ No

Are there any other debt obligations of this utility (i.e., bank loans, guarantee savings contracts, installment payment contracts, bank or financing purchase leases, loans from other utilities of the applicant)?

☒ Yes ☐ No

Is an estimated debt service coverage percentage currently available (coverage is computed by taking Net Revenues and dividing it by maximum annual debt service inclusive of both the planned new and any outstanding revenue bonds)? ☐ Yes ☒ No

- if available, the coverage estimate is _____ percent.

Please know that prior to any loan preclosing, a formal pro forma coverage showing of at least 125% is required by SRF.

B. Will net revenues be the sole source of repayment? ☒ Yes ☐ No

If "no" was marked in Questions A and B, then please answer the following additional questions:

- What is the planned source(s) to provide funds to make SRF loan repayments? Check below as applicable:
  - ☐ property taxes. If checked:
    - Is a preliminary determination & remonstrance process under IC 6-1.1-20 required? ☐ Yes ☐ No
    - Has that preliminary determination & remonstrance process under IC 6-1.1-20 been completed? ☐ Yes ☐ No
  - ☐ tax increment revenues. If checked:
    - Has a TIF area already established? ☐ Yes ☐ No

    If already established:
    1) Please provide history of tax increment revenues (at least five (5) years)
    2) Provide a schedule of projected tax increment revenues, debt service (which includes existing obligations pledged with tax increment revenues) and a showing that the 125% coverage requirement is met.
  - ☐ other (describe: _____).

C. Will proceeds be used to payoff an existing BAN? ☐ Yes ☒ No

- if "yes", provide amount of the payoff _____.
- And, provide the purpose for which the BAN was used: ☐ Construction ☐ Non-construction

  If Construction is selected, the subject of the BAN will require SRF review prior to construction.

Section VI. SIGNATURE

I certify that I am legally authorized by the legislative body to sign this application. To the best of my knowledge and belief, the foregoing information is true and correct.

Signature of Authorized Signatory (Community Official)

THOMAS J. BROOKSHIRE JR.
Printed or Typed Name

MAYOR, City of Anderson
Title of Authorized Signatory

3-25-2024
Date

CITY OF ANDERSON

MADISON COUNTY, INDIANA

2024 PRELIMINARY ENGINEERING REPORT

CURRY & ASSOCIATES, INC.

CONSULTING ENGINEERS & ARCHITECTS

Prepared By
Curry & Associates, Inc.
110 Commerce Drive
Danville, Indiana 46122

March 27, 2024

CITY OF ANDERSON

2024 PRELIMINARY ENGINEERING REPORT

MAYOR THOMAS J. BRODERICK, JR.

Board Of Public Works
David Eicks, Chairman
Jack Keesling, Member
Richard Symmes, Member

Lori A. Young

Prepared By:
Curry & Associates, Inc.
Engineers & Architects
110 Commerce Drive
Danville, Indiana 46122

March 27, 2024

City of Anderson
2024 Preliminary Engineering Report

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Appendices

Appendix B

Appendix C

EXECUTIVE SUMMARY

The City of Anderson has identified eleven (11) feasible alternatives that most effectively address its existing and projected water system needs. Although no significant population growth is anticipated, demand has continued to grow and is expected to continue rising over the next 20 years. Nestle USA, located in the southwest portion of the city, has contributed significantly to rising and geographically shifting demand. The City works hard to best allocate its resources to maintaining and improving its water system infrastructure. Significant resources are required to keep the City's oldest equipment operating at levels that can meet demand. The existing water system includes critical infrastructure that can no longer operate near design capacity and requires significant maintenance to remain functional. The proposed feasible alternatives, designed to alleviate leaks and other challenges associated with aging infrastructure, consist primarily of water main replacements.

In order to meet current and projected 20-year demand, treatment capacity must be expanded. The older of the City's two water treatment plants has exceeded its useful life, but cannot be decommissioned until new treatment capacity is available. The aging Wheeler Water Treatment Plant (WTP) is supplied by two (2) well fields, Ranney and Norton, that are each more than 70 years old and have been classified as Groundwater Under the Direct Influence of Surface Water (GWUDI). The Ranney wells operate well below original rated capacity, while the low-production rock wells at the Norton Well Field, each constructed in the 1890s, have even lower actual pumping capacities. VOCs and PFAS have also been identified in wells that supply the Wheeler WTP. While the plant does include equipment to effectively remove VOCs, the newly-identified PFAS contaminants cannot be removed by the existing treatment train. The first feasible alternative proposes to replace the City's aging Wheeler WTP, located in the central part of the city, with a new package water treatment plant to be located closer to existing and anticipated future industrial demand in and near the Flagship Enterprise Center where Nestle USA is located.

The remaining ten (10) feasible alternatives address distribution system needs. Water mains that are failing and/or undersized limit the flow that can be conveyed from each respective WTP to customers as well as to elevated storage towers. A significant percentage of water that is pumped and treated is either lost to water main leaks or diverted to non-revenue usage such as backwash, water main flushing, and fire protection. Water main leaks are responsible for the majority of lost water, and most of these leaks could be prevented by replacing older water mains and service lines in neighborhoods that are known for frequent and/or significant leaks. Water main replacements are also necessary in areas where the existing water main diameter cannot effectively convey sufficient flow. The City is completing its lead service line inventory and a majority of the service

lines in project areas are believed to be lead or galvanized with a lead gooseneck. This project will seek to protect public health by removing these sources of lead in service lines.

The proposed alternatives for the City of Anderson for the planning horizon include the following projects:

Phase I Proposed Projects

- **Alternative 2:** Cross Street Water Transmission Main & Service Line Replacement
- **Alternative 3:** 8th Street Water Main & Service Line Replacement
- **Alternative 4:** North Anderson Cross A Water Main & Service Line Replacement
- **Alternative 5:** North Anderson Cross B Water Main & Service Line Replacement
- **Alternative 6:** West Central Water Main & Service Line Replacement
- **Alternative 7:** Park Place Water Main & Service Line Replacement
- **Alternative 8:** Belmont Water Main & Service Line Replacement
- **Alternative 9:** Brentwood Water Main & Service Line Replacement
- **Alternative 10:** Indian Meadows Water Main & Service Line Replacement
- **Alternative 11:** Historic District Water Main & Service Line Replacement

Phase I projects are identified on Figures in Appendix B and explained in detail in Chapter 3.

Phase II Proposed Project

- **Alternative 1:** South Side Water Treatment Plant & Wells

Phase II project locations are still being finalized and will be amended to this PER.

CHAPTER 1: CURRENT CONDITIONS

1.1 EXISTING SYSTEM

The existing City of Anderson water system infrastructure consists of a mix of materials and components constructed over the past century. The City of Anderson Water Department operates three (3) well fields, two (2) water treatment plants (WTPs), seven (7) elevated water storage tanks, and a water distribution system that includes approximately 420 miles of water mains that range in diameter from 2" to 30". Figure 1.1.1 provides a location map for the existing major components of the Anderson Waterworks. The City of Anderson's existing and proposed water service area are the same. There are limited customers outside the city limits which includes approximately 3-4 subdivisions.

1.1.1 Water Supply

The City of Anderson has three (3) distinct well fields. The three (3) well fields produce the entire raw water supply to two (2) potable water treatment plants. The three (3) well fields are identified as follows:

1. Ranney Well Field
2. Norton Well Field
3. Lafayette Well Field

The Ranney and Norton wells pump to the Wheeler Avenue Water Treatment Plant (WTP), and the Lafayette wells pump to the Lafayette Plant. The following sections further describe the wells as water supply wells dedicated to the two (2) water treatment plants.

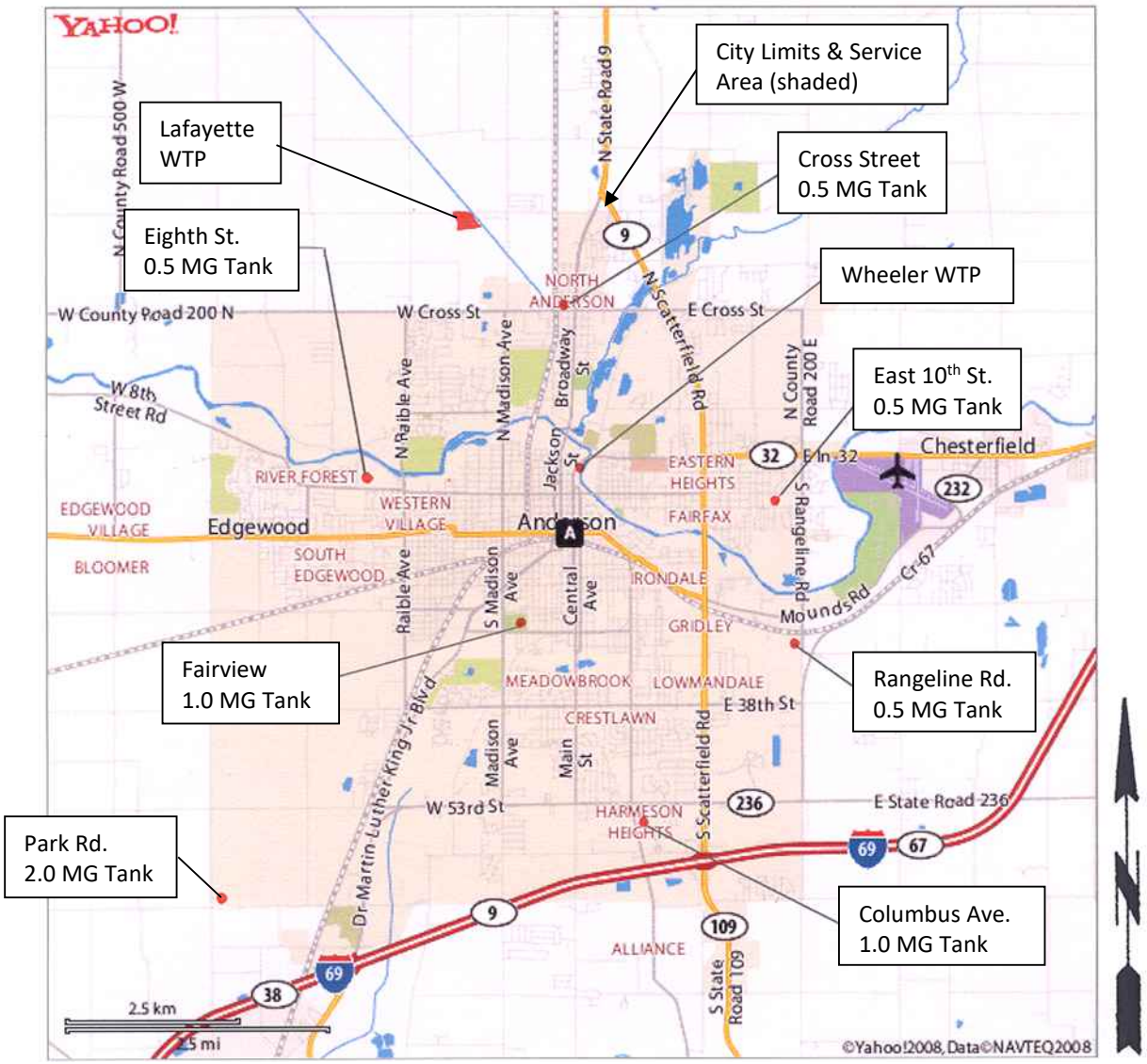

Figure 1.1.1 Location Map for City of Anderson Service Area & Major Waterworks Components

Source: http://maps.yahoo.com

Wheeler Treatment Plant Water Supply

Ranney Well Field

The Ranney Well Field is composed of four (4) collector wells, plus two (2) tubular gravel pack wells. All wells pump to the Wheeler Avenue Water Treatment Plant. The wells are located within the 100-year floodplain of the White River and Killbuck Creek. The location of the Ranney Well Field and Norton Well Field are identified in Figure 1.1.2.

The four Ranney collector wells were constructed in the 1940s and 1950s and produce

approximately 70% of the water treated at the Wheeler Plant. The Ranney wells are operational, but have declined in production capacity and efficiency over their many years of operation. These wells are 70 – 80 years old and have had marginal maintenance due to the extreme cost. The cost to clean and line radial collector laterals for these wells is greater than the cost of construction for a new tubular well. For this reason, the Ranney wells have been maintained as necessary to continue producing water, without investing in extraordinary rehabilitation.

The Ranney Wells are at the end of their useful life. Replacement of these water supply wells is critical to the long-term water supply for the City of Anderson.

Along with the four (4) functioning collector wells, the Ranney Well Field includes two (2) gravel pack tubular wells, designated as "Elder #1" and "Elder #2". These wells were constructed in 2008 and 2010 and are in generally good condition, but have a relatively low production capacity.

Norton Well Field

The Norton Well Field is located near downtown Anderson, adjacent to the White River and the 8th Street Bridge. The well field contains two (2) operating rock wells, each approximately 300 feet deep, referred to as "Norton #1" and "Norton #2". The Norton Wells were installed in 1910 and are therefore over 110 years old. Despite having exceeded their expected useful life, the Norton wells are operational, but have a very marginal capacity. **The Norton Wells are beyond their useful life. Replacement of these water supply wells is critical to the long-term water supply for the City of Anderson.**

Both the Ranney and Norton well fields are located in urban areas and the land is surrounded by a large number of old and/or unknown potential sources of contamination. There is not enough space to provide required setbacks. The possibility for well field expansion is severely restricted.

