Second set of Supplemental Questions to WDNR regarding Waukesha Diversion Application – received March 14, 2016

Wisconsin responses provided in blue.

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1 Please provide a summary of the removal efficiencies for the alternative means of treating radium and forecast the amount of residual radium being released into the environment from current and proposed treatment methods. For example, if radium contaminated groundwater is treated and the concentrate is discharged to the sanitary sewer how much residual radium passes though the WWTP to be discharged into the Fox River?

The Waukesha Water Utility evaluated technologies for drinking water radium removal in a 2003 report (Radium Treatment Study, CH2MHill). In general, most technologies can remove over 90% of the radium and that radium is present in a waste product. Waukesha currently discharges about 100 billion picocuries of radium radiation to the environment each year. Radium-226 radioactively decays very slowly with a half-life of 1,600 years.
Some radium treatment technologies (e.g. Hydrous Manganese Oxide – or 'HMO', lime softening) produce a solid waste product that would be conveyed to the wastewater plant. With these technologies, most of the radium would end up in the wastewater sludge, but some would also be discharged in the wastewater liquid effluent that would flow into the Fox River. Other technologies (e.g. ion exchange, reverse osmosis, electrodialysis reversal) produce a liquid waste product that would be conveyed to the wastewater plant; and with these technologies, a higher percentage of radium is expected to be in the wastewater liquid effluent that would flow into the Fox River. A few technologies selectively remove radium on a proprietary media (e.g. Dow radium selective complex resin, Water Remediation Technology WRT Z-88). In these processes, the radium is concentrated on the media. When the media has reached its limit for radium removal or radiation levels are high, it is then transported to a low level radioactive waste landfill for disposal. If the Applicant is able to switch to a Lake Michigan water supply, this would remove radium from public consumption and prevent the release of radium into the environment (either through sludge being land applied or through WWTP effluent).

2 Is it true that there is no established NPDES Radium discharge standard?

There is no established NPDES or WPDES radium discharge (effluent) standard. Therefore, there is no WPDES requirement that the Applicant test its wastewater treatment plant influent or effluent for radium.

3 It has been suggested that using Milwaukee as a water source and return flow to Milwaukee would avoid issues on the Root River, utilize existing capacity from the Milwaukee system and cost less than the proposed alternative. WDNR has stated that the decision to use

water from Oak Creek was made by the applicant. Please have the City of Waukesha explain why the option of accepting water from Milwaukee was not selected if it costs less and would result in avoiding any adverse impacts on the Root River.

The following information was provided by the Applicant in response to this question:

The assumptions in this question are incorrect. The relative cost of water from Oak Creek and Milwaukee was not a deciding factor on water source; and the return flow location was selected among various locations because it had the greatest environmental benefits, not because of the water source. The choice of a water source among the Lake Michigan options is not a Compact criterion.

Water Source

The City of Waukesha (City) initially contacted the Cities of Milwaukee, Oak Creek and Racine to negotiate the potential sale of Great Lakes water. All three are cities within the Lake Michigan basin with treatment plants that have existing capacity available to serve the City of Waukesha and that sell water to other "contract" communities.
The City contacted the City of Milwaukee in June 2011 to discuss a water sale agreement. Over the course of the next year, the City of Milwaukee imposed a number of preconditions to negotiating the sale of water to the City, at least one of which was a concern for the WDNR. Ultimately, these preconditions were not able to be resolved, so the City entered negotiations with the cities of Racine and Oak Creek. The City of Oak Creek was selected as the water supplier. An exclusivity clause was negotiated into the Oak Creek Letter of Intent to sell water to the City of Waukesha, at Oak Creek's request. Therefore, at this point it would be a breach of the agreement to switch water supply options.

Return Flow

The City of Waukesha evaluated a number of return flow alternatives as part of its application including: the Root River, Underwood Creek, four alternatives involving the Milwaukee Metropolitan Sewage District (MMSD), and two alternatives with direct return to Lake Michigan. The Applicant estimated that return flow to Underwood Creek was the lowest cost alternative and proposed it in the City's initial diversion application (May 2010); however, a Total Maximum Daily Load (TMDL) was initiated on Underwood Creek prior to the City submitting its revised application (October 2013). In consultation with the USEPA, the WDNR determined that a return flow to Underwood Creek was not implementable until the TMDL was completed. With the June 2018 deadline to deliver drinking water complying with state and federal standards, the Applicant could not wait for TMDL completion.

The WDNR encouraged the Applicant to further consider return flow to the Root River, MMSD and direct to Lake Michigan. The Applicant determined the return flow alternatives to the MMSD were the most expensive. In addition, the MMSD alternatives did not provide equivalent environmental benefits as the return flow to the Root River, primarily because permit limits for the Root River return flow would be stricter and the return flow would provide an environmental resource to the flow-limited fisheries within the Root River.

If a water supply had been obtained from the City of Milwaukee, the Applicant still would have chosen to return flow to the Root River. The Applicant has an existing wastewater treatment plant, which provides higher levels of treatment than MMSD. Connecting to the Milwaukee wastewater system would be paying for wastewater treatment twice.

Root River return flow has the greatest environmental benefit of all of the return flow alternatives and it is the lowest cost of all the alternatives that were considered by the WDNR to be implementable. Through the WDNR's Preliminary Final EIS and Technical Review, return flow to the Root River was determined to meet the Compact and state requirements. In addition to the analysis in the Application, the WDNR evaluated the Root River, MMSD, and direct to Lake Michigan return flow locations for environmental impacts. Detailed descriptions of each return flow alternatives are found in the Preliminary Final EIS Section 2.4.2 and environmental effects of this evaluation can be found in the Preliminary Final EIS sections 4.4.2.2 (MMSD), 4.4.2.3 (Root River), and 4.4.2.4 (Direct to Lake Michigan).

4 Please proved a written summary of the WWTP design and operating controls described during the site tour that would prevent untreated water (and potentially invasive species) migration from MRB.

