

Minnesota 3M PFC Settlement

Notes from the Drinking Water Supply Technical Subgroup 1 meeting

Wednesday, March 17, 2021

1:00 – 4:00 p.m.

Virtual Webex meeting

Group members in attendance

- Brian Bachmeier
- Brian Davis
- Gary Krueger
- Jack Griffin
- Jason Moeckel
- Jim Westerman
- Jon Herdegen
- Karla Peterson
- Lucas Martin
- Marian Appelt
- Matt Moore
- Molly Wellens
- Richard Thron
- Ryan Burfeind
- Ryan Stempiski
- Stephanie Stouter
- Stu Grubb

Presenters

- Gary Krueger, Minnesota Pollution Control Agency (MPCA)
- Jason Moeckel, Minnesota Department of Natural Resources (DNR)
- Hannah Albertus-Benham, Wood
- Ryan Burfeind, City of Cottage Grove
- Mark Lorie, Abt Associates

Welcome

Mark Lorie (Abt Associates) welcomed the Subgroup to the meeting. Mark reviewed the agenda. The purpose of the meeting was to review the White Bear Lake situation and what it means for the Conceptual Plan and to discuss centralized water softening. Gary Krueger (MPCA) then welcomed the Subgroup and announced that Jeanne Giernet had retired from MPCA and that Brian Hamrick was no longer with Wood. With Jeanne's retirement, communications to the subgroup would now come from staff from Abt Associates and Hannah and Erin will continue to be the contacts for Wood. He also explained that today's meeting and future conversations would discuss how the Plan could include flexibility and potentially be implemented in a phased approach.

White Bear Lake and the Conceptual Plan

Jason Moeckel (DNR) presented on the White Bear Lake District Court Order. DNR was sued in 2012 by the White Bear Lake Restoration Association and White Bear Lake Homeowners' Association who alleged that DNR permitted too much groundwater use near White Bear Lake, causing the lake levels to drop. The District Court ruled in favor of the plaintiffs. The case has been reviewed by the Court of Appeals and the Minnesota Supreme Court. The DNR is not pursuing any further legal challenges and will continue working to implement the Court Order. Key elements of the Court Order include:

- DNR may not issue new permits or increases in allocations to existing permits within five miles of White Bear Lake unless certain conditions are met
- In addition, before DNR can authorize a permit to use groundwater, DNR must have sufficient hydrologic data to understand the impact on White Bear Lake and the Prairie du Chien-Jordan aquifer. DNR is required to evaluate the impact any groundwater use permit would have on White Bear Lake, even if it is outside the five-mile radius.
- DNR has to require public water suppliers to implement a residential irrigation ban when the lake reaches 923.5 feet in elevation; and the ban is to remain in place until the lake reaches 924.
- The court order requires that cities with permits within the 5 mile radius have enforceable plans to reach a 75 gallons per capita per day residential use and 90 gallons per capita per day total use. .
- Public water suppliers must also develop a contingency plan to shift from groundwater to surface water.
- The DNR must set a collective annual withdrawal limit for White Bear Lake.

Jason then reviewed some of the historical water levels that were part of the DNR's hydrologic analysis, including the court's determination of a 5-mile radius of the lake. Some key technical elements of the situation include:

- White Bear Lake reached its all-time low elevation in January 2013 at 919 feet. Last week the elevation was just under 925 feet. The ordinary high-water elevation, a regulatory value, is set just under 925 feet.
- The Court Order said DNR must address any use of water within five miles of White Bear Lake. However, some communities (e.g., Oakdale and Lake Elmo) have wells that are both inside and outside the five-mile boundary. Most of the wells within the boundary are public supply water wells.

Jason also discussed important trends that have occurred related to White Bear Lake, including:

- Average groundwater use within the five-mile radius has generally decreased since 1988. One of the major causes for a recent decrease is that St. Paul Regional Water Services is no longer relying on groundwater, except in emergencies. They had been using a mix of groundwater and surface water to meet their needs until a few years ago. They are now relying on surface water from the Mississippi River. However, they are maintaining their groundwater wells in case of emergency. Use has also decreased because the communities around White Bear Lake are now more established and not growing as quickly and household appliances have become more efficient.
- The long-term record for the lake (since 1920) shows cyclical periods of high and low water levels due to drought followed by heavy rainfall. There was a significant drought in the late 1980s followed by a very wet period in the early 1990s to late 2000s. Another dip happened around 2005/2006 because of below-average rainfall and pumping increases around the entire East Metro area.
- The outlet level of White Bear Lake has changed over time. After flooding, residents asked to lower the outlet to protect homes in lower-lying areas. It was lowered in the 1980s along with some other improvements to reduce flooding.
- In 2016, the DNR set a protective elevation at 922 feet. The protective elevation is based on the characteristics of White Bear Lake's long term history, lake ecology and recreational use.