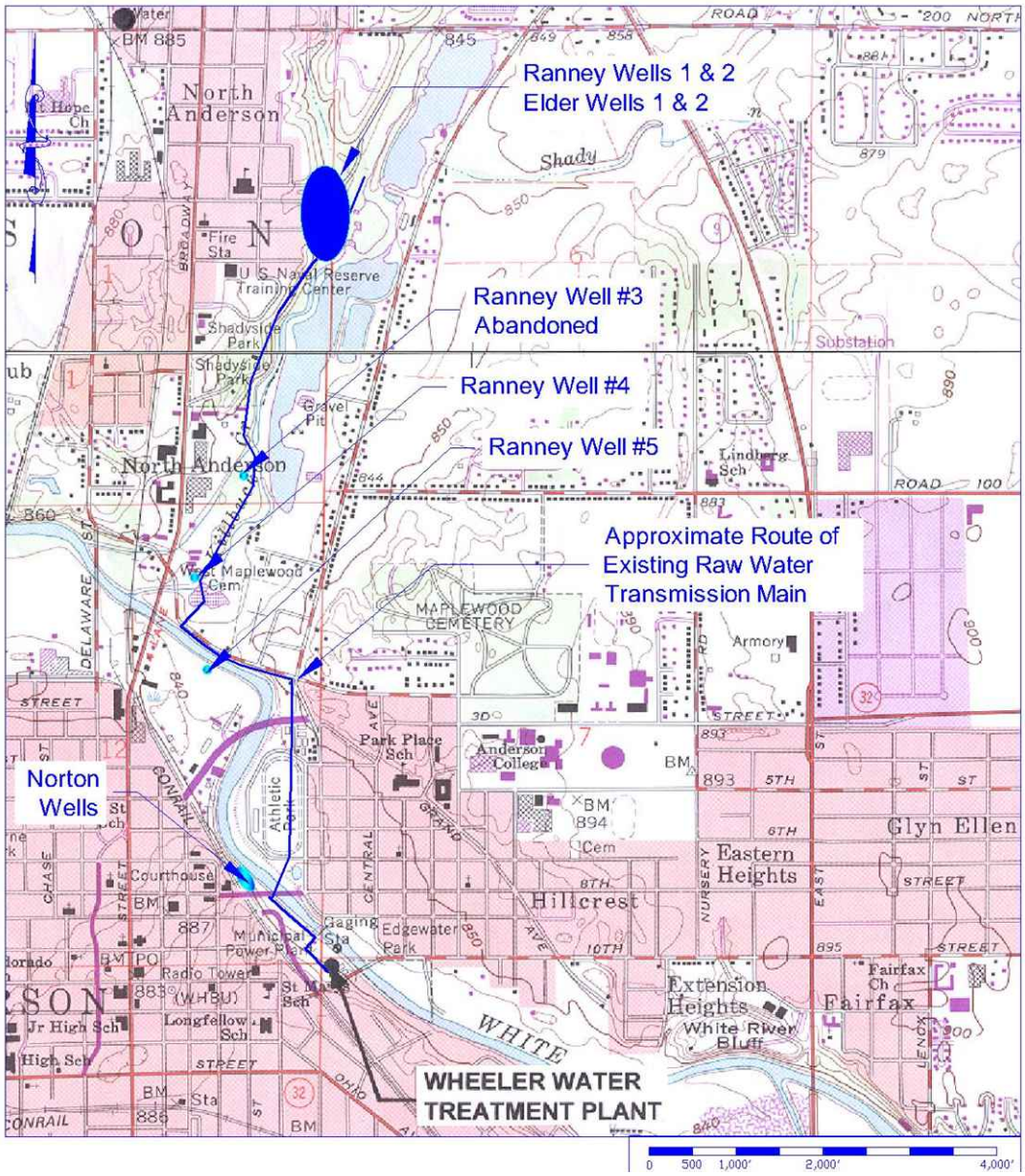

Figure 1.1.2 Ranney & Norton Well Field Location Map
(Source: Anderson North and Anderson South USGS Quadrangles, photo revised 1981)

Table 1.1.1.1 provides a summary of the Wheeler WTP Supply well operating capacities reported for 2022. The production capacity continues to decline in these aging wells and actual pumping rates are significantly less than their historical design capacities.

Table 1.1.1.1 Existing Wheeler WTP Water Supply Wells

Well Name	Rated Capacity (GPM) per 2022 IURC Report	Actual Capacity (GPM) per 2022 IURC Report
Ranney 1	1,200	700
Ranney 2	1,500	300
Ranney 4	1,200	360
Ranney 5	1,200	900
Elder 1	1,000	300
Elder 2	700	400
Norton 1	Unknown	150
Norton 2	Unknown	250
Total Peak Production		**3,360 gpm 4,838,400 gpd**
Safe Capacity (Ranney 5 out of service)		2,460 gpm 3,542,400 gpd

Well Capacity & Useful Life Concerns

The Wheeler WTP average daily production for the period of 2021 – 2023 has been 4,703,270 gpd. This is very close to the current operating peak well capacity for this well field. This well field has consistently produced an average of 43% of the city's water demand over the past three (3) years. This well production is critical to Anderson's water supply. The normal operation of these wells exceeds the Safe Capacity. Additional well production capacity is needed to provide Safe Capacity for this plant.

Contamination Concerns

The Ranney and Norton Well Fields are in an area with historical industrial development. These wells are vulnerable to groundwater and surface water contamination. The wells have a history of VOC contamination, and most recently the Emerging Contaminant PFAS has been detected in the first round of voluntary testing:

1. **Volatile Organic Carbon Contamination**

   Tetrachloroethylene (TCE, also known as Perchloroethylene (PCE)), was detected in the groundwater supply at levels above the MCL. Treatment plant improvements were constructed in 1999 – 2000 to install air strippers to remove the VOC. The plant has effectively operated the treatment system and removed Tetrachloroethylene since that time. This well field is located within the EPA National Priority List (NPL) "Broadway Street Corridor Groundwater Contamination" added to the Superfund National Priorities List in 2018. The EPA is currently taking initial steps toward clean-up. See Appendix A.

2. **Groundwater Under the Direct Influence of Surface Water (GWUDI) - 2009**

   In 2009, Ranney Well #5 was identified as "Under the Direct Influence of Surface

Water" (GWUDI) by the Indiana Department of Environmental Management (IDEM). In 2009, the Anderson Water Department upgraded the Wheeler Treatment Plant as required to meet regulatory treatment requirements for "Groundwater Under the Direct Influence of Surface Water." A Class V Operator License became a requirement when the plant was converted for treatment of groundwater under the direct influence of surface water.

3. **Emerging Contaminants – PFAS – 2023**

The City of Anderson participated in voluntary testing for PFAS in 2023. The first round of sampling was conducted on August 2, 2023. PFAS Sampling Results were issued from IDEM on September 12, 2023. The sampling detected PFAS Constituents in the Ranney Wells and plant finished water exceeding the EPA's Lifetime Health Advisory Levels (HALs) for PFOS. See IDEM report in Appendix A. The following table provides a summary of results.

Table 1.1.1.2 PFAS Constituents Detected in Wheeler WTP Supply Wells

Well	Constituent	Level Detected (ppt)	Health Advisory Level (ppt)	Exceeds HAL or Action Level
Ranney 1	PFOS	3.7	0.02	Yes
Ranney 4	PFOS PFHxS	35.8 2.2	0.02 >140	Yes No
Ranney 5	PFOS	2.6	0.02	Yes
Wheeler Finished	PFOS	3.5	0.02	Yes

The Wheeler Well Field needs to be replaced. The known contamination and detection of Emerging Contaminants in this well field are of great concern. The age of the wells and capacity concerns additionally demonstrate that replacement wells are needed. The groundwater contamination and shallow aquifer conditions of this well field are not favorable for development of new wells. **A new source of water supply is needed to replace the Ranney and Norton Wells.**

Emergency Power

The Wheeler well field currently has two (2) mobile generators. These generators are prioritized to operate the Ranney #5 and Elder #2 wells, which are the highest producers in this well field. The emergency generators provide approximately 50% of the pumping capacity with these two (2) wells in service.

Lafayette WTP / Lafayette Well Field

The Lafayette Well Field is located in Lafayette Township, northwest of the City of Anderson. The Lafayette Well Field contains 11 tubular gravel pack wells. The original well field was constructed in 1969. As those wells have reached the end of their useful life, all but three (3) of the original wells have been replaced. The two (2) newest wells, Hannah #2 and Tucker #2, were completed in 2023. The construction of four (4) replacement wells since 2017 has been essential to Anderson's

ability to meet water demand requirements. The two (2) wells constructed in 2023 have been very beneficial to provide additional production capacity necessary to meet demand and allow for wells to be taken out of service for maintenance. Improved ability to take wells out of service for maintenance is helpful to better maintain and clean wells and better sustain pumping capacities.

Table 1.1.1.3 Existing Water Supply Wells

Well Name	Rated Capacity (GPM) per 2022 IURC Report	Actual Capacity (GPM) per 2022 IURC Report	Year Well Constructed
Lafayette WTP Supply Wells			
Hall [2]	1,200	800	2017
Welborne	800	300	2002
Tucker 1 [2]	1,200	800	2017
Tucker 2	1,200	1,200	2023
Schreckengast	800	250	1969
Tuxford	550	400	1969
Gahimer	800	600	2011
Jarrett	Unknown	350 (not used)[1]	1969
Rock [2]	1,400 (1,000)	900	2009
Hannah 1 [2]	1,400	900	2009
Hannah 2	1,400	1,400	2023
Total Well Capacity		7,550 gpm = 10.87 MGD[1]	
Safe Well Capacity		6,150 gpm = 8.86 MGD[1]	

Notes:
[1] Capacity Calculation assumes no pumpage from Jarrett Well.
[2] A permanent generator dedicated to well

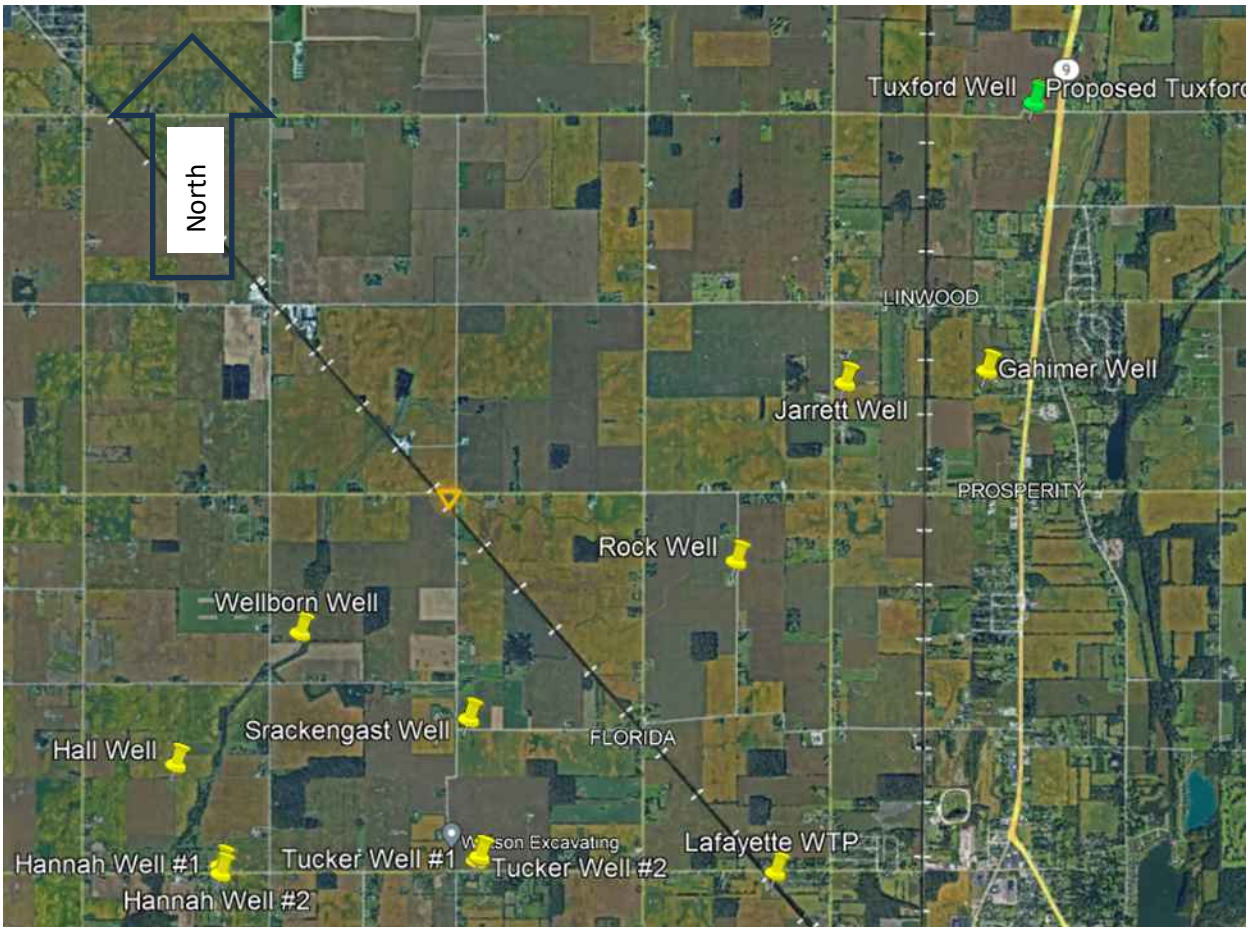

Figure 1.1.3: Location Map for Lafayette Wells
Anderson, Indiana (Source Google Earth, not to scale)

Average well pumpage from the Lafayette Well Field in 2014 was 4.4 MGD. Average daily pumpage from the Lafayette Well Field increased to 6.5 MGD in 2022. The new well construction since 2017, combined with the Lafayette WTP replacement project completed in 2019 have provided increased water production from this well field. These improvements have been very beneficial to the City of Anderson and have allowed them to shift some water production from the Wheeler wells to the Lafayette Wells.

Well Capacity & Useful Life Concerns

The Jarrett, Tuxford and Srackengast Wells are the remaining original wells from 1969. All of these wells are at the end of their useful life. The Tuxford and Srackengast Wells were planned for replacement in 2017, but sufficient formation was not found in test wells drilled on these existing well properties for construction of new wells.

The need to replace the Wheeler Well Field water supply has been identified. The Lafayette Well Field has potential for construction of additional wells. **Additional wells are recommended in the Lafayette Well Field to help replace the existing wells in the Wheeler Well Field.**

Hydrogeologic Investigation

Eagon & Associates has been working with the City of Anderson on hydrogeological investigation to identify locations for new water supply wells. See March 2024 memo in **Appendix A,** *Anderson, Indiana Groundwater Exploration Summary*, which summarizes work performed between 2017 and 2024 to evaluate potential new well capacity and locations. The following specific locations have been identified for new wells:

- Fuller Well Field – Proposed wells to pump to Lafayette WTP
    - Fuller Well Field is located north of Anderson and northeast of the Lafayette Well Field, east of the southeast corner of the intersection between CR 800 N and US Highway 9.
    - Anderson owns the "Fuller" Well property, which was purchased several years ago for future water supply. Two new wells are recommended for this site.
    - Fuller Well 1 is a test production well drilled in 2022 that can be converted into a permanent well with full sized casing and screen.
        - January 2023 report, Pumping Test Analysis Fuller Well 1 (see Appendix A), recommends a 1,400-gpm pump for Well 1. The report also recommends that a second well of similar design be constructed in the vicinity of Test Boring 22-2 at this well field.
- Tuxford Well Replacement – Proposed replacement of existing well in Lafayette Well Field.
- Other Potential Well Sites
- South Side Well Field

Contamination Concerns

There have not been any contaminant concerns identified in the Lafayette Well Field. The well field area has historically been used for agriculture, primarily row crops. There have not been any industrial operations near these wells. They are generally at lower risk for groundwater contamination than the Wheeler Wells.