Under normal conditions and operation, the Applicant will provide a continuous return flow to the Root River as noted in Technical Review section R1 and as summarized in the Application. The Applicant's wastewater treatment plant (WWTP) is designed to meet all permit limits under a range of flow conditions, including high flow events observed during wet weather. The City of Waukesha has separate storm sewer and sanitary sewer systems so the only flow reaching the WWTP is from the sanitary sewer system. There will be some Mississippi River Basin (MRB) water that enters the sewers from inflow and infiltration (I/I). Structural measures for preventing untreated water or invasive species in return flow include:

- The WWTP is an advanced facility with primary, secondary, and tertiary treatment dual media sand filters, and ultraviolet light disinfection processes. The return flow pump station is downstream of all these processes. The only path from the WWTP to the Root River or Lake Michigan is through the return flow pump station which will be dedicated to only pumping return flow to the Root River. The return flow pump station will be constructed upon diversion approval, after receiving the necessary construction permits through the WDNR.
- The WWTP is at a higher elevation than the 100-year flood elevations along the Fox River. As a result, Fox River (MRB) water could not mix with treated WWTP water prior to entering the return flow pump station.
- The return flow pump station design includes two pumping bays to allow for maintenance of the system without impacting the City's ability to provide continuous return flow. The pumping bays and pumps are sized to each provide return flow up to the maximum potential rate of 10.1 mgd. Both pumping bays have an isolation gate that will allow one bay to be isolated while the other bay provides return flow. In the event that return flow needed to be suspended, such as for a catastrophic equipment failure, the entire pump station could be isolated to eliminate any potential for untreated water to enter the pump station. As a

redundant safety measure, the pump station could also be shut down. To ensure that the treatment plant provides return flow that meets all permit limits, the Applicant would schedule maintenance during low flow periods when flows at the WWTP are well below treatment capacities. This is common operating practice among WWTPs.

As an additional operational measure to prevent untreated water or invasive species in return flow, the WWTP has a centralized computer control system that allows operators to monitor and control the processes from multiple locations. There are hundreds of sensors throughout the WWTP that provide real-time information about WWTP processes and treatment optimization. The return flow pump station will include this same level of control and monitoring, where return flow could be suspended by closing gates or turning off pumps if there were indications of flow conditions that would not meet permit limits or if there were a threat of invasive species.

See Attachment A for the Applicant's proposed conceptual WWTP design figures.

5 Please describe the history of the deep aquifer and which other communities have stopped using the deep aquifer (New Berlin included). Is it true that Milwaukee previously used the deep aquifer and stopped doing so in the 60's when they took water from Lake Michigan?

In Southeast Wisconsin, the cities of Milwaukee, South Milwaukee, Racine, and Kenosha, use Lake Michigan water as their source of water, and have since these public systems originally formed between 1874 and 1898. By comparison, inland communities and industries in Southeastern Wisconsin developed as groundwater supply systems withdrawing water from the deep confined aquifer. Over the twentieth century, many of these communities shifted from groundwater supply to purchasing water retail or wholesale from Lake Michigan suppliers. Concurrently, most industries that were self-supplied with deep aquifer wells began purchasing public water supplied from Lake Michigan sources. Currently all municipal water supply systems in Milwaukee County withdraw or purchase water withdrawn from Lake Michigan. Self-supplied industrial groundwater usage in Milwaukee peaked between 1950 and 1960 and then declined.

In addition to full transitions to Lake Michigan water, several of the straddling communities in Waukesha County, such as Brookfield and Menomonee Falls, maintain split systems purchasing water from Milwaukee and supplying groundwater. New Berlin maintained this type of split service until 2009 when it received approval as a straddling community to divert Lake Michigan water to the Mississippi River basin portion of its service area, with return flow to Milwaukee's wastewater treatment system. This trend of communities shifting from deep aquifer groundwater to Lake Michigan surface water is common and continues in Eastern Wisconsin and in Northeastern Illinois. Water withdrawals from the deep aquifer peaked near the year 2000 and have been declining due to a combination of declining water use rates, shifts to Lake Michigan sources, and shifts to shallow aquifer sources.

The City of Milwaukee's Water Utility began operation in 1871 with Lake Michigan as its water supply. While there were industries in the city that privately pumped deep aquifer groundwater, the utility itself has always used Lake Michigan as its exclusive source. (For more information regarding the development of public water supplies in southeast Wisconsin, please see "Hard Water: Politics and Water Supply in Milwaukee, 1870-1995" by Kate Foss-Mollan, 2001 and "Planning Report No. 52, Volume 1: A Regional Water Supply Plan for Southeastern Wisconsin" by SEWRPC, 2009)

See Attachment B for a map of the change in the deep aquifer groundwater divides and the change in the center of pumping from 1950 to 2000.

6 How much water could be produced from the shallow water options including from the western portion of Waukesha County before causing adverse impacts on the surface water features?

The WDNR did not specifically conduct this analysis, and does not see this analysis as required by the Agreement/Compact criteria. However, some of the analysis we did conduct addresses the question. As outlined in the "Summary" section of the Technical Review Introduction, the WDNR first determined that the demand projections for the delineated water supply service area were reasonable and then used the low end of the projected demand range (8.5 MGD) to review water supply alternatives. The low end of the range was used to obtain a conservative estimate of environmental impacts with the reasoning that if a water supply alternative was not reasonable at 8.5 MGD then it would not be a reasonable water supply alternative at 10.1 MGD with greater environmental impacts. As described in Technical Review Section S2, several alternatives used the shallow aquifer for all or part of the water supply. These alternatives used the shallow aquifer for 3.2 MGD, 4.0 MGD and 8.5 MGD of the supply. The WDNR determined that these alternatives were not reasonable water supply alternatives based on impacts to 700 - 2300 acres of wetlands. Additionally, in the EIS section 4.2, the WDNR reviewed the projected impacts from the City's existing wells pumping at current withdrawal rates. The results of this analysis found that the existing shallow wells pumped at current rates (1.2 MGD) modeled for 20 years would result in 430 – 484 acres of wetlands falling within the one-foot drawdown contour. These wells were approved before state law was interpreted to require the department to consider impacts on wetlands and cumulative impacts from existing and new wells in high capacity well reviews. As the department considers the existing impacts potentially significant (although there is no field verification or monitoring of wetland impact), it follows that any additional shallow aquifer pumping would likely also be significant.

