PETITIONER'S EXHIBIT 1

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF GIBSON WATER, INC., A NON-PROFIT CORPORATION, FOR AUTHORITY TO ISSUE LONG-TERM DEBT TO IMPROVE ITS WATER SYSTEM AND FOR APPROVAL OF AN ADJUSTMENT TO ITS RATES AND CHARGES	)	**CAUSE NO.** 45080

VERIFIED DIRECT TESTIMONY AND EXHIBITS

OF

JOHN W. WETZEL, P.E.

ON BEHALF OF PETITIONER,

GIBSON WATER, INC.

PETITIONER, GIBSON WATER, INC.
IURC Cause No. _____
Verified Direct Testimony of John W. Wetzel, P.E.

I.
Introduction

1. Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John W. Wetzel and my business address is Midwestern Engineers, Inc., 802 West Broadway Street, Loogootee, Indiana 47553.

2. Q. WHAT IS YOUR OCCUPATION AND BY WHOM ARE YOU EMPLOYED?

A. I am a Professional Engineer, registered in the State of Indiana since 1998, specializing in Civil Engineering with an emphasis on water and wastewater. Since 1996, I have been employed by Midwestern Engineers, Inc. ("Midwestern"). I am a shareholder in Midwestern and I currently serve as its President. I also serve Midwestern and our various clients as a Senior Project Engineer.

3. Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND, RELEVANT EXPERIENCE, AND PROFESSIONAL AFFILIATIONS.

A. I graduated from Purdue University in 1993 with a Bachelor of Science degree in Civil Engineering. After graduation, I worked for Commonwealth Engineers from May of 1993 to November of 1996, before joining Midwestern Engineers, Inc. in November of 1996. Over the course of my career, I have been the lead Senior Project Engineer on numerous water and wastewater projects throughout

the State of Indiana. I have personally completed preliminary engineering reports, developed funding alternatives, aided our clients in obtaining grant and loan funds from various state and federal agencies, designed and prepared plans and specifications, and overseen construction and engineering on these projects. A sampling of these projects include the Patoka Lake Regional Water & Sewer District Phase VI, VII, and VIII water improvement projects, the Patoka Lake Regional Water & Sewer District Phase V sewer improvement project, the Morgan County Rural Water Corporation "Western Expansion Project" and "Connection to the City of Indianapolis Project," the Decatur County Rural Water Corporation Phase III, IV, and V water improvement projects, the Washington Township Water Authority water system relocations and improvements along the I-69 Corridor, and numerous water improvement projects for the Stucker Fork Conservancy District.

In addition, I am a member of various professional organizations, including the American Water Works Association ("AWWA"), American Council of Engineering Companies of Indiana, and Chi Epsilon Civil Engineering Honor Society. Other members of my firm and I are also active in the Indiana Rural Water Association and the Alliance of Indiana Rural Water.

4. Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE COMMISSION PRIOR TO THIS CAUSE?

A. Yes, I have. Various other members of my firm and I have previously offered testimony and exhibits to the Commission on behalf of Stucker Fork Conservancy District, Washington Township Water Corporation of Monroe County, the City of Boonville, and other clients.

5. Q. HOW LONG HAS MIDWESTERN BEEN ENGAGED AND PROVIDING ENGINEERING SERVICES IN INDIANA?

A. In 1959, Midwestern was founded with a primary focus on providing water and wastewater advice and design and construction engineering services to municipalities, regional water and sewer districts, conservancy districts, and nonprofit rural water and wastewater utility corporations throughout the State of Indiana.

II.
Experience and Background in Working with Gibson Water

6. Q. CAN YOU DESCRIBE YOU AND FIRM'S EXPERIENCE IN WORKING WITH GIBSON WATER?

A. Midwestern Engineers, Inc. ("MEI") has provided engineering services to Gibson Water, Inc. since the 1970's. MEI was the engineer of record for the initial Gibson Water construction project in the late 1970's which brought potable water to many rural areas in Gibson County. This project consisted of a master meter pit connection to the City of Evansville, located south of the Southwest corner of the I-64/U.S. 41 Intersection, a 16" main from the meter pit

to a booster station located along CR 1250 S, a 12" main from the booster station northward to a 300,000 gallon elevated water storage tank located approximately 3 miles north of the Town of Fort Branch, and approximately 110 miles of distribution and transmission main. MEI also completed engineering work on two (2) distribution system expansions in the 1980's, one in 1984 and one in 1987, as well as engineering on an additional 300,000 gallon standpipe in 1989. Next, in 1996 MEI provided engineering on a number of water main relocation projects made necessary due to road/railroad improvements related to the development of the Toyota Manufacturing Facility ("Toyota") site between Fort Branch and Princeton. Also undertaken in 1996 was a system expansion project aimed at increasing available potable water flows for Toyota. This project included a new 20" transmission main from CR 1200 S northward to the west side of the Toyota site and a new 1.5 MG elevated water storage tank. Next, in 2008 MEI completed engineering on both a water main relocation project caused by the construction of the new I-69 and a distribution system expansion project which made potable water available to the Community of East Mount Carmel. Also, in 2012 MEI completed engineering on distribution system improvements that ran potable water to the Gibson County Coal Company facilities. We have also completed various miscellaneous consulting engineering type services for Gibson Water since its inception in the mid to late 1970's.

7. Q. BASED ON YOUR EXPERIENCE IN WORKING WITH GIBSON WATER, ARE YOU FAMILIAR WITH GIBSON WATER'S SYSTEM

AND ITS ANTICIPATED OPERATIONAL, MAINTENANCE, AND CAPITAL NEEDS?

A. Yes, I am.

8. Q. WAS YOUR FIRM RETAINED BY GIBSON WATER, INC. ("GIBSON WATER") IN CONNECTION WITH THIS PROCEEDING?

A. Yes, our firm was retained to: (i) analyze possible improvements to its distribution system to improve performance; (ii) increase system pressure in critical areas during peak demand periods; (iii) provide looping of the network to eliminate dead end piping segments and improve water quality in those areas; and (iv) assist in developing rates in an amount sufficient to cover the ongoing operational and maintenance needs of the utility.

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

A. The purpose of my testimony is to: (i) outline Gibson Water's requested relief in this Cause; (ii) detail Gibson Water's existing system and needs; and (iii) describe the capital improvement projects proposed by Gibson Water in this Cause, as well as the need for, and funding of, the same.

III.
Gibson Water's Request for Relief

10. Q. HAVE YOU REVIEWED THE PETITION INITIATING THIS CAUSE?

A. Yes, I have. For the Commission's convenience, I have attached a copy of the Petition to my testimony as Petitioner's Exhibit 2. It is my understanding that the

Petition is being filed simultaneously with my testimony and exhibits. Gibson Water seeks approval to incur debt to complete certain projects and adjust its rates and charges to meet the needs of the utility.

11. Q. WITH WHOM DOES GIBSON WATER SEEK TO INCUR DEBT?

A. The Board has considered a variety of options, but has decided to pursue the issuance of long-term debt to the United States Department of Agriculture – Rural Development ("Rural Development") and the State Revolving Fund ("SRF").

12. Q. DO YOU AND YOUR FIRM HAVE EXPERIENCE IN WORKING ON BOTH RURAL DEVELOPMENT-FUNDED AND SRF-FUNDED PROJECTS?

A. Yes. Our firm has done a number of Rural Development and SRF-funded projects.

13. Q. HAS GIBSON WATER PREPARED AN ACCOUNTING STUDY THAT DETAILS THE COSTS ASSOCIATED WITH THE PROPOSED IMPROVEMENTS AND THE CORRESPONDING DEBT FROM RURAL DEVELOPMENT AND SRF?

A. Yes, the Board of Directors for Gibson Water authorized H. J. Umbaugh & Associates, LLP ("Umbaugh") to prepare an accounting report ("Accounting Report") that summarizes the cost of the anticipated capital projects, the financial impact of the proposed debt, and the ongoing financial needs of the utility. A

copy of the Accounting Report is attached to the Prefiled Direct Testimony of Scott A. Miller, C.P.A. as Petitioner's Exhibit 7.

IV.
Overview of Gibson Water's System

14. Q. CAN YOU GENERALLY DESCRIBE GIBSON WATER'S SERVICE AREA AND CUSTOMER BASE?

A. Yes, I can. Gibson Water is a nonprofit corporation providing water service to approximately 150 square miles of rural and urban areas in Gibson County, Indiana. The general location of Gibson Water's facilities are described in the attached Petitioner's Exhibit 3. With its existing facilities, Gibson Water serves approximately 1,750 retail customers. Gibson Water also provides wholesale water service to the Town of Haubstadt ("Haubstadt") and retail service to the Toyota Manufacturing Facility ("Toyota") near Princeton, Indiana, pursuant to two (2) separate water service agreements.

15. Q. IS PETITIONER'S EXHIBIT 3 A DEFINITIVE MAP OF GIBSON WATER'S SERVICE TERRITORY?

A. No, it is not. Petitioner's Exhibit 3 is intended to show the location of Gibson Water's existing facilities and where its current customers are located. As has been the case in the past, Gibson Water can extend its existing facilities or make its service available to areas and customers outside of the area identified on Petitioner's Exhibit 3 when there is a need.

16. Q. MR. WETZEL, PLEASE DESCRIBE THESE WATER SERVICE AGREEMENTS IN MORE DETAIL?

A. The Town of Haubstadt is served at wholesale through a master meter located near the intersection of U.S. Route 41 and County Road 925 S. Haubstadt uses an average of approximately 124,000 gallons per day ("GPD"), and is Gibson Water's second largest user. The wholesale Water Supply Contract between Gibson Water and Haubstadt was approved by the Commission in Cause No. 43918 on November 4, 2010.

The Toyota facility located on the east side of U.S. Highway 41 between Fort Branch and Princeton is Gibson Water's largest customer, consuming an average volume of approximately 700,000 GPD. The Water Supply Service Contract between Gibson Water and Toyota was approved by the Commission in Cause No. 40755 on March 26, 1997.

17. Q. MR. WETZEL, CAN YOU GENERALLY DESCRIBE GIBSON WATER'S EXISTING FACILITIES?

A. Yes, I can. Gibson Water purchases its entire supply from the City of Evansville, Indiana ("Evansville"), pursuant to a Water Purchase Agreement entered into on July 13, 1977. Under the terms of that Agreement, Evansville provides a not to exceed amount of 2.5 MGD of potable treated water. The term of the Agreement is 50 years from the date of initial delivery of water.

The master meter pit connection to Evansville is located south of the southwest corner of the intersection of I-64 and US Highway 41. Water from this meter pit flows northward via a 16" main under I-64 to a booster station located along County Road 1250 South. This 16" transmission main is a critical component of the system as it is the sole feed from Evansville into the Gibson Water system. The original booster pumping station for Gibson Water was renovated in 1996, and now contains two 1,500 GPM high service pumps and one 800 GPM pump. The booster station pumps water northward, through primarily a 20" transmission main, to the two (2) elevated water storage tanks located at the Toyota site. One of the tanks (i.e. Tank 1) has a capacity of 300,000 gallons and is located on the west side of the Toyota site. The second tank (i.e. Tank 2) has a capacity of 1,500,000 gallons and is located on the east side of the Toyota site. Both tanks have the same overflow elevation (approximately 669 feet). The distribution system also contains a third tank (i.e. Tank 3), which is a 300,000 gallon standpipe with an overflow elevation (approximately 669 feet) matching the other tanks. This tank is located north of Tanks 1 and 2, approximately 3 miles east of Princeton and "floats" with the other tanks.

The distribution system contains approximately 190 miles of 2-inch through 20-inch diameter water mains. The entire system operates on one pressure zone (due to all tanks having the same overflow elevation). However, system operating pressure varies dramatically throughout the service area due to the large amount of small diameter piping (which causes reduced pressure during peak demand

periods) and the significant variation in ground elevation. During high demand periods, inadequate operating pressures have been observed at a number of locations within the distribution system network. Most of these areas lie at remote locations relative to existing storage, pumping, or large transmission main facilities and are plagued by undersized and/or unlooped mains which are incapable of sustaining adequate pressure during peak demand periods. Some of these areas are southwest of Princeton, north of Owensville, south and west of Haubstadt and north of the I-64/I-69 interchange. Gibson Water wholesales water (approximately 124,000 gpd average) to the Town of Haubstadt through a master meter located near the intersection of US Highway 41 and CR 925, and also sells approximately 700,000 gpd of water to Toyota, its largest customer. Gibson Water also has emergency interconnections with both the Town of Fort Branch, Indiana ("Fort Branch") and the Town of Owensville, Indiana ("Owensville'). Both Fort Branch and Owensville each operate a number of groundwater wells and a treatment plant to serve their respective communities. These interconnections would only be used in an emergency situation. No water was sold or received via these emergency interconnections in 2016 or 2017.

18. Q. CAN YOU DESCRIBE THE CONDITION OF THESE EXISTING FACILITIES?

A. Yes. The original portions of the distribution system consist of ductile iron and polyvinyl chloride ("PVC") pipes. The distribution system was subsequently expanded over the years to serve developing or unserved areas. The current

distribution system contains approximately 190 miles of pipe, much of which is 40 years old. Typical useful life expectancy of ductile iron or PVC main piping is estimated at 70 to 80 years. Therefore, the existing water distribution system network is suitable for continued operation, assuming normal maintenance activities, with significant useful life remaining. However, as discussed above, system operating pressure varies dramatically throughout the service area due to the large amount of small diameter piping (which causes reduced pressure during peak demand periods) and the significant variation in ground elevation. During high demand periods, inadequate operating pressures have been observed at a number of locations within the distribution system network. Most of these areas lie at remote locations relative to existing storage, pumping, or large transmission main facilities and are plagued by undersized and/or unlooped mains which are incapable of sustaining adequate pressure during peak demand periods.

There have been no significant improvements to the booster pumping station since it was renovated in 1996. Twenty years of growth in the customer base, plus increasing flow demands from Toyota and other industrial and commercial users have taxed the station in recent years. The pumps require extended and excessive run times to meet current maximum day demands. The pumps have been well maintained, but they are now beyond their expected useful life of 15 to 20 years and are experiencing reduced pumping capacity due to age and wear. The pump station building itself has been well maintained and is suitable for continued service.

The three (3) elevated water storage tanks are generally in good condition and provide storage approximately equal to one and a half (1.5) days based upon the current average daily demand for the system. Tank 1 is approximately 40 years old; Tank 2 is approximately 20 years old; and Tank 3 is approximately 30 years old. With proper maintenance and regular inspection, the tanks should provide many more years of continued service.

19. Q. DO YOU ANTICIPATE A GROWTH IN THE DEMAND FOR WATER FROM GIBSON WATER?

A. Population growth for Gibson County was approximately 12% for the period 1960 to 2010. After the original system was installed, Gibson Water has periodically expanded and installed water mains to serve sporadic development as it has occurred. However, as with the County wide population growth between 1960 and 2010, this expansion has been somewhat limited but steady. We have utilized projected county wide population growth along with current water demands to forecast projected residential, commercial, and wholesale water demands. The Indiana Business Research Center projects 3.6% growth in the population of Gibson County over the 20 year planning period; thus, we assumed a corresponding 3.6% growth in the residential, commercial, and wholesale demands for the same period.

A significant impact on future water consumption is expected to be created by Toyota, which is in the planning stages of a $600 million investment in its

assembly plant. With the associated production and labor force expansion, an increase of 8% has been added to the current industrial water demand. However, should additional industrial users locate within the service territory boundaries, additional water demand increases over and above this estimated increase could be seen.

Based upon the above, this results in a projected peak day water demand for the plan year 2037 of approximately 2.924 million gallons, an increase of 14% over 2017 peak day demands.

20. Q. IN LIGHT OF THE NEEDS OF CURRENT AND FUTURE CUSTOMERS, DOES GIBSON WATER NEED TO UPGRADE AND MAKE IMPROVEMENTS TO ITS EXISTING FACILITIES?

A. Yes, it does. In consultation with Gibson Water's Board and staff, Midwestern has identified a number of improvements that need to be made in order to address service reliability issues for Gibson Water's current customers, as well as to ensure the quality and reliability of service for future customers that are anticipated to connect to Gibson Water's system. By completing the proposed improvements, Gibson Water will be able to offer better service to its existing customers and have adequate capacity and facilities available for new customers when they need service.

21. Q. HAVE YOU PREPARED A PRELIMINARY ENGINEERING REPORT WHICH DESCRIBES GIBSON WATER'S EXISTING SYSTEM AND THE IMPROVEMENTS THE UTILITY PROPOSES TO COMPLETE?

A. Yes. I have prepared a Preliminary Engineering Report ("PER") dated September, 2017, that describes Gibson Water's existing facilities, current deficiencies, and provides recommendations and probable costs for enhancements which will allow Gibson Water to meet regulatory requirements under all operating conditions. For the Commission's reference, I am attaching a copy of the PER as Petitioner's Exhibit 4.

22. Q. MR. WETZEL, PLEASE EXPLAIN THE PURPOSE OF THE PER?

A. The purpose of the PER is two-fold. First, the PER is a planning document required by many state and federal agencies as part of the process of obtaining financial assistance for development of drinking water, wastewater, solid waste, and storm water projects. An applicant for funding from either the Rural Development or SRF programs, must submit a PER for review and approval. The PER describes the existing facilities, identifies current system deficiencies/needs, analyzes alternatives aimed at addressing these deficiencies/needs, proposes selected improvements, defines project costs, and provides information critical to the underwriting process. Second, the PER also provides justification as to why Gibson Water should be authorized to incur debt and adjust its rates and charges in this Cause.

23. Q. CAN YOU PLEASE BRIEFLY EXPLAIN THE CONTENTS OF THE PER?

A. Yes, I can. The PER includes seven (7) chapters, along with detailed Tables, Figures, and Appendices supporting each chapter.

Chapter 1 describes the general project location, environmental resources present, population trends within the service area and the existing and projected 20-year service area.

Chapter 2 explains the existing water facilities (supply, distribution, pumping, storage), the wholesale and large volume customers, condition of existing facilities, and the financial status of the existing system.

Chapter 3 discusses the need for the proposed projects by identifying areas within the distribution system that have experienced low residual pressures and describing how small mains and dead-end pipe segments contribute to and exacerbate this problem, discusses the aging piping and pumping infrastructure, lists current customers and water demands, and projects future water demands.

Chapter 4 describes the various hydraulic modeling simulations that were completed on the system and presents the results of the modeling. Due to system deficiencies identified in part through the modeling, this Chapter also covers possible improvement alternatives considered to address the deficiencies, including a "No Action" alternative. Next, design criteria, maps, environmental impacts, land requirements, potential construction impacts, sustainability

considerations, and cost estimates were provided for the various improvement alternatives identified.

Chapter 5 discusses how each of the possible improvement alternatives were evaluated, presents the life cycle cost analysis, compares the hydraulic modeling results of the system with the proposed improvements vs. that of the existing system to ensure that the proposed improvements positively impact the areas of low residual pressures, and also describes the proposed improvement's non-monetary factors like traffic impacts, construction noise, removal of trees and shrubs, impacts to businesses, service interruptions, and community impacts.

Chapter 6 describes the proposed project in detail, provides a timeline schedule, discusses permit requirements and sustainability considerations, and provides probable total project cost estimates, annual existing and projected operating budgets, and gives general debt repayment information including an asset reserve schedule and projected annual revenue requirements.

Finally, Chapter 7 includes conclusions and recommendations for the scope of the capital improvements.

III.
Proposed Capital Improvements in the Preliminary Engineering Report

24. Q. MR. WETZEL, CAN YOU DESCRIBE THE PROCESS USED TO DEVELOP THE LIST OF PROPOSED CAPITAL IMPROVEMENTS

SHOWN IN YOUR PER AND ALSO ON PAGE 3 OF THE ACCOUNTING REPORT?

A. Yes. The PER was used to identify the distribution system improvements needed to eliminate low residual pressure conditions in portions of the system during periods of high demand. A hydraulic model was created to evaluate the performance of the system and to determine the requirements for water main extensions or system reinforcements needed to improve system performance. The hydraulic model was also used to evaluate booster station performance and to identify pumping upgrades needed to meet projected peak day demands. Another factor in consideration of the proposed improvements was the fact that a single, 16" transmission main carries water from the meter pit connection to Evansville across I-64, to the booster station located along County Road 1250 South. This is the sole feed from Evansville into the Gibson Water system. If there is a problem with this main (especially under I-64), Gibson Water's entire system would have no source of supply and Gibson Water would be unable to provide service (once it exhausts the water in its storage facilities).

Gibson Water's existing distribution system is plagued by a number of dead end water mains and the lack of system looping to provide redundant bidirectional feeds to critical areas. Low residual pressures occur in a number of these areas during peak water demand conditions. Improvement and reinforcement of the system is essential to improve carrying capacity and hydraulic gradients, particularly in high elevation areas.

25. Q. WHAT ARE YOUR RECOMMENDED CAPITAL PROJECT ALTERNATIVES BASED ON THE DETAILED ANALYSIS IN THE PER?

A. The following alternatives, expressed as water main extensions, are recommended to ensure Gibson Water's ability to adequately meet projected maximum daily and peak hourly demand conditions:

Alternative 2, the County Road 225 West Water Main Extension is essential to provide connectivity between the portions of the distribution system west of Fort Branch and Haubstadt.

Alternative 3, the State Route 68 Water Main includes an 8-inch main that increases system carrying capacity to areas northwest of the I-69/I-64 interchange.

Alternative 6, the County Roads 200 South and 350 West Water Mains include 6-inch and 8-inch mains that are needed to improve service to a high elevation rural area west of Princeton and will also supplement existing 3-inch diameter dead end water mains along County Road 200 South and 350 West.

Alternative 7, the State Road 64 Water Main Extension includes a 6-inch main that is needed to complete a system loop and eliminate poor water quality in the dead-end water main on State Road 64 in the northwest portion of the distribution system.

Alternative 8, the Parallel Booster Station Supply Main plus Booster Pump Replacement includes a 16-inch main that is necessary to provide a redundant

transmission main to convey water from the connection point with Evansville to the Gibson Water Booster Station and northward to County Road 1200 South. This is essential so that service can continue to be provided to the entire system should the sole existing main have a problem. This alternative also includes upgrades to Gibson Water's high service pumping equipment within the booster station to ensure the ability of the system to meet projected maximum day demand conditions for plan year 2037.

26. Q. IN YOUR PROFESSIONAL OPINION, ARE EACH OF THE PROPOSED CAPITAL IMPROVEMENTS WITHIN THE PER AND IDENTIFIED ON PAGE 3 OF THE ACCOUNTING REPORT REASONABLE AND NECESSARY FOR GIBSON WATER TO PROVIDE SAFE, EFFICIENT SERVICE TO ITS CUSTOMERS?

A. Yes, they are. As fully discussed in the PER, each of the recommended improvements are intended to address specific service quality and reliability concerns with Gibson Water's existing facilities. Upon completion, Gibson Water will have upgraded distribution facilities that will be able to meet projected demands, improve residual water pressure and service to its current and future customers, and make its system more reliable in case of an emergency.

27. Q. WILL THE RURAL DEVELOPMENT AND SRF LOANS PROVIDE FUNDS FOR ALL OF THE IMPROVEMENTS PROPOSED BY GIBSON WATER?

A. Yes. Midwestern estimated the costs of the recommended improvements in Chapter 6 of the PER. We then provided these costs to Gibson Water's financial advisor, Mr. Miller, who has included them in the Accounting Report. Gibson Water is seeking authority to incur long-term debt in an amount sufficient to cover the cost of constructing the proposed improvements.

28. WHAT AUTHORITY IS GIBSON WATER REQUESTING WITH RESPECT TO THE ISSUANCE OF LONG-TERM DEBT?

A. Gibson Water is requesting authority to issue a 40-year note in an estimated amount of $2,438,000 to Rural Development and a 35-year note in an estimated amount of $1,143,00 to SRF. These amounts cover the probable construction cost of the alternatives recommended above, as well as a 10% construction contingency and estimated non-construction costs.

29. Q. DO YOU BELIEVE THESE COST ESTIMATES IN THE PER ARE REASONABLE?

A. Yes, I do. Based on our firm's experience with similar projects in the past, I believe our estimates are reasonable projections of the actual costs that will be incurred for the recommended improvements. I must caution, however, that they are estimated costs and there will no doubt be some variation in final cost for most, if not all, of the components of the recommended improvements.

30. Q. WHAT ARE THE CONSEQUENCES IF GIBSON WATER DOES NOT COMPLETE THE RECOMMENDED IMPROVEMENTS AT THIS TIME?

A. The "No Action" Alternative discussed in the PER assumes no improvements are made to Gibson Water's distribution system. Without improvements, areas of low residual pressure during periods of high demand will remain. The system may be unable to meet projected peak day flows. Additionally, areas of potential development may not be able to be adequately served. Finally, Gibson Water would continue to be exposed to a potential system-wide outage should issues develop with the existing supply main. We determined that the "No Action" alternative does not meet Gibson Water's long-term goals and thus was eliminated from consideration.

31. Q. HAS RURAL DEVELOPMENT AND THE SRF PROGRAM APPROVED THE PER?

A. Yes, Rural Development has approved the PER and the proposed improvements contained therein. I understand that the SRF Program will complete its review and hopefully approval of the PER within the next two (2) weeks.

32. Q. HAS GIBSON WATER RECEIVED A COMMITMENT FROM RURAL DEVELOPMENT THAT IT WILL MAKE THE CONTEMPLATED LOAN?

A. Yes. Gibson Water has received a Letter of Condition which outlines the terms and conditions upon which Rural Development will issue the loan.

IV.
Periodic Maintenance

33. Q. IN SUPPORT OF ITS REQUEST TO ADJUST ITS RATES AND CHARGES, IS GIBSON WATER INCLUDING EXPENSES OR AMOUNTS FOR PERIODIC MAINTENANCE?

A. Yes, it is. The details of the individual components of Gibson Water's revenue requirements are discussed in much greater detail in the pre-filed testimony and accounting papers of Mr. Miller.

34. Q. DO YOU AGREE WITH THE PERIODIC MAINTENANCE ITEMS AND AMOUNTS SET FORTH IN MR. MILLER'S PRE-FILED TESTIMONY AND EXHIBITS?

A. Yes, I do. I have reviewed the periodic maintenance items and amounts contained on page 10 of Mr. Miller's Accounting Report, and I believe these items and amounts are consistent with the expenses that Gibson Water will incur.

35. Q. CAN YOU EXPLAIN THE PROCESS BY WHICH GIBSON WATER DETERMINED AN APPROPRIATE AMOUNT FOR PERIODIC MAINTENANCE EXPENSE?

A. Yes, I can. I understand that Gibson Water's last rate case was in 1986. Considering the length of time since its last rate case, the Gibson Water Board requested that Umbaugh and Midwestern review the Gibson Water's operations to ensure the rates were sufficient to cover the ongoing needs of the utility. As part

of this process, Midwestern was responsible for reviewing the periodic maintenance expenses to determine if such amounts were an accurate reflection of what Gibson Water either had experienced or would experience upon completion of the new improvements. I, along with other members of Midwestern, and Gibson Water representatives reviewed each of the individual expenses. Midwestern also relied on its recent experience in working with clients that performed similar types of periodic maintenance projects. We then used this updated information to estimate the amount of maintenance expenses that Gibson Water could expect to incur on a prospective basis, prepared an exhibit that summarized and detailed each item of periodic maintenance and the estimated cost, and then discussed the exhibit. After a few iterations, the periodic maintenance expenses were finalized and then included on page 10 of Mr. Miller's Accounting Report.

36. Q. DO YOU BELIEVE THE AMOUNTS FOR PERIODIC MAINTENANCE ARE APPROPRIATE AND REASONABLE?

A. Yes, I do. After significant review and research, I believe the items and amounts detailed in the Umbaugh Accounting Report are an accurate reflection of the type and amount of expenses that Gibson Water will experience for periodic maintenance.

37. Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

VERIFICATION

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

John W. Wetzel, P.E.
Midwestern Engineers, Inc.

CERTIFICATE OF SERVICE

I certify that a copy of the foregoing "Verified Direct Testimony and Exhibits of John W. Wetzel, P.E." was served upon the following by electronic mail this 24th day of April, 2018:

Indiana Office of Utility Consumer Counselor
PNC Center, Suite 1500 South
115 West Washington Street
Indianapolis, IN 46204
infomgt@oucc.in.gov

J. Christopher Janak

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

3353210_6

Petitioner's Exhibit 2

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

IN THE MATTER OF THE PETITION OF GIBSON WATER, INC., A NONPROFIT CORPORATION, FOR AUTHORITY TO ISSUE LONG-TERM DEBT AND FOR APPROVAL OF A CHANGE IN RATES AND CHARGES	)))))))	**CAUSE NO._____**

VERIFIED PETITION

TO THE INDIANA UTILITY REGULATORY COMMISSION:

Petitioner, Gibson Water, Inc. ("Gibson Water"), hereby files this Verified Petition ("Petition") with the Indiana Utility Regulatory Commission ("Commission") seeking authority to issue long-term indebtedness and adjust its rates and charges. In support of its Petition, Gibson Water states:

1. Gibson Water is a nonprofit corporation duly organized and existing under and through the laws of the state of Indiana. Gibson Water's principal office is located at 517 East 1250 South, Haubstadt, Indiana 47639.

2. Gibson Water is a public utility as defined by Indiana Code § 8-1-2-1 and as such is under the jurisdiction of the Indiana Utility Regulatory Commission ("Commission"). Further, Gibson Water believes that by virtue of Indiana Code §§ 8-1-2-42.7, 8-1-2-61, 8-1-2-78, 8-1-2-79, 8-1-2-83, and 8-1-2-125, the Commission has jurisdiction over this matter. Additional statutes that may be applicable to this Cause may be found at Indiana Code § 8-1-2-1 et seq.

3. Gibson Water owns and operates transmission facilities, distribution facilities, land, land rights, equipment, materials, supplies, working capital, and other property which is used and useful for the rendering of potable water service to its customers.

4. Gibson Water provides potable water in various rural and municipal areas in Gibson County, Indiana. Petitioner serves approximately 1,750 residential customers, and provides wholesale water service to the Town of Haubstadt ("Town") and retail service to its largest customer, the Toyota Manufacturing Facility ("Toyota"), near Princeton, Indiana. The Water Supply Contracts with Toyota and the Town were approved by the Commission in Cause Nos. 40755 and 43918, respectively.

5. Gibson Water purchases its entire supply from the City of Evansville, Indiana ("Evansville"), pursuant to a Water Purchase Agreement entered into on July 13, 1977. On December 21, 2017, Gibson Water filed its most recent request to change its water tracking adjustment applicable to all customers, which is based solely upon the change in the cost of purchased water from Evansville.

6. Gibson Water's current base rates and charges for water utility service were approved by order of this Commission in Cause No. 37829, issued on February 26, 1986. These rates and charges are more than thirty-two (32) years old, and no longer produce revenues sufficient for Gibson Water to pay all the expenses incident to the operation of the Utility, including, but not necessarily limited to, maintenance and repair costs, operating charges, interest charges on bonds or other obligations, monies for a sinking fund for the liquidation of bonds or other evidences of indebtedness (including a debt service reserve), and funds to be used for working capital, making extensions and replacements, and paying applicable taxes. The existing rates are, therefore, unlawful.

7. Gibson Water will propose in this case new water rates and charges which will be sufficient to pay its expenses as set forth in paragraph 6 above.

8. Gibson Water does not currently have any outstanding indebtedness to the federal government. However, Gibson Water proposes in this Cause to incur long-term debt with the

United States Department of Agriculture - - Rural Development and Indiana State Revolving Loan Fund Program, the proceeds from which will be used to complete certain water system improvements.

9. On January 29, 2018, Gibson Water provided notice to the Commission and the Indiana Office of the Utility Consumer Counselor ("OUCC") of its intent to file this Petition. Pursuant to IC 8-1-2-42.7(d)(2), Gibson Water is designating a historic test year that includes the twelve (12) month period ended August 31, 2017, with adjustments permitted for changes that are known, fixed, and measurable and in effect within twelve (12) months after the test year.

10. Included with this petition, Gibson Water is submitting its case in chief which includes the pre-filed testimony and exhibits of Scott Miller, Certified Public Accountant, and John Wetzel, Professional Engineer.

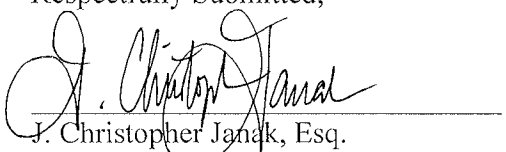
11. Gibson Water's case in chief includes, among other things, work papers, revenue requirements, revenues, expenses, balance sheet and income statements, and proforma tariff sheets. Gibson Water requests that a pre-hearing conference be held in this matter as soon as possible.

12. Service of all petitions, motions, reports, testimony, exhibits, or papers of any kind, to be served upon Gibson Water should be served on Gibson Water's counsel of record as here noted:

J. Christopher Janak, Esq.
Kristina Kern Wheeler, Esq.
Bose McKinney & Evans LLP
111 Monument Circle, Suite 2700
Indianapolis, IN 46204
(317) 684-5000 Telephone
(317) 684-5173 Fax
cjanak@boselaw.com
kwheeler@boselaw.com

WHEREFORE, Petitioner, the Gibson Water, Inc., respectfully requests that the Commission enter this Petition of record, set this matter for a preliminary hearing as soon as possible, hold such further hearings as the Commission believes necessary and appropriate, authorize Gibson Water to incur long-term debt as supported by the evidence, accept a new schedule of rates and charges, and for all other relief justice would require in the proceedings.

Respectfully Submitted,



J. Christopher Janak, Esq.
Attorney No. 18499-49
Kristina Kern Wheeler, Esq.
Attorney No. 20957-49A
Bose McKinney & Evans LLP
111 Monument Circle, Suite 2700
Indianapolis, IN 46204
(317) 684-5000
(317) 684-5173 Fax

Counsel for Petitioner,
Gibson Water, Inc.

VERIFICATION

I have read the foregoing Petition and the allegations contained therein are true and correct to the best of my knowledge and belief.

Duane Michel, President
Gibson Water, Inc.

Kreig Christy, Secretary
Gibson Water, Inc.

CERTIFICATE OF SERVICE

I certify that a copy of the foregoing "Petition" was served upon the following by hand delivery or regular mail this 24th day of April, 2018:

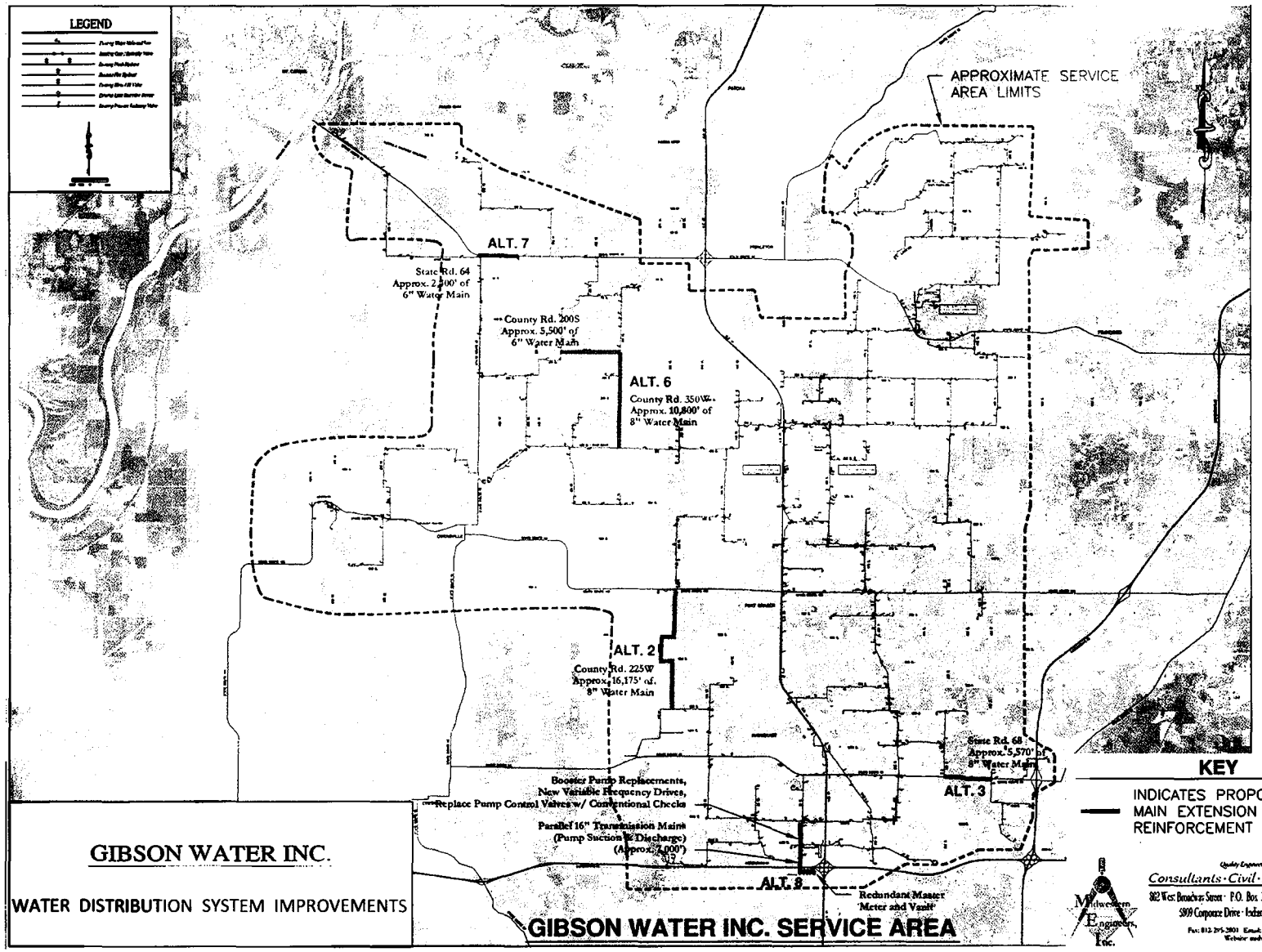
Indiana Office of the Utility Consumer Counselor
PNC Center, Suite 1500 South
115 West Washington Street
Indianapolis, IN 46204

J. Christopher Janak

Bose McKinney & Evans LLP
111 Monument Circle, Suite 2700
Indianapolis, IN 46204
(317) 684-5000
(317) 684-5173 Fax

3337996_2

Petitioner's Exhibit 3



DATE	5-2017
DESIGN	M.M.S.
DRAWN	D.A.P.
S.E. CHECK	R.D.D.
PROJECT MANAGER	2016115
FILE NUMBER	9

GIBSON WATER INC.
GIBSON COUNTY
PROPOSED PROJECT – ALTERNATIVE 9
WATER DISTRIBUTION SYSTEM IMPROVEMENTS

Quality Engineering Service Since 1959
Consultants · Civil · Mechanical · Electrical
802 West Broadway Street · P.O. Box 295 · Longcane, IN. 47553 · P: 812-295-2800
5809 Corporate Drive · Indianapolis, IN. 46278 · P: 317-334-0062
Fax: 812-295-2801 Email: mwest@midwesternmeng.com
Website: midwesternmeng.com

FIGURE 1

Fig 10 – Proposed Project For JWW.dwg

Petitioner's Exhibit 4

PRELIMINARY ENGINEERING REPORT

FOR

WATER DISTRIBUTION SYSTEM IMPROVEMENTS

FOR

GIBSON WATER, INC.

GIBSON COUNTY, INDIANA

MEI PROJECT #2016115

September, 2017

Midwestern Engineers, Inc.

Quality Engineering Services Since 1959

802 W. Broadway Street ~ P.O. Box 295 ~ Loogootee, IN 47553 ~ P: 812.295.2800 ~ F: 812.295.2801

6809 Corporate Drive ~ Indianapolis, IN 46278 ~ P: 317.334.0262

E-Mail ~ mei@midwesterneng.com

www.midwesterneng.com

PRELIMINARY ENGINEERING REPORT

for

WATER DISTRIBUTION SYSTEM IMPROVEMENTS

for

GIBSON WATER, INC.

GIBSON COUNTY, INDIANA

OFFICERS

Duane Michel, President

Kathryn Armstrong, Vice President

Kreig Christy, Secretary

Jim Pohl, Treasurer

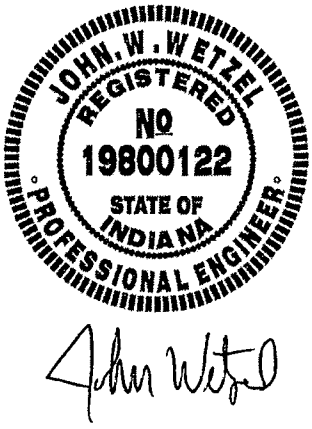
Steve Meny, Asst. Secretary/Treasurer

UTILITY MANAGER

Steve Jenkins

ATTORNEY

Adam Farrar



PREPARED BY

MIDWESTERN ENGINEERS, INC.

Loogootee, Indiana

SEPTEMBER, 2017

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

INTRODUCTION

Gibson Water, Inc. is a non-profit corporation organized to provide reliable water service to rural and urban areas in Gibson County, Indiana. Gibson Water, Inc. purchases water from the Evansville Water Company. The water is delivered through a Master Meter connection located near the intersection of U.S. 41 and Interstate 64 (I-64) in southern Gibson County.

The purpose of all public water systems is to provide utility customers with an aesthetically pleasing and affordable water supply that is adequate in terms of quantity and delivery pressure. Water works facilities must be capable of meeting the projected future demands of the utility over the course of a reasonable planning period. The findings presented herein are intended to provide the Gibson Water officials with the information and guidance needed to make sound decisions regarding the water supply facilities.

Toward that end, Gibson Water, Inc. wishes to make improvements to its distribution system to improve performance, increase system pressure in critical areas during peak demand periods, and provide looping of the network to eliminate dead end piping segments. Looping of the system will also serve to improve water quality in areas where dead end mains are present. The purpose of this Preliminary Engineering Report (PER) is to present the results of an evaluation of the water distribution system and to provide recommendations for enhancements which will allow the Utility to meet regulatory requirements under all operating conditions.

As part of this study, a computer-based hydraulic model of the water distribution system was generated to evaluate the system and the beneficial impact of proposed improvements. The system was modeled using WaterCad, a pressure piping network program developed by Bentley Systems.

CHAPTER 1 - PROJECT PLANNING

1.1 PROJECT LOCATION

Gibson Water, Inc. (Gibson Water) is a non-profit corporation organized to provide reliable water services to rural and urban areas in Gibson County, Indiana. Gibson Water's administrative offices and pumping station are located approximately 2 miles south of Town of Haubstadt at the intersection of County Roads 50 E and 1250 S. **Figure 1 (Appendix A)** is a General Location Map showing the location of Gibson County. **Figure 2 (Appendix A)** presents the approximate service area of Gibson Water within the county.

Gibson County is located in the southwest corner of Indiana above Posey and Vanderburg counties. The county is considered the northern portion of the Evansville, IN Metropolitan Statistical Area. The county seat is the City of Princeton and the county has ten townships. **Table 1** presents U.S. Geological Survey and Public Land Survey System information for the service area.

Table 1
USGS and Public Land Survey System Information

USGS Quadrangle Maps	County	Townships
Princeton, Haubstadt, Owensville, Francisco	Gibson	Montgomery, Patoka, Union, Johnson Center Barton
Boonville	Warrick	Greer

1.2 ENVIRONMENTAL RESOURCES PRESENT

A full environmental report, containing pertinent environmental information for the proposed projects, has also been prepared. Flood plain maps (**Figures B-1 and B-2**) and wetlands maps (**Figures B-3 and B-4**) and a list of rare and endangered species in Gibson County are provided in **Appendix B**.

The principal environmental resources with the Gibson Water service area are the Wabash River, Patoka River and Broad Pond.

1.2.1 Wabash River

The Wabash River forms the western boundary of Gibson County with the State of Illinois. The Wabash River drains the western portion of the Gibson Water service area through numerous rivers, streams and creeks. Principal among these are: Shelton Creek; McCarty Ditch; Blair Ditch; Scott Ditch; Barren Creek; Higginbotham Ditch and the Black River.

The Wabash River is not listed as a scenic river in the Indiana Code (See **Appendix C**). The river is not listed by the Indiana Dept. of Natural Resources (DNR) as a special stream. In fact, DNR does not list ant water body in Gibson County as a Special Stream. DNR **does** list the Wabash River as an Outstanding River in Gibson County (See **Appendix C**). An Outstanding River is defined as a stream in the State which has environmental or aesthetic value.

The Wabash River is not included in the Indiana Dept. of Environmental Management's (IDEM's) Listing of Indiana Waters Designated for Special Protection.

None of the Wabash River tributaries in Gibson County are listed as Special Streams, Outstanding Rivers or identified for special protection.

1.2.2 Patoka River

The Patoka River is located in the Wabash Lowland region, with average elevations about 500 feet above mean sea level. The Patoka River begins in Orange County in the Hoosier National Forest at an elevation of approximately 660' m.s.l. The River flows westward approximately 140 miles, passing just north of Crawford County before draining to Patoka Lake. The River then continues through the City of Jasper in Dubois County, Winslow in Pike County, then north of Princeton in Gibson County, before meeting the Wabash River near Mount Carmel, Illinois.

South Fork headwaters of the Patoka River are located in far northern Warrick County at approximately 500' above m.s.l. The south fork flows northwesterly approximately 17 miles where it enters the main stem of the Patoka River near the Pike – Gibson County Line.

1.2.3 Broad Pond

Broad Pond is a man-made impoundment on the western edge of Gibson County. The pond is supplied by Skelton Creek, Blair Ditch and McCarty Ditch prior to their discharge into the Wabash River. The pond principally serves to buffer drainage flow entering the Wabash River. Additional uses include fishing.

1.3 POPULATION TRENDS

Table 2 presents historical population data for Princeton and Gibson County. The data was obtained from the StatsIndiana website which compiled U.S. Census Bureau data from 1900 through 2010.

Table 2 shows Gibson County has experienced a population growth over the last 50 years of nearly 12%. The county seat, the City of Princeton, experienced a population growth of approximately 9% during the same period.

Table 2
Gibson County Historical Population Data

Entity	1960	1970	1980	1990	2000	2010	% Increase Since 1960
Gibson County Montgomery, Patoka, Union, Johnson, Center, Barton Townships	29,949	30,444	33,156	31,913	32,500	33,503	11.9 %
City of Princeton	7,906	7,431	8,976	8,127	8,175	8,644	9.3 %

The Indiana Business Research Center (IBRC), Indiana University Kelley School of Business operates a research division providing population projections on countywide and citywide basis. This information is available on StatsIndiana. The last available year for Gibson County and City of Princeton projected populations is 2015. The IBRC projected populations for Gibson County and the City of Princeton are 33,775 and 8,626 respectively. During the five (5) year period, the IBRC projected growth for Gibson County was 0.8% or 0.16% per year. The projected Princeton population projection is 8,626, a decrease of -0.2%.

Midwestern Engineers, Inc. assumed a 20-year planning period for this PER. Therefore, the end of planning year is 2037. Based on **Table 2** and the IBRC population projections, MEI projected the Year 2037 Gibson County population at 34,984 people using an annual increase of 0.16% for the 22 year period. [2037 Population = 2015 Population (33,775) x $(1+.0016)^{22}$] = 34,984.

1.4 COMMUNITY ENGAGEMENT

Gibson Water officers wish to make its customers and the public aware of the proposed improvements to the water distribution supply system. Therefore, public meetings will be held during the planning and design portion of the work. During planning, the projects will be discussed with meeting attendants. Discussion items will include: project need; costs; financing; and probable impacts on customer water rates. Potential consequences of not acting on the problems will also be addressed. Comments and questions will be encouraged at the public meetings and will be considered during planning and design.

1.5 PROJECT AREAS

The project areas consist of multiple individual improvement projects within the Gibson Water's existing service area (See **Figure 10**, **Appendix A**). Gibson Water is not currently planning an expansion of the service area.

1.6 EXISTING SERVICE AREA

The existing water distribution system service area is roughly 58,710 acres or 91.7 sq. miles. **Figure 2 (Appendix A)** presents the limits of the Gibson Water service area.

1.7 PROJECTED 20-YEAR SERVICE AREA

The service area limits shown in **Figure 2** include areas conforming to the regional extents of the existing water distribution system. In some cases, water mains were installed to serve sporadic development as it occurred. Many of these mains pass along areas of row crop farmland and areas with little to no ongoing development activity, and very few potential in-place customers. Therefore, the Gibson Water service area does contain many locations where customer growth is feasible. For this study, however, we believe it is appropriate to utilize population and associated water demand forecasts based upon the Stats Indiana population projections for Gibson County.

Based upon this supposition, the 20-year service area matches the extents of the existing service area. No building developments or annexations are currently planned.

CHAPTER 2 - EXISTING FACILITIES

2.1 LOCATION MAP

Figure 1 (Appendix A) is a General Location Map for Gibson County. **Figure 2 (Appendix A)** presents the Gibson Water, Inc. service area.

2.2 HISTORY AND SYSTEM DESCRIPTION

2.2.1 Gibson Water, Inc.

Gibson Water, Inc. is a non-profit corporation founded in 1976 to provide reliable water service to residents of predominantly rural and urban areas in Gibson County, Indiana.

2.2.1.1 Water Supply

Gibson Water purchases its entire supply from the Evansville Water Company. The Water Purchase Agreement was entered into on July 13th, 1977. Under the terms of the agreement, the "Water Works District of Evansville, Indiana" is obligated to provide potable treated water in such quantity required by the purchaser, not to exceed 2.5 million gallons per day. The Agreement also includes a minimum obligation of 1.0 million gallons per month. The water is to be delivered at a reasonably constant pressure of 70 psi to the suction side of Gibson Water's high service pumping facilities.

The term of the Agreement is to extend for a period of 50 years, thus the expiration date is July of 2027. A copy of the Water Purchase Contract is included in **Appendix L** of this report.

The Master Meter and vault installed at the point of connection with Evansville is located on the south side of Indiana Interstate 64 and west of the intersection with U.S. Highway 41. The Evansville Water Company has a 20-inch main supplying the Master Meter vault. From the master meter location, Gibson Water owns a 16-inch transmission main which crosses the Interstate and continues west and north approximately ¾ mile to the Gibson Water pumping station. This singular transmission main is a critical component of the system, as it is the only source of conveyance from Evansville to the Gibson Water System.

2.2.1.2 Booster Pumping Station

The original booster pumping station was replaced in 1996 (See **Photo 8, Appendix E**). The new booster station contains two (2) 1,500 gpm high service pumps and one (1) 800 gpm pump (See **Photo 4, Appendix E**). The 1,500 gpm pumps are driven by 75 HP motors, and the 800 gpm pump is a 40 HP unit. Each pump is provided with a variable frequency drive (VFD).

The pump controls have indicators showing the level of the elevated water storage tanks and a selector switch to allow the Operator to choose which elevated tank controls the pumps (See **Photo 5, Appendix E**).

The booster station also contains isolation valves for each pump, slow closing, pilot operated pump control valves on each pump to prevent water hammer at pump shut down, and an effluent flow meter (See **Photo 7, Appendix E**) and chlorine injection system.

2.2.1.3 Distribution System

Based on the inventory derived from the WaterCAD hydraulic model, the distribution system contains approximately 990,000 lin. ft. (187.5 miles) of 2-inch through 20-inch diameter water mains. **Figure 3 (Appendix A)** is a map showing the complete distribution system. The mains are a mix of ductile iron (D.I.) and PVC. Large diameter transmission mains were constructed using ductile iron. The vast majority of the rural distribution system was constructed using PVC pipe. The following table presents a breakdown of the system, showing total length for each pipe diameter.

Gibson Water, Inc. Water Distribution System

Total System Pipe Length

Diameter (in.)	Length (ft.)	Length (miles)
2	67,165	12.7
3	311,900	59.1
4	106,575	20.2
6	185,380	35.1
8	104,200	19.7
10	67,180	12.7
12	72,745	13.8
16	12,440	2.4
18	250	.05
20	62,245	11.8
All Diameters:	990,080	187.5

System operating pressure varies dramatically due to the large amount of small diameter piping and the significant variation in ground elevation throughout the service area. Operating pressure is also greatly affected by variable system demands. System performance will be discuss if greater detail in subsequent sections of the report.

