



MEMO

Kaukauna Utilities

To: Mayor Tony Penterman
From: Michael Avanzi
Date: May 21, 2024
Re: City Property for Water Treatment Facilities

As discussed with the Common Council on December 19, 2023, Kaukauna Utilities (KU) has been working on a comprehensive water study for about 2 years. In the study, there are 4 alternatives for the main water filter plant (no change – react when failure occurs, replace the pressure filter tank at the current location, rebuild the water treatment building and reservoirs at current location, and a new water treatment plant at a new location). The existing main water filter plant site, originally developed in 1899, is located at 304 Elm Street. Water from 3 of Kaukauna's 5 wells is treated and stored at the main water filter plant site making it a critical component of Kaukauna's water supply. The pressure filter tank (for iron, manganese, and radionuclide removal) at the main water filter plant is over 60 years old and is at the end of its service life. The tank was temporarily patched 7 years ago and will need to be replaced within the next 3 to 5 years. The 2 ground storage reservoirs and building that houses the booster pumps are also in poor condition. In addition, the main water filter plant site is located in a floodplain. Alternative 4 minimizes the most risk factors that were considered. Alternative 4 consists of building a new water treatment plant with reservoirs and a booster pump station at a new location outside the floodplain. The new main water treatment plant location would allow for

the necessary building size for new treatment. This alternative would replace the equipment and structures identified in the water system study report as being past their useful life. Alternative 4 also allows the existing main water filter plant to continue producing water while the new water treatment plant is built. This eliminates a huge risk since rebuilding at the same site would require about a 2-year outage of 3 out of 5 wells supplying water to the city. At its meeting on April 24, 2024, this is the alternative that the water ad hoc committee decided to recommend to the Utility Commission.

In terms of the location where to relocate the main water filter plant, there were 4 sites considered. See Figure #1 below depicting the 4 sites. Proposed Site #1 is on Boyd Avenue, just south of the city pool at the current archery range site. This site is desirable due to its proximity to the existing raw water transmission main, and the property is currently owned by the City of Kaukauna. This site is also uphill from the river, fairly level, and out of the floodplain. Proposed Site #2 is to the west of the Konkapot Creek Trail. This site is also near the existing raw water transmission main. This site is undesirable due to the steep topography in this area. Proposed sites #3 and #4 are in Horseshoe Park. These sites are beneficial because they are already located on City-owned property and are near the raw water transmission main. These sites are also outside the floodplain. Site #3 is north of the baseball field. This site is not desirable due to the steep slope. Site #4 is not desirable because it is a former fill site unsuitable for building foundations. The water ad hoc committee chose Site #1 as the preferred site for the main filter plant and wishes for KU to work in good faith with the City of Kaukauna on obtaining rights to this property. See Figure #2 below for a footprint of the proposed site. The façade of any structures on the property will have a masonry appearance to match the area (tied

into the theme of the new Kaukauna pool site) and landscaping will be provided as needed.

As part of the water study, KU has also been working with its consultant on evaluating various water treatment options. Many options were considered, but 5 options made it to the top of the list for consideration. Water treatment option 1 is to keep the existing treatment process and not remove hardness from the water. All the other top 5 options involve treating for the hardness of the water so that KU customers no longer have to do so. Water treatment option 2 is ion exchange water treatment. Ion exchange functions as a large-scale water softener similar to what most people have in their homes. Water treatment option 3 is reverse osmosis or nanofiltration treatment. This treatment process consists of pushing water through a semipermeable membrane using high pressure. Water treatment option 4 is pellet softening treatment. With pellet softening, water is pushed through a fluidized bed of sand. The chemistry concept of pellet softening is the same as lime softening. Water treatment option 5 is for Kaukauna Utilities to switch to surface water as a source of water. This option has the benefit of eliminating the issue of radium and high water hardness associated with Kaukauna's groundwater. There are 2 communities nearby that are wholesale suppliers for surface water. At the April 24, 2024 meeting, the water ad hoc committee decided to recommend Option 3 (Reverse Osmosis or Nanofiltration) to the Utility Commission.

In order to limit the cost impacts of this new water treatment option, it is recommended to consolidate two of KU's current well sites. Raw water from Wells 8 and 9 would be treated at an upsized Well 9 water treatment plant located north of the Fox River. A raw water transmission main between Well 8 and 9 would be installed, and the Well 8 water treatment plant would remain for pretreatment to

remove iron. This would require an expansion of the Well 9 site. See Figure #3 below for the potential expansion area needed. The expansion area consists of land currently owned by the City of Kaukauna. The façade of any structures on the property will have a masonry appearance to match the area and landscaping will be provided as needed.