7 Is the deep aquifer that Waukesha currently draws from the same aquifer that communities in northern Illinois draw from? And what ability does Wisconsin have to control the overall withdrawal rate from this aquifer – in other words what mechanism are in place to attempt to establish a sustainable withdrawal rate from the confined aquifer whether this application is approved or not?

Yes, this aquifer is the same aquifer that northeastern Illinois communities draw from. There are currently no mechanisms in place to establish a sustainable withdrawal rate from the confined aquifer. While much of southeastern Wisconsin, including Waukesha County, has been designated as a groundwater management area,[1] there is currently very little regulation specific to groundwater management areas. Wisconsin law defines groundwater management areas (GMAs) as those areas where the groundwater potentiometric surface is reduced 150 feet or more from the pre-development condition.[2] Additional authorizing legislation would be necessary in order to implement any broad groundwater management strategies specific to those areas. However, there was a presumption at the time of

[1] These areas are subject to additional regulation under Wis. Admin. Code § NR 820.
[2] Wis. Stat. § 281.34(9)(a), Wis. Admin. Code § NR 820.20.

designation that future groundwater management actions would be taken in an effort to ensure sustainable use of groundwater resources within the designated area.

A 2015 report by the Illinois Water Survey, "Changing Groundwater Levels in the Sandstone Aquifers of Northern Illinois and Southern Wisconsin: Impacts on Available Water Supply", provides an overview of recent evaluation of this regional aquifer and the extensive drawdown found in northern Illinois and to lesser, but still significant level in southeastern Wisconsin.

8 It is asserted that alternatives not involving a diversion of water from Lake Michigan would result in unacceptable impacts to Wisconsin's water resources, including wetlands, that are outside of the Great Lakes basin and that those impacts render the alternatives unacceptable. Are the identified impacts prohibited from occurring under Wisconsin law? If so, please explain. If the premise is to avoid these impacts, what assurances are in place to prevent these impacts from occurring in the future due to other projects, including other water withdrawal projects?

WDNR reviews applications for new high capacity wells on a case-by-case basis. A Wisconsin court decision requires the WDNR to consider impacts to "waters of the state," (which include streams, lakes, wetlands, and private wells) when presented with sufficient concrete, scientific evidence of potential harm to waters of the state, when deciding whether to approve, approve with conditions or deny a high capacity well application. A subsequent administrative law decision requires WDNR to include impacts from proposed wells(s) and cumulative impacts from existing high capacity wells as part of the review. Following these decisions, and consistent with s. NR 103.06, Wis. Adm. Code, WDNR's case-by-case review of high capacity well applications has included consideration of potential impacts on wetlands.

The WDNR's water supply alternatives environmental review identified hundreds of acres of wetlands within the one-foot drawdown contour from the groundwater flow modeling of the water table for all groundwater withdrawal scenarios. WDNR typically uses one foot of drawdown in wetlands as a screening threshold for potentially significant adverse impacts to wetlands. In addition, for the alternative in western Waukesha County, groundwater flow modeling showed 6" – 12" of drawdown in several deep seepage lakes and a greater than 10% reduction in groundwater discharge to these lakes; these drawdowns and discharge decreases also exceed a WDNR screening threshold for likely significant adverse impacts to lakes. The findings from the environmental analysis for the City of Waukesha diversion application, if applied to a specific application for a high capacity well, may be grounds to significantly restrict or deny that application in Wisconsin.

As allowed by state law, WDNR has made recent determinations to approve proposed municipal high capacity wells where no other water supply is available after working to minimize potential environmental impacts to "waters of the state." The department has not conducted a review for a high capacity well in the shallow aquifer and cannot predict the outcome of such a review. However, the department has determined that based on projected environmental impacts, the Applicant does not have a reasonable water supply alternative in the Mississippi River Basin.

Approving the proposed Waukesha diversion for the delineated water supply service area would ensure a Lake Michigan public water supply in the delineated water supply service area, eliminating the need to apply for shallow aquifer high capacity wells in the Fox River corridor.

9 Please provide an outline of the sequences of events leading up to the issuance of an NPDES permit that will ensure no adverse impacts to the Root River and its ecosystem. Does Wisconsin intend to condition any withdrawal on full compliance with the NPDES permit conditions?

If its diversion application is approved, the Applicant will have to apply for a discharge permit under Wisconsin's Pollutant Discharge Elimination System (WPDES) program, as well any other required state or federal permits. Wisconsin law requires WPDES permit compliance. Any additional conditions made part of any Compact Council diversion approval would be implemented under Wisconsin's Compact implementing statute. The final diversion approval would not be issued in Wisconsin until all other permits are issued to the Applicant.

10 It has been suggested that increased flow in the Root River could adversely impact benthic organisms that rely on low water level to avoid fish predation. Is it possible to split the return discharge point (in other words discharge a portion of the flow in more than one location upstream from the proposed discharge point) to disperse the potential for a sudden increase in flow at a single point during low flow conditions?

The outfall may be designed to 'split' or disperse return flow to the Root River in a way to assist the Applicant in meeting water quality standards and to minimize or eliminate any potential impacts to the Root River at the proposed discharge location.

11 GZA has suggested on behalf of CIC that a new technology by Water Remediation Technology (WRT Z-88 System) can cost effectively treat radium and is, in fact, being used by several Wisconsin communities to treat radium from water supply wells. Did Waukesha and Wisconsin consider WRT Z-88, if not, why not, and if so, what were the results of that analysis? What is the removal efficiency of the Z-88 system – that is how much radium would still be released into the environment?

Yes, the Applicant evaluated this technology in 2003, (Radium Treatment Study, CH2MHill). As a result of this analysis the Applicant selected HMO treatment, which they currently use on several deep aquifer wells. In the diversion application, the Applicant selected RO treatment for the analysis of reasonable water supply alternatives in the Mississippi River basin. RO treatment was selected because of its ability to also remove total dissolved solids in addition to radium. The preliminary final EIS section 4.2.2 includes a discussion of different radium treatment methods.