Water Production Capacity – Combined Water Treatment Plants

The operational capacity of the Wheeler Avenue and the Lafayette Plants is limited by different factors, supply and plant issues, respectively. Table 1.1.1.4 outlines how existing capacity for both plants is determined.

Table 1.1.1.4 Capacity Summary for Anderson Treatment Plants - 2023

Capacity	Wheeler	Lafayette	Total
Plant Peak Design (Wheeler on Groundwater Under the Direct Influence of Surface Water)*	6,480,000	10,000,000	16,480,000
Current "Safe" WTP Operating Capacity	6,480,000	**8,000,000**	14,480,000
Peak Well Capacity	**4,838,000**	10,870,000	15,708,000
"Safe" Well Capacity	**3,542,000**	8,860,000	12,402,000
Limiting Factor	*Supply*	*Plant*	*Total*
Operational Safe Capacity	**3,542,000**	**8,000,000**	**11,542,000**
Operational Peak Capacity	**4,838,400**	**10,000,000**	**14,838,400**
* Wheeler Plant design rating of 6.48 MGD based on surface water rate of 2 gpm/s.f.			
**"Safe" capacity is with largest well or filter out of service			
***Wheeler Wells consistently produce an average of 4.7 MGD, exceeding the calculated "Safe" Capacity			

The Wheeler Wells and Treatment Plant has reliably produced an average of 4.7 MGD per day for the past five (5) years. This exceeds the calculated "safe" capacity, but has proven to be reliable.

Calculated "Reliable" Capacity = 4.7 MGD Wheeler + 8.0 MGD Lafayette = 12.7 MGD Reliable Capacity

The Lafayette WTP production is also limited by its capacity to discharge into the distribution system. The existing water transmission main limits water transmission due to pressure increase with higher flow. The current Safe Capacity of 8 MGD out of Lafayette is an approximate limit from the distribution system as well. **A new water transmission main is needed out of the Lafayette WTP for the distribution system to further increase water production at the Lafayette WTP.**

1.1.2 Water Treatment

Anderson owns and operates two (2) existing water treatment plants, including the older Wheeler (Avenue) Water Treatment Plant and the newer Lafayette (Township) Water Treatment Plant.

The Lafayette Water Treatment Plant was replaced in 2018-2019 and is located on the north side of Anderson, on the same site as the original plant (1968). The Wheeler (Avenue) Water Treatment Plant is located along the White River, near the center of Anderson. The Wheeler WTP is located on the site of Anderson's original water treatment works from the early 1900s.

The new Lafayette WTP went into service in January 2019. Since that major improvement project, Anderson has been able to shift more water production to the Lafayette WTP. During the period of 2019 to 2023, approximately 57% of the water supply was produced at the Lafayette WTP, and the Wheeler WTP produced approximately 43% of the City's water supply.

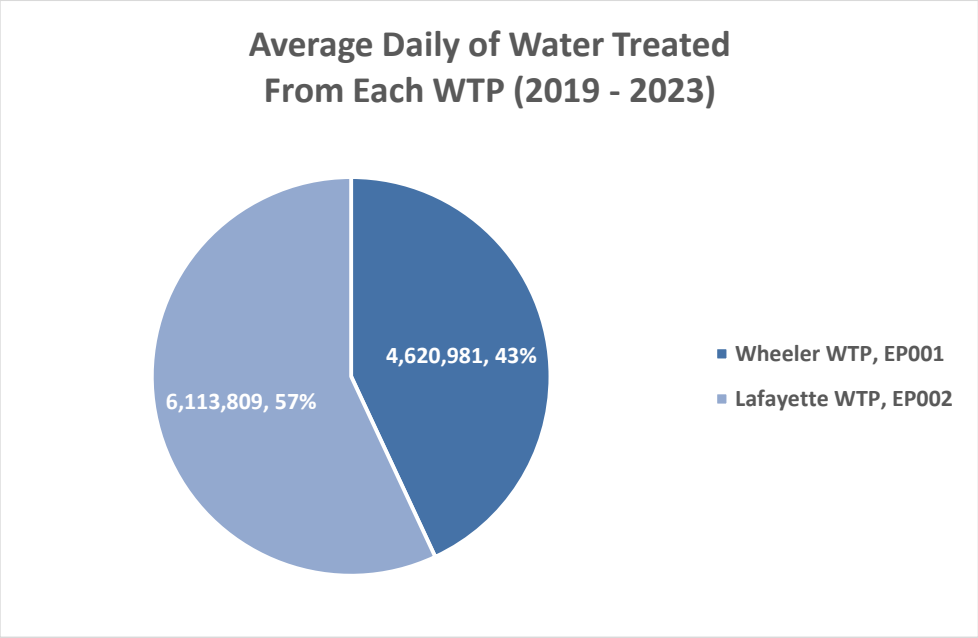

Figure 1.1.4 Distribution of Water Treatment

Wheeler Avenue Water Treatment Plant

The Wheeler Water Treatment Plant is at the end of its useful life and needs to be replaced. This section provides details regarding the existing facility conditions. The plant currently provides water treatment for VOC removal due to groundwater contamination of the well field, which is significant enough to have been placed on the EPA's Superfund National Priority List. The Wheeler WTP also provides treatment for Groundwater Under the Direct Influence of Surface Water. **Emerging PFAS Contaminants were detected in source water for this plant at levels exceeding the EPA's Lifetime Health Advisory Levels in August 2023.**

The Wheeler WTP does not have treatment in place to remove PFAS, and modification of this plant for removal of PFAS is not advisable. **The Wheeler Water Treatment Plant needs to be replaced.** The following information further describes the existing conditions and need for replacement.

General

The Wheeler Avenue Water Treatment Plant is located at the intersection of Wheeler Avenue and Cincinnati Avenue, adjacent to the White River. The Wheeler Plant was constructed in approximately 1947 to supplement a surface water treatment plant constructed in 1935. Surface water treatment was later abandoned and the Wheeler Avenue Treatment Plant became the primary treatment plant, treating only groundwater. The two (2) plants are located adjacent to each other as shown in Figure 1.1.5.

Water is pumped from the Ranney Well Field and the Norton Well Field to the Wheeler Avenue Water Treatment Plant for processing. The Wheeler Avenue Water Treatment Plant consists of aeration, detention, and filtration. Water treatment at the Wheeler Plant is specifically for the purpose of iron and VOC removal, filtration, disinfection, and compliance with surface water treatment requirements.

The original design capacity of the Wheeler Plant is approximately 9.7 MGD with one (1) filter out of service. **Due to the limited production capacity of the well fields, the peak capacity of the Wheeler Plant is approximately 4.8 MGD with all wells operating.** The site is surrounded by urban areas and the White River, making any significant plant expansions or additions impossible.

This plant is staffed full-time (24 hours per day) with a Class V Certified Operator and support staff. A Class V Operator License became a requirement when the plant was converted for treatment of groundwater under the direct influence of surface water.

Aeration

The air stripper process was added to the Wheeler Avenue Water Treatment Plant in 2000, when the Ranney Well Field developed ground water contamination due to petroleum-based VOCs. The air strippers effectively remove tetrachloroethylene (TCE) to below the 0.2 ppb.

One byproduct of air stripping is removal of carbon dioxide, which increases the raw water pH. With an increase in pH, calcium carbonate hardness plates onto the filter gravel and filter media. A recarbonation system was added to the Wheeler Avenue Water Treatment Plant to lower the water pH at a point between the air strippers and the water plant filters, which lowers the pH to approximately 7.3, eliminating the precipitation of calcium carbonate in the filters.

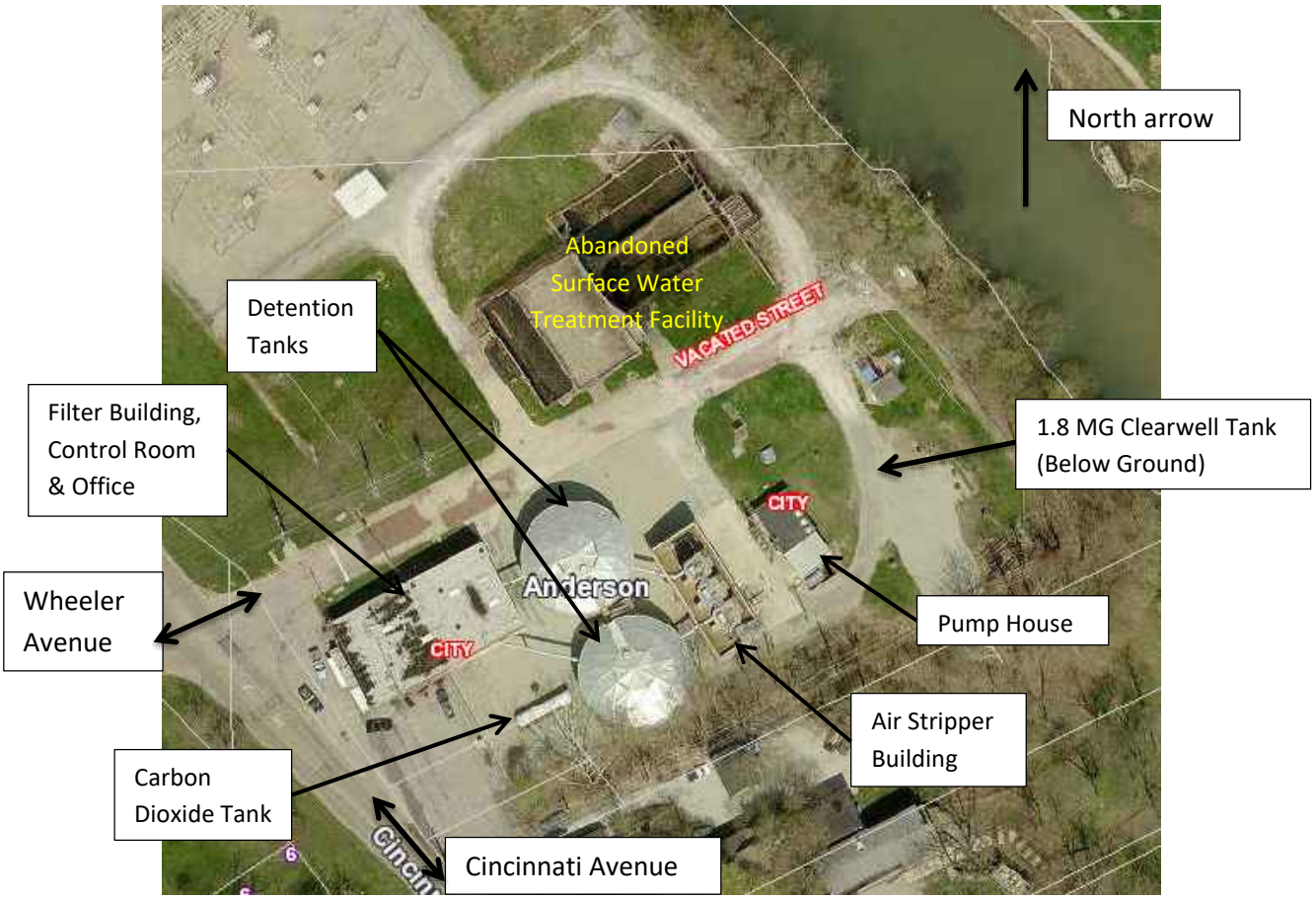

Figure 1.1.5 Wheeler Avenue Water Treatment Plant Site (no scale)

Detention Tanks

Water flows from the air strippers to the detention tanks. The two detention tanks were originally constructed to serve as clarifiers for the surface water treatment facility. Each tank has a volume of 630,000 gallons. This provides a minimum of three (3) hours of detention for oxidation of iron. Aluminum domes were installed to cover the tanks in 2000. The detention tanks are constructed of concrete and have a metal siding treatment on the outside. The tanks are in generally good condition.

Filtration

Water flows by gravity from the detention tanks into the filters. The Wheeler Plant has eight (8) open top gravity filters. Due to the open top filters there is an elevated humidity level in the filter room. With the cold 55 degree well water there is a decreased ambient temperature in the filter room. These two (2) characteristics combine to create extensive condensation in the filter rooms. A direct consequence of condensation of filter face piping and other steel components is corrosion. The Wheeler Plant filter room shows extensive corrosion due to condensation setting on pipes, valves, fittings, and other steel components. The combination of age and corrosion has greatly diminished the structural integrity of most steel components in the filter room.

Good paint coating maintenance has been performed in recent years, along with dehumidification

and pipe insulation in an effort to preserve and protect piping.

