

August 14, 2017

Mr. Steve Knudson  
Public Service Commission of Wisconsin  
610 N. Whitney Way  
Madison, WI 53705

***Subject: Paddock Lake – Water System Improvements***

Dear Mr. Knudson:

On behalf of the Village of Paddock Lake, we are requesting your Authority to Construct for the Water System Improvements project. Enclosed is a project filing application report which includes a project description, the estimated costs, project schedule, design parameters, and a discussion of alternatives in accordance with the requirements of Wisconsin Administrative Code PSC Chapter 184.

Please call if you have any questions.

Sincerely,

BAXTER & WOODMAN, INC.  
CONSULTING ENGINEERS



Joseph W. Marchese, P.E.

JWM:jmc

Encs.

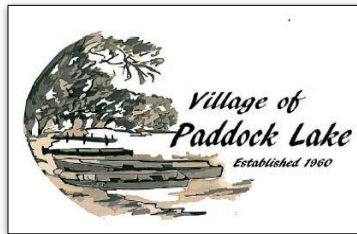
C: Tim Popanda, Village of Paddock Lake (electronic copy)  
Mark Kolczaski, Baxter & Woodman (electronic copy)  
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# Village of Paddock Lake, Wisconsin Water Supply Improvements

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## PSC Filing Application

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*Prepared by:*

**BAXTER & WOODMAN**  
Consulting Engineers

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August 2017

# Village of Paddock Lake, Wisconsin Water Supply Improvements PSC Filing Application

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- B Project Maps
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# 1. PROJECT OVERVIEW

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## 1.1 Location

The project is located in the Village of Paddock Lake, Wisconsin, about 15 miles west of the City of Kenosha, Wisconsin and about five miles north of the Illinois State border. Specifically, the project is located in Kenosha County, Township 1N, Range 20E, and Sections 2, 3, 10, and 11. The project includes three separate sites. The Well No. 1 and Well No. 2 sites located near the east end of the Village, the Well No. 3 site located near the southwest side of the Village, and the water main portion runs along STH 50 from near the west end of the Village at STH 75 to near the east end of the Village at 236<sup>th</sup> Avenue. See Appendix A for a Water System Concept Plan.

## 1.2 Project Description

The planned improvements include an expansion and improvements of the existing east side water system to provide additional supply and fire protection to existing customers and allow for service and fire protection expansion to future customers along the south and west sides of the Village. The following describes the proposed improvements:

- A new pump station to house Wells No. 1 and No. 2 that will include a ground storage reservoir, high service pumps, chemical addition (sodium hypochlorite and phosphate), and emergency stand-by power.
- New 350 gpm pumps for both Wells No. 1 and No. 2.
- New 12-inch water main along STH 50 and 236<sup>th</sup> Avenue to connect the east side system to the west side system. The new mains will provide service to Central High School and businesses on STH 50.
- A pump station, well pump, and emergency stand by power at the previously constructed Well No. 3; this pumping station will be classified as emergency use only and serve as the required redundant source of water.

## 1.3 Proposed Construction

The proposed construction requires improvements to Wells No. 1 and No. 2 and utilizing Well No. 3 as a back-up source. The water main construction will interconnect the east and west side water systems.

## 1.4 Construction Schedule

The project schedule includes design of the proposed improvements currently underway with Bidding and Award of the proposed project in early 2018. Construction would then begin in spring of 2018 and be complete by fall of 2018.

## 1.5 Contact Information

Table 1 contains a list of contact information for the design engineer and the Village.

**TABLE 1**  
**Contact Information**

| <b>Name</b>         | <b>Title</b>          | <b>Organization</b>     | <b>Address</b>                                 | <b>Phone #</b> |
|---------------------|-----------------------|-------------------------|--|----------------|
| Joseph Marchese, PE | Project Manager       | Baxter & Woodman        | 256 S. Pine St.<br>Burlington, WI 53105        | 815-444-3363   |
| Tim Popanda         | Village Administrator | Village of Paddock Lake | 6969 236 <sup>th</sup> Ave.<br>Salem, WI 53168 | 262-843-2713   |

## 1.6 Other Agency Correspondence/Permits/Approvals

### 1.6.1 Copies of Correspondence

See Appendix B for correspondence between the Village and the WDNR regarding the concept plans for supplying the west side of the Village with drinking water and improving fire protection throughout the areas served.