2.2.1.4 Water Storage

The Gibson Water distribution system includes three (3) elevated water storage tanks. Two (2) of the tanks are multiple column style structures. The third tank is a standpipe.

Tank T-1 is a 300,000 gallon toro-ellipsoidal style tank located on U.S. Route 41 and just west of the Toyota Manufacturing plant. Tank T-1 was constructed in 1978 as part of the original distribution system construction (See **Photo 1, Appendix E**).

Tank T-2 is a 1,500,000 gallon torus bottom style tank located on County Road 100 E at the Toyota Manufacturing plant. Tank T-2 was constructed in 1996 to provide the additional storage needed to adequately serve the Toyota plant (See **Photo 3, Appendix E**).

Tank T-3, the standpipe, has a capacity of 300,000 gallons and is located at the end of South Dogwood Lane near the end of Curtice Lande Drive. Tank T-3 was constructed in 1990 (See **Photo 2, Appendix E**).

Table 3 presents a summary of the tank types and capacities.

TABLE 3

ELEVATED WATER STORAGE TANK INFORMATION

Tank	Capacity (gal.)	Style	Dia. (ft.)	Head Range (ft.)	Elevations		
					Overflow	Bottom	Base
Tank 1 U.S. Rt. 41	300,000	Multi-Column	43.0	33.0	670.00	637.00	514.00
Tank 2 CR 100 E	1,500,000	Multi-Column	91.0	35.0	668.61	633.61	485.11
Tank 3 Standpipe	300,000	Welded Steel	31.0	27.0	670.00	632.00	541.00

2.2.2 Wholesale Water Customers

Gibson Water also provides the wholesale conveyance of water to one large manufacturing facility and one small community which lies within its service area. Gibson Water also has an emergency interconnection with two other neighboring communities.

2.2.2.1 Town of Haubstadt

Gibson Water wholesales water to the Town of Haubstadt through a Master Meter located near the intersection of U.S. Rte. 41 and CR 975. Based on the 2016 Billing Report provided by Gibson Water, Haubstadt uses an average of 124,000 gallons per day (GPD) or 86.1 gallons per minute (gpm). Based on the list of high water volume users, Haubstadt is Gibson Water's second largest user. A copy of the Water Purchase Agreement is included in **Appendix L**.

2.2.2.2 Toyota Manufacturing

Gibson Water has a commitment to provide wholesale water sales to the Toyota Manufacturing Facility located on US Highway 41 approximately 4 miles south of downtown Prinecton. The Toyota plant is Gibson Water's largest customer, consuming an average volume of approximately 700,000 gallons of water per day. A copy of the Water Sales Contract with Toyota Motor Manufacturing, Indiana is included in **Appendix L**.

2.2.2.3 Owensville and Fort Branch (Emergency Interconnections)

The Town of Owensville has four groundwater wells and a treatment facility to provide water to the community. Gibson Water has a Master Meter located near the intersection of U.S. Rte. 165 and Warehouse Road to provide water to the Town under an emergency condition. In 2016, Owensville did not receive any water from Gibson Water, Inc.

Gibson Water also has an emergency water service interconnection with the Town of Fort Branch. Fort Branch owns and operates a number of groundwater wells and a treatment plant to serve the community. No water was conveyed to the Town by Gibson Water in 2016.

2.2.3 High Volume Water Users

Gibson Water provided a list of their high volume water users for 2016 (See **Appendix D**). Using the information, average monthly and total water use values were calculated for each user. These values were converted to average use rates (gpm) and placed in the hydraulic model at the appropriate locations.

The highest volume water user is Toyota Manufacturing. Several of the high volume water users' consumption appeared to be seasonal. Where this was the case, the highest monthly consumption was used to calculate the usage rate for entry into the computer model.

2.3 CONDITION OF EXISTING FACILITIES

2.3.1 Distribution System

The original distribution system was installed in 1977 and 1978; therefore, most of the system is close to 40 years old. The original system consisted of approximately 130 miles of 2-inch through 18-inch diameter water mains. Pipe materials were ductile iron and polyvinyl chloride (PVC).

The distribution system has been expanded over the years as needed to serve newly developing areas. The most significant expansion occurred in 1996 when a new 20-inch diameter main was installed to serve the Toyota plant. Based on the Hydraulic Model, the current distribution system contains approximately 187.5 miles of pipe.

The majority of the distribution system, approximately 82%, consists of PVC pipe which is now 40 years old. The AWWA Water Research Foundation considers the life expectancy of PVC water main piping to exceed 100 years. For this study, we estimate a minimum useful life of 70 to 80 years. Therefore, the existing water distribution system network is suitable for continued operation with significant useful life remaining.

2.3.2 Booster Pumping Station

The original Booster Pumping Station was replaced with a new station in 1996. There have been no significant improvements or additions to the new station since its construction. The building and primary pumping equipment are therefore a little over 20 years old. The station contains three horizontally mounted centrifugal pumps with common suction and discharge headers. The two largest pumps are each rated for 1,500 gpm at 109' TDH. The smallest pump is rated for 800 gpm at approximately 100' TDH.

Twenty years of growth in the customer base plus increasing flow demands from Toyota and other industrial and commercial users have taxed the station in recent years. Both of the 1,500 gpm pumps have lost pumping capacity due to age and wear and are now producing about 1,200 gpm each. The lowered capacity often causes the pumps to experience run times in excess of 20 hours per day to meet daily flow demands. Inefficient pilot operated pump control valves on the discharge side of each pump also reduce pump efficiency. The two larger pumps, when operating simultaneously, are only capable of producing approximately 1,700 gpm. Therefore, both of the large pumps require extended and excessive run times to meet current maximum day demands. The 800 gpm pump is not presently in use, as it provides little benefit in meeting system needs.

With proper maintenance, the typical useful life for centrifugal pumps is 15 to 20 years. The pumps have been well maintained and have served the Utility well, but they are now beyond their expected useful life.

Revised 10/20/17

The pump station building itself is of brick masonry construction, has been well maintained, and is suitable for continued service.

2.3.3 Water Storage Tanks

Tank T-1, the 0.30 Mgal. elevated tank, was constructed as part of the original distribution system; therefore, it is approximately 40 years old. A tank inspection was conducted in March, 2013 revealing localized areas of corrosion and compromised coatings on the tank interior. Exterior conditions showed chalked and weathered coatings along with some mold growth on the bottom of the reservoir bowl. As a result of the inspection, the interior and exterior surfaces of the tank were repainted in 2016 and are in good condition. Modern coating systems are typically capable of providing a useful life of 12 – 15 years. Periodic inspections are recommended, but recoating of the tank should not be required for another 10 to 12 years.

Tank T-2, the 1.50 Mgal. tank, is approximately 20 years old. The tank was repainted in 2014. During the repainting, both the interior and exterior were completely sand blasted with new coating systems applied. Therefore, the tank is currently in good condition.

Tank T-3, the standpipe, is approximately 27 years old. The most recent recoating work was performed several years ago on the tank interior, which is good condition. The tank exterior currently has a heavy layer of mold and mildew on the lower portions of the tank (See **Photo 2, Appendix E**). Exterior surfaces of the standpipe are in need of pressure washing with an environmentally safe and biodegradable detergent to remove fungal growth. The tank exterior should also be provided with abrasive cleaning and recoating in the very near future. While it is unsightly, mold and mildew should not adversely affect the life of the coating system unless the conditions are very severe.

Structurally, the three (3) elevated water storage tanks are in good condition and provide approximately one (1) day of current average demand for the system. With proper maintenance and regular inspection, the tanks should provide many more years of continued service.

2.4 FINANCIAL STATUS OF EXISTING FACILITIES

A copy of the current Schedule of Water Rates and Charges for Gibson Water, Inc. is included in **Appendix J**. **Table 4** below presents a summary of operating revenues and expenses from the Gibson Water, Inc. 2015 financial statement.

Revised 10/20/17

Table 4
Comparison of 2015 and 2014 Operating Budgets

Description		2015	2014
Operating Revenues			
	Water Sales	$ 1,424,486	$ 1,407,146
	Other	$ 7,552	$ 8,348
	Miscellaneous	$ 29,339	$ 27,661
	Total Operating Revenues	**$ 1,461,377**	**$ 1,443,155**
Operating Expenses			
	Cost of Water	$ (645,984)	$ (599,448)
	Utility Plant Operations	$ (258,250)	$ (275,454)
	Administration and General	$ (454,704)	$ (438,778)
	Total Operating Expenses	**$ (1,358,947)**	**$ (1,313,680)**
Operating Income Before Depreciation & Interest		$ 102,430	$ 129,475
	Depreciation	$ (78,442)	$ (77,848)
	Interest	$ (3,939)	$ (4,303)
Operating Income		**$ 20,049**	**$ 47,324**

2.5 WATER/ENERGY/WASTE AUDITS

No Water/Energy/Waste Audits have been performed on the pumping facilities or water distribution system network.

CHAPTER 3 - NEED FOR PROJECT

3.1 HEALTH, SANITATION AND SECURITY

3.1.1 Water Distribution System

Regulatory requirements for public water systems require that operating pressures be neither too low nor too high throughout the extent of the distribution system. Optimal domestic service pressure is generally within a range of 55 to 70 psi. Average working pressures should not fall below 35 psi, and pressures should never be permitted to fall below 20 psi under the most severe operating conditions at any location within the system.

During high demand conditions, inadequate operating pressures have been observed at a number of locations within the distribution system network. Most of these areas lie at remote locations relative to existing storage and pumping facilities. Several areas are also plagued by undersized and unlooped water mains which are incapable of sustaining adequate pressure during periods of peak demand. Low pressure conditions are common in higher elevation rural areas southwest of Princeton, north of Owensville, and south and west of Haubstadt. There are also two areas northwest of the I-69 and I-64 interchange which periodically experience low pressure due to relatively high elevation and the unlooped nature of the system at those locations.

These identified areas periodically experience water pressures below those allowed by regulatory authorities. Transient low water pressure poses a risk to public health due to the increased potential for the intrusion of contaminants into the distribution system. The distribution system contains multiple instances of long run dead end water mains. The dead-end lines vary in size from 2-inch to 6-inch diameter. In some cases the system demand on dead-end pipe segments is very low; therefore, there is little turn over in the mains. The low turnover causes a long residence time and the loss of chlorine residual, which in turn leads to poor water quality and the potential for biofouling and contamination. This condition is best remedied by extending the dead-end mains to provide looping within the system and continual bi-directional flow within the pipe network where feasible.

3.2 AGING INFRASTRUCTURE

3.2.1 Booster Pumping Station

The Utility's original pumping station was replaced with the current booster pumping station in 1996. Therefore, the booster station building has considerable useful life remaining. The current pumping equipment, however, is aging and pumping capacities are inadequate to meet projected peak demand conditions. The existing high service pumps are 20 years old and are underperforming their design capacities due to age and wear. Even at the original design flow rates, the pumps are undersized based upon current maximum day demand conditions.

The existing pumping installation includes diaphragm type pump control valves which have created numerous maintenance issues for the Utility due to a frequent need for parts replacement. The chronic maintenance concerns and diminished pumping capacity dictate that the need for pump replacement, VFD replacement, and removal of the power consuming pilot control valves.

3.2.2 Water Distribution System

The majority (approximately 82%) of the distribution system is approximately 40 years old. PVC piping systems can be expected to provide reliable service for a period of 70 to 80 years. Therefore, there is significant useful life remaining in the existing water distribution system.

3.3 REASONABLE GROWTH

This PER is based on a 20-year planning period - 2017 through 2037.

The Indiana Business Research Center (IBRC), Indiana University Kelley School of Business operates a research division providing population projections on countywide and citywide basis. This information is available on StatsIndiana. The last available year for Gibson County and City of Princeton projected populations is 2015. During the five (5) year period, the IBRC projected growth for Gibson County was 0.8% or 0.16% per year. The projected Princeton population projection is 8,626, a decrease of -0.2%.

The IBRC's Gibson County annual growth rate was applied to the County's estimated 2015 population to estimate the 2037 population, as follows:

$$\begin{aligned} \text{Population 2036} &= \text{Pop 2015} \times (1 + .0016)^{(\text{Future Year} - \text{Population Year})} \\ &= 33{,}775 \times (1.00162)^{(2037 - 2015)} \\ &= 33{,}775 \times (1.00162)^{22} \\ &= 33{,}775 \times 1.0358 \\ &= 34{,}984 \text{ persons} \end{aligned}$$

This value was used for the Gibson County 2037 population. The 2037 population is an increase of 1,209 people or 3.6%.

From the U.S. 2010 Census, Gibson County had 12,987 households and the average number of people per household was 2.5. The incorporated areas, cities and towns, in Gibson County had a total of 7,575 households. Therefore, the rural County encompasses approximately 5,412 households.

3.3.1 Existing Water Demands

Based on pumping records supplied by Gibson Water, the Year 2016 total water demand was 502.6 million gallons (Mgal.). This in an increase of 6.7% over the 2015 total water demand. **Table 5**

presents a summary of the 2016 water use by customer type. The number of customers per type varied over the year; the Customer Count in **Table 5** is the 2016 average.

Table 5

Breakdown of 2016 Water Demands

Customer Type	Annual Water Demand (MGD)	Customer Count	Average Use Per Customer (Gal./Cust/Day)
Residential	80.922	1,615	137
Commercial	33.196	96	947
Industrial (Toyota)	255.596	1	700,263
Industrial (Other)	43.936	4	30,093
Public Authority	0.004	1	11
Educational	1.362	3	1,244
Agricultural	6.088	21	794
Resale	45.412	1	124,416
Total	**466.517**	**1,742**	

Gibson Water's sole purchase and resale customer is the Town of Haubstadt, with an average water consumption of 124,416 gal. per day (gpd). The largest industrial customer is the Toyota manufacturing plant. The second largest industrial customer is the Duke Energy power plant.

Table 6 presents a summary of the 2014 through 2016 booster pumping station metered flow data. The "Total" value represents the total water pumped for the year. The "Average" value is the average day pumping value. The "Maximum" value is the greatest single day pumping amount for the year. The "minimum" value is the lowest single day pumping amount for the year.

In 2016, the Booster Station pumped 502.6 Mgal. or an average of 1.38 MGD (approximately 960 gpm). In 2016, Gibson Water billed 466.52 Mgal. Therefore, in 2016, lost water was 36.09 Mgal. or 7.2%. This is an excellent lost water percentage for a system the size of Gibson Water's.

Table 6
Summary of Booster Station Pumping

Year	Total (Mgal.)	Average (MGD)	Maximum (MGD)	Max:Avg Peaking Factor
2014	467.59	1.28	2.48	1.94
2015	471.15	1.29	2.71	2.10
2016	502.60	1.37	2.98	2.17

It is important to note that over the past two years, Gibson Water, Inc. has occasionally experienced Maximum Day Demand conditions which exceed the volume limitations of the water purchase Agreement with the City of Evansville. This may not be apparent to the City since the monthly pumping averages remain within the terms of the agreement. Casual discussion with Evansville Water representatives have indicated that excessive consumption by Gibson Water is not a concern and additional water is available if needed.

3.3.2 Projected Water Demands

The projected future residential water demands for Gibson Water are based upon the Utility's current average daily water consumption and the projection of 3.6% growth in the customer and population base over the course of the 20-year planning period. The above table indicates that the maximum day water demand exceeds the average day demand by a factor of roughly 2.17. From historical records, seasonal variation in water consumption is also apparent. Water usage during the summer months tends to be 30 – 35% higher than the annual average. This is not uncommon for a regional utility serving a diverse customer base which includes farming and large manufacturing operations.

The most significant impact on future water consumption is expected to be created by the Toyota Motor facility, which is planning a $600 million investment in the assembly plant in Princeton. The expansion will add 400 jobs, or an increase of 7.8% in the current labor force of 5,100 employees.

In 2016, the average daily water consumption at the Toyota facility was 698,350 gallons. Maximum demand was 934,500 gallons per day. With the planned labor force expansion, it is prudent to expect a roughly 8% increase in the average day and maximum day demand figures for industrial water use.

To project the Utility's Average Day water Demand (ADD) for plan year 2037, an increase of 8% has been added to the current ADD for industrial water consumption. 3.6% has been added for residential, commercial, wholesale, and all other customer categories.

To project plan year 2037 Maximum Day Demand (MDD) conditions, a peaking factor of 2.15 times the Average Day Demand was used. This approach is consistent with historical trends and is appropriate for the evaluation of the Gibson Water Inc. public water supply system. Projected average and maximum day water demands for plan year 2037 are presented in **Table No. 7,** including a breakdown based upon customer use category.

Table 7

Projected Water Demands, Year 2037

Usage Category	2017 Water Demand		Projected Water Demand, Plan Year 2037	
	Average Day Demand (Gallons)	Maximum Day Demand (Gallons)	Average Day Demand (Gallons)	Maximum Day Demand (Gallons)
Residential	221,704	443,408	229,685	459,371
Commercial	90,948	181,896	94,222	188,444
Industrial	820,636	1,641,272	886,287	1,772,574
Public Auth.	11	22	11	23
Educational	3,732	7,464	3,866	7,733
Agricultural	16,679	33,358	17,279	34,559
Resale	124,416	248,832	128,895	257,790
Total (gpd):	**1,278,126**	**2,556,252**	**1,360,247**	**2,924,530**

CHAPTER 4 – ALTERNATIVES CONSIDERED

4.1 INTRODUCTION

The primary purpose of this Engineering Study is to identify the distribution system improvements needed to eliminate transient low pressure conditions in critical portions of the system during periods of high demand. A hydraulic model was created to evaluate the performance of the system and to determine the requirements for water main extensions or system reinforcements needed to improve system performance. The system hydraulic model was also used to evaluate booster station performance and to identify the pumping upgrades needed to meet projected peak day demands for design year 2037.

4.1.1 System Hydraulic Modeling

To facilitate the analysis of the Gibson Water system, a software package entitled "WaterCad®" was used. The program has been specifically designed and developed to model flows and operating pressures in water distribution system networks and other pressure pipe systems.

Water system modeling involves the creation of a numerical database representing all of the major physical components of the system. The final model includes pipes, pumps, storage tanks, control devices, and node references which contain elevation and customer demand information. Following completion of data entry, the Gibson Water model was used to evaluate system performance under a variety of operating conditions. For this study, Average Day, Maximum Day, and Peak Hour flow demands were analyzed.

The model uses an iterative technique to balance and solve for unknown variables. Steady State simulations were performed for the various demand conditions to determine the resulting hydraulic grade elevations, flow velocities, and operating pressures throughout the system. The modeling results are a valuable tool to determine whether system hydraulics and capacity are adequate to meet daily demands.

Again, three base models were developed to analyze various flow demand conditions which are likely to exist during different periods of the day. The modeled conditions are based upon steady state simulations, meaning the results are indicative of the system operating conditions at a given point in time and under a specific flow demand. The following demand conditions were evaluated:

1. Average Day Demand
2. Maximum Day Demand
3. Peak Hourly Demand

Upon completion of data entry into the computer model, an initial run was performed and the results were compared with information provided by Gibson Water, Inc. Minor adjustments were made to pipe roughness coefficients and node demand variables to calibrate the model. We believe the

adjusted model closely reflects the actual operating conditions which are routinely experienced within the existing distribution system.

4.1.2 Discussion of Modeling Results

When interpreting the modeling results, we look for specific indicators of potential problems such as areas of low operating pressure, or sections of piping where flow velocity and corresponding headlosses may be excessively high. Inadequate system carrying capacity may be indicated if low pressures occur in an area during periods of peak water use while pressures are satisfactory during periods of low demand.

The tabulated junction node results for Average Day Demand and Peak Hourly Demand Conditions are included in **Appendix K** of this report. Four Tables presenting distribution system modeling results have been provided as follows:

Table K-1: Existing Distribution System Under Average Day Demand Conditions

Table K-2: Existing Distribution System Under Peak Hourly Demand Conditions

Table K-3: System w/ Recommended Improvements, Average Day Demand

Table K-4: System w/ Recommended Improvements, Peak Hourly Demand

Under Average Day Demand conditions, the vast majority of the existing distribution system is capable of sustaining operating pressures above the recommended minimum standard of 35 psi. In several areas, however, operating pressures fall significantly during Peak Hourly Demand Conditions. At those locations, the pressure deficiencies are due to high ground elevations, service from undersized and/or dead-end water mains, or a combination of those factors.

Table K-2 in Appendix K provides the greatest insight regarding specific locations within the system where performance is inadequate during periods of high demand. Junction Nodes displaying operating pressures of less than 25 psi have been provided with bold text and shaded highlighting in the Table. **Figure K** in that Appendix provides a map which identifies the specific areas of low pressure within the existing distribution system during Peak Hourly Demand conditions. In many cases, the resultant operating pressures during high use periods fall below the minimum allowable regulatory standard of 20 psi.

Multiple alternatives were modeled to determine the distribution system improvements which most benefited system operating pressures, carrying capacity and flow patterns. Following modeling, project cost estimates were developed for the alternatives to determine which alternatives offered the greatest economic return.

4.2 ALTERNATIVE 1 - "NO ACTION" ALTERNATIVE

The "No Action" Alternative assumes no improvements are made to Gibson Water's distribution system. Without improvements, problems such as stagnant water, degradation of water quality, and poor operating pressure during periods of high demand will remain. Additionally, areas of potential development may not be able to be adequately served.

MEI determined Alternative 1, the "No Action" alternative, does not meet Gibson Water's long tern goals and was eliminated from consideration.

4.3 SYSTEM IMPROVEMENTS

4.3.1 Alternative 2 – County Road 225 W Water Main Extension

Alternative 2 includes the installation of a new 6-inch or 8-inch water main on County Road 225 W from CR 950 to State Route 168. The new water line would connect to an existing 8-inch main on CR 950 and with a 6-inch main at the intersection of CR 225 W and SR 168. The approximate pipe length of Alternative 2 is 16,175 feet. The location and alignment of Alternative 2 is shown on **Figure 4 (Appendix A)**.

Alternative 2 completes the "looping" of the existing 8-inch diameter water line on CR 150 W and the existing 6-inch diameter pipe on CR 225 W. The purpose of Alternative 2 is to eliminate two long dead end mains in the areas west of Fort Branch and Haubstadt. This extension will greatly improve system carrying capacity to the southern portion of the distribution system. Peak demand conditions presently create low pressure conditions in areas west and south of Haubstadt. Additionally, Alternative 2 will improve water quality and help to serve future development in the area. Without this improvement, any additional demand due to customer growth would compromise system performance.

4.3.2 Alternative 3 – State Route 68 Water Main

Alternative 3 replaces an existing 4-inch water main on SR 68 with a new 8-inch diameter main. The new water main connects an existing 8-inch pipe at the intersection of SR 68 and CR 350 E with an existing 3-inch main at the intersection of SR 68 and CR 450 E. The approximate total pipe length of Alternative 3 is 5,272 feet. The location and alignment of Alternative 3 is shown on **Figure 5 (Appendix A)**.

The purpose of Alternative 3 is to increase carrying capacity in the southeast portion of the distribution system, and improve operating pressure for two high elevation areas northwest of the SR 68 and Interstate 69 interchange. Without this improvement, any future growth in this area would negatively impact existing customers which are situated at the higher elevations.

4.3.3 Alternative 4 – County Road 350 W Water Main

Alternative 4 would include the installation of a new 8-inch water main along CR 350 W from its intersection with CR 400 S to the intersection with CR 250 S. The new pipe would connect to an existing 10-inch main on CR 400 S and an existing 3-inch main at the intersection of CR 350 W and CR 250 S. The length of Alternative 4 is approximately 8,087 feet. The location and alignment of Alternative 4 are shown on **Figure 6 (Appendix A)**.

The purpose of Alternative 4 is to "loop in" the dead end 3-inch main on CR 350 W. This is one of the most compromised portions of the existing distribution system during peak demand conditions due to the long length of unlooped 3" diameter water mains serving the area. Looping in this region will also help to eliminate poor water quality due to lack of circulation and increase flow capacity and operating pressure north and west of the CR 350 W and CR 250 S intersection.

4.3.4 Alternative 5 – County Road 200 S Water Main

Alternative 5 would provide a new 6-inch water main on CR 200 S to connect the existing 6-inch water line on Old SR 65 with an existing 3-inch un-looped main on CR 200 S. The approximate total pipe length for Alternative 6 is 3,775 feet. The location and alignment of Alternative 5 are shown on **Figure 7 (Appendix A)**.

The purpose of Alternative 5 is to complete a secondary internal loop initiated with Alternative 4. The loop will increase flow capacity and pressures on the northern portion of CR 350 W. Additionally, the existing 3-inch pipe on CR 200 S serves a seasonally high-volume farming operation. Alternative 5 would provide a second, larger water main to serve the facility and also improve system performance in the area during peak demand conditions.

4.3.5 Alternative 6 – County Roads 350 W and 200 S Water Mains

Alternative 6 combines Alternative 4 and 5 and provides additional system enhancement by replacing the existing 3-inch water lines which would remain under those alternatives. Although Alternatives 4 and 5 effectively eliminate the existing 3" dead end lines, the remaining 3" pipe segments would still act as a bottleneck during peak demand conditions. The primary purpose of Alternative 6 is to remove those bottlenecks. The new pipe on CR 350 W would continue to be 8-inch and the main on CR 200 S would be 6-inch. Total length of Alternative 6 is approximately 16,310 feet. Therefore, approximately 4,450 feet of existing 3-inch pipe would be replaced. The location and alignment of Alternative 6 are shown on **Figure 7 (Appendix A)**.

4.3.6 Alternative 7 – State Route 64 Water Main Extension

Alternative 7 includes the construction of a new 6-inch water main on SR 64 to connect the existing 8-inch pipe on SR 65 with an existing 3-inch dead end water main on SR 64. The approximate total pipe length of Alternative 7 is 2,397 feet. The location and alignment of Alternative 7 are shown on **Figure 8 (Appendix A)**.

The purpose of Alternative 7 is to complete a perimeter loop in the northwest portion of the distribution system. This will greatly improve system carrying capacity in the area and eliminate poor water quality in the existing dead end 3-inch water main on State Road 64.

4.3.7 Alternative 8 – Parallel Booster Station Supply Main and Booster Station Improvements

Alternative 8 includes the installation of a parallel 16-inch water main from the Evansville Master Meter to the Gibson Water pumping station. To provide redundancy on the discharge side of the pumping station, this Alternative also includes a 16" water main to parallel the lone existing transmission main from the booster station northward to County Road 1200 South.

In addition to the redundant transmission mains to reinforce the booster station suction and discharge piping, a second 8-inch master meter with vault would be installed at the site of the Evansville master meter. The approximate length of new 16-inch pipe is 7,000 ft. The alignment requires a 300 foot bored and jacked crossing of Interstate 64. Additionally, new easement will be needed for the alignment. The locations and alignments of Alternative 8 are shown on **Figure 9 (Appendix A)**.

The existing booster station pumps do not have adequate capacity to meet current and projected Maximum Day Demands. The existing pumps are also fitted with antiquated variable frequency drives (VFDs) and inefficient pump control valves. These valves waste energy and are prone to mechanical failure. Replacement of all pumps is necessary in order to insure the Utility's ability to meet projected maximum day demand conditions.

The purpose of Alternative 8 is to: 1) Provide the critical redundancy needed to insure that the supply source from Evansville is available at all times to the suction side of the Gibson Water pumping station. This supply source is the backbone of the Gibson Water system. A failure of the existing supply main would leave the Utility without a source supply until the necessary repairs can be made. 2) The parallel supply line would support an increase in the capacity of the booster station by reducing headloss on the suction side of the high service pumps.

Currently, Gibson Water's sole supply source is the existing 16-inch water main from the Evansville Water Company. Gibson Water has a total of 2.1 Mgal. in elevated water storage, or approximately 1.6 days during average demand, and less than one day of storage during peak demand conditions. Therefore, a second, redundant supply line is considered a critical need. 3) An increase in pumping capacity is essential to insure Gibson Water's ability to meet future maximum daily demands. To improve energy efficiency, pump control valves should be replaced with conventional check valves and the antiquated variable frequency drives should be replaced with modern, more efficient equipment.

4.3.8 Alternative 9 – Combined Alternatives

Alternative 9 assumes Alternatives 2, 3, 6, 7, and 8 are installed in the Gibson Water distribution system. The use of Alternative 6 in lieu of Alternatives 4 and 5 is considered much more desirable because it replaces the short lengths of existing 3-inch diameter water mains and the potential bottlenecks they create.

4.4 DESIGN CRITERIA

Design criteria for all phases of the project will include conventional standards for design and construction of public water supply facilities in Indiana. For distribution system upgrades, design criteria will include:

- IDEM design guidelines, which incorporate the "Recommended Standards for Water Works" (also known as the "10 States Standards");
- Gibson Water design and construction guidelines;
- Indiana Dept. of Transportation (INDOT) design and construction standards and specifications;
- Indiana Storm Water Quality Manual; and
- Any applicable design review comments provided by the USDA Rural Development program or another applicable funding agency will also be incorporated.

All pipe shall be of the appropriate material and class for its intended purpose and operating pressure. Minimum pressure class shall be 150 psi. Joints and gaskets will be in accordance with AWWA C111.

Valves will be resilient wedge gate valves in accordance with AWWA C515. Joints and gaskets will be in accordance with AWWA C111. Valves shall be rated for the appropriate system pressure. Minimum pressure class shall be 200 psi.

4.5 MAPS

Figure 1 is a General Location Map showing the location of Gibson County. **Figure 2** presents the approximate service area of Gibson Water, Inc. water distribution system within the county. **Figures 4 through 9** present the locations and alignments of the alternatives. All figures are located in **Appendix A**.

4.6 ENVIRONMENTAL IMPACTS

The new water main construction will have no permanent environmental impacts. Existing wetlands, exceptional use streams, state resource waters, or natural or scenic rivers will not be impacted. No endangered species or critical habitats will be impacted by the project. Following pipe installation, existing grades and surfaces will be restored.

Revised 10/20/17

Therefore, the work will not impact existing runoff patterns or quantities. Temporary environmental impacts will include: noise; dust; erosion; trash; and fluids. Noise impacts will be minimized by limiting construction to normal working hours. Additionally, the pipes to be installed are small; therefore, equipment sizes will be modest.

The contractor will be required to maintain the work sites in a neat and workmanlike manner. Therefore, trash will be promptly removed and the site kept clean.

All of the proposed improvement projects consist of water main pipeline construction. Therefore, construction will be linear in nature rather than point construction. Appropriate erosion control measures shall be placed prior to the start of excavation. Due to the linear nature of the work, installation of erosion control measures will progress with the work. Erosion control measures will not be removed until an acceptable ground cover is established.

Points of storm water discharge will shift as construction progresses. Points of storm water discharge will be selected along the alignment to take advantage of natural drainage patterns. Discharge will only be allowed downstream of erosion control devices.

4.7 LAND REQUIREMENTS

The new water main alignments will be along roadways using existing, previously disturbed public right-of-way (R/W) or easements which have been granted to and accepted by the Utility. Cross country installation will only be required for the installation of the parallel transmission main from the Evansville connection point to the Gibson Water pumping station. An existing utility easement will be used to accommodate that installation. General orientation of proposed water main routes are shown in **Figures 4 through 9 (Appendix A)**.

River/stream crossings will be avoided where possible. If required, minor crossings will be completed using horizontal directional drilling methods to minimize disturbance to streambeds and floodway areas. Additional R/W may be required to allow a trenchless crossing. The amount of new R/W required for the water mains is expected to be very small.

4.8 POTENTIAL CONSTRUCTION IMPACTS

The new water mains will be installed along roads, outside of pavement, in existing R/W or dedicated utility easement adjacent and contiguous to the roadway R/W. Therefore, the greatest associated construction issues will be temporary traffic control, stringing of pipe materials and erosion control. Erosion and traffic control issues will be mitigated as pipe construction progresses.

The construction sites are primarily along minor county roads which are lightly traveled; therefore traffic impacts will be negligible. Traffic control measures, including flagging, street closures and detours, will be used to minimize traffic disruptions. Pipe material will be strung along the alignment, outside the R/W, to minimize material transport.

Revised 10/20/17

However, stockpiles of bedding material should be strategically located along the route. Transport to the installation site will be required.

Erosion control measures will be used along the alignment to prevent silt migration. Erosion control devices will be installed prior to any excavation and will remain in place until the new ground cover is established.

Worker and material delivery vehicles will temporarily increase traffic along the alignment. Connecting the new transmission main to the existing pumping station will not affect the operation of the existing high service pumps. Therefore, no service interruption of the booster station will be required.

4.9 SUSTAINABILITY CONSIDERATIONS

4.9.1 Water and Energy Efficiency

The design of the proposed new water mains will incorporate piping materials with favorable friction coefficients to minimize power consumption. The addition of a parallel water main to provide redundancy for the transmission of water from Evansville to the Utility's booster station will improve the available delivery pressure on the suction side of the pumps, helping to lower power consumption.

4.9.2 Green Infrastructure

Properly designed, constructed, and maintained green infrastructure practices will be used to provide the greatest benefit to water resources and the community. Energy efficient variable frequency drives will be used for high service pumping equipment, and the existing power consuming diaphragm type pump control valve will be eliminated. Best management practices (BMPs) will be selected, sized and designed for the new development site(s).

4.9.3 Other

As noted in paragraph 2.3.1, much of the distribution system is 40 years old. Construction practices of the period were not as stringent as current practices. Additionally, materials and manufacturing have improved. Therefore, pipes installed during that era tend to have more leakage than modern piping materials.

4.10 COST ESTIMATES

Preliminary project costs were developed for each alternative except Alternative 1 – "No Action" Alternative. Where possible, construction bid prices from similar project and equipment supplier quotes were used to derive the estimated costs for the various alternatives. The project costs include:

Revised 10/20/17

1) An 8.3% allowance for design and construction engineering services;
2) Construction inspection based on an installation rate of 300 ft. of pipe per day;
3) A 3.5% allowance of construction costs for legal/financial assistance;
4) A 1.25% allowance of construction costs for Gibson Water administration costs; and
5) a 10% contingency for unknown design and construction related issues.

For all estimates, MEI assumed:

- All new water mains would be installed in existing road R/W or utility easement outside of pavement limits;
- All water mains will be properly bedded in granular material per manufacturer recommendations;
- Pipes less than 12-inch diameter will be AWWA C900 PVC pipe, pipes greater than 12-inch diameter will be DI pipe;
- Isolation valves will be installed at 1,500 foot intervals maximum;
- All valves will be resilient wedge gate valves; and
- Minimum depth of cover for water mains is 42 inches per IAC 327, Article 8.
- Pipe will be backfilled with suitable granular material in roadway areas and where pipe is installed within 5' of a paved surface or other area subject to vehicular traffic.

Table 8 presents a summary of the estimated project construction costs for the individual Alternatives. Detailed cost estimates for each alternative are included in **Appendix F**.

Table 8
Summary of Project Costs

Description	Alt. 2 CR 225W Water Main	Alt. 3 SR 68 Water Main	Alt. 4 CR 350W Water Main	Alt. 5 CR 200S Water Main	Alt. 6 Combination of Alt. 4&5, plus elimination of 3" mains	Alt. 7 SR 64 Water Main	Alt. 8 Parallel Booster Transmission Mains, plus Pump Upgrades
Construction Costs							
Water Main Extensions:							
6" Dia.				$90,420	$148,500	$97,900	
8" Dia.	$404,380	$135,000	$204,000		$270,000		
16" Dia.							$469,000
Hydrant with Gate Valve and Box		$4,000				$4,000	
Master Meter and Vault							$55,500
Metered Service Connections	$10,800				$11,700		
Service Tubing	$10,000				$12,000		
Booster Station Improvements							$192,000
Road Crossings:							
Gravel (Open Cut)		$14,000					
Paved (Jack & Bored)		$59,500					$156,000
Paved Co. Rd. or Driveway	$24,500		$25,000	$12,000	$45,000	$32,500	$5,000
Isolation Valves	$7,000	$5,600	$5,600	$2,000	$10,500	$1,000	$24,400
System Connections	$6,000	$6,400	$2,800	$2,800	$5,600	$4,800	$30,000
Traffic Control	$3,000	$3,000	$2,000	$1,500	$2,500	$1,500	$2,000
Erosion Control	$10,000	$5,500	$2,500	$2,500	$5,000	$2,500	$5,000
Restoration	$5,000	$20,000	$2,500	$2,000	$5,000	$5,000	$5,000
Testing	$16,180	$2,700	$6,000	$8,000	$17,550	$2,230	$7,000
Mobilization	$19,900	$10,200	$16,400	$9,300	$21,300	$6,000	$38,000
Bonds & Insurance	$5,000	$2,600	$3,300	$1,400	$7,350	$1,500	$9,500
Construction Total	$521,760	$268,500	$270,100	$131,920	$562,000	$158,930	$998,400
10% Construction Contingency	$52,200	$26,900	$27,000	$13,200	$56,200	$15,900	$99,800
Total Probable Construction Cost	**$573,960**	**$295,400**	**$297,100**	**$145,120**	**$618,200**	**$174,830**	**$1,098,200**

CHAPTER 5 – SELECTION OF AN ALTERNATIVE

A cost benefit analysis was completed to compare the present cost of project alternatives for the recommended improvements project. The net present worth analysis is used to convert all cash flows to present day dollars.

5.1 LIFE CYCLE COST ANALYSIS

A life cycle cost analysis was completed for each Alternative.

The Scenario Energy Cost feature of the distribution system's WaterCAD hydraulic model was used to calculate the total power consumed under each Alternative. The total power consumed was converted into an energy cost using Duke Energy's Low Load Factor Service rates (**Appendix H**). No peak demand factor was used for the calculations.

The O&M expenses are expected to be the same for all Alternatives except the power used for pumping. MEI used an expected useful life of 75 years for the water mains. If plastic pipe is used, the industry claims a useful life of 100 years; so, the used life is conservative. Concrete structures were also assumed to have a useful life of 75 years.

Various cost considerations for the life cycle cost analysis are as follows:

5.1.1 Construction Cost

Construction costs include the initial capital investment required to purchase and install the facilities and all related equipment. The costs are based on 2017 dollar values.

5.1.2 Operation and Maintenance Costs

Table 9 presents projected post-construction annual operation and maintenance (O&M) costs. No significant change in operating personnel is required based on the distribution system or booster station improvements. Additionally, it is assumed water demands will increase moderately over the course of the planning period. Costs for these items are taken from the table of Pro Forma Annual Operation and Maintenance Expenses as presented in the Accountants' Rate Study and Compilation Report prepared in January, 2018.

Additional insurance coverage must also be provided for the related improvements. The proposed improvements add approximately 10.6 miles, or 5.8%, of new pipe to the system. Future insurance payments were based on a per linear foot of pipe basis.

The pumping electrical costs are based on Alternative 9 which combines the various individual alternatives.

Revised 1/10/18

Table 9
Projected Annual O & M Expenses

Item		Cost
1	Salaries and Wages	$ 337,318
2	Employee Benefits - PERF	$ 138,619
3	Purchased Power	
	Pumping	$ 33,000
	Other Power Requirements	$ 7,876
5	Insurance	$ 25,928
6	Contractual Services	$ 43,470
7	Materials and Supplies	$ 29,564
8	Transportation	$ 12,066
9	Tank Maintenance and Short Lived Assets Reserve	$ 154,341
10	Bad Debt Expense	$ 795
11	Cost of Water	$ 1,063,315
12	Miscellaneous	$ 27,109
	TOTAL:	**$ 1,873,401**

5.1.3 Analysis Period and Depreciation

The present worth analysis is based on a 20-year period. Salvage value is based on straight line depreciation, since economic benefits from the capital investments are expected to be realized evenly over their useful life.

5.1.4 Present Worth Analysis Method

The total present worth of an alternative is determined by summing the initial capital investment cost, present worth of operation, maintenance and equipment replacement costs, and then subtracting the present worth salvage value. The project period is 20 years and the discount rate is 0.5%.

The present value factor (P) is determined by:

$$P = (1 / (1 + r)^{n})$$

Where: r = the discount rate, in this case 0.5%
n = the project term, 20 years

Employing the above figures, the present worth (P) of the salvage value at the end of 20 years is calculated by multiplying its value by 0.9051.

Revised 1/10/18

Present worth of annual operation, maintenance, and equipment replacement costs is calculated by multiplying its value by:

$$[(1+i)^n - 1] \div [i(1+i)^n] = 18.987$$

Table 10 on the following page presents a side-by-side comparison of Life Cycle Cost Analyses (LCCA) of the Alternatives. The LCCA for the Alternatives cannot be reliably compared to each other as each Alternative is a separate construction project. To be effective, an LCCA must compare different versions of the same alternative. Additionally, the LCCA for Alternative 19 combines various Alternatives. **Appendix G** contains a breakdown of the LCCA calculations.

Revised 10/20/17

Table 10

Life Cycle Cost Analysis Summary

	Cost Summary	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Alt. 8	Alt. 9
a.	Construction Cost	$521,760	$268,500	$270,100	$131,920	$562,000	$158,930	$998,400	$2,509,590
b.	10% Const. Contingency	$52,200	$26,900	$27,000	$13,200	$56,200	$15,900	$99,800	$251,000
c.	Non-Construction Costs @ 24.5%	$140,620	$72,373	$72,790	$35,554	$151,459	$42,833	$269,059	$676,345
d.	Total Cap. Cost (a+b+c)	$714,580	$367,773	$369,890	$180,674	$769,659	$217,663	$1,367,259	$3,436,935
e.	Annual O&M Cost	$1,873,401	$1,873,401	$1,873,401	$1,873,401	$1,873,401	$1,873,401	$1,873,401	$1,873,401
f.	Replacement Cost (SLA)	$8,700	$3,000	$4,400	$2,000	$8,300	$1,100	$6,700	$27,800
g.	Salvage Value	$467,500	$158,600	$239,600	$106,100	$445,000	$58,100	$253,700	$1,365,600
h.	Total Capital Costs	$714,580	$367,773	$369,890	$180,674	$769,659	$217,663	$1,367,259	$3,814,500
i.	O&M Present Worth (Factor = 18.987)	$25,791,371	$25,791,371	$25,791,371	$25,791,371	$25,791,371	$25,791,371	$25,791,371	$25,791,371
j.	Replalcement Present Worth (Factor = 18.987)	$165,187	$56,961	$83,543	$37,974	$157,592	$20,886	$127,213	$527,839
k.	Salvage Present Worth (Factor = 0.9051)	$423,134	$143,549	$216,862	$96,031	$402,770	$52,586	$229,624	$1,236,005
Total Present Worth		$26,248,004	$26,072,556	$26,027,942	$25,913,988	$26,315,852	$25,977,334	$27,056,219	$28,897,705

Note: Alternative 9 Includes Alts. 2, 3, 6, 7 and 8. Alternative 6 is recommended in lieu of combined Alts. 4 and 5.

Revised 10/20/17

5.2 HYDRAULIC MODELING

A hydraulic model of the Gibson Water, Inc. distribution system was created using Bentley Systems' WaterCad software program. This program links a hydraulic modeling engine with a scaled map of the system generated with AutoCad. Modeling input variables include pipe diameter, pipe length, friction factors, pipe connectivity, storage tank locations and overflow elevations, pump curves, customer locations and customer demands. Pipe friction "C" factors of 130 to 140 were used throughout the system for existing water main piping. A friction factor of C = 140 was used for new piping.

Customer demands for typical residential users were based upon data presented in Chapter 3. High volume customers were identified and demand nodes were provided in the model to properly reflect the hydraulic impact of those customers on the system. Information regarding current system operation, pump on-off set points, water sales records, pump discharge rates, and operating ranges for elevated tanks has been gathered and entered into the hydraulic model.

5.2.1 Demand

The primary objective of a public water supply system is to furnish a safe, adequate, and high quality supply of water to meet the demands of its customers. To properly meet this goal, water demands must be accurately projected to insure that all components of the system are adequate. Facilities must be properly planned, designed, financed, and constructed prior to their imminent need.

For this study, the terms used to define typically daily usage demands are: Average Day, Maximum Day, and Peak Hour.

Average Daily Flow uses the yearly total volume of water distributed divided by the number of days in the year. For residential customers, the average daily flow used for this study is 0.4 gallons per minute per service connection.

Maximum Daily Flow is the maximum volume of water distributed in any 24 hour period during the year. This flow condition typically occurs during hot summer months when water use is the greatest due to the use of swimming pools and watering of livestock, gardens and lawns. The ratio of maximum day to average day demand is assumed to be 1.5 for the Gibson Water system. The calculated Maximum Day Demand is then 0.6 gallons per minute per residential service connection.

Peak Hourly Flow is the maximum volume of water distributed during any 60 minute period of the year. This condition usually occurs again during summer months and in the morning hours when many customers are simultaneously using water for showering, or in the evening when homeowners are returning from work and simultaneously using water for meal preparation, laundry and other activities. A typical peak hour to maximum day factor of 1.75 was used in the hydraulic model, resulting in a peak hourly demand rate of 1.05 gpm per residential service connection. For large

industrial customers such as Toyota which employ multiple work shifts, modeled demands entered into the model are based upon customer meter records, since a large fluctuation in consumption during the day is less likely.

5.2.2 Existing System

The existing distribution system was modeled under the described demand conditions to determine the recommended locations for needed improvements and their priorities. The existing system was analyzed at average day, maximum day, and peak hour flow demand conditions. Projected peak hour demands based upon year 2037 projections create the most severe operating conditions. The "Low Pressure" column presents modeled operating pressures for the existing piping network under Peak Hour conditions assuming no improvements to the system are made.

It should be noted that the vast majority of the system experiences adequate operating pressures, within a range of 50 to 80 psi, even under peak hourly demand conditions. Inadequate pressures occur during high demand conditions at locations of high ground elevation in areas remote from existing storage facilities. Dead end mains and poor looping of the system in some areas also create pressure problems due to high pipeline headloss gradients.

Modeling results for the existing system are included in **Appendix K**. Average Day Demand conditions are presented in Table K-1. Peak Hour Demand conditions are shown in Table K-2. The following table summarizes typical average pressures and low pressures experienced in the most critical portions of the system during current average day and peak hour demand conditions. The results are based upon steady state simulations with each elevated tank at a working elevation 10' below overflow.

Table 11
Hydraulic Analysis – Existing System without Improvements

Node Reference	General Location	Average Pressure (psi)	Low Pressure (psi)
Node J-113	State Road 68, west of County Rd. 450E	34.6	21.0
Node J-127	County Rd. 1250S at 150W	39.4	16.1
Node J-129	County Rd. 1300S west of Scottsdale Dr.	41.8	14.2
Node J-130	County Rd. 1300S west of Scottsdale Dr.	31.3	10.1
Node J-131	County Rd. 1300S west of Scottsdale Dr.	32.2	10.5
Node J-132	County Rd. 1300S west of Scottsdale Dr.	43.9	16.2
Node J-133	County Rd. 1300S west of Scottsdale Dr.	49.4	21.6
Node J-135	County Rd. 1200S west of C.R. 40W	43.1	22.7
Node J-139	County Rd. 1200S east of C.R. 150W	39.7	19.3
Node J-376	County Rd. 350W near C.R. 75S	50.4	22.8
Node J-381	County Rd. 65S east of C.R. 325W	50.9	22.8
Node J-382	County Rd. 350W north of C.R. 200S	31.8	13.1
Node J-383	County Rd. 350W at 200S	43.4	24.9
Node J-384	County Rd. 200S west of C.R. 350W	23.9	9.0
Node J-385	County Rd. 350W south of C.R. 200S	42.6	23.2
Node J-386	County Rd. 350W south of C.R. 200S	33.0	13.7
Node J-407	County Rd. 1000S at C.R. 250W	40.2	19.1
Node J-408	County Rd. 1000S at Clearview Drive	41.0	19.8
Node J-409	County Rd. 250W south of C.R. 1000S	38.1	16.9
Node J-410	County Rd. 250W south of C.R. 1000S	43.7	22.5
Node J-411	County Rd. 1050S near State Rd. 68	40.7	19.5
Node J-413	West end of system along S.R. 68	45.4	24.3
Node J-425	County Rd. 1000S at Joy Lane	41.0	19.8
Node J-426	County Rd. 1000S east of C.R. 250W	41.5	20.2
Node J-428	North end of Joy Lane	44.0	22.8
Node J-431	County Rd. 1200S at C.R. 40W	44.8	24.3

Results of the hydraulic analysis of the existing distribution system show a minimum system pressure of approximately 24 psi under Average Day Demand Conditions at Junction Node J-384 on County Road 200 South, west of County Road 350 West. Six of the junction locations in the above table exhibited operating pressures below the recommended minimum average of 35 psi during average demand conditions.

During a peak hourly demand condition, 15 locations show low system pressures below the minimum regulatory standard of 20 psi. The Ten States Standard for Water Works requires that 20 psi be maintained at all points in the distribution system under all flow demand conditions. A graphic presentation of the peak demand low pressure areas is provided on the map included in Appendix K.

5.2.3 Existing System with Improvements

Chapter 4 lists the recommended improvements needed to improve the performance of the Utility's water distribution system network. None of the individual improvements is adequate on its own to meet year 2037 projected demands. Low pressure areas already exist in the north, south, and southeast portions of the system.

Due to the sprawling, expansive nature of the existing service area, the following Alternatives are all needed to provide acceptable operating pressure throughout the distribution system. Figures 4 through 11 (Appendix A) show the locations of the recommended system improvements.

Alternative 2 - County Road 225 W Water Line

Alternative 2 will provide a vital link in the system to connect the north and south portions of the piping network west of U.S. Highway 41. Under present conditions, large areas west of U.S. 41 must endure service interruptions when a break occurs in an existing primary feeder. This water main extension will create connectivity between two large service areas, providing redundancy and greatly improved carrying capacity within the overall piping network.

Alternative 3 - State Route 68 Water Line

The purpose of Alternative 3 is to increase flow potential to the area around the new SR 68 and I-69 interchange. The improved carrying capacity will eliminate low pressure conditions during high demand periods and support future development activity near the interchange.

Alternative 6 - County Roads 350 W and 200 S Water Lines

Alternative 6 is recommended as the preferred option over the implementation of Alternatives 4 and 5. Alternative 6 will create a large diameter loop in the CR 350 W and 200 S area and eliminates the 3-inch diameter bottlenecks which would remain if Alternatives 4 and 5 are constructed. The purpose of Alternative 6 is to reinforce the system in the northern portion of the service area west of Princeton. Alternative 6 provides system looping to increase flow capacity and operating pressure for customers in this high elevation area. The looped system will also improve water quality by eliminating two dead end 3-inch water mains.

Revised 10/20/17

Alternative 7 - State Road 64 Water Main Extension

Under Alternative 7, a 6-inch water main is recommended for construction along S.R. 64 to connect an 8-inch water main on S.R. 65 with an existing 3-inch dead-end main S.R. 64. The new pipe completes an additional loop in the area west of Princeton. The purpose of Alternative 7 is to provide bi-directional flow, increased carrying capacity, and elimination of water quality degradation in the dead end 3-inch main.

Alternative 8 - Parallel Booster Station Supply Main plus Booster Pump Replacement

Alternative 8 provides for the installation of a parallel 16-inch diameter supply transmission main from the Evansville connection point and mater meter to the Utility's existing High Service Pumping Station. Alternative 8 also includes the installation of a second 8-inch diameter compound master meter and metering vault. The purpose of the new transmission main and master meter is to provide Gibson Water with redundancy in the critical transmission main should a rupture or failure occur in the existing supply main. Both transmission mains will be used in normal operation. The parallel transmission main will also reduce headloss to the booster station, supporting an increase in pumping capacity.

Alternative 8 also includes the replacement of all three high service pumps at the existing booster station. As presented in Chapter 4, the existing pumps are not adequately sized to meet peak projected demands for the year 2037. Declining performance over the past several years has compromised the ability of the pumps to meet even the current maximum day flow demands.

The replacement pumps should be designed to meet a projected maximum day demand of 3.0 MGD for plan year 2037. As an additional margin of safety, it is recommended that the pumps be designed to meet the maximum day demand condition in an 18 hour pumping period. The recommended minimum firm capacity (pumping capacity with largest unit out of service) is therefore 2,775 gpm. Friction loss increases and pumping efficiency decreases with multiple pumps operating. The desired pumping condition can be met with one large pump and two smaller pumps, or with three equally sized pumps. The final determination will be made during the design phase, when additional hydraulic modeling will be performed to determine the most efficient pumping arrangement. New variable frequency drives should be provided for the pumps, and the power wasting pump control valves should be removed and replaced with conventional check valves.

