

Water Utility Infrastructure Project

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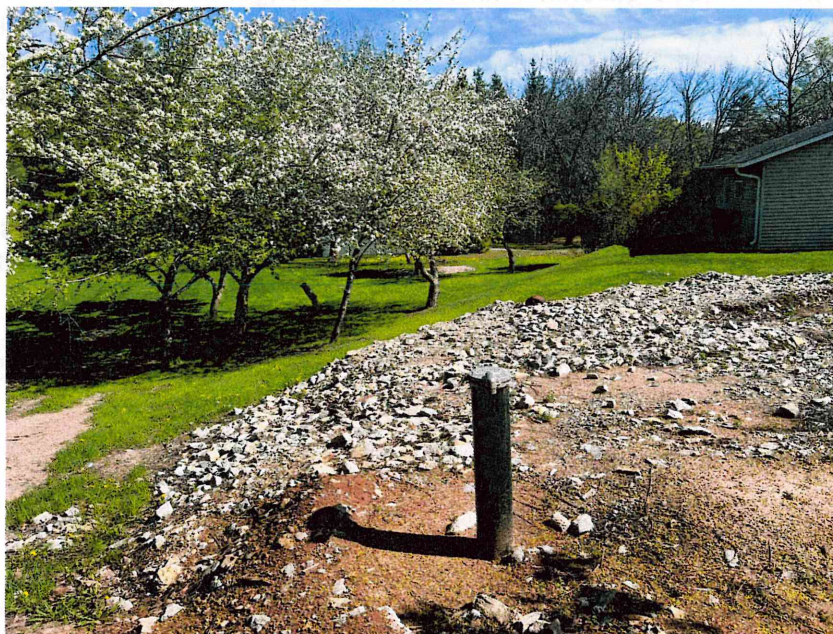
On May 6, 2024 the Suamico Village Board directed staff and the Public Works & Utility Commission to pursue the development of a new water well, a Hydrous Manganese Oxide (HMO) treatment option, and a 300,000 gallon storage tank.

Below you will find the project's background and on-going progress reports.

Background

The development of Well #5, treatment and a storage tank has been in the planning phase for the Village since 2005. In order to meet current system demand and sustain adequate growth within the sewer service area, a 700 gallon per minute well is needed. The total improvement costs to construct this well are estimated at \$9,500,000 in 2024 numbers. This includes the construction of the well, treatment facility and water tower.

The Village has spent a number of years dating back to 2005 collecting and analyzing data from a series of studies and professional service providers. There have been three Water Utility studies completed evaluating the Villages Water System from a capacity, demand, fire protection and rate of growth perspective. These studies were conducted in 2005, 2016 and 2021.



Test Well Site at 2185 Northwood Road

When/why will Suamico Water Utility need to add capacity?

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Gallons (000) of Finished Water Pumped	119,100	135,393	141,911	127,810	131,085	135,549	141,849	139,522	146,938	147,021	162,550	149,605	140,986	142,944
Average Daily Gallons (000) Pumped	326	371	388	350	359	371	388	382	403	403	445	410	386	392
Maximum Daily Gallons (000) Pumped	584	683	845	804	569	485	944	708	804	666	836	692	702	792
Minimum Daily Gallons (000) Pumped	230	225	137	224	184	197	270	209	249	244	254	244	254	138

Since 2010, the compound annual rate of growth in finished water pumped from the Suamico Water Utility is 2.34%. In 2023, the average daily output was 392,000 gallons per day. On an average demand day, the Utility's wells have plenty of capacity to service average demand. On peak demand days, however, system capacity could be an issue if one of the two operational wells is down for maintenance.

In 2017, Well #2 exceeded Radium limits and was removed from service in 2017. Over the ten-year period, the average day demand was 393,900 GPD and an annual maximum demand day was 719,800 gallons and the standard deviation was 141,000 gallons. With well #2 no longer in operation, if either well #3 or well #4 (each having a capacity of 720,000 gallons/day) were temporarily out of operation, the system would barely keep up with demand on a maximum demand day. In fact, in four of the ten past years, the maximum demand day would have exceeded available pumping capacity if either well #3 or well #4 were out of service.