Jason also explained how DNR created a sophisticated groundwater model to evaluate how groundwater pumping, rainfall and other factors affect the aquifers and White Bear Lake. The model has been peer-

reviewed. DNR used the groundwater model to simulate several scenarios using hydrologic conditions from 1998 through 2018, and evaluated water level dynamics from 2002 to 2018 and found that:

- Water levels in White Bear Lake would have been higher and would have remained above the protective elevation if there was no groundwater pumping among all permitted wells.
- Compared to existing use of water, a temporary residential irrigation ban would increase White Bear Lake levels only slightly (roughly a few inches) after several years, and lake levels would still drop below the protective elevation. For the communities closest to the lake, residential irrigation accounts for a relatively small percentage of total water use, therefore eliminating it on a short term basis doesn't change lake levels very much. In other words, a temporary residential irrigation ban is not the same as a 30% reduction in water use, year after year. In addition, mature landscaping in established communities tends to need less irrigation compared to newly established areas.
- If the lake outlet was raised while keeping existing permitted use the same, water levels would have been slightly higher, longer, but would still drop below the protective elevation.
- If a 25 percent reduction in pumping was implemented across all permittees, lake levels would have been about one foot higher, but would still drop below the protective elevation. A 40 percent reduction would get closer to the protective elevation. A 40 percent reduction in existing use, is a dramatic change and would likely be unacceptable to communities and residents.

Jason also explained how DNR included growth into their projections for White Bear Lake. They used the same projections that Wood used in their modeling for the Conceptual Plan. Woodbury is the largest city and has the most expected growth in total water use but is not within the five-mile radius. Hugo and Lake Elmo are also anticipating significant growth. Saputo Dairy Foods is a milk processing facility that is the largest non-community water user that is closest to the lake. Some cities like Cottage Grove use a lot of water but are far enough from White Bear Lake that their use does not substantively affect lake levels compared to others.

Groundwater modeling showed that projected water use for 2040 would essentially use the water that was saved by St. Paul Regional Water Service relying solely on surface water. If Oakdale and Lake Elmo were to connect with St. Paul Regional Water (Option 3 in the Conceptual Plan), there would be approximately one foot of elevation gain when considering 2040 demands. Due to the Court Order, DNR will have to work with communities to make some changes to meet the requirements and provide safe drinking water under the 3M Settlement. In general, communities closest to the lake have the biggest impact, it's really a combination of distance and volume. Jason also highlighted the North and East Groundwater Management Area, which was designated in 2012 by DNR when concerns about water levels in White Bear Lake and aquifer levels in parts of the area were declining. The area boundary was selected because these communities are hydro-geologically related, which means that water use and aquifer recharge are not contained solely within a communities legal boundary.

Lastly, Jason explained what the Court Order meant for the Conceptual Plan. He emphasized that DNR cannot increase groundwater allocations that affect White Bear Lake right now, even if they are located outside of the five-mile radius. The Plan needs to have flexibility while DNR works with communities and legislators to identify long-term solutions. DNR is scheduling meetings with all communities affected by White Bear Lake to grow the region's understanding of this challenge and to discuss solutions.

Feedback

One Subgroup member asked the Co-Trustees and Wood to look at the projected 2040 use in more detail. They did not feel that Woodbury's number was reflecting what they would be using on average. They asked for additional background on how that number was reached. Jason explained that this number was pulled from materials that Woodbury sent to Wood but that they would verify that correct projections were used (Note: DNR and Wood have subsequently confirmed that the water use projections used in the analysis are in fact correct) . Some growth numbers were pulled from city water plans.

Another Subgroup member asked how wells that were going to go offline were incorporated into the model and how it might affect decision-making for White Bear Lake. Jason explained that DNR knows there is some agricultural irrigation in the area that use a fair amount of water that may not be used in the future. They did not consider these wells going offline because DNR does not typically know a well is going offline until it already has. However, can update the model and analysis as wells go offline.

Subgroup members asked for more context to be added to the slide deck to clarify what information was being presented.

Feedback

One member of the public said the difference between 2020 and 2040 numbers needs to be explained more. They said that was an important element of the chart and asked for that context to be added to the slides.