Due to the limited remaining lifespan of critical components at the main filter plant, the goal is to complete this project in 3-4 years. This is a fairly aggressive timeline given the scope of work involved. With that, the design and permitting phase needs to commence this summer. The plan is to present a recommendation to the Utility Commission at the May meeting, which would be rescheduled until after the May 21st Common Council meeting. At the June Utility Commission meeting, a final decision would be made and KU staff would formally begin the design and permitting phase of the project.



Figure #1: Main Filter Plant Proposed Site Options

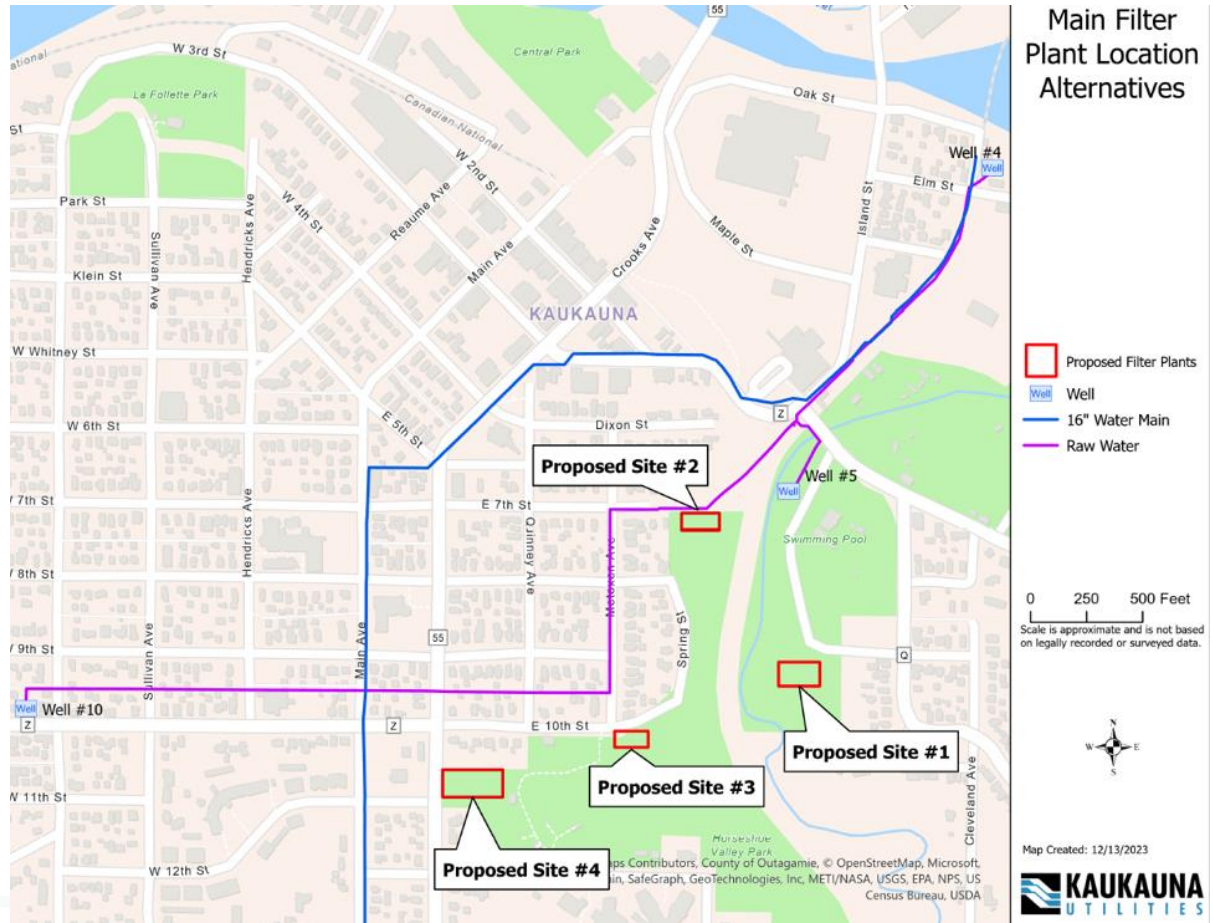
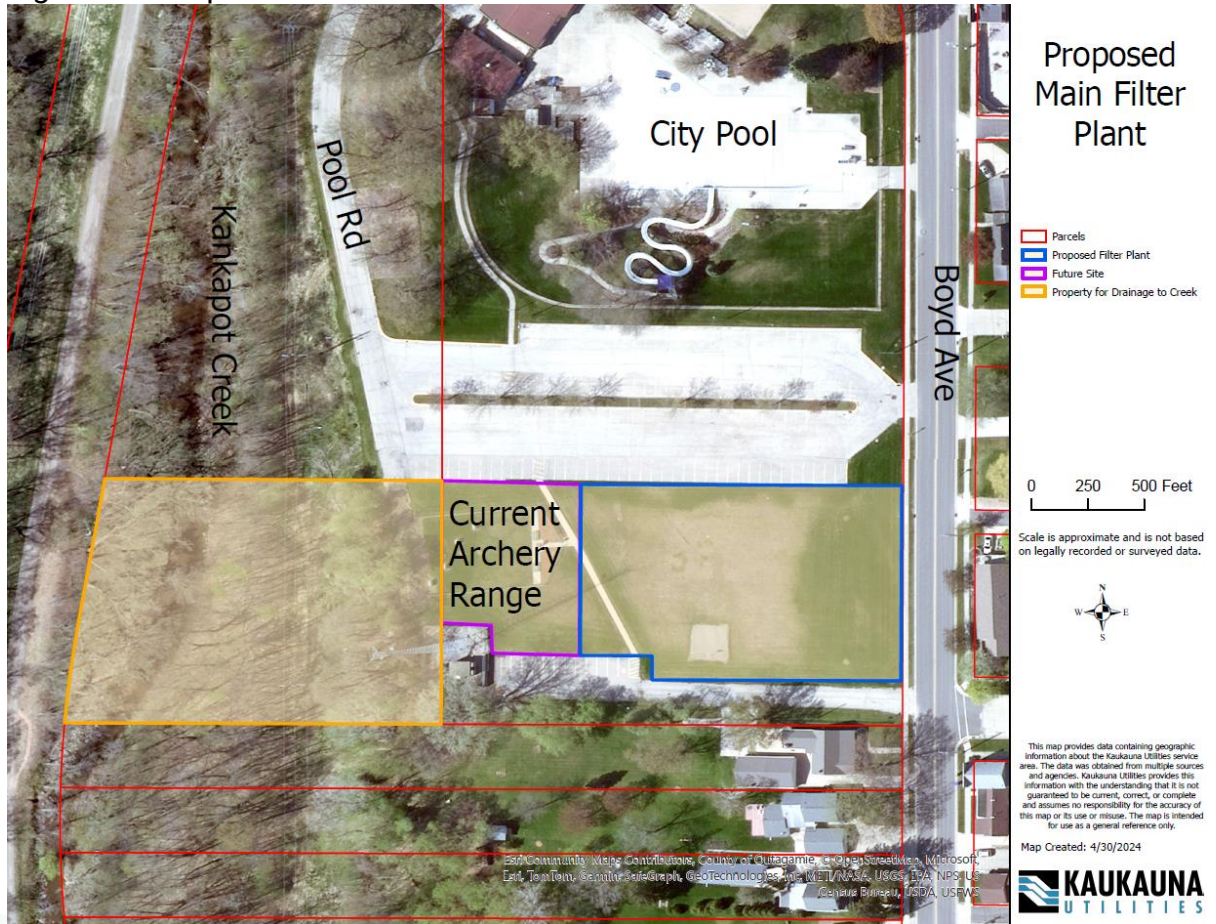


Figure #2: Proposed Main Filter Plant Site



**Proposed Well 9
Filter Plant**

- ▭ Parcels
- ▭ Proposed Filter Plant
- ▭ Current Filter Plant
- ▭ Current Well

0 250 500 Feet

Scale is approximate and is not based on legally recorded or surveyed data.

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W E
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This map provides data containing geographic information about the Kaukauna Utilities service area. The data was obtained from multiple sources and agencies. Kaukauna Utilities provides this information with the understanding that it is not guaranteed to be current, correct, or complete and assumes no responsibility for the accuracy of this map or its use or misuse. The map is intended for use as a general reference only.

Map Created: 4/30/2024

KAUKAUNA UTILITIES

For Community Maps Contact: County of Outagamie, at OpenStreetMap, Midway, WI; TomTom, Seattle, WA; Garmin, Olathe, MO; Esri, Redlands, CA; Intel Map Services, Inc., Menlo Park, CA; Google Earth Pro, Santa Barbara, CA; Bing Maps, Redmond, WA; Microsoft, Redmond, WA; Census Bureau, USA, USFWS

Michael Avanzi
General Manager
Kaukauna Utilities

Cc: Sally Kenney
Tim Greenwood