Table 12 contains the results of the hydraulic analysis of the system with the inclusion of all recommended improvements.

Revised 10/20/17

Table 12

Hydraulic Analysis with Recommended System Improvements

Node Reference	General Location	Average Pressure (psi)	Low Pressure (psi)
Node J-113	State Road 68, west of County Rd. 450E	45.2	41.9
Node J-127	County Rd. 1250S at 150W	46.5	30.2
Node J-129	County Rd. 1300S west of Scottsdale Dr.	49.0	28.3
Node J-130	County Rd. 1300S west of Scottsdale Dr.	38.5	21.3
Node J-131	County Rd. 1300S west of Scottsdale Dr.	39.4	22.1
Node J-132	County Rd. 1300S west of Scottsdale Dr.	51.1	30.3
Node J-133	County Rd. 1300S west of Scottsdale Dr.	56.3	35.7
Node J-135	County Rd. 1200S west of C.R. 40W	50.3	36.7
Node J-139	County Rd. 1200S east of C.R. 150W	47.7	35.1
Node J-376	County Rd. 350W near C.R. 75S	70.4	56.6
Node J-381	County Rd. 65S east of C.R. 325W	70.9	52.2
Node J-382	County Rd. 350W north of C.R. 200S	68.6	57.4
Node J-383	County Rd. 350W at 200S	83.2	73.5
Node J-384	County Rd. 200S west of C.R. 350W	63.1	52.9
Node J-385	County Rd. 350W south of C.R. 200S	82.5	73.0
Node J-386	County Rd. 350W south of C.R. 200S	73.0	63.5
Node J-407	County Rd. 1000S at C.R. 250W	49.0	36.3
Node J-408	County Rd. 1000S at Clearview Drive	49.8	37.1
Node J-409	County Rd. 250W south of C.R. 1000S	46.8	34.2
Node J-410	County Rd. 250W south of C.R. 1000S	52.4	39.8
Node J-411	County Rd. 1050S near State Rd. 68	49.4	36.8
Node J-413	West end of system along S.R. 68	54.2	41.5
Node J-425	County Rd. 1000S at Joy Lane	49.8	37.1
Node J-426	County Rd. 1000S east of C.R. 250W	50.2	37.5
Node J-428	North end of Joy Lane	52.8	40.0
Node J-431	County Rd. 1200S at C.R. 40W	51.9	38.3

With the improvements in place, all junction nodes meet the minimum average working pressure standard of 35 psi. More importantly, all nodes meet the regulatory standard of a 20 psi minimum pressure during peak hourly demand conditions.

5.3 SELECTION MATRIX

Alternatives 2, 3, 7, and 8 do not have different options to be compared against. Therefore, a selection matrix for these alternatives was unnecessary. Alternative 6 serves as an option to combined Alternatives 4 and 5. **Table 13** presents the Selection Matrix developed to evaluate the use of Alternatives 6 in lieu of combined Alternatives 4 and 5. Criteria were evaluated and assigned a value of 1 or 2, with 1 being most favorable. The values were then totaled and the Alternative with the lowest total is considered the preferred option.

Table 13
Selection Matrix

Criteria	Alternatives 4 & 5	Alternative 6
Initial Cost	1	2
Overall System Impact	2	1
Construction Impacts	1	1
Small Dia. Pipe Replaced	2	1
System Performance	2	1
Total	8	6

5.4 NON-MONETARY FACTORS

Non-monetary factors are those aspects of construction and system operation which cannot readily be assigned a monetary value. These factors include: traffic impacts; construction noise; removal of trees and shrubs; impacts to businesses; impacts to neighborhoods; loss of services; etc.

5.4.1 Traffic Impacts

Most of the proposed improvements are in rural areas of the County. Alternatives 2, 6, 7, and 8 are examples. The roads where the Alternatives will be installed are sparsely traveled and have a relatively small number of homes and businesses. Work will be contained within utility easements. Where existing water mains are upsized, the work will be conducted within existing easements. A travel lane will be maintained during construction. Because there is very little traffic, no rigorous form of traffic control is anticipated, and vehicles will be addressed as needed.

Alternatives 3 and 7 include water main piping to be installed adjacent to the rights of way of State Roads 68 and 64, respectively. SR 68 and 64, in the project areas, are two lane paved roads. A travel lane will be maintained during construction and INDOT approved traffic control measures will be utilized as needed.

Except during construction, traffic will not be significantly increased. Construction traffic will include: material delivery; worker's cars and trucks; equipment; and spoil removal. Material delivery will be spread over the project and not significantly increase traffic. Equipment will be

delivered to the site and stay until the work is complete. Traffic impacts due to the proposed projects are not expected to be significant.

5.4.2 Construction Noise

As noted in paragraph 5.4.1, Alternatives 2, 6, 7 and 8 are in remote areas with few houses or businesses. Therefore, in these areas, construction noise will not pose a significant problem.

Alternative 3 is in more a developed area; however, structures are still widely spaced. Noise impacts will be minimized by the distance to residences. The proposed pipes are small diameter; therefore, only smaller equipment will be used. This will help minimize construction noise.

Impacts from construction noise are expected to be minimal and construction activities will be limited to normal daytime working hours.

5.4.3 Removal of Trees and Shrubs

To the greatest extent possible, all pipe installation will be performed within private utility easements. Most of the areas consist of farmland and the loss of trees is expected to be minimal. The installation of isolation valves and flushing hydrants will be minimally invasive, making use of field lines, fence lines, and field access drives. Farming of the land above the water mains should not be adversely affected. During design, significant trees will be identified and appropriate measures included in the design to preserve the trees. Disturbed ground will be restored to preconstruction grades using like materials.

Only Alternative 3 has significant vegetation along the roads. The removal of trees and shrubs is not expected to be a concern during construction.

5.4.4 Impacts to Businesses

Again, most Alternatives are located in remote areas of the County. No businesses are present in the project areas. While along a paved road, the project sites for Alternatives 3 and 7 also do not have any businesses other than rural farming operations.

In addition to residences, there are several businesses within the SR 64 project area. Steps will be taken during construction to maintain access to parking lots and entrances. At the end of each day's work, trenches around businesses will be filled or covered with plates to provide access. Construction impacts to businesses for the proposed projects are expected to be minimal or non-existent.

5.4.5 Service Interruptions

Except for Alternative 3 and a portion of Alternative 6, all proposed pipes will be installed in areas without service. Connections to existing pipes will be by "wet taps" to active pipes. Therefore, there will be no loss of service.

Alternative 6 entails paralleling some existing small diameter pipe. The existing pipe along CR 350 W serves a small number of customers. The 3-inch main in CR 200 S serves a turkey farm which is a high volume water user. Construction in these areas will be scheduled to avoid taking the existing pipe out of service until the new pipe is installed, tested, disinfected and placed into operation. At this point the existing services will be transferred to the new pipe. A short period of service disruption will be required. The service interruption will be coordinated with the farmer and homeowners. Once the transfer has occurred, the existing pipe will be abandoned.

Alternative 3 replaces existing 4-inch pipe with a new 8-inch water main. The new main will be installed, tested, disinfected and placed into service before services are transferred to the new pipe. A short loss of service will be required during the transfer. All loss of services will be coordinated with the property owners.

Loss of water service during construction is expected to be minimal.

5.4.6 Community Impacts

As noted, Alternatives 2, 6, 7 and 8 are located in remote areas of the County. Therefore, in these locations there are no densely populated areas to disrupt.

The project area for Alternative 3 has widely spaced residences. The proposed projects consist of pipe installation and are therefore linear in nature. Disruptions in any given area will be short lived.

The greatest disruption will be created by trench excavation and material stockpiling. Pipe will be stored along the alignment for quick access. Additionally, stockpiles of granular backfill material will be stored along the alignment. All materials will be temporarily stored within easement or public R/W unless previous arrangements have been made with the property owner. Stockpiles will be depleted quickly as installation progresses. Disturbed areas will be restored immediately following testing. All community disruptions will be temporary.

Booster pump replacement, VFD and check valve replacement, and SCADA system improvements will be performed in a manner which allows at least one of the Utility's high capacity pumps to remain in service at all times during the course of construction. No loss of service is anticipated.

CHAPTER 6 – PROPOSED PROJECT

6.1 PROJECT DESIGN

The proposed project consists of six (6) elements:

i. Alternative 2 - County Road 225 W Water Main Extension;
ii. Alternative 3 - State Route 68 Water Main Extension;
iii. Alternative 6 - County Roads 350 W and 200 S Water Mains;
iv. Alternative 7 - State Road 64 Water Main Extension;
v. Alternative 8 - Parallel Booster Station Transmission Main plus Booster Pump Replacements.

Restrained joint pipe will be used at all fittings and valves. Pipe will be bedded per manufacturer recommendations, generally in granular material up to 1 foot above the pipe crown. Within traffic areas, the trench will be backfilled to grade with granular material per INDOT requirements.

In addition, Alternative 8 will include a second Master Meter with an 8-inch diameter compound meter. Alternative 8 also includes a bored and jacked crossing of I-64. The crossing will consist of a 16" D.I. carrier pipe installed within a 24" diameter welded steel casing pipe.

Figure 10 (Appendix A) presents the location of the proposed projects within the service area.

6.1.1 Alternative 2 – County Road 225 W Water Main Extension

Alternative 2 includes the installation of a new 8-inch water main on County Road (CR) 225 W from CR 950 to State Route (SR) 168. The new water line will connect an existing 8-inch pipe on CR 905 with a 6-inch pipe at the intersection of CR 225 W and SR 168. The Alternative 2 approximate total pipe length is 16,175 feet. The location and alignment of Alternative 2 is shown on **Figure 4 (Appendix A)**.

6.1.2 Alternative 3 – State Road 68 Water Main

Alternative 3 replaces an existing 4-inch pipe on SR 68 with a new 8-inch water line. The new water main connects an existing 8-inch pipe at the intersection of SR 68 and CR 350 E with an existing 3-inch pipe at the intersection of SR 68 and CR 450 E. The approximate total pipe length of Alternative 3 is 5,272 feet. The location and alignment of Alternative 3 is shown on **Figure 5 (Appendix A)**.

6.1.3 Alternative 6 - County Roads 350 W and 200 S Water Mains

Alternative 6 provides for the installation of a new 8-inch main on CR 350 W, a new 6-inch main on CR 200 S and replaces the existing dead-end 3-inch mains on both of those roads. Total pipe length for Alternative 6 is approximately 16,310 feet. Approximately 4,450 feet of existing 3-inch

pipe would be replaced. The location and alignment of Alternative 6 is shown on **Figure 7 (Appendix A)**.

6.1.4 Alternative 7 – State Road 64 Water Main Extension

Alternative 7 includes the construction of a new 6-inch water main on SR 64 to connect the existing 8-inch pipe on SR 65 with an existing 3-inch dead end water main on SR 64. The approximate total pipe length of Alternative 7 is 2,397 feet. The location and alignment of Alternative 8 is shown on **Figure 8 (Appendix A)**.

6.1.5 Alternative 8 – Parallel Booster Station Transmission Main plus Booster Pump Replacement

Alternative 8 provides for the construction of a parallel 16-inch transmission main from the Evansville Master Meter to the Gibson Water High Service Booster Station. In addition, a new 8-inch master meter with vault will be installed near the location of the existing master meter. The transmission main should also be extended northward along County Road 50E from the Booster Station to County Road 1200S. This will provide needed redundancy and improve pump performance and efficiency during normal operating conditions. The approximate length of new 16-inch pipe is 7,000 ft. The alignment requires a 300 foot bored and jacked crossing of I-64. Additionally, new easement may be required for the alignment. The location and alignment of Alternative 8 are shown on **Figure 9 (Appendix A)**.

Alternative 8 also includes the replacement of all three high service pumps at the existing booster station. The new pumps will be provided with variable frequency drives to maximize efficiency and ramp the pumps up and down slowly to prevent pipeline surges. Existing problematic pump control valves will be removed and replaced with conventional swing type check valves.

6.2 PROJECT SCHEDULE

Table 14 presents a preliminary timeline and estimated milestone dates for the recommended project.

Table 14
Project Schedule and Milestone Dates

Task Description	Est. Completion Date
PER review and approval by Gibson Water	September, 2017
Authorize Engineer to prepare USDA-RD Application	September, 2017
Umbaugh prepares rate and financing report using PER	October, 2017
Umbaugh presents rate report to Board	November, 2017
USDA-RD Approves PER and Environmental Report	December, 2017
Petition and Case-in-Chief Evidence filed with IURC - Begins 10 month period for the IURC to issue and order - Test year not more than 4 months old	December, 2017
USDA-RD Issues a "Letter of Conditions"	January, 2018
Authorize Engineer to proceed with project design	February, 2018
Submit Plans and PWS Construction Permit Application to IDEM	June, 2018
Easement Acquisition	July, 2018
IDEM Issues Construction Permit	August, 2018
Advertise for Bids	September, 2018
Receive Bids	October, 2018
Order received from the IURC	November, 2018
USDA-RD Loan Closing	November, 2018
Award Construction Contracts and Notice to Proceed	November, 2018
New rates first billed	December, 2018
Substantial Completion of Construction	August, 2019
Final Inspection	September, 2019

Substantial Completion and Final Inspection dates are based on the inclusion of all recommended system improvements. MEI expects individual water main projects to be completed sequentially, although a large contractor employing multiple crews may work on separate water main extensions simultaneously. Therefore, multiple Substantial Completion and Final Inspections may be performed during the construction. As individual projects are completed the mains will be tested and placed into service. Project documents will leave the order of construction of the projects to the discretion of the Contractor.

6.3 PERMIT REQUIREMENTS

A PWS (Public Water Supply) Construction Permit application will be required by the Indiana Department of Environmental Management (IDEM) for the construction of the major project

components. MEI anticipates a single construction permit will be issued rather than individual permits for each portion of the project.

No major stream crossings are required by any of the pipelines. The minor crossings will be accomplished by trenchless methods with the existing roadway R/W. Therefore, no Indiana Department of Natural Resources (DNR) or IDEM Section 401 Water Quality Certification are required.

Alternatives 3, 7 and 8 may at points encroach upon or cross the R/W of state roads. INDOT Right of Way Permits may therefore be required for these alternatives. Alternatives 2, 6 and 8 may utilize County Road right-of-way at some locations. Plans and specifications will be submitted to the Gibson County Highway Dept. for review and comment and construction permits will be obtained from the agency where necessary.

Alternative 8 requires a crossing of Interstate-64. A separate INDOT construction permit will be obtained for the jacked and bored crossing

6.4 SUSTAINABILITY CONSIDERATIONS

Alternatives 2, 6, and 7 include the installation of pipe in areas without existing water service. This provides Gibson Water with potential new customers. Gibson Water, Inc. will be responsible for asset management and making sure that its water distribution system remains in good working order. The Utility has practiced excellent infrastructure management through the years, providing proactive operation and regular maintenance of its storage facilities, distribution system and pumping facilities.

6.4.1 Water and Energy Efficiency

Alternatives 2, 6, and 7 provide looping of the distribution system and eliminate dead ends. Dead ends combined with periodic low flow conditions in the area result in poor water quality. To relieve the problem the pipes are flushed regularly and water wasted. The completed loops will mitigate problems associated with poor water quality, reducing the flushing requirement and saving water.

Alternative 8 installs a parallel 16-inch diameter supply transmission main to the Booster Pump Station. Modeling shows the parallel transmission main reduces head loss to the station. In the model, this helps to support increased pumping capacity due to the higher suction side pressure. In actual operation, the increased suction head will allow Gibson Water to reduce pump speed using the variable speed drives. The reduced operating speed will lower energy consumption. The existing pump control valves waste energy and will be unnecessary once the new pumps and variable frequency drives are installed. The energy inefficient valves will be eliminated.

6.4.2 Green Infrastructure

Existing grades will be restored following pipe installation. Restorative ground covers will match or improve on existing conditions. Therefore, the projects will not increase runoff volume or change drainage patterns. Properly designed and maintained erosion control measures will be installed to stop runoff and sediment from leaving the project site. As the water projects are linear in nature, erosion control measures will be moved with construction. Measures will not be removed before suitable ground cover restoration is established.

6.4.3 Other

Alternative 8 provides Gibson Water with a second source supply transmission main to the Booster Pump Station. Gibson Water currently has only one supply line. If the main breaks or if other repairs are needed, Gibson Water is effectively without a supply source. The elevated tanks, when full, provide only 1.5 days of storage at average demand, assuming no fire flow usage.

6.5 TOTAL PROJECT COST ESTIMATE

Table 15 provides an itemized estimate of project costs based upon a 12-month construction period. This preliminary estimate includes costs for construction, a 10% construction contingency, and estimated non-construction costs associated with engineering fees administrative expenses. All construction costs are based on estimated 2017 dollars and reflect current market conditions within the public water supply construction industry.

Table 15
Engineer's Opinion of Probable Project Cost

Item Description	Cost	Total Cost
Probable Construction Costs:		
1. Alternative 2 – County Road 225W Water Main Extension	$521,800	
2. Alternative 3 – State Route 68 Water Main Extension	$268,500	
3. Alternative 6 – County Roads 350W and 200S Water Mains	$562,000	
4. Alternative 7 – State Road 64 Water Line	$158,900	
5. Alternative 8 – Parallel Booster Station Transmission Main, Additional Master Meter & Vault, Booster Pump and VFD Replacement	$998,400	
Subtotal, Probable Construction Cost:		**$2,509,600**
Probable Non-Construction Costs:		
10% Construction Contingency:		$250,960
Engineering:		
Preliminary Engineering Report	$25,000	
Environmental Assessment	$15,000	
Design, Construction Engineering Services (8.3%)	$208,300	
Construction Inspection (9 months)	$144,000	
Total Engineering:		$392,000
Land Acquisition, Utility Easements		
Alternative 2 - CR 225W Water Main Extension	$32,400	
Alternative 3 - SR 68 Water Main Extension	$10,400	
Alternative 6 - CR 350W & 200S Water Main Extension	$24,000	
Alternative 7 – SR 64 Water Main Extension	$8,600	
Alternative 8 – Parallel Booster Station Transmission Mains	$13,200	
Total Land Acquisition, Easement Costs:		$88,600
Easement Document Preparation		$7,500
Easement Negotiation, Procurement		$30,000
Legal and Financial Assistance (ncluding IURC Filing)		$265,000
Archaeological Reconnaissance		$15,000
Crop Damage		$21,000
Subtotal, Probable Non-Construction Costs:		**$1,070,400**
Total Probable Project Cost:		**$3,580,000**

Subtotals are rounded to the nearest hundred.

Note: Projects funded through the USDA Rural Utility Service or the State Revolving Fund program will be subject to American Iron and Steel requirements. The term iron and steel products means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

Revised 10/20/17
Revised 1/10/18

6.6 ANNUAL OPERATING BUDGET

As presented in Chapter 2, **Table 7**, the Utility's annual income is derived almost entirely from local metered water sales. In addition to repaying the principal and interest associated with funding the recommended water system improvements, a budget must be prepared to account for annual operating expenses, replacement of short lived assets, and retirement of existing debt. **Appendix I** contains the latest Gibson Water financial data.

6.6.1 Income

Table 16 presents Gibson Water's projected annual operating receipts based upon the 2015 operating budget and 2016 Billing Report.

Table 16
Annual Operating Receipts

Revenue Source	Annual Receipts
Water Sales	$ 1,541,500
Miscellaneous	$ 29,300
Other	$ 7,600
Total Annual Revenue:	**$ 1,578,400**

6.6.2 Annual Operating Budget

The recommended water works improvements will have minimal effect on annual utility operation and maintenance expenses. The proposed improvements increase the amount of pipe in the system by 56,150 feet, a 5.8% increase. Therefore, the insurance cost was increased proportionally. The greatest impact on annual Utility operating expense will be seen in the cost for purchased water, due to updated rate tariffs recently adapted by the Evansville Water Utility. **Table 17** presents estimated annual operating and maintenance expenses for year 2018.

Revised 1/10/18

Table 17

Projected Annual Operation and Maintenance Expenses

Item	Cost
Salaries and Wages	$ 337,318
Employee Benefits - PERF	$ 138,619
Purchased Power	
Pumping	$ 33,000
Other Power Requirements	$ 7,876
Insurance	$ 25,928
Contractual Services	$ 43,470
Materials and Supplies	$ 29,564
Transportation	$ 12,066
Tank Maintenance and Short Lived Asset Reserve	$ 154,341
Bad Debt Expense	$ 795
Cost of Water	$ 1,063,315
Miscellaneous	$ 27,109
TOTAL:	**$ 1,873,401**

6.7 DEBT REPAYMENTS

Based on Gibson Water's Financial Statements for 2014 and 2015, long term debt will be retired in 2017.

Table 18 on the next page provides an amortization schedule showing the net monthly payments required to fund the recommended water works improvements project and assumes all prior outstanding debt has been retired. This analysis assumes USDA-Rural Development funding through issuance of a 40-year loan with an annual interest rate of 3.75% (Anticipated USDA-Rural Development Market Rate for Water and Environmental Programs at the time of loan committment).

The loan amortization and preliminary rate derivation assumes an across-the-board rate increase for all customer classes, including residential, industrial and resale users. Gibson Water utilizes a declining block rate schedule. Industrial and resale customers receive a favorable rate because of the significantly greater volume of water purchased by those wholesale customers.

Revised 1/10/18

Industrial and Resale customer monthly rate adjustments were calculated per 1,000 Gal. This was done because Gibson Water's existing rate schedule (See **Appendix J**) is based on a charge per 1,000 Gallons. The Pro Forma financial figures are based upon unaudited financial information for the twelve months ended August 31, 2017, as provided in the January 2018 Rate Study.

Table 18

Preliminary Amortization Table and Rate Derivation

	Item	Pro Forma
a	Total Cost of Capital Improvements:	$3,580,000
b	Loan Term (Years)	40
c	Interest Rate	3.75%
d	Interest During Construction	$40,000
e	Total Bond Issue: (a + d)	$3,620,000
f	Gross Monthly Payment:	$14,570
g	Annual Debt Service: (f x 12)	$174,847
h	Debt Service Reserve:	$17,485
i	Long Term Asset Replacement Reserve	$126,143
j	Annual O&M (Incl. Short-Lived Asset Reserve):	$1,873,401
k	Total Annual Revenue Requirement (g + h + i + j)	$2,191,876
l	Less Interest Income	($229)
m	Less Miscellaneous Income	($7,995)
n	Net Annual Revenue Requirements:	$2,183,652
Pro Forma Water Revenues:		
o	Water Sales	$1,830,927
p	Fire Protection	$22,680
q	Total Annual Revenues:	$1,853,607
r	Additional Revenues Required (n - q)	$330,045
s	Approximate Across-the-Board Increase in Present Rates and Charges (r ÷ q):	17.80%
t	Current Residential Rate for 4,000 Gallons:	$31.30
u	Approx. Increase in Monthly Residential Water Bill:	$5.58
v	Projected Residential Rate for 4,000 Gallons:	$36.88
w	Current Rate per 1,000 Gallons, Industrial and Resale Users	$2.66
x	Projected Rate per 1,000 Gallons, Industrial and Resale Users	$3.13

Revised 1/10/18

6.7.1 Reserves

Gibson Water's revenue primarily comes from monthly rates and is used to fund staffing and administrative expenses, capital projects, and the depreciation of capital assets. Existing ratepayers and the resale of water through the Haubstadt agreement must support the full cost of providing service. Those costs must include an allowance for annual depreciation of assets. Though depreciation is not a direct cash expense, Gibson Water should use an allowance for depreciation as a resource for partially funding capital re-investment in the system. This is a common way to equitably charge current customers for use and decline of the system. It provides a major source of capital re-investment, which can be augmented with use of debt financing.

6.7.1.1 Short-Lived Asset Reserve

The majority of Gibson Water's assets are long term such as water mains, storage tanks and customer meters. The only short term assets are in the Booster Station and consist of: the high service pumps and motors; the pump controls; the system telemetry, master meters and vehicles. **Table 19** presents a listing of Short-Lived Utility Assets, including the estimated replacement period and the annual reserve required to fund replacement of each item.

6.7.1.2 Long Term Replacements and Improvements Reserve

An annual depreciation reserve in the amount of roughly 1.0% of total assets is recommended to provide for improvements or replacement of long term assets.

The 2015 Financial Report reported the Gibson Water total assets were $12,839,500 on December 31, 2015. This figure will be used as the basis for depreciation to allow for replacement of aging major equipment and other utility assets over time. The recommended minimum annual allowance for replacement and improvements to long term capital assets is $126,143 as presented in the Pro Forma Annual Revenue Requirements included in the 2018 Rate Study.

Revised 10/20/17

Revised 1/10/18

Table 19

Short-Lived Utility Assets Reserve Schedule

	Asset Description	Replacement Period in Years	Total Estimated Cost	Number of Assets	Annualized Replacement Cost
Existing System	1,500 GPM High Service Pump Motor	15	$ 10,350	2	$ 1,380
	800 GPM High Service Pump Motors	15	$ 7,000	1	$ 470
	Turbine Type Flow Meters	15	$ 11,000	1	$ 730
	6" Compound Flow Meter	15	$ 13,000	1	$ 870
	8" Compound Flow Meters	15	$ 20,000	1	$ 1,340
	SCADA, Instrumentation	10	$ 100,000	1	$ 10,000
	Tank Repainting Reserve		$ 138,600		$138,600
	Equivalent Annual Replacement Cost (Present System):				**$153,390**
	Asset Description	**Replacement Period in Years**	**Total Estimated Cost**	**Number of Assets**	**Annualized Replacement Cost**
Proposed Project	1,500 GPM High Service Pump Motor	15	$ 10,350	3	$ 2,070
	Turbine Type Flow Meters	15	$ 11,000	2	$ 1,470
	6" Compound Flow Meter	15	$ 13,000	1	$ 870
	8" Compound Flow Meters	15	$ 20,000	1	$ 1,340
	SCADA, Instrumentation	10	$ 100,000	1	$ 10,000
	Tank Repainting Reserve		$ 69,300		$138,600
	Equivalent Annual Replacement Cost (Proposed Project):				**$154,350**

Total annual revenue requirements including the recommended long-term replacement and improvements reserve and short-lived asset reserve are presented in **Table 20**. Short lived assets are included in the annual operating and maintenance costs.

Table 20

Annual Revenue Requirements for Project Funding

Revenue Requirements	Amount
Operation, Maintenance, Salaries (Incl. Short Lived Assets)	$ 1,873,401
Annual Debt Service	$ 174,847
Debt Service Reserve	$ 17,485
Annual Replacement and Improvements Reserve	$ 126,143
Total Annual Revenue Requirement:	**$ 2,191,876**

Revised 10/20/17
Revised 1/10/18

CHAPTER 7 – CONCLUSIONS AND RECOMMENDATIONS

This PER has been prepared to provide a comprehensive evaluation of Gibson Water's public water supply facilities and to present recommendations for system improvements. Water quality and water system reliability are critical factors which help to define the quality of life within a community. All public water utilities must strive to provide a safe, reliable and high quality supply of water that is pleasing and affordable to its customers.

The existing water distribution system is plagued by a number of dead end water mains and the lack of system looping to provide redundant bidirectional feeds to critical areas. Low system operating pressures occur in a number of these areas during peak water demand conditions. Improvement and reinforcement of the system is essential to improve carrying capacity and hydraulic gradients, particularly in high elevation areas. The following alternatives, expressed as water main extensions, are recommended to insure Gibson Water, Inc.'s ability to adequately meet projected maximum daily and peak hourly demand conditions:

7.1 Alternative 2 - County Road 225 W Water Main Extension

Alternative 2 is essential to provide connectivity between the northern and southern sections of the distribution system west of U.S. Highway 41. Four of the low pressure conditions during peak demand lie west of U.S. 41. The County Road 225W water main extension is key to improving carrying capacity in this portion of the system.

7.2 Alternative 3 - State Route 68 Water Main

Alternative 3's purpose is to increase system carrying capacity to area northwest of the I-69/SR 68 interchange. Two locations in this region experience low pressure due to high ground elevation relative to the pressure source. Providing adequate water service to the intersection is hindered at this time due to the bottleneck created by the existing 4" water main which extends to the area along SR 68. We recommend the construction of Alternative 3 as it will greatly improve system carrying capacity and will allow Gibson Water to serve future development in the area.

7.3 Alternative 6 - County Roads 200 S and 350 W Water Mains

Alternative 6 is needed to improve service to a high elevation rural area west of Princeton. This alternative will also replace existing 3-inch diameter dead end water mains pipes CR 200 S and 350 W. The new mains will provide a large diameter loop and bidirectional flow capability to improve operating pressure and water quality in the area. This Alternative is the prudent, cost-effective approach for eliminating existing 3" bottlenecks and improving overall performance in this portion of the distribution system network.

7.4 Alternative 7 – State Road 64 Water Main Extension

Alternative 7 is intended to complete a system loop and eliminate poor water quality in the dead-end water main on SR 64 in the northwest portion of the distribution system. Alternative 7 increases carrying capacity in both the 8-inch water main on SR 65 and the 3 inch main on SR 64. The length of pipe required is relatively small. We recommend Alternative 7 as a cost effective means of improving system performance and eliminating water quality concerns associated with the existing 3-inch unlooped main.

7.5 Alternative 8 – Parallel Booster Station Supply Main plus Booster Pump Replacement

The purpose of Alternative 8 is to provide a redundant transmission main to convey water from the connection point with Evansville to the Gibson Water Booster Station. The Alternative also provides critical redundancy by paralleling the lone transmission main from the Booster Station to the 20" primary feeder which conveys water to the 1.5 million gallon tank east of Toyota Manufacturing. Reliability of the supply source is essential to minimize outages and possible interruptions in water service.

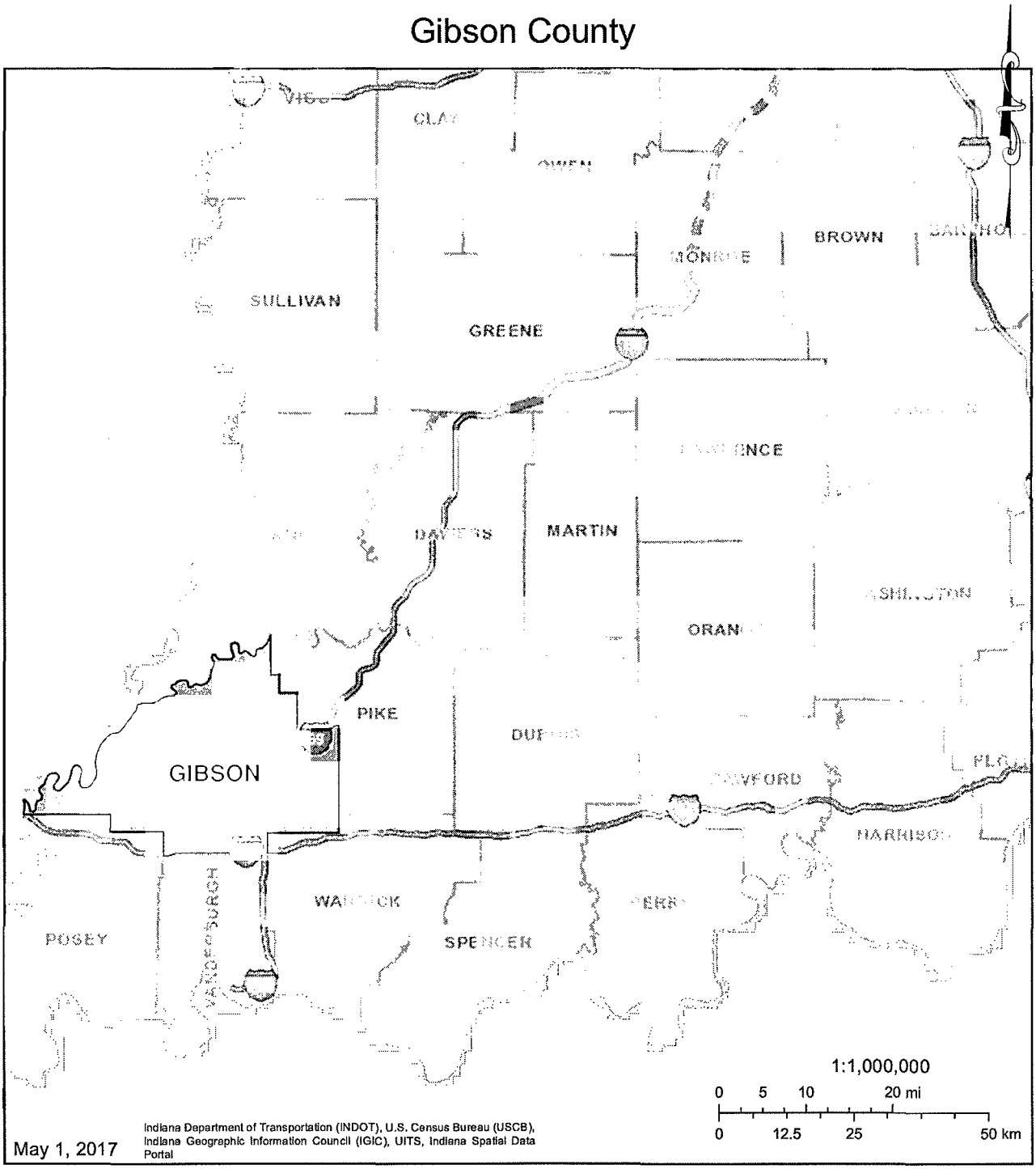
Redundancy is the best means of maintaining normal supply should a breakdown or failure occur in one transmission main. The new supply main should also be provided with a dedicated Master Meter and vault. In normal operation, the second transmission main will help to reduce friction losses in the flow of water to and from the Booster Station. The increased suction pressure will allow Gibson Water to slightly increase pump output and/or reduce pump operating speed, thereby saving energy and reducing pumping costs.

Alternative 8 also includes upgrades to the Utility's high service pumping equipment to insure the ability of the system to meed projected maximum day demand conditions for plan year 2037.

Appendices

Appendix A – Figures

Gibson County



GENERAL LOCATION MAP

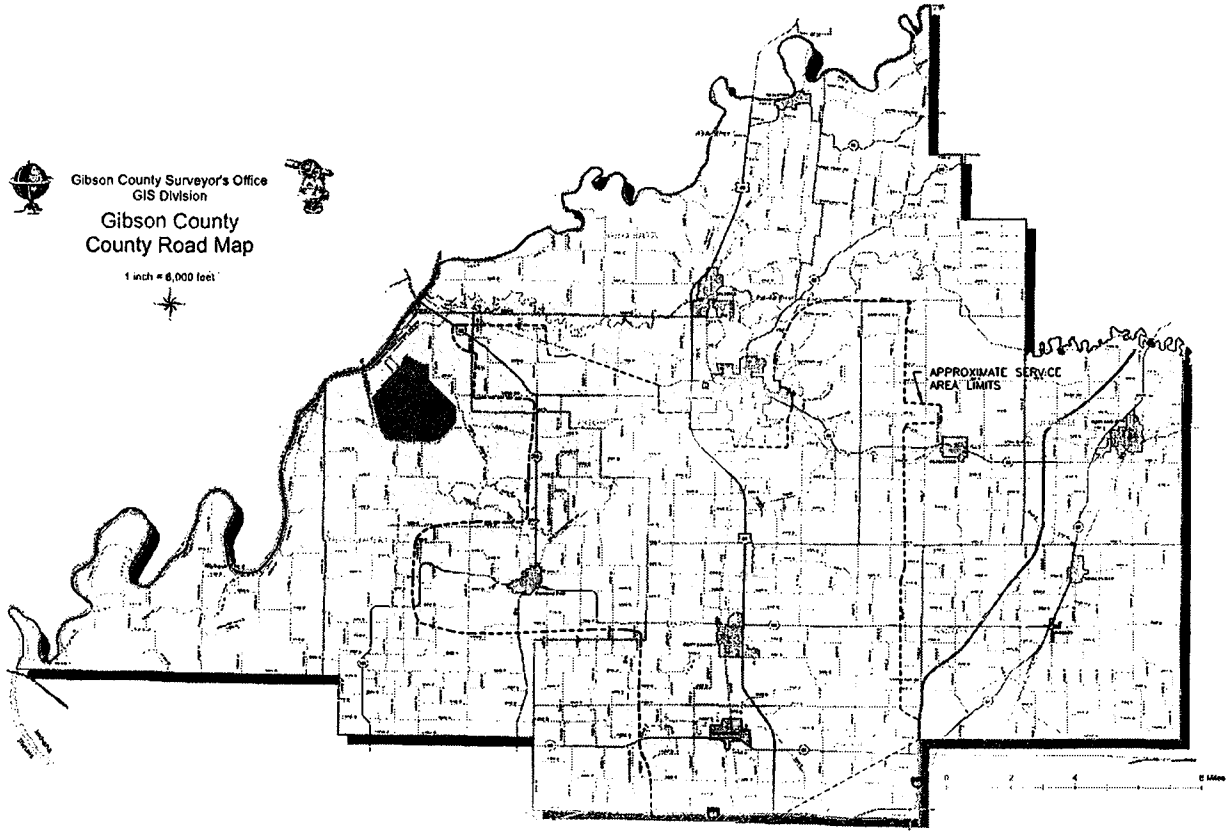
Consultants · Civil · Mechanical · Electrical
802 West Broadway Street · P.O. Box 295 · Logansport, IN. 46947 · P: 574-753-3501
5609 Corporate Drive · Indianapolis, IN. 46278 · P: 317-554-0062

WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS
GENERAL LOCATION MAP
GIBSON WATER INC.
GIBSON COUNTY

DATE	Q.C. CHECK
5-2017	R.D.D.
DESIGN	PROJECT NUM.
M.M.S.	2016115
DRAWN	FILE NUMBER
D.A.P.	*

FIGURE 1

Fig 1 – LocMap.dwg 1



GIBSON WATER INC. SERVICE AREA

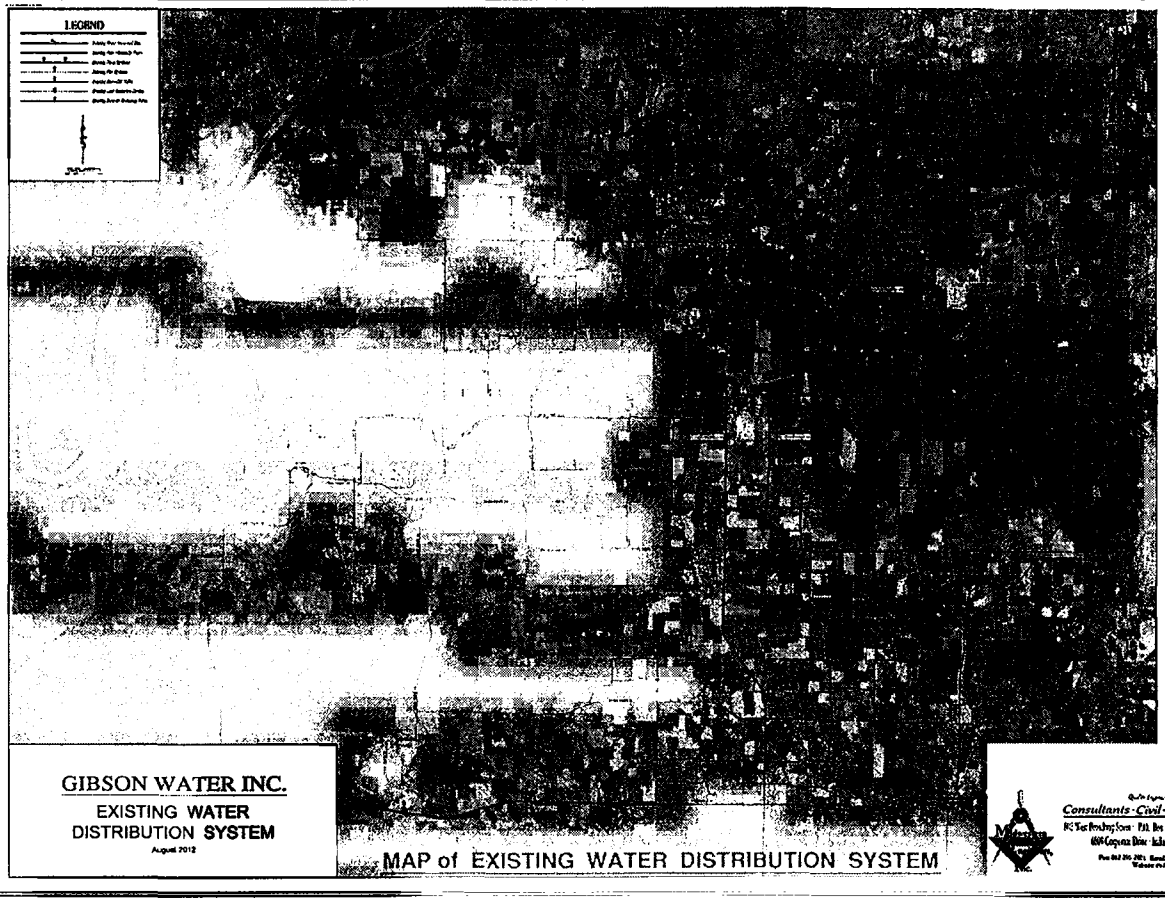
DATE	5-2017	16 JOB NO. 1600
DRAWN BY	M.M.S.	2016115
CHECKED BY	D.A.P.	

WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS
PROPOSED PROJECT LOCATIONS MAP
GIBSON WATER INC.
GIBSON COUNTY

Consultants: Civil-Mechanical-Electrical

FIGURE 2

Fig 2 – PropPrjLoc.dwg 1



GIBSON WATER INC.
EXISTING WATER
DISTRIBUTION SYSTEM
August 2012

MAP of EXISTING WATER DISTRIBUTION SYSTEM

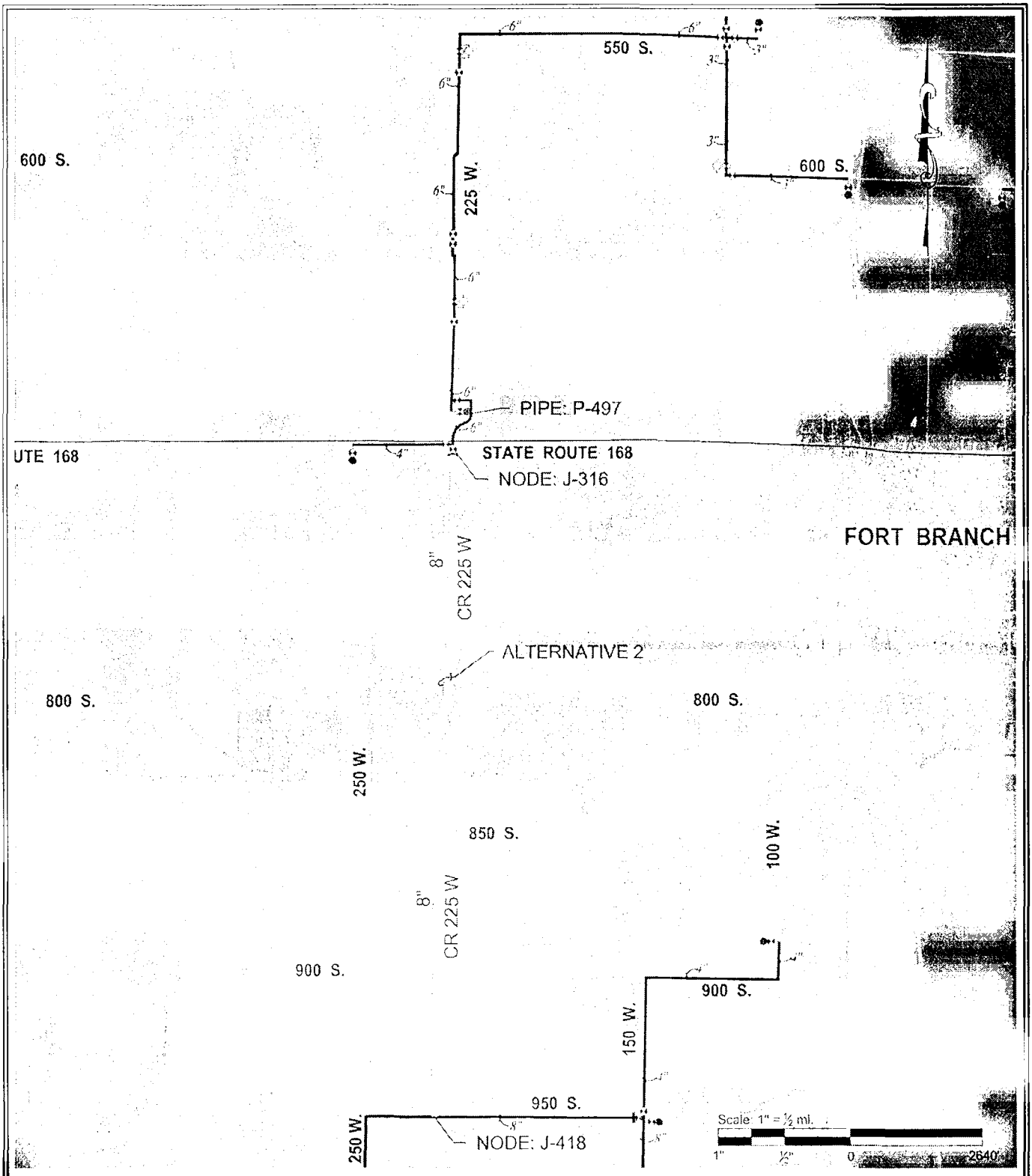
Midwestern Engineers, Inc.
6609 Corporate Drive
Indianapolis, Indiana
46278

DATE 5-2-2017
SCALE 1" = 2,000'
DRAWN BY U.M.S.
CHECKED BY D.S.F.
PROJECT NUMBER 2016115
SHEET NUMBER 1

WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS
EXISTING WATER SYSTEM DISTRIBUTION MAP
GIBSON WATER INC.
GIBSON COUNTY

Consultants · Civil · Mechanical · Electrical

FIGURE
3

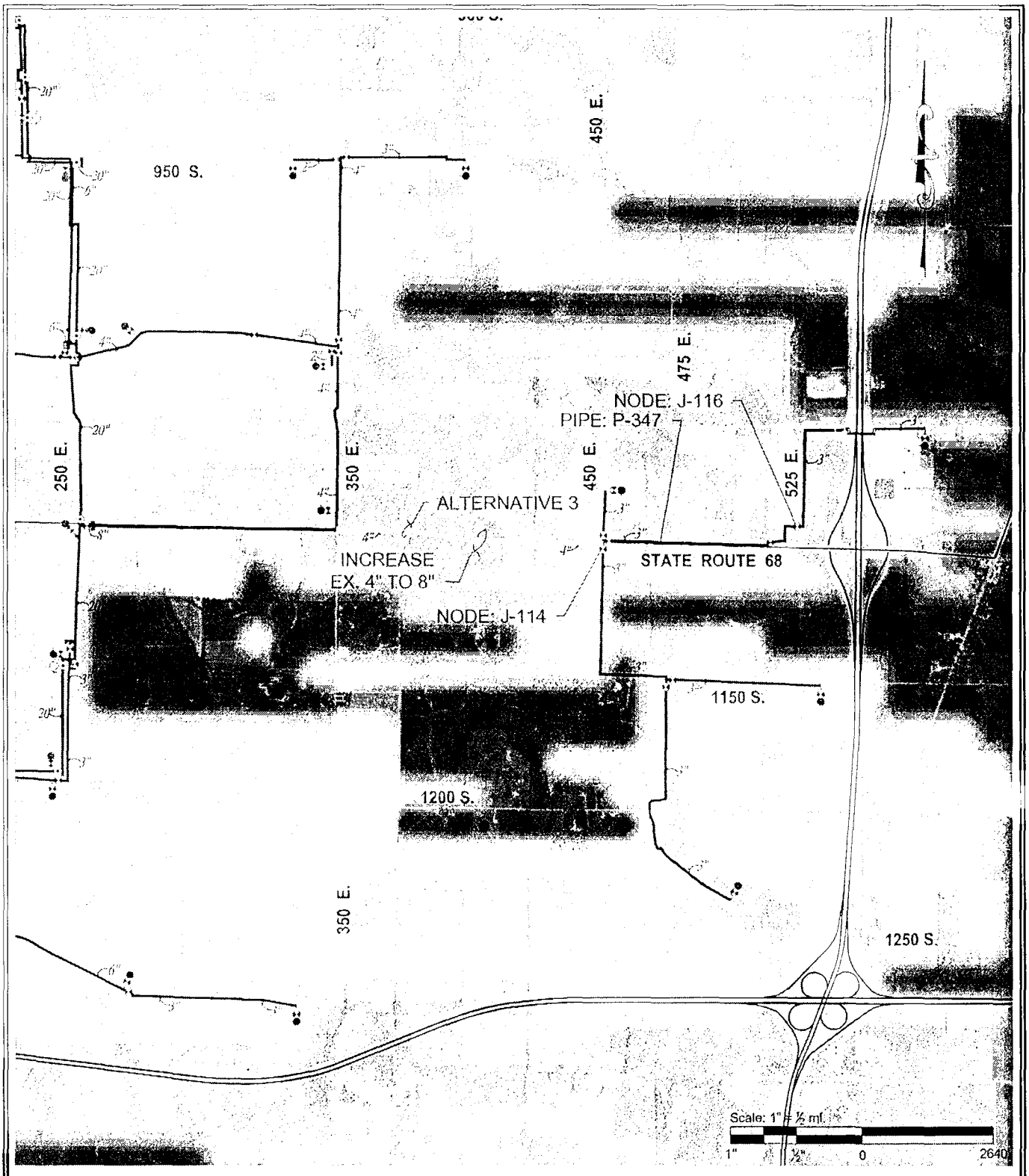


ALTERNATIVE No.2

COUNTY ROAD 225W WATER MAIN EXTENSION

Midwestern Engineers, Inc. Consultants · Civil · Mechanical · Electrical	WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS ALTERNATIVE No.2 GIBSON COUNTY	DATE 5-2017	O.C. CHECK R.D.D.	© 2017 Midwestern Engineers, Inc 8909 Corporate Drive Indianapolis, Indiana 46278	FIGURE 4
		DESIGN M.M.S.	PROJECT NUM. 2016115		
		DRAWN D.A.P.	FILE NUMBER *		