WRT Z-88 System is an adsorptive media system (described in EIS section 4.2.2.1). Radium Selective Complexer (marketed by Layne), is a similar adsorptive media radium treatment system. Please note that radium selective adsorptive media treatment is not a new technology.

The Applicant did not select this treatment method for the following reasons:

- The treatment process does not improve any other water quality parameters such as iron, manganese or hardness (relevant parameters for the Applicant's water quality).
- The use of an adsorptive media for radium removal requires a license from the Wisconsin Department of Health Services Radiation Protection Section as a Low Level Radioactive Waste. The treatment company must prepare and ship the spent adsorptive media filters to a radioactive storage facility in the western United States. The associated disposal costs are high and subject to change with time.
- Adsorptive media treatment facilities must be contained in a separate room, with strict precautions against exposure to radioactivity.
- The media and treatment process is proprietary and the use of this system requires long-term contract conditions.

As noted in the preliminary final EIS, radium selective adsorptive media is used by Brookfield and the City of Pewaukee Water Utilities in Wisconsin to treat for radium. In 2014, these water utilities treated 0.7 MGD and 0.02 MGD, respectively, from individual wells using radium selective adsorptive media. Another Wisconsin water utility, Fond du Lac Water Utility, originally treated for radium using an adsorptive media, but switched to HMO after problems with filters installed (before the media) required frequent replacement. These filters were necessary to prevent iron and manganese fouling of the adsorptive media and were costly and time intensive to maintain.

All radium treatment methods result in radium to dispose of—whether at a radioactive waste facility or locally. With adsorptive media treatment, the radium adsorbs onto the radium selective resin. Once the resin is spent, the treatment company removes the resin disposing of it at a long term radioactive waste disposal site. The radium must be transported and disposed of as a low level radioactive waste, with associated environmental impacts. However, with adsorptive media methods, the radium is not transmitted to the wastewater treatment plant sludge and released to the environment via local landspreading or landfilling.

12 Please explain how this proposed diversion is not inconsistent or in violation of Wisconsin common law, riparian rights within the Great Lakes Basin and the public trust doctrine as understood and applied under Wisconsin law.

Under Wisconsin common law, riparians have an equal right to the use of surface water for all reasonable and beneficial purposes. This reasonable use rule applies to water withdrawals and water discharges. *See, State ex rel. Chain O' Lakes Protective Assn v. Moses*, 53 Wis.2d 579, 582, 193 N.W. 2d 708 (1972); and *Hazeltine v. Case,* 46 Wis. 1, 1 N.W. 66 (1879). The Applicant will be a riparian owner on the Root River at the point of discharge, and the City of Oak Creek, who is providing water by contract to the Applicant, is the riparian owner with respect to water withdrawal from Lake Michigan. There is nothing in Wisconsin common law that prevents or proscribes the distribution of water through public water systems to non-riparians, and in fact that is a common practice. Thus the primary question is whether the withdrawal or the discharge is a reasonable use. In this case, as documented in the preliminary final EIS and Technical Review, the withdrawal and discharge

meet applicable reasonable use standards because approximately 100% of the water withdrawn will be returned, and it will be discharged in a condition that meets all water quality standards.

The Public Trust Doctrine is included in the Wisconsin Constitution and means that, "the state holds the navigable waters of this state in trust for the public, and that such trust extends to the uses of such waters for fishing, hunting, and other recreational purposes, as well as for pure navigation." *Muensch v. Public Service Commission,* 261 Wis. 492, 515, 55 N.W.2d 40 (1952). At the same time, the courts have made clear that, "no single public interest in the use of navigable waters, though afforded the protection of the public trust doctrine, is absolute. Some public uses must yield if other public uses are to exist at all. The uses must be balanced and accommodated on a case by case basis." *State v. Village of Lake Delton,* 93 Wis. 2d 78, 286 N.W.2d 622, 632 (Ct. App 1979). In this case the preliminary final EIS and Technical Review have demonstrated that both the public interest associated with providing a safe and reliable public water supply to the Applicant and the public interest in preserving the Great Lakes, by returning approximately 100% of the flow to Lake Michigan and meeting all water quality standards, may be met.

WATER SERVICE AREA QUESTIONS

13 According to transcripts from a public hearing (May 12, 2011) in the Town of Waukesha the City of Waukesha represented to the Town that if it joined the proposed service area the Town could ask the City for water in the future and would not have to go thru the Compact application process. Explain how that approach – while no doubt pursued in good faith, does not circumvent the Compact requirements that any community seeking Great Lakes water must apply for it, demonstrate a need for a new supply, demonstrate that it has implemented required water conservation measures and that no reasonable alternative exists to the request for Great Lakes water? It is recognized that good utility service planning may dictate local community collaboration and cooperation but how does that process meet Compact criteria for approval of a diversion by each community?

Wisconsin's Compact implementing statutes provide that for purposes of evaluating an application for a diversion to a "community within a straddling county," against the Compact's diversion criteria, the area in question is to be the water supply service area.[3] The WDNR review applied the compact criteria to the entire delineated water supply service area, not limited by jurisdictional boundaries.

The Applicant's delineated water supply service area (including portions of the Town of Waukesha) sets the outer boundary for the Waukesha Water Utility and is based on detailed planning process-which aligns the sewer service area with the water supply service area. Service area boundaries are delineated considering residential density, wetland, shoreland, and floodplain protection programs while accommodating current and future growth. Areas within the delineated service area would be eligible to receive Great Lakes water under the proposal. Whether public water service is extended within the delineated service area and

[3] See Wis. Stat. s. 281.346 (4) (bg) 2 and Wis. Stat. s. 281.346 (4) (e) 1. em.

the pace at which public water service is extended is primarily up to the property owners, the jurisdictions and the Wisconsin Public Service Commission (WPSC).

