


Water Filtration Plant Clearwells Replacement Project

Public Comments, Questions, and Answers as of 1/6/22

The following comments and questions were gathered during the October 13, 2021 Water Filtration Plant Clearwells Replacement Project (Project) public meeting and after the meeting through mailed and e-mailed correspondence. Similar comments or questions were not duplicated.

Storage Tanks Exterior Appearance Related Questions and Comments	
Question	The renderings show brown brick, tan stone veneer, tan cementitious coating. Can some other color besides brown be used?
Question	Can people think of something that is massive yet beautiful?
Comment	If we have to look at these structures for next 50 to 100 years, they need to nice looking.
Comment	I prefer the 2017 rendering that was not popular in the past. The next generation, younger citizens who have to pay for the Project over time, should say what they prefer.
Comment	The tanks need to "fade into the neighborhood".
Question	What type of landscaping will be installed?
Comment	The tanks could have murals on them. Murals can be vibrant and respect local history (see Third Ward example on right). We could engage local young artists and students to sketch ideas.
	
City Response	<p>The City is gathering public input on the storage tanks' exterior colors and textures. Public comments are being compiled and considered by the Project team and Project permitting authorities and departments. The finishes and textures need to be constructible and compatible with concrete water holding tank construction and operation. From the 2017 Public Meeting, the direction was to incorporate material finishes that blended with the brick and stone materials already on site and in the neighborhood.</p> <p>The final landscape plan has not been developed yet. In general, the existing landscaping along Washington Avenue, west of Lampert Street, will be extended further east on Washington Avenue and north along the property line shared with Lake Shore Drive. For site security and surveillance, new trees at the fence line will be avoided. If changes to Lake Shore Drive are planned as part of the Project, complimentary landscaping will be incorporated.</p>
<u>Update</u> <u>Jan. 6,</u> <u>2022</u>	A landscape plan will be developed after the site plan is finalized and the location of the underground infrastructure is determined. Approximately \$220,000 is included in all of the cost estimates for landscaping.


Storage Tanks Shape and Design Related Questions and Comments	
Question	Can the new structures be more artistic in appearance, like the Calatrava wing of the Milwaukee Art Museum?
Question	Why are the tanks so tall? Can we change the tank diameter?
Question	Can the water be stored in water towers instead of in at-grade storage tanks?
Question	Is it possible to make the storage tanks square rather than circular? Square would look better. What's the cost difference between circular and square?
Question	Are the structures going to be built on top of the existing clearwells?
Comment	The storage tanks should be square. This will help them to not look so industrial and out of character for the center of a city and next to a park. Hopefully the added capacity of adding "corners" would mean the overall size could be reduced, as well.

Question	What are the sizes of the tanks and pump house? The pump house appears larger than the 2017 version.
City Response	<p>The shape of the storage tanks can be square, rectangular, or round. A minimum of two (2) tanks must be constructed so one (1) tank is always in service while routine inspections and maintenance is performed on the other. The design includes round pre-cast concrete tanks because this type of tank has the lowest construction and maintenance costs. Cast-in-place concrete square or rectangular tanks have higher costs and elevated storage (water towers) are the most expensive.</p> <p>The height of the tanks is based on the volume of water needed to be stored and the available area for the tank footprint. The Marion Water Tower Study completed in 2014 indicated the need for a minimum of 2 million gallons of onsite storage (two 1-million-gallon capacity tanks) to serve Plant and water system needs. The current onsite storage volume is 2.4 million gallons.</p> <p>The tanks in the Public Meeting displays have an 80-foot interior diameter and have an approximately 28-foot wall height with a 34-foot height to the top of the roof dome (elevation 785.5). For comparison, the Water Filtration Plant has roof lines ranging from elevation 778 to elevation 798. The Waters has a peak elevation of about elevation 808 and homes fronting Washington Avenue, near Lampert Street, range from elevation 788 to 792.</p> <p>The diameter was selected to allow the new storage tanks to be built within the existing clearwells foundation, not on top of the existing clearwells. The floor of the new storage and pumping facilities is at elevation 751.5, or about 6 feet below the existing ground elevation above the existing clearwells. While each tank diameter and height can be adjusted to provide 1 million gallons storage, 80 feet is the maximum dimension (with corresponding minimum height) that permits the new tanks to be constructed on a stable, uniform foundation with minimal added investment, to avoid differential settlement and cracking. Increasing the tank size larger than the existing clearwells foundations will require complete removal of the existing clearwell and construction of new deep foundations to avoid dissimilar foundation conditions. This approach significantly increases the complexity and cost of construction. The City will work to prepare a conceptual construction cost estimate for circular precast concrete and square/rectangular cast-in-place concrete storage tanks with larger footprints (shorter wall heights) within the Plant property.</p> <p>The dimensions of the pump station are approximately 116 feet by 60 feet with 20-foot-high walls and the roof peak is at 28 feet, elevation 779.5. This is larger, but not taller, than the 2017 dimension. In 2017, a second pump station was proposed on top of the existing CT/BWS Basin (look for the green-colored roof on the left side of the 2017 Concept Plan). It has since been determined both pumping systems can be located in a single structure to reduce costs and risks during construction.</p>
Update Jan. 6, 2022	<p>The City's engineering consultant has reviewed alternatives to reduce the height of the tanks, including preliminary cost estimates. Two alternatives were analyzed, larger square/rectangular tanks and buried square/rectangular tanks. For clarification, the buried option includes about 9 feet of exposed wall height. The 2017 cost estimates includes the same assumptions.</p> <p>The alternatives are proposed to be built over the existing clearwells' foundations to reduce construction complexity and cost. The partially-buried tank option does not meet State Administrative Code for storage of drinking water. There are no similarly-designed community water storage facilities in the state of Wisconsin. To approve double-walled tank construction, the Wisconsin Department of Natural Resources (WDNR) would have to find that the double-walled design equally safeguards drinking water quality and provides additional benefits when compared with the Wisconsin Administrative Code.</p> <p>A new pump station is needed with any of the alternatives. The pump station is proposed to be built at ground elevation over a portion of the existing clearwells' foundation.</p> <p>The table below summarized the sizes and cost estimates, in 2021 dollars, of the alternatives. All dimensions are to the exterior wall.</p>