Fig 4 to 9 - VicinMaps.dwg 1



ALTERNATIVE No.3

STATE ROAD 68 WATER MAIN

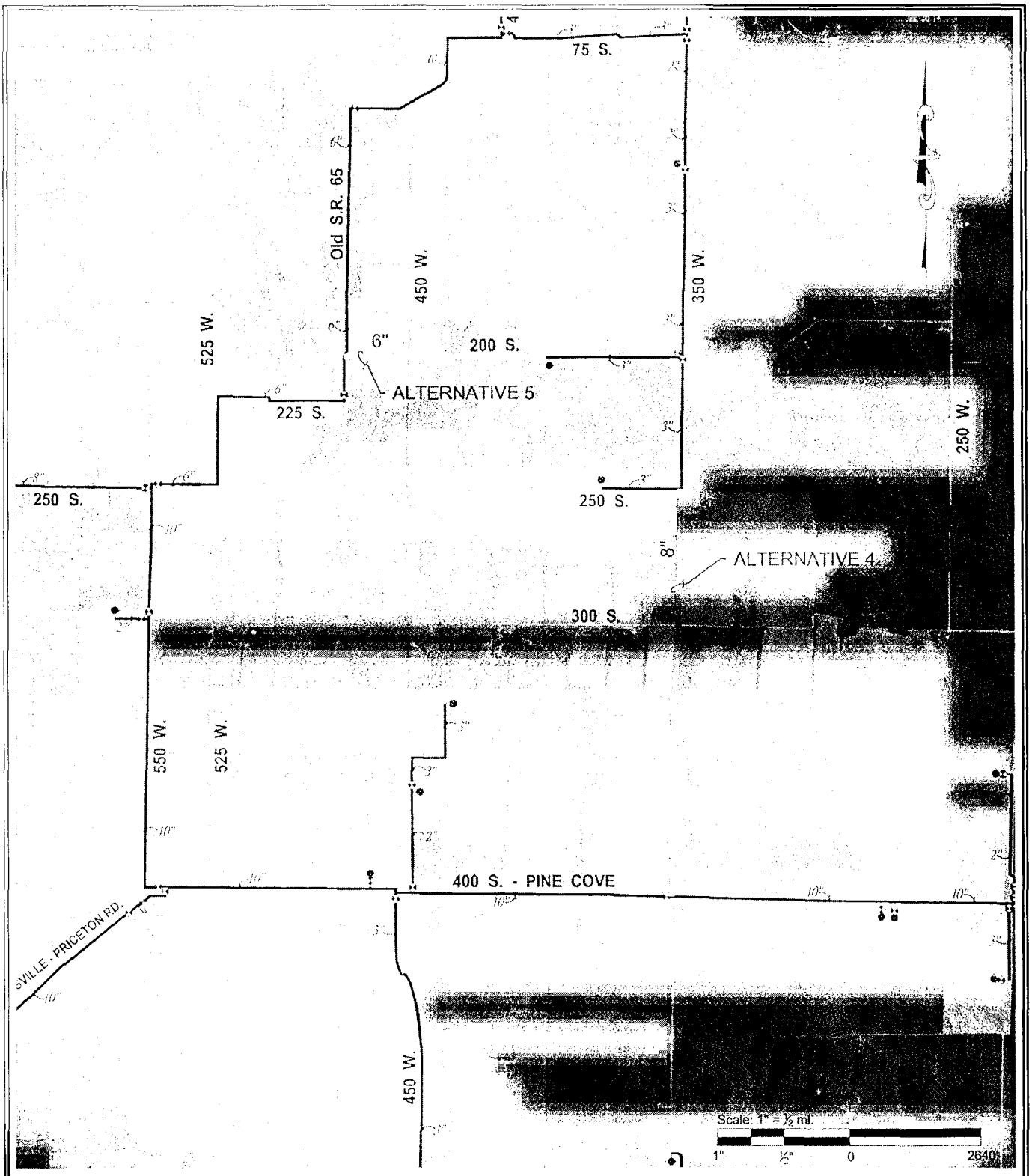
Consultants · Civil · Mechanical · Electrical

WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS
ALTERNATIVE No.3
GIBSON COUNTY

DATE	Q.C. CHECK
5-2017	R.D.D.
DESIGN	PROJECT NUM.
M.M.S.	2016115
DRAWN	FILE NUMBER
D.A.P.	*

FIGURE 5

Fig 4 to 9 - VicinMaps.dwg 1

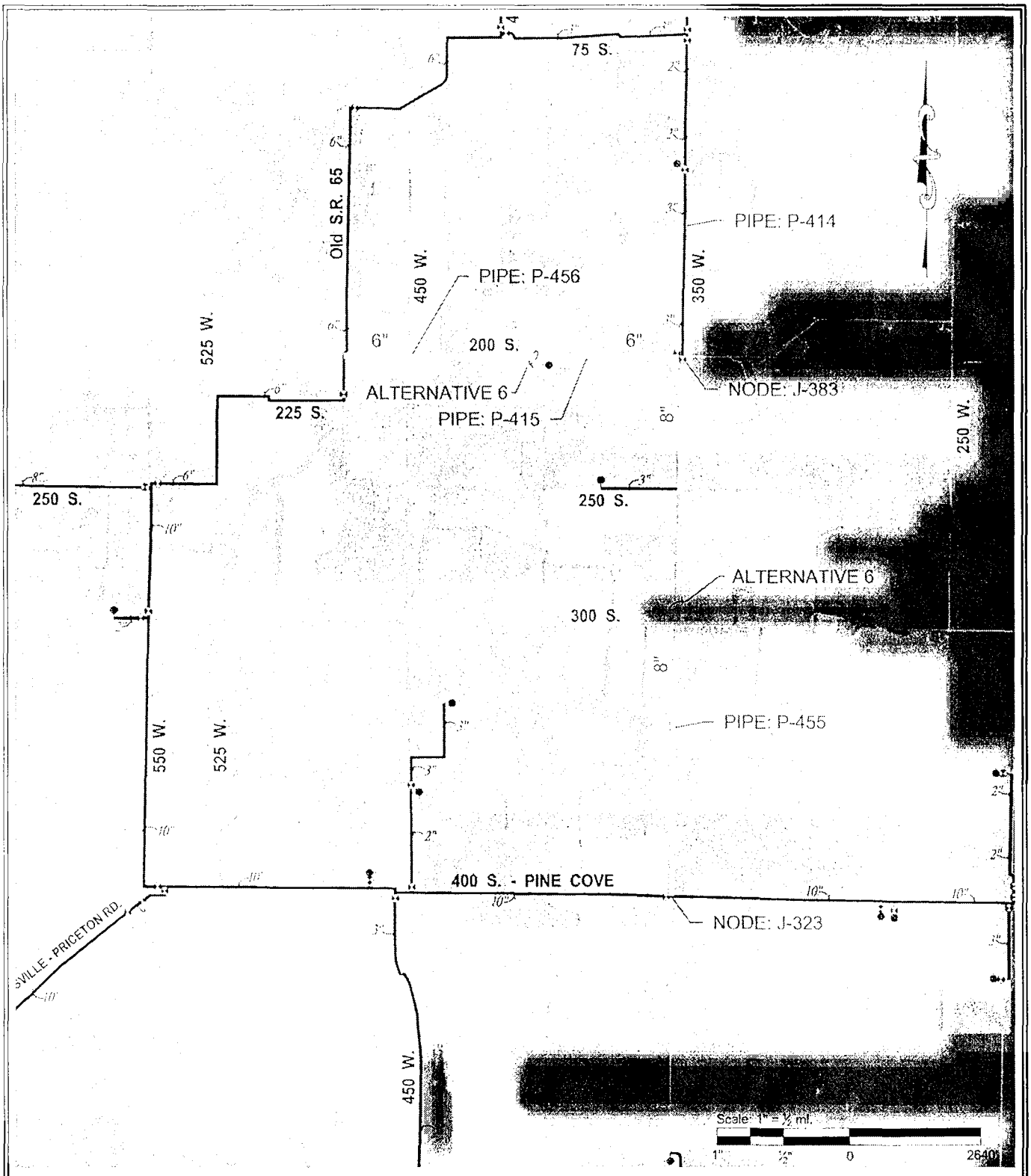


ALTERNATIVE No.4 & 5

COUNTY ROAD 350W & 200S WATER MAIN EXTENSIONS

Consultants · Civil · Mechanical · Electrical	WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS ALTERNATIVES No.4,5 GIBSON COUNTY	DATE 5-2017	Q.C. CHECK R.D.D.	© 2017	FIGURE 6
		DESIGN M.M.S.	PROJECT NUM. 2016115		
		DRAWN D.A.P.	FILE NUMBER		

Fig 4 to 9 - VicinMaps.dwg 1



ALTERNATIVE No.6

COMBINED CR 350 W and CR 200 S WATER MAIN EXTENSIONS

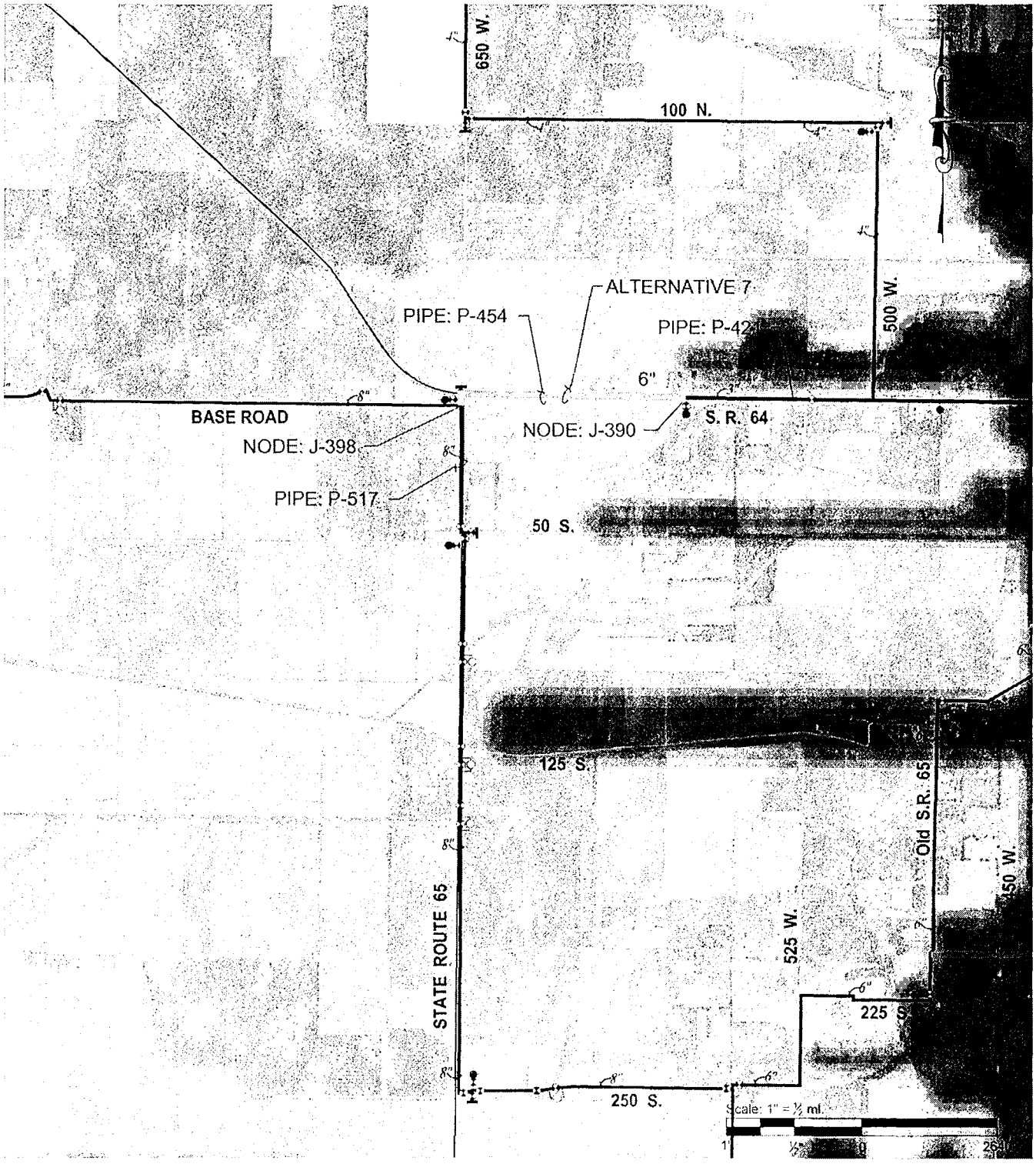
Midwestern Engineers, Inc.
Consultants · Civil · Mechanical · Electrical

WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS
ALTERNATIVE No.6
GIBSON COUNTY

DATE	Q.C. CHECK
5-2017	R.D.D.
DESIGN	PROJECT NUM.
M.M.S.	2016115
DRAWN	FILE NUMBER
D.A.P.	*

FIGURE 7

Fig 4 to 9 - VicinMaps.dwg 1

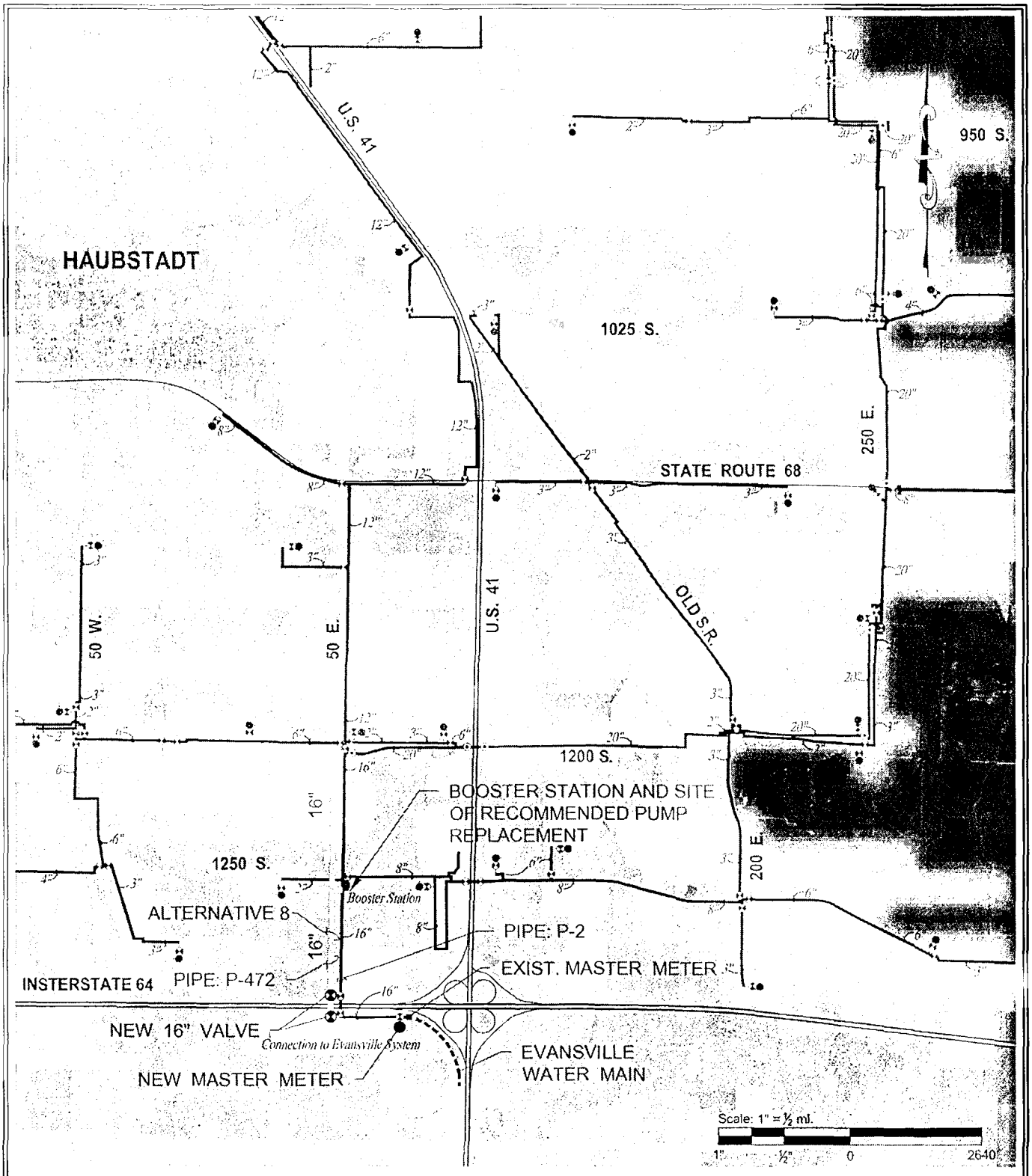


ALTERNATIVE No.7

STATE ROAD 64 WATER MAIN EXTENSION

Consultants · Civil · Mechanical · Electrical	WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS ALTERNATIVE No.7 GIBSON COUNTY	DATE 5-2017	O.C. CHECK R.J.D.	© 2017	FIGURE 8
		DESIGN M.M.S.	PROJECT NUM. 2016115		
		DRAWN D.A.P.	FILE NUMBER		

Fig 4 to 9 - VicinMaps.dwg 1



ALTERNATIVE No.8

PARALLEL BOOSTER STATION TRANSMISSION MAIN & BOOSTER PUMP REPLACEMENT

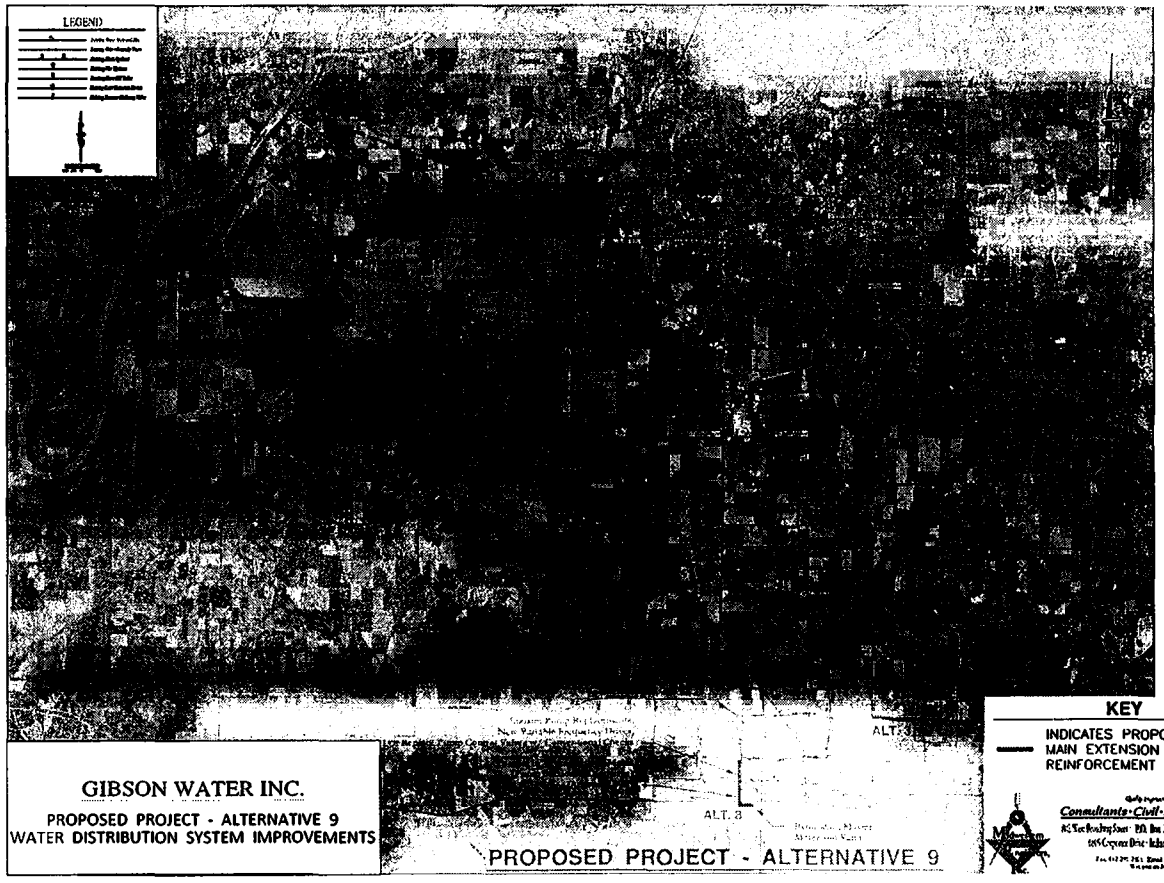
Consultants · Civil · Mechanical · Electrical

WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS
ALTERNATIVE No.8
GIBSON COUNTY

DATE	Q.C. CHECK
5-2017	R.D.D.
DESIGN	PROJECT NUM.
M.M.S.	2016115
DRAWN	FILE NUMBER
D.A.P.	

FIGURE 9

Fig 4 to 9 - VicinMaps.dwg 1



GIBSON WATER INC.

PROPOSED PROJECT - ALTERNATIVE 9
WATER DISTRIBUTION SYSTEM IMPROVEMENTS

KEY

INDICATES PROPOSED WATER MAIN EXTENSION FOR SYSTEM REINFORCEMENT

Consultants · Civil · Mechanical · Electrical

GIBSON WATER INC.
GIBSON COUNTY
PROPOSED PROJECT - ALTERNATIVE 9
WATER DISTRIBUTION SYSTEM IMPROVEMENTS

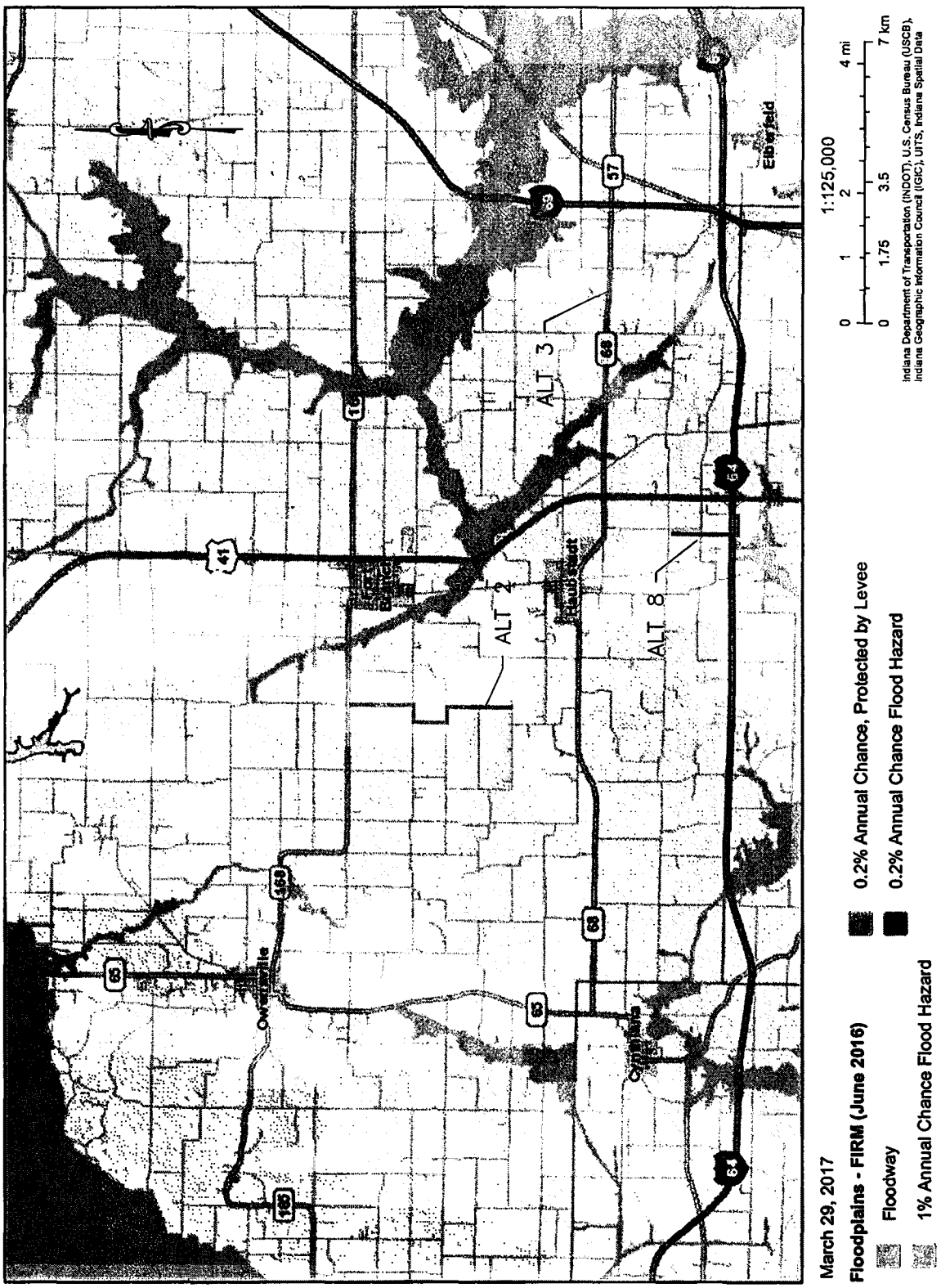
FIGURE
10

Fig 10 - Proposed Project.dwg 1

Appendix B – Environmental

Figures B-1 and B-2	Flood Plain Maps
Figures B-3 and B-4	Wetlands Map

Rare and Endangered Species List for Gibson County



FLOOD PLAINS - SOUTH

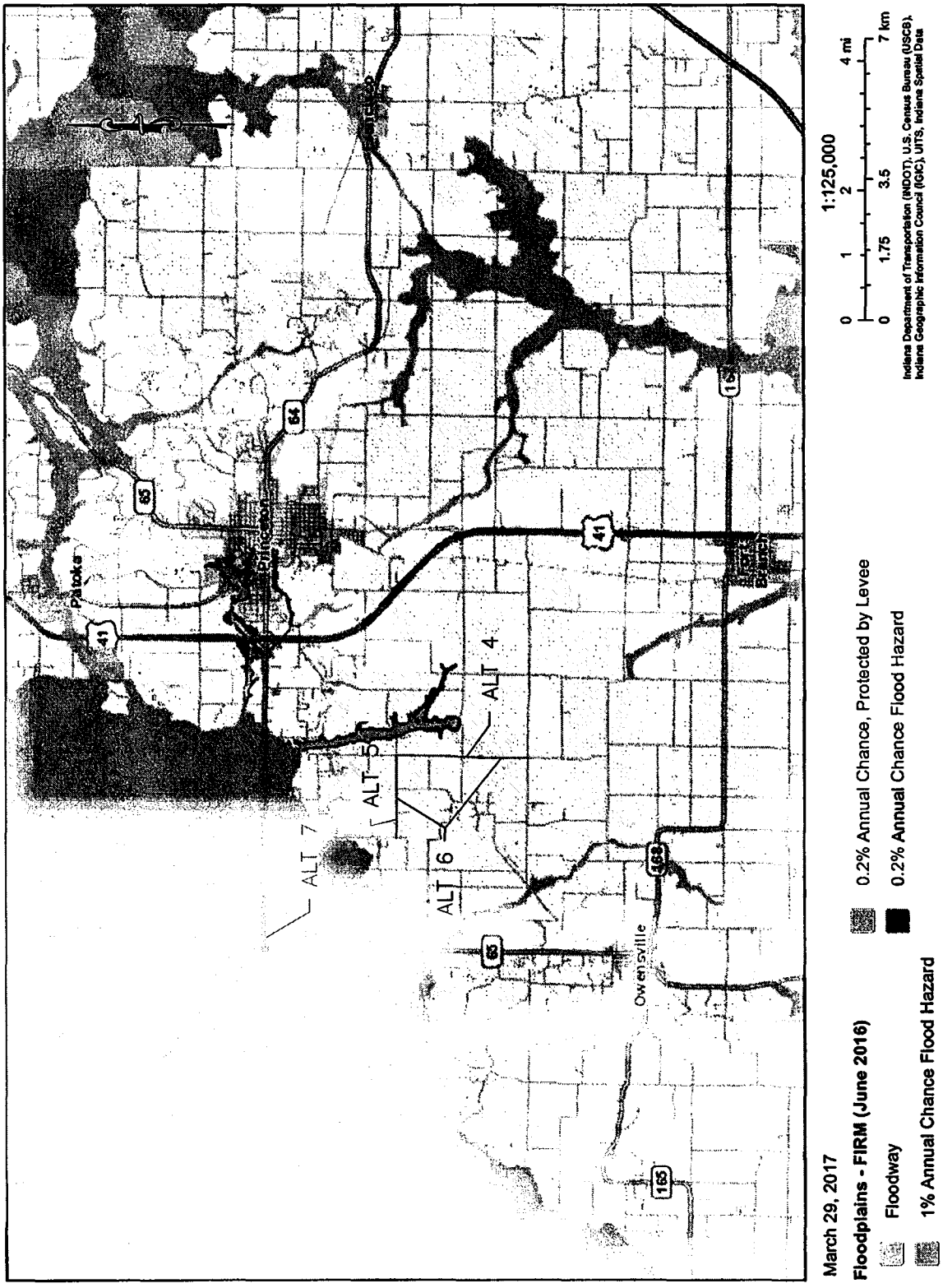
Midwestern Engineers, Inc.
Consultants · Civil · Mechanical · Electrical

WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS
FLOOD PLAINS – SOUTH
GIBSON WATER INC.
GIBSON COUNTY

DATE	Q.C. CHECK
5-2017	R.D.D.
DESIGN	PROJECT NUM.
M.M.S.	2016115
DRAWN	FILE NUMBER
D.A.P.	*

FIGURE B1

Fig B1 – FloodPln N.dwg 1



FLOOD PLAINS - NORTH

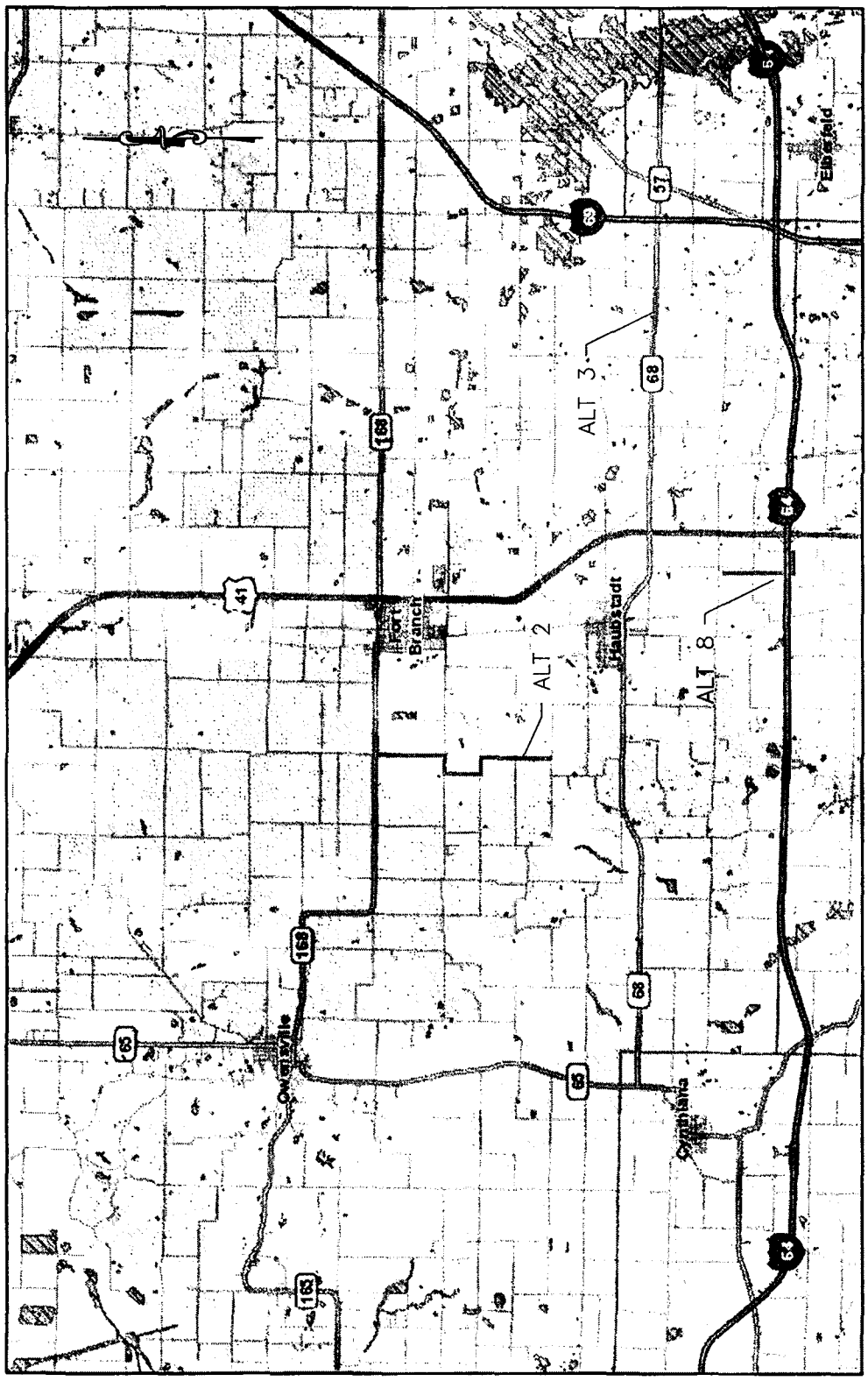
Consultants · Civil · Mechanical · Electrical

WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS
FLOOD PLAINS – NORTH
GIBSON WATER INC.
GIBSON COUNTY

DATE	Q.C. CHECK
5-2017	R.D.D.
DESIGN	PROJECT NUM.
M.M.S.	2016115
DRAWN	FILE NUMBER
D.A.P.	*

FIGURE B2

Fig B1 – FloodPln N.dwg 1



WETLANDS - SOUTH

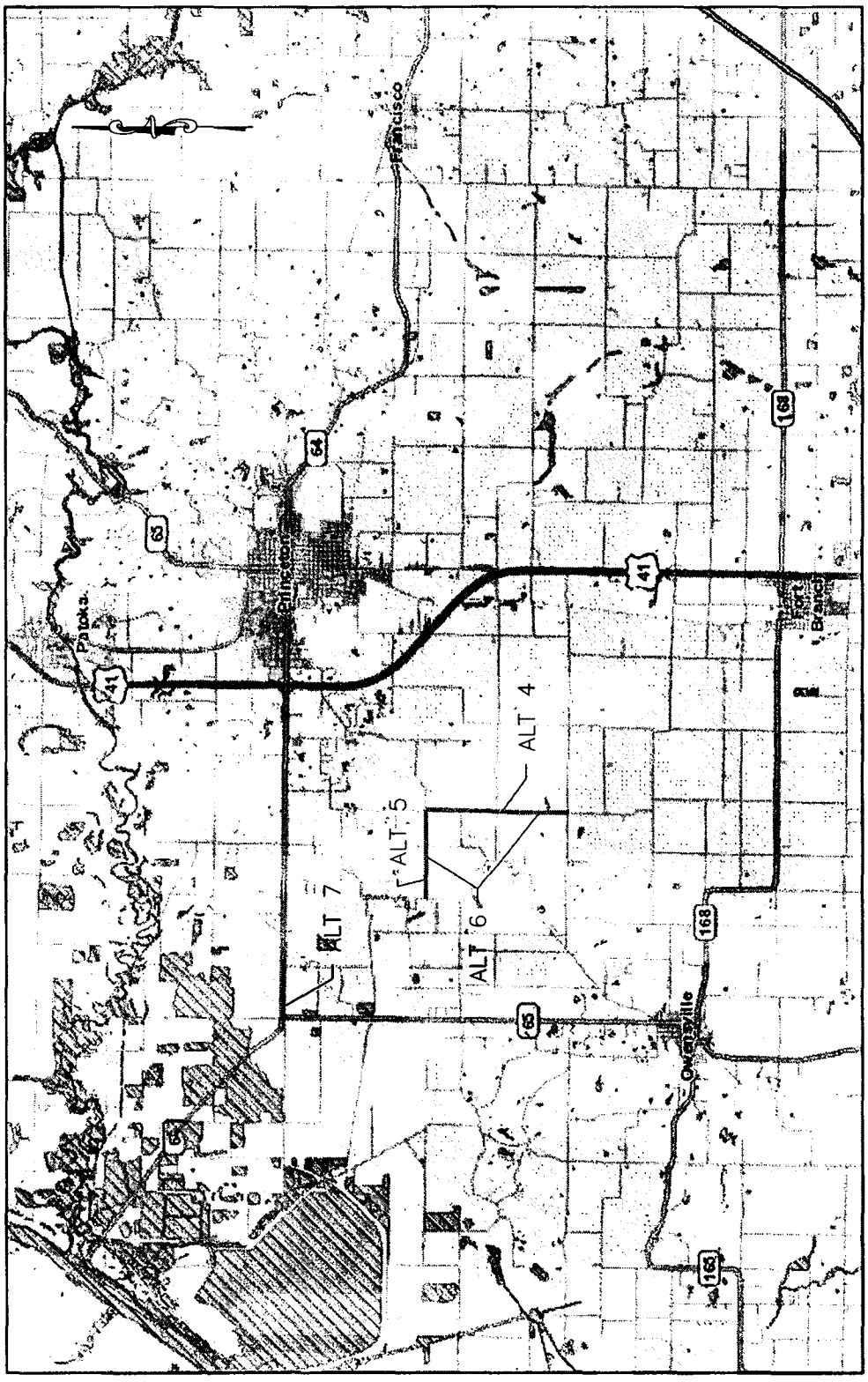
Consultants · Civil · Mechanical · Electrical

WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS
WETLANDS – SOUTH
GIBSON WATER INC.
GIBSON COUNTY

DATE	Q.C. CHECK
5-2017	R.D.D.
DESIGN	PROJECT NUM.
M.M.S.	2016115
DRAWN	FILE NUMBER
D.A.P.	*

FIGURE B3

Fig B3 – Wetlands.dwg 1



WETLANDS - NORTH

Consultants · Civil · Mechanical · Electrical

WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS
WETLANDS – NORTH
GIBSON WATER INC.
GIBSON COUNTY

DATE	O.C. CHECK
5-2017	R.D.D.
DESIGN	PROJECT NUM.
M.M.S.	2016115
DRAWN	FILE NUMBER
D.A.P.	*

FIGURE B4

Fig B3 – Wetlands.dwg 1

Rare and Endangered Species List for Gibson County

Indiana County Endangered, Threatened and Rare Species List

County: Gibson

Species Name	Common Name	FED	STATE	GRANK	SRANK
Crustacean: Malacostraca, Crayfish					
Orconectes indianensis	Indiana Crayfish		SR	G3	S2
Crustacean: Malacostraca, Isopods					
Caecidotea beattyi	An Isopod			G3G4	S1
Mollusk: Bivalvia (Mussels)					
Cumberlandia monodonta	Spectaclecase	C	SX	G3	SX
Cyprogenia stegaria	Eastern Fanshell Pearlymussel	LE	SE	G1Q	S1
Epioblasma flexuosa	Leafshell		SX	GX	SX
Epioblasma propinqua	Tennessee Rifflefshell		SX	GX	SX
Epioblasma torulosa torulosa	Tubercled Blossom	LE	SE	G2TX	SX
Epioblasma triquetra	Snuffbox	LE	SE	G3	S1
Fusconaia subrotunda	Longsolid		SE	G3	SX
Lampsilis abrupta	Pink Mucket	LE	SE	G2	SX
Lampsilis ovata	Pocketbook			G5	S2
Ligumia recta	Black Sandshell			G4G5	S2
Obovaria retusa	Ring Pink	LE	SX	G1	SX
Obovaria subrotunda	Round Hickorynut		SE	G4	S1
Plethobasus cicatricosus	White Wartyback	LE	SE	G1	SX
Plethobasus cooperianus	Orangefoot Pimpleback	LE	SE	G1	SX
Plethobasus cyphyus	Sheepnose	LE	SE	G3	S1
Pleurobema clava	Clubshell	LE	SE	G1G2	S1
Pleurobema cordatum	Ohio Pigtoe		SSC	G4	S2
Pleurobema plenum	Rough Pigtoe	LE	SE	G1	S1
Pleurobema pyramidatum	Pyramid Pigtoe		SE	G2G3	SX
Potamilus capax	Fat Pocketbook	LE	SE	G2	S1
Ptychobranchus fasciolaris	Kidneyshell		SSC	G4G5	S2
Quadrula cylindrica cylindrica	Rabbitsfoot	LT	SE	G3G4T3	S1
Insect: Ephemeroptera (Mayflies)					
Homoeoneuria ammophila	A Sand-filtering Mayfly		SE	G4	S1
Pseudiron centralis	A Mayfly		SE	G5	S1
Insect: Lepidoptera (Butterfly)					
Euphyes dukesi	Scarce Swamp Skipper		ST	G3	S1S2
Fish					
Etheostoma squamiceps	Spottail Darter			G4G5	S2S3
Amphibian					
Acris blanchardi	Northern Cricket Frog		SSC	G5	S4
Reptile					
Kinosternon subrubrum subrubrum	Eastern Mud Turtle		SE	G5T5	S2
Nerodia erythrogaster neglecta	Copperbelly Water Snake	PS:LT	SE	G5T3	S2

Indiana Natural Heritage Data Center
Division of Nature Preserves
Indiana Department of Natural Resources
This data is not the result of comprehensive county surveys.

Fed: LE = Endangered; LT = Threatened; C = candidate; PDL = proposed for delisting

State: SE = state endangered; ST = state threatened; SR = state rare; SSC = state species of special concern; SX = state extirpated; SG = state significant; WL = watch list

GRANK: Global Heritage Rank: G1 = critically imperiled globally; G2 = imperiled globally; G3 = rare or uncommon globally; G4 = widespread and abundant globally but with long term concerns; G5 = widespread and abundant globally; G? = unranked; GX = extinct; Q = uncertain rank; T = taxonomic subunit rank

SRANK: State Heritage Rank: S1 = critically imperiled in state; S2 = imperiled in state; S3 = rare or uncommon in state; G4 = widespread and abundant in state but with long term concern; SG = state significant; SH = historical in state; SX = state extirpated; B = breeding status; S? = unranked; SNR = unranked; SNA = nonbreeding status unranked

Indiana County Endangered, Threatened and Rare Species List

County: Gibson

Species Name	Common Name	FED	STATE	GRANK	SRANK
Opheodrys aestivus	Rough Green Snake		SSC	G5	S3
Pseudemys concinna concinna	Eastern River Cooter		SE	G5T5	S1
Terrapene carolina carolina	Eastern Box Turtle		SSC	G5T5	S3
Bird					
Accipiter striatus	Sharp-shinned Hawk	No Status	SSC	G5	S2B
Ammodramus henslowii	Henslow's Sparrow		SE	G4	S3B
Botaurus lentiginosus	American Bittern		SE	G4	S2B
Buteo lineatus	Red-shouldered Hawk		SSC	G5	S3
Circus cyaneus	Northern Harrier		SE	G5	S2
Cistothorus platensis	Sedge Wren		SE	G5	S3B
Dendroica cerulea	Cerulean Warbler		SE	G4	S3B
Falco peregrinus	Peregrine Falcon		SSC	G4	S2B
Haliaeetus leucocephalus	Bald Eagle		SSC	G5	S2
Ixobrychus exilis	Least Bittern		SE	G5	S3B
Lanius ludovicianus	Loggerhead Shrike		SE	G4	S3B
Mniotilta varia	Black-and-white Warbler		SSC	G5	S1S2B
Nyctanassa violacea	Yellow-crowned Night-heron		SE	G5	S2B
Nycticorax nycticorax	Black-crowned Night-heron		SE	G5	S1B
Phalaropus tricolor	Wilson's Phalarope		SSC	G5	SHB
Rallus elegans	King Rail		SE	G4	S1B
Sternula antillarum athalassos	Interior Least Tern	LE	SE	G4T2Q	S1B
Thryomanes bewickii	Bewick's Wren			G5	S1B
Tyto alba	Barn Owl		SE	G5	S2
Vermivora chrysoptera	Golden-winged Warbler		SE	G4	S1B
Mammal					
Lasiurus borealis	Eastern Red Bat		SSC	G5	S4
Mustela nivalis	Least Weasel		SSC	G5	S2?
Myotis lucifugus	Little Brown Bat		SSC	G3	S2
Myotis septentrionalis	Northern Myotis		SSC	G1G3	S2S3
Myotis sodalis	Indiana Bat or Social Myotis	LE	SE	G2	S1
Nycticeius humeralis	Evening Bat		SE	G5	S1
Perimyotis subflavus	Eastern Pipistrelle		SSC	G3	S2S3
Sylvilagus aquaticus	Swamp Rabbit		SE	G5	S1
Taxidea taxus	American Badger		SSC	G5	S2
Vascular Plant					
Acalypha deamii	Mercury		SR	G4?	S2
Armoracia aquatica	Lake Cress		SE	G4?	S1
Azolla caroliniana	Carolina Mosquito-fern		ST	G5	S2
Calycocarpum lyonii	Cup-seed		ST	G5	S2
Carex socialis	Social Sedge		SR	G4	S2

Indiana Natural Heritage Data Center
Division of Nature Preserves
Indiana Department of Natural Resources
This data is not the result of comprehensive county surveys.

Fed: LE = Endangered; LT = Threatened; C = candidate; PDL = proposed for delisting

State: SE = state endangered; ST = state threatened; SR = state rare; SSC = state species of special concern; SX = state extirpated; SG = state significant; WL = watch list

GRANK: Global Heritage Rank: G1 = critically imperiled globally; G2 = imperiled globally; G3 = rare or uncommon globally; G4 = widespread and abundant globally but with long term concerns; G5 = widespread and abundant globally; G? = unranked; GX = extinct; Q = uncertain rank; T = taxonomic subunit rank

SRANK: State Heritage Rank: S1 = critically imperiled in state; S2 = imperiled in state; S3 = rare or uncommon in state; G4 = widespread and abundant in state but with long term concern; SG = state significant; SH = historical in state; SX = state extirpated; B = breeding status; S? = unranked; SNR = unranked; SNA = nonbreeding status unranked

Indiana County Endangered, Threatened and Rare Species List

County: Gibson

Species Name	Common Name	FED	STATE	GRANK	SRANK
Carex straminea	Straw Sedge		ST	G5	S2
Catalpa speciosa	Northern Catalpa		SR	G4?	S2
Chelone obliqua var. speciosa	Rose Turtlehead		WL	G4T3	S3
Clematis pitcheri	Pitcher Leather-flower		SR	G4G5	S2
Crataegus grandis	Grand Hawthorn		SE	G3G5Q	S1
Crataegus viridis	Green Hawthorn		ST	G5	S2
Cyperus pseudovegetus	Green Flatsedge		SR	G5	S2
Didiplis diandra	Water-purslane		SE	G5	S2
Diodia virginiana	Buttonweed		WL	G5	S2
Gleditsia aquatica	Water-locust		SE	G5	S1
Hibiscus moscheutos ssp. lasiocarpos	Hairy-fruited Hibiscus		SE	G5T4	S1
Iresine rhizomatosa	Eastern Bloodleaf		SR	G5	S2
Juglans cinerea	Butternut		WL	G4	S3
Linum striatum	Ridged Yellow Flax		WL	G5	S3
Ludwigia decurrens	Primrose Willow		WL	G5	S2
Orobanche riparia	Bottomland Broomrape		SE	G4?	S2
Platanthera flava var. flava	Southern Rein Orchid		SE	G4?T4?Q	S1
Potamogeton pusillus	Slender Pondweed		WL	G5	S2
Sparganium androcladum	Branching Bur-reed		ST	G4G5	S2
Strophostyles leiosperma	Slick-seed Wild-bean		ST	G5	S2
Styrax americanus	American Snowbell		WL	G5	S3
Taxodium distichum	Bald Cypress		ST	G5	S2
Trachelospermum difforme	Climbing Dogbane		SR	G4G5	S2
Vitis palmata	Catbird Grape		SR	G4	S2
High Quality Natural Community					
Forest - floodplain wet-mesic	Wet-mesic Floodplain Forest		SG	G3?	S3
Forest - upland dry-mesic	Dry-mesic Upland Forest		SG	G4	S4
Forest - upland mesic	Mesic Upland Forest		SG	G3?	S3
Wetland - swamp shrub	Shrub Swamp		SG	GU	S2
Other Significant Element					
Geomorphic - Nonglacial Erosional Feature - Water Fall and Cascade	Water Fall and Cascade			GNR	SNR

Indiana Natural Heritage Data Center
Division of Nature Preserves
Indiana Department of Natural Resources
This data is not the result of comprehensive county surveys.

Fed: LE = Endangered; LT = Threatened; C = candidate; PDL = proposed for delisting

State: SE = state endangered; ST = state threatened; SR = state rare; SSC = state species of special concern; SX = state extirpated; SG = state significant; WL = watch list

GRANK: Global Heritage Rank: G1 = critically imperiled globally; G2 = imperiled globally; G3 = rare or uncommon globally; G4 = widespread and abundant globally but with long term concerns; G5 = widespread and abundant globally; G? = unranked; GX = extinct; Q = uncertain rank; T = taxonomic subunit rank

SRANK: State Heritage Rank: S1 = critically imperiled in state; S2 = imperiled in state; S3 = rare or uncommon in state; G4 = widespread and abundant in state but with long term concern; SG = state significant; SH = historical in state; SX = state extirpated; B = breeding status; S? = unranked; SNR = unranked; SNA = nonbreeding status unranked

Appendix C - IDNR Designated Special Streams

State Natural and Scenic River Segments

(Source: Indiana Department of Natural Resources, 1994, Rev. 1996)

River	Counties	Quad Maps	Boundaries
BIG PINE CREEK* (10.0 miles) (Studied 1980)	Warren	Williamsport, Pine Village	Rocky Ford (r.m. 13.8) to CR 131 (r.m. 3.75)
BIG WALNUT CREEK (10.6 miles)	Putnam	North Salem, Roachdale	Hendricks-Putnam Co. Line (r.m. 43.7) to SR 36 (r.m. 33.1)
BLUE RIVER (45.5 miles) (Designated 1978)	Crawford, Harrison, Washington	Fredericksburg, Milltown, Corydon, W., Leavenworth	US 150 in Fredericksburg (r.m. 57.0) to SR 462 (r.m. 11.5)
CEDAR CREEK (13.7 miles) (Designated 1976)	Allen, Dekalb	Garrett, Auburn, Huntertown	DeKalb CR 68 (r.m. 13.7) to St. Josheph River (r.m. 0.0)
SAND CREEK* (12.1 miles)	Decatur, Jennings	Butlerville, Westport	Westport Covered Bridge (r.m. 33.2) to Brewersville Rd. (r.m. 21.1)
S. BR. ELKHART* RIVER (13.6 miles) (Studied 1982)	Noble	Albion, Ligonier, Merriam	CR 100N (r.m. 14.2) to US 6 (r.m. 0.6)
SUGAR CREEK* (50.1 miles) (Studied 1977**)	Montgomery, Parke	Montezuma, Alamo Kingman, Wallace New Market, Crawfordsville	Darlington Covered Bridge (r.m. 50.1) to Wabash River (r.m. 0.0)
TIPPECANOE RIVER* (15.9 miles)	Kosciusko, Marshall	Mentone, Bourbon Atwood, Burket	Kosciusko CR 700W (r.m. 139.9) to the mouth of Moores Ditch (r.m. 123.0)
WHITEWATER RIVER* (28.4 miles) (Studied 1979)	Franklin	Metamora, Brookville, Whitecomb, Cedar Grove	Laurel Feeder Dam (r.m. 45.4) to New Trenton Bridge (r.m. 17.1)
WILDCAT CREEK (48.5 miles) (Designated 1980)	Carroll, Tippecanoe	Lafayette E., Pyrmont, Rossville, Burlington	SR 29 (r.m. 43.1 to Eisenhower Rd. (r.m. 4.8) and on the South Fork, SR 38 (r.m. 10.2) to the North Fork, (r.m. 0.0)

* These stream segments qualify for classification as a State Natural & Scenic River Segment. However, they have not yet been officially classified as such.

** The Montgomery County segment has recently been re-studied.

Last Print/Revision Date: October 13, 1996

INDIANA NATURAL AND SCENIC RIVERS LIST

A detailed river segment list and map are attached to the following river summaries.

BIG PINE CREEK

A 10 1/2-mile segment of Big Pine Creek in Warren County (from Rocky Ford, near Rainsville, downstream to County Road 131) qualifies for State Natural and Scenic River designation.

Big Pine Creek is Indiana's premier whitewater creek during high spring water levels and is popular with canoeists and kayakers from Indiana and Illinois. Due to unreliable water levels for canoeing throughout warm weather, commercial canoes are not available for use on the creek.

The Department of Environmental Management has designated the Big Pine Creek segment and some of its headwaters "for exceptional use" due to outstanding quality.

BIG WALNUT CREEK

Slightly more than 10 1/2 miles of Big Walnut Creek in Putnam County (from the county line to the SR 36 bridge) rate as natural as any segment on the DNR's Natural and Scenic Rivers list. The lower part of the segment flows by two state dedicated nature preserves (Hall's Woods and Big Walnut) which the DNR and The Nature Conservancy have cooperated to acquire from a willing seller.

Big Walnut Creek is lightly used by fishermen and canoeists. Commercial canoes are not available for use on the State Natural and Scenic River segment due to unreliable water levels throughout warm weather.

BLUE RIVER

The State Natural and Scenic River segment of Blue River designated in 1978 begins at river mile 57 (Fredericksburg) and runs to river mile 11 1/2 (just upstream of the SR 462 bridge). The DNR owns much of the lower 25 miles of the river corridor and manages its property to enhance the natural integrity of the river. The lower 5 1/2 miles of the river itself are part of the Cannelton Pool of the Ohio River.

The major canoe livery using the river provides about 15,000 canoe trips on the river annually, primarily between river mile 40 (Totten Ford Bridge) and river mile 20 (Rothrock Mill Public Access Site, the DNR's only access site in the State Natural and Scenic River segment). The river is also popular for fishing.