14 As a follow up – is it correct that City of Waukesha identified an area within the Town of Waukesha (Lather property?) as an option for an alternative shallow well water supply and that option was rejected because it could not produce sufficient water supply for City needs without adverse draw down of surface waters? However, if that was a suitable source of water at a lower demand – say a million gallons per day how can the Town of Waukesha demonstrate that it needs Lake Michigan water when there is a source within its own boundaries that was considered suitable by the City?

Please see the responses to questions 6 and 8. Modeling of the environmental impacts of the Applicant's existing wells (at withdrawal rates of approximately 1 MGD) over a twenty year period projected adverse impacts to 430 – 484 acres of wetlands.

15 How much of the requested Lake Michigan water supply represents growth within the City boundaries and how much is outside the City? Is it correct that the City can meet its projected needs with a flow of about 8.2 MGD? And that the requested 10.1 MGD adds water for communities outside the current City boundaries? What portion of the current flow serves what area outside the City boundaries? In effect there are a series of categories of requested water supply demand: Current City demand, future growth within the City, areas currently served by the City outsides its boundaries, currently built out areas outside the City with other water supplies, and future growth outside the current City boundaries. Please identify the amount of water allocated to each in this request.

According to 2015 reporting, the city withdrew 2.2 billion gallons of water in 2015 or an average of 6.13 million gallons per day (MGD). Of this, 6.10 MG were served within the city and 0.03 MGD was served outside of the city. The expected increase in water demand within the city at full build-out (approximately 2050) is 2.10 MGD.

	2015 Average Daily Demand (MGD)	
	Currently Served	2050 Projected Demand
Within City	6.10	8.20
Outside of City	0.03	1.90

Private wells are currently used to supply areas outside of the areas now served by the Applicant. Consequently, the actual current water demand for these areas is unknown. See Attachment C.

16 Please identify the homes/residents/property served by the City outside boundaries and the reasons service was extended outside the City boundaries – for example, the private wells were contaminated or not usable for what reason?

Attached is map of those areas served by the city outside its jurisdictional boundary. The Applicant did not maintain a database of information on why individual parcels chose to connect to municipal supply but did cite water quality concerns and failing septic as reasons for extension of service.

17 Please describe what is inadequate, unsuitable or unusable about the existing water supplies in the areas outside the City boundary that were included in the expanded service area. Please supply this information community by community and as appropriate sub area by sub area within each community. Please demonstrate with this response how the Compact Criteria have been addressed and met for each community.

As described in the response to question 13 above, the WDNR did not review the application 'community by community'. The applicant is the City of Waukesha, and is the only community within the delineated service area that meets Wisconsin's Compact implementing legislation requirement that a community must operate a public water supply system to apply for diversion. The delineated water supply service/diversion area sets the outer boundary of where municipal service could be served.

The WDNR considered whether the Waukesha Water Utility is currently without adequate supplies of potable water. The delineated water supply service area, which defines the needs of the Applicant, is without adequate supplies of potable water from the standpoint of a municipal water supply system, as further explained in Response to Question 18.

18 As we understand the Wisconsin water supply service area planning law (Wis Stat 281.348) a community within a designated planning area is NOT OBLIGATED to join a larger water supply system if they chose to remain independent. And in fact, the Town of Waukesha could vote to join the City of Waukesha water supply service area and NEVER seek or obtain water from the City. Is that correct? If so, then how can merely being part of a water service area plan constitute a demonstrated need for water under the Compact if the community never asks for such service to be extended? And how can a simple request for service comply with the Compact criteria?

It is correct that areas within the delineated water supply service area that are currently on private wells are not obligated to connect to the Waukesha Water Utility. The Town of Waukesha has already approved its inclusion in the Waukesha water supply service area plan. For the Town of Waukesha and other areas included in the delineated service area, a request for public water service would typically come from individual parcels and not from the respective jurisdiction.

The water supply service area was delineated to match water supply and sewer service area planning in accordance with Wisconsin's Compact implementation law. The WDNR considered whether the Waukesha Water Utility is currently without adequate supplies of potable water. The delineated water supply service area is without adequate supplies of potable water from the standpoint of a municipal water supply system as described in Technical Review section S 1. The WDNR reviewed the Compact criteria against the delineated water supply service area as a whole.

19 How much of the current City of Waukesha water service area is currently on septic systems? And how much of the expanded area is currently on septic systems?

Of the nearly 18,000 parcels currently served by the Waukesha Water Utility, approximately 17,900 are served by Waukesha wastewater utility. The remaining 100 served with water

are assumed to use private septic systems. For those portions of the delineated water supply service area not served by the Waukesha water utility approximately 120 parcels are supplied by private wells but are served by Waukesha wastewater utility. The remainder of the delineated water supply service area currently utilizes private septic systems. See Attachment D for a map of areas currently served by the Waukesha Wastewater Utility.

20 Will any residences and other facilities that are currently on septic systems be required to connect to sanitary sewers when they are connected to the municipal water supply? If not, how much (volume & %) of the requested diversion will be lost to the shallow groundwater in the Mississippi River Basin via septic systems? If water is lost via septic systems will infiltration & other inflow into the sanitary sewer system off-set the volume lost to shallow groundwater via septic systems?

Any new connections that receive Great Lakes water from the Applicant will be required to simultaneously connect to the sanitary sewerage system.

21 Please explain if the proposed City of Waukesha water service area plan has been in fact approved, and if not, when will it be approved?

The Applicant's water supply service area plan has not been approved. The WDNR will approve the water supply service area plan following a decision by the Compact Council, in conjunction with issuing any other necessary permits before any final Diversion approval from the State of Wisconsin is issued.

22 The water service area plan indicates that limited portions of adjoining communities would be served by the City of Waukesha. Please explain where each of these communities obtain water for the remaining portions of their communities: Delafield –other 91%, Genesee – other 85%, Pewaukee – other 96%, and Town of Waukesha – other 16%? Why is that source of water in each community not available for the area of each community to be served by the City of Waukesha in the proposed water service area plan?