### 1.6.2 Issues or Concerns

No issues or concerns regarding this project have been raised.

### 1.6.3 Permits/Approvals Required

The Village will need to obtain a permit from the Public Service Commission for the Authority to Construct the project. The Village will also need WDNR approval for the water system improvements, the water main construction, and construction site stormwater and erosion control permits. A permit from WisDOT will be required for constructing, operating, and maintaining the water main along STH 50.

## 1.7 Project Maps

Refer to Appendix B for the project maps referenced in other Sections of this Report.

## 2. PROJECT DEVELOPMENT AND ALTERNATIVES

### 2.1 Purpose for the Project

The Village of Paddock Lake Water Utility currently serves roughly one third of its citizens, as a result, the U.S. Census population data is not applicable. However, the Village had a population of 2,992 as of the 2010 U.S. Census. The data in Table 2 below shows the current population served by the Utility as well as estimates for the number of new customers this project will serve. The data was provided by the Village and the Public Service Commission (PSC) of Wisconsin.

**TABLE 2**  
**Population**

| <b>Service Area</b>              | <b>Population</b> |
|----------------------------------|-------------------|
| East Side Water System – Current | 1,001             |
| West Side and Business District  | 505               |
| HWY 50 Business District         | 204               |
| Total – With Improvements        | 1,710             |

While only one third of its citizens are being served by the water system, population projections for the Village are located in Table 3. The population projections are provided by the Department of Administration (DOA) – Demographic Services Center (DSC). Most of the near-term population growth in the Village is expected to occur on the west side of the Village and will be served by the new west side water system. Development is expected to occur only if the west side water system is placed into service.

**TABLE 3**  
**Population Projections**

| <b>Year</b> | <b>Population</b> |
|-------------|-------------------|
| 2015        | 3,015             |
| 2020        | 3,135             |
| 2025        | 3,215             |
| 2030        | 3,280             |
| 2035        | 3,290             |
| 2040        | 3,265             |

The existing water supply system is at the end of its useful life and is not code compliant. Much of the distribution system was installed with Wells No. 1 and No. 2 in 1958. The facility cannot be expanded beyond the current 275 single family home connections per WDNR orders. The firm capacity, or capacity with the largest well out of service, of the system has been exceeded by the

maximum system demand and needs to be expanded to allow for growth of the water utility and to provide fire protection for the service area. Table 4 shows the historical water demands from PSC records, the maximum day to average day ratio, and the average gallons of water used per capita per day (gpcd).

**TABLE 4**  
**Historical Water Demands**

| Year    | Average Day Demand (MGD) | Maximum Day Demand (MGD) | Max Day / Avg Day | GPCD |
|---------|--------------------------|--------------------------|-------------------|------|
| 2011    | 0.0559                   | 0.160                    | 2.9               | 56   |
| 2012    | 0.0604                   | 0.193                    | 3.2               | 60   |
| 2013    | 0.0536                   | 0.150                    | 2.8               | 54   |
| 2014    | 0.0525                   | 0.153                    | 2.9               | 52   |
| 2015    | 0.0477                   | 0.103                    | 2.2               | 48   |
| Average | 0.0540                   | 0.152                    | 2.8               | 54   |

The utility, however, cannot provide water for additional customers or provide fire protection for the community. Another hot, dry summer similar to 2012 will push the water system beyond the firm capacity 0.180 MGD. The proposed improvements will provide a back-up water supply to be used for fire protection as well as improving the wells and storage system to provide more water for the community. Also, with both existing wells being drilled into the same aquifer so close to each other, a contamination event or need for chemical treatment would likely prohibit either well from being used.

In addition to the capacity and fire protection improvements needed, the system is out of compliance with WDNR requirements. On July 26, 2005, a boil water notice was issued by the WDNR as a result of positive total coliform samples taken from the distribution system. At the time, community water systems were not required to have continuous disinfection, and as such, the Village had no permanent disinfection for the water system. Shortly afterwards, the Paddock Lake Water Utility installed chemical feed equipment. The chemical feed equipment includes a blended phosphate injector and chlorine injector for both Wells No. 1 and No. 2. Since then, the water utility has and can properly provide safe drinking water for its customers. However, the WDNR approved the chemical feed system on a temporary basis, with the understanding a more permanent solution would be provided upon completion of the west side water system.