Maximum demand days are driven by a number of factors including hydrant flushing, system maintenance, a large fire in the Village, or weather extremes. As the below table illustrates, there is considerable variability in the maximum daily gallons pumped statistics. In order to better determine whether there is a trend in maximum daily pumping, ten year rolling averages were calculated:

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
10-Year Rolling Avg. Maximum Daily Gallons Pumped	569	485	944	708	804	666	836	692	702	792

This analysis confirms that the maximum daily demand is a highly variable statistic without a clear trend line and that the current 10-year rolling average maximum daily demand exceeds the pumping capacity of either well #3 or well #4. If the maximum daily demand exceeds system capacity with the highest capacity well out of service, additional capacity is needed. That is the current situation. **Additional capacity is needed now.**

Sources of Capacity:

The Village consulted with 2 professional engineering services to evaluate the options and cost analysis that best fit the Village's needs for providing additional capacity to the water system. These were completed in 2016 and 2021. It was determined by the committee and Village Board to invest in a new Village-owned well to provide the needed capacity.

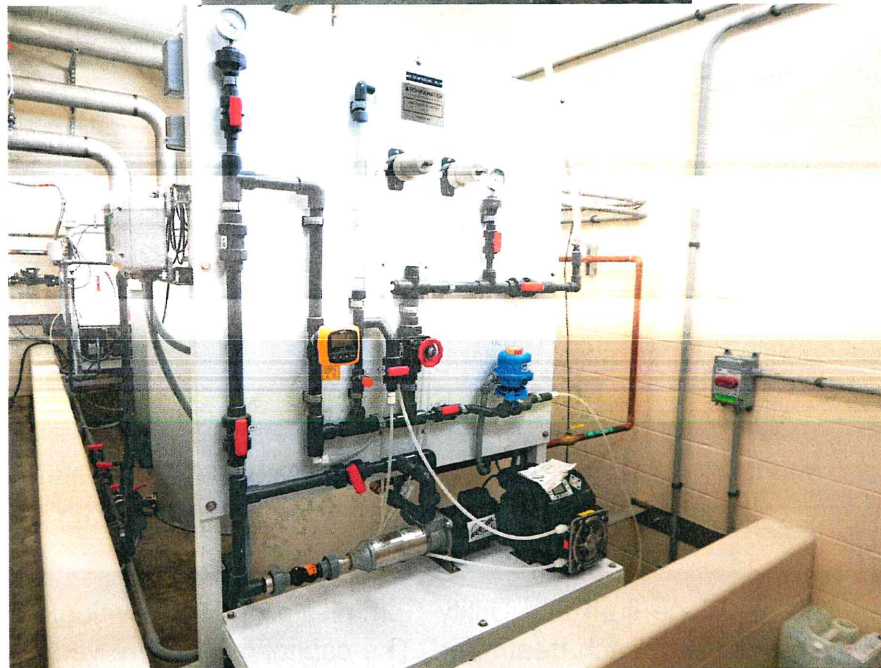
Well #2 was evaluated for rehab and treatment but with the limited capacity of 360,000 gallons per day, it was not worth the investment of over \$1,000,000.00 for a source of supply that will only satisfy our max day demands for less than a 10 year period. Well #3 was investigated and test pumped to increase capacity but at 600 plus gallons per minute we started pumping sand. The capacity could be increased from 500 GPM but it would require a sand filtration system - not worth the investment for the additional capacity that would be generated.

The other two options were purchasing water from Central Brown County Water Authority and Green Bay Water Utility. Both entities provided proposals to supply and sell the Village water. The initial or upfront capital costs on the CBCWA option was more favorable than a new well, but the 20-year rate projection shows a comparable rate, and that did not take into account any future rate increases from that utility that were not planned for. The desire to remain in control of our water rates was a driving factor on pursuing a well versus connecting to a surface water system. These surface water options will have future requirements and rate increases of their own that we would always be subject to. The Village would have been still required to maintain and exercise our wells even though if the Village purchased water from a surface water provider. The Green Bay Water Utility costs were not feasible.