Update <u>Jan. 6,</u> <u>2022</u>		Type of Tank		
	Project Component	At-Grade Circular	At-Grade Square and Rectangular	Partially-Buried, Double-Walled Square and Rectangular
	Proposed tank size (gallons)	Two 84' Diameter tanks with 28' wall height and 34' to top of domed roof. (1,000,000 gal each)	South, 92' square. North, 84' x 130' rectangle. Both tanks have 17' wall height and are 18' to top of sloped roof. (850,000 and 1,150,000 gal, respectively)	South, 85' square tank with 95' square containment. North, 77' x 123' rectangle with 87' x 133' containment. Both tanks have a 9' wall height above ground and are 10' to top of sloped roof (850,000 and 1,150,000 gal, respectively).
	Proposed max. roof elevation	785.5	769.5	761.5
	Proposed Pump Station max roof elevation	779.5	779.5	779.5 (footprint will be smaller)
	Existing Filtration Plant Roofline Elevations	778 to 798	778 to 798	778 to 798
	Storage Tanks Cost	\$5,398,600	\$9,548,300	\$21,238,800
	Pumping Stations Cost	\$7,301,700	\$7,301,700	\$4,746,100
	Ozone System	\$7,804,800	\$7,804,800	\$7,804,800
	Emergency Generators	\$4,707,900	\$4,707,900	\$4,707,900
	Demolition/Site work	\$3,357,000	\$3,357,000	\$3,357,000
	Auxiliary Improvements	\$1,210,600	\$1,210,600	\$1,210,600
	TOTAL COST	\$29,780,600	\$33,930,300	\$43,065,200
	Notes: It is possible the PSC will require incremental additional tank costs be funded by sources other than water rates. At-grade circular tank estimated based on 60% complete design. At-grade rectangular tank estimated based on 10% complete design estimate. Partially-buried, double-walled rectangular based on engineering concepts.			

Buried Storage Tanks Related Questions and Comments	
Update <u>Jan. 6,</u> <u>2022</u>	The Buried Storage Tank Option, as presented at the public meeting and included in the cost estimates, is not for fully-buried tanks. Approximately 9' of the tanks walls would still be exposed. The State Administrative Code states "Earth covering of reservoirs shall be avoided where possible." Any reference to "buried tanks" or "underground tanks" means only a partially-buried tank.
Question	What does it cost to build new buried storage tanks?
Question	Did you consider building new tanks within the existing clearwells, and then building an above ground tank for any remaining capacity needed?
Question	Can you provide the code that requires the above groundwater storage?
Question	What are the sizes of the existing clearwells?