The state authorized Blue River Commission has zoning jurisdiction over the State Natural and Scenic River segment and has worked with the DNR in the conservation of the river since 1978. During that time the DNR, with some assistance from The Nature Conservancy, has also acquired nearly 6 miles of riverbank lands from willing sellers in the lower Natural and Scenic River segment. This will further assure protection of the natural integrity of Blue River.

The DEM has designated the State Natural and Scenic River segment of Blue River as "an outstanding state resource" to prevent water quality degradation and has designated the segment and much of its headwaters "for exceptional use" due to exceptional quality.

CEDAR CREEK

Cedar Creek, 13.7 miles from DeKalb County Road 68 to the confluence with the St. Joseph River in Allen County was designated a State Natural and Scenic River in 1976. The Nature Conservancy has acquired one conservation easement along the creek. Part of the Izaak Walton League's property along the creek has been designated by the state as Rodenbeck Nature Preserve.

The Allen County Parks and Recreation Board has acquired and developed two public access sites along the creek using Land and Water Conservation Funds administered by the DNR. Cedar Creek is used by fishermen and canoeists.

The Cedar Creek Wildlife Project, Fort Wayne Chapter of the Izaak Walton League, and the Cedar Creek Preservation Foundation work with the DNR in the conservation of Cedar Creek.

The DEM has designated the State Natural and Scenic River segment of Cedar Creek as "an outstanding state resource" to prevent water quality degradation.

SAND CREEK

A 12.1-mile segment of Sand Creek, from the Westpost Covered Bridge in Jennings County (river mile 33.2) to Brewersville Road in Decatur County (river mile 21.1) qualifies as a State Natural and Scenic River. Sand Creek is notable for its karst corridor.

It is lightly used by fishermen and canoeists. Commercial canoes are not available for use on the segment due to unreliable water levels throughout warm weather.

SOUTH BRANCH OF ELKHART RIVER

Nearly 14 miles of the South Branch of the Elkhart River, between Noble County Road 100 North and the U.S. 6 bridge, qualifies as a State Natural and Scenic River. It flows through the largest contiguous wetlands remaining in the state, including the DNR's Mallard Roost Wetlands Conservation Area. In the upstream portion of the segment, the river flows through the state designated Bender Woods Nature Preserve, owned by Acres Inc.

The South Branch of Elkhart River is used by fishermen and waterfowl hunters, and the DNR has developed four public access sites along the river. Commercial canoes are not available for use on the river.

SUGAR CREEK

Over 50 miles of Sugar Creek, from the Darlington Covered Bridge in Montgomery County downstream to the confluence with the Wabash River in Parke County, qualify as a State Natural and Scenic River. The creek flows past a community park in Darlington, a city park in Crawfordsville, Pine Hills Nature Preserve (and National Natural Landmark), and Shades and Turkey Run State Parks.

Six public access sites, four acquired and developed by the DNR, are available along the creek. Two major commercial canoe liveries provide about 20,000 trips on Sugar Creek annually, primarily between Crawfordsville and Turkey Run State Park. The creek is also popular with fishermen.

The Friends of Sugar Creek works with the DNR the conservation of Sugar Creek and its tributaries.

TIPPECANOE RIVER

Almost 16 miles of the Tippecanoe River, from Kosciusko County Road 700 West to the mouth of Moores Ditch in Marshall County, qualify as a State Natural and Scenic River.

The upper part of the segment flows through forested wetlands and is seldom used by recreationists. The lower part of the segment is popular with fishermen, and commercial canoes are available. A Kosciusko County Historical Society rest park provides river access near Warsaw, and the DNR has developed two public access sites along the Tippecanoe River segment.

WHITEWATER RIVER

A 28.3-mile segment of the West Fork and Main Stem of the Whitewater River in Franklin County, from the Laurel Feeder Dam (river mile 45.4) to the New Trenton Bridge (river mile 17.1.), qualifies as a State Natural and Scenic River. The DNR's Whitewater Canal State Historic Site owns land adjacent to the river in several sites between its Laurel Feeder Dam Public Access Site and Brookville. Eight miles of the former towpath and an abandoned rail line along the canal and near the river are planned for development as a recreational trail. Two major canoe liveries provide about 20,000 trips on the river annually. The river is also popular with fishermen.

The Franklin County Area Plan Commission's White-water River Advisory Board has worked with the DNR in the conservation of the river since 1979.

WILDCAT CREEK

The State Natural and Scenic River segments of Wildcat Creek total 48.5 miles, extending from Burlington to Tippecanoe County's Eisenhower Road Bridge on the North Fork, and from Dayton on the South Fork to the confluence with the North Fork. The Wildcat was designated in 1980.

The DNR has developed four access sites, including a Public Fishing Area and a county park along the creek. The Tippecanoe County Parks and Recreation Board manages the county park through an agreement with the DNR.

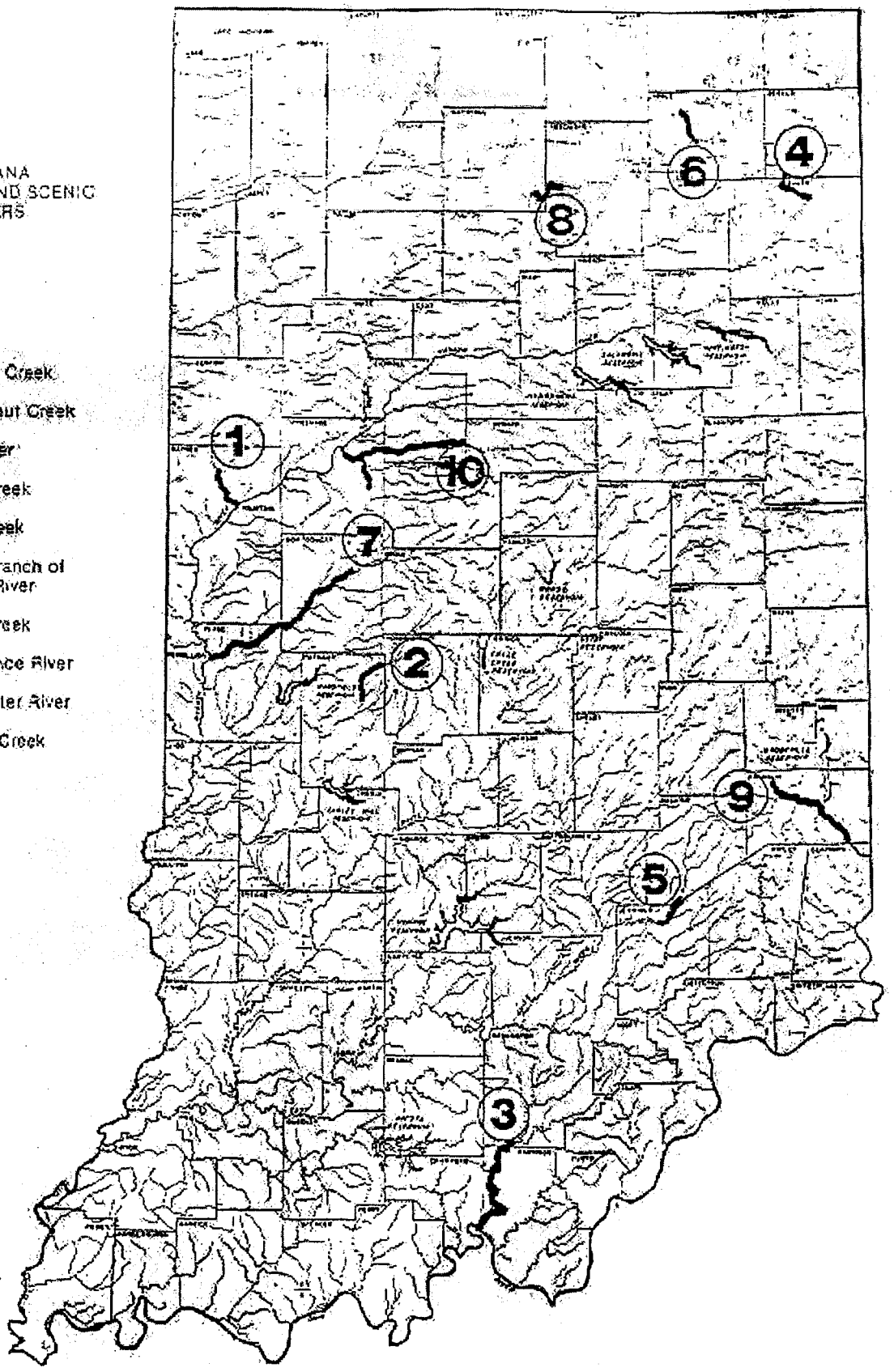
Recreationists use the creek for canoeing, fishing, and tubing. The only commercial canoe livery along the creek provides about 2,000 trips on the creek annually, primarily on the lower several miles of the State Natural and Scenic River segment of the North Fork.

The Wildcat Creek Advisory Group and the Carroll County and Tippecanoe County Area Plan Commissions have worked with the DNR in the conservation of the creek since 1980.

The DEM has designated the State Natural and Scenic River segments of Wildcat Creek as "an outstanding state resource" to prevent water quality degradation.

INDIANA
NATURAL AND SCENIC
RIVERS

1) Big Pine Creek
2) Big Walnut Creek
3) Blue River
4) Cedar Creek
5) Sand Creek
6) South Branch of Elkhart River
7) Sugar Creek
8) Tippecanoe River
9) Whitewater River
10) Wildcat Creek



Outstanding Rivers:

The Department has prepared a roster of streams in the State which have particular environmental or aesthetic value. The roster was printed as a nonrule policy document in the Indiana Register, Volume 16, Number 6, (16 IR 1677) on March 1, 1993 under the title "Natural Resources Commission, Information Bulletin #4, Outstanding Rivers List for Indiana". For additional information regarding the roster contact:

Division of Outdoor Recreation
Room W271
402 West Washington Street
Indianapolis, Indiana 46204

Telephone: (317) 232-4070

The following table is a synopsis of the roster printed in the Indiana Register. In the event of a conflict, the information in the Register has primacy.

Outstanding Rivers		
Stream	County(s)	Segment
Bear Creek	Fountain	From CR 250 W to its confluence with the Wabash River
Big Blue River	Johnson Rush Shelby	From its confluence with the Flatrock River to Carthage
Big Creek	Jefferson	From the east side of the Jefferson Military Reservation boundary to its confluence with Graham Creek
Big Pine Creek	Warren	From SR 18 to its confluence with the Wabash River
Big Walnut Creek	Putnam	From the Hendricks-Putnam county Line to Greencastle
Black River	Posey	From its confluence with Higginbotham Ditch to its confluence with the Wabash River
Blue River	Crawford Harrison Washington	From its confluence with the Middle Fork Blue River to its confluence with the Ohio River
Buck Creek	Harrison	From its headwaters to its confluence with the Ohio River
Cedar Creek	Allen Dekalb	From Dekalb County Road 68 to its confluence with the St. Joseph River
Clifty Creek	Montgomery	From its headwaters to its confluence the Indian Creek
Cypress Slough	Posey	From its confluence with Castlebury Creek to the Southwind Maritime Center
Deep River	Lake Porter	From 1 mile south of US 30 to its confluence with the Little Calumet River
Driftwood River	Bartholomew	From the Atterbury Fish and Wildlife Area to Columbus
East Arm Little Calumet River	Porter	From CR 600 E to SR 249
East Fork White River	Bartholomew Daviess Dubois Jackson Lawrence Martin Pike	From Columbus to its confluence with the West Fork White River
Eel River	Miami Wabash	From South Whitley to Logansport
Elkhart River	Elkhart Noble	From SR 13 to Island Park in Elkhart
Fall Creek	Warren	From US 41 to its confluence with Big Pine Creek

Outstanding Rivers		
Stream	County(s)	Segment
Fawn River	LaGrange Steuben	From Nevada Mills to the Indiana-Michigan state line and from the Indiana-Michigan state line to the Indiana-Michigan state line
Fish Creek	Dekalb Steuben	From the Indiana-Ohio state line to the Indiana-Ohio state line
Flatrock River	Bartholomew Shelby	From SR 9 to its confluence with the East Fork White River
Fourteen-Mile Creek	Clark	From its confluence with the East Fork and the West Fork to its confluence with the Ohio River
Graham Creek	Jefferson Jennings Ripley	From New Marion to its confluence with Big Creek
Indian Creek	Harrison	From the Floyd-Harrison county line to its confluence with the Ohio River
Indian Creek	Montgomery	From CR 475 W to its confluence with Sugar Creek
Indian-Kentuck Creek	Jefferson Ripley	From its confluence with Vestal Branch to its confluence with the Ohio River
Iroquois River	Newton	From SR 16 to the Indiana-Illinois state line
Kankakee River	LaPorte Newton Porter	From the upstream boundary of the Kingsbury Fish and Wildlife Area through the LaSalle Fish and Wildlife Area to the Indiana-Illinois state line
Kilmore Creek	Clinton	From US 421 to its confluence with South Fork Wildcat Creek
Laughery Creek	Dearborn Ohio Ripley	From its source just east of Morris in Ripley County to its confluence with the Ohio River
Little Blue River	Crawford	From English to its confluence with the Ohio River
Little Creek	Jefferson	From Kent to Big Creek
Little Indian Creek	Harrison	From Pfrimmer Church to its confluence with Indian Creek
Little Mosquito Creek	Harrison	From its headwaters to its confluence with Mosquito Creek
Little Pine Creek	Warren	From Bridge SW of Green Hill to its confluence with the Wabash River
Little River	Allen Huntington	From its source to its confluence with the Wabash River
Lost River	Martin Orange	From Potato Road to its confluence with the East Fork White River
Middle Fork Wildcat Creek	Clinton Tippecanoe	From SR 26 at Edna Mills to its confluence with South Fork Wildcat Creek
Mississinewa River	Miami	From Mississinewa Reservoir to its confluence with the Wabash River

Outstanding Rivers		
Stream	County(s)	Segment
Mosquito Creek	Harrison	From Buena Vista to its confluence with the Ohio River
Mud Pine Creek	Warren	From SR 352 to its confluence with Big Pine Creek
Muscatatuck River	Jackson Jennings Scott Washington	From its confluence with Graham Creek and Big Creek to its confluence with the East Fork White River
Oil Creek	Perry	From St. Croix to its confluence with the Ohio River
Otter Creek	Jennings Ripley	From the covered bridge north of Holton to its confluence with the Vernon Fork Muscatatuck River
Patoka River	Dubois Gibson Pike	From Patoka Reservoir to its confluence with the Wabash River
Pigeon River	LaGrange	From SR 327 to the Indian-Michigan state line
Rattlesnake Creek	Fountain	From CR 350 W to its confluence with Bear Creek
Rattlesnake Creek	Parke	From CR 400/450 S to its confluence with Sugar Creek
Roaring Creek	Parke	From 1 mile upstream of SR 41 to its confluence with Sugar Creek
Sand Creek	Bartholomew Decatur Jackson Jennings	From its confluence with Cobbs Fork to its confluence with the East Fork White River
South Branch Elkhart River	Noble	From CR 100 N to US 6
South Fork Blue River	Washington	From SR 135 to its confluence with Blue River
South Fork Wildcat Creek	Clinton Tippecanoe	From US 421 to its confluence with Wildcat Creek
Stinking Fork	Crawford	From its headwaters to its confluence with Little Blue River
Sugar Creek	Johnson Shelby	Within Johnson and Shelby Counties
Sugar Creek	Montgomery Parke	From the Darlington covered bridge to its confluence with the Wabash River
Sugar Mill Creek	Fountain Parke	From Wallace to its confluence with Sugar Creek
Tippecanoe River	Carroll Fulton Kosciusko Marshall Pulaski Tippecanoe White	From its source, Lake Tippecanoe, to Norway and from Oakdale Dam to its confluence with the Wabash River

Outstanding Rivers		
Stream	County(s)	Segment
Turkey Fork	Crawford	From I-64 to its confluence with the Little Blue River
Vernon Fork Muscatatuck River	Jackson Jennings	From Zenas to its confluence with the Muscatatuck River
Wabash River	Adams Allen Carroll Cass Fountain Gibson Huntington Jay Knox Miami Parke Posey Sullivan Tippecanoe Vermillion Vigo Wabash Warren Wells	From the Indiana-Ohio state line to its confluence with the Ohio River including the Little River and the portage between the Little River and the Maumee River
West Branch Mosquito Creek	Harrison	From its headwaters to its confluence with Mosquito Creek
West Fork White River	Daviess Delaware Gibson Greene Hamilton Knox Madison Marion Morgan Owen Randolph	From Farmland to its confluence with the Wabash River
Whitewater River	Dearborn Fayette Franklin Wayne	From Cambridge City to the Indiana-Ohio state line west of Harrison, Ohio
Wildcat Creek	Carroll Tippecanoe	From SR 29 to its confluence with the Wabash River

Appendix D

Large Volume Water Users

Name and Acct No.	Service Address	January-16	February-16	March-16	April-16	May-16	June-16	July-16	August-16	September-16	October-16	November-16	December-16
1050600	CR 100 E - Meter Vault												
Toyota (TMMI)	Princeton IN 47670	18,976,800	22,181,300	22,927,500	23,280,600	21,912,400	22,357,100	28,970,900	24,921,500	319,339	28,079,100	21,228,000	20,441,700
1060500	CR 925 S - Meter Vault												
Town of Haubstadt (Vault)	Fort Branch IN 47648	4,117,400	3,113,500	3,088,500	3,320,000	3,893,000	4,044,200	4,334,900	4,091,000	3,990,900	3,982,000	3,486,100	3,950,700
12211100	CR 1250 S - Lane - Truck Wash												
Blue Beacon Truck Wash	Haubstadt IN 47639	785,500	703,700	737,500	791,400	654,500	665,700	784,100	547,100	698,200	826,500	864,400	758,700
1040602	CR 1250 S - Truck Stop - Hwy 41												
Pilot Travel Center	Haubstadt IN 47639	299,800	212,200	158,100	294,500	220,300	296,800	214,800	281,100	308,500	324,900	255,900	262,300
1010500	CR 1250 S - Truck Stop - Hwy 41												
Flying J Truck Stop	Haubstadt IN 47639	285,000	272,000	263,000	292,000	292,000	514,000	579,000	780,000	853,000	824,000	292,000	288,000
5841300	CR 350 W - Turkey Farm												
Soup Enterprises	Princeton IN 47670	214,700	4,500	182,400	70,600	116,700	145,500	330,800	132,000	261,800	211,700	198,700	43,800
2862000	CR 750 S - Turkey Farm												
Duane Michel	Fort Branch IN 47648	180,700	152,100	161,000	190,200	179,300	199,400	256,100	235,400	263,400	232,700	206,900	163,300
4348400	A & T Concrete - Highway 41												
Jim Pohl	Fort Branch IN 47648	145,500	52,800	115,000	123,900	191,600	141,000	77,700	11,300	11,300	11,300	11,300	11,300
4450800	325 E 350 S - Industrial												
Diversity Vuteq	Princeton IN 47670	132,700	206,300	141,300	83,100	157,900	125,200	196,600	118,000	176,300	169,200	146,000	182,200
4349401	SR 168 and Hwy 41 - Concrete Plant												
IMI South	Fort Branch IN 47648	128,100	70,300	87,200	225,100	301,800	110,100	240,700	88,500	130,000	92,800	664,500	117,200
122113101	12798 CR 1250 S - Access Road - Hotel												
Baymont Inn	Haubstadt IN 47639	88,000	57,200	81,300	142,000	110,200	106,500	132,800	162,400	131,400	138,900	119,100	113,400
4450700	819 E CR 350 S - Industrial												
Vuteq Corp.	Princeton IN 47670	80,000	410,900	721,900	118,400	219,300	173,500	1,542,900	883,900	1,495,500	1,477,600	1,767,500	1,145,600
122101101	E 1250 S - Lane- Truck Stop												
Loves Travel Stop	Haubstadt IN 47639	74,500	48,500	56,600	90,500	66,500	84,100	86,700	95,800	85,000	90,600	44,400	45,100
5841800	1525 S Old SR 65 - Mobile Home Park												
Big Oak Mobile Home Park	Princeton IN 47665	73,700	210,400	148,400	135,600	116,200	118,000	112,400	184,100	129,300	81,000	113,200	82,300
8345000	CR 700 W - Coal mine												
Gibson County Coal	Owensville IN 47665	58,000	104,000	106,000	109,000	89,000	105,000	121,000	82,000	126,000	107,000	134,000	103,000
9039500	12653 S 200 E & CR 1250 S - Restaurant												
Log Inn	Haubstadt IN 47639	54,400	11,900	52,200	46,700	43,400	40,600	43,400	46,500	46,800	43,300	40,500	43,300
5841700	1525 S Old SR 65 - Mobile Home Park												
Big Oak Mobile Home Park 2	Princeton IN 47670	48,600	164,400	88,300	90,800	84,400	100,800	94,400	133,100	92,100	64,300	93,300	71,500

Name and Acct No.	Service Address	January-16	February-16	March-16	April-16	May-16	June-16	July-16	August-16	September-16	October-16	November-16	December-16
9094000	12848 Weather Rock Drive - Campground												
Weather Rock Campground	Haubstadt IN 47639	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000
2412000	9690 S 250 E - Cattle Farm												
Wilzbacher Farms	Haubstadt IN 47639	37,600	5,900	7,400	9,300	9,400	11,800	19,600	46,400	47,100	59,400	50,100	42,300
1093500	CR 1100 S - Industrial												
West Side Automation	Haubstadt IN 47639	35,800	24,400	41,600	39,000	55,200	18,000	38,800	48,100	25,000	26,400	32,900	44,500
4349600	SR 168 - Convenience Store and Gas Station												
Ora Williams - Hucks Convenience	Fort Branch IN 47648	30,400	22,400	25,800	20,900	27,000	20,400	26,500	22,400	23,800	21,400	21,700	23,700
4450500	CR 350 S - Industrial												
EnovaPremier LLC	Princeton IN 47670	29,100	15,500	25,100	25,200	16,000	14,100	19,700	18,600	25,800	31,900	22,900	20,500
4394300	809 E CR 525 S - Warehouse												
Mike Crabtree	Princeton IN 47670	28,000	28,000	34,500	31,400	34,500	25,900	31,700	24,800	29,700	31,800	33,400	29,200
7678000	3415 E CR 50 S - Cattle Farm												
Paul Potts	Princeton IN 47670	27,600	(12,400)	10,400	8,900	8,700	16,600	49,000	36,400	30,300	42,600	22,000	21,800
1083502	SR 68 - Grocery Store												
Holiday Foods	Haubstadt IN 47639	26,900	35,400	33,400	33,700	34,200	29,600	28,800	50,400	75,500	58,800	45,400	31,100
4396500	CR 100 E - Trucking												
KC Transportation	Princeton IN 47670	24,900	15,000	20,000	18,100	18,600	16,100	23,600	36,900	27,500	16,000	31,600	18,600
1050700	CR 100 E - Fire Protection System - Vault												
TMMI	Princeton IN 47639	23,100	16,500	33,100	122,500	36,200	14,600	6,500	16,600	10,100	117,500	40,600	12,800
3274500	12300 S 50 W - Church & School												
St James Church	Haubstadt IN 47639	22,200	26,300	33,800	32,000	28,900	28,800	20,100	13,000	46,800	61,900	37,600	55,600
2110401	Hwy 41 - Restaurant												
Kentuckiana Subway	Fort Branch IN 47648	21,200	11,800	25,900	19,800	14,000	11,800	18,400	11,500	13,000	14,100	15,000	11,900
1050300	CR 525 S - Child Care												
TMMI Child Care Center	Princeton IN 47670	20,000	34,800	30,700	35,300	30,000	42,000	167,000	219,700	382,500	51,700	43,300	52,700
1050400	CR 525 S - Trucking												
Ryder Truck Shop	Princeton IN 47670	20,500	23,000	28,500	27,500	25,000	22,500	23,500	15,300	32,700	34,000	30,400	29,600
8134900	9208 W SR 165 - Meat Processing												
Kenny Dewig Meats	Owensville IN 47665	11,200	12,100	22,600	14,700	16,500	21,400	15,600	17,100	22,900	17,800	30,000	28,700
2857500	CR 800 S - Education												
Vincennes University	Fort Branch IN 47648	1,900	2,800	5,700	90,300	77,200	105,300	215,300	217,900	244,400	159,800	156,600	36,800
125064101	CR 1200 S - Agricultural												
Warrick Coop Farm Supply	Haubstadt IN 47639	1,000	900	1,100	34,500	41,600	57,000	89,100	31,800	20,600	8,700	2,600	4,400
9013000	CR 1250 S - Residential & Commercial												

Name and Acct No.	Service Address	January-16	February-16	March-16	April-16	May-16	June-16	July-16	August-16	September-16	October-16	November-16	December-16
Rick Knapp	Haubstadt IN 47639	20,400	21,900	20,700	21,200	18,100	10,800	10,300	9,400	9,800	19,600	23,500	32,900
2210000	CR 750 S - Residential												
Larry Johnson	Haubstadt IN 47648	36,100	19,400	22,000	15,800	13,500	19,200	14,900	15,900	19,800	36,400	32,200	21,400
7732801	2068 N Carithers Road - Residential												
David Dunn	Princeton IN 47670	14,200	30,100	16,900	7,700	14,700	16,800	38,100	29,700	27,000	19,400	14,500	8,500
4389000	CR 500 S - Agricultural												
John Wallis	Princeton IN 47670	7,000	7,300	16,600	30,000	30,500	27,500	35,200	29,700	13,300	6,400	7,800	8,300

Appendix E

Photographs of Existing Facilities

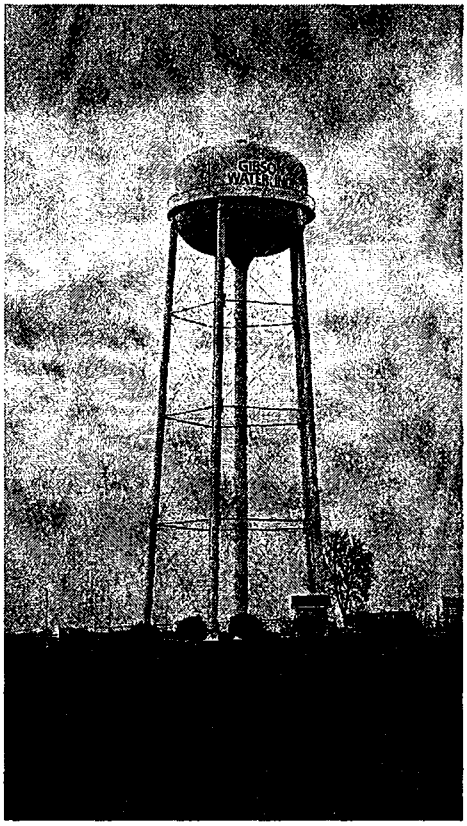


Photo 1 - 300,000 Gal. Elevated Tank (On U.S. 41 west of Toyota Manufacturing)

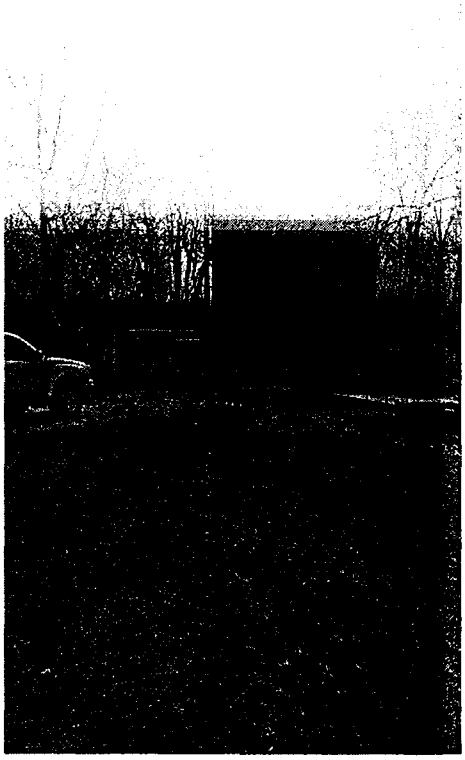


Photo 2 -300,000 Gal. Standpipe Tank (North end of System east of Princeton)

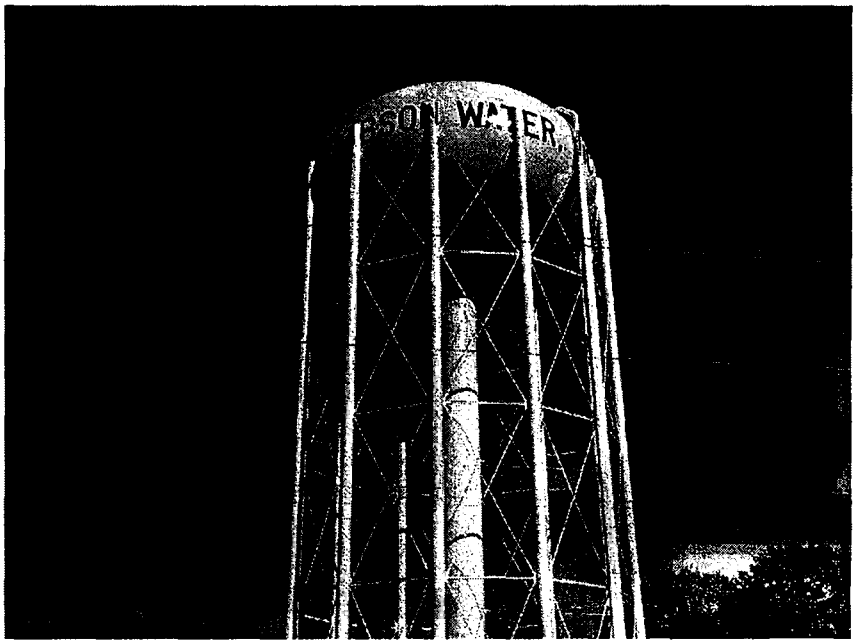


Photo 3 - 1,500,000 gal. Elevated Tank located on County Road 100E, east of Toyota Manufacturing

Photo 4 - Booster Pumping Station Interior, Showing High Service Pumps, Suction and Discharge Piping, Pump Control Valves, and Variable Frequency Drives

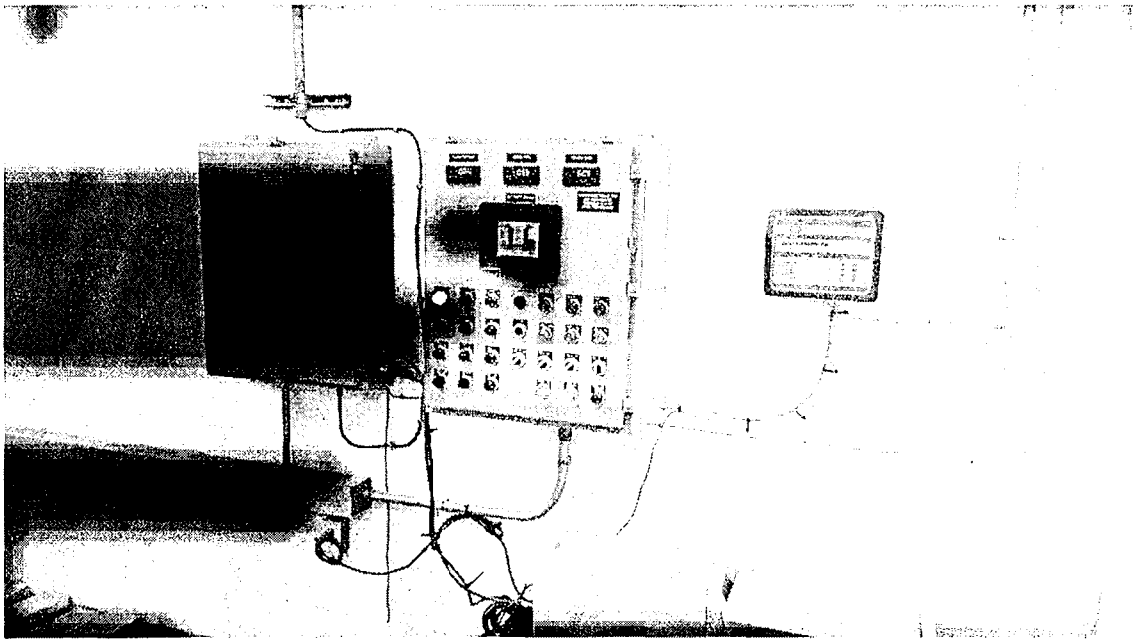


Photo 5 - Pump Controls with Touch Screen Interface for Tank Level Indication

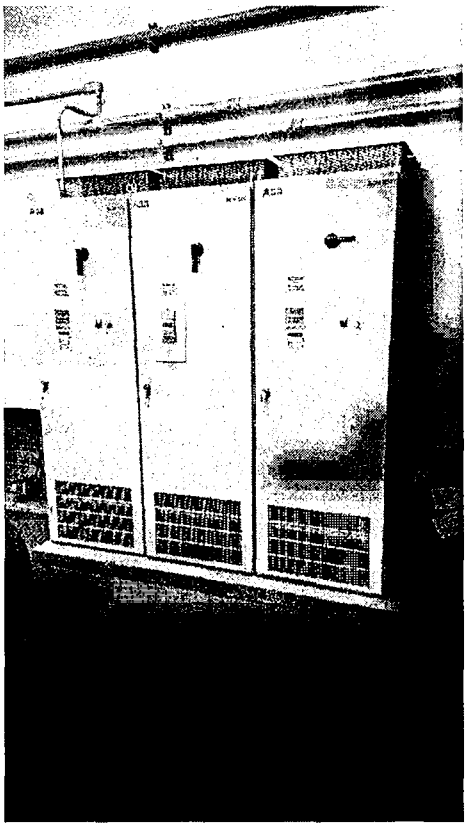


Photo 6 - Pump Variable Frequency Drives

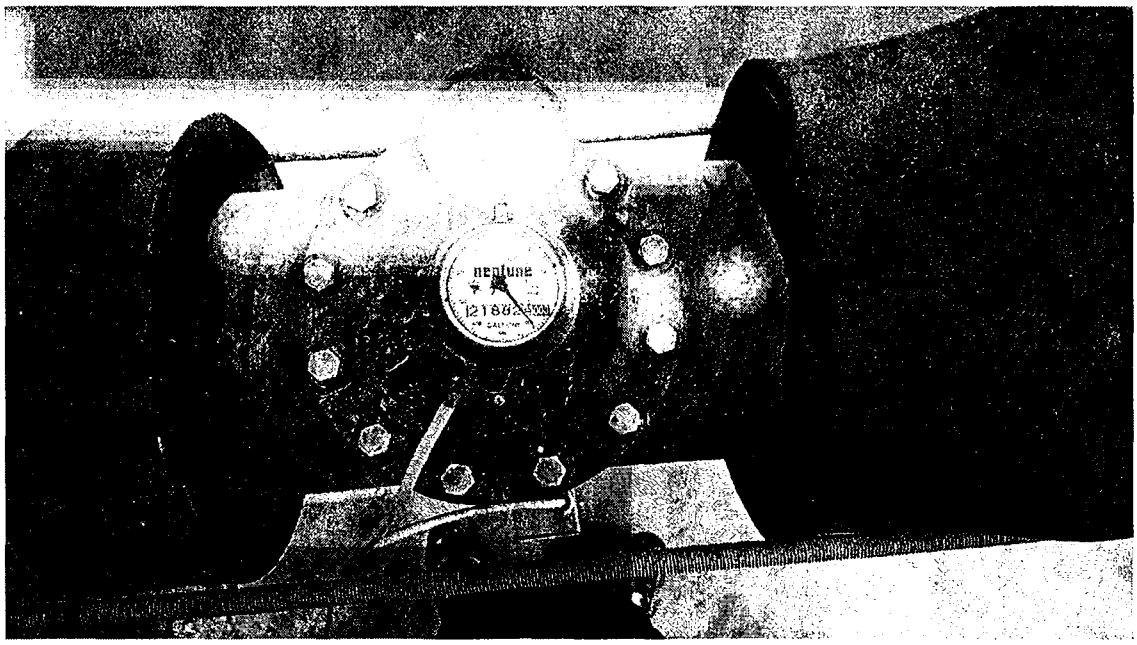


Photo 7 - Booster Pump Discharge Flow Meter

Photo 8 - Booster Pump Station Exterior

Appendix F

Cost Estimates for Project Alternatives

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
PRELIMINARY PROJECT COST ESTIMATE
ALTERNATIVE 2 - CR 225 W WATER MAIN

	Description	Quant.	Unit		Unit Cost		Total Cost
CONSTRUCTION COST							
1	8" Water Main	16,175.0	ft	$	25.00	$	404,380
2	8" Gate Valves	5.0	ea	$	1,400.00	$	7,000
3	Wet Tap Existing Pipe						
	Tapping Sleeve	2.0	ea	$	1,600.00	$	3,200
	Tapping Valve	2.0	ea	$	1,400.00	$	2,800
4	Metered Service Connections	12.0	ea	$	900.00	$	10,800
	Service Tubing	500.0	ft	$	20.00	$	10,000
5	Roads & Driveways						
	Open Cut Crosssing	4.0	ls	$	3,000.00	$	12,000
	Driveways	5.0	ea	$	2,500.00	$	12,500
6	Traffic Control	1.0	ls	$	3,000.00	$	3,000
7	Erosion Control	1.0	ls	$	10,000.00	$	10,000
8	Restoration	1.0	ls	$	5,000.00	$	5,000
9	Testing	16,175.0	lf	$	1.00	$	16,180
	Subtotal					**$**	**496,900**
10	Mobilization	4.0%				$	19,900
11	Bonds & Insurance	1.0%				$	5,000
	Construction Subtotal					**$**	**521,800**

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
PRELIMINARY PROJECT COST ESTIMATE
ALTERNATIVE 2 - CR 225 W WATER MAIN

	Description	Quant.	Unit		Unit Cost		Total Cost
NON-CONSTRUCTION COSTS							
10	Engineering						
	Design	1.0	ls	$	31,308.00	$	31,300
	Bid & Award	1.0	ls	$	2,609.00	$	2,600
	Construction	1.0	ls	$	3,913.50	$	3,900
11	Survey, Testing & Permits	1.0	ls	$	7,827.00	$	7,800
12	Construction Inspection	8.0	mth	$	16,000.00	$	128,000
13	Easements	16,175.0	lf	$	2.00	$	32,350
14	Legal/Financial	1.0	ls	$	18,263.00	$	18,300
15	Administrative Costs	1.0	ls	$	9,400.00	$	9,400
16	Construction Contingency	10.0%				$	52,200
	Non-Construction Costs					**$**	**285,850**
	Total Project Costs					**$**	**807,650**

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
PRELIMINARY PROJECT COST ESTIMATE
ALTERNATIVE 3 - SR 68 WATER MAIN

	Description	Quant.	Unit		Unit Cost		Total Cost
CONSTRUCTION COST							
1	8" Water Main	5,400.0	ft	$	25.00	$	135,000
2	8" Gate Valves	4.0	ea	$	1,400.00	$	5,600
3	Wet Tap Existing Pipe						
	Tapping Sleeve	2.0	ea	$	1,600.00	$	3,200
	Tapping Valve	2.0	ea	$	1,600.00	$	3,200
4	5 1/4" Hydrant w/ Gate Valve & Box	1.0	ea	$	4,000.00	$	4,000
5	Bore and Jack Roadway Crossing						
	16" Casing, 6" Carrier	70.0	lf	$	250.00	$	17,500
	18" Casing, 8" Carrier	140.0	lf	$	300.00	$	42,000
6	Traffic Control	1.0	ls	$	3,000.00	$	3,000
7	Erosion Control	1.0	ls	$	5,500.00	$	5,500
8	Restoration	1.0	ls	$	20,000.00	$	20,000
	Open Cut Crossing	2.0	ea	$	3,000.00	$	6,000
9	Driveways	4.0	ea	$	2,000.00	$	8,000
10	Testing	5,400.0	lf	$	0.50	$	2,700
	Subtotal					**$**	**255,700**
11	Mobilization	4.0%				$	10,200
12	Bonds & Insurance	1.0%				$	2,600
	Construction Subtotal					**$**	**268,500**

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
PRELIMINARY PROJECT COST ESTIMATE
ALTERNATIVE 3 - SR 68 WATER MAIN

	Description	Quant.	Unit		Unit Cost		Total Cost
NON-CONSTRUCTION COSTS							
10	Engineering						
	Design	1.0	ls	$	16,110.00	$	16,100
	Bid & Award	1.0	ls	$	1,342.50	$	1,300
	Construction	1.0	ls	$	2,013.75	$	2,000
11	Survey, Testing & Permits	1.0	ls	$	4,027.50	$	4,000
12	Construction Inspection	3.0	mth	$	16,000.00	$	48,000
13	Easements	0.0	lf	$	2.00	$	-
14	Legal/Financial	1.0	ls	$	9,397.50	$	9,400
15	Administrative Costs	1.0	ls	$	3,356.25	$	3,400
16	Construction Contingency	10.0%				$	26,900
	Non-Construction Costs					**$**	**111,100**
	Total Project Costs					**$**	**379,600**

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
PRELIMINARY PROJECT COST ESTIMATE
ALTERNATIVE 6 - CR 350 W & 200 S WATER MAIN

	Description	Quant.	Unit		Unit Cost		Total Cost
CONSTRUCTION COST							
1	6" Water Main	6,750.0	ft	$	22.00	$	148,500
	8" Water Main	10,800.0	ft	$	25.00	$	270,000
2	6" Gate Valves	3.0	ea	$	1,000.00	$	3,000
	8" Gate Valves	5.0	ea	$	1,500.00	$	7,500
3	Wet Tap Existing Pipe						
	6" Tapping Sleeve	1.0	ea	$	1,200.00	$	1,200
	8" Tapping Sleeve	1.0	ea	$	1,600.00	$	1,600
	6" Tapping Valve	1.0	ea	$	1,200.00	$	1,200
	8" Tapping Valve	1.0	ea	$	1,600.00	$	1,600
4	Metered Service Connection	13.0	ea	$	900.00	$	11,700
	Service Tubing	600.0	ft	$	20.00	$	12,000
5	Roads & Driveways						
	County Rd. & Driveway Repair	18.0	ea	$	2,500.00	$	45,000
6	Traffic Control	1.0	ls	$	2,500.00	$	2,500
7	Erosion Control	1.0	ls	$	5,000.00	$	5,000
8	Restoration	1.0	ls	$	5,000.00	$	5,000
9	Testing	17,550.0	lf	$	1.00	$	17,550
	Subtotal					**$**	**533,400**
10	Mobilization	4.0%				$	21,300
11	Bonds & Insurance	1.0%				$	7,310
	Construction Subtotal					**$**	**562,010**

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
PRELIMINARY PROJECT COST ESTIMATE
ALTERNATIVE 7 - SR 64 WATER MAIN

	Description	Quant.	Unit		Unit Cost		Total Cost
CONSTRUCTION COST							
1	6" Water Main	4,450.0	ft	$	22.00	$	97,900
2	6" Gate Valves	1.0	ea	$	1,000.00	$	1,000
3	Wet Tap Existing Pipe						
	Tapping Sleeve	2.0	ea	$	1,200.00	$	2,400
	Tapping Valve	2.0	ea	$	1,200.00	$	2,400
4	5 1/4" Hydrant w/ Gate Valve & Box	1.0	ea	$	4,000.00	$	4,000
5	Roads & Driveways						
	Jack & Bore Crossing	100.0	lf	$	250.00	$	25,000
	Driveway Repair	3.0	ea	$	2,500.00	$	7,500
6	Traffic Control	1.0	ls	$	1,500.00	$	1,500
7	Erosion Control	1.0	ls	$	2,500.00	$	2,500
8	Restoration	1.0	ls	$	5,000.00	$	5,000
9	Testing	4,450.0	lf	$	0.50	$	2,230
	Subtotal					**$**	**151,430**
10	Mobilization	4.0%				$	6,000
11	Bonds & Insurance	1.0%				$	1,500
	Construction Subtotal					**$**	**158,900**

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
PRELIMINARY PROJECT COST ESTIMATE
ALTERNATIVE 8 - PARALLEL BOOSTER STATION SUPPLY

	Description	Quant.	Unit		Unit Cost		Total Cost
CONSTRUCTION COST							
1	16" Water Main	7,000.0	ft	$	67.00	$	469,000
2	16" Butterfly Valve	4.0	ea	$	6,100.00	$	24,400
3	Cut-In Connections to Existing Mains	4.0	ea	$	7,500.00	$	30,000
4	Roads & Driveways						
	Jack & Bore Crossing	300.0	lf	$	520.00	$	156,000
	Open Cut Crosssing	2.0	ea	$	2,500.00	$	5,000
	Driveways	0.0	ea	$	2,500.00	$	-
5	Booster Station Improvements	1.0	ls			$	192,000
6	New Master Meter						
	Structure	1.0	ls	$	40,000.00	$	40,000
	Meter	1.0	ea	$	15,500.00	$	15,500
7	Traffic Control	1.0	ls	$	2,000.00	$	2,000
8	Erosion Control	1.0	ls	$	10,000.00	$	5,000
9	Restoration	1.0	ls	$	5,000.00	$	5,000
10	Testing	7,000.0	lf	$	1.00	$	7,000
	Subtotal					**$**	**950,900**
8	Mobilization	4.0%				$	38,000
9	Bonds & Insurance	1.0%				$	9,500
	Construction Subtotal					**$**	**998,400**

Appendix G

Life Cycle Cost Analysis Calculations

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
LIFE CYCLE COST ANALYSIS
ALTERNATIVE 2 - CR 225 W WATER MAIN

Assumptions:		**Number** (ea)	**Useful Life** (years)		**Unit Cost**
1	Financial Data (jan., 2017)				
	RD 20-Year Interest Rate	0.50%			
	SRF Interest Rate	2.21%			
	Inflation Rate =	3.00%			
2	Bond Period	20.0	years		
3	Study Period	20.0	years		
4	Assets w/ 20 year life - % value at end of life	10.0%			
5	Long Lived Assests (longer than 20 Years)				
	8" Water Main	16,175.0	75.0	$	628,620
	Valves	9.0	40.0	$	12,000
6	Short Lived Assests (less than 20 years)				
	None				
7	Total Project Cost			$	1,094,450
8	Present Value Factor	Pv =	$1 / ((1 + i) ^ n)$		
		i =	Interest Rate		
		n =	Bond Period		
		Pv =	0.9051		
8	Present Worth Factor	Pw =	$\frac{((1 + i) ^ n) - 1}{i * (1 + i) ^ n)}$		
		Pw =	18.987		
9	Inflation Factor, 20 Year	i =	$(1 + i) ^ n$		
			1.806		

		2016 Value	**Salvage Value @ 20 Years**	**Yearly Replacement Cost**
Salvage Costs (Assets longer than 20 years)				
1	Transmission Mains			
	8" Water Main	$ 628,620	$ 460,988	$ 8,382
2	Valves	$ 12,000	$ 6,000	$ 300
	TOTAL		$ 466,988	$ 8,682
Short Lived Assets (less than 20 years)				$ -
Operations and Maintenance Costs (2015)				
1	Salaries & Wages	$ 307,601		
	Employee Benefits	$ 158,855		
	Outside Services	$ 15,616		

	Utilities				
	Pumping	$	8,191		
	Other	$	27,477		
	Insurance	$	27,206		
	Contractural Service	$	9,869		
	Materials & Supplies	$	23,395		
	Transportation	$	12,115		
	Professional Fees	$	24,732		
	Tank Maintenance	$	69,268		
	Cost f Water	$	645,984		
	Miscellaneous	$	26,994		
	Total	$	1,357,303		

LIFE CYCLE COST ANALYSIS

	Federal Real Discount Rate		0.50%		
	Planning Period		20.0		
a	**Total Project Costs:**			$	1,094,450
b	**Annual Operation & Maintenance:**	$	1,357,303		
	O&M 20 Year PW			$	25,771,700
c	**Short Lived Depreciated Assets:**	$	8,682		
	SLA 20 Year PW			$	164,800
d	**Future Salvage Value:**	$	466,988		
	Salvage Value 20 Year PW			$	422,700
e	**Total Present Worth (a + b + c - d)**			**$**	**26,608,250**

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
LIFE CYCLE COST ANALYSIS
ALTERNATIVE 3 - SR 68 WATER MAIN

Assumptions:		**Number** (ea)	**Useful Life** (years)		**Unit Cost**
1	Financial Data (jan., 2017)				
	RD 40-Year Interest Rate	0.50%			
	SRF Interest Rate	2.21%			
	Inflation Rate =	3.00%			
2	Bond Period	20.0	years		
3	Study Period	20.0	years		
4	Assets w/ 20 year life - % value at end of life	10.0%			
5	Long Lived Assests (longer than 20 Years)				
	8" Water Main	1.0	75.0	$	211,190
	Valves	5.0	40.0	$	7,400
6	Short Lived Assests (less than 20 years)				
	None				
7	Total Project Cost			$	360,100
8	Present Value Factor	Pv =	1 / ((1 + i) ^ n)		
		i =	Interest Rate		
		n =	Bond Period		
		Pv =	0.9051		
8	Present Worth Factor	Pw =	$\frac{((1 + i)^n) - 1}{i * (1 + i)^n}$		
		Pw =	18.987		
9	Inflation Factor, 20 Year	i =	(1 + i) ^ n		
			1.806		

		2016 Value	**Salvage Value @ 20 Years**	**Yearly Replacement Cost**
Salvage Costs (Assets longer than 20 years)				
1	Transmission Mains			
	8" Water Main	$ 211,190	$ 154,873	$ 2,816
2	Valves	$ 7,400	$ 3,700	$ 185
	TOTAL		$ 158,573	$ 3,001
Short Lived Assets (less than 20 years)				$ -
Operations and Maintenance Costs (2015)				
1	Salaries & Wages	$ 307,601		
	Employee Benefits	$ 158,855		
	Outside Services	$ 15,616		

Utilities		
Pumping	$	8,292
Other	$	27,477
Insurance	$	27,206
Contractural Service	$	9,869
Materials & Supplies	$	23,395
Transportation	$	12,115
Professional Fees	$	24,732
Tank Maintenance	$	69,268
Cost f Water	$	645,984
Miscellaneous	$	26,994
Total	$	1,357,404

LIFE CYCLE COST ANALYSIS

	Federal Real Discount Rate			0.50%
	Planning Period			20.0
a	**Total Project Costs:**		$	360,100
b	**Annual Operation & Maintenance:**	$ 1,357,404		
	O&M 20 Year PW		$	25,773,600
c	**Short Lived Depreciated Assets:**	$ 3,001		
	SLA 20 Year PW		$	57,000
d	**Future Salvage Value:**	$ 158,573		
	Salvage Value 20 Year PW		$	143,500
e	**Total Present Worth (a + b + c - d)**		**$**	**26,047,200**

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
LIFE CYCLE COST ANALYSIS
ALTERNATIVE 4 - CR 350 W WATER MAIN

Assumptions:		**Number** (ea)	**Useful Life** (years)		**Unit Cost**
1	Financial Data (jan., 2017)				
	RD 40-Year Interest Rate	0.50%			
	SRF Interest Rate	2.21%			
	Inflation Rate =	3.00%			
2	Bond Period	20.0	years		
3	Study Period	20.0	years		
4	Assets w/ 20 year life - % value at end of life	10.0%			
5	Long Lived Assests (longer than 20 Years)				
	8" Water Main	1.0	75.0	$	312,540
	Valves	6.0	40.0	$	8,800
6	Short Lived Assests (less than 20 years)				
	None				
7	Total Project Cost			$	636,300
8	Present Value Factor	Pv =	1 / ((1 + i) ^ n)		
		i =	Interest Rate		
		n =	Bond Period		
		Pv =	0.9051		
8	Present Worth Factor	Pw =	$\frac{((1 + i) ^ n) - 1}{i * (1 + i) ^ n)}$		
		Pw =	18.987		
9	Inflation Factor, 20 Year	i =	(1 + i) ^ n		
			1.806		