Well #5

The Village identified and purchased property at 2185 Northwood Road in 2019 and has completed the following activities related to development of Well 5:

- In the spring of 2023, CTW Corporation constructed a 12-in diameter test well at the site including performing a pump test that indicates the site is capable of supporting a permanent well which will produce the desired 700 GPM to meet long range water needs of the Village.
- Water quality testing at the site shows naturally occurring radium, an alkaline earth metal that is prevalent in the subsurface geologic formation. Radium in groundwater is a common problem in the Suamico area. The test well produced water with radium concentrations above the DNR allowable limits and treatment will be required.
- Through 2023, several discussions occurred with the Utility Commission on the options the Village has for meeting the necessary water capacity with Well 5 by removing radium from the water. Two of the most common treatment options for Radium are Hydrous Manganese Oxide (HMO) and Ion Exchange:
 - Ion Exchange is currently being used in the Village for the treatment of radium.
 - HMO is used in several neighboring communities.
 - Village staff toured an HMO water treatment plant that produces about 400,000 gallons a day.
 - Water consultants Ayres and Donohue discussed with the Village staff and Utility Commission the pros and cons along with costs for both treatment options, with evaluation favoring HMO Treatment.
 - Consensus from Village staff and Utility Commission was to evaluate and confirm the capital and operational costs of each treatment. The capital costs were very close to each other, and the operational costs were slightly less costly for HMO at today's prices.



An example of an HMO treatment plant

- Storage of water has also been discussed because development of land to the west will require creation of a new, higher pressure zone that requires either pumps and a grade level reservoir or an elevated storage tank. Both options were evaluated for pros and cons along with costs. The option of Village staff and the Utility Commission based on this effort was to move forward with an elevated storage tank and the required Pressure Reducing Valve Station to allow the Village to have two zones of pressure and connect the new water source to the existing Village infrastructure.

Key Strategies that the Public Works and Utility Commission focused around:

- Assure that operation of the Suamico Water Utility is responsive to its rate payers and the citizens of the Village of Suamico.
- Assure that all aspects of the Suamico Water Utility are accountable to Village elected officials and that water rates remain among the lowest in Brown County.

- Maintain Village control of all aspects of the utility.
- Expand the system in a “pay as you go” approach, matching capacity increases to actual demand.
- Protect rate payers by utilizing impact fees to finance qualifying expansion serving new development.
- Vetting of engineering estimates for capital projects to assure that Suamico Water Utility does not overpay for facility improvements.

What does this mean as a rate payer?

CAPITAL COST SUMMARY

Well 5 in Well House (No Treatment)	\$	2,120,000
Add Radium Removal Treatment at Well 5	\$	4,910,000
Tower (300,000 gal.)	\$	2,460,000
Total - Well & Treatment & Tower	\$	9,490,000

Estimated Comparison of Quarterly Residential Customer Bills (Fixed and Volume Only)

Does not include in fire protection charges

			Suamico				
				ALL 3 (100% Utility)	ALL 3 (50% Utility/50% Impact Fee)	ALL 3 (60% Utility/40% Impact Fee)	
			Avg quarterly usage (gallons)	Current Rate	98% increase	55% increase	64% increase
Water	3/4	Fixed		\$ 30.00	59.40	46.50	49.20
		Volume	14,000.00	58.52	115.87	90.71	95.97
				88.52	175.27	137.21	145.17
Volume Charge				\$ 4.18	\$ 8.28	\$ 6.48	\$ 6.86

Risks

- 1) Unknown future capital costs
- 2) Water quality
- 3) Not collecting all planned impact fee portion

Assumptions:

- 1) Used 2023 test year rate case application, as do not have 2023 final numbers yet
- 2) Expenses and Revenues constant unless noted
- 3) Capital is assumed to be all or nothing for specific categories above
- 4) Does not account for any additional capital not noted
- 5) Allocation of capital could change depending on what the actual infrastructure totals are
- 6) Debt service requirements are not factored in aside from the capital costs
- 7) Used 6.2% rate of return, which could fluctuate after PSC review/approval. 6.2% is industry standard set by PSC.