The need for this project is to improve water system capacity and provide fire flow protection. This project will also expand the water system within the Village to allow more citizens the opportunity to connect to the public water system. This project will help the Village attract more development by providing a reliable water source and fire protection. Another benefit of this project will be improved water quality and system reliability which the Village has been lacking for many years. The improvements will bring the system up to all current WDNR and OSHA safety standards to provide operators with a system that is safe and reliable.



## 2.2 Relation to Future Projects

In this proposed plan, the maximum growth for the water utility is 350 gpm. Based on a current maximum day demand (2012) of 134 gallons per minute, a maximum day to average day ratio of 3 to 1, and 60 gpcd for new population growth, this phase will allow for an additional 1,700 population equivalent. Any additional growth beyond that will need to occur after additional phases have been implemented. Details for the Phases 2 and 3 are summarized below and are taken from the "Paddock Lake Water System Conceptual Plan" found in Appendix A. The only change made to the concept plan is that the Phase 2 elevated storage hydraulic grade line will match the existing Bristol and Paddock Lake systems, there will be a small geographic booster zone in the area of the water tower and there will only be one main needed between the Well No. 1/Well No. 2 facility and State Road 50.

Phase 2 – The intent is that this phase would proceed when the projected maximum day demand is between 350 and 700 gpm, or up to an additional 4,500 population equivalent beyond the current population served, and would include:

- Elevated tank with volume similar to or larger than the proposed ground storage reservoir at Wells No. 1 and No. 2 to be constructed in the western part of the Village. Overflow elevation would match the Village of Bristol and the existing east side system; the higher areas adjacent would require a small boosted zone to maintain static pressure above the 35 psi minimum to serve the entire Village.
- Iron removal filters at Well No. 3 and convert well to regular use.
- Continue replacing water mains in the existing system.

Phase 3 – The intent is that this phase would proceed when the projected maximum day demand exceeds 700 gpm, or above an additional 4,500 population equivalent beyond the current population served, and would include:

- A pump station and pump for previously constructed Well No. 4. The water would be pumped to Well No. 3 for treatment.
- A second connection between the east side and west side water systems, possibly along County Road K.
- Iron removal at Well 1 and Well 2.

## 2.3 Alternatives

Three different options were considered for the improvements for the Village of Paddock Lake Water Utility. The three options are summarized below.

### **Option 1: Improvements to Wells No. 1 and No. 2 and utilizing Well No. 3 as a back-up source – Selected Option**

To allow for growth of the water utility, Wells No. 1 and No. 2 will be rehabilitated and a new 350 gpm pump will be installed at both wells. In addition to the rehabilitation and new pumps, a new pump station to house Wells No. 1 and No. 2 will be constructed that includes a ground reservoir, high service pumps, chemical addition (sodium hypochlorite and phosphate), and emergency

Village of Paddock Lake, Wisconsin

power. The pump station building will be constructed of masonry with a precast concrete plank ceiling. The reservoir will be a cast-in-place concrete reservoir partially buried below grade with a capacity of approximately 140,000 gallons. The reservoir will be sized to store a two-hour fire and the high service pumps will be sized to meet the maximum day needs of the customers and the fire demand.

A pump station and pump will be provided for previously constructed Well No. 3; this well will serve as a backup source of water until the Phase 2 improvements including the iron removal facilities are provided. The pump station building will be constructed of masonry with a precast concrete plank ceiling. The well capacity will match that of Well No. 1, or 350 gpm. The well will discharge to the common pressure zone with the service pumps of Well No. 1 and No. 2. A new 12" water main on STH 50 and 236<sup>th</sup> Avenue will connect to existing unused mains on STH 75 in the western part of the Village. The new water main will be constructed of PVC or HDPE and the water services will mostly be HDPE. Table 5 shows the preliminary opinion of probable cost for Option 1.