		2016 Value	**Salvage Value @ 20 Years**	**Yearly Replacement Cost**
Salvage Costs (Assets longer than 20 years)				
1	Transmission Mains			
	8" Water Main	$ 312,540	$ 229,196	$ 4,167
2	Valves	$ 8,800	$ 4,400	$ 220
	TOTAL		$ 233,596	$ 4,387
Short Lived Assets (less than 20 years)				$ -
Operations and Maintenance Costs (2015)				
1	Salaries & Wages	$ 307,601		
	Employee Benefits	$ 158,855		
	Outside Services	$ 15,616		

Utilities			
Pumping	$	8,292	
Other	$	27,477	
Insurance	$	27,206	
Contractural Service	$	9,869	
Materials & Supplies	$	23,395	
Transportation	$	12,115	
Professional Fees	$	24,732	
Tank Maintenance	$	69,268	
Cost f Water	$	645,984	
Miscellaneous	$	26,994	
Total	$	1,357,404	

LIFE CYCLE COST ANALYSIS

	Federal Real Discount Rate		0.50%		
	Planning Period		20.0		
a	**Total Project Costs:**			$	636,300
b	**Annual Operation & Maintenance:**	$	1,357,404		
	O&M 20 Year PW			$	25,773,600
c	**Short Lived Depreciated Assets:**	$	4,387		
	SLA 20 Year PW			$	83,300
d	**Future Salvage Value:**	$	233,596		
	Salvage Value 20 Year PW			$	211,400
e	**Total Present Worth (a + b + c - d)**			**$**	**26,281,800**

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
LIFE CYCLE COST ANALYSIS
ALTERNATIVE 5 - CR 200 S WATER MAIN

Assumptions:		**Number** (ea)	**Useful Life** (years)	**Unit Cost**
1	Financial Data (jan., 2017)			
	RD 40-Year Interest Rate	0.50%		
	SRF Interest Rate	2.21%		
	Inflation Rate =	3.00%		
2	Bond Period	20.0	years	
3	Study Period	20.0	years	
4	Assets w/ 20 year life - % value at end of life	10.0%		
5	Long Lived Assests (longer than 20 Years)			
	6" Water Main	1.0	75.0	$ 141,880
	Valves	4.0	40.0	$ 4,200
6	Short Lived Assests (less than 20 years)			
	None			
7	Total Project Cost			$ 284,350
8	Present Value Factor	Pv =	1 / ((1 + i) ^ n)	
		i =	Interest Rate	
		n =	Bond Period	
		Pv =	0.9051	
8	Present Worth Factor	Pw =	$\frac{((1 + i) ^ n) - 1}{i * (1 + i) ^ n)}$	
		Pw =	18.987	
9	Inflation Factor, 20 Year	i =	(1 + i) ^ n	
			1.806	

		2016 Value	**Salvage Value @ 20 Years**	**Yearly Replacement Cost**
Salvage Costs (Assets longer than 20 years)				
1	Transmission Mains			
	6" Water Main	$ 141,880	$ 104,045	$ 1,892
2	Valves	$ 4,200	$ 2,100	$ 105
	TOTAL		$ 106,145	$ 1,997
Short Lived Assets (less than 20 years)				$ -
Operations and Maintenance Costs (2015)				
1	Salries & Wages	$ 307,601		
	Employee Benefits	$ 158,855		
	Outside Services	$ 15,616		

Utilities		
Pumping	$	8,292
Other	$	27,477
Insurance	$	27,206
Contractural Service	$	9,869
Materials & Supplies	$	23,395
Transportation	$	12,115
Professional Fees	$	24,732
Tank Maintenance	$	69,268
Cost f Water	$	645,984
Miscellaneous	$	26,994
Total	$	1,357,404

LIFE CYCLE COST ANALYSIS

	Federal Real Discount Rate	0.50%		
	Planning Period	20.0		
a	**Total Project Costs:**		$	284,350
b	**Annual Operation & Maintenance:**	$ 1,357,404		
	O&M 20 Year PW		$	25,773,600
c	**Short Lived Depreciated Assets:**	$ 1,997		
	SLA 20 Year PW		$	37,900
d	**Future Salvage Value:**	$ 106,145		
	Salvage Value 20 Year PW		$	96,100
e	**Total Present Worth (a + b + c - d)**		**$**	**25,999,750**

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
LIFE CYCLE COST ANALYSIS
ALTERNATIVE 6 - CR 350 W & 200 S WATER MAINS

Assumptions:		**Number** (ea)	**Useful Life** (years)		**Unit Cost**
1	Financial Data (jan., 2017)				
	RD 40-Year Interest Rate	0.50%			
	SRF Interest Rate	2.21%			
	Inflation Rate =	3.00%			
2	Bond Period	20.0	years		
3	Study Period	20.0	years		
4	Assets w/ 20 year life - % value at end of life	10.0%			
5	Long Lived Assests (longer than 20 Years)				
	6" Water Main	1.0	75.0	$	202,110
	8" Water Main	1.0	75.0	$	396,160
	6" Valves	4.0	40.0	$	3,900
	8" Valves	6.0	40.0	$	8,600
6	Short Lived Assests (less than 20 years)				
	None				
7	Total Project Cost			$	1,093,300
8	Present Value Factor	Pv =	$1 / ((1 + i) ^ n)$		
		i =	Interest Rate		
		n =	Bond Period		
		Pv =	0.9051		
8	Present Worth Factor	Pw =	$\frac{((1 + i) ^ n) - 1}{i * (1 + i) ^ n)}$		
		Pw =	18.987		
9	Inflation Factor, 20 Year	i =	$(1 + i) ^ n$		
			1.806		

		2016 Value	**Salvage Value @ 20 Years**	**Yearly Replacement Cost**
Salvage Costs (Assets longer than 20 years)				
1	Transmission Mains			
	6" Water Main	$ 202,110	$ 148,214	$ 2,695
	8" Water Main	$ 396,160	$ 290,517	$ 5,282
2	Valves			
	6" Valves	$ 3,900	$ 1,950	$ 98
	8" Valves	$ 8,600	$ 4,300	$ 215
	TOTAL		$ 444,981	$ 8,289
Short Lived Assets (less than 20 years)				$ -

Operations and Maintenance Costs (2015)

1	Salries & Wages	$	307,601
	Employee Benefits	$	158,855
	Outside Services	$	15,616
	Utilities		
	Pumping	$	8,292
	Other	$	27,477
	Insurance	$	27,206
	Contractural Service	$	9,869
	Materials & Supplies	$	23,395
	Transportation	$	12,115
	Professional Fees	$	24,732
	Tank Maintenance	$	69,268
	Cost f Water	$	645,984
	Miscellaneous	$	26,994
	Total	$	1,357,404

LIFE CYCLE COST ANALYSIS

	Federal Real Discount Rate		0.50%		
	Planning Period		20.0		
a	**Total Project Costs:**			$	1,093,300
b	**Annual Operation & Maintenance:**	$	1,357,404		
	O&M 20 Year PW			$	25,773,600
c	**Short Lived Depreciated Assets:**	$	8,289		
	SLA 20 Year PW			$	157,400
d	**Future Salvage Value:**	$	444,981		
	Salvage Value 20 Year PW			$	402,700
e	**Total Present Worth (a + b + c - d)**			**$**	**26,621,600**

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
LIFE CYCLE COST ANALYSIS
ALTERNATIVE 7 - SR 64 WATER MAIN

Assumptions:		**Number** (ea)	**Useful Life** (years)	**Unit Cost**
1	Financial Data (jan., 2017)			
	RD 40-Year Interest Rate	0.50%		
	SRF Interest Rate	2.21%		
	Inflation Rate =	3.00%		
2	Bond Period	20.0	years	
3	Study Period	20.0	years	
4	Assets w/ 20 year life - % value at end of life	10.0%		
5	Long Lived Assests (longer than 20 Years)			
	6" Water Main	1.0	75.0	$ 77,570
	Valves	2.0	40.0	$ 2,400
6	Short Lived Assests (less than 20 years)			
	None			
7	Total Project Cost			$ 178,300
8	Present Value Factor	Pv =	1 / ((1 + i) ^ n)	
		i =	Interest Rate	
		n =	Bond Period	
		Pv =	0.9051	
8	Present Worth Factor	Pw =	$\frac{((1 + i) ^ n) - 1}{i * (1 + i) ^ n}$	
		Pw =	18.987	
9	Inflation Factor, 20 Year	i =	(1 + i) ^ n	
			1.806	

		2016 Value	**Salvage Value @ 20 Years**	**Yearly Replacement Cost**
Salvage Costs (Assets longer than 20 years)				
1	Transmission Mains			
	6" Water Main	$ 77,570	$ 56,885	$ 1,034
2	Valves	$ 2,400	$ 1,200	$ 60
	TOTAL		$ 58,085	$ 1,094
Short Lived Assets (less than 20 years)				$ -
Operations and Maintenance Costs (2015)				
1	Salries & Wages	$ 307,601		
	Employee Benefits	$ 158,855		
	Outside Services	$ 15,616		

	Utilities				
	Pumping	$	8,292		
	Other	$	27,477		
	Insurance	$	27,206		
	Contractural Service	$	9,869		
	Materials & Supplies	$	23,395		
	Transportation	$	12,115		
	Professional Fees	$	24,732		
	Tank Maintenance	$	69,268		
	Cost f Water	$	645,984		
	Miscellaneous	$	26,994		
	Total	$	1,357,404		

LIFE CYCLE COST ANALYSIS

	Federal Real Discount Rate		0.50%		
	Planning Period		20.0		
a	**Total Project Costs:**			$	178,300
b	**Annual Operation & Maintenance:**	$	1,357,404		
	O&M 20 Year PW			$	25,773,600
c	**Short Lived Depreciated Assets:**	$	1,094		
	SLA 20 Year PW			$	20,800
d	**Future Salvage Value:**	$	58,085		
	Salvage Value 20 Year PW			$	52,600
e	**Total Present Worth (a + b + c - d)**			**$**	**25,920,100**

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
LIFE CYCLE COST ANALYSIS
ALTERNATIVE 8 - PARALLEL BOOSTER STATION SUPPLY

Assumptions:		**Number** (ea)	**Useful Life** (years)		**Unit Cost**
1	Financial Data (jan., 2017)				
	RD 40-Year Interest Rate	0.50%			
	SRF Interest Rate	2.21%			
	Inflation Rate =	3.00%			
2	Bond Period	20.0	years		
3	Study Period	20.0	years		
4	Assets w/ 20 year life - % value at end of life	10.0%			
5	Long Lived Assests (longer than 20 Years)				
	16" Water Main	1.0	75.0	$	283,720
	Valves	8.0	40.0	$	26,200
	Meter Vault	1.0	75.0	$	24,300
6	Short Lived Assests (less than 20 years)				
	Master Meter	1.0	20.0	$	32,000
7	Total Project Cost			$	1,065,100
8	Present Value Factor	Pv =	$1 / ((1 + i) ^ n)$		
		i =	Interest Rate		
		n =	Bond Period		
		Pv =	0.9051		
8	Present Worth Factor	Pw =	$\frac{((1 + i) ^ n) - 1}{i * (1 + i) ^ n)}$		
		Pw =	18.987		
9	Inflation Factor, 20 Year	i =	$(1 + i) ^ n$		
			1.806		

		2016 Value	**Salvage Value @ 20 Years**	**Yearly Replacement Cost**
Salvage Costs (Assets longer than 20 years)				
1	Transmission Mains			
	16" Water Main	$ 283,720	$ 208,061	$ 3,783
2	Valves	$ 26,200	$ 13,100	$ 655
3	Meter Vault	$ 24,300	$ 17,820	$ 324
	TOTAL		$ 238,981	$ 4,762
Short Lived Assets (less than 20 years)				
1	Master Meter	$ 32,000		$ 1,600

Operations and Maintenance Costs (2015)

1	Salries & Wages	$	307,601		
	Employee Benefits	$	158,855		
	Outside Services	$	15,616		
	Utilities				
	Pumping	$	8,280		
	Other	$	27,477		
	Insurance	$	27,206		
	Contractural Service	$	9,869		
	Materials & Supplies	$	23,395		
	Transportation	$	12,115		
	Professional Fees	$	24,732		
	Tank Maintenance	$	69,268		
	Cost f Water	$	645,984		
	Miscellaneous	$	26,994		
	Total	$	1,357,392		

LIFE CYCLE COST ANALYSIS

	Federal Real Discount Rate		0.50%		
	Planning Period		20.0		
a	**Total Project Costs:**			$	1,065,100
b	**Annual Operation & Maintenance:**	$	1,357,392		
	O&M 20 Year PW			$	25,773,400
c	**Short Lived Depreciated Assets:**	$	6,362		
	SLA 20 Year PW			$	120,800
d	**Future Salvage Value:**	$	238,981		
	Salvage Value 20 Year PW			$	216,300
e	**Total Present Worth (a + b + c - d)**			**$**	**26,743,000**

GIBSON WATER, INC.
GIBSON COUNTY, INDIANA
DISTRIBUTION SYSTEM IMPROVEMENTS
LIFE CYCLE COST ANALYSIS
ALTERNATIVE 9 - COMBINED ALTERNATIVES - 2, 3, 6, 7, & 8

	Assumptions:	**Number** (ea)	**Useful Life** (years)		**Unit Cost**
1	Financial Data (jan., 2017)				
	RD 40-Year Interest Rate	0.50%			
	SRF Interest Rate	2.21%			
	Inflation Rate =	3.00%			
2	Bond Period	20.0	years		
3	Study Period	20.0	years		
4	Assets w/ 20 year life - % value at end of life	10.0%			
5	Long Lived Assests (longer than 20 Years)				
	6" Water Main	1.0	75.0	$	279,680
	8" Water Main	1.0	75.0	$	1,235,970
	16" Water Main	1.0	75.0	$	283,720
	6" Valves	6.0	40.0	$	6,300
	8" Valves	30.0	40.0	$	28,000
	16" Valves	4.0	40.0	$	26,200
	Meter Vault	1.0	75.0	$	21,500
6	Short Lived Assests (less than 20 years)				
	Flow Meter	1.0	20.0	$	32,000
7	Total Project Cost			$	3,663,300
8	Present Value Factor	Pv =	$1 / ((1 + i) ^ n)$		
		i =	Interest Rate		
		n =	Bond Period		
		Pv =	0.9051		
8	Present Worth Factor	Pw =	$\frac{((1 + i) ^ n) - 1}{i * (1 + i) ^ n)}$		
		Pw =	18.987		
9	Inflation Factor, 20 Year	i =	$(1 + i) ^ n$		
			1.806		

		2016 Value	**Salvage Value @ 20 Years**	**Yearly Replacement Cost**
Salvage Costs (Assets longer than 20 years)				
1	Transmission Mains			
	6" Water Main	$ 279,680	$ 205,099	$ 3,729
	8" Water Main	$ 1,235,970	$ 906,378	$ 16,480
	16" Water Main	$ 283,720	$ 208,061	$ 3,783
2	Valves			
	6" Valves	$ 6,300	$ 3,150	$ 158
	8" Valves	$ 28,000	$ 14,000	$ 700

	16" Valves	$	26,200	$	13,100	$ 655
3	Meter Vault	$	21,500	$	15,767	$ 287
				$	1,365,555	$ 25,791

Short Lived Assets (less than 20 years)

1	Master Meter	$	32,000	$	1,600
				$	27,391

Operations and Maintenance Costs (2015)

1	Salaries & Wages	$	307,601
	Employee Benefits	$	158,855
	Outside Services	$	15,616
	Utilities		
	Pumping	$	7,757
	Other	$	27,477
	Insurance	$	27,206
	Contractural Service	$	9,869
	Materials & Supplies	$	23,395
	Transportation	$	12,115
	Professional Fees	$	24,732
	Tank Maintenance	$	69,268
	Cost of Water	$	645,984
	Miscellaneous	$	26,994
	Total	$	1,356,900

LIFE CYCLE COST ANALYSIS

	Federal Real Discount Rate		0.50%		
	Planning Period		20.0		
a	**Total Project Costs:**			$	3,663,300
b	**Annual Operation & Maintenance:**	$	1,356,900		
				$	25,764,000
	O&M 20 Year PW				
c	**Short Lived Depreciated Assets:**	$	27,400		
	SLA 20 Year PW			$	520,300
d	**Future Salvage Value:**	$	1,365,600		
	Salvage Value 20 Year PW			$	1,236,000
e	**Total Present Worth (a + b + c - d)**			**$**	**28,711,600**

Appendix H

Duke Energy Power Rates

Duke Energy Indiana, LLC
1000 East Main Street
Plainfield, Indiana 46168

RATE HLF—SCHEDULE FOR HIGH LOAD FACTOR SERVICE

Availability

Available to any customer contracting for a specified capacity of not less than 25 kW. Applicant must be located adjacent to an electric transmission or distribution line of Company that is adequate and suitable for supplying the service requested.

Character of Service

Alternating current having a frequency of sixty Hertz and furnished in accordance with the provisions set forth hereunder.

Rate*

Connection Charges per Month:

Secondary	$ 15.00
Primary and Primary Direct	$ 75.00
Transmission	$300.00

Maximum Load Charge (Monthly)

Transmission Line Service at nominal voltage of 138,000, 230,000 or 345,000 Volts Each kW of Billing Maximum Load	$ 10.35 per kW
Transmission Line Service at nominal voltage of 69,000 Volts Each kW of Billing Maximum Load	$ 10.83 per kW
Primary Direct Service at nominal voltage of 2,400 to 34,500 Volts Each kW of Billing Maximum Load	$ 12.05 per kW
Primary Service at nominal voltage of 2,400 to 34,500 Volts Each kW of Billing Maximum Load	$ 13.08 per kW
Secondary Service at nominal voltage of 480 Volts or lower Each kW of Billing Maximum Load	$ 14.06 per kW

Energy Charge (In addition to the Maximum Load Charge)

Transmission Line Service at nominal voltage of 138,000, 230,000 or 345,000 Volts For All Energy Used Per Month	$0.015848 per kWh
Transmission Line Service at nominal voltage of 69,000 Volts For All Energy Used Per Month	$0.015904 per kWh
Primary Direct Service at nominal voltage of 2,400 to 34,500 Volts For All Energy Used Per Month	$0.016065 per kWh
Primary Service at nominal voltage of 2,400 to 34,500 Volts For All Energy Used Per Month	$0.016275 per kWh
Secondary Service at nominal voltage of 480 Volts or lower For All Energy Used Per Month	$0.016830 per kWh

KVAr Charge

For Each kVAr of the Monthly Billed kVAr Demand	$0.24	per kVAr

RATE HLF—SCHEDULE FOR HIGH LOAD FACTOR SERVICE

Monthly Minimum Charge

The monthly minimum charge shall be the Maximum Load Charge.

Measurements of Maximum Load and Energy

Maximum Load shall be measured by suitable recording instruments provided by Company. The Metered Maximum Load shall be the customer's highest average thirty-minute kW load in the billing period.

When energy is measured through more than one meter (permitted in the case of metering at a voltage of 480 Volts or lower under Paragraph 4 of Special Terms and Conditions) the Maximum Loads, separately determined for each meter, shall be added together for determining the Maximum Load for the month.

Energy shall be measured by suitable integrating instruments provided by Company.

Metering Adjustments

At the option of the Company, service hereunder may be metered at voltage levels different from delivered voltages. In the event metered voltages exceed delivered voltages, before computing the charges, the actual measurement of energy, kVAr and Billing Maximum Load shall be decreased by one percent (1%). In the event delivered voltages exceed metered voltages, before computing the charges, the actual measurement of energy, kVAr and Billing Maximum Load shall be increased by one percent (1%).

Billing Maximum Load

The Billing Maximum Load will equal the Metered Maximum Load in kW adjusted for metering adjustments, if applicable. In no event shall the Billing Maximum Load be less than 25 kW.
Billing of kVAr

For Customers who have pulse metering, the billed kVAr demand will be determined by trigonometric calculation using the customer's peak 30 minute kW demand for the month and the power factor coincident with the peak 30 minute kW demand for the month. For Customers who do not have pulse metering, the billed kVAr demand will be determined by trigonometric calculation using the Customer's peak 30 minute kW demand for the month and the average power factor for the month.

Special Terms and Conditions

1. For Customers taking transmission or primary service, Customer shall furnish, own, and maintain, at his own expense, the complete substation structure and equipment, including switches and protective equipment, transformers and other apparatus, any or all of which is necessary for Customer to take service at the standard primary or transmission line voltage selected by Company. Company will, however, furnish, own, operate, and maintain all necessary metering equipment. Failure of a customer to provide proper maintenance on facilities described hereinabove which results in premature equipment failure and/or interruption to the Company's other customers shall be considered negligent and the Company may require the Customer to install protective equipment as specified by the Company in order to provide the necessary protection and isolation. Said protective equipment shall be furnished, owned, and maintained by the Customer, however, in certain instances Company retains the option of requiring the Customer to enter into a specific maintenance agreement with the Company. Company also retains the option of furnishing, owning, and maintaining said protective equipment as per "Standard Contract Rider No. 53—Excess Facilities."

RATE HLF—SCHEDULE FOR HIGH LOAD FACTOR SERVICE

Special Terms and Conditions (Contd.)

2. All wiring, pole lines, wires, and other electrical equipment and apparatus located beyond point of connection of Customer's service lines with the lines of Company are considered the distribution system of Customer and shall be furnished, owned, and maintained by Customer, except in the case of metering equipment and other equipment incidental to the rendering of service, if any, that is furnished, owned and maintained by Company, and installed beyond point of connection.

3. The Company normally does not provide transformations within the transmission and/or primary service classifications as described in the transmission and primary maximum load charges. However, in the case of unusual service requests where the Company's existing facilities adjacent to the Customer are inadequate, the Company may furnish such transformations upon Customer paying the appropriate excess facilities charge. The Company shall not furnish, own, and maintain such transformers on an excess facilities basis solely for the purpose of modifying Paragraph 1 on the previous page.

4. The rates hereunder are predicated upon the supply of service being delivered at a single location in such a manner that the measurement of the various components of the service may be made through one metering installation, except that service metered at a voltage of 480 Volts or lower may be furnished through not more than one meter for the lighting service and one meter for the power service, unless it is required by law to install a separate service for exit lighting, in which case an additional meter will be installed for the exit lighting.

5. During certain scheduled periods of time, Customers served at primary voltage and higher may perform normal maintenance or repair that will result in a partial or total reduction in electrical consumption during certain monthly billing periods. Such maintenance or repair period may be scheduled and agreed upon by Customer and Company at least thirty (30) days prior to such period. There shall be a maximum of two (2) such scheduled periods in a twelve-month consecutive period not to exceed 14 days in total duration for both such periods.

   Whenever such maintenance or repair periods have been scheduled with and agreed to by Company, Customer will be billed for the actual maximum load during such periods on the basis of the proration of the Maximum Load Charge. Such proration will be based on the ratio of the number of days in the scheduled maintenance or repair period, divided by thirty (30) days. The actual energy used during the maintenance or repair period will be billed according to the Energy Charge of this rate schedule.

   For all of the other days during the monthly billing period in which there has been a scheduled maintenance or repair period, Customer will be billed for the maximum load, as determined by the Billing Maximum Load provision of this rate schedule, multiplied by the complement of the above computed prorate ratio. The Energy Charge will be computed on the actual energy used during the remaining portion of the monthly billing period.

   A $500.00 fee will be imposed on customers taking advantage of the Maintenance Period Provision, but only at those times when such periods are taken.

   *Subject to the applicable rate adjustment riders listed in Appendix A.

Appendix I

Financial Statement

GIBSON WATER, INC.

FINANCIAL STATEMENTS

AND OTHER FINANCIAL INFORMATION

YEARS ENDED DECEMBER 31, 2015 AND 2014

GIBSON WATER, INC.

FINANCIAL STATEMENTS

HAUBSTADT, INDIANA

TABLE OF CONTENTS

GIBSON WATER, INC.

ORGANIZATION AND SERVICE

State of Incorporation

Indiana

Officers and Directors

Duane Michel	President and Director
Kreig Christy	Vice President and Director
Kathryn Armstrong	Treasurer and Director
Jim Pohl	Secretary and Director
Stephen Meny	Assistant Secretary/Treasurer and Director

Service

Distribution and sale of water to rural areas and incorporated towns in Gibson County

Office

Haubstadt, Indiana

CHARLES A. BUECHLEIN, CPA, CMA, CGMA
MARK W. BUECHLEIN, CPA, CGMA

BUECHLEIN
AND ASSOCIATES, P.C.

P.O. BOX 519 • 1805 DISPATCH ROAD
JASPER, IN 47547-0519

BRIAN K. HOSTETTER, CPA, CGMA
RALPH V. MICHEL, CPA, CGMA
SONYA K. SEUFERT, CPA, CGMA
DARRIN J. WHALEY, CPA, CIA, CFE, CGMA
LINDSAY M. DUMOND, CPA
REX ALAN SOULSBY, CPA

CERTIFIED PUBLIC ACCOUNTANTS

PHONE (812) 482-3535
FAX (812) 482-4249

INDEPENDENT AUDITORS' REPORT

To the Board of Directors of
Gibson Water, Inc.
Haubstadt, Indiana

We have audited the accompanying financial statements of Gibson Water, Inc. (a nonprofit corporation) which comprise the statements of financial position as of December 31, 2015 and 2014, and the related statements of activities and changes in net assets and cash flows for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements
Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility
Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement.

An audit includes performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

CHARLES A. BUECHLEIN, CPA, CMA, CGMA
MARK W. BUECHLEIN, CPA, CGMA

BUECHLEIN
AND ASSOCIATES, P.C.

P.O. BOX 519 • 1805 DISPATCH ROAD
JASPER, IN 47547-0519

BRIAN K. HOSTETTER, CPA, CGMA
RALPH V. MICHEL, CPA, CGMA
SONYA K. SEUFERT, CPA, CGMA
DARRIN J. WHALEY, CPA, CIA, CFE, CGMA
LINDSAY M. DUMOND, CPA
REX ALAN SOULSBY, CPA

CERTIFIED PUBLIC ACCOUNTANTS

PHONE (812) 482-3535
FAX (812) 482-4249

(CONTINUED)

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Gibson Water, Inc. as of December 31, 2015 and 2014, and the changes in its net assets and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America.

Other-Matter

Our audit was conducted for the purpose of forming an opinion on the financial statements as a whole. The schedules of functional expenses on page 17 are presented for purposes of additional analysis and are not a required part of the financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated in all material respects in relation to the financial statements as a whole.

Buechlein + Associates, P.C.

Certified Public Accountants

Jasper, Indiana

June 2, 2016

GIBSON WATER, INC.
STATEMENTS OF FINANCIAL POSITION

ASSETS

	DECEMBER 31, 2015	DECEMBER 31, 2014
CURRENT ASSETS		
Cash	$ 478,980	$ 500,461
Cash deposit for line extension	-	5,225
Trade accounts receivable, net		
Billed	26,437	19,198
Unbilled	87,986	86,717
Other receivable from line extension	13,109	-
Prepaid expenses	9,491	17,111
Inventory	32,949	24,164
Total current assets	648,952	652,876
PROPERTY, PLANT, AND EQUIPMENT		
Utility plant in service	16,669,837	16,537,622
Accumulated depreciation	(5,285,427)	(5,002,039)
Net utility plant in service	11,384,410	11,535,583
OTHER ASSETS		
Deferred tank painting expense	806,160	907,053
Total assets	$ 12,839,522	$ 13,095,512

GIBSON WATER, INC.
STATEMENTS OF ACTIVITIES AND CHANGES IN NET ASSETS

	YEAR ENDED DECEMBER 31, 2015	YEAR ENDED DECEMBER 31, 2014
	UNRESTRICTED	
OPERATING REVENUES		
Water sales		
Residential	$ 568,317	$ 564,021
Commercial	177,433	201,003
Industrial	555,501	533,458
Agricultural	34,800	25,363
Sold for resale	88,435	83,301
Other	7,552	8,348
Total water sales	1,432,038	1,415,494
Miscellaneous operating income	29,339	27,661
Total operating revenues	1,461,377	1,443,155
OPERATING EXPENSES		
Cost of water	645,984	599,448
Utility plant operations	258,259	275,454
Administrative and general	454,704	438,778
Total operating expenses	1,358,947	1,313,680
OPERATING INCOME BEFORE DEPRECIATION AND INTEREST	102,430	129,475
DEPRECIATION (less amortization of grants and contributions in aid of construction)	78,442	77,848
INTEREST	3,939	4,303
OPERATING INCOME	20,049	47,324
NON-OPERATING ACTIVITIES		
Interest income	195	325
Memberships issued	13,900	14,100
Memberships redeemed	(11,400)	(11,700)
Amortization of grants	(33,333)	(33,332)
Contributions in aid of construction	99,111	208,811
Amortization of contributions in aid of construction	(171,612)	(169,960)
Miscellaneous income	4,116	4,165
Total non-operating activities	(99,023)	12,409
CHANGE IN UNRESTRICTED NET ASSETS	(78,974)	59,733
NET ASSETS AT BEGINNING OF YEAR	12,742,264	12,682,531
NET ASSETS AT END OF YEAR	$ 12,663,290	$ 12,742,264

SEE INDEPENDENT AUDITORS' REPORT
SEE NOTES TO FINANCIAL STATEMENTS

GIBSON WATER, INC.
STATEMENTS OF CASH FLOWS

	YEAR ENDED DECEMBER 31, 2015	YEAR ENDED DECEMBER 31, 2014
CASH FLOWS FROM OPERATING ACTIVITIES		
Cash received from customers	$ 1,439,760	$ 1,498,456
Cash paid to suppliers and employees	(1,385,172)	(1,209,828)
Interest received	195	325
Interest paid	(3,939)	(4,303)
Other income	4,116	4,165
Net cash provided by operating activities	54,960	288,815
CASH FLOWS FROM INVESTING ACTIVITIES		
Purchases of property and equipment	(132,215)	(254,893)
Increase in deferred tank painting expense	-	(466,588)
Net cash used by investing activities	(132,215)	(721,481)
CASH FLOWS FROM FINANCING ACTIVITIES		
Proceeds from contributions in aid of construction	99,111	208,811
Proceeds from memberships	13,900	14,100
Refunds of memberships	(11,400)	(11,700)
Principal payments on note payable	(51,062)	(60,697)
Net cash provided by financing activities	50,549	150,514
NET DECREASE IN CASH	(26,706)	(282,152)
CASH AT BEGINNING OF YEAR	505,686	787,838
CASH AT END OF YEAR	$ 478,980	$ 505,686
SUPPLEMENTAL DISCLOSURES		
Noncash activities		
Decrease in deferred tank painting expense and contract payable from settlement of contract	$ 31,625	$ -
Deferred tank painting expense on contract payable	-	73,793
Reclass of deferred tank painting expense from property and equipment	-	176,063
Acquisition of utility plant on contract payable	-	45,000

SEE INDEPENDENT AUDITORS' REPORT
SEE NOTES TO FINANCIAL STATEMENTS

GIBSON WATER, INC.
STATEMENTS OF CASH FLOWS

(CONTINUED)

RECONCILIATION OF CHANGE IN UNDESIGNATED NET ASSETS TO NET CASH PROVIDED BY OPERATING ACTIVITIES

	YEAR ENDED DECEMBER 31, 2015	YEAR ENDED DECEMBER 31, 2014
CHANGE IN UNDESIGNATED NET ASSETS	$ 24,360	$ 51,814
Adjustments to reconcile change in undesignated net assets to net cash provided by operating activities		
Depreciation	78,442	77,848
Amortization of deferred tank painting expense	69,268	99,788
(Increase) decrease in operating assets:		
Accounts receivable	(8,508)	55,301
Other receivable from line extension	(13,109)	-
Prepaid expenses	7,620	(7,877)
Inventory	(8,785)	13,258
Increase (decrease) in operating liabilities:		
Accounts payable	(332)	(1,743)
Accrued liabilities	(6,829)	426
Contracts payable	(87,167)	-
Total adjustments	30,600	237,001
Net cash provided by operating activities	$ 54,960	$ 288,815

SEE INDEPENDENT AUDITORS' REPORT
SEE NOTES TO FINANCIAL STATEMENTS

GIBSON WATER, INC.
NOTES TO FINANCIAL STATEMENTS
YEARS ENDED DECEMBER 31, 2015 AND 2014

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

NATURE OF OPERATIONS

Gibson Water, Inc. (the "Utility") provides for the distribution of potable water to its members in the rural areas of Gibson County, Indiana. The Utility serves approximately 1,700 customers. The Utility is governed by a five-member Board of Directors elected by the voting members of the Utility at the annual membership meeting. Directors are elected to serve alternating three year terms.

BASIS OF ACCOUNTING

The financial statements of the Utility have been prepared on the accrual basis of accounting and, accordingly, reflect all significant receivables, payables, and other liabilities.

The accounting guide in use by the Utility is the Uniform System of Accounts for Class A Water Utilities published by the National Association of Regulatory Utility Commissioners and is in accordance with policies prescribed or permitted by the Indiana Utility Regulatory Commission. In 2012, the Utility began amortizing the Grant Proceeds and Contributions in Aid of Construction in accordance with the Uniform System of Accounts.

REGULATORY JURISDICTION

The Utility is subject to the regulatory jurisdiction of the Indiana Utility Regulatory Commission. The Commission has the responsibility for determining the fair, just, and equitable rates and charges of the Utility, approving the incurrence of long term indebtedness, and other matters that fall within its statutory authority.

REVENUE RECOGNITION

The Utility records revenues as water is consumed by the customer.

ESTIMATES

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of income and expenses during the reporting period. Actual results could differ from those estimates.

FINANCIAL STATEMENT PRESENTATION

As required by the Presentation of Financial Statements Topic of the Financial Accounting Standards Board Accounting Standards Codification, the Utility shall report all unrestricted net assets, temporarily restricted net assets, and permanently restricted net assets. The Utility did not have any permanently restricted net assets or temporarily restricted net assets at December 31, 2015 and 2014.

GIBSON WATER, INC.
NOTES TO FINANCIAL STATEMENTS
YEARS ENDED DECEMBER 31, 2015 AND 2014

(CONTINUED)

CASH FLOW INFORMATION
Cash paid for interest was $3,939 and $4,303 for 2015 and 2014, respectively.

CASH
The Utility considers all highly liquid debt instruments with an initial maturity of three months or less to be cash equivalents.

A portion of the Utility's cash was classified as restricted on the balance sheets for the final costs of a line extension. See note 4 for more details.

ACCOUNTS RECEIVABLE
The Utility grants credit on sales of water to customers. Trade accounts receivable are recorded at the outstanding balance as of the balance sheet date. The Utility charges interest on overdue trade accounts receivable at 10% of the first $3.00 of the bill and 3% of the remaining bill. Receivables are considered past due after the due date, and accounts are written off at year-end if they are considered uncollectible. Late accounts continue to accrue monthly late penalties until paid. The Utility uses the direct write off method for any uncollectible accounts based on management's evaluation of the outstanding accounts.

Financial instruments which potentially subject the Utility to concentrations of credit risk consist primarily of accounts receivable. However, individual accounts receivable are collateralized by the amount of the membership fee of up to $100.

The Utility had $504 and $1,007 included in accounts receivable greater than 90 days as of December 31, 2015 and 2014, respectively.

INVENTORY
Inventory consists primarily of items used for the maintenance and expansion of the utility system and is valued at lower of cost (first-in, first-out method) or market.

PROPERTY, PLANT, AND EQUIPMENT
Property, plant, and equipment are recorded at cost. The Utility follows the practice of capitalizing all expenditures of property, plant, and equipment in excess of $1,500. Depreciation is computed using the straight-line method at an annual composite rate of 1.7% of depreciable utility plant in service, in accordance with regulatory requirements. Components of the property, plant, and equipment totals are summarized in Note 5.

GIBSON WATER, INC.
NOTES TO FINANCIAL STATEMENTS
YEARS ENDED DECEMBER 31, 2015 AND 2014

(CONTINUED)

DEFERRED TANK PAINTING EXPENSE
Deferred tank painting expense consists of the costs of repainting and resurfacing the Utility's tanks and standpipe. The Utility amortizes the costs using the straight-line method over the estimated time interval between repaintings and resurfacings which is estimated at 10 to 15 years. The Utility records the amortization as Maintenance of Tanks. Components of deferred tank maintenance expense are summarized in Note 6.

MEMBERSHIPS
New customers are required to pay $100 to obtain a membership certificate. Upon relinquishment of memberships, customers are refunded the cost of their membership less any past due amounts owed to the Utility for water fees.

GRANT PROCEEDS
Grants consist of assistance received from the United States Department of Agriculture under formal grant agreements used for the acquisition or construction of fixed assets. These assets become the property of the Utility and are capitalized and therefore depreciated. The Utility amortizes the grants and records as a decrease in property, plant, and equipment depreciation expense. The amortization is computed using the straight-line method over the remaining estimated useful lives of the related property. Grants and the related accumulated amortization were as follows at December 31:

	2015	2014
Grants	$ 2,000,000	$ 2,000,000
Less accumulated amortization	(133,333)	(100,000)
Grants, net of amortization	$ 1,866,667	$ 1,900,000

CONTRIBUTIONS IN AID OF CONSTRUCTION
Contributions in aid of construction consist of contributions made by members that bear the cost of extending water lines to their property and also for capital projects funded by the State of Indiana. These assets become the property of the Utility and are capitalized and therefore depreciated. The Utility amortizes the contribution in aid of construction and records as a decrease in property, plant, and equipment depreciation expense. The amortization is computed using the straight-line method over the remaining estimated useful lives of the related property. Contributions in aid of construction and the related accumulated amortization were as follows at December 31:

	2015	2014
Contributions in aid of construction	$ 10,296,711	$ 10,197,600
Less accumulated amortization	(656,190)	(484,578)
Contributions in aid of construction, net of amortization	$ 9,640,521	$ 9,713,022

GIBSON WATER, INC.
NOTES TO FINANCIAL STATEMENTS
YEARS ENDED DECEMBER 31, 2015 AND 2014

(CONTINUED)

2. INCOME TAX STATUS

The Utility is exempt from federal income tax under Section 501(c)(12) of the Internal Revenue Code and exempt from Indiana state income tax. Therefore, no provision for either federal or state income taxes has been made in the financial statements.

The Utility files income tax returns in the U.S. federal jurisdiction and Indiana state jurisdiction. The Utility is no longer subject to U.S. federal and state tax examinations by tax authorities for years prior to 2012.

3. CONCENTRATIONS

The Utility purchases all of its supply of water from the Evansville Water and Sewer Utility (Evansville Waterworks Department). The purchase of water from the Evansville Waterworks Department is made under the provisions of a long-term contract. The water purchase contract provides for Evansville Waterworks Department to furnish to the Utility purchases of up to 2.5 million gallons per day. The term of the contract is for a period of 50 years, with the rates and charges subject to periodic revision upon review and approval of the Indiana Utility Regulatory Commission.

Nearly all revenue is obtained from water sales to the local geographic area. For the years ended December 31, 2015 and 2014, the Utility had sales of $526,062 and $503,262, respectively to Toyota Motor Manufacturing, Indiana, Inc. and $88,126 and $82,383, respectively, to the town of Haubstadt.

The Utility maintains its cash in bank deposit accounts which, at times, may exceed federally insured limits. The Utility has not experienced any losses in such accounts. The amounts on deposit at December 31, 2015 and 2014, exceeded the federally insured limits by $225,739 and $462,068, respectively.

4. CASH RESTRICTIONS

The Utility's restricted cash consists of a construction account funded by outside parties for line extensions. The cash restricted for line extensions was $5,225 as of December 31, 2014. The Utility had no restricted cash as of December 31, 2015.

GIBSON WATER, INC.
NOTES TO FINANCIAL STATEMENTS
YEARS ENDED DECEMBER 31, 2015 AND 2014

(CONTINUED)

5. PROPERTY, PLANT, AND EQUIPMENT

Property, plant, and equipment consisted of the following at December 31:

	2015	2014
Organization and franchise	$ 191,433	$ 191,433
Land and land rights	953,855	953,855
Structures and improvements	2,304,738	2,304,738
Transmission and distribution	12,791,166	12,671,104
Office furniture	190,873	178,720
Transportation equipment	94,975	94,975
Tools and equipment	142,797	142,797
Total utility plant in service	16,669,837	16,537,622
Less accumulated depreciation	(5,285,427)	(5,002,039)
Net utility plant in service	$ 11,384,410	$ 11,535,583

In 2014, the Utility completed a water main relocation project at a cost of $80,735, for which the Utility was reimbursed by the Indiana Department of Transportation. The Utility had contracts payable from this project of $-0- and $45,000 as of December 31, 2015 and 2014, the respectively.

6. DEFERRED TANK PAINTING EXPENSE

The Utility's deferred tank painting expense was $806,160 and $907,053 as of December 31, 2015 and 2014, respectively. In 2015, the Utility recorded amortization of $69,268 which is included as Maintenance of Tanks expense in the Schedules of Functional Expenses. The Utility also reduced deferred tank painting expense by $31,625 in accordance with the Utility's settlement of a tank painting contract.

In 2014, the Utility recorded additions of $506,158 related to a tank painting contract. The Utility's retainage on the project was $73,793 as of December 31, 2014, and recorded as Contracts Payable in the Statements of Financial Position. The Utility also reclassified $158,458 in tank repainting costs that were originally recorded in property, plant, and equipment in previous years. In 2014, the Utility recorded amortization of $99,788, which was included as Maintenance of Tanks expense.

GIBSON WATER, INC.
NOTES TO FINANCIAL STATEMENTS
YEARS ENDED DECEMBER 31, 2015 AND 2014

(CONTINUED)

7. LONG-TERM DEBT

The note payable consisted of the following as of December 31:

	2015	2014
Note payable to bank, payable in monthly installments of $3,134; bearing interest of 2.875%; due November 2018	$ 58,655	$ 109,717
Less current portion	(35,940)	(34,996)
Long-term note payable	$ 22,715	$ 74,721

Maturities of long-term debt are as follows for the years ended December 31:

Year	Amount
2016	$ 35,940
2017	22,715
Total	$ 58,655

The note is collateralized by all business assets of the Utility.

8. EMPLOYEE RETIREMENT PLAN

The Utility has a Simplified Employee Pension Plan (SEP). All full-time employees who are at least 21 years of age and have been employed for 60 calendar days may participate in the plan. This is a defined contribution plan. Benefits are based solely on contributions. Therefore, no unfunded liability for prior service exists.

The Utility's contribution to the plan is 5% of gross wages for each participant. Retirement expense incurred by the Utility was $13,755 and $13,477 in 2015 and 2014, respectively.

GIBSON WATER, INC.
NOTES TO FINANCIAL STATEMENTS
YEARS ENDED DECEMBER 31, 2015 AND 2014

(CONTINUED)

9. RELATED PARTY TRANSACTIONS

The Utility made purchases from businesses owned by members of the Board of Directors totaling $533 in 2015 and $4,549 in 2014. The Utility contracted services with a business that is owned by a Utility employee and employs Utility employees. The contracted line extension costs were $18,600 and $8,784 for 2015 and 2014, respectively. There were no amounts payable to these businesses at December 31, 2015 and 2014, respectively. Management considers these to be arm's-length transactions.

10. SUBSEQUENT EVENTS

The Utility has evaluated subsequent events through June 2, 2016 the date which the financial statements were available to be issued.

GIBSON WATER, INC.
SCHEDULES OF FUNCTIONAL EXPENSES
YEAR ENDED DECEMBER 31, 2015 WITH COMPARATIVE TOTALS FOR 2014

	UTILITY PLANT OPERATIONS	ADMINISTRATIVE AND GENERAL	TOTALS 2015	TOTALS 2014
Salaries and wages	$ 103,725	$ 203,876	$ 307,601	$ 281,671
Employee benefits	37,200	121,655	158,855	149,595
Outside services	5,441	10,175	15,616	20,851
Utilities	37,769	-	37,769	37,269
Insurance	-	27,206	27,206	26,756
Contractual services	-	9,869	9,869	10,764
Materials and supplies	4,381	19,014	23,395	24,954
Transportation	-	12,115	12,115	16,053
Bad debts	-	66	66	300
Professional fees	-	24,734	24,734	18,613
Maintenance of tanks	69,268	-	69,268	99,788
Miscellaneous	475	25,994	26,469	27,618
Total expenses	$ 258,259	$ 454,704	$ 712,963	$ 714,232

SEE INDEPENDENT AUDITORS' REPORT
SEE NOTES TO FINANCIAL STATEMENTS

Appendix J

Gibson Water, Inc. Schedule of Water Rates and Charges

OFFICE COPY

GIBSON WATER, INC.
517 E 1250 S
HAUBSTADT IN 47639
(812) 768-6899

W	
J	HAUBSTADT RATE - $2.37/THOUSAND GALLONS
S	TOYOTA RATE - $2.37/THOUSAND GALLONS

SCHEDULE OF WATER RATES AND CHARGES

As of 3/15/2017

METERED CONSUMPTION

For use of and service rendered by the waterworks system of the Corporation, based on the use of water supplied by said system:

Consumption per Month		Rate per 1000 gallons	
First	2,000 gallons	$7.64	(15.28)
Next	5,000 gallons	$7.35	(36.75)
Next	18,000 gallons	$7.05	(126.90)
Next	75,000 gallons	$6.76	(507.00)
Next	100,000 gallons	$5.00	(500.00)
Next	300,000 gallons	$3.24	(972.00)
Over	500,000 gallons	$2.65	(1325.00)

MINIMUM CHARGE

$3482.93/1 MILLION GALLONS w/o tax

Each user shall pay a minimum charge in accordance with the following applicable size of meter installed, for which the user shall be entitled to the quantity of water set out in the following schedule of rates:

W	Meter Size	Gallons Allowed	Minimum Charge w/o Tax		
1	5/8 and ¾ inch meter	2,000	$ 15.28	1.07	16.35
2	1 inch meter	3,400	$ 25.57	1.79	27.36
3	1 ½ inch meter	6,900	$ 51.30	3.59	54.89
4	2 inch meter	11,315	$ 82.45	5.77	88.22
5	3 inch meter	21,630	$ 155.17	10.86	166.03
6	4 inch meter	37,000	$ 260.05	18.20	278.25
7	6 inch meter	75,890	$ 522.95	36.61	559.56

TEMPORARY USERS – CONDUIT

Water furnished to temporary users such as contractors shall be charged on the basis of the metered rates herein before set forth as estimated and established by the Waterworks Superintendent.

TEMPORARY USERS – VEHICLE

$7.64 PER 1;000 GALLONS

Water furnished to temporary users such as bulk haulers shall be charged this rate on the basis of volumes estimated and established by the Waterworks Superintendent.