Central water softening

Hannah Albertus-Benham (Wood) explained some of the technical elements of central water softening, including:

- Groundwater throughout the East Metro is generally very hard. Many residents have in-home water softeners to address this issue. Cottage Grove and St. Paul Park have especially hard water. Some communities said that approximately 90 percent of their residents have in-home softeners. Others have less.
- Two environmental impacts associated with residential water softeners include wasted water due to the regeneration cycle the in-home softeners use and high concentrations of chloride in discharge downstream. One of the primary benefits of central water softening would be to save the water that is wasted from in-home softeners. Another is reducing the chloride in discharged wastewater which could improve downstream water quality.
- A paper released by MPCA estimated some costs for lime softening. However, the Settlement would have synergies between central softening and pre-treatment that would be needed to treat water for PFAS, so capital costs would not be quite as high. In addition, the Settlement would have to consider operation and maintenance costs and the costs to remove in-home softeners from peoples' homes.

Hannah explained that central water softening would eliminate the need for in-home softeners, saving money for residents who spend money on salt, energy, and to rent equipment. It would also reduce the money spent by communities on treatment by reducing the amount of water. Lastly, it would meet Priority 1 conservation goals by using less water from communities and pumping less water from the aquifer.

Ryan Burfeind from Cottage Grove shared information on central water softening from their community's perspective. In Cottage Grove, approximately 75 percent of residential properties have in-home water softeners. They use approximately three million pounds of salt annually and waste approximately 42 million gallons of water through recharging (4.18 percent of Cottage Grove's annual water use). There is the opportunity to reduce this waste significantly through central water softening.

Feedback

One Subgroup member said that the pilot study in Cottage Grove showed pre-treatment was needed for iron. They said it would be important to look at the raw water quality and use that to identify what pre-treatment might be needed for other communities. There could be some overlap between pre-treatment and centralized softening. Subgroup members also said that there were a few key elements that will need to be figured out. They discussed the need for smart engineering and whether it would be an all or nothing approach to communities participating in centralized softening. One Subgroup member explained that if a community is putting in softening, they also need to look at the rest of the system. They said more discussion is warranted under the existing options for communities that may not be getting full PFAS treatment in their system (e.g., Woodbury). They also said there could be unintended or unexpected steps that are required for communities to soften their water and those would all need to be considered before a final decision on softening was made.

Another Subgroup member said the group had not really discussed the health effects of softened water. They said that some people choose to only soften their hot water because when you soften water, you lose some essential nutrients and introduce the possibility of increased corrosion in pipes.

Technical 1:1 re-cap and path forward/next steps

Hannah reviewed feedback from the one-on-one technical meetings. Key feedback includes:

- Pre-treatment costs. Cottage Grove is seeing more frequent changeouts as part of their pilot study due to iron fouling. This may affect both ion exchange (IX) and granulated activated carbon (GAC) treatment. There could be some opportunity for savings with centralized softening because both would remove some iron and manganese. There could also be operation and maintenance savings.
- Capital costs. Capital costs essentially doubled after the first round of one-on-one meetings and updates. The Co-Trustees feel a more accurate number is now represented. Gary said Co-Trustees and Wood could provide more detailed cost specifics later.
- Staffing costs. As a result of looking at capital costs, Co-Trustees and Wood found staffing costs will be increased for some communities. Another item to be considered were extra costs related to pre-treatment for things like hydraulic loading rate, backwash to sewer and staff time.
- Priority costs. Some communities are figuring out their individual priorities so that they are ready to start work when the Settlement funds are available.
- Phased approach. The Co-Trustees are considering a phased approach for Settlement implementation to incorporate flexibility and ensure there are sufficient funds.
- Additional contingency. The Co-Trustees have discussed increased the contingency fund.

Next steps

Mark reviewed the next steps in the process for finalizing the Plan. Over the next couple months, the Co-Trustees will continue to gather feedback and update the Plan based on that feedback. The Co-Trustees expect to release the Plan in June.

The next Subgroup meeting will occur on Wednesday, April 21. The agenda is not yet set.

Feedback

One Subgroup member asked if the costs would be updated again based on the most recent one-on-one meetings. Gary said that there were some adjustments to the costs.

Another Subgroup member was concerned about how treatment media consumption costs were calculated. They were not sure there was enough allocated. Gary explained that the Co-Trustees were still considering the lifespan of the treatment media and how it might affect operation and maintenance costs. He also explained that the Co-Trustees and Wood had not received any additional input from communities on how to measure media use. They are currently using the PFOA loading as a base for the calculation. A conservative estimate is that media would need to be changed every three years, but the Co-Trustees would like any additional information that communities have.

Public comments and questions

There were no public comments or questions at this time.