City Response	<p>The cost to build underground storage was about double the cost of aboveground storage. The 2017 estimates were \$24 million for double-walled underground tanks and about \$12 million for aboveground tanks. These estimates are for the tanks only, and do not include all of the other components of the Project. Double-walled underground water storage tanks would involve unique and challenging design and construction techniques. Underground storage tanks do not meet the State Administrative Code requirement to store drinking water above the 100-year flood plain and above the groundwater. An exemption to either of these requirements has not been granted by the Wisconsin Department of Natural Resources (WDNR). The clearwells need to conform to State Administrative Code, Chapter NR 811, Requirements for the Operation and Design of Community Water Systems.</p> <p>The north and middle clearwells are over 100 years old and have a depth of approximately 14 - 17 feet. The approximate exterior dimensions (length and width) of these respectively are: 133 feet by 85 feet and 63 feet by 85 feet. The south clearwell is approximately 60 years old with a depth of approximately 12 feet and exterior dimensions of approximately 94 feet by 94 feet. Utilizing the existing clearwells as the necessary secondary wall system was evaluated. Due to the condition of the existing clearwell structures and the unique construction methods required, it was determined the entire system would need to be new to ensure a full life cycle use of the new storage tanks.</p>
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Capacity and Location of Storage Tanks Related Questions and Comments	
Comment	Our lake front is important to attracting business and residents. These large structures at this location are not good for the City's image.
Comment	The street between Merritt and Washington should be closed entirely to allow for ample green space to plant an abundance of trees to soften the harsh look of the massive structures.
Question	Can we shift them further north or west on the site?
Question	If moving the facilities means the Project gets more expensive, how much more expensive?
Question	Can some of the needed storage volume be located at the Plant site and the remaining needed storage at a new water tower site somewhere else?
Question	Do you need 2 MG water storage when customer water demands have been less?
Question	Do you have enough water storage to attract new business and support City development?
Question	<p>Is Lake Shore Drive staying? Does it have to be there? Can it be a pedestrian and bike trail instead of a road with parking? Can we add a sidewalk? Where can more trees be planted to screen views of the Water Filtration Plant? The concept on the right was submitted by a citizen.</p> 
Question	I understand from the meeting that shifting the tanks/pump house north is problematic. Have you considered moving the tanks to the west, farther away from the waterfront?
Question	Can you provide a map of the underground facilities in the area of the plant?

City Response

The City studied community storage capacity needs with the proposed replacement of the Marion Water Tower in 2014 and prepared updated water demand forecasts in the Water System Capacity Study in 2019. The Marion Tower Study concluded the City needed to maintain its available storage at 6.65 million gallons, which is roughly equal to the City’s average daily water use. The Capacity Study estimated 13.7 million gallons per day of pumping capacity would be adequate to serve City customers through the year 2040. Locating storage offsite would require extensive buried piping demolition and construction at the Plant, between the Plant and the new site, and potentially beyond depending on system hydraulic performance with a new storage site location. Offsite storage would also require substantial replacement of the Plant filter backwash system to convey several hundred thousand gallons of drinking water at high flow rates each day from the remote location.

New offsite storage locations would each introduce unique hydraulic conditions and impacts to the Water Utility’s ability to provide cost-effective and reliable water service under normal and emergency conditions. It is not possible to estimate cost for new offsite storage without a technical feasibility study and lifecycle cost analysis for each offsite location.



The Water Filtration Plant site is compact and is nearly fully occupied by visible at-grade structures and dense networks of buried pipes, utilities, and structures located below grass and paved surfaces. Along with other process piping, the buried assets include the raw water supply intakes, the drinking water transmission mains that supply water to customers, and the primary electrical power supply. The image below, taken during a previous project on site, is an example of the utility network throughout the site. Planned use of the limited available “open space” onsite includes (1) an area for expansion of the treatment plant to accommodate future community growth or to allow for the rehabilitation of existing assets and (2) an area for the addition of ultra-violet (UV) disinfection (see drawing above). UV disinfection may be needed to meet future water quality regulations for treating algal toxins, pharmaceuticals, or other emerging contaminants. The areas within the orange boxes in the drawing are not available for construction of the clearwells. These areas need to be maintained for future needs and to ensure the Water Filtration Plant stays operational during construction. For security reasons, the City cannot release a drawing showing the location of the existing underground utility network.



Because most of the Water Filtration Plant site is being used or is designated for reasonably-anticipated future needs, existing assets would need to be demolished and new locations provided for them to create spaces for water storage and pumping facilities. Rather than incurring these costs and creating additional challenges to maintaining continuous Plant operation during construction, the focus of the Project is to replace assets that are at the end of their service life or are unreliable.