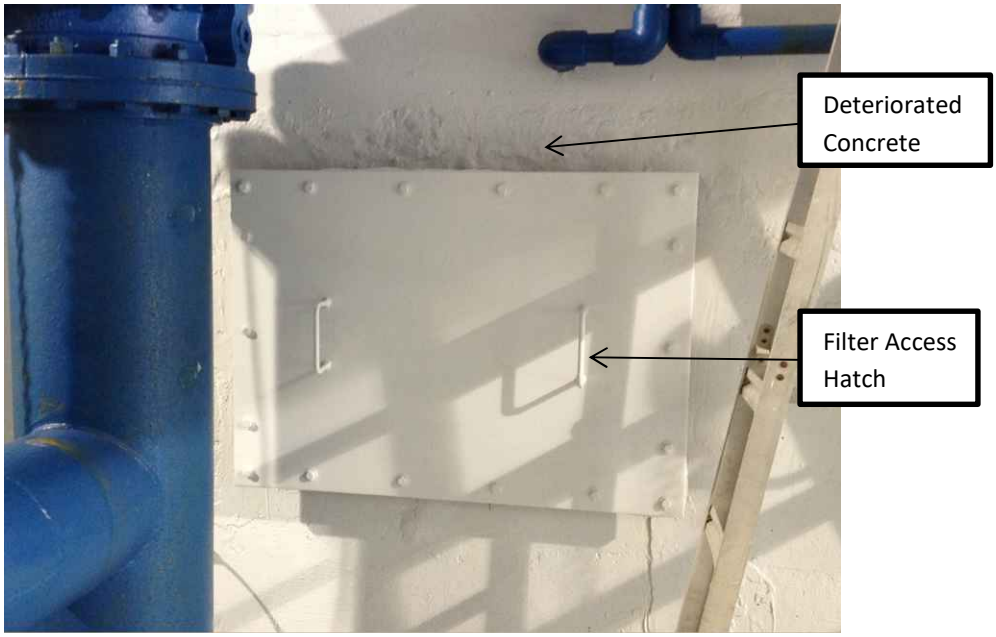

Figure 1.1.6 Filter Hatch in Concrete Filter Wall

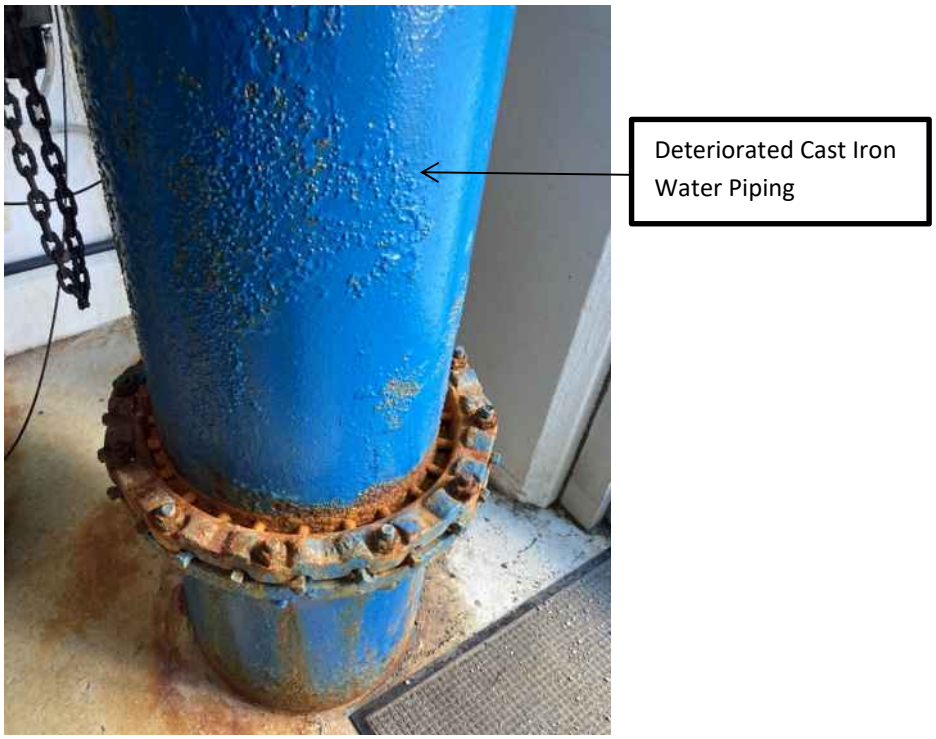

Figure 1.1.7 Finished Water Piping inside Filter Room

Constructed in 1947 and 1967, the concrete filters are 57-77 years old. The cracks and leaks in the concrete filter walls are repaired annually with epoxy injection; see Figure 1.1.8. **The concrete**

filter cells are at the end of their expected useful life. The associated filter piping and valves and distribution boxes are also at the end of their useful life. Repairs will continue to be necessary to maintain the operation of these filters. If concrete failures continue to worsen, this could result in emergency repairs or having to remove filters from service.

There are no automated controls for operation of the eight (8) filters at the Wheeler Plant. All valves are manually operated for backwash.

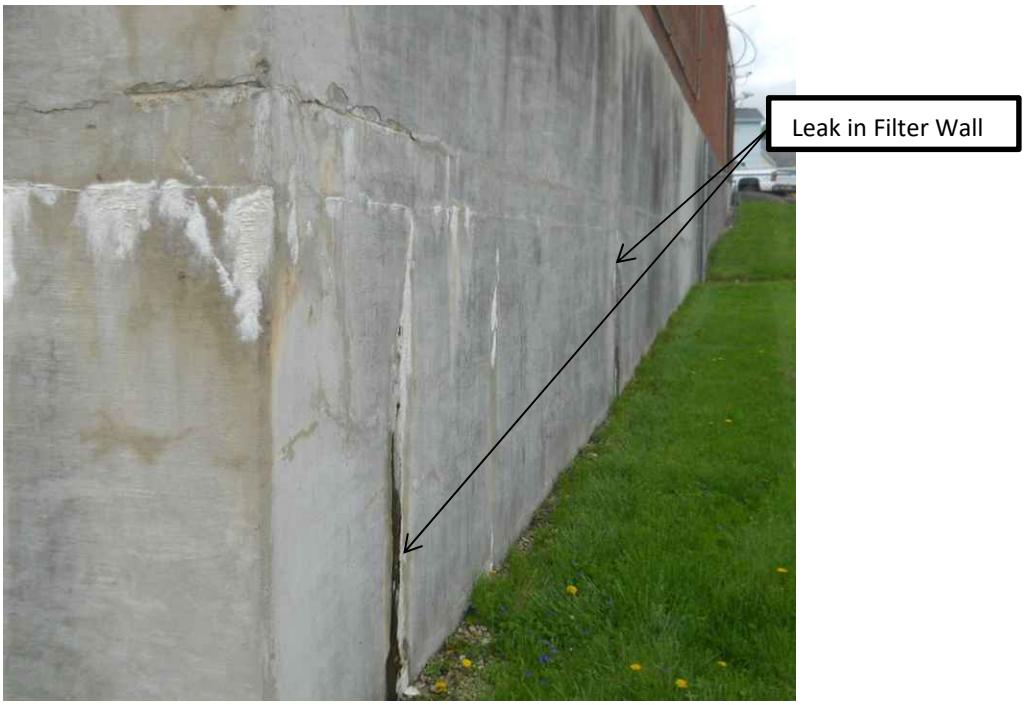

Figure 1.1.8 Exterior Wall of Filter on North Side of Filter Building

Clearwell

Filter effluent flows by gravity to a 1,800,000-gallon below-ground clearwell constructed in 1935. **This clearwell tank is nearly 90 years old and at the end of its useful life.** The clearwell tank cannot be bypassed from the treatment and pumping operations, so any maintenance must be performed while the tank is full of water. Sediment has accumulated in the clearwell tank that is difficult to remove while maintaining water production operations and good water quality.

Due to the original construction of this clearwell tank and the surface water plant that had been constructed in the early 1930s, and the subsequent phases of construction on the filter plant, the piping interconnections were complex and deep. The City of Anderson completed the final step of to completely eliminate connection of piping between the clearwell under the abandoned surface water plant to the 1.8 MG clearwell. This was a difficult project due to depth of piping, location, and criticality of keeping treatment and distribution in service.

Chemical Addition

The utility adds chlorine, fluoride, coagulant, and phosphates via chemical feed equipment that is in good condition. Chemical feed equipment is housed inside the Air Stripper Building. Chlorine gas is used for chlorine disinfection.

High Service Pumps

Four (4) high service pumps are located inside the Pump House building. Three (3) of the four (4) pumps are original from 1965. One (1) pump was replaced and a variable frequency drive (VFD) was installed on this pump motor in 2011. The VFD has been a significant improvement for pump control and safety. **The three (3) older pumps are near the end of their useful service life and need to be replaced.**

Housed with the high service pumps, the emergency generator was installed with the plant in 1965. Although functional and exercised regularly, **the generator is reaching the end of its reasonably expected useful life.**

Figure 1.1.9 Abandoned Surface Water Treatment Plant Building

Wheeler Plant Lab and Offices

The Wheeler Plant has very limited space for laboratory, offices, and storage. Figure 1.1.10 shows the entire lab space for the water treatment facility. The operators are challenged to perform necessary testing in this tiny lab space. This lab area is not acceptable for a water treatment facility of this magnitude.

The Wheeler Plant facility is not handicap accessible and does not meet ADA standards.

Figure 1.1.10 Laboratory at Wheeler Water Treatment Plant

Lafayette Water Treatment Plant

The current Lafayette WTP was constructed in 2019. The plant is in the north central portion of the City of Anderson on C.R. 300 North, approximately two (2) miles west of Broadway Street. The current WTP replaced the original 1969 plant. The Lafayette WTP supplies water from the Lafayette Well Field. **The Lafayette WTP has a Safe Design Capacity of 8 MGD and Peak Capacity of 10 MGD. This plant was designed to accommodate future expansion to 14 MGD Safe Capacity. This treatment plant is in very good operating condition.**

General

Water enters the plant at the aerators and detention tank and flows by gravity through the filters and into the clearwell tank. High service pumps convey water from the clearwell tank into the distribution system.

Aeration and Detention

There are three (3) detention tanks, each with an aerator installed on top of the tank. Two of the three tanks can provide greater than 30 minutes of detention time at the current and future peak flow rates. The three (3) tanks are hydraulically connected by piping on discharge side of tanks.

Filters

Five (5) horizontal pressure filters, each rated at 1,400 gpm, are currently installed. All five (5) filters operate during peak design conditions. The plant was constructed with expandability to add three (3) more filters. All pipe sizing is based on the future peak design flow.

Each half of the filter gallery has a separate effluent header pipe. There is a Venturi flow meter and flow control valve on the discharge side of the filter header pipe.

Filter backwash requires an entire filter to be taken out of service to backwash each cell. Design provides for backwash at a rate of 15 gpm/s.f. for 15 minutes. Filter backwash water is discharged to the sanitary sewer. Filter control valves are automatically controlled with actuators via Filter Control Panel/SCADA.

Clearwell

A 600,000-gallon clearwell tank receives all filtered water, and serves as the suction reservoir for high service pumps. The water level in the clearwell controls the operation of wells. The sidewater depth in the clearwell tank is 16.6 feet. The allowable fluctuation in the tank is 300,000 gallons, resulting in a minimum volume of 300,000 gallons maintained in the clearwell tank. A bypass line between the tank fill and suction lines allows for the tank to be taken out of service.

High Service Pumps

Five (5) high service pumps (HSPs), each with a pumping rate of 1,750 gpm, operate. With all five pumps operating, a pumping rate of 8,750 gpm could be achieved. Safe capacity with one (1) pump out of service is 7,000 gpm (10 MGD). All pumps have VFD control. A Venturi flow meter is installed on the discharge line from the HSPs. Residual chlorine monitoring and a post chlorine injection port are on the discharge main. The new 30" finished water line is connected to the existing finished water line. High service pump operation is controlled based on tank levels in the distribution system.

Chemical Feed

Chlorine, Fluoride, and Phosphates are fed at the filter discharge piping, near the flow meter and control valve. Each discharge header has dedicated chemical feed injection points. Feed rate is flow proportional. Liquid bleach is used for disinfection.

Chemical storage tanks provide a minimum 30 days of storage at 12 MGD, with an additional day tank to provide four (4) days of storage. Containment sumps are provided in each of the chemical rooms. Fill lines are located at the outside wall.

1.1.3 Water Storage

Seven (7) elevated water storage tanks serve the water distribution system, providing a total storage tank volume of 6,500,000 gallons. Anderson has an additional 2,400,000 gallons in clearwell storage at the water treatment plants (1.8 MG Wheeler + 0.6 MG Lafayette). Approximately 50% of the clearwell storage volume could be considered effective storage = 1,200,000 gallons.

Total effective water storage = 6.5 MG + 1.2 MG = 7.7 MG.

The average daily water pumpage for 2022 – 2023 was 11.1 MGD. The recommended water storage capacity is equal to one (1) day's average pumpage. **Anderson is deficient in water storage. Additional water storage is recommended.**

Recommended Storage Volume	11.1 MG
Effective storage	7.7 MG
Water Storage Deficiency	3.4 MG

The names and capacities of the existing water storage tanks are provided in the table below.

Table 1.1.3.1 Summary of City of Anderson Water Storage Tanks

Tank	Type	Date Installed	Capacity (gallons)	High Water Level Elev.	Head Range
Cross Street	Elevated Leg Tank	1958 (Painted 2003)	500,000	1,006' msl	30'
Columbus Avenue	Sphere	1968 (Painted 1998)	1,000,000	1026' msl	30'
Fairview Park	Elevated Leg Tank	1958 (Painted 1996)	1,000,000	984' msl	30'
Rangeline Road	Elevated Leg Tank	1968 (Painted 2000)	1,000,000	1,026' msl	30'
East 10th Street	Elevated Leg Tank	1958 (Painted 2019)	500,000	1009' msl	30'
Eighth Street	Elevated Leg Tank	1958 (Painted 2018)	500,000	1,015' msl	30'
Park Road	Elevated Composite	2011	2,000,000	1,026’ msl	42’
		Total Storage	**6,500,000**		

The City of Anderson has a tank maintenance program (see *Appendix A*) with Veolia for regular inspections and maintenance. This contract is based on a 20-year schedule of recommended regular inspection and maintenance including painting and repairs. Four (4) of the seven (7) tanks have been painted in the last four (4) years (8th, 10th, Cross, and Rangeline Tanks).

The Fairview Booster Station pumps out of the Fairview Tank to the Park Road Tank and Southwest/Flagship Pressure Zone. The Fairview Booster Station was constructed in approximately 2017 and is in good condition. The booster station has three (3) 2,000 gpm booster pumps (2 service + 1 standby).

The tanks do not have perimeter security fencing.

1.1.4 Water Distribution System

Water Main Materials of Construction (MOC) and Diameters

The City of Anderson has a large water distribution system containing water mains ranging in size from 2” to 30” and in materials from cast iron, steel, PVC, asbestos-cement, prestressed concrete to ductile iron. The ages of the various mains range from the time of origination of the water works up

to current day installation. The City of Anderson currently installs ductile iron or PVC pipe as a standard.

Many steel water mains were installed after World War II. The steel material corrodes over a period of time. Corrosion of the steel water mains is also impacted by the aggressiveness of soils. The City of Anderson does have aggressive soils in some areas. Anderson has reached the point where all of the steel water mains, **particularly the 2" and smaller galvanized steel mains, are at the end of their useful life and need to be systematically replaced.**

The 2"-diameter water mains represent the most problematic portion of the water distribution system that routinely impacts residential customers and diverts the City's resources. Based on City records there are approximately 340,000 LF (64 miles) of 2" water main.

Dead end water mains, many of which are small diameter mains with no hydrant for flushing, also represent a significant maintenance and water quality challenge. These zones are vulnerable to water quality issues. Replacement of 2" water mains and installation of fire hydrants is needed to improve water quality and fire protection.