Factors:

- 1) Will vary depending on capital needs and the timing of capital
- 2) Cost recovered by impact fees will vary depending on actual development by year

The average residential water customer uses about 14,000 gallons per quarter. With an increase of \$2.68/1000 gallons, the expected utility bill will go up \$150.08 per year or \$37.52 per quarter. Keep in mind

the quarterly \$44.34 debt service charge on the utility bill has been eliminated as of April 1, 2024. Customers should see a net reduction on their utility bill even after a potential water rate increase of \$27.28 per year or \$6.82/quarter, using 2024 rates.

***It is important to note that actual adjustments to rates cannot be determined until after construction has been completed, which is currently projected to be sometime in 2027.

COMPARATIVE WATER RATES		
MUNICIPALITY	RATE (\$/1000 GAL.)	METER CHARGE (\$ / MONTH)
City of DePere	\$7.46	\$10.00
Village of Wrightstown	\$7.30	\$14.00
Village of Howard	\$6.85	\$16.90
Village of Allouez	\$6.55	\$11.33
Village of Ledgeview	\$6.03	\$12.73
Village of Bellevue	\$5.98	\$12.00
Town of Lawrence	\$5.57	\$9.02
Village of Suamico (2021)	\$3.86	\$9.72

2021 Rates Analysis

Utility ID	Utility Name	12000 GAL Including Quarterly Meter Charge	Effective Date
3095	Town of Lawrence Water Utility	\$ 142.20	8/1/2024
1600	Denmark Municipal Water Utility	\$ 139.32	3/15/2024
5296	Town of Scott Water Utility	\$ 135.12	1/4/2024
6800	Village of Wrightstown Water Utility	\$ 133.50	6/1/2022
2620	Village of Howard Water and Sewer Department	\$ 132.90	1/20/2021
1610	De Pere Water Department	\$ 131.16	6/1/2024
70	Village of Allouez Water Department	\$ 120.30	1/1/2022
1615	Ledgeview Sanitary District No 2	\$ 117.93	3/21/2025
6810	GREENLEAF WATER UTILITY	\$ 102.90	12/18/2024
430	Bellevue Water Utility	\$ 99.90	7/20/2015
2573	Village of Hobart Water Utility	\$ 88.80	1/1/2024
4890	Pulaski Water Department	\$ 85.35	9/18/2024
2575	Town of Holland Sanitary District #1	\$ 82.50	12/31/2023
255	Ashwaubenon Water And Sewer Utility	\$ 81.21	4/26/2023
5795	Suamico Water Utility	\$ 80.16	6/14/2023
2350	Green Bay Water Utility	\$ 75.00	8/1/2024

Source: <https://apps.psc.wi.gov/RATES/waterbill/default.aspx>

A Way Forward:

The Public Works and Utility Commission worked closely with all the engineers that provided information, data and analysis through each phase of the work completed to get where we are at. The Committee asked a lot of questions, provided feedback and tasked each consultant with additional requests that were above and beyond the scope of services to ensure items were double checked.

The Public Works and Utility Commission recommended (7-0) on Tuesday, April 23, 2024 that the Village move forward with Well #5 construction, HMO treatment and a 300,000 gallon water tower. This recommendation was then supported (7-0) by the Village Board on May 6, 2024.

On April 7, 2025 the Village Board [approved a bid](#) to construct the new well using Midwest Well Services.



Current Village Water Tower at 1877 Pride Terrace

Current Projected Timeline

June/July 2024	Submission to PSC for project approval
July 2024 thru June 2025	Design services of well, building, treatment, PRV station, and tower
June 2025	Safe Drinking Water Loan Application
September 2025	Permanent Well Construction
Fall/Winter 2025	Bidding of building, treatment, PRV station and water tower
Feb 2026 thru Dec 2027	Building, Treatment, PRV station and Water tower construction