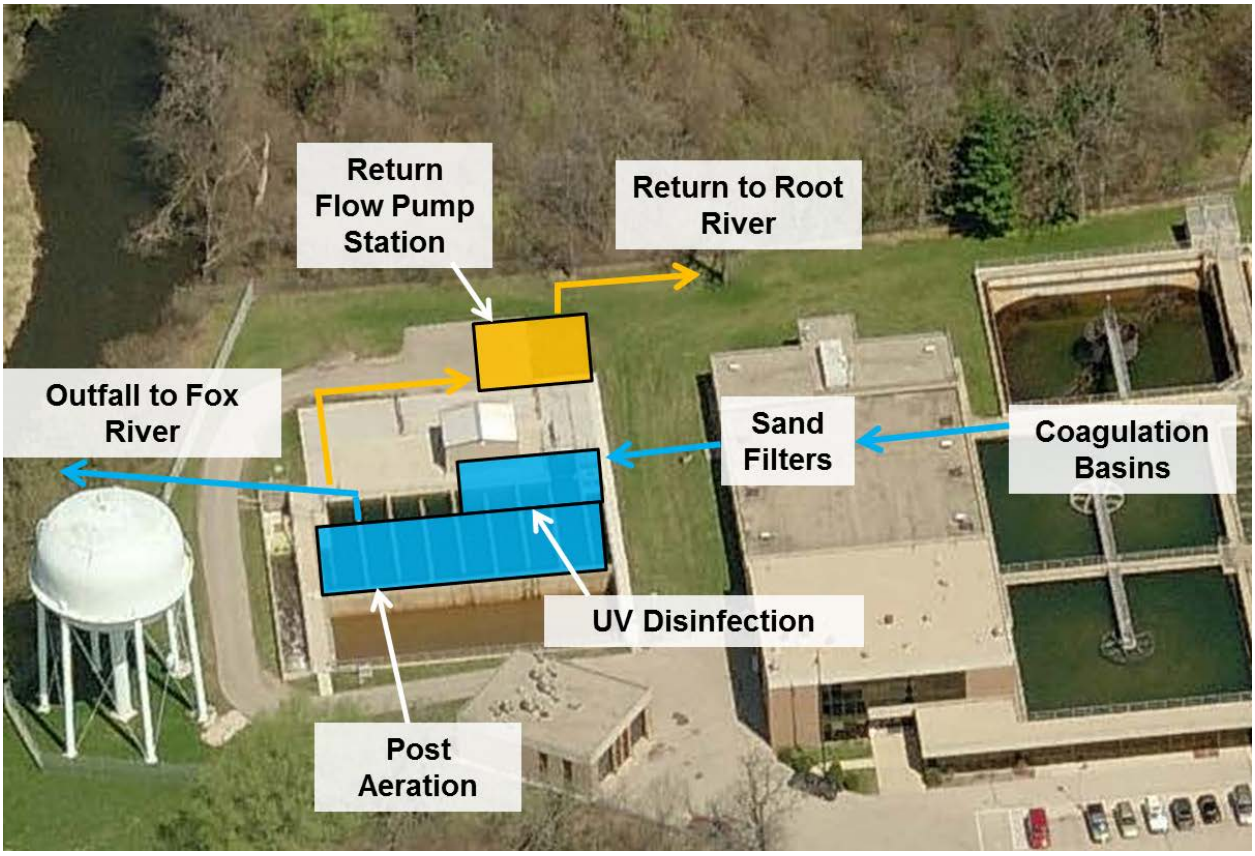
The Towns of Delafield, Genesee, and Waukesha do not provide municipal water service. The portions of those Towns outside of the delineated water supply service area are served by private wells as are those portions of the Towns within the delineated service area not currently connected to the Waukesha Water utility.

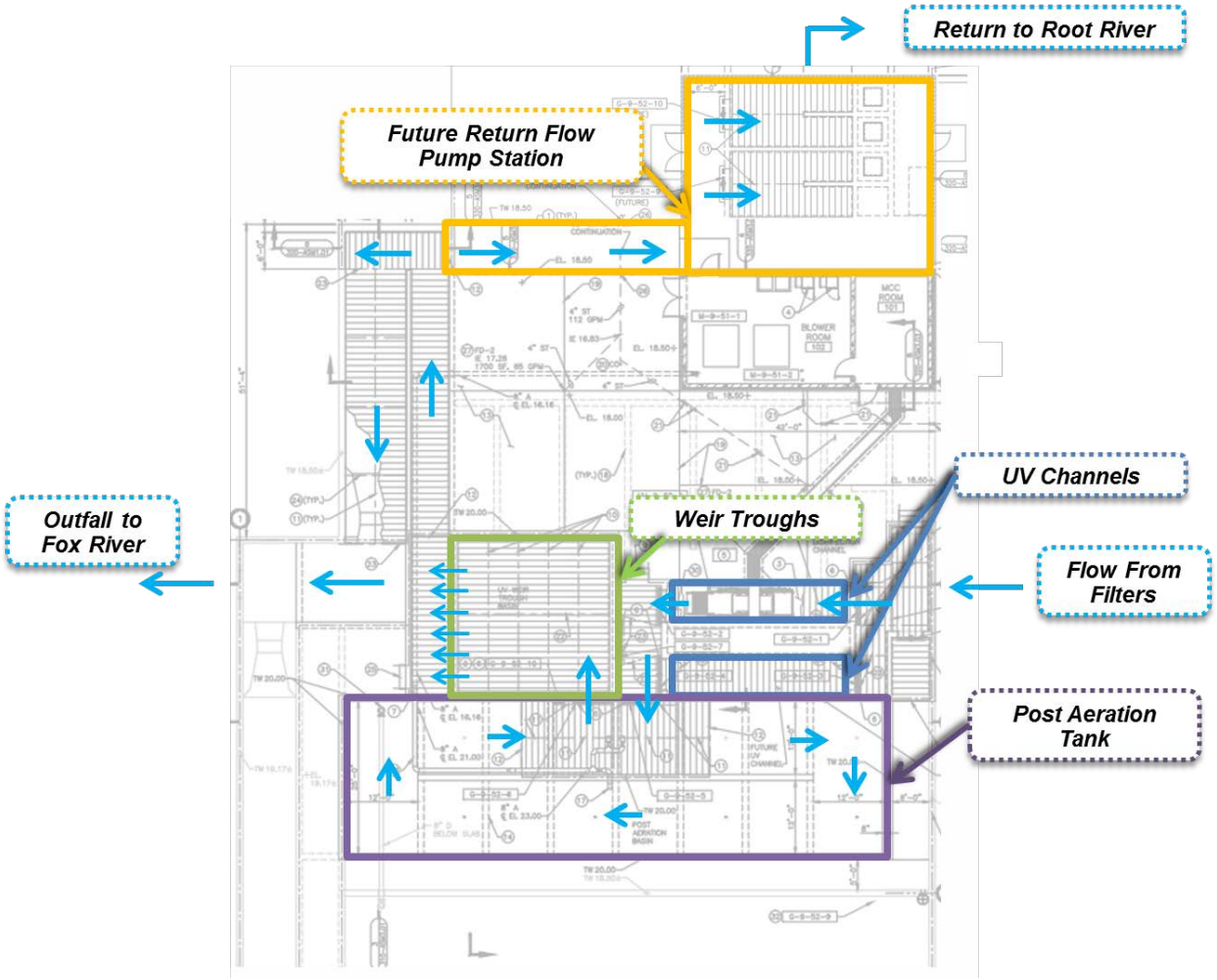
The City of Pewaukee operates a municipal water system. In 2014, the City of Pewaukee water utility served 9,407 customers out of an estimated population of 13,942. The remaining population is assumed to be on private wells. Portions of the City of Pewaukee receive water and sewer service from the Waukesha Utility based on the 1997 Intergovernmental Boundary Agreement between Waukesha and Pewaukee.