Some of the water mains in the distribution system are in the range of 100 years old. These are primarily cast-iron water mains. They have not been a chronic problem yet, but due to the age of this piping, these will need to be replaced. It is recommended that these older mains be planned for replacement along with any service line replacement programs.

Anderson's water distribution system includes a large transmission main loop around the center of the city. The existing 24" and 30" diameter transmission mains were originally constructed to serve the large manufacturing facilities near the center of Anderson. They are well linked to the water storage tanks and fed by the Lafayette WTP on the north and Wheeler WTP on the east sides. This design was well suited to the development in the 1960s and 1970s. New development on the southwest side of Anderson and loss of industry in the east-central portion of the city has shifted the concentration of water demand. The following conditions are noted:

1. Wheeler WTP is best located to feed water into the distribution system. The Wheeler Plant and Well production is declining and not as able to serve the system as in the past. A replacement for the Wheeler WTP is needed to provide a second source of supply to the water distribution system.
2. Lafayette WTP and Well capacity has increased to help offset Wheeler losses, but there is only one transmission main out of the Lafayette Plant, feeding the distribution system at only one point. A second transmission main is needed out of the Lafayette WTP into the distribution system.
3. Most of the growth in water demand is on the southwest side of the city, particularly the Flagship Industrial Park. There were no large diameter water mains serving this area in the past. Upgrades have been made to serve this area, including water mains, a booster station at the Fairview Tank, the 2 MG Park Road water storage Tank, along with transmission main improvements. Additional transmission main looping will be needed in

this area as growth continues.

Lead Service Lines (LSLs)

The City is in the process of completing its Lead Service Line Inventory. This effort includes establishing the complete connections list and service line materials on the utility side and customer side. A survey has been distributed to all water customers. The City is currently performing visual investigations of service lines at meter pits and inside buildings where possible. Pothole investigations are the next step of the investigation to be performed by the Water Department.

The most common service line condition is galvanized service lines with a lead (gooseneck type) connector to the water main. There have been a few actual lead service lines observed by City staff in the past. Those lead service lines and neighboring areas are a primary focus for the pothole investigation. The galvanized service lines with lead connectors are common sources of leaks. Further, many are connected to 2" galvanized steel water mains.

Anderson experiences many water main and service line leaks each year. Replacement of water mains and services with leak history is a main priority. Review of the leak history data indicates the leaks in both service lines and water mains are widespread through the older parts of the city. Water main replacement will be prioritized in areas with significant LSLs and lead connectors and/or leaks. Leaks are particularly prevalent in areas with older and/or smaller diameter water mains. Appendix A includes maps of water main and service line leaks throughout the City.

Interview with Water Department personnel who have worked for years in the field performing repairs and replacements identified the priority areas listed in Table 1.1.4.2 for replacement of water mains and service lines. This interview emphasized the importance of locating all lead service lines and lead connectors, and this factored into the recommended priorities of the most experienced water system professionals.

Table 1.1.4.2 provides a summary of the highest priority locations for water main and service line replacement. The completion of the ongoing Lead Service Line Inventory could result in revisions and/or additions to this table. See identified areas on Location Map in Appendix B Figure 5.0.

Table 1.1.4.2 High Priority Areas for Water Main and Service Line Replacement

Area	# Service Lines	# Leaks (2017-2022)	Length of 2" Water Main (+/-)	Total Length of Water Main
8th Street area – Brown-Delaware to Raible	272	36	11,085	17,620
North Anderson Cross A	336	39	10,127	28,155
North Anderson Cross B	378	49	16,335	28,825
West Central	643	52	11,085	31,150
Park Place	663	54	12,995	54,975
Belmont	234	20	10,980	20,915
Brentwood	118	20	0	5,555
Indian Meadows	370	31	5,860	27,135
Historic District	314	14	2,120	26,670

Complete replacement of the 2" water mains, lead service lines, and galvanized service lines with lead connectors is recommended.

Maintenance

The City implemented a flushing program in 2017. The City maintains an up-to-date list of hydrants to be repaired or replaced. As water system repairs are made, work is documented in Ziptility, an online asset mapping program. Typically, 8-9 hydrants are replaced per year, and the City replaces them as quickly as possible. The City also bags any hydrants that do not work and notifies the fire department of them as well. Additionally, the City maintains a detailed valve exercise program and physically exercises as many valves as time allows. Distribution flow modeling and flow testing further identify closed and broken valves.

Hydraulic Model of Distribution System

The City of Anderson has a hydraulic model of the distribution system to analyze flow and pressure in the system. Development of the system model began in approximately 2015 and continues to be refined with more detail. This is a valuable tool in evaluating operations and flow in the distribution system. This is an excellent tool for planning and evaluating distribution system needs to serve new development, and how to most efficiently move water from treatment plants into the distribution system.

1.2 CURRENT POPULATION

As of 2023, there were 23,279 active accounts. Fire protection and flat rate connections account for 292 of these accounts. The service area is bounded approximately by the city limits. As of 2023, the system served a population of 58,942.

1.3 CURRENT SIGNIFICANT WATER CONSUMERS

The City of Anderson serves a combination of residential, commercial, institutional, and industrial customers. The table below provides a breakdown of the customer classifications. This is based on the percentage of customers in each classification, not water consumption by classification.

Table 1.3.1 Water Customer Distribution

Customer Type	No. Active Connections	Percentage (%)
Residential	20,896	91.5%
Commercial	1,526	6.7%
Institutional	128	0.6%
Industrial	21	0.1%
Fire Protection	269	1.2%

The table below provides a listing of Anderson's 10 largest water use customers in 2022. It is noteworthy that the City of Anderson's 10 largest water users consumed approximately 24.1% of the total water produced in 2022. Nestle is an extraordinary water user, utilizing approximately 20% of Anderson's water produced.

Table 1.3.2 Anderson's 10 Largest Water Users in 2022

Rank	Customer	2022 Water Use (Gallons)	Percent of Water Sold to Top 10 Customers
1	NESTLE	804,720,092	80.2%
2	RESIN PARTNERS, INC.	40,932,804	4.1%
3	REDBUD ESTATES/CAMELOT	26,666,948	2.7%
4	COMMUNITY HOSPITAL	26,479,200	2.6%
5	ST. VINCENT REGIONAL HOSPITAL	9,963,372	2.0%
6	CREW CARWASH	18,130,024	1.8%
7	NTN DRIVESHAFT	17,988,652	1.8%
8	ANDERSON COMMUNITY SCHOOLS	17,803,148	1.8%
9	GREATER VISION IX LLC	17,111,248	1.7%
10	TWG HOOSIER WOODS, LP	14,016,772	1.4%
Total		**1,003,812,260**	

Source: City of Anderson Utilities Customer Account Water Summary for 2022

Meter Reading and Meter Replacement

The City of Anderson needs to replace its existing meter reading system. Twenty years ago, the City replaced 23,000 meters. Anderson currently spends approximately $400,000 per year to replace approximately 1,800 water meters. The plan is to increase this to $750,000 per year in order to replace 2,800 meters annually, including both residential and commercial meters as part of the City's Extensions & Replacements/CIP Program. The utility is also transitioning from Badger meters to Neptune meters.

SCADA

Anderson Water Utility has a system wide SCADA system for monitoring of all treatment facilities, tank levels, wells, and booster stations. The SCADA system has been on a radio communication system with fiber optics connection between the Lafayette and Wheeler Water Treatment Plants. Damage to this fiber optic line resulted in significant operational difficulties, and some manual operations until the line could be repaired.

Anderson needs to upgrade its SCADA system and transition from radio signal based to cellular based communication. This provides greater reliability and is more compatible with current technology. SCADA components become obsolete with the ongoing development of technology.

Anderson Water Utility is at a point where it needs to make major SCADA system equipment and controls upgrades. A system-wide upgrade will provide the best communication and reliability. See evaluation and proposal in Appendix A.

GPS Software

The City is planning to upgrade GPS equipment. The City currently uses Ziptility GIS mapping on tablets in the field. They currently document all leak repairs with handheld GPS units.

1.4 EXISTING CONSUMPTION

Water Loss

Recent data show that average annual water loss continues to rise and exceeded 39% in 2022. Note that these water loss values do exclude accounted for public water used for activities such as water main flushing, firefighting, street cleaning, and utility operations. These numbers do not incorporate apparent losses such as metering inaccuracies or unauthorized consumption as is included in the AWWA Water Loss software. 2019 and 2021 Year validated water loss audits are included in Appendix A.

Table 1.4.1 Water Loss 2019-22

Year	Water Pumped and Treated (1,000 Gallons)	Water Sold to Customers (1,000 Gallons)	Public use & Apparent Losses (1,000 Gallons)	Water Loss (1,000 Gallons)	Water Loss (%)
2019	3,734,739	2,378,991	100,279	1,255,469	33.6%
2020	3,651,360	2,335,104	34,607	1,281,649	35.1%
2021	3,965,016	2,252,148	182,509	1,530,359	38.6%
2022	4,137,232	2,371,770	133,972	1,631,490	39.4%

Source: City of Anderson IURC Annual Reports

CHAPTER 2: UTILITY NEEDS

The City of Anderson's current service area is generally defined by the city limits, with only a small percentage of customers located outside that boundary. The service area is not expected to change in any significant way over the next 20 years. Historically, Anderson has been a major industrial hub for Indiana, beginning with the Industrial Revolution. Industrial activity, particularly in the automotive industry, fueled significant and continued population growth for the City of Anderson until the 1970s. Census data demonstrates an average growth of 21% per decade from 1900 - 1970. Since then, a significant decline in local manufacturing, most notably in the automotive industry, has contributed to a steady population decrease that is projected to continue for the foreseeable future. The population of Anderson decreased by over 11,000 from 1970 to 2000, representing a nearly 16% decline. Water demand, however, has continued to rise and is expected to increase over the next 20 years. Future increase in water demand is anticipated to come primarily from industrial and commercial sectors, rather than residential, customers.

Table 2.1.1 Historic and Projected Population Data

City of Anderson		
Year	**Population**	**% Change**
1900	20,178	--
1910	22,476	11.4%
1920	29,767	32.4%
1930	39,804	33.7%
1940	41,572	4.4%
1950	46,820	12.6%
1960	49,061	4.8%
1970	70,787	44.3%
1980	64,695	-8.6%
1990	59,459	-8.1%
2000	59,734	0.5%
2010	56,129	-6.0%
2020	54,788	-2.4%
2030	53,353	-2.6%
2040	51,320	-3.8%
2050	49,272	-4.0%

Source: www.stats.indiana.edu.

As of September 2023, the City of Anderson has approximately 23,279 active accounts, including a total of 292 fire protection or flat rate connections.

The City of Anderson anticipates future water demand to increase from industrial development. The Nestle manufacturing facility is by far Anderson's largest single customer. In 2012, Nestle purchased 20% of all water pumped, equal to an average of 1,742,800 gpd. In 2022, Nestle purchased approximately 20% of all water pumped, equal to approximately 2,136,714 gpd. Nestle is located in the Flagship Industrial and Business Park, which has been developed to attract more

advanced manufacturing and industrial facilities to Anderson. Water system infrastructure improvements would allow Anderson to better serve current and potential new industrial water customers.

2.1 20-YEAR CAPACITY NEEDS

The recommended 20-year design flows are informed by the steady increase in water demand that has been fueled by industry and has occurred even as population growth has declined. Average and peak daily water use increased from 10.5 MGD to 11.3 MGD, and from 11.5 MGD to 13.4 MGD, respectively, from 2014 to 2022. These rates equate to an average annual increase of 1.0% in average demand and 2.1% in peak day demand.

Table 2.2.1 provides recent and projected demand changes. The projected 20-year daily demand is approximately 14.4 MGD for average conditions or 18.0 MGD for peak day demand. This is an average annual water pumpage increase of 155,000 gpd. The existing water treatment facilities have a combined daily design (safe capacity) rating of 11.5 – 12.7 MGD. **The existing treatment capacity is not sufficient to meet the projected 20-year water needs.**

Table 2.2.1 20-Year Projected Demand

Year	Average Use (MGD)	Peak Daily Use (MGD)
2014	10.5	11.5
2022	11.3	13.4
2042	**14.4**	**18.0**

Expansion of the Lafayette WTP and Well Field is needed to increase water supply. There are known water resources in the Lafayette Well Field that can be developed, and the Lafayette WTP is designed for expansion. Additional Water Transmission Mains are required to move more water from the Lafayette WTP into the distribution system.

Replacement of the Wheeler WTP and Wells is a critical need. The current production of 3.5 – 4.8 MGD from the Wheeler facility must be replaced. The plant and wells are at the end of their useful life, and the discovery of PFAS in the raw water supply at this facility further demonstrates the critical need for replacement of the Wheeler WTP and Wells.

Estimated 20-year Future Demand

Using the above average rates of annual increase in average day and peak day demand based on 2014-2022 usage data, 20-year capacity needs may be estimated as shown in the table below. 20-year demand projections will be adjusted as overall demand changes. Lost water rates will continue to be monitored, and demand projections revised over time according to actual conditions.