FYI:

$25.00 Reconnect Fee	Date Bills are mailed – 15th/month
$20.00 Returned Check Charge	Date Bills are Due – 1st/month

Appendix K

Hydraulic Modeling Results

GIBSON WATER INC.
EXISTING WATER
DISTRIBUTION SYSTEM
August 2017

LOW PRESSURE AREAS DURING PEAK HOUR DEMAND

KEY
INDICATES LOW PRESSURE AREAS

DES.	R.D.D.
DRWN	M.M.S.
CHKD	J.A.P.
PROJECT NUMBER	2016115
FILE NUMBER	9

WATER SYSTEM INFRASTRUCTURE IMPROVEMENTS
EXISTING WATER SYSTEM DISTRIBUTION MAP
GIBSON WATER INC.
GIBSON COUNTY

Consultants · Civil · Mechanical · Electrical

FIGURE
K1

Fig K1 - LoPrAreaDrPkDe.dwg 1

Table K-1
Gibson Water, Inc.
Hydraulic Modeling - Junction Node Results Table

Existing Distribution System Under Average Day Demand Conditions

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-2	450	0.0	636.00	80.5
J-3	450	0.0	649.88	86.5
J-4	450	0.0	649.88	86.5
J-5	455	0.0	649.88	84.3
J-6	450	1.6	649.88	86.5
J-7	496	0.0	650.05	66.7
J-8	496	3.1	650.03	66.6
J-9	448	0.0	649.96	87.4
J-10	457	5.4	649.92	83.5
J-11	480	8.6	649.37	73.3
J-12	453	17.8	649.88	85.2
J-13	460	2.3	649.86	82.1
J-14	455	0.0	649.81	84.3
J-15	433	0.0	649.78	93.8
J-16	433	0.8	649.90	93.8
J-17	420	1.6	650.59	99.8
J-18	480	64.5	654.39	75.4
J-19	459	3.1	655.60	85.1
J-20	470	3.9	656.79	80.8
J-21	465	0.0	658.26	83.6
J-22	454	0.0	658.73	88.6
J-23	463	19.5	658.72	84.7
J-24	460	0.0	658.81	86.0
J-25	460	0.0	658.81	86.0
J-26	510	0.0	659.97	64.9
J-27	492	0.0	659.13	72.3
J-28	487	0.0	659.21	74.5
J-29	450	0.0	659.31	90.6
J-30	484	0.0	659.37	75.9
J-31	485	195.5	659.38	75.4
J-32	477	0.8	659.46	78.9
J-33	477	570.0	659.43	78.9
J-34	483	0.0	659.72	76.5
J-35	485	11.5	660.00	75.7
J-36	485	0.0	659.10	75.3
J-37	464	0.0	658.32	84.1
J-38	471	0.0	657.79	80.8
J-39	471	0.0	657.67	80.8

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-40	440	0.0	657.14	93.9
J-41	452	0.0	656.70	88.6
J-42	430	0.0	656.59	98.0
J-43	442	0.0	655.62	92.4
J-44	420	0.0	654.85	101.6
J-45	432	4.7	654.42	96.2
J-46	410	0.0	654.16	105.6
J-47	471	0.8	653.71	79.1
J-48	430	0.0	653.46	96.7
J-49	417	0.0	653.18	102.2
J-50	441	0.0	652.91	91.7
J-51	460	0.0	652.38	83.2
J-52	433	0.8	651.89	94.7
J-53	446	0.0	651.55	88.9
J-54	490	0.0	651.24	69.8
J-55	480	0.0	650.92	74.0
J-56	445	6.2	650.53	88.9
J-57	495	2.3	650.28	67.2
J-58	500	2.3	650.27	65.0
J-59	501	4.8	650.11	64.5
J-60	462	8.3	649.88	81.3
J-61	428	0.8	650.06	96.1
J-62	430	1.6	649.98	95.2
J-63	420	3.9	650.54	99.7
J-64	460	3.9	652.57	83.3
J-65	440	0.8	653.37	92.3
J-66	417	0.0	653.06	102.1
J-67	430	0.0	652.91	96.4
J-68	428	0.0	652.91	97.3
J-69	435	0.8	652.87	94.3
J-70	460	1.6	652.64	83.3
J-71	441	3.9	652.77	91.6
J-72	460	0.0	652.33	83.2
J-73	460	0.8	652.24	83.2
J-74	433	1.6	652.05	94.8
J-75	460	77.1	646.15	80.5
J-76	460	0.0	646.03	80.5
J-77	460	11.5	645.96	80.5
J-78	458	0.0	646.03	81.4
J-79	470	0.0	645.87	76.1
J-80	470	0.0	645.87	76.1
J-81	488	9.3	645.78	68.3
J-82	490	3.9	645.78	67.4
J-83	493	11.5	645.56	66.0

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-84	493	8.2	645.56	66.0
J-85	510	4.7	645.38	58.6
J-86	472	11.3	645.25	75.0
J-87	500	4.7	644.88	62.7
J-88	478	11.7	650.12	74.5
J-89	475	0.0	650.12	75.8
J-90	478	0.0	650.36	74.6
J-91	480	0.0	650.83	73.9
J-92	490	3.9	651.05	69.7
J-93	446	5.7	651.55	88.9
J-94	446	0.8	651.54	88.9
J-95	430	3.9	640.26	91.0
J-96	434	1.6	637.41	88.0
J-97	455	7.0	637.00	78.7
J-98	446	7.8	636.34	82.3
J-99	470	0.8	635.41	71.6
J-100	447	3.1	634.59	81.2
J-101	450	1.6	634.49	79.8
J-102	450	0.0	634.59	79.9
J-103	438	3.1	643.06	88.7
J-104	510	0.0	635.21	54.2
J-105	510	0.8	635.20	54.2
J-106	515	6.2	634.87	51.9
J-107	450	0.0	634.76	79.9
J-108	465	2.3	634.71	73.4
J-109	444	0.8	634.68	82.5
J-110	500	3.1	634.58	58.2
J-111	470	0.0	630.73	69.5
J-112	503	10.9	627.97	54.1
J-113	548	2.3	627.93	34.6
J-114	432	0.8	627.83	84.7
J-115	438	0.8	627.83	82.1
J-116	424	4.9	626.36	87.6
J-117	407	3.1	626.22	94.8
J-118	425	0.8	626.21	87.1
J-119	450	4.8	620.95	74.0
J-120	430	5.4	620.52	82.4
J-121	520	7.8	618.91	42.8
J-122	490	14.0	614.05	53.7
J-123	490	0.0	613.67	53.5
J-124	501	86.3	608.83	46.7
J-125	470	7.0	608.24	59.8
J-126	460	0.8	607.89	64.0
J-127	514	0.8	605.02	39.4

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-128	470	0.8	603.49	57.8
J-129	498	8.1	594.68	41.8
J-130	**522**	**3.9**	**594.44**	**31.3**
J-131	**520**	**1.6**	**594.44**	**32.2**
J-132	493	6.2	594.49	43.9
J-133	480	4.7	594.26	49.4
J-134	490	8.0	611.95	52.8
J-135	512	3.1	611.66	43.1
J-136	488	1.6	611.63	53.5
J-137	467	3.9	611.37	62.5
J-138	490	16.3	612.37	52.9
J-139	520	0.0	611.72	39.7
J-140	488	27.6	610.86	53.2
J-141	476	7.0	610.84	58.3
J-142	493	0.0	610.61	50.9
J-143	478	2.3	610.39	57.3
J-144	442	9.3	609.81	72.6
J-145	430	40.8	654.80	97.3
J-146	440	4.7	652.49	91.9
J-147	420	0.0	654.72	101.6
J-148	434	0.0	653.94	95.2
J-149	438	4.7	653.84	93.4
J-150	438	2.3	654.66	93.7
J-151	410	3.1	652.74	105.0
J-152	429	3.1	651.21	96.1
J-153	442	0.0	655.59	92.4
J-154	437	3.9	655.59	94.6
J-155	420	0.0	655.49	101.9
J-156	446	5.4	655.88	90.8
J-157	430	0.0	656.39	97.9
J-158	452	0.0	656.52	88.5
J-159	453	10.1	656.41	88.0
J-160	410	6.2	651.22	104.4
J-161	430	1.6	651.21	95.7
J-162	453	2.3	655.51	87.6
J-163	460	2.3	655.43	84.6
J-164	440	3.1	656.79	93.8
J-165	471	7.0	657.50	80.7
J-166	474	2.3	656.95	79.2
J-167	470	1.6	657.78	81.2
J-168	464	1.6	658.16	84.0
J-169	485	0.8	658.65	75.1
J-170	485	0.0	659.10	75.3
J-171	485	1.6	659.04	75.3

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-172	483	0.0	659.72	76.5
J-173	468	0.0	659.72	82.9
J-174	460	0.0	659.72	86.4
J-175	470	0.0	658.28	81.5
J-176	470	6.6	658.28	81.5
J-177	445	2.3	656.79	91.6
J-178	440	0.8	651.18	91.4
J-179	439	0.8	650.92	91.7
J-180	446	2.3	650.79	88.6
J-181	500	1.6	650.79	65.2
J-182	425	0.8	650.78	97.7
J-183	458	0.0	650.92	83.5
J-184	430	1.6	650.93	95.6
J-185	440	0.8	651.04	91.3
J-186	446	2.3	651.17	88.8
J-187	435	1.6	651.14	93.5
J-188	420	3.1	652.00	100.4
J-189	438	4.7	655.12	93.9
J-190	445	11.7	659.34	92.7
J-191	463	0.0	659.34	84.9
J-192	462	7.8	659.29	85.4
J-193	455	10.1	657.17	87.5
J-194	458	0.0	655.39	85.4
J-195	428	0.8	655.10	98.3
J-196	420	0.0	655.10	101.7
J-197	446	3.9	655.10	90.5
J-198	484	3.9	655.33	74.1
J-199	445	3.1	656.05	91.3
J-200	468	3.1	659.26	82.8
J-201	469	0.8	659.24	82.3
J-202	469	0.8	659.24	82.3
J-203	465	5.4	657.99	83.5
J-204	453	6.2	657.45	88.5
J-205	440	0.0	656.80	93.8
J-206	520	3.1	659.24	60.2
J-207	520	0.0	658.54	59.9
J-208	520	0.8	658.53	59.9
J-209	520	0.8	657.83	59.6
J-210	460	0.8	656.98	85.2
J-211	475	2.3	656.79	78.7
J-212	478	3.1	656.76	77.3
J-213	474	1.6	656.78	79.1
J-214	471	0.0	657.76	80.8
J-215	472	0.8	657.75	80.4

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-216	480	1.6	657.57	76.8
J-217	460	0.0	659.25	86.2
J-218	474	1.6	659.25	80.2
J-219	480	0.8	659.19	77.5
J-220	530	7.0	658.99	55.8
J-221	537	5.4	658.86	52.7
J-222	525	0.8	658.86	57.9
J-223	578	4.7	658.72	34.9
J-224	540	0.0	658.72	51.4
J-225	470	5.4	659.30	81.9
J-226	528	0.8	659.32	56.8
J-227	530	0.0	659.07	55.8
J-228	560	0.0	659.06	42.9
J-229	532	0.8	659.05	55.0
J-230	575	1.6	659.05	36.4
J-231	474	3.1	655.82	78.7
J-232	475	0.0	655.78	78.2
J-233	470	4.1	655.74	80.4
J-234	468	0.0	655.78	81.2
J-235	455	0.0	655.68	86.8
J-236	480	3.1	655.55	76.0
J-237	450	0.8	655.66	89.0
J-238	480	2.3	655.63	76.0
J-239	500	2.3	655.53	67.3
J-240	520	0.8	655.52	58.6
J-241	480	0.0	655.52	75.9
J-242	461	0.8	655.97	84.4
J-243	461	0.0	655.97	84.4
J-244	535	3.1	659.37	53.8
J-245	540	7.0	659.21	51.6
J-246	510	6.2	659.43	64.7
J-247	490	0.0	659.51	73.3
J-248	570	3.9	659.59	38.8
J-249	490	4.7	659.34	73.3
J-250	470	4.7	659.20	81.9
J-251	470	7.8	659.18	81.8
J-252	535	7.8	658.81	53.6
J-253	580	5.4	658.26	33.9
J-254	481	7.8	656.19	75.8
J-255	455	3.9	655.25	86.6
J-256	472	3.1	654.41	78.9
J-257	450	4.7	653.63	88.1
J-258	430	0.8	653.61	96.7
J-259	435	0.8	653.61	94.6

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-260	433	0.0	653.61	95.4
J-261	430	2.3	653.27	96.6
J-262	500	5.4	652.68	66.1
J-263	494	0.0	652.49	68.6
J-264	454	0.8	652.48	85.9
J-265	520	3.1	652.00	57.1
J-266	430	1.6	651.98	96.0
J-267	550	5.4	653.03	44.6
J-268	510	10.1	652.36	61.6
J-269	449	7.8	652.16	87.9
J-270	430	6.2	652.13	96.1
J-271	511	3.9	652.12	61.1
J-272	466	6.2	652.17	80.5
J-273	520	7.8	652.15	57.2
J-274	564	1.6	652.11	38.1
J-275	440	0.8	652.11	91.8
J-276	453	0.0	652.11	86.1
J-277	520	7.0	650.93	56.6
J-278	420	4.7	648.67	98.9
J-279	520	3.1	648.39	55.5
J-280	505	1.6	648.39	62.0
J-281	423	2.3	648.39	97.5
J-282	460	1.6	648.35	81.5
J-283	410	3.9	648.56	103.2
J-284	545	3.1	649.40	45.2
J-285	410	2.3	651.72	104.6
J-286	500	5.7	651.84	65.7
J-287	420	0.8	651.69	100.2
J-288	462	0.0	651.92	82.2
J-289	480	1.6	651.98	74.4
J-290	475	0.8	652.11	76.6
J-291	445	0.8	652.24	89.7
J-292	430	0.8	651.93	96.0
J-293	492	0.0	659.21	72.3
J-294	492	0.0	659.21	72.3
J-295	491	3.9	658.25	72.4
J-296	489	0.0	658.25	73.2
J-297	492	0.0	658.22	71.9
J-298	490	3.9	656.81	72.2
J-299	463	9.3	656.23	83.6
J-300	461	3.1	656.01	84.4
J-301	450	4.7	654.44	88.5
J-302	470	0.8	654.22	79.7
J-303	468	0.8	654.21	80.6

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-304	472	0.0	654.22	78.8
J-305	475	0.8	654.21	77.5
J-306	487	1.6	654.21	72.3
J-307	440	3.9	651.27	91.4
J-308	437	3.1	651.05	92.6
J-309	430	0.8	651.05	95.6
J-310	420	0.0	650.97	99.9
J-311	455	2.3	650.90	84.8
J-312	435	0.8	651.00	93.5
J-313	430	2.3	650.96	95.6
J-314	450	0.8	650.95	86.9
J-315	450	0.8	650.95	86.9
J-316	439	1.6	650.95	91.7
J-317	441	1.6	650.94	90.8
J-318	436	0.0	647.50	91.5
J-319	443	0.8	647.44	88.5
J-320	436	3.9	647.28	91.4
J-321	420	0.8	647.27	98.3
J-322	420	0.8	645.42	97.5
J-323	462	0.8	642.64	78.2
J-324	508	0.0	639.09	56.7
J-325	530	2.3	636.49	46.1
J-326	500	3.9	636.31	59.0
J-327	515	1.6	638.88	53.6
J-328	510	2.3	636.57	54.8
J-329	450	0.0	635.64	80.3
J-330	448	3.1	635.12	81.0
J-331	445	3.1	635.57	82.4
J-332	530	0.0	638.51	46.9
J-333	435	0.8	636.01	87.0
J-334	410	4.7	635.90	97.7
J-335	518	8.6	635.33	50.8
J-336	511	1.6	633.88	53.2
J-337	517	4.7	633.23	50.3
J-338	543	4.7	630.08	37.7
J-339	536	5.4	629.24	40.3
J-340	440	3.1	626.79	80.8
J-341	465	0.8	624.71	69.1
J-342	457	2.3	622.44	71.6
J-343	430	0.0	621.25	82.7
J-344	460	0.8	620.27	69.3
J-345	490	3.9	620.20	56.3
J-346	449	7.0	617.71	73.0
J-347	444	0.8	617.69	75.1

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-348	500	3.1	610.76	47.9
J-349	470	0.0	609.76	60.5
J-350	470	3.1	609.71	60.4
J-351	466	10.4	610.59	62.6
J-352	437	3.1	608.41	74.2
J-353	437	3.1	608.33	74.1
J-354	420	3.1	608.11	81.4
J-355	470	3.9	608.03	59.7
J-356	435	3.1	608.23	74.9
J-357	435	0.8	608.22	74.9
J-358	435	3.1	608.12	74.9
J-359	435	2.3	608.06	74.9
J-360	430	6.2	607.97	77.0
J-361	430	3.9	607.79	76.9
J-362	410	0.0	607.93	85.6
J-363	425	0.0	607.91	79.1
J-364	412	0.8	607.90	84.8
J-365	460	3.9	607.89	64.0
J-366	478	2.3	634.73	67.8
J-367	457	0.0	634.73	76.9
J-368	450	3.1	634.16	79.7
J-369	446	0.0	631.02	80.0
J-370	425	2.3	626.99	87.4
J-371	410	3.1	622.51	91.9
J-372	480	0.0	619.05	60.2
J-373	412	33.9	610.91	86.1
J-374	417	3.1	608.51	82.9
J-375	417	3.1	607.62	82.5
J-376	465	6.2	581.51	50.4
J-377	420	2.3	573.36	66.4
J-378	435	2.3	570.35	58.6
J-379	435	1.6	570.32	58.5
J-380	440	0.0	569.86	56.2
J-381	452	7.8	569.76	50.9
J-382	**475**	**7.0**	**548.56**	**31.8**
J-383	445	1.6	545.35	43.4
J-384	**490**	**12.9**	**545.30**	**23.9**
J-385	447	0.0	545.35	42.6
J-386	**469**	**0.0**	**545.35**	**33.0**
J-387	406	0.8	603.59	85.5
J-388	450	0.0	595.80	63.1
J-389	410	2.3	593.84	79.5
J-390	398	8.6	592.67	84.2
J-391	399	11.1	593.15	84.0

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-392	393	0.0	593.15	86.6
J-393	397	0.0	593.15	84.9
J-394	397	0.0	593.15	84.9
J-395	400	0.0	634.15	101.3
J-396	405	1.6	634.15	99.1
J-397	390	0.8	634.14	105.6
J-398	393	1.6	634.13	104.3
J-399	390	0.0	634.13	105.6
J-400	395	0.0	634.12	103.5
J-401	395	2.3	634.11	103.5
J-402	395	1.6	634.11	103.5
J-403	470	0.8	655.48	80.2
J-404	450	0.0	636.00	80.5
J-405	450	0.0	649.88	86.5
J-406	488	1.6	610.08	52.8
J-407	517	9.3	609.98	40.2
J-408	515	0.0	609.82	41.0
J-409	522	3.1	609.98	38.1
J-410	509	1.6	609.97	43.7
J-411	516	3.9	609.97	40.7
J-412	503	3.1	609.97	46.3
J-413	505	3.9	609.96	45.4
J-414	0	0.0	634.13	104.3
J-415	494	0.0	658.84	71.3
J-418	478	2.3	610.15	57.2
J-419	486	0.0	630.73	62.6
J-420	485	0.0	630.73	63.1
J-421	471	0.0	630.73	69.1
J-422	457	0.0	630.73	75.2
J-425	515	2.3	609.82	41.0
J-426	514	6.2	609.83	41.5
J-427	499	3.1	609.78	47.9
J-428	508	3.9	609.77	44.0
J-429	440	2.3	649.75	90.7
J-430	440	419.8	649.73	90.7
J-431	508	14.3	611.51	44.8
J-432	486	7.8	627.95	61.4
J-433	481	9.3	646.14	71.5
J-434	481	5.4	645.46	71.2
J-435	463	10.1	645.30	78.9
J-436	495	2.3	627.87	57.5
J-437	505	3.1	619.75	49.6
J-438	445	2.3	651.24	89.2
J-439	436.93	0.0	653.97	93.9

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-440	429	9.5	652.73	96.8
J-441	460	7.0	654.81	84.3
J-442	435	10.1	652.12	93.9
J-443	524	1.6	638.20	49.4
J-444	465	10.1	635.62	73.8
J-445	539	7.8	631.53	40.0
J-446	472	25.7	616.00	62.3
J-447	392.08	0.0	634.13	104.7
J-448	419	11.7	604.97	80.5
J-449	444	5.4	592.21	64.1
J-450	474	158.1	645.79	74.3
J-451	472	20.5	652.42	78.1
J-452	466	0.8	655.67	82.1
J-453	483	2.3	657.09	75.3
J-454	430	0.8	650.69	95.5
Master Meter	458	0.0	636.00	77.0

Table K-2
Gibson Water, Inc.
Hydraulic Modeling - Junction Node Results Table

Existing Distribution System Under Peak Hourly Demand Conditions

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-2	450	0.0	635.96	80.5
J-3	450	0.0	639.88	82.2
J-4	450	0.0	639.88	82.2
J-5	455	0.0	639.88	80.0
J-6	450	2.3	639.88	82.2
J-7	496	0.0	640.24	62.4
J-8	496	4.5	640.20	62.4
J-9	448	0.0	640.04	83.1
J-10	457	7.9	639.96	79.2
J-11	480	12.4	638.89	68.8
J-12	453	25.8	639.89	80.9
J-13	460	3.4	639.85	77.9
J-14	455	0.0	639.75	80.0
J-15	433	0.0	639.66	89.5
J-16	433	1.1	639.91	89.6
J-17	420	2.3	641.26	95.8
J-18	480	93.2	648.80	73.1
J-19	459	4.5	651.19	83.2
J-20	470	5.6	653.55	79.5
J-21	465	0.0	656.45	82.9
J-22	454	0.0	657.36	88.0
J-23	463	28.2	657.35	84.1
J-24	460	0.0	657.53	85.5
J-25	460	0.0	657.53	85.5
J-26	510	0.0	659.86	64.9
J-27	492	0.0	658.18	71.9
J-28	487	0.0	658.33	74.2
J-29	450	0.0	658.52	90.3
J-30	484	0.0	658.65	75.6
J-31	485	282.5	658.68	75.2
J-32	477	1.1	658.83	78.7
J-33	477	823.7	658.76	78.7
J-34	483	0.0	659.34	76.3
J-35	485	16.6	659.89	75.7
J-36	485	0.0	658.11	74.9
J-37	464	0.0	656.56	83.4
J-38	471	0.0	655.52	79.9
J-39	471	0.0	655.28	79.8

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-40	440	0.0	654.23	92.7
J-41	452	0.0	653.36	87.2
J-42	430	0.0	653.13	96.6
J-43	442	0.0	651.21	90.6
J-44	420	0.0	649.69	99.4
J-45	432	6.7	648.84	93.9
J-46	410	0.0	648.33	103.2
J-47	471	1.1	647.47	76.4
J-48	430	0.0	646.94	93.9
J-49	417	0.0	646.39	99.3
J-50	441	0.0	645.86	88.7
J-51	460	0.0	644.82	80.0
J-52	433	1.1	643.85	91.3
J-53	446	0.0	643.18	85.4
J-54	490	0.0	642.60	66.1
J-55	480	0.0	641.96	70.1
J-56	445	9.0	641.17	84.9
J-57	495	3.4	640.69	63.1
J-58	500	3.4	640.69	60.9
J-59	501	7.0	640.37	60.3
J-60	462	12.0	639.88	77.0
J-61	428	1.1	640.22	91.9
J-62	430	2.3	640.06	90.9
J-63	420	5.6	641.17	95.7
J-64	460	5.6	645.20	80.2
J-65	440	1.1	646.76	89.5
J-66	417	0.0	646.15	99.2
J-67	430	0.0	645.85	93.4
J-68	428	0.0	645.85	94.3
J-69	435	1.1	645.77	91.2
J-70	460	2.3	645.35	80.2
J-71	441	5.6	645.58	88.6
J-72	460	0.0	644.73	80.0
J-73	460	1.1	644.56	79.9
J-74	433	2.3	644.16	91.4
J-75	460	111.3	632.51	74.7
J-76	460	0.0	632.27	74.6
J-77	460	16.6	632.15	74.5
J-78	458	0.0	632.27	75.4
J-79	470	0.0	631.96	70.1
J-80	470	0.0	631.96	70.1
J-81	488	13.5	631.80	62.3
J-82	490	5.6	631.80	61.4
J-83	493	16.6	631.37	59.9

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-84	493	11.8	631.37	59.9
J-85	510	6.7	631.03	52.4
J-86	472	16.3	630.74	68.7
J-87	500	6.7	630.02	56.3
J-88	478	16.9	640.37	70.3
J-89	475	0.0	640.37	71.6
J-90	478	0.0	640.85	70.5
J-91	480	0.0	641.78	70.0
J-92	490	5.6	642.21	65.9
J-93	446	8.3	643.17	85.4
J-94	446	1.1	643.17	85.4
J-95	430	5.6	620.85	82.6
J-96	434	2.3	615.23	78.5
J-97	455	10.1	614.44	69.0
J-98	446	11.2	613.11	72.3
J-99	470	1.1	611.30	61.2
J-100	447	4.5	609.66	70.4
J-101	450	2.3	609.48	69.0
J-102	450	0.0	609.66	69.1
J-103	438	4.5	626.39	81.6
J-104	510	0.0	610.93	43.7
J-105	510	1.1	610.91	43.7
J-106	515	9.0	610.26	41.2
J-107	450	0.0	610.00	69.3
J-108	465	3.4	609.91	62.7
J-109	444	1.1	609.84	71.8
J-110	500	4.5	609.67	47.5
J-111	470	0.0	602.04	57.2
J-112	503	15.8	596.61	40.5
J-113	**548**	**3.4**	**596.56**	**21.0**
J-114	432	1.1	596.29	71.1
J-115	438	1.1	596.29	68.5
J-116	424	7.1	593.38	73.3
J-117	407	4.5	593.10	80.6
J-118	425	1.1	593.09	72.8
J-119	450	7.0	582.71	57.4
J-120	430	7.9	581.85	65.7
J-121	520	11.2	578.72	25.4
J-122	490	20.3	569.10	34.2
J-123	490	0.0	568.35	33.9
J-124	501	124.6	558.79	25.0
J-125	470	10.1	557.61	37.9
J-126	460	1.1	556.91	42.0
J-127	**514**	**1.1**	**551.26**	**16.1**

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-128	470	1.1	548.23	33.9
J-129	498	11.6	540.83	14.2
J-130	517	5.6	540.36	10.1
J-131	516	2.3	540.35	10.5
J-132	493	9.0	530.45	16.2
J-133	480	6.7	529.97	21.6
J-134	490	11.6	564.95	32.4
J-135	512	4.5	564.39	22.7
J-136	488	2.3	564.31	33.0
J-137	467	5.6	563.79	41.9
J-138	490	23.6	565.77	32.8
J-139	520	0.0	564.52	19.3
J-140	488	39.9	562.80	32.4
J-141	476	10.1	562.75	37.6
J-142	493	0.0	562.31	30.0
J-143	478	3.4	561.85	36.3
J-144	442	13.5	560.69	51.4
J-145	430	59.0	649.60	95.1
J-146	440	6.7	645.04	88.8
J-147	420	0.0	649.42	99.3
J-148	434	0.0	647.90	92.6
J-149	438	6.7	647.69	90.8
J-150	438	3.4	649.32	91.5
J-151	410	4.5	645.51	102.0
J-152	429	4.5	642.51	92.4
J-153	442	0.0	651.15	90.5
J-154	437	5.6	651.15	92.7
J-155	420	0.0	650.95	100.0
J-156	446	7.9	651.74	89.1
J-157	430	0.0	652.73	96.4
J-158	452	0.0	653.01	87.0
J-159	453	14.6	652.79	86.5
J-160	410	9.0	642.51	100.7
J-161	430	2.3	642.49	92.0
J-162	453	3.4	651.01	85.7
J-163	460	3.4	650.85	82.6
J-164	440	4.5	653.54	92.4
J-165	471	10.1	654.95	79.6
J-166	474	3.4	653.87	77.9
J-167	470	2.3	655.50	80.3
J-168	464	2.3	656.25	83.2
J-169	485	1.1	657.23	74.6
J-170	485	0.0	658.11	74.9
J-171	485	2.3	658.01	74.9

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-172	483	0.0	659.34	76.3
J-173	468	0.0	659.33	82.8
J-174	460	0.0	659.33	86.3
J-175	470	0.0	656.49	80.7
J-176	470	9.5	656.49	80.7
J-177	445	3.4	653.54	90.3
J-178	440	1.1	642.44	87.6
J-179	439	1.1	641.93	87.8
J-180	446	3.4	641.68	84.7
J-181	500	2.3	641.71	61.3
J-182	425	1.1	641.65	93.8
J-183	458	0.0	641.95	79.6
J-184	430	2.3	641.95	91.8
J-185	440	1.1	642.17	87.5
J-186	446	3.4	642.42	85.0
J-187	435	2.3	642.35	89.8
J-188	420	4.5	644.06	97.0
J-189	438	6.7	650.23	91.9
J-190	445	16.9	658.57	92.5
J-191	463	0.0	658.58	84.7
J-192	462	11.2	658.48	85.1
J-193	455	14.6	654.30	86.3
J-194	458	0.0	650.77	83.4
J-195	428	1.1	650.18	96.2
J-196	420	0.0	650.18	99.6
J-197	446	5.6	650.19	88.4
J-198	484	5.6	650.67	72.2
J-199	445	4.5	652.07	89.6
J-200	468	4.5	658.44	82.4
J-201	469	1.1	658.39	82.0
J-202	469	1.1	658.39	82.0
J-203	465	7.9	655.91	82.6
J-204	453	9.0	654.84	87.4
J-205	440	0.0	653.55	92.4
J-206	520	4.5	658.41	59.9
J-207	520	0.0	657.04	59.3
J-208	520	1.1	657.02	59.3
J-209	520	1.1	655.64	58.7
J-210	460	1.1	653.92	83.9
J-211	475	3.4	653.56	77.3
J-212	478	4.5	653.49	76.0
J-213	474	2.3	653.53	77.7
J-214	471	0.0	655.46	79.9
J-215	472	1.1	655.44	79.4

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-216	480	2.3	655.10	75.8
J-217	460	0.0	658.40	85.9
J-218	474	2.3	658.42	79.8
J-219	480	1.1	658.29	77.2
J-220	530	10.1	657.93	55.4
J-221	537	7.9	657.67	52.2
J-222	525	1.1	657.66	57.4
J-223	578	6.7	657.42	34.4
J-224	540	0.0	657.40	50.8
J-225	470	7.9	658.51	81.6
J-226	528	1.1	658.58	56.5
J-227	530	0.0	658.08	55.4
J-228	560	0.0	658.08	42.5
J-229	532	1.1	658.06	54.6
J-230	575	2.3	658.07	36.0
J-231	474	4.5	651.63	76.9
J-232	475	0.0	651.56	76.4
J-233	470	5.9	651.48	78.6
J-234	468	0.0	651.55	79.5
J-235	455	0.0	651.35	85.0
J-236	480	4.5	651.11	74.1
J-237	450	1.1	651.30	87.1
J-238	480	3.4	651.25	74.1
J-239	500	3.4	651.08	65.4
J-240	520	1.1	651.06	56.7
J-241	480	0.0	651.04	74.0
J-242	461	1.1	651.92	82.6
J-243	461	0.0	651.92	82.6
J-244	535	4.5	658.68	53.5
J-245	540	10.1	658.36	51.2
J-246	510	9.0	658.78	64.4
J-247	490	0.0	658.93	73.1
J-248	570	5.6	659.13	38.6
J-249	490	6.7	658.60	73.0
J-250	470	6.7	658.31	81.5
J-251	470	11.2	658.27	81.5
J-252	535	11.2	657.58	53.1
J-253	580	7.9	656.52	33.1
J-254	481	11.2	652.37	74.2
J-255	455	5.6	650.50	84.6
J-256	472	4.5	648.85	76.6
J-257	450	6.7	647.30	85.4
J-258	430	1.1	647.25	94.0
J-259	435	1.1	647.25	91.9

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-260	433	0.0	647.25	92.7
J-261	430	3.4	646.56	93.8
J-262	500	7.9	645.44	63.0
J-263	494	0.0	645.07	65.4
J-264	454	1.1	645.03	82.7
J-265	520	4.5	644.12	53.7
J-266	430	2.3	644.02	92.7
J-267	550	7.9	646.17	41.6
J-268	510	14.6	644.82	58.4
J-269	449	11.2	644.39	84.6
J-270	430	9.0	644.32	92.8
J-271	511	5.6	644.35	57.7
J-272	466	9.0	644.41	77.2
J-273	520	11.2	644.41	53.9
J-274	564	2.3	644.36	34.8
J-275	440	1.1	644.29	88.4
J-276	453	0.0	644.28	82.8
J-277	520	10.1	642.01	52.8
J-278	420	6.7	637.47	94.1
J-279	520	4.5	636.98	50.6
J-280	505	2.3	636.96	57.1
J-281	423	3.4	636.93	92.6
J-282	460	2.3	636.87	76.6
J-283	410	5.6	637.25	98.4
J-284	545	4.5	638.99	40.7
J-285	410	3.4	643.50	101.1
J-286	500	8.2	643.79	62.2
J-287	420	1.1	643.45	96.7
J-288	462	0.0	643.92	78.8
J-289	480	2.3	644.04	71.0
J-290	475	1.1	644.31	73.3
J-291	445	1.1	644.54	86.4
J-292	430	1.1	643.92	92.6
J-293	492	0.0	658.34	72.0
J-294	492	0.0	658.34	72.0
J-295	491	5.6	656.44	71.6
J-296	489	0.0	656.44	72.5
J-297	492	0.0	656.39	71.2
J-298	490	5.6	653.60	70.8
J-299	463	13.5	652.43	82.0
J-300	461	4.5	652.01	82.7
J-301	450	6.7	648.89	86.1
J-302	470	1.1	648.48	77.3
J-303	468	1.1	648.44	78.1

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-304	472	0.0	648.47	76.4
J-305	475	1.1	648.46	75.1
J-306	487	2.3	648.45	69.9
J-307	440	5.6	642.61	87.7
J-308	437	4.5	642.19	88.8
J-309	430	1.1	642.18	91.9
J-310	420	0.0	642.02	96.1
J-311	455	3.4	641.90	80.9
J-312	435	1.1	642.09	89.7
J-313	430	3.4	642.00	91.8
J-314	450	1.1	642.00	83.1
J-315	450	1.1	642.00	83.1
J-316	439	2.3	641.99	87.9
J-317	441	2.3	641.98	87.0
J-318	436	0.0	635.17	86.2
J-319	443	1.1	635.05	83.1
J-320	436	5.6	634.73	86.0
J-321	420	1.1	634.71	92.9
J-322	420	1.1	631.04	91.4
J-323	462	1.1	625.59	70.8
J-324	508	0.0	618.59	47.9
J-325	530	3.4	613.46	36.1
J-326	500	5.6	613.09	49.0
J-327	515	2.3	618.17	44.7
J-328	510	3.4	613.62	44.9
J-329	450	0.0	611.73	70.0
J-330	448	4.5	610.72	70.4
J-331	445	4.5	611.59	72.1
J-332	530	0.0	617.46	37.9
J-333	435	1.1	612.46	76.8
J-334	410	6.7	612.24	87.5
J-335	518	12.4	611.17	40.3
J-336	511	2.3	608.30	42.1
J-337	517	6.7	607.02	39.0
J-338	543	6.7	600.80	25.0
J-339	536	7.9	599.15	27.3
J-340	440	4.5	594.24	66.8
J-341	465	1.1	590.15	54.2
J-342	457	3.4	585.66	55.7
J-343	430	0.0	583.30	66.4
J-344	460	1.1	581.36	52.5
J-345	490	5.6	581.26	39.5
J-346	449	10.1	576.30	55.1
J-347	444	1.1	576.27	57.3

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-348	500	4.5	562.61	27.1
J-349	470	0.0	560.61	39.2
J-350	470	4.5	560.51	39.2
J-351	466	15.0	562.24	41.7
J-352	437	4.5	557.92	52.3
J-353	437	4.5	557.76	52.3
J-354	420	4.5	557.31	59.4
J-355	470	5.6	557.20	37.7
J-356	435	4.5	557.57	53.1
J-357	435	1.1	557.55	53.1
J-358	435	4.5	557.35	53.0
J-359	435	3.4	557.23	52.9
J-360	430	9.0	557.05	55.0
J-361	430	5.6	556.70	54.8
J-362	410	0.0	556.95	63.6
J-363	425	0.0	556.93	57.1
J-364	412	1.1	556.89	62.7
J-365	460	5.6	556.91	42.0
J-366	478	3.4	609.95	57.1
J-367	457	0.0	609.94	66.2
J-368	450	4.5	608.82	68.8
J-369	446	0.0	602.60	67.8
J-370	425	3.4	594.63	73.4
J-371	410	4.5	585.77	76.1
J-372	480	0.0	578.97	42.8
J-373	412	49.0	562.84	65.3
J-374	417	4.5	558.03	61.1
J-375	417	4.5	556.35	60.3
J-376	**465**	**9.0**	517.76	**22.8**
J-377	420	3.4	508.03	38.1
J-378	435	3.4	505.12	30.3
J-379	435	2.3	505.03	30.3
J-380	440	0.0	504.92	28.1
J-381	**452**	**11.2**	504.64	**22.8**
J-382	**472**	**8.1**	502.36	**13.1**
J-383	**443**	**2.3**	500.74	**24.9**
J-384	**480**	**12.4**	500.73	**9.0**
J-385	**447**	**0.0**	500.74	**23.2**
J-386	**469**	**0.0**	500.74	**13.7**
J-387	406	1.1	548.38	61.6
J-388	450	0.0	533.01	35.9
J-389	410	3.4	529.12	51.6
J-390	398	12.4	526.79	55.8
J-391	399	16.0	527.75	55.7

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-392	393	0.0	527.75	58.3
J-393	397	0.0	527.75	56.6
J-394	397	0.0	527.75	56.6
J-395	400	0.0	608.77	90.4
J-396	405	2.3	608.77	88.2
J-397	390	1.1	608.74	94.7
J-398	393	2.3	608.73	93.4
J-399	390	0.0	608.72	94.7
J-400	395	0.0	608.70	92.5
J-401	395	3.4	608.69	92.5
J-402	395	2.3	608.69	92.5
J-403	470	1.1	650.96	78.3
J-404	450	0.0	635.89	80.5
J-405	450	0.0	639.88	82.2
J-406	488	2.3	561.22	31.7
J-407	**517**	**13.5**	561.05	**19.1**
J-408	**515**	**0.0**	560.73	**19.8**
J-409	**522**	**4.5**	561.05	**16.9**
J-410	**509**	**2.3**	561.01	**22.5**
J-411	**516**	**5.6**	561.02	**19.5**
J-412	503	4.5	561.02	25.1
J-413	**505**	**5.6**	561.01	**24.3**
J-414	393	0.0	608.73	93.4
J-415	494	0.0	657.61	70.8
J-418	478	3.4	561.38	36.1
J-419	486	0.0	601.87	50.2
J-420	485	0.0	601.87	50.6
J-421	471	0.0	601.87	56.7
J-422	457	0.0	601.86	62.7
J-425	**515**	**3.4**	560.73	**19.8**
J-426	**514**	**9.0**	560.75	**20.2**
J-427	499	4.5	560.63	26.7
J-428	**508**	**5.6**	560.62	**22.8**
J-429	440	3.4	639.62	86.4
J-430	440	606.5	639.58	86.4
J-431	**508**	**20.7**	564.05	**24.3**
J-432	486	11.2	596.57	47.9
J-433	481	13.5	632.52	65.6
J-434	481	7.9	631.17	65.0
J-435	463	14.6	630.83	72.7
J-436	495	3.4	596.42	43.9
J-437	505	4.5	580.33	32.6
J-438	445	3.4	642.57	85.5
J-439	436.93	0.0	647.95	91.4

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-440	429	13.8	645.50	93.7
J-441	460	10.1	649.63	82.1
J-442	435	14.6	644.29	90.6
J-443	524	2.3	616.83	40.2
J-444	465	14.6	611.72	63.5
J-445	539	11.2	603.64	28.0
J-446	472	37.1	572.94	43.7
J-447	392.08	0.0	608.73	93.8
J-448	419	16.9	551.12	57.2
J-449	444	7.9	525.92	35.5
J-450	474	228.5	631.81	68.3
J-451	472	29.6	644.92	74.9
J-452	466	1.1	651.34	80.2
J-453	483	3.4	654.15	74.1
J-454	430	1.1	641.48	91.5
Master Meter	458	0.0	635.90	77.0

Table K-3
Gibson Water, Inc.
Hydraulic Modeling - Junction Node Results Table

System with Recommended Improvements - Average Day Demand

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-2	450	0.0	636.00	80.5
J-3	450	0.0	650.91	86.9
J-4	450	0.0	650.91	86.9
J-5	455	0.0	650.91	84.8
J-6	450	1.6	650.91	86.9
J-7	496	0.0	651.09	67.1
J-8	496	3.1	651.07	67.1
J-9	448	0.0	650.98	87.8
J-10	457	5.4	650.92	83.9
J-11	480	8.6	650.37	73.7
J-12	453	17.8	650.86	85.6
J-13	460	2.3	650.82	82.6
J-14	455	0.0	650.74	84.7
J-15	433	0.0	650.67	94.2
J-16	433	0.8	650.76	94.2
J-17	420	1.6	651.39	100.1
J-18	480	64.4	654.84	75.6
J-19	459	3.1	655.96	85.2
J-20	470	3.9	657.06	80.9
J-21	465	0.0	658.41	83.7
J-22	454	0.0	658.83	88.6
J-23	463	19.5	658.83	84.7
J-24	460	0.0	658.91	86.1
J-25	460	0.0	658.91	86.1
J-26	510	0.0	659.97	64.9
J-27	492	0.0	658.91	72.2
J-28	487	0.0	659.04	74.4
J-29	450	0.0	659.21	90.5
J-30	484	0.0	659.30	75.8
J-31	485	195.2	659.33	75.4
J-32	477	0.8	659.42	78.9
J-33	477	569.3	659.39	78.9
J-34	483	0.0	659.70	76.4
J-35	485	11.5	660.00	75.7
J-36	485	0.0	659.18	75.4
J-37	464	0.0	658.47	84.1
J-38	471	0.0	657.99	80.9
J-39	471	0.0	657.88	80.9
J-40	440	0.0	657.41	94.1

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-41	452	0.0	657.01	88.7
J-42	430	0.0	656.91	98.2
J-43	442	0.0	656.03	92.6
J-44	420	0.0	655.35	101.8
J-45	432	4.7	654.97	96.5
J-46	410	0.0	654.74	105.9
J-47	471	0.8	654.34	79.3
J-48	430	0.0	654.12	97.0
J-49	417	0.0	653.87	102.5
J-50	441	0.0	653.63	92.0
J-51	460	0.0	653.16	83.6
J-52	433	0.8	652.68	95.0
J-53	446	0.0	652.38	89.3
J-54	490	0.0	652.12	70.1
J-55	480	0.0	651.84	74.3
J-56	445	6.2	651.50	89.3
J-57	495	2.3	651.28	67.6
J-58	500	2.3	651.28	65.5
J-59	501	4.8	651.13	65.0
J-60	462	8.3	650.86	81.7
J-61	428	0.8	650.91	96.4
J-62	430	1.6	650.83	95.5
J-63	420	3.9	651.36	100.1
J-64	460	3.9	653.28	83.6
J-65	440	0.8	654.03	92.6
J-66	417	0.0	653.77	102.4
J-67	430	0.0	653.64	96.8
J-68	428	0.0	653.64	97.6
J-69	435	0.8	653.60	94.6
J-70	460	1.6	653.38	83.7
J-71	441	3.9	653.52	91.9
J-72	460	0.0	653.17	83.6
J-73	460	0.8	653.16	83.6
J-74	433	1.6	652.97	95.2
J-75	460	76.9	647.19	81.0
J-76	460	0.0	647.07	80.9
J-77	460	11.5	647.00	80.9
J-78	458	0.0	647.07	81.8
J-79	470	0.0	646.91	76.5
J-80	470	0.0	646.91	76.5
J-81	488	9.3	646.82	68.7
J-82	490	3.9	646.82	67.8
J-83	493	11.5	646.60	66.5
J-84	493	8.2	646.60	66.5

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-85	510	4.7	646.42	59.0
J-86	472	11.3	646.29	75.4
J-87	500	4.7	645.92	63.1
J-88	478	11.7	651.04	74.9
J-89	475	0.0	651.04	76.2
J-90	478	0.0	651.28	75.0
J-91	480	0.0	651.75	74.3
J-92	490	3.9	651.90	70.0
J-93	446	5.7	652.38	89.3
J-94	446	0.8	652.38	89.3
J-95	430	3.9	641.20	91.4
J-96	434	1.6	638.36	88.4
J-97	455	7.0	637.95	79.2
J-98	446	7.8	637.28	82.8
J-99	470	0.8	636.36	72.0
J-100	447	3.1	635.54	81.6
J-101	450	1.6	635.45	80.2
J-102	450	0.0	635.54	80.3
J-103	438	3.1	652.66	92.9
J-104	510	0.0	652.37	61.6
J-105	510	0.8	652.36	61.6
J-106	515	6.2	652.36	59.4
J-107	450	0.0	652.25	87.5
J-108	465	2.3	652.19	81.0
J-109	444	0.8	652.17	90.1
J-110	500	3.1	652.06	65.8
J-111	470	0.0	652.38	78.9
J-112	503	10.9	652.40	64.6
J-113	548	2.3	652.36	45.2
J-114	432	0.8	652.26	95.3
J-115	438	0.8	652.26	92.7
J-116	424	4.9	650.79	98.1
J-117	407	3.1	650.66	105.4
J-118	425	0.8	650.65	97.6
J-119	450	4.8	645.40	84.5
J-120	430	5.4	644.97	93.0
J-121	520	7.8	643.36	53.4
J-122	490	14.0	630.54	60.8
J-123	490	0.0	630.16	60.6
J-124	501	86.1	625.34	53.8
J-125	470	7.0	624.75	67.0
J-126	460	0.8	624.40	71.1
J-127	514	0.8	621.53	46.5
J-128	470	0.8	620.01	64.9

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-129	498	8.0	611.22	49.0
J-130	522	3.9	610.98	38.5
J-131	520	1.6	610.98	39.4
J-132	493	6.2	611.03	51.1
J-133	480	4.7	610.80	56.6
J-134	490	8.0	628.45	59.9
J-135	512	3.1	628.16	50.3
J-136	488	1.6	628.13	60.6
J-137	467	3.9	627.87	69.6
J-138	490	16.3	630.33	60.7
J-139	520	0.0	630.30	47.7
J-140	488	27.6	630.25	61.5
J-141	476	7.0	630.23	66.7
J-142	493	0.0	630.28	59.4
J-143	478	2.3	630.30	65.9
J-144	442	9.3	629.72	81.2
J-145	430	40.7	655.30	97.5
J-146	440	4.7	653.00	92.2
J-147	420	0.0	655.20	101.8
J-148	434	0.0	654.43	95.4
J-149	438	4.7	654.32	93.6
J-150	438	2.3	655.12	93.9
J-151	410	3.1	653.13	105.2
J-152	429	3.1	651.52	96.3
J-153	442	0.0	656.00	92.6
J-154	437	3.9	656.00	94.8
J-155	420	0.0	655.91	102.1
J-156	446	5.4	656.26	91.0
J-157	430	0.0	656.71	98.1
J-158	452	0.0	656.83	88.6
J-159	453	10.1	656.72	88.1
J-160	410	6.2	651.54	104.5
J-161	430	1.6	651.53	95.8
J-162	453	2.3	655.83	87.8
J-163	460	2.3	655.74	84.7
J-164	440	3.1	657.06	93.9
J-165	471	7.0	657.72	80.8
J-166	474	2.3	657.16	79.2
J-167	470	1.6	657.98	81.3
J-168	464	1.6	658.32	84.1
J-169	485	0.8	658.77	75.2
J-170	485	0.0	659.18	75.4
J-171	485	1.6	659.12	75.3
J-172	483	0.0	659.70	76.4

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-173	468	0.0	659.70	82.9
J-174	460	0.0	659.70	86.4
J-175	470	0.0	658.43	81.5
J-176	470	6.5	658.43	81.5
J-177	445	2.3	657.06	91.7
J-178	440	0.8	651.49	91.5
J-179	439	0.8	651.20	91.8
J-180	446	2.3	651.07	88.7
J-181	500	1.6	651.07	65.4
J-182	425	0.8	651.06	97.8
J-183	458	0.0	651.20	83.6
J-184	430	1.6	651.21	95.7
J-185	440	0.8	651.29	91.4
J-186	446	2.3	651.40	88.9
J-187	435	1.6	651.37	93.6
J-188	420	3.1	652.18	100.5
J-189	438	4.7	655.15	94.0
J-190	445	11.7	659.29	92.7
J-191	463	0.0	659.29	84.9
J-192	462	7.8	659.25	85.3
J-193	455	10.1	657.16	87.5
J-194	458	0.0	655.41	85.4
J-195	428	0.8	655.12	98.3
J-196	420	0.0	655.12	101.7
J-197	446	3.9	655.12	90.5
J-198	484	3.9	655.34	74.1
J-199	445	3.1	656.05	91.3
J-200	468	3.1	659.22	82.7
J-201	469	0.8	659.20	82.3
J-202	469	0.8	659.20	82.3
J-203	465	5.4	657.96	83.5
J-204	453	6.2	657.43	88.4
J-205	440	0.0	656.79	93.8
J-206	520	3.1	659.20	60.2
J-207	520	0.0	658.50	59.9
J-208	520	0.8	658.49	59.9
J-209	520	0.8	657.80	59.6
J-210	460	0.8	656.95	85.2
J-211	475	2.3	656.76	78.6
J-212	478	3.1	656.73	77.3
J-213	474	1.6	656.75	79.1
J-214	471	0.0	657.72	80.8
J-215	472	0.8	657.71	80.3
J-216	480	1.6	657.54	76.8

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-217	460	0.0	659.21	86.2
J-218	474	1.6	659.22	80.1
J-219	480	0.8	659.15	77.5
J-220	530	7.0	658.96	55.8
J-221	537	5.4	658.83	52.7
J-222	525	0.8	658.82	57.9
J-223	578	4.7	658.92	35.0
J-224	540	0.0	658.69	51.4
J-225	470	5.4	659.27	81.9
J-226	528	0.8	659.30	56.8
J-227	530	0.0	659.04	55.8
J-228	560	0.0	659.03	42.8
J-229	532	0.8	659.03	55.0
J-230	575	1.6	659.03	36.4
J-231	474	3.1	655.81	78.7
J-232	475	0.0	655.77	78.2
J-233	470	4.1	655.74	80.4
J-234	468	0.0	655.77	81.2
J-235	455	0.0	655.67	86.8
J-236	480	3.1	655.55	76.0
J-237	450	0.8	655.65	89.0
J-238	480	2.3	655.62	76.0
J-239	500	2.3	655.53	67.3
J-240	520	0.8	655.51	58.6
J-241	480	0.0	655.51	75.9
J-242	461	0.8	655.96	84.4
J-243	461	0.0	655.96	84.4
J-244	535	3.1	659.35	53.8
J-245	540	7.0	659.19	51.6
J-246	510	6.2	659.41	64.6
J-247	490	0.0	659.50	73.3
J-248	570	3.9	659.58	38.8
J-249	490	4.7	659.34	73.3
J-250	470	4.7	659.19	81.9
J-251	470	7.8	659.17	81.8
J-252	535	7.8	658.80	53.6
J-253	580	5.4	658.26	33.9
J-254	481	7.8	656.19	75.8
J-255	455	3.9	655.26	86.6
J-256	472	3.1	654.41	78.9
J-257	450	4.7	653.64	88.1
J-258	430	0.8	653.62	96.7
J-259	435	0.8	653.62	94.6
J-260	433	0.0	653.62	95.5

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-261	430	2.3	653.27	96.6
J-262	500	5.4	652.69	66.1
J-263	494	0.0	652.50	68.6
J-264	454	0.8	652.49	85.9
J-265	520	3.1	652.01	57.1
J-266	430	1.6	651.99	96.0
J-267	550	5.4	653.04	44.6
J-268	510	10.1	652.37	61.6
J-269	449	7.8	652.17	87.9
J-270	430	6.2	652.14	96.1
J-271	511	3.9	652.13	61.1
J-272	466	6.2	652.18	80.5
J-273	520	7.8	652.16	57.2
J-274	564	1.6	652.12	38.1
J-275	440	0.8	652.12	91.8
J-276	453	0.0	652.12	86.1
J-277	520	7.0	650.95	56.7
J-278	420	4.7	648.69	98.9
J-279	520	3.1	648.41	55.6
J-280	505	1.6	648.40	62.0
J-281	423	2.3	648.41	97.5
J-282	460	1.6	648.37	81.5
J-283	410	3.9	648.58	103.2
J-284	545	3.1	649.42	45.2
J-285	410	2.3	651.73	104.6
J-286	500	5.6	651.85	65.7
J-287	420	0.8	651.70	100.2
J-288	462	0.0	651.93	82.2
J-289	480	1.6	651.99	74.4
J-290	475	0.8	652.12	76.6
J-291	445	0.8	652.25	89.7
J-292	430	0.8	651.94	96.0
J-293	492	0.0	659.04	72.3
J-294	492	0.0	659.04	72.3
J-295	491	3.9	657.67	72.1
J-296	489	0.0	657.67	73.0
J-297	492	0.0	657.65	71.7
J-298	490	3.9	656.24	71.9
J-299	463	9.3	654.82	83.0
J-300	461	3.1	654.61	83.8
J-301	450	4.7	652.27	87.5
J-302	470	0.8	652.06	78.8
J-303	468	0.8	652.04	79.6
J-304	472	0.0	652.06	77.9

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-305	475	0.8	652.05	76.6
J-306	487	1.6	652.04	71.4
J-307	440	3.9	647.71	89.9
J-308	437	3.1	641.57	88.5
J-309	430	0.8	641.56	91.5
J-310	420	0.0	641.49	95.8
J-311	455	2.3	641.42	80.7
J-312	435	0.8	637.92	87.8
J-313	430	2.3	634.11	88.3
J-314	450	0.8	633.00	79.2
J-315	450	0.8	633.00	79.2
J-316	439	1.6	632.13	83.6
J-317	441	1.6	632.12	82.7
J-318	436	0.0	643.95	90.0
J-319	443	0.8	643.89	86.9
J-320	436	3.9	643.73	89.9
J-321	420	0.8	643.72	96.8
J-322	420	0.8	641.87	96.0
J-323	462	0.8	639.11	76.6
J-324	508	0.0	637.30	55.9
J-325	530	2.3	634.71	45.3
J-326	500	3.9	634.53	58.2
J-327	515	1.6	637.20	52.9
J-328	510	2.3	634.90	54.0
J-329	450	0.0	633.97	79.6
J-330	448	3.1	633.45	80.2
J-331	445	3.1	633.90	81.7
J-332	530	0.0	637.02	46.3
J-333	435	0.8	635.82	86.9
J-334	410	4.7	635.71	97.7
J-335	518	8.6	635.14	50.7
J-336	511	1.6	633.69	53.1
J-337	517	4.7	633.05	50.2
J-338	543	4.7	629.90	37.6
J-339	536	5.4	629.07	40.3
J-340	440	3.1	626.62	80.7
J-341	465	0.8	624.55	69.0
J-342	457	2.3	622.28	71.5
J-343	430	0.0	621.10	82.7
J-344	460	0.8	620.11	69.3
J-345	490	3.9	620.05	56.3
J-346	449	7.0	617.56	72.9
J-347	444	0.8	617.55	75.1
J-348	500	3.1	610.64	47.9

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-349	470	0.0	609.63	60.4
J-350	470	3.1	609.58	60.4
J-351	466	10.4	610.46	62.5
J-352	437	3.1	608.29	74.1
J-353	437	3.1	608.21	74.1
J-354	420	3.1	607.98	81.3
J-355	470	3.9	607.91	59.7
J-356	435	3.1	608.11	74.9
J-357	435	0.8	608.10	74.9
J-358	435	3.1	608.00	74.8
J-359	435	2.3	607.94	74.8
J-360	430	6.2	607.85	76.9
J-361	430	3.9	607.67	76.9
J-362	410	0.0	607.81	85.6
J-363	425	0.0	607.79	79.1
J-364	412	0.8	607.77	84.7
J-365	460	3.9	607.77	63.9
J-366	478	2.3	635.54	68.2
J-367	457	0.0	635.54	77.2
J-368	450	3.1	635.42	80.2
J-369	446	0.0	635.22	81.9
J-370	425	2.3	634.95	90.8
J-371	410	3.1	634.69	97.2
J-372	480	0.0	634.51	66.8
J-373	412	33.9	631.52	95.0
J-374	417	3.1	631.12	92.6
J-375	417	3.1	630.98	92.6
J-376	465	6.2	627.61	70.4
J-377	420	2.3	619.48	86.3
J-378	435	2.3	616.48	78.5
J-379	435	1.6	616.45	78.5
J-380	440	0.0	616.00	76.1
J-381	452	7.8	615.89	70.9
J-382	475	7.0	633.56	68.6
J-383	445	1.6	637.23	83.2
J-384	490	12.9	635.89	63.1
J-385	447	0.0	637.69	82.5
J-386	469	0.0	637.69	73.0
J-387	406	0.8	630.73	97.2
J-388	450	0.0	630.85	78.2
J-389	410	2.3	630.89	95.6
J-390	398	8.6	634.54	102.3
J-391	399	11.0	630.20	100.0
J-392	393	0.0	630.20	102.6