**TABLE 5**  
**Option 1 Project Costs**

| Description   | Cost               |
|---|--------------------|
| Wells No. 1 & No. 2 Pump Station and Storage Improvements | \$1,535,000        |
| Well No. 3 Emergency Back-up Pump Station                 | \$517,000          |
| Wells No. 1 & No. 2 Rehabilitation/Well Pumps             | \$220,000          |
| Highway 50 Water Main                                     | \$1,800,000        |
| Highway 50 Water Services                                 | \$450,000          |
| <b>Total</b>  | <b>\$4,522,000</b> |

**Option 2: Improvements to Wells No. 1 and No. 2 and utilizing a connection to Village of Bristol water system to serve as a backup supply**

This option is similar to Option 1 with one exception; a connection to the Village of Bristol water system will serve as a backup water supply instead of implementing the improvements to Well No. 3. Wells No. 1 & No. 2 will receive the same improvements as described in Option 1. A water main connection to the Village of Bristol water system along STH 50 between 236<sup>th</sup> Avenue and USH 45 will be installed. The 12" water main will provide roughly 370 gpm of similar quality of water. This option will work to provide additional water capacity, but should not be used as fire protection. The water main will contain two days' worth of water for the Village of Paddock Lake, as a result, additional chlorine may need to be added to the water before use in the Paddock Lake system. Table 6 shows the preliminary opinion of probable cost for Option 2.

**TABLE 6**  
**Option 2 Project Costs**

| Description   | Cost               |
|---|--------------------|
| Wells No. 1 & No. 2 Pump Station and Storage Improvements | \$1,535,000        |
| Wells No. 1 & No. 2 Rehabilitation/Well Pumps             | \$220,000          |
| Highway 50 Water Main                                     | \$1,800,000        |
| Highway 50 Water Services                                 | \$450,000          |
| Connection to Bristol Water Supply                        | \$1,062,000        |
| <b>Total</b>  | <b>\$5,067,000</b> |

### **Option 3: Well No. 3 and No. 4 Improvements**

Wells No. 3 and No. 4 have been drilled and tested. Well No. 3 has a capacity of 800 gpm; Well No. 4 has a capacity of 400 gpm. Both wells are high in dissolved iron; removal treatment is needed. The well pumps and iron removal equipment will be sized only to meet the needs of the initial development area. The treatment building will be expanded in the future to maximize the future well output. The booster pumps and ground storage reservoir will provide 1,000 gpm fire protection for 2 hours. An access drive is needed to both sites; plans are to reuse and improve the limestone drives installed by the well driller. Fire protection will be provided by a pump and ground reservoir in the treatment building. Well No. 4 will be pumped to the treatment facility on the Well No. 3 site. There is existing water main between the well sites, on CTH F, and on STH 75 that was installed in 2005. Table 7 shows the preliminary opinion of probable cost for Option 3.

**TABLE 7**  
**Option 3 Project Costs**

| Description                                     | Cost               |
|---|--------------------|
| <u>Well No. 3</u>                               |                    |
| Well Pump Station, Generator, Tank Building     | \$500,000          |
| Water Treatment Equipment and Building          | \$700,000          |
| Booster Station and Storage Facility            | \$500,000          |
| Limestone Access Drive from Site to CTH F       | \$90,000           |
| Sanitary Service from Site to CTH F             | \$60,000           |
| <u>Well No. 4</u>                               |                    |
| Well Pump Station and Generator                 | \$300,000          |
| Limestone Access Drive from Site to Public Road | \$40,000           |
| Sanitary Holding Tank                           | \$12,000           |
| Construction Contingency (20%)                  | \$440,400          |
| Design Engineering (8%)                         | \$211,400          |
| Bidding and Construction Engineering (7%)       | \$264,200          |
| Wells No. 3 & No. 4 Subtotal                    | \$3,118,000        |
| Highway 50 Water Main                           | \$1,800,000        |
| Highway 50 Water Services                       | \$450,000          |
| <b>Total</b>                                    | <b>\$5,368,000</b> |

## 2.4 Factors Considered

Option No. 1 was the selected alternative based on the life cycle cost analysis and non-monetary factors as outlined below.

### 2.4.1 Life Cycle Cost Analysis

A 20-year present worth cost comparison is included in Appendix C. Option 2 has the lowest total present worth cost, Option 1 has the second lowest total present worth cost, and Option 3 has the highest total present worth cost.

### 2.4.2 Non-Monetary Factors

Many non-monetary factors were taken into consideration including water system infrastructure currently installed but not being used, fire protection improvements, and reliance on other communities for water service. Option 1 also provides the opportunity to bring the existing water supply system up to code.