Figure 2.1.1 City of Anderson
Projected Future Water Demand

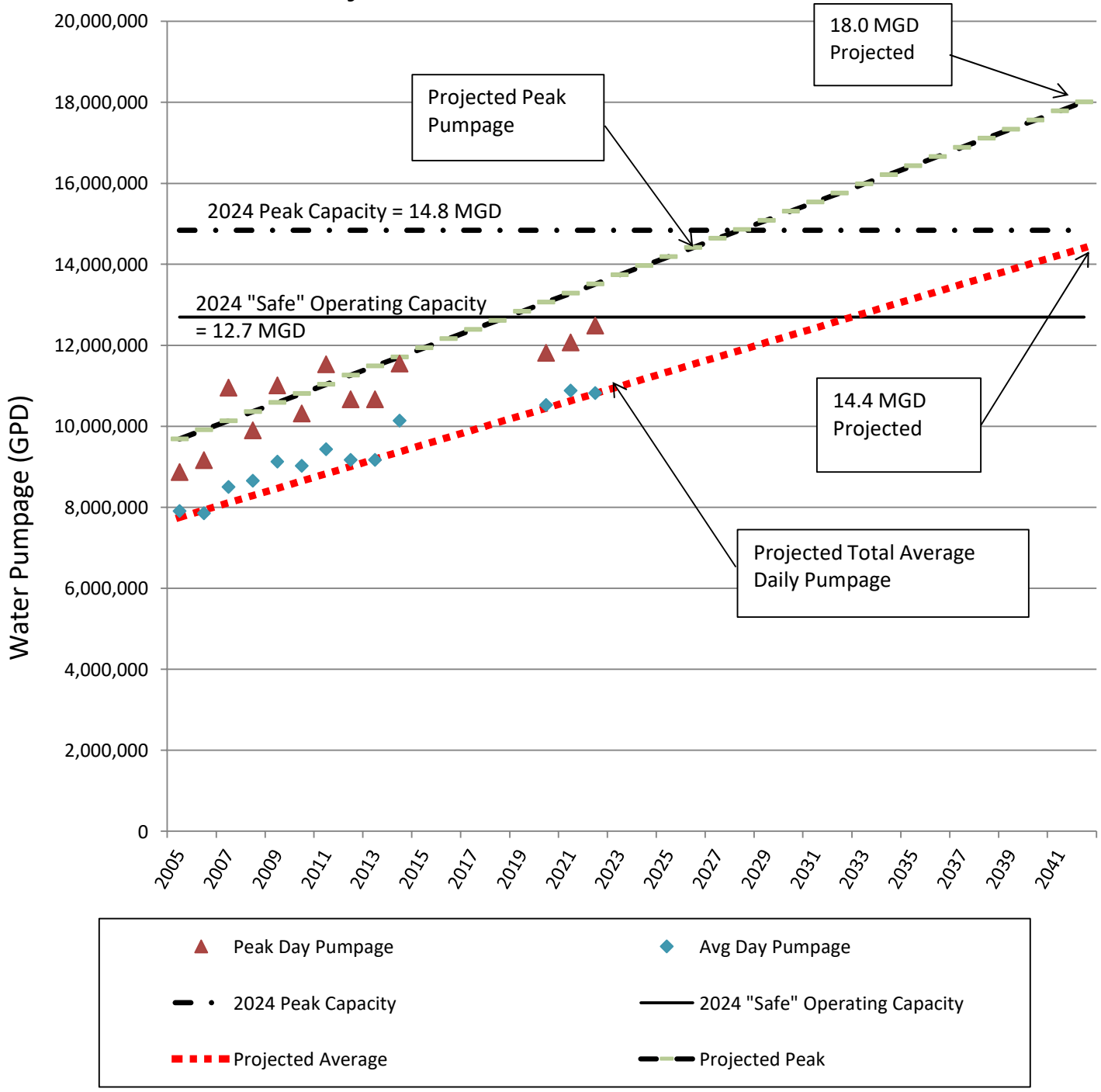

Table 2.2.2 20-Year Capacity Needs (Gallons/Day)

Customer Type	2022 Flow (GPD)	2042 Flow (GPD)
Domestic Demand (D)	3,840,000 gpd	4,877,000
Commercial Demand (C)	1,510,000 gpd	1,916,000
Industrial Demand (I)	1,151,000 gpd	1,462,000
Total D, C, I	6,501,000 gpd	8,255,000 gpd
Water Loss (39%)	4,469,836 gpd	5,616,000 gpd
Average Daily Production Demand	11,334,882 gpd	14,400,000 gpd
Peaking Factor	1.25	1.25
Peak D, C, I	8,122,500 gpd	18,000,000 gpd
Peak Day Demand	8,122,500 gpd	10,319,000 gpd
Peak Hour Demand	511,000 gph	650,000 gph

The projected distribution of customer types is not expected to fluctuate significantly. Geographical distribution and demand distribution, however, are both expected to continue shifting from the east-central region to the western region of the city. Industrial growth, particularly from potential new customers in the Flagship Industrial and Business Park, is expected to increase overall water demand as well as the need for infrastructure improvements in the western region of the city.

Industrial:

Industrial demand has shifted from the southeast to the west. Nestle is the highest-consuming customer in the water system. Nestle's water demand increased from 2014 to 2021. Since then, Nestle's water use has somewhat stabilized. There are no known plans for significant increase in water demand from Nestle, but due to the size and nature of this large water user, it is important to anticipate potential increased demand in the future from industrial users.

2.2 20-YEAR WATER SYSTEM NEEDS

2.2.1 Distribution System

Lafayette WTP Transmission Main West to CR 200 and South to Cross St - Short Term Projects to be funded by TIF

This project includes construction of a new 36" D.I. water main from the Lafayette WTP at 1383 W Hartman Road west to CR 200 W, then south to Cross Street. This will improve distribution and connect to the existing 18" transmission main on Cross Street. Preliminary Opinion of Probable Construction Cost = $6,553,114.00

Cross St West to Romine and South to 8th St - Short Term Projects to be funded by TIF

This short-term planning project proposes construction of a new 30" water main from the intersection of CR 200 W and W Cross St running west to Romine Rd, crossing the White River, and south to 8th St. This will tie in to the 30" transmission main on 8th Street, close to the 8th Street Elevated Water Storage Tank. Preliminary Opinion of Probable Construction Cost = $8,505,515.00

Replacement of Water Mains and Service Lines – Capital Projects with Proposed Funding through SRF Bond Issue

The City's first priority is to replace sections of water mains and service lines associated with a high geographic density of leaks and areas with lead service lines and/or galvanized service lines with lead connectors. The City recorded 1,207 service line leaks and 505 main leaks between 2017 and 2022. Replacing service lines and water mains, particularly 2" galvanized steel water mains with history of leakage, is a high priority for public health protection and to reduce water loss. These high priority projects are needed to protect public health, improve pressure, flow, fire protection, and reliability throughout the service area.

The City of Anderson distribution system staff have only seen a small number of actual lead service lines (LSLs) in the distribution system. They most commonly have galvanized service lines with lead connectors. The galvanized service lines are common sources of leaks. They also have a number of PVC service lines installed in the 1970s that have been a frequent source of leaks. Anderson also has a number of polyethylene lines that are in good condition.

The table below summarizes what is known about the materials of construction of service lines throughout the water system, based on a Lead Service Line Inventory (LSLI) conducted starting in 2023, and continuing through 2024. The city is currently receiving surveys provided to all water customers, along with performing visual inspections in some areas. Anderson will also be performing pothole inspections with its hydro-excavation equipment recently purchased with grant funding from the IFA.

Table 2.4.2 Service Line Information

Service Line Material Category	**Quantity**
Known Lead**, A**	16
Known Lead Connector**, B**	129*
Galvanized Requiring Replacement (GRR), **C**	0
Known Non-lead, **D**	2,133
Unknown, **E**	21,001*
Total Service Lines	23,279

**A significant number of unknowns are believed to be galvanized with a lead connector based on interviews with staff, however, verification is underway.*

2.2.2 Water Supply

The Ranney and Norton wells that supply the Wheeler WTP are reaching the end of their useful life. The well field is contaminated with VOCs and is designated an EPA Superfund Site. Recent testing has discovered PFAS constituents exceeding the EPA's Lifetime Health Advisory Levels. The Ranney Wells are also under the Direct Influence of Surface Water. **The Ranney and Norton Wells must be replaced.** Replacement wells are not recommended in this well field due to the known contamination.

Additional water supply wells are needed.

Lafayette Well Field – Proposed Fuller Wells– Short Term Projects to be funded by ARPA
The most certain water availability is in the Lafayette Well Field at the Fuller Well Site. This property has been tested and confirmed there is capacity for construction of two (2) wells on this site. These are a critical need, along with raw water main to connect to the existing raw water transmission main to the Lafayette WTP. Preliminary Opinion of Probable Construction Cost = $3,309,930.

Lafayette Well Field – Proposed Tuxford Well Replacement – Short Term Project to be funded by ARPA
The Tuxford Well is at the end of its useful life and needs to be replaced. There is room on the existing property for a replacement well. Test drilling shall be performed to confirm aquifer formation. This is anticipated to be a good location for construction of a new well to replace the existing well. Preliminary Opinion of Probable Construction Cost = $1,082,400.

New South Side Well Field – Capital Projects with Proposed Funding through SRF Bond Issue
Development of a new south side well field is recommended. This is needed to replace water production capacity from the Wheeler WTP and wells. The hydrogeological investigation currently underway must be continued in order to find good well sites and progress with acquisition of land for wells and a treatment plant. The south side water treatment plant is also necessary to provide a secondary and partially redundant water supply to the city.

2.2.3 Water Treatment

Wheeler Water Treatment Plant Replacement – Proposed South Side Plant – Capital Project with Proposed Funding through SRF Bond Issue
As described in Chapter 1, the Wheeler Avenue Water Treatment Plant is approaching the end of its useful life. **The Wheeler Water Treatment Plant production capacity must be replaced. A new 6 MGD water treatment facility is needed to replace the Wheeler WTP**. A new plant, proposed on the south side of Anderson, would provide a secondary water supply, which is beneficial for a level of redundancy. The projected future needs exceed the maximum expandability

of the Lafayette WTP and well field. A second source of supply and treatment is extremely important to Anderson's long-term water security.

Lafayette Water Treatment Plant Expansion – Short Term Projects to be funded by ARPA
The capacity of the Lafayette WTP needs to be expanded with the additional wells. While some of the capacity lost at Wheeler can be transferred to Lafayette, it cannot replace the total capacity of the Wheeler WTP and provide for the projected 20-year water demand. The Lafayette WTP is recommended to be expanded from 8 MGD to 14 MGD.

2.2.4 Water Storage

Water storage tanks together provide 6.5 million gallons of storage. With inclusion of half of the clear well storage volume at the water treatment plants, the effective storage capacity is 7.7 MG. Additional water storage is recommended. The average daily water pumpage exceeds effective storage by 3.4 MG. The current effective storage is approximately equal to the average day system customer demand of 6.5 MGD.

Construction of additional elevated water storage tanks is recommended in the next 10 years. This will be needed to meet the projected future daily water consumption and pumpage requirements.

Tank maintenance is critical to maintain the integrity and useful life of water storage tanks. The City of Anderson has a maintenance contract for the long-term maintenance of all of its tanks. This includes regular inspections and coating replacements. The tanks are all in good condition. There is a need for fences to be installed around all of the water tanks.

2.3 OTHER WATER UTILITY NEEDS

Water Meter Replacement
Water meter replacement is an ongoing need for all water utilities. Water meters typically have a useful life of 12 – 20 years. Anderson did a major system-wide meter replacement program approximately 20 years ago. Those meters are in need of replacement, and Anderson has been replacing meters on an annual basis. The Water Department proposes to increase the meter replacement to 2,800 meters per year. This is recommended to be incorporated into their Extensions and Replacements/CIP budget.

Hydrogeological Investigation
The City has been working on hydrogeological investigation for new water supply wells for a south side plant, and for additional wells in the Lafayette Well Field. This work is recommended to continue for development of new wells in the near-term, and for long-term water resource planning.

Decomissioning of the Wheeler Wells and WTP

Upon completion of a new water treatment plant and well field on the south, the Wheeler WTP and wells will need to be decommissioned. The wells will need to be sealed and properly abandoned to prevent groundwater contamination through these conduits into the aquifer. The old water treatment plant facility is recommended to be demolished and the site restored for other use.

CHAPTER 3: EVALUATION OF ALTERNATIVES

3.0 NO ACTION ALTERNATIVE

For each identified project alternative, the choice to take "No Action" remains an alternative. The "No Action" alternative would allow the water system component that has been identified as a "current need" to continue operation without improvement or replacement.

The "No Action" alternative selection does not have immediate environmental impacts caused by new construction, nor does it have an initial capital cost. Long-term operation, maintenance, and repair costs are typically significant as infrastructure in poor condition requires much more costly maintenance and repair work to try and keep the component in service, particularly under emergency conditions.

A water utility is obligated to maintain its waterworks in a manner that protects public health and provides reliable service to customers. Taking no action on known problems puts customers at risk for interruption of service, boil water orders, and negative impacts on water quality. Failure to address known problems allows those problems to worsen and when failure occurs in the water system, it becomes an emergency. The expense of emergency repair projects is much greater than planned repair or replacement.

"No Action" is not a viable alternative for the City. Action must be taken in order to maintain the integrity of the water utility and provide improved reliability, service, and water quality to customers.

3.1 WATER SYSTEM IMPROVEMENTS ALTERNATIVES

ALTERNATIVE 1: NEW SOUTH SIDE WATER TREATMENT PLANT AND WELL FIELD (REPLACEMENT FOR WHEELER WTP)

A. Description

A new 6 MGD water treatment plant and well field is proposed to replace the Wheeler WTP and Wells. The proposed WTP shall be located on the south side of Anderson. The City of Anderson is in the process of drilling test wells in the area identified by its hydrogeologist to have good potential for groundwater supply to support the proposed water treatment plant. The City is working to complete test well drilling to verify water supply, quantity and quality. This effort has been ongoing for several years, but in recent months the test well drilling sites have become available and the formation identified in this area has been very promising. See Appendix A, Project Memorandum by Eagon & Associates. The "Dream Bigger LLC" property is currently under investigation for water resources. The "Long" and "Adams" properties and "Conservation Club" property warrant further investigation, and are relatively close together, which would be ideal for locating wells and a treatment plant.

This plant would serve the critical need of replacing the Wheeler Water Treatment Plant and Well Field. The exact location of the proposed water treatment plant and wells is currently under investigation. Supplemental information shall be submitted as soon as possible when the well verification is accomplished and land for the water treatment plant and wells is secured.

B. Design Criteria

The project includes construction of a new 6 MGD water treatment plant and approximately four (4) new water supply wells. The proposed water treatment plant shall include aeration, detention and filtration for iron and manganese removal. Two (2) package filtration units shall each have a capacity of 3.0 MGD. A new water treatment plant building shall include chemical feed systems (chlorine, fluoride and phosphates), high service pumps, valves and piping, flow meters, controls, a small lab and restroom.

Table 3.1.1 Proposed Expansion Capacity of Package WTP

Package Water Treatment Plant	Safe Design Flow MGD	Safe Design Flow, GPM	Peak Design Flow, MGD	Peak Design Flow, GPM
2 Package Aeralator Units, 2,100 gpm Each	4	2,800	6	4,200

C. Map

The location of the proposed water treatment plant and wells has not yet been defined. Supplemental information will be provided when location is determined.

D. Environmental Impacts

The proposed improvements will likely be partially or completely on previously undisturbed land. The locations will be environmentally reviewed and vetted when selected. Supplemental information will be submitted in the future to evaluate the environmental impacts.

E. Land Requirements

The City of Anderson will need to acquire land for the well field and water treatment plant. Easements will also be required for raw water mains and finished water mains.

F. Potential Construction Problems

This will be reviewed once the final locations are selected for wells and water treatment plant.