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-393	397	0.0	630.20	100.9
J-394	397	0.0	630.20	100.9
J-395	400	0.0	635.31	101.8
J-396	405	1.6	635.26	99.6
J-397	390	0.8	635.10	106.0
J-398	393	1.6	634.88	104.7
J-399	390	0.0	634.88	105.9
J-400	395	0.0	634.87	103.8
J-401	395	2.3	634.86	103.8
J-402	395	1.6	634.86	103.8
J-403	470	0.8	655.84	80.4
J-404	450	0.0	636.00	80.5
J-405	450	0.0	650.91	86.9
J-406	488	1.6	630.33	61.6
J-407	517	9.3	630.23	49.0
J-408	515	0.0	630.07	49.8
J-409	522	3.1	630.23	46.8
J-410	509	1.6	630.21	52.4
J-411	516	3.9	630.21	49.4
J-412	503	3.1	630.22	55.0
J-413	505	3.9	630.21	54.2
J-414	393	0.0	634.87	104.6
J-415	494	0.0	658.49	71.2
J-418	478	2.3	630.40	65.9
J-419	486	0.0	630.97	62.7
J-420	485	0.0	631.11	63.2
J-421	471	0.0	631.41	69.4
J-422	457	0.0	631.55	75.5
J-425	515	2.3	630.07	49.8
J-426	514	6.2	630.08	50.2
J-427	499	3.1	630.03	56.7
J-428	508	3.9	630.02	52.8
J-429	440	2.3	650.63	91.1
J-430	440	419.2	650.61	91.1
J-431	508	14.3	628.00	51.9
J-432	486	7.8	638.38	65.9
J-433	481	9.3	647.16	71.9
J-434	481	5.4	646.50	71.6
J-435	463	10.1	646.33	79.3
J-436	495	2.3	652.31	68.1
J-437	505	3.1	644.20	60.2
J-438	445	2.3	652.02	89.6
J-439	437	0.0	654.56	94.2
J-440	429	9.5	653.23	97.0

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-441	460	7.0	655.25	84.5
J-442	435	10.1	652.44	94.1
J-443	524	1.6	636.52	48.7
J-444	465	10.1	635.43	73.7
J-445	539	7.8	631.35	40.0
J-446	472	25.7	633.21	69.8
J-447	392	0.0	634.95	105.1
J-448	419	11.7	630.71	91.6
J-449	444	5.4	628.63	79.9
J-450	474	157.9	646.83	74.8
J-451	472	20.5	653.05	78.3
J-452	466	0.8	655.67	82.1
J-453	483	2.3	657.08	75.3
J-454	430	0.8	650.70	95.5
Master Meter	458	0.0	636.00	77.0

Table K-4
Gibson Water, Inc.
Hydraulic Modeling - Junction Node Results Table

System with Recommended Improvements - Peak Hourly Demand

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-2	450	0.0	636.00	80.5
J-3	450	0.0	641.99	83.1
J-4	450	0.0	641.99	83.1
J-5	455	0.0	641.99	80.9
J-6	450	2.3	641.99	83.1
J-7	496	0.0	642.33	63.3
J-8	496	4.5	642.30	63.3
J-9	448	0.0	642.12	84.0
J-10	457	7.9	642.00	80.0
J-11	480	12.4	640.92	69.6
J-12	453	25.8	641.89	81.7
J-13	460	3.4	641.81	78.7
J-14	455	0.0	641.65	80.8
J-15	433	0.0	641.51	90.2
J-16	433	1.1	641.69	90.3
J-17	420	2.3	642.92	96.4
J-18	480	93.2	649.77	73.5
J-19	459	4.5	651.99	83.5
J-20	470	5.6	654.17	79.7
J-21	465	0.0	656.86	83.0
J-22	454	0.0	657.69	88.1
J-23	463	28.2	657.67	84.2
J-24	460	0.0	657.83	85.6
J-25	460	0.0	657.83	85.6
J-26	510	0.0	659.94	64.9
J-27	492	0.0	657.83	71.7
J-28	487	0.0	658.09	74.0
J-29	450	0.0	658.44	90.2
J-30	484	0.0	658.62	75.5
J-31	485	282.5	658.68	75.1
J-32	477	1.1	658.86	78.7
J-33	477	823.7	658.79	78.7
J-34	483	0.0	659.40	76.3
J-35	485	16.6	660.00	75.7
J-36	485	0.0	658.37	75.0
J-37	464	0.0	656.96	83.5
J-38	471	0.0	656.01	80.0
J-39	471	0.0	655.80	80.0
J-40	440	0.0	654.86	93.0

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-41	452	0.0	654.07	87.4
J-42	430	0.0	653.87	96.9
J-43	442	0.0	652.14	90.9
J-44	420	0.0	650.79	99.9
J-45	432	6.7	650.02	94.3
J-46	410	0.0	649.58	103.7
J-47	471	1.1	648.78	76.9
J-48	430	0.0	648.34	94.5
J-49	417	0.0	647.85	99.9
J-50	441	0.0	647.37	89.3
J-51	460	0.0	646.44	80.7
J-52	433	1.1	645.50	91.9
J-53	446	0.0	644.90	86.1
J-54	490	0.0	644.37	66.8
J-55	480	0.0	643.82	70.9
J-56	445	9.0	643.15	85.7
J-57	495	3.4	642.72	63.9
J-58	500	3.4	642.71	61.7
J-59	501	7.0	642.41	61.2
J-60	462	12.0	641.88	77.8
J-61	428	1.1	641.98	92.6
J-62	430	2.3	641.82	91.6
J-63	420	5.6	642.88	96.4
J-64	460	5.6	646.67	80.8
J-65	440	1.1	648.17	90.1
J-66	417	0.0	647.66	99.8
J-67	430	0.0	647.40	94.1
J-68	428	0.0	647.39	94.9
J-69	435	1.1	647.31	91.9
J-70	460	2.3	646.87	80.9
J-71	441	5.6	647.16	89.2
J-72	460	0.0	646.45	80.7
J-73	460	1.1	646.44	80.7
J-74	433	2.3	646.06	92.2
J-75	460	111.3	634.60	75.5
J-76	460	0.0	634.37	75.4
J-77	460	16.6	634.24	75.4
J-78	458	0.0	634.37	76.3
J-79	470	0.0	634.05	71.0
J-80	470	0.0	634.05	71.0
J-81	488	13.5	633.87	63.1
J-82	490	5.6	633.87	62.2
J-83	493	16.6	633.44	60.8
J-84	493	11.8	633.43	60.8

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-85	510	6.7	633.08	53.3
J-86	472	16.3	632.82	69.6
J-87	500	6.7	632.08	57.1
J-88	478	16.9	642.25	71.1
J-89	475	0.0	642.25	72.4
J-90	478	0.0	642.72	71.3
J-91	480	0.0	643.64	70.8
J-92	490	5.6	643.94	66.6
J-93	446	8.3	644.89	86.1
J-94	446	1.1	644.89	86.0
J-95	430	5.6	622.73	83.4
J-96	434	2.3	617.10	79.2
J-97	455	10.1	616.29	69.8
J-98	446	11.2	614.98	73.1
J-99	470	1.1	613.15	61.9
J-100	447	4.5	611.52	71.2
J-101	450	2.3	611.34	69.8
J-102	450	0.0	611.52	69.9
J-103	438	4.5	645.44	89.8
J-104	510	0.0	644.87	58.4
J-105	510	1.1	644.85	58.3
J-106	515	9.0	644.85	56.2
J-107	450	0.0	644.63	84.2
J-108	465	3.4	644.53	77.7
J-109	444	1.1	644.47	86.7
J-110	500	4.5	644.27	62.4
J-111	470	0.0	644.90	75.7
J-112	503	15.8	644.94	61.4
J-113	548	3.4	644.86	41.9
J-114	432	1.1	644.66	92.0
J-115	438	1.1	644.65	89.4
J-116	424	7.1	641.75	94.2
J-117	407	4.5	641.48	101.4
J-118	425	1.1	641.46	93.7
J-119	450	7.0	631.05	78.3
J-120	430	7.9	630.20	86.6
J-121	520	11.2	627.02	46.3
J-122	490	20.3	601.61	48.3
J-123	490	0.0	600.86	48.0
J-124	501	124.6	591.30	39.1
J-125	470	10.1	590.13	52.0
J-126	460	1.1	589.43	56.0
J-127	514	1.1	583.75	30.2
J-128	470	1.1	580.74	47.9

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-129	498	11.6	563.32	28.3
J-130	522	5.6	562.84	21.3
J-131	520	2.3	562.83	22.1
J-132	493	9.0	562.94	30.3
J-133	480	6.7	562.47	35.7
J-134	490	11.6	597.46	46.5
J-135	512	4.5	596.89	36.7
J-136	488	2.3	596.82	47.1
J-137	467	5.6	596.32	56.0
J-138	490	23.6	601.20	48.1
J-139	520	0.0	601.13	35.1
J-140	488	39.9	601.04	48.9
J-141	476	10.1	601.00	54.1
J-142	493	0.0	601.09	46.8
J-143	478	3.4	601.13	53.3
J-144	442	13.5	599.99	68.4
J-145	430	59.0	650.69	95.5
J-146	440	6.7	646.12	89.2
J-147	420	0.0	650.49	99.7
J-148	434	0.0	648.96	93.0
J-149	438	6.7	648.75	91.2
J-150	438	3.4	650.32	91.9
J-151	410	4.5	646.37	102.3
J-152	429	4.5	643.20	92.7
J-153	442	0.0	652.08	90.9
J-154	437	5.6	652.08	93.1
J-155	420	0.0	651.89	100.3
J-156	446	7.9	652.58	89.4
J-157	430	0.0	653.48	96.7
J-158	452	0.0	653.72	87.3
J-159	453	14.6	653.50	86.7
J-160	410	9.0	643.24	100.9
J-161	430	2.3	643.21	92.2
J-162	453	3.4	651.72	86.0
J-163	460	3.4	651.55	82.9
J-164	440	4.5	654.17	92.7
J-165	471	10.1	655.47	79.8
J-166	474	3.4	654.38	78.0
J-167	470	2.3	656.00	80.5
J-168	464	2.3	656.67	83.4
J-169	485	1.1	657.55	74.7
J-170	485	0.0	658.37	75.0
J-171	485	2.3	658.26	75.0
J-172	483	0.0	659.40	76.3

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-173	468	0.0	659.40	82.8
J-174	460	0.0	659.40	86.3
J-175	470	0.0	656.89	80.9
J-176	470	9.5	656.89	80.9
J-177	445	3.4	654.17	90.5
J-178	440	1.1	643.13	87.9
J-179	439	1.1	642.56	88.1
J-180	446	3.4	642.31	84.9
J-181	500	2.3	642.30	61.6
J-182	425	1.1	642.28	94.0
J-183	458	0.0	642.56	79.9
J-184	430	2.3	642.57	92.0
J-185	440	1.1	642.74	87.7
J-186	446	3.4	642.95	85.2
J-187	435	2.3	642.89	89.9
J-188	420	4.5	644.50	97.1
J-189	438	6.7	650.39	91.9
J-190	445	16.9	658.59	92.4
J-191	463	0.0	658.59	84.6
J-192	462	11.2	658.50	85.0
J-193	455	14.6	654.36	86.3
J-194	458	0.0	650.90	83.5
J-195	428	1.1	650.33	96.2
J-196	420	0.0	650.33	99.7
J-197	446	5.6	650.33	88.4
J-198	484	5.6	650.77	72.2
J-199	445	4.5	652.16	89.6
J-200	468	4.5	658.46	82.4
J-201	469	1.1	658.42	82.0
J-202	469	1.1	658.42	82.0
J-203	465	7.9	655.96	82.6
J-204	453	9.0	654.90	87.4
J-205	440	0.0	653.63	92.4
J-206	520	4.5	658.41	59.9
J-207	520	0.0	657.03	59.3
J-208	520	1.1	657.02	59.3
J-209	520	1.1	655.64	58.7
J-210	460	1.1	653.95	83.9
J-211	475	3.4	653.58	77.3
J-212	478	4.5	653.51	75.9
J-213	474	2.3	653.55	77.7
J-214	471	0.0	655.48	79.8
J-215	472	1.1	655.47	79.4
J-216	480	2.3	655.12	75.8

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-217	460	0.0	658.43	85.9
J-218	474	2.3	658.45	79.8
J-219	480	1.1	658.32	77.2
J-220	530	10.1	657.94	55.4
J-221	537	7.9	657.67	52.2
J-222	525	1.1	657.67	57.4
J-223	578	6.7	657.40	34.4
J-224	540	0.0	657.40	50.8
J-225	470	7.9	658.56	81.6
J-226	528	1.1	658.61	56.5
J-227	530	0.0	658.10	55.4
J-228	560	0.0	658.08	42.4
J-229	532	1.1	658.08	54.5
J-230	575	2.3	658.07	35.9
J-231	474	4.5	651.69	76.9
J-232	475	0.0	651.62	76.4
J-233	470	5.9	651.55	78.5
J-234	468	0.0	651.62	79.4
J-235	455	0.0	651.42	85.0
J-236	480	4.5	651.17	74.1
J-237	450	1.1	651.38	87.1
J-238	480	3.4	651.32	74.1
J-239	500	3.4	651.13	65.4
J-240	520	1.1	651.11	56.7
J-241	480	0.0	651.11	74.0
J-242	461	1.1	652.00	82.6
J-243	461	0.0	652.00	82.6
J-244	535	4.5	658.71	53.5
J-245	540	10.1	658.39	51.2
J-246	510	9.0	658.83	64.4
J-247	490	0.0	659.01	73.1
J-248	570	5.6	659.17	38.6
J-249	490	6.7	658.68	73.0
J-250	470	6.7	658.39	81.5
J-251	470	11.2	658.35	81.5
J-252	535	11.2	657.63	53.1
J-253	580	7.9	656.55	33.1
J-254	481	11.2	652.45	74.2
J-255	455	5.6	650.60	84.6
J-256	472	4.5	648.93	76.6
J-257	450	6.7	647.39	85.4
J-258	430	1.1	647.35	94.0
J-259	435	1.1	647.35	91.9
J-260	433	0.0	647.35	92.7

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-261	430	3.4	646.67	93.7
J-262	500	7.9	645.50	63.0
J-263	494	0.0	645.14	65.4
J-264	454	1.1	645.12	82.7
J-265	520	4.5	644.18	53.7
J-266	430	2.3	644.13	92.6
J-267	550	7.9	646.20	41.6
J-268	510	14.6	644.88	58.4
J-269	449	11.2	644.48	84.6
J-270	430	9.0	644.42	92.8
J-271	511	5.6	644.41	57.7
J-272	466	9.0	644.49	77.2
J-273	520	11.2	644.47	53.9
J-274	564	2.3	644.39	34.8
J-275	440	1.1	644.39	88.4
J-276	453	0.0	644.38	82.8
J-277	520	10.1	642.06	52.8
J-278	420	6.7	637.58	94.1
J-279	520	4.5	637.03	50.6
J-280	505	2.3	637.02	57.1
J-281	423	3.4	637.03	92.6
J-282	460	2.3	636.95	76.6
J-283	410	5.6	637.36	98.4
J-284	545	4.5	639.02	40.7
J-285	410	3.4	643.61	101.1
J-286	500	8.2	643.85	62.2
J-287	420	1.1	643.56	96.7
J-288	462	0.0	644.01	78.7
J-289	480	2.3	644.12	71.0
J-290	475	1.1	644.39	73.3
J-291	445	1.1	644.64	86.4
J-292	430	1.1	644.02	92.6
J-293	492	0.0	658.09	71.9
J-294	492	0.0	658.09	71.9
J-295	491	5.6	655.38	71.1
J-296	489	0.0	655.38	72.0
J-297	492	0.0	655.33	70.7
J-298	490	5.6	652.54	70.3
J-299	463	13.5	649.74	80.8
J-300	461	4.5	649.31	81.5
J-301	450	6.7	644.68	84.2
J-302	470	1.1	644.26	75.4
J-303	468	1.1	644.22	76.2
J-304	472	0.0	644.25	74.5

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-305	475	1.1	644.23	73.2
J-306	487	2.3	644.22	68.0
J-307	440	5.6	635.63	84.6
J-308	437	4.5	623.46	80.7
J-309	430	1.1	623.46	83.7
J-310	420	0.0	623.30	88.0
J-311	455	3.4	623.16	72.8
J-312	435	1.1	616.23	78.4
J-313	430	3.4	608.68	77.3
J-314	450	1.1	606.49	67.7
J-315	450	1.1	606.49	67.7
J-316	439	2.3	604.76	71.7
J-317	441	2.3	604.74	70.8
J-318	436	0.0	628.19	83.2
J-319	443	1.1	628.06	80.1
J-320	436	5.6	627.75	83.0
J-321	420	1.1	627.74	89.9
J-322	420	1.1	624.07	88.3
J-323	462	1.1	618.58	67.7
J-324	508	0.0	615.01	46.3
J-325	530	3.4	609.87	34.6
J-326	500	5.6	609.51	47.4
J-327	515	2.3	614.80	43.2
J-328	510	3.4	610.25	43.4
J-329	450	0.0	608.40	68.5
J-330	448	4.5	607.38	69.0
J-331	445	4.5	608.26	70.6
J-332	530	0.0	614.45	36.5
J-333	435	1.1	612.07	76.6
J-334	410	6.7	611.86	87.3
J-335	518	12.4	610.73	40.1
J-336	511	2.3	607.86	41.9
J-337	517	6.7	606.58	38.8
J-338	543	6.7	600.34	24.8
J-339	536	7.9	598.69	27.1
J-340	440	4.5	593.83	66.6
J-341	465	1.1	589.73	54.0
J-342	457	3.4	585.24	55.5
J-343	430	0.0	582.89	66.1
J-344	460	1.1	580.94	52.3
J-345	490	5.6	580.82	39.3
J-346	449	10.1	575.88	54.9
J-347	444	1.1	575.85	57.0
J-348	500	4.5	562.15	26.9

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-349	470	0.0	560.17	39.0
J-350	470	4.5	560.07	39.0
J-351	466	15.0	561.81	41.5
J-352	437	4.5	557.49	52.1
J-353	437	4.5	557.34	52.1
J-354	420	4.5	556.90	59.2
J-355	470	5.6	556.75	37.5
J-356	435	4.5	557.14	52.8
J-357	435	1.1	557.13	52.8
J-358	435	4.5	556.93	52.8
J-359	435	3.4	556.81	52.7
J-360	430	9.0	556.62	54.8
J-361	430	5.6	556.28	54.6
J-362	410	0.0	556.54	63.4
J-363	425	0.0	556.51	56.9
J-364	412	1.1	556.48	62.5
J-365	460	5.6	556.47	41.7
J-366	478	3.4	611.52	57.8
J-367	457	0.0	611.52	66.9
J-368	450	4.5	611.28	69.8
J-369	446	0.0	610.88	71.3
J-370	425	3.4	610.35	80.2
J-371	410	4.5	609.83	86.5
J-372	480	0.0	609.48	56.0
J-373	412	49.0	603.54	82.9
J-374	417	4.5	602.75	80.4
J-375	417	4.5	602.49	80.3
J-376	465	9.0	595.80	56.6
J-377	420	3.4	579.69	69.1
J-378	435	3.4	573.74	60.0
J-379	435	2.3	573.67	60.0
J-380	440	0.0	572.78	57.4
J-381	452	11.2	572.56	52.2
J-382	475	10.1	607.60	57.4
J-383	445	2.3	614.86	73.5
J-384	490	18.7	612.21	52.9
J-385	447	0.0	615.79	73.0
J-386	469	0.0	615.79	63.5
J-387	406	1.1	601.97	84.8
J-388	450	0.0	602.23	65.9
J-389	410	3.4	602.30	83.2
J-390	398	12.4	609.53	91.5
J-391	399	16.0	600.94	87.4
J-392	393	0.0	600.94	90.0

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-393	397	0.0	600.94	88.2
J-394	397	0.0	600.94	88.2
J-395	400	0.0	611.06	91.3
J-396	405	2.3	610.97	89.1
J-397	390	1.1	610.65	95.5
J-398	393	2.3	610.21	94.0
J-399	390	0.0	610.20	95.3
J-400	395	0.0	610.19	93.1
J-401	395	3.4	610.18	93.1
J-402	395	2.3	610.18	93.1
J-403	470	1.1	651.75	78.6
J-404	450	0.0	636.00	80.5
J-405	450	0.0	641.99	83.1
J-406	488	2.3	601.19	49.0
J-407	517	13.5	600.99	36.3
J-408	515	0.0	600.67	37.1
J-409	522	4.5	600.98	34.2
J-410	509	2.3	600.96	39.8
J-411	516	5.6	600.96	36.8
J-412	503	4.5	600.97	42.4
J-413	505	5.6	600.96	41.5
J-414	393	0.0	610.18	94.0
J-415	494	0.0	657.02	70.5
J-418	478	3.4	601.33	53.4
J-419	486	0.0	602.47	50.4
J-420	485	0.0	602.74	50.9
J-421	471	0.0	603.32	57.3
J-422	457	0.0	603.61	63.4
J-425	515	3.4	600.67	37.1
J-426	514	9.0	600.69	37.5
J-427	499	4.5	600.59	44.0
J-428	508	5.6	600.57	40.0
J-429	440	3.4	641.42	87.1
J-430	440	606.5	641.38	87.1
J-431	508	20.7	596.58	38.3
J-432	486	11.2	617.16	56.7
J-433	481	13.5	634.55	66.4
J-434	481	7.9	633.24	65.9
J-435	463	14.6	632.91	73.5
J-436	495	3.4	644.75	64.8
J-437	505	4.5	628.68	53.5
J-438	445	3.4	644.19	86.2
J-439	436.93	0.0	649.23	91.9
J-440	429	13.8	646.59	94.1

Node No.	Elevation (Ft.)	Demand (gpm)	Hydraulic Grade (ft.)	Pressure (psi)
J-441	460	10.1	650.58	82.5
J-442	435	14.6	645.01	90.9
J-443	524	2.3	613.46	38.7
J-444	465	14.6	611.31	63.3
J-445	539	11.2	603.22	27.8
J-446	472	37.1	606.91	58.4
J-447	392.08	0.0	610.35	94.4
J-448	419	16.9	601.95	79.2
J-449	444	7.9	597.81	66.5
J-450	474	228.5	633.89	69.2
J-451	472	29.6	646.23	75.4
J-452	466	1.1	651.41	80.2
J-453	483	3.4	654.21	74.1
J-454	430	1.1	641.58	91.5
Master Meter	458	0.0	636.00	77.0

Appendix L
Water Purchase and Sales Agreements

- Evansville Water Purchase Agreement
- Town of Haubstadt Water Sales Agreement
- Toyota Motor Manufacturing, Indiana Water Sales Agreement

Evansville Water Purchase Agreement

USDA–FHA
Form FHA 442-30
(Rev. 4-19-72)

Position 5

WATER PURCHASE CONTRACT

COPY

This contract for the sale and purchase of water is entered into as of the 13th day of July, 19 77, between the Water Works District of Evansville, Indiana,

(Address)

hereinafter referred to as the "Seller" and the Gibson Water, Inc., 115 S. Main, Princeton, Indiana 47670,

(Address)

hereinafter referred to as the "Purchaser",

WITNESSETH:

Whereas, the Purchaser is organized and established under the provisions of _____ of the Code of _____, for the purpose of constructing and operating a water supply distribution system serving water users within the area described in plans now on file in the office of the Purchaser and to accomplish this purpose, the Purchaser will require a supply of treated water, and

Whereas, the Seller owns and operates a water supply distribution system with a capacity currently capable of serving the present customers of the Seller's system and the estimated number of water users to be served by the said Purchaser as shown in the plans of the system now on file in the office of the Purchaser, and

Whereas, by Resolution No. _____ enacted on the 16th day of August, 19 77, by the Seller, the sale of water to the Purchaser in accordance with the provisions of the said contract was approved, and the execution of this contract carrying out the said schedule by the Vice-President, and attested by the Secretary, was duly authorized, and

Whereas, by resolution of the Board of Directors of the Purchaser, enacted on the 13th day of July, 19 77, the purchase of water from the Seller in accordance with the terms set forth in the said _____ was approved, and the execution of this contract by the President, and attested by the Secretary was duly authorized;

Now, therefore, in consideration of the foregoing and the mutual agreements hereinafter set forth,

A. The Seller Agrees:

1. (Quality and Quantity) To furnish the Purchaser at the point of delivery hereinafter specified, during the term of this contract or any renewal or extension thereof, potable treated water meeting applicable purity standards of the Enviromental Management Board in such quantity as may be required by the Purchaser not to exceed 2.5 million gallons per ~~month~~ day.

2. (Point of Delivery and Pressure) That water will be furnished at a reasonably constant pressure calculated at 35 PSI from a proposed twenty (20) inch main supply at a point located west of U.S.Hwy 41 approximately 2500 ft.south of the intersection of U.S.41 & I-

If a greatet pressure than that normally available at the point of delivery is required by the Purchaser, the cost of providing such greater pressure shall be borne by the Purchaser. Emergency failures of pressure or supply due to main supply line breaks, power failure, flood, fire and use of water to fight fire, earthquake or other catastrophe shall excuse the Seller from this provision for such reasonable period of time as may be necessary to restore service.

3. (Metering Equipment) To furnish, install, operate, and maintain at its own expense at point of delivery, the necessary metering equipment, including a meter house or pit, and required devices of standard type for properly measuring the quantity of water delivered to the Purchaser and to calibrate such metering equipment whenever requested by the Purchaser but not more frequently than once every twelve (12) months. A meter registering not more than two percent (2%) above or below the test result shall be deemed to be accurate. The previous readings of any meter disclosed by test to be inaccurate shall be corrected for the six (6) months previous to such test in accordance with the percentage of inaccuracy found by such tests. If any meter fails to register for any period, the amount of water furnished during such period shall be deemed to be the amount of water delivered in the corresponding period immediately prior to the failure, unless Seller and Purchaser shall agree upon a different amount. The metering equipment shall be read on 1st working day of each month. An appropriate official of the Purchaser at all reasonable times shall have access to the meter for the purpose of verifying its readings.

4. (Billing Procedure) To furnish the Purchaser at the above address not later than the 15th day of each month, with an itemized statement of the amount of water furnished the Purchaser during the preceding month.

B. The Purchaser Agrees:

1. (Rates and Payment Date) To pay the Seller, not later than the 30th day of each month, for water delivered in accordance with the following schedule of rates:

a. $ 290.00 for the first one (1) million gallons, which amount shall also be the minimum rate per month.

b. $ .29 cents per 1000 gallons for water in excess of one (1) million gallons ~~for~~ ~~less than~~ ~~gallons~~

c. ~~$ cents per 1000 gallons for water in excess of gallons~~

2. (Connection Fee) To pay as an agreed cost, a connection fee to connect the Seller's system with the system of the Purchaser, the sum of $150,000.00 dollars which shall cover any and all costs of the Seller for installation of the metering equipment and agreed difference between 16" and 20" connection piping extensior

C. It is further mutually agreed between the Seller and the Purchaser as follows:

1. (Term of Contract) That this contract shall extend for a term of 50 years from the date of the initial delivery of any water as shown by the first bill submitted by the Seller to the Purchaser and, thereafter may be renewed or extended for such term, or terms, as may be agreed upon by the Seller and Purchaser.

2. (Delivery of Water) That 90 days prior to the estimated date of completion of construction of the Purchaser's water supply distribution system, the Purchaser will notify the Seller in writing the date for the initial delivery of water.

3. (Water for Testing) When requested by the Purchaser the Seller will make available to the contractor at the point of delivery, or other point reasonably close thereto, water sufficient for testing, flushing, and trench filling the system of the Purchaser during construction, irrespective of whether the metering equipment has been installed at that time, at a ~~flat~~ charge of $ .29 per 1000 gal. which will be paid by the contractor or, on his failure to pay, by the Purchaser.

4. (Failure to Deliver) That the Seller will, at all times, operate and maintain its system in an efficient manner and will take such action as may be necessary to furnish the Purchaser with quantities of water required by the Purchaser. Temporary or partial failures to deliver water shall be remedied with all possible dispatch. In the event of an extended shortage of water, or the supply of water available to the Seller is otherwise diminished over an extended period of time, the supply of water to Purchaser's consumers shall be reduced or diminished in the same ratio or proportion as the supply to Seller's consumers is reduced or diminished.

5. (Modification of Contract) That the provisions of this contract pertaining to the schedule of rates to be paid by the Purchaser for water delivered are subject to modification at the end of every 3 year period. Any increase or decrease in rates shall be based on a demonstrable increase or decrease in the costs of performance hereunder, but such costs shall not include increased capitalization of the Seller's system. Other provisions of this contract may be modified or altered by mutual agreement.

6. (Regulatory Agencies) That this contract is subject to such rules, regulations, or laws as may be applicable to similar agreements in this State and the Seller and Purchaser will collaborate in obtaining such permits, certificates, or the like, as may be required to comply therewith.

7. (Miscellaneous) That the construction of the water supply distribution system by the Purchaser is being financed by a loan made or insured by, and/or a grant from, the United States of America, acting through the Farmers Home Administration of the United States Department of Agriculture, and the provisions hereof pertaining to the undertakings of the Purchaser are conditioned upon the approval, in writing, of the State Director of the Farmers Home Administration.

8. (Successor to the Purchaser) That in the event of any occurence rendering the Purchaser incapable of performing under this contract, any successor of the Purchaser, whether the result of legal process, assignment, or otherwise, shall succeed to the rights of the Purchaser hereunder.

In witness whereof, the parties hereto, acting under authority of their respective governing bodies, have caused this contract to be duly executed in 4 counterparts, each of which shall constitute an original.

Seller:

Water Works District of Evansville, Indiana

By [signature]

Title Vice President

Attest: [signature]

Secretary

Purchaser:

Gibson Water, Inc.

By [signature]

Title President

Attest: [signature]

Secretary

This contract is approved on behalf of the Farmers Home Administration this 27 day of October, 19 78.

By Wilbur K Hanna

Title Chief Community Programs

Town of Haubstadt Water Sales Agreement

WATER PURCHASE AGREEMENT

Between

TOWN OF HAUBSTADT

and

GIBSON WATER, INC.

This Agreement for the sale and purchase of water, made and entered into on the 17 day of February, 2010, by and between Gibson Water, Inc., a not-for-profit corporation pursuant to the Indiana Not-For-Profit Act of 1971, (hereinafter referred to as "Gibson Water") and the Town of Haubstadt, Indiana, a municipal corporation of the State of Indiana, (hereinafter referred to as "Haubstadt") (collectively referred to as "Parties").

WITNESSETH:

WHEREAS, Haubstadt and Gibson Water entered into a Water Purchase Contract on January 31, 1989, for the purchase by Haubstadt from Gibson Water of a treated supply of water for purposes of resale and redistribution by Haubstadt to water customers of the Haubstadt Water Utility; and

WHEREAS, the Water Purchase Contract dated January 31, 1989, was for an initial term of 20 (twenty) years ("Original Contract"), which initial term has now expired; and

WHEREAS, Haubstadt desires to continue purchasing from Gibson Water, and Gibson Water desires to continue selling to Haubstadt a treated supply of water for an additional term of 20 (twenty) years; and

NOW, THEREFORE, in consideration of the covenants herein contained and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. Water Supply. Gibson Water will furnish to Haubstadt as the sole provider at the current delivery and connection point, located at C.R. 925 S. and U.S. Highway 41 S., during the term of this Agreement and any renewal and extensions thereof, potable treated water, meeting applicable purity standards of the Public Water Supply Section of the Indiana Department of Environmental Management.

2. Water Pressure and Delivery Location Provisions. Water will be furnished by Gibson Water at a reasonably constant normal pressure from Gibson Water's supply main, which shall be of appropriate dimensions for the quantity of the water being purchased by Haubstadt. The connection and delivery location as described in paragraph 1 is and shall continue to be owned by Gibson Water. If a lesser or greater pressure than that available at the point of delivery is required by Haubstadt, the cost of providing such lesser or greater pressure shall be borne by Haubstadt. Emergency failure of pressure or supply due to main supply breaks, power failure, flood, fire, and use of water to fight fire, earthquake or any other catastrophe or event of force majeure shall excuse Gibson Water from its obligations hereunder for such reasonable period of time as may be necessary to restore service. Haubstadt shall be responsible for payment of all costs and expenses from and including the delivery point. Haubstadt shall also be responsible for payment of all costs and expenses for site modifications and enlargements, equipment purchase and repairs at the delivery location site, except for the metering equipment as set forth in paragraph 3 below. Haubstadt shall also remain a member of Gibson Water, Inc. and pay any required renewal or membership fees.

3. Metering Equipment. Gibson Water shall continue to operate and maintain at its own expense at said point of delivery, the necessary standard metering equipment for properly measuring the quantity of water delivered to Haubstadt ("Metering Equipment") from and including the delivery site and to calibrate such Metering Equipment whenever requested by Haubstadt but not more frequently than once every 12 months. Metering Equipment registered not more than 2% above or below the test results will be deemed to be accurate. The previous readings of any Metering Equipment disclosed to be inaccurate to the extent of more than 2% will be corrected for the 2 months previous to such tests in accordance with the percentage of inaccurancy in excess of 2% found by such test. If any Metering Equipment fails to register for any period, the amount of water delivered during such periods shall be deemed to be the amount of the water delivered in the corresponding period immediately prior to the failure, unless Gibson Water and Haubstadt agree upon a different amount. The Metering Equipment shall be read monthly. An appropriate official of Haubstadt shall have access to the Metering Equipment for the purpose of verifying its readings at all reasonable times.

4. Billing Date. Gibson Water will furnish to Haubstadt by the 20th day of each month an itemized billing of the amount of water delivered to Haubstadt in the preceding month.

5. Sole Provider of Water. Haubstadt agrees to purchase all of its water needs and supplies during the term of this Agreement from Gibson Water.

6. Emergency Water Usage. In the event that Haubstadt experiences a significant emergency (e.g. waterline breaks and firefighting needs) or anticipates a

significant increase in usage (e.g. system maintenance and flushing), Haubstadt will notify Gibson Water as soon as possible of such emergency or anticipated increase in usage.

7. Water Rates. Haubstadt shall pay to Gibson Water each month for water delivered by Gibson Water to Haubstadt the current wholesale rate for such usage, as approved by the Indiana Utility Regulatory Commission, or any successor regulatory commission having jurisdiction over the rates. The Parties further recognize and expressly agree that Gibson Water has the right to petition the Indiana Utility Regulatory Commission for an increase in the aforesaid rates from time to time and that this Agreement shall be subject to any change, amendment, increase or decrease in the tariffs and rates charged by Gibson Water under this Agreement pursuant to the approval of the Indiana Utility Regulatory Commission. Haubstadt shall pay any such tariff and rate applicable to it that is lawfully chargeable by Gibson Water at any time during the term of this Agreement, including but not limited to, any new or additional tariffs, rates and charges that may be in effect at any time during the term hereof. Gibson Water agrees to notify Haubstadt in a timely manner of any intention of an initiation of a proceeding with the Indian Utility Regulatory Commission to change any rate affecting Haubstadt. The Parties acknowledge and agree that the "demand charge" agreed upon in the Original Contract shall no longer be charged to Haubstadt.

8. Verification of Metering and Pass Through Charges. The volume charges to Haubstadt shall be measured by the volume registered at the metering point on a monthly basis. In addition to the above stated charges, Haubstadt acknowledges that Gibson Water purchases its water supply from the City of Evansville, Indiana, and that any increase in the charge that the City of Evansville makes to Gibson Water shall be passed through and tracked by Gibson Water to Haubstadt and that Haubstadt shall pay Gibson Water for Haubstadt's proportionate share of such increase in charges per gallon. The meter and regulatory equipment shall be accessible to authorized employees of Haubstadt at all reasonable times. Volume reports shall be submitted by Gibson Water to Haubstadt with each monthly billing. Haubstadt shall have the right to make an audit, at reasonable times mutually agreeable to the Parties, of Gibson Water's books and records to the extent necessary to verify Gibson Water's calculations for the water taken by Haubstadt.

9. Payment of Monthly Bill. Gibson Water's monthly water bill to Haubstadt shall be due and payable no later than the first working day of each month or as stated on the monthly water bill, whichever date is later. In the event that payment is not received by such date, then Haubstadt shall pay a late payment charge of 10% of the first $3,00 and 3% of the amount of the bill over $3,00. In the event that 30 days elapse without payment by Haubstadt, then Haubstadt shall have breached this contract and Gibson Water may give 7 days' written notice to Haubstadt to cure its default. If Haubstadt fails to cure the default, Gibson Water may elect to pursue available legal remedies including, without limitation, the termination of water service.

10. Term of Agreement and Extension. This Agreement shall be in effect for a period of 20 years from the date first written above and thereafter shall automatically renew for successive 1-year terms, unless either Party is notified in writing by the other party within 6 months prior to expiration of the initial or any successive renewal term.

11. Water Supply Failure. Gibson Water shall not be liable to Haubstadt for failing to supply water pursuant to this Agreement when water is not available due to causes beyond the control of Gibson Water. Gibson Water shall provide Haubstadt with as much advance notice as possible in the event that Gibson Water is unable to provide the required water supply to Haubstadt. Haubstadt shall be permitted to purchase water, during such time that sufficient water is not available from Gibson Water, from other sources, if available. Haubstadt acknowledges that the water supply for Gibson Water is obtained from the City of Evansville pursuant to a contractual Agreement with the City of Evansville Water Department. However, Gibson Water shall use due care and diligence not to make commitments to sell more water from Gibson Water's supply than can be reasonably obtained through Gibson Water's contractual Agreement with the City of Evansville Water Department. Notwithstanding such commitment, should a shortage of water occur, then Gibson Water agrees that it will fairly and equitably apportion the supply available between all of its customers, including Haubstadt. In the event of the need for implementation of water use rationing, curtailment or conservation, Gibson Water shall not require Haubstadt to reduce its consumption to a greater degree than that is required of its other customers.

12. Cross Connection Control Devices. Haubstadt shall, at its own expense, be responsible for the installation and maintenance of any cross connection control devices as are necessary and required pursuant to 410 I.A.C. 6.22-8-1-11, and Gibson Water's requirements. Haubstadt shall construct, own, maintain, control, and be responsible for all cross connection control devices, the water line that connects Haubstadt's system to Gibson Water's meter, and all tap-ins on said connecting line constructed, owned, and maintained by Haubstadt.

13. Purchase of Reserve Capacity. If at any time during the term of this Agreement, Gibson Water reasonably determines on the basis of sound and accepted engineering practice that Haubstadt's future increased usage threatens to exceed Gibson Water's ability to provide water in sufficient quantities to all customers, Gibson Water may require Haubstadt to purchase reserve capacity for such future increased usage. Such reserve capacity amount shall be mutually agreed upon by the Parties.

14. Assignability. This Agreement or any right or duty hereunder cannot be assigned without written approval of both Parties.

15. Binding Effect. This Agreement shall be binding on the successors, approved assigns, and trustees of each party.

16. Approval Contingency. This Agreement shall be contingent upon approval of the same by the Indiana Utility Regulatory Commission and shall have an effective date concurrent to the date of such approval.

IN WITNESS WHEREOF, the Parties hereto, acting under authority of their respective executive bodies, cause this Agreement to be duly executed in two counterparts, each of which shall constitute an original.

DATED this 17 day of February 2010.

GIBSON WATER, INC.

President

ATTEST:

Secretary

DATED this 1 day of MARCH 2010.

TOWN COUNCIL OF THE
TOWN OF HAUBSTADT

Kenneth Reinbrecht, President

Harry Martin, Council Member

Michael Ballard, Council Member

ATTEST:

Bonnie Wagner, Clerk-Treasurer

15. Binding Effect. This Agreement shall be binding on the successors, approved assigns, and trustees of each party.

16. Approval Contingency. This Agreement shall be contingent upon approval of the same by the Indiana Utility Regulatory Commission and shall have an effective date concurrent to the date of such approval.

IN WITNESS WHEREOF, the Parties hereto, acting under authority of their respective executive bodies, cause this Agreement to be duly executed in two counterparts, each of which shall constitute an original.

DATED this 17 day of February 2010.

GIBSON WATER, INC.

President

ATTEST:

Secretary

DATED this _____ day of _____ 2010.

TOWN COUNCIL OF THE
TOWN OF HAUBSTADT

Kenneth Reinbrecht, President

Harry Martin, Council Member

Michael Ballard, Council Member

ATTEST:

Bonnie Wagner, Clerk-Treasurer

Toyota Motor Manufacturing, Indiana
Water Sales Agreement

WATER SALE AND PURCHASE CONTRACT

THIS AGREEMENT, for the sale and purchase of water, made and entered into on the 1st day of March, 1997, by and between GIBSON WATER, INC., a Not-For-Profit Corporation pursuant to the Indiana Not-For-Profit Act of 1971, hereinafter referred to as SELLER, and TOYOTA MOTOR MANUFACTURING, INDIANA, INC., hereinafter referred to as PURCHASER, WITNESSETH:

WHEREAS, PURCHASER is constructing a manufacturing facility near Princeton, Gibson County, Indiana, and is connected by a new pipeline to SELLER's water distribution system, and PURCHASER desires an adequate and substantial supply of reliable water for its plant, and to accomplish its purpose of obtaining such water supply PURCHASER has entered into negotiations with SELLER which have culminated in this Contractual Agreement, and

WHEREAS, SELLER owns and operates a water supply distribution system with rights to supply and a capacity currently capable of serving the present plant needs of PURCHASER and providing water through SELLER's distribution system to PURCHASER at its plant in Gibson County, Indiana, in the quantity hereinafter agreed to by the parties, and

WHEREAS, PURCHASER has corporate and legal authority to enter into this Contract and to purchase water from SELLER as provided in this Contract, and SELLER has been authorized to sell water to PURCHASER, in accordance with this Contract and approval thereof by the Board of Directors of Gibson Water, Inc.

NOW, THEREFORE, in consideration of the foregoing, and additional mutual and valid consideration as set forth hereinafter, the parties mutually agree as follows:

1. SELLER agrees to furnish PURCHASER at the point of delivery hereinafter specified, during the term of this Contract, and any renewal or extension hereof, potable treated water, meeting applicable purity standards of the Public Water Supply Section of the Indiana Department of Environmental Management and Indiana Department of Natural Resources, but not presently exceeding a maximum quantity of one million (1,000,000) gallons U.S. per day, unless SELLER gives its express written approval to any excedence in said quantity.

2. SELLER's water will be furnished to PURCHASER at a reasonably constant normal pressure (approximately 80 psi) from SELLER's supply main which shall be of appropriate dimensions therefor. The connection and delivery and take point shall be owned by SELLER and located on PURCHASER's property at [DESCRIPTION OF LOCATION OF METER PIT].

The actual cost of connection between SELLER's main and PURCHASER's take point shall be determined by SELLER and submitted to PURCHASER and such costs shall be paid by PURCHASER in advance of the connection. If a lesser or greater pressure than that available at the point of delivery is required by the PURCHASER, the reasonable cost of providing such lessor or greater pressure shall be borne by PURCHASER. Emergency failure of pressure or supply due to equipment or pipe breaks, power failure, flood, fire and use of water to fight fire, earthquake or any other catastrophe or event of force majeure shall excuse the SELLER from its obligations hereunder for such reasonable period of time as may be necessary to restore service. PURCHASER shall be responsible for payment of all reasonable costs and expense of SELLER for any additions, extensions, changes or

improvements of SELLER's system which are necessary and utilized exclusively to supply water to PURCHASER, including but not limited to any pump modifications and additions, meters and a metering pit, orifice and pressure regulator, backflow prevention equipment, and connection. PURCHASER shall also become a member of Gibson Water Company, Inc. and pay the membership fee of $100.00; reimburse SELLER for all reasonable professional fees and expenses pertaining to connection of and service by SELLER to PURCHASER; and PURCHASER shall pay SELLER a tap in fee which shall consist of any difference between SELLER's estimate of costs, expenses, fees and services involved in connecting PURCHASER to SELLER's system and meter and the provision of water and service by SELLER to PURCHASER, and the actual total cost thereof, it being the express agreement and intent of the parties that SELLER shall not incur any out of pocket cost in connecting PURCHASER to its system and providing water supply and service to PURCHASER.

3. SELLER shall operate and maintain at its own expense at the said point of delivery, the necessary standard metering equipment for properly measuring the quantity of water delivered to the PURCHASER and to initially calibrate such metering equipment and to calibrate such metering equipment whenever requested by the PURCHASER but not more frequently than once every twelve (12) months. A meter registering not more than two percent (2%) above or below the test results will be deemed to be accurate. The previous readings of any meter disclosed by tests to be inaccurate to the extent of more than 2% shall be corrected for the two (2) months previous to such tests in accordance with the percentage of inaccuracy in excess of 2% found by such tests. If any meter fails to register for any

period, the amount of water furnished during such period shall be deemed to be the amount of water delivered in the corresponding period immediately prior to the failure, unless the SELLER and PURCHASER agree upon a different amount. The metering equipment shall be read monthly. An appropriate official of the PURCHASER shall have access to the meter for the purpose of verifying its readings at all reasonable times.

4. SELLER shall furnish the PURCHASER, before the 10th day of each month, an itemized billing of the amount of water furnished the PURCHASER in the preceding month, and PURCHASER shall pay said bill, absent any objection, by the 25th day of the billing month; provided however, if the bill is not provided before the 10th day of the month, then PURCHASER shall pay the bill, absent any objection, by the 25th day of the month immediately following the billing month.

5. PURCHASER agrees to purchase all of its water needs and supply during the term hereof up to the maximum of 1,000,000 gallons per day from SELLER. The parties acknowledge the following estimated schedule of water usage which schedule is subject to modification by mutual agreement or due to changed circumstances:

Average Gallons/Day	To be Available Not Later Than
200,000	March, 1997
400,000	February, 1998
800,000	September, 1998

6. Quantities of water in excess of 1,000,000 gallons per day may be purchased by PURCHASER from SELLER, subject to engineering and system constraints, for a period of time not to exceed seven (7) days by notifying SELLER not later than twenty-four (24)

hours prior to the time that said additional water shall be taken and receiving approval from SELLER to draw the additional water. Additional quantities of water may be purchased for a period of time greater than seven (7) days by submitting a written request to SELLER at least fourteen (14) days in advance specifying the additional quantity and the specific days it is to be taken. Before the additional water is taken, the request must be approved in writing by SELLER. The parties acknowledge that one purpose for the requirement of obtaining prior approval before additional water can be taken is to prevent PURCHASER from placing unscheduled peak demands upon SELLER's system or supply which could not be fulfilled by SELLER. The SELLER shall not withhold approval unreasonably. The SELLER may, however, require PURCHASER to purchase additional reserve or reservoir/storage capacity if continued additional usage threatens to exceed the SELLER's ability to provide water in sufficient quantities to all customers. In the event that PURCHASER takes more water than its maximum daily quantity without obtaining prior approval, then a surcharge shall be paid by PURCHASER of fifty cents ($.50) per one thousand (1,000) U.S. gallons taken each day in excess of the maximum daily quantity of 1,000,000 gallons.

7. PURCHASER shall also pay SELLER as follows:

PURCHASER shall pay to SELLER each month for water delivered by SELLER to PURCHASER one dollar and six cents ($1.06) per each one thousand (1,000) U.S. gallons taken from SELLER with no monthly demand charge for the initial term hereof. Said rate, subject to regulatory approval, shall be fixed for an initial period of three (3) years. The volume charges to PURCHASER shall be

measured by the volume registered at the metering point on a monthly basis. In addition to the above stated charges, PURCHASER acknowledges that SELLER purchases its water supply from the City of Evansville, Indiana, and that any increase in the charge that City of Evansville makes to SELLER shall be passed through and tracked by SELLER to PURCHASER and that PURCHASER shall pay SELLER for all such charges.

The parties acknowledge and agree that the one dollar and six cents ($1.06) per 1,000 gallons charge, without a monthly demand charge, to be paid by PURCHASER to SELLER has been calculated and set on the basis of SELLER's sales, rates and financials existent at the date of this Agreement and are subject to approval of the Indiana Utility Regulatory Commission, and that such approval is a condition precedent to the effectiveness of this Agreement. The parties further recognize and expressly agree that SELLER has the right to petition the Indiana Utility Regulatory Commission for an increase in the aforesaid rates from time to time and that this Agreement shall be subject to any change, amendment, increase or decrease in the tariffs and rates initially charged by SELLER under this Agreement pursuant to the approval of the Indiana Utility Regulatory Commission and PURCHASER shall pay such tariff and rate applicable to it that is lawfully chargeable by SELLER at any time during the term of this Agreement, including but not limited to any new or additional tariffs, rates and charges that may be in effect at any time during the term hereof.

Meters and regulatory equipment shall be accessible to authorized employees of PURCHASER at all reasonable times. Volume reports shall be submitted by SELLER to PURCHASER with each monthly billing. PURCHASER shall have the right to make an audit, at reasonable times, of the SELLER's books and records to the extent necessary to verify the SELLER's calculation of the water taken by PURCHASER and SELLER's billings therefor.

8. This Contract shall extend for a period of ten (10) years from the date first above written and continue thereafter for successive one (1) year periods unless and until either party gives the other at least ninety (90) days advance written notice of termination as of the end of the initial ten (10) year term or as of the end of any successor period.

9. The charges for water shall be effective after approval thereof by the Indiana Utility Regulatory Commission and as of the date of completion of construction of the connection between SELLER and PURCHASER, and at the time that notice of availability of water at the point of connection is served upon the PURCHASER by SELLER, and upon PURCHASER's payment of all expenses and costs as provided for herein, and upon PURCHASER's take of water through SELLER's meter at the point of connection. Until all of the foregoing occur, and until this Contract is finally approved by the Indiana Utility Regulatory Commission, all water taken by PURCHASER from SELLER shall be purchased and paid for by PURCHASER pursuant to SELLER's applicable standard existing tariff and rates.

10. SELLER reserves the right to either increase or decrease its rates and charges for water from time to time as may be required based upon the SELLER's operating

experience, government regulations, and changes in supplier prices, all as approved by the Indiana Utility Regulatory Commission, provided however that the initial rate provided in Paragraph 7 hereof shall be fixed for an initial period of three (3) years - subject to Regulatory approval.

11. SELLER shall not be liable to the PURCHASER for failing to supply water pursuant to this Contract when water is physically not available due to causes beyond the control of the SELLER. PURCHASER acknowledges that the water supply for the SELLER is obtained from the City of Evansville pursuant to a contractual agreement with the City of Evansville Water Department. However, the SELLER shall not make commitments to sell more water from the SELLER's supply then can be reasonably obtained through the SELLER's contractual agreement with the City of Evansville Water Department. Notwithstanding such commitment, should a shortage of water occur, then the SELLER agrees that it will fairly and equitably apportion the supply available between all of its customers, including the PURCHASER. In the event of a need for implementation of water use rationing, curtailment or conversion, SELLER shall not require PURCHASER to reduce its consumption to a greater degree than that required of its other customers, unless an emergency exists.

12. PURCHASER shall install and maintain, or cause to be installed and maintained, at its own expense such cross connection control device(s) as are necessary and required pursuant to 410 IAC 6.22-8-1-11, and SELLER's requirements. PURCHASER shall construct, own, maintain, control and be responsible for all cross connection control devices, the water line that connects the PURCHASER's system to SELLER's meter and

all tap-ins on said connecting line constructed, owned and maintained by PURCHASER. PURCHASER shall also be solely responsible for the quality and distribution of all water after it has passed through SELLER's meter at the point of connection on PURCHASER's property. PURCHASER has agreed to be solely responsible for water required for PURCHASER's fire protection.

13. That if any time during the life of this Contract, it becomes apparent on the basis of sound and accepted engineering practice, that the daily amount of water to be delivered to PURCHASER is inadequate to meet the PURCHASER's water supply needs, then the said daily quantity of water may be increased by supplemental agreement if mutually accepted by both parties.

14. This Contract and any right or duty hereunder cannot be assigned without written approval of both parties.

15. This Contract shall be binding on the successors, approved assigns, and trustees of each party and shall be governed by Indiana law.

IN WITNESS WHEREOF, the parties hereto, acting under proper legal authority have caused this Contract to be duly executed in two (2) counterparts, each of which shall constitute and original.

SELLER:

GIBSON WATER, INC.

By: _____ 1-27-97
President

ATTEST:

_____

PURCHASER:

TOYOTA MOTOR MANUFACTURING,
INDIANA, INC.

By: Don Dees 23/1/97 [signature] 1/27/97

Its: [signature] 1/27/97

ATTEST:

____

116920