## 3. PROJECT COSTS

### 3.1 Estimated Cost of Project

A breakdown of total project costs in accordance with Commission Uniform System of Accounts (USoA) is included in Table 8.

**TABLE 8**  
**USoA Cost Breakdown**

| Account #                  | Description                         | Estimated Cost     |
|----------------------------|-------------------------------------|--------------------|
| 314                        | Wells and Springs                   | \$40,000           |
| 321                        | Structures and Improvements         | \$1,390,720        |
| 325                        | Electric Pumping Equipment          | \$145,000          |
| 343                        | Transmission and Distribution Mains | \$1,267,250        |
| 345                        | Services                            | \$327,930          |
| 348                        | Hydrants                            | \$80,000           |
| SUBTOTAL CONSTRUCTION      |                                     | \$3,250,900        |
| Contingency                |                                     | \$325,100          |
| TOTAL CONSTRUCTION         |                                     | \$3,576,000        |
| Engineering                |                                     | \$712,000          |
| Legal                      |                                     | \$20,000           |
| Administration             |                                     | \$30,000           |
| Interest                   |                                     | \$100,000          |
| <b>Total Project Costs</b> |                                     | <b>\$4,438,000</b> |

### 3.2 Estimated Annual Operating Costs

A preliminary look at the annual operating budget is included below.

#### 3.2.1 Income

Current total annual revenue from retail sales is \$91,538. This amount will increase once the new users are connected to the water system. The current average quarterly water user rates are \$105.86 per customer. The proposed average quarterly water user rates will increase to \$136.65 per customer in the first year. Estimated annual income is outlined in Table 9 below.

**TABLE 9**  
**Estimated Income**

| Description                        | Description                           | Cost             |
|------------------------------------|---------------------------------------|------------------|
| Operating Income                   | Metered sales – residential           | \$91,538         |
| Non-Operating Income               | Utility bill penalty and late charges | \$900            |
| Non-Operating Income – Other       | Commercial sales                      | \$3,102          |
| Non-Operating Income – Assessments |                                       | \$33,570         |
| Non-Operating Income – GO/Taxes    | General Fund                          | \$120,000        |
| Non-Operating Income – Other       | TID Payments                          | \$51,500         |
| Other                              | Public sales                          | \$1,683          |
| <b>Total</b>                       |                                       | <b>\$302,293</b> |

### 3.2.2 Annual O&M Costs

A summary of annual operation and maintenance costs provided by the Village is included in Table 10.

**TABLE 10**  
**Proposed O&M Costs**

| Expense Item          | Description                      | Annual Amount   |
|-----------------------|----------------------------------|-----------------|
| Administrative/Office | Utility billing, Administration  | \$5,249         |
| Engineering           |                                  | \$1,500         |
| Insurance             | Work comp., Liability            | \$3,900         |
| Repairs/Maintenance   |                                  | \$17,600        |
| Salaries/Benefits     | Salary and Benefits              | \$16,761        |
| Supplies              | Chemicals                        | \$5,600         |
| Utilities             | Electric, gas, and communication | \$10,390        |
| <b>Total</b>          |                                  | <b>\$61,000</b> |

### 3.2.3 Debt Repayments

Existing debt repayments include a \$122,000 annual payment for general obligation bonds from previous water system improvements. The existing debt payment will be transferred to the general fund and will be removed from the user rate calculations going forward. Only the debt repayment on the USDA loan will apply towards the new user rates. The annual debt payment for this new loan is estimated at \$171,828.

### 3.2.4 Reserves

The Village will maintain reserves at current levels and increase when funds allow.

### **3.3 Replaced/Retired Property**

This project does not involve replacement or retiring of any property.

### **3.4 Funding Sources**

The Village has applied for a United States Department of Agriculture Rural Development loan and has received approval for that loan. The loan will be secured by a Mortgage Revenue Bond for a term of 40 years at an interest rate of 2.375%. The principal is due on an annual basis and the interest is due on a semi-annual basis each year.

### **3.5 Effect of the Proposed Project**

The proposed project will improve water system capacity and provide fire flow protection. This project will also expand the water system within the Village to allow more citizens the opportunity to connect to the public water system. This project will help the Village attract more development by providing a reliable water source and fire protection. As more customers are connected to the system, the goal is that the cost of service will decrease or remain relatively constant.