G. Sustainability Consideration

a. Water and Energy Efficiency
This is not yet determined.

b. Green infrastructure
This is not yet determined.

H. Cost Estimates

See Cost Estimate in Appendix B, Table 3.1. Land acquisition for the water treatment plant and wells will additionally be required. Those costs will be updated when known.

ALTERNATIVE 2: CROSS STREET WATER TRANSMISSION MAIN

A. Description

This project includes replacement of the existing 18" water main along Cross Street with a new 24" water main from the intersection of CR 200 W going east to Broadway St. Approximately 52 service lines would be replaced from water main to meter with this project. Any service lines that are galvanized from meter to building having followed a lead connector would additionally be replaced.

Approximately 9,500 L.F. of 24" water main shall be installed to replace the existing water main. This is a critical water transmission main conveying water from the Lafayette WTP to the Cross Street Tank. This line has experienced breaks related to high pressure. This has limited the pumpage out of the Lafayette WTP as increasing flow above 8 MGD increases pressure on this segment of water main to a level of concern. Replacement of this critical line will help the water distribution to be more resilient and reliable.

B. Design Criteria

24" water main will be installed to replace existing mains. Fittings, valves, location wire, and erosion control/landscape restoration are also included. Approximately 52 service lines will be replaced from the new water main to existing water meter. Approximately 30 are anticipated to require replacement from the meter to the house due to galvanized with possible lead upstream in the past.

Table 3.1.2 Alt. 2: Cross Street Water Transmission Main Project

Proposed 24" Water Main on Cross Street, C905 PVC	9,500 L.F.
Service Lines to be Replaced Main to Meter	52
Service Line Replacement Meter to Building Premise	30

Fittings, valves, location wire, and erosion control/landscape restoration are also included.

C. Map

The project is shown on Figures 5.2a-d in Appendix B.

D. Environmental Impacts

The proposed improvements will be completed on property previously disturbed. No floodplains, wetlands, or historic resources will be impacted. No negative impacts are expected.

E. Land Requirements

Water main construction shall be located within city road right-of-way. Right of entry permission shall be required for all locations where lead or galvanized water service lines are replaced from the water meter to building. Easements may be necessary if there is no room for water main construction due to other existing utilities and features.

F. Potential Construction Problems
Temporary traffic control may be necessary. Access to the site may require a temporary drive access. The City does anticipate that construction in this area may be challenged by the presence of fiber optic wire that has been installed in recent years along Cross St.

G. Sustainability Consideration
   a. Water and Energy Efficiency
   The proposed project does not have any special efficiency benefits.
   b. Green infrastructure
   The proposed project does not include any green infrastructure.

H. Cost Estimates
See Cost Estimate in Appendix B, Table 3.2 for detailed cost estimate including service line only cost.

ALTERNATIVE 3: 8TH STREET MAIN & SERVICE REPLACEMENT

A. Description
This 8th Street area was identified by the City as a high priority for replacement of service lines and to replace and upgrade the existing 6" cast iron water main that is approximately 100 years old. This is a high traffic road and the frequent service line repairs are dangerous for workers and damaging to the roadway. Replacement of the water mains with a larger 12" water main will improve flow distribution. Water service lines in this region commonly have lead gooseneck connectors to galvanized service lines. A few lead service lines have also been identified in this area. Replacement of the service lines is important for the protection of public health and will also help to reduce lost water. This project includes replacement of all service lines from the water main to meter, and replacement of an estimated 80% of service lines from the meter to house.

B. Design Criteria
Replace approximately 15,680 LF of water main, including 2" water main, and approximately 272 service lines. Fittings, valves, location wire, and erosion control/landscape restoration are also included.

Table 3.1.3 Alt. 3: 8th Street Water Main & Service Line Replacement

Proposed 12" Water Main to Replace Existing 6" Water Main	8,160 L.F.
Proposed 6" Water Main to Replace Existing 2" Water Main	4,300 L.F.
Proposed 6" Water Main to Replace Existing 4" & 6" Water Main	3,220 L.F.
Total Length Proposed Water Mains (Replacement)	**15,680** L.F.
2" Retired with Service Reconnect to Parallel Existing Main	190 L.F.
Total 2" Water Mains to be Eliminated	**4,490** L.F.
Service Lines to be Replaced Main to Meter	272
Service Lines to be Replaced Meter to House	218
Service Line Leaks 2017-2022	35
Percent of Service Line Leaks in 5 years	12.9%
Water Main Leaks 2017-2022	1
Total Length of Existing Water Main in Area	17,620 L.F.
Percentage of Water Mains to Be Retired and/or Replaced	90%

C. Map

The project is shown on Figures 5.3a-e in Appendix B. Specifically, Figure 5.3e identifies existing and proposed water mains for replacement.

D. Environmental Impacts

The proposed improvements will be completed on previously disturbed land. No floodplains, wetlands, or historic resources will be impacted. No negative impacts are expected.

E. Land Requirements

Water main construction shall be primarily within the public right-of-way. Right of entry permission shall be required for all locations where lead or galvanized water service lines are replaced from the water meter to building. Easements may be necessary if there is no room for water main construction due to other existing utilities and features.

F. Potential Construction Problems

Temporary traffic control may be necessary. Access to the site may require a temporary road and parking area.

G. Sustainability Consideration

a. Water and Energy Efficiency

The proposed project does not have any special efficiency benefits.

b. Green infrastructure

The proposed project does not include any green infrastructure.

H. Cost Estimates

See Cost Estimate in Appendix B, Table 3.3 including service line only cost.

ALTERNATIVE 4: NORTH ANDERSON CROSS A MAIN & SERVICE REPLACEMENT

A. Description

The **North Anderson Cross A** Service Area is located north of Cross Street and south of School Street, between Lafayette and State streets. Aged water mains and service lines result in regular leaks and service calls for the Anderson Water Department. The North Cross A Service Area was identified as a high priority for replacement by the Water Department's most experienced staff. The area is plagued with 2" galvanized water mains along with lead gooseneck connectors and galvanized service lines. They have chronic water main leaks with the deteriorating pipe, and the lead goosenecks with galvanized pipe is a public health concern. Replacement of the 2" water mains with 6" water mains will also allow the installation of standard fire hydrants, which will greatly improve fire protection in this area. New valves and hydrants will also improve operation and maintenance operations and benefit water quality.

B. Design Criteria

Replace approximately 14,125 LF of water main in the area identified as North Cross A. Project includes elimination of approximately 10,127 LF of existing 2" water mains. Replace approximately 336 galvanized steel service lines with lead connectors from main to meter and replace an estimated 270 galvanized service lines from meter to premise plumbing. Fittings, valves, location wire, and erosion control/landscape restoration are also included.

Table 3.1.4 Alt. 4: North Cross A Water Main and Service Line Replacement Project

Proposed 6" Water Main to Replace Existing 2" Water Main	8,045 L.F.
Proposed 6" Water Main to Replace Existing 4" & 6" Water Main	6,080 L.F.
Total Length Proposed Water Mains (Replacement)	**14,125 L.F.**
2" Retired with Service Reconnect to Parallel Existing Main	2,082 L.F.
Total 2" Water Mains to be Eliminated	**10,127 L.F.**
Service Lines to be Replaced Main to Meter	336
Service Lines to be Replaced Meter to House	270
Service Line Leaks 2017-2022	22
Percent of Service Line Leaks in 5 years	6.5%
Water Main Leaks 2017-2022	17
Total Length of Existing Water Main in Area	28,155 L.F.
Percentage of Water Mains to Be Retired and/or Replaced	58%

C. Map

The project is shown on Figures 5.4a-e in Appendix B. Specifically, Figure 5.4e identifies existing and proposed water mains for replacement.

D. Environmental Impacts
The proposed improvements will be completed at property previously disturbed for existing utilities and facilities construction. No floodplains, wetlands or historic resources will be impacted. No negative impacts are expected.

E. Land Requirements
Water main construction shall be primarily within the public right-of-way. Right of entry permission shall be required for all locations where lead or galvanized water service lines are replaced from the water meter to building. Easements may be necessary if there is no room for water main construction due to other existing utilities and features.

F. Potential Construction Problems
Temporary traffic control may be necessary. Access to the site may require a temporary drive and parking area.

G. Sustainability Consideration
   a. Water and Energy Efficiency
   The proposed project does not have any special efficiency benefits.
   b. Green infrastructure
   The proposed project does not include any green infrastructure.

H. Cost Estimates
See Cost Estimate in Appendix B, Table 3.4 including service line only cost.

ALTERNATIVE 5: NORTH ANDERSON CROSS B MAIN & SERVICE REPLACEMENT

A. Description
The **North Anderson Cross B** area, adjacent to the southern boundary of North Anderson Cross A, is bordered by E. Cross St., Indiana Ave., and E. Oak St., with Kilbuck Creek to the east. This area has many 2" water mains and is impacted by both deteriorated water mains and service line leaks. This area lacks sufficient valves to allow for maintenance and isolation. Aged water mains and service lines result in regular leaks and service calls for the Anderson Water Department. The North Cross B Service Area was identified as a high priority for replacement by the Water Department's most experienced staff. The area is plagued with 2" galvanized water mains along with lead gooseneck connectors and galvanized service lines. They have chronic water main leaks with the deteriorating pipe, and the lead goosenecks with galvanized pipe is a public health concern. Replacement of the 2" water mains with 6" water mains will also allow the installation of standard fire hydrants, which will greatly improve fire protection in this area, along with flushing and maintenance improvements that will ultimately benefit water quality.

B. Design Criteria
Replace approximately 12,295 LF of water main in the area identified as North Cross B. Project includes elimination of approximately 5,245 LF of 2" water mains.

Replace approximately 378 galvanized steel service lines with lead connectors from main to meter and replace an estimated 300 galvanized service lines from meter to premise plumbing. Fittings, valves, location wire, and erosion control/landscape restoration are also included.

Table 3.1.5 Alt. 5: North Cross B Water Main and Service Line Replacement Project

Proposed 6" Water Main to Replace Existing 2" Water Main	11,090 L.F.
Proposed 6" Water Main to Replace Existing 4" & 6" Water Main	1,205 L.F.
Total Length Proposed Water Mains (Replacement)	**12,295** L.F.
2" Retired with Service Reconnect to Parallel Existing Main	5,245 L.F.
Total 2" Water Mains to be Eliminated	**16,335** L.F.
Service Lines to be Replaced Main to Meter	378
Service Lines to be Replaced Meter to House	300
Service Line Leaks 2017-2022	17
Percentage of Service Line Leaks in 5 years	4.5%
Water Main Leaks 2017-2022	32
Total Length of Existing Water Main in Area	28,825 L.F.
Percentage of Water Mains to Be Retired and/or Replaced	61%

C. Map

The project is shown on Figures 5.5a-e in Appendix B. Specifically, Figure 5.5e identifies existing and proposed water mains for replacement.

D. Environmental Impacts

The proposed improvements will be completed at property previously disturbed for existing utilities and facilities construction. No floodplains, wetlands, or historic resources will be impacted. No negative impacts are expected.

E. Land Requirements

Water main construction shall be primarily within the public right-of-way. Right of entry permission shall be required for all locations where lead or galvanized water service lines are replaced from the water meter to building. Easements may be necessary if there is no room for water main construction due to other existing utilities and features.

F. Potential Construction Problems

Temporary traffic control may be necessary. Access to the site may require a temporary road and parking area.

G. Sustainability Consideration

a. Water and Energy Efficiency

The proposed project does not have any special efficiency benefits.

b. Green infrastructure

The proposed project does not include any green infrastructure.

H. Cost Estimates
See Cost Estimate in Appendix B, Table 3.5 including service line only cost.

ALTERNATIVE 6: WEST CENTRAL AREA MAIN & SERVICE REPLACEMENT

A. Description
The **West Central** area, bordered by Sycamore St., John St., 8th St., and Hazlett St., includes older 2" water mains as well as newer 12" water main "loop lines" that run through alleys. This area generates frequent leaks and is lacking in sufficient valves to allow for maintenance. There are many lead goosenecks in this area, as 2" water mains throughout Anderson typically have lead goosenecks on connecting service lines. The West Central Service Area Project consists of replacing 2" water mains and service lines throughout the area, adding valves to facilitate shutdowns for maintenance.

B. Design Criteria
Replace 2" water mains with 6" water mains. Fittings, valves, location wire, and erosion control/landscape restoration are also included. Replace service lines and connect to new water main. Fittings, valves, location wire, and erosion control/landscape restoration are also included.

Table 3.1.6 Alt. 6: West Central Water Main and Service Line Replacement Project

Proposed 6" Water Main to Replace Existing 2" Water Main	7,655 L.F.
Proposed 6" Water Main to Replace Existing 4" & 6" Water Main	19,425 L.F.
Total Length Proposed Water Mains (Replacement)	**27,080** L.F.
2" Retired with Service Reconnect to Parallel Existing Main	3,430 L.F.
Total 2" Water Mains to be Eliminated	**11,085** L.F.
Service Lines to be Replaced Main to Meter	643
Service Lines to be Replaced Meter to Building	510
Service Line Leaks 2017-2022	74
Percentage of Service Line Leaks in 5 years	11.5%
Water Main Leaks 2017-2022	11
Total Length of Existing Water Main in Area	31,150 L.F.
Percentage of Water Mains to Be Retired and/or Replaced	98%

C. Map
The project is shown on Figures 5.6a-e in Appendix B. Specifically, Figure 5.6e identifies existing and proposed water mains for replacement.

D. Environmental Impacts
The proposed improvements will be completed at property previously disturbed for existing utilities and facilities construction. No floodplains, wetlands or historic resources will be impacted. No negative impacts are expected.

E. Land Requirements
Water main construction shall be primarily within the public right-of-way. Right of entry permission shall be required for all locations where lead or galvanized water service lines are replaced from the water meter to building. Easements may be necessary if there is no room for water main construction due to other existing utilities and features.

F. Potential Construction Problems
Temporary traffic control may be necessary. Access to the site may require a temporary drive and parking area.

G. Sustainability Consideration
   a. Water and Energy Efficiency
   The proposed project does not have any special efficiency benefits.
   b. Green infrastructure
   The proposed project does not include any green infrastructure.

H. Cost Estimates
See Cost Estimate in Appendix B, Table 3.6 including service line only cost.

ALTERNATIVE 7: PARK PLACE MAIN & SERVICE REPLACEMENT

A. Description
The Park Place service area is approximately bordered by Wilson St., 10th St. and Martin Dr., S Nursery Rd., and University Blvd. This is an area that has experienced many water service line leaks. A few actual lead service lines have been observed by City staff in this area. The proposed improvements for this area include elimination of 2" and smaller water mains and replacement of all water service lines. An estimated 80% of service lines will be replaced all the way to the house premise plumbing. Existing 4" water mains shall also be replaced and upgraded to 6". The new 6" water mains will provide improved fire protection.