23 Is it true that the Waukesha water service area plan is not yet formally approved? If not, how can this application rely on that plan?

Please see the response to question 21.

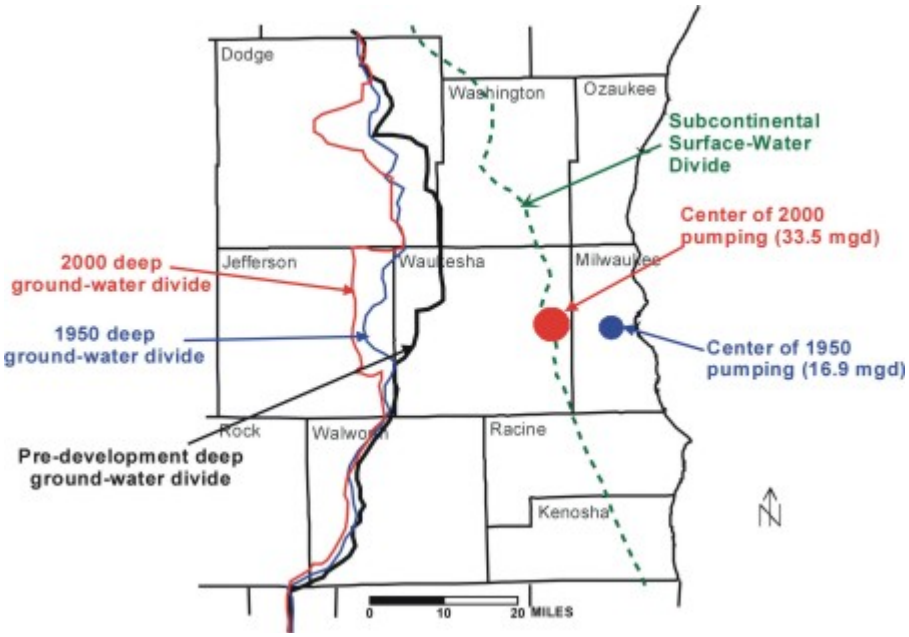
Attachment A – Question 4 – City of Waukesha Wastewater Treatment Plant Conceptual Designs (provided by the Applicant)