## 4. EXISTING SITE INFORMATION

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### 4.1 Existing System Description

Wells No. 1 and No. 2 were drilled and placed into service in 1958. The wells occupy the same pumphouse and both draw water from the sand and gravel aquifer. Well No. 1 is a 12-inch diameter well drilled to a depth of 136 feet and has an operational capacity of 375 gpm at 217 feet of head. Well No. 2 is a 6-inch diameter well drilled to 141 feet and has an operational capacity of 125 gpm at 227 feet of head. A hydro-pneumatic pressure tank was installed at the wells to provide storage system pressure. The tank can hold 10,000 gallons and has a pressure range of 40-60 psi. The tank is below grade and does not meet current requirements of Section NR 811.61 of the Wisconsin Administrative Code and presents OSHA confined space entry issues. The majority of the distribution system was also constructed at this time. According to the 2015 PSC Annual Water System Report, the distribution system consists of a total of 15,370 feet of water main; 4,171 feet is 4-inch diameter, 10,346 feet is 6-inch diameter, and 853 feet is 8-inch diameter.

The Village of Paddock Lake Water Utility was utilizing an Emergency Chlorination Procedure until 2005. The procedure was called into action when a “valid follow-up sample comes back positive for total coliform”. Until the implementation of the emergency procedure, chlorine or any disinfecting product, was not added to the system. On July 26, 2005, a boil water notice was issued by the WDNR as a result of positive total coliform samples taken from the distribution system. Chemical injection systems were proposed and installed at both Wells No. 1 & No. 2 to inject blended phosphate and chlorine. The details of the implemented chemical feed systems are described in the 2005 Chemical Feed Approval letter from the WDNR, see Appendix A. As part of this approval letter, a variance was issued due code compliance issues and required a new pump station to be constructed within five years; this requirement has not been met but will be addressed as part of the proposed project.

Wells No. 3 and No. 4 and approximately 2.5 miles of water main were constructed in 2008 to serve the new West Side Water System. The wells were drilled and grouted, but a pump or well station were not installed and the water main was never placed into service. At the same time, several proposed developments within the Village were put on hold due to the economic recession, and it was decided that the best solution at that time was to cap the wells and leave them for future developments.



## 5. ROUTE AND SITE INFORMATION

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### 5.1 General Description

The project includes three separate sites. The Well No. 1 and Well No. 2 sites located near the east end of the Village, the Well No. 3 site located near the southwest side of the Village, and the water main portion runs along STH 50 from near the west end of the Village at STH 75 to near the east end of the Village at 236<sup>th</sup> Avenue. A majority of the water main will be constructed within road right-of-ways with only a small portion (less than 10%) being constructed within easements.

### 5.2 Water Main Description

Approximately 7,100 feet of new 12" water main and 200 feet of new 8" water main on STH 50 and 236<sup>th</sup> Avenue will connect to existing unused mains on STH 75 in the western part of the Village. The new water main will be constructed of PVC or HDPE and the water services will mostly be HDPE. There will be approximately 16 new fire hydrants installed throughout the project.

### 5.3 Associated Facilities

See other sections of this report for a discussion of associated facilities.

### 5.4 Staging Areas

All staging areas will be kept within close proximity to the construction sites and the footprint of the staging areas will be kept to a minimum. All staging areas will be restored to their pre-existing condition upon project completion.

### 5.5 Wisconsin Department of Transportation (WisDOT) ROWs

A majority of the water main construction associated with this project will occur within the WisDOT ROW of STH 50. Detailed plans will be submitted to WisDOT along with a permit request to construct, operate, and maintain the water main within the ROW. All work within the WisDOT ROW will be coordinated with them and in accordance with their requirements. STH 50 is scheduled to be reconstructed through the Village within the next several years.

### 5.6 Construction Impacts

A large construction project of this nature will have wide-ranging construction impacts throughout the project. However, many of the impacts will be short term and the long term benefits far outweigh any of these short term impacts. The water main construction and well work will be done concurrently with a goal of completing all work at approximately the same time. All existing water customers are expected to have a continuous supply of drinking water throughout the project with only minor short term outages necessary for crossover connections.