B. Design Criteria
Replace approximately 9,530 LF of water main in the area identified as Park Place.
Project includes elimination of approximately 12,995 LF of existing 2" water mains.
Replace approximately 667 lead and galvanized steel service lines with lead connectors from main to meter. Fittings, valves, location wire, and erosion control/landscape restoration are also included.

Table 3.1.7 Alt. 7: Park Place Service Area Water Main and Service Line Replacement Project

Proposed 6" Water Main to Replace Existing 2" Water Main	8,360 L.F.
Proposed 6" Water Main to Replace Existing 4"Water Main	1,170 L.F.
Total Length Proposed Water Mains (Replacement)	**9,530** L.F.
2" Retired with Service Reconnect to Parallel Existing Main	4,635 L.F.
Total 2" Water Mains to be Eliminated	**12,995 L.F.**
Service Lines to be Replaced Main to Meter	667
Service Lines to be Replaced Meter to House	530
Service Line Leaks 2017-2022	44
Water Main Leaks 2017-2022	10
Percentage of Service Line Leaks in 5 years	6.6%
Water Main Leaks 2017-2022	10
Total Length of Existing Water Main in Area	54,975 L.F.
Percentage of Water Mains to Be Retired and/or Replaced	26%

C. Map

The project is shown on Figures 5.7a-e in Appendix B. Specifically, Figure 5.7e identifies existing and proposed water mains for replacement.

D. Environmental Impacts

The proposed improvements will be completed at property previously disturbed for existing utilities and facilities construction. No floodplains, wetlands, or historic resources will be impacted. No negative impacts are expected.

E. Land Requirements

Water main construction shall be primarily within the public right-of-way. Right of entry permission shall be required for all locations where lead or galvanized water service lines are replaced from the water meter to building. Easements may be necessary if there is no room for water main construction due to other existing utilities and features.

F. Potential Construction Problems

Temporary traffic control may be necessary. Access to the site may require a temporary road and parking area.

G. Sustainability Consideration

a. Water and Energy Efficiency

The proposed project does not have any special efficiency benefits.

b. Green infrastructure

The proposed project does not include any green infrastructure.

H. Cost Estimates

See Cost Estimate in Appendix B, Table 3.7 including service line only cost.

ALTERNATIVE 8: BELMONT MAIN & SERVICE REPLACEMENT

A. Description

The Belmont area of Anderson, bordered by Raible, 30th St., Arrow Rd., and 25th St. This area has had 21 service line leaks between 2017 and 2022. The Utility staff said that lead service lines may also be in this region, although a majority of the City side services have already been replaced. This area is predominantly served by 2" galvanized water mains and old 6" cast iron water mains. The 2" water mains cannot provide fire protection and are not adequate to serve this area. The 2" galvanized water mains are also prone to leaking and a significant concern due to age and deterioration. Historically, they have had lead gooseneck connectors to galvanized service lines, which is a public health concern. Replacement of all the 2" water mains is recommended, along with 6" cast iron water mains that have a history of leaking. All service lines are recommended to be replaced, including an estimated 80% of service lines from meter to house if they have galvanized or lead service line material.

B. Design Criteria

Replace approximately 14,885 LF of water main in the area identified as Belmont
Project includes elimination of approximately 10,980 LF of existing 2" water mains.
Replace approximately 234 galvanized steel service lines with lead connectors from main to meter and replace an estimated 187 galvanized service lines from meter to premise plumbing. Fittings, valves, location wire, and erosion control/landscape restoration are also included.

Table 3.1.8 Alt. 8: Belmont Service Area Water Main and Service Line Replacement Project

Proposed 6" Water Main to Replace Existing 2" Water Main	6,590 L.F.
Proposed 6" Water Main to Replace Existing 4" & 6" Water Main	8,295 L.F.
Total Length Proposed Water Mains (Replacement)	**14,885** L.F.
2" Retired with Service Reconnect to Parallel Existing Main	4,390 L.F.
Total 2" Water Mains to be Eliminated	**10,980** L.F.
Service Lines to be Replaced Main to Meter	234
Service Lines to be Replaced Meter to House	187
Service Line Leaks 2017-2022	17
Percentage of Service Line Leaks in 5 years	7.3%
Water Main Leaks 2017-2022	3
Total Length of Existing Water Main in Area	20,915 L.F.
Percentage of Water Mains to Be Retired and/or Replaced	92%

C. Map

The project is shown on Figures 5.8a-e in Appendix B. Specifically, Figure 5.8e identifies existing and proposed water mains for replacement.

D. Environmental Impacts
The proposed improvements will be completed at property previously disturbed for existing utilities and facilities construction. No floodplains, wetlands, or historic resources will be impacted. No negative impacts are expected.

E. Land Requirements
Water main construction shall be primarily within the public right-of-way. Right of entry permission shall be required for all locations where lead or galvanized water service lines are replaced from the water meter to building. Easements may be necessary if there is no room for water main construction due to other existing utilities and features.

F. Potential Construction Problems
Temporary traffic control may be necessary. Access to the site may require a temporary road and parking area.

G. Sustainability Consideration
   a. Water and Energy Efficiency
   The proposed project does not have any special efficiency benefits.
   b. Green infrastructure
   The proposed project does not include any green infrastructure.

H. Cost Estimates
See Cost Estimate in Appendix B, Table 3.8 including service line only cost.

ALTERNATIVE 9: BRENTWOOD MAIN & SERVICE REPLACEMENT

A. Description
The Brentwood area is along 8th Street, from Costello Drive running east to Raible Avenue. Water mains in this area are primarily 8" cast iron and 6" transite. Service lines are primarily galvanized with lead goosenecks, and several service line leaks have occurred in recent years, particularly along the transite water main on the east end of this service area.

The 6" transite water main along 8th Street between Horton Drive and Raible Avenue has had several leaks in recent years and is also recommended for replacement. This is also the area of the most frequent service line leaks. This segment of 6" transite water main is recommended to be replaced with 6" C900 PVC water main. All service lines are recommended to be replaced, including an estimated 80% of service lines from meter to house if they have galvanized or lead service line material.

B. Design Criteria
Replace approximately 2,610 LF of 6" transite water mains with a history of leaks.
Replace approximately 118 galvanized steel service lines with lead connectors from main to meter and replace an estimated 187 galvanized service lines from meter to premise

plumbing. Fittings, valves, location wire, and erosion control/landscape restoration are also included.

Table 3.1.9 Alt. 9: Brentwood Service Area Water Main and Service Line Replacement Project

Proposed 6" Water Main to Replace Existing 2" Water Main	-
Proposed 6" Water Main to Replace Existing 4" & 6" Water Main	2,610
Total Length Proposed Water Mains (Replacement)	**2,610**
2" Retired with Service Reconnect to Parallel Existing Main	-
Total 2" Water Mains to be Eliminated	-
Service Lines to be Replaced Main to Meter	118
Service Lines to be Replaced Meter to House	95
Service Line Leaks 2017-2022	17
Percentage of Service Line Leaks in 5 years	14.4%
Water Main Leaks 2017-2022	3
Total Length of Existing Water Main in Area	5,555
Percentage of Water Mains to Be Replaced	47%

C. Map

The project is shown on Figures 5.9a-e in Appendix B. Specifically, Figure 5.9e identifies existing and proposed water mains for replacement.

D. Environmental Impacts

The proposed improvements will be completed at property previously disturbed for existing utilities and facilities construction. No floodplains, wetlands, or historic resources will be impacted. No negative impacts are expected.

E. Land Requirements

Water main construction shall be primarily within the public right-of-way. Right of entry permission shall be required for all locations where lead or galvanized water service lines are replaced from the water meter to building. Easements may be necessary if there is no room for water main construction due to other existing utilities and features.

F. Potential Construction Problems

Temporary traffic control may be necessary. Access to the site may require a temporary road and parking area.

G. Sustainability Consideration

a. Water and Energy Efficiency

The proposed project does not have any special efficiency benefits.

b. Green infrastructure

The proposed project does not include any green infrastructure.

H. Cost Estimates

See Cost Estimate in Appendix B, Table 3.9 including service line only cost.

ALTERNATIVE 10: INDIAN MEADOWS MAIN & SERVICE REPLACEMENT

A. Description

The Indian Meadows area in the northern part of Anderson, bordered by Broadway St., State Route 9 (Scatterfield Rd), and E. School St., is served by a combination of ductile iron, cast iron, transite and galvanized water mains. The 2" galvanized water mains are recommended to be replaced, along with galvanized and lead service lines. All service lines are recommended to be replaced, including an estimated 80% of service lines from meter to house if they have galvanized or lead service line material.

B. Design Criteria

Replace approximately 5,860 LF of water main in the identified Indian Meadows Area.
Project includes elimination of approximately 5,860 LF of existing 2" water mains.
Replace approximately 370 galvanized steel service lines with lead connectors from main to meter and replace an estimated 296 galvanized service lines from meter to premise plumbing. Fittings, valves, location wire, and erosion control/landscape restoration are also included.

Table 3.1.10 Alt. 10: Indian Meadows Area Water Main and Service Line Replacement Project

Proposed 6" Water Main to Replace Existing 2" Water Main	5,860
Proposed 6" Water Main to Replace Existing 4" & 6" Water Main	-
Total Length Proposed Water Mains (Replacement)	**5,860**
2" Retired with Service Reconnect to Parallel Existing Main	-
Total 2" Water Mains to be Eliminated	**5,860**
Service Lines to be Replaced Main to Meter	370
Service Lines to be Replaced Meter to Building	296
Service Line Leaks 2017-2022	27
Percent of Service Line Leaks in 5 years	7.3%
Water Main Leaks 2017-2022	4
Total Length of Existing Water Main in Area	27,135
Percentage of Water Mains to Be Replaced	22%

C. Map

The project is shown on Figures 5.10a-e in Appendix B. Specifically, Figure 5.10e identifies existing and proposed water mains for replacement.

D. Environmental Impacts

The proposed improvements will be completed at property previously disturbed for existing utilities and facilities construction. No floodplains, wetlands, or historic resources will be impacted. No negative impacts are expected.

E. Land Requirements
Water main construction shall be primarily within the public right-of-way. Right of entry permission shall be required for all locations where lead or galvanized water service lines are replaced from the water meter to building. Easements may be necessary if there is no room for water main construction due to other existing utilities and features.

F. Potential Construction Problems
Temporary traffic control may be necessary. Access to the site may require a temporary road and parking area.

G. Sustainability Consideration
   a. Water and Energy Efficiency
   The proposed project does not have any special efficiency benefits.
   b. Green infrastructure
   The proposed project does not include any green infrastructure.

H. Cost Estimates
See Cost Estimate in Appendix B, Table 3.10 including service line only cost.

ALTERNATIVE 11: HISTORIC DISTRICT MAIN & SERVICE REPLACEMENT

A. Description
The Historic District is bordered by Madison Ave., 8th St., Brown-Delaware St., and 14th St. This area is served primarily by 6" cast iron water mains, along with some segments of 2" galvanized water mains. All service lines are recommended to be replaced, including an estimated 80% of service lines from meter to house if they have galvanized or lead service line material.

B. Design Criteria
Replace approximately 4,020 LF of water main in the area identified as the Historic District Project includes elimination of approximately 2,120 LF of existing 2" water main.
Replace approximately 315 galvanized steel service lines with lead connectors from main to meter and replace an estimated 250 galvanized service lines from meter to premise plumbing. Fittings, valves, location wire, and erosion control/landscape restoration are also included.

Table 3.1.11 Alt. 11: Historic District Water Main and Service Line Replacement Project

Proposed 12" Water Main on John St- improve fire protection	1,900 L.F.
Proposed 6" Water Main to Replace Existing 2" Water Main	2,120 L.F.
Proposed 6" Water Main to Replace Existing 4" & 6" Water Main	-
Total Length Proposed Water Mains (Replacement)	**4,020** L.F.
2" Retired with Service Reconnect to Parallel Existing Main	-
Total 2" Water Mains to be Eliminated	**2,120** L.F.
Service Lines to be Replaced Main to Meter	315
Service Lines to be Replaced Meter to Building	250
Service Line Leaks 2017-2022	14
Percentage of Service Line Leaks in 5 years	4.4%
Water Main Leaks 2017-2022	-
Total Length of Existing Water Main in Area	26,670 L.F.
Percentage of Water Mains to Be Replaced	15%

C. Map

The project is shown on Figures 5.11a-e in Appendix B. Specifically, Figure 5.11e identifies existing and proposed water mains for replacement.

D. Environmental Impacts

The proposed improvements will be completed at property previously disturbed for existing utilities and facilities construction. No floodplains, wetlands, or historic resources will be impacted. No negative impacts are expected.

E. Land Requirements

Water main construction shall be primarily within the public right-of-way. Right of entry permission shall be required for all locations where lead or galvanized water service lines are replaced from the water meter to building. Easements may be necessary if there is no room for water main construction due to other existing utilities and features.

F. Potential Construction Problems

Temporary traffic control may be necessary. Access to the site may require a temporary road and parking area.

G. Sustainability Consideration

a. Water and Energy Efficiency

The proposed project does not have any special efficiency benefits.

b. Green infrastructure

The proposed project does not include any green infrastructure.

H. Cost Estimates

See Cost Estimate in Appendix B, Table 3.11 including service line only cost.

3.2 REGIONALIZATION

The City of Anderson has been able to develop water supply for the Lafayette Wellfield and the raw water quality is good and can be easily treated for iron removal. The City's Wheeler Plant has supplied water for many decades, although is facing several water quantity and quality concerns mentioned in this report. Other hydrogeological testing is underway for additional wells and a replacement plant for the Wheeler Plant to meet the City's growing needs.

Other nearby cities and towns have drinking water systems; however, these systems would be burdened by the demand that Anderson requires. Significant upgrades would be required to these systems and their supply, treatment, and transmission. Regionalization is not recommended as a feasible alternative for the City of Anderson's Water Utility that serves over 58,000 people.

3.3 NET PRESENT WORTH ANALYSIS

The net present worth analysis will be completed once further details are known regarding the location for the south side replacement water plant project and O&M costs are further known.
Phase I projects have the same O&M costs as the existing water mains, although the City should have fewer maintenance requirements once old mains are replaced with new.