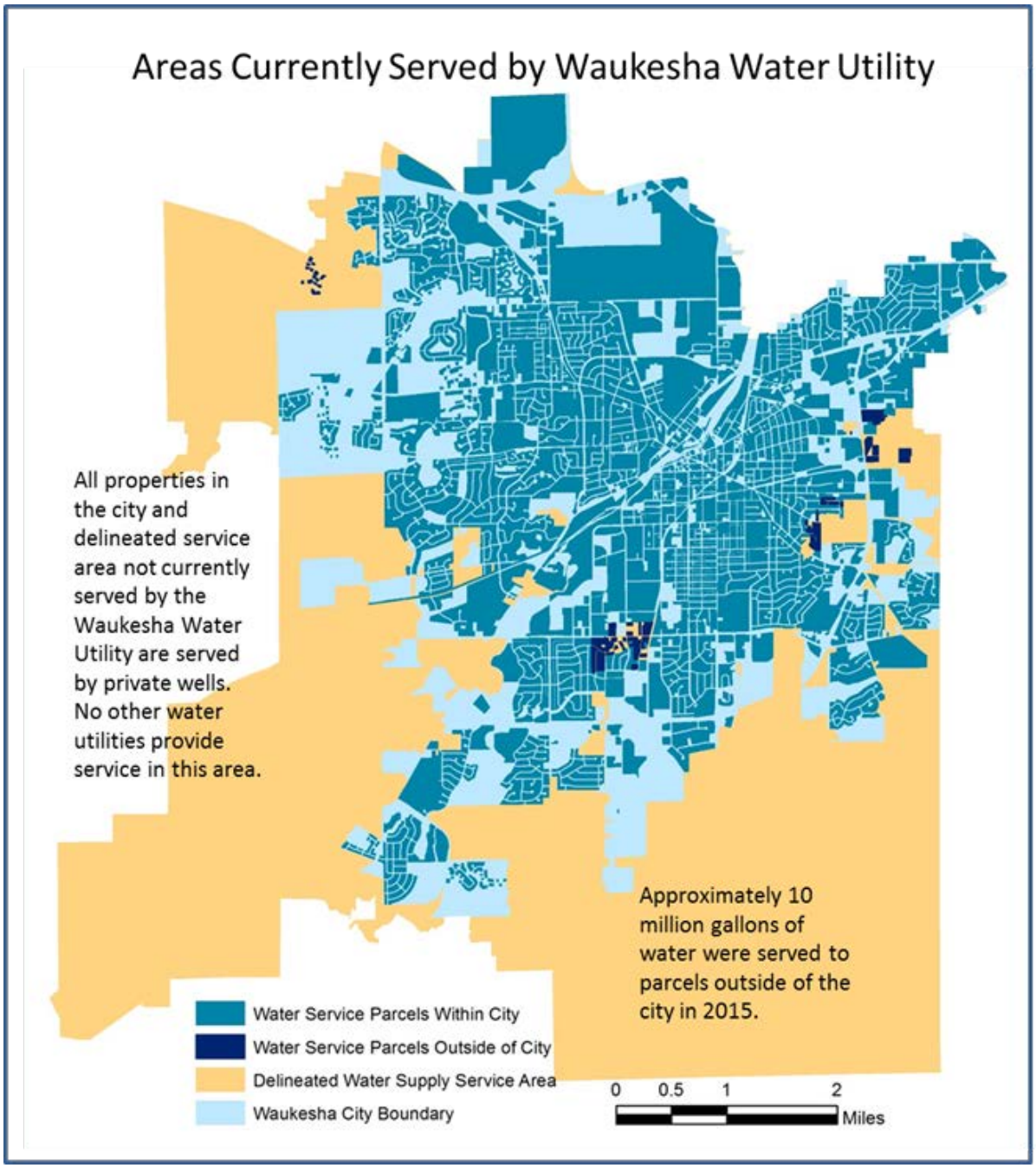
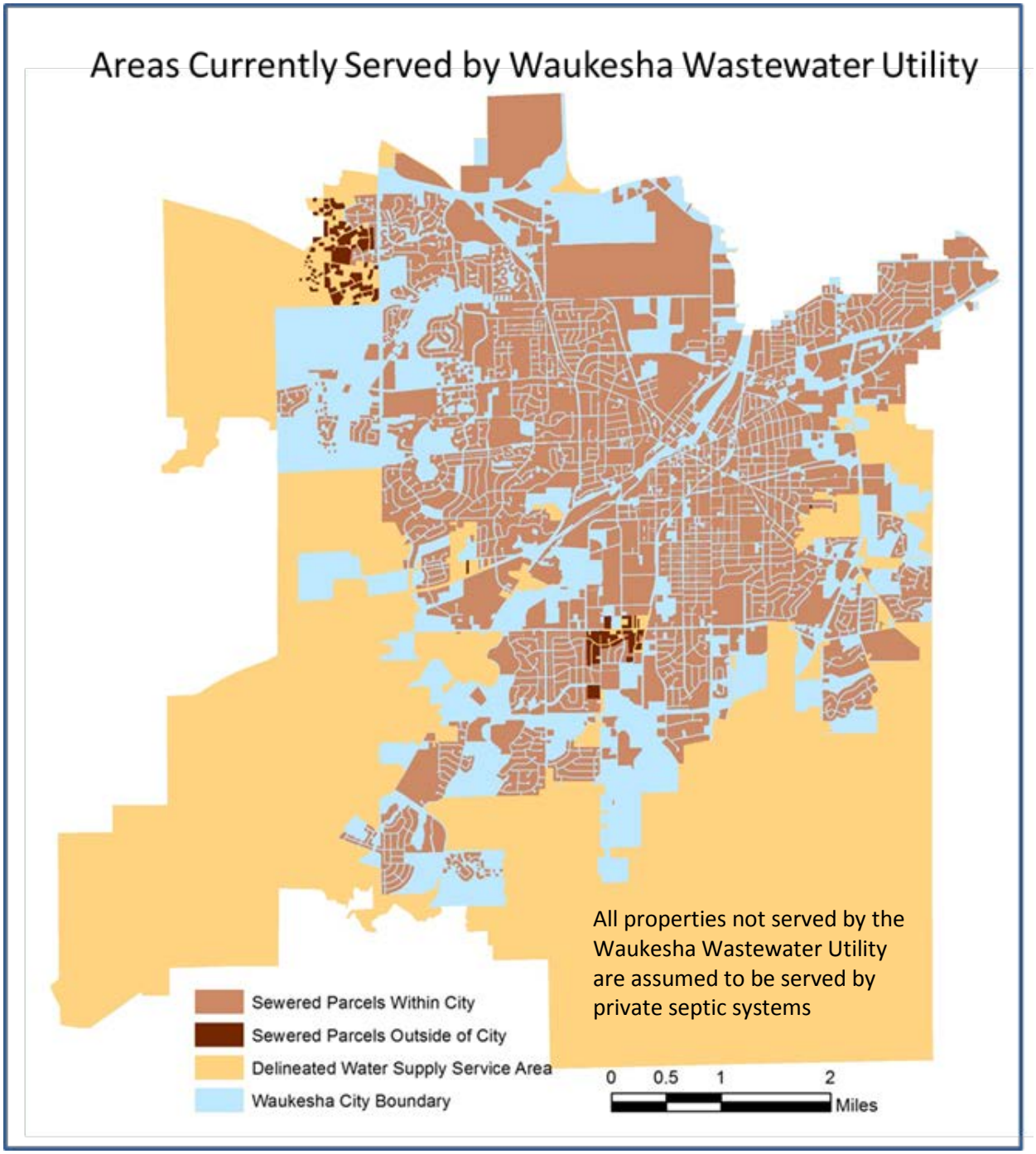

Return to Root River
Future Return Flow Pump Station
UV Channels
Weir Troughs
Outfall to Fox River
Flow From Filters
Post Aeration Tank

Attachment B – Question 5

Location of pumping centers and Groundwater divides in the deep sandstone aquifer: predevelopment, 1950, and 2000 conditions. (Source USGS and Wisconsin Geological and Natural History Survey)



Attachment C – Question 16 (data provided by City of Waukesha)



Attachment D – Question 19 (Data provided by City of Waukesha)