A majority of the water main is expected to be installed using open trench methods. All STH 50 crossings will be directionally drilled as well as the culvert crossing at the east end of STH 50 in an effort to minimize construction impacts.

Traffic impacts will be unavoidable during this project but will be kept to a minimum. STH 50 is a major highway through Kenosha County. Most of the work will be done outside of the roadway, however, lane closures will be required to keep workers and the public safe during construction. Traffic control will be provided in accordance with WisDOT requirements.

Environmental impacts are covered in the following section.

## 6. NATURAL RESOURCE IMPACTS

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### 6.1 Flood-Sensitive Facilities

There is one location throughout the project where work will be performed within a floodplain. This location is on STH 50 just west of 236<sup>th</sup> Avenue. An unnamed stream crosses STH 50 at this location. The intermittent stream source is Paddock Lake and flows through a culvert under the highway. The outfall for the lake for normal flows is through a discharge pipe below the intermittent stream. The tentative plan is to directionally drill the water main under the culvert at this location to avoid any impacts on the intermittent stream. A map of the floodplain locations from the WDNR Surface Water Viewer relative to the project site is included in Appendix B.

### 6.2 Wetlands

There are several locations throughout the project where wetlands will be near the project site, but no wetlands will be directly affected by the proposed construction. A map of the wetland locations from the WDNR Surface Water Viewer relative to the project site is included in Appendix B.

#### 6.2.1 Wetland Identification

Wetland delineation has been completed for the entire project limits. A wetland report has been prepared and will be submitted to the WDNR for concurrence and permitting.

#### 6.2.2 Limiting Wetland Impacts

Silt fence will be placed along the edge of all wetlands to prevent any impacts from construction activities. Silt fence will be installed by the Contractor prior to any earth moving activities and will remain in place until restoration has been completed upland of the wetland.

### 6.3 Waterbodies/Waterways

No waterbodies or waterways will be crossed except as noted above. No construction activities will occur below the ordinary high water mark (OHWM) of a waterbody or waterway.

### 6.4 Rare Species and Natural Communities

A preliminary investigation into threatened or endangered species within/near the project area using the U.S. Fish & Wildlife Service IPaC Trust Resources Report indicated three endangered species, zero critical habitats, twenty five migratory birds, zero wildlife refuges and fish hatcheries, and three classifications of wetlands.

Based on these preliminary findings, an Endangered Resources Review Request was submitted to the Wisconsin Department of Natural Resources (WDNR) Bureau of Natural Heritage conservation. Their review revealed that the project falls under the Broad Incidental Take Permit and Authorization for No/Low Impact Activities, and therefore does not require an Endangered

Resources Review. A copy of the letter outlining this coverage along with the ER Review Verification is also included in Appendix D.

## 6.5 Archeological and Historic Resources

There are no historic properties located within the project area. The water main construction will all be within existing road right-of-ways that have previously been disturbed. The new pump station to house Wells No. 1 and No. 2 will be built on the site of the existing pump station building. The pump station at Well No. 3 will be built on land that was previously used for farming. The site was disturbed during well drilling activities and no items of historic significance were found.

The State Historic Preservation Office has reviewed the project and concurs that no historic properties will be affected. See Appendix D for a copy of the approval request.

## 6.6 Other Environmental Considerations

The construction of the proposed improvements will not have any permanent adverse air quality impacts. Some temporary adverse impacts resulting from the construction activities will occur. These include airborne dust from construction activities and vehicle emissions from workers' vehicles, delivery trucks, and construction equipment. Proper construction techniques will be utilized to minimize these negative impacts.

Other than the noise produced by construction activities, the proposed construction will not have any adverse effects on noise. The new equipment at the pump stations will produce the most noise. A majority of the new equipment will be installed inside the new pump station buildings. Standby generators may be installed outside adjacent to the new pump buildings, but would be enclosed in sound attenuating enclosures.

The proposed facilities will use more electricity than the existing pumping station. Most of the increase in power will be due to an increase in the motor sizes for the Wells No. 1 and No. 2 pumps to pump a greater volume of water. There will also be new booster pumping equipment to pump the water from the ground reservoir into the distribution system. There will also be an increase in electricity due to the new construction of the Well No. 3 pump station, however, this facility will initially be used as a backup source of water, so initial energy consumption from this facility will be minimal. The increase in electricity use is necessary when expanding a water system.