The storage and pumping facilities are located in close proximity of each other with piping and valves arranged to optimize hydraulic conditions, pump performance, and operational flexibility. This layout helps minimize operating and maintenance (O & M) costs. While not the most important aspect of the Project, construction and O & M costs are central considerations because the City must provide affordable, safe drinking water to its customers and because the Public Service Commission (PSC) must approve the Project cost impacts to water rate payers.

If Lake Shore Drive is closed and the costs associated with the complete removal of the clearwells are incurred to create uniform foundation for new storage tanks, the tanks could have a larger footprint and shorter wall height. Lake Shore Drive is heavily used by a variety of community members throughout the year. Additional stakeholder input will be necessary prior to proceeding with an option to close the road. A sidewalk or pathway along Lake Shore Drive can be evaluated for inclusion in the Project.

If Lake Shore Drive is closed, adequate chemical delivery truck access from both Merritt Avenue and Washington Avenue, with a turning radius to accommodate 55-foot-long vehicles, would need to be provided. Parking near the Water Filtration Plant driveways would be prohibited to provide space to safely maneuver large vehicles.

If Lake Shore Drive is closed, additional trees can be planted in locations not currently occupied by critical buried infrastructure and meeting the security requirements.

Update
Jan. 6,
2022

Relocation of the Clearwells offsite is not a feasible option. The water stored in the Clearwells is need for operation of the plant. Relocation offsite would require extensive changes to the plant operations and require significant piping improvements connecting the sites and construction of at least one additional pump station. The City is working to keep the Clearwells on the existing Water Filtration Plant property and not require changes to Lake Shore Drive. Changes to Lake Shore Drive can be proposed and completed in the future, once they have gone through the proper public comment and review process.

Water Filtration Plant Security Related Questions and Comments	
Question	Can you explain the security concerns at a water treatment plant?
Question	Wouldn't underground structures be more secure? Have there been past security issues at the Plant?
Question	Can you build a deck over the structure?
City Response	<p>The State has determined that storage above ground poses less of a risk to public health than storage below the 100-year flood plain and groundwater elevations.</p> <p>Regulations and guidance that require security measures be in place to help protect and restrict access to these assets include the following:</p> <ul style="list-style-type: none"> • Title IV of the Federal Public Health Security and Bioterrorism Preparedness and Response Act of 2002 • Chemical Facility Anti-Terrorism Standards, Interim final rule, 72 Federal Register • Water Sector-Specific Plan, part of the US Department of Homeland Security's National Infrastructure Protection Plan • American Water Works Association G403, Security Practices for Operation and Maintenance • Section 2013 America's Water Infrastructure Action of 2018

Environmental Impacts Related Questions and Comments	
Question	What are you doing to reduce light pollution?
Question	Can you add green components to the project, like green roofs?
Question	What are the neighborhood impacts (roadway traffic) during construction? Can you put a weight limit on trucks?
Question	What will the noise levels be after construction?
Question	Are there any odor generating concerns?
City Response	<p>Other than personnel entrance doors, the Project will not require exterior lighting. The City has ordinances in place requiring cut-off fixtures and limiting light trespass offsite.</p> <p>Regulations prohibit green roofs on drinking water storage and pumping facilities. Permeable pavement and reinforced turf are included in the Project to reduce impervious surface area and improve onsite storm water management.</p> <p>Construction traffic will be directed from the nearest truck route down Merritt Avenue to the plant. If Merritt Avenue is closed, Washington Avenue will be used. The City has adopted the State Statutes pertaining to vehicle weight limits.</p> <p>Noise levels should be the same or less after construction. Improvements to the liquid oxygen storage tanks should reduce the occurrence of sound resulting from tank pressure relief valve.</p> <p>The treatment process is not being changed, there are no new sources of odors.</p>

General Questions and Comments	
Question	Will there be additional water quality testing done during construction?
Question	Does the Project need to be approved by City Common Council?
Question	Are water rates going to go up?
Question	What happens to these facilities after 80 years?
Question	Why have a public meeting if Project documentation is being submitted to the regulators tomorrow?
Question	How is the work being phased to provide water during construction?

City Response	<p>Once the new storage tanks have reached the end of their useful life, it is expected they will be reconstructed at the same location.</p> <p>Water quality testing occurs continuously at the plant and will continue throughout the construction.</p> <p>Significant resources have been invested to plan the sequencing of construction to allow the Water Filtration Plant to remain operational during demolition and construction activities.</p> <p>The Project will need to be approved by the City's Common Council, WDNR, and PSC.</p> <p>The rate payers will pay for the Project. Water rates are anticipated to increase as a result. The City is in the process of completing its Rate Case submittal to the PSC to establish rate impacts.</p>
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