



Legislative Water Commission

Barb Huberty, Director

65 State Office Building St. Paul, MN 55155-1201 Phone: (651) 284-6431 Fax: (651) 297-3697 TDD (651) 296-9896

April 24, 2017

Meeting Minutes

Members Present:

House

Representative David Bly
Representative Peter Fischer
Representative Glenn Gruenhagen
Representative Clark Johnson
Representative John Poston
Representative Paul Torkelson

Senate

Senator Kent Eken
Senator Andrew Lang
Senator Carrie Ruud
Senator Bill Weber
Senator Charles Wiger

Members Excused:

Senator Jason Isaacson

The meeting was called to order at 6:05 pm on April 24, 2017. A quorum was not present.

Perry Jones, hydrologist with the US Geological Survey presented the findings from the USGS Report "Water levels and groundwater and surface-water exchanges in lakes of the northeast Twin Cities Metropolitan Area, Minnesota, 2002 through 2015- Chapters A and B". Mr. Jones explained the short-term and long-term statistical analyses and the field study were completed to assess the interaction of surface and groundwater in the NE Metro area. The study area was selected based on a regional approach, not specifically on geology.

Statistically, closed basin lakes without an active outlet were prone to higher ranges of water level fluctuations than flow-through lakes and lake levels were more stable in urbanized areas. Closed basin lakes positioned at higher elevations and that were underlain by the more permeable Superior Lobe deposits had more water level variability; it is a natural occurrence that may be enhanced by groundwater pumping.. Of the lakes studied, White Bear Lake (WBL) was the most variable. He also noted that it is possible for a flow-through lake to become a closed basin lake if its water level falls below its outlet elevation.

Looking at 40 water supply wells, the USGS identified the locations of those wells having isotopic signatures for both groundwater and surface water and the proportional share of each. Where organic sediments were over 5' thick, there was a higher incidence of trapped gasses and less opportunity for surface water seepage into the underlying aquifer. Based on seepage-flux measurements, which measure flow rates within a 5' radius, the USGS determined that deep lake water outflow could range

from 0.04 – 1.0 in/day, while nearshore groundwater inflow had a higher range of 0.1 - 11.3 in/day, attributing this result to the fact that lake shore sediments tend to be more permeable than lake bottom sediments.

Lastly, the USGS refined Met Council's Metro Model 3 to develop a steady state model to describe the groundwater flow in this area as it related to groundwater and surface-water interactions in lakes and the effects of groundwater withdrawals and precipitation on lake levels. To refine the model, they used a finer and more detailed model grid, used 4 layers of Quaternary geology data, updated the recharge data, added the Lake Package for 6 lakes, and included a refined RIV Package that was applied to rivers, other lakes, and streams. They then modeled 9 simulations addressing the 2003-2013 average conditions and 8 hypothetical scenarios, including a $\pm 30\%$ change in groundwater withdrawals, a $\pm 5\%$ change in precipitation, and a combination of precipitation/groundwater withdrawal changes. The model calibrated well over the study area and showed that both groundwater withdrawals and precipitation can affect lake-water levels and budgets. The largest change could be expected during a drought, when precipitation is lower and withdrawal rates are higher. Some lakes are providing water to underlying aquifers. However, the effects of groundwater withdrawals on the lake water levels varied with the number of wells and the amount of withdrawals from wells near the lakes. There is a strong connection between glacial materials and the underlying Prairie du Chien aquifer, particularly where the PDC is the uppermost bedrock. He reiterated that these were modeled findings, not directly measured aquifer changes. The final review of Ch B is in progress and USGS expects it to be published in June.

If additional work is to be completed in this area, USGS staff recommend the characterization of glacial sediments and buried bedrock valleys below lakes like WBL, developing transient simulations for the groundwater-flow model, and developing a common lake information data base. It is not known whether a confining layer exists between any portions of the WBL base and the underlying Prairie du Chien aquifer.

A quorum now being present, Sen Weber moved approval of the March 27, 2017 minutes. THE MOTION PREVAILED.

The next presenters, who gave several updates about a variety of N&E metro topics, were both from DNR's Ecological and Water Resources Division: Jason Moeckel, Manager of the Inventory, Monitoring, and Analysis Section and Julie Ekman, Manager of the Conservation Assistance and Regulations Section.

Mr. Moeckel indicated that WBL's water level reached 923.1' today; the highest level it has been in 10 years. Aquifer levels in wells adjacent to WBL are also trending upward and are higher than since 1995.

DNR is entering into a contract with a national consultant to use the completed USGS model to evaluate transient conditions near WBL by the end of this summer. Unlike the hypothetical, infinite steady state model, a transient model can review conditions covering a few months to a few years and it can be used to evaluate the effects of changes in pumping on lake levels and streamflow. The data could also be provided to communities to indicate when their water use is impacting lake levels and to justify rate increases. It can utilize actual pumping data within a certain distance of a lake over a certain period of time in order to predict differences in real time.

DNR has set the protective elevation for WBL at 922'; its ordinary high water level is 924.89' and its outlet elevation is 924.3' (this has changed twice over time). The lake is only below 921' 10% of the time. DNR spent over a year conducting a technical evaluation utilizing statutory criteria to select that protective elevation, which is at the 73rd percentile. This is the first time DNR has set a protective

elevation that was intended for broad application vs it being a permit condition; they have yet to determine exactly what their response will be when this elevation is reached. In meeting with 5 local communities potentially affected by the protective elevation, DNR learned that they have already adopted several water conservation measures. Currently, enforcement of watering bans is local and complaint-based. It is unclear whether some watering ordinances apply to private well owners or in situations where water is supplied to other communities.

In the past, WBL was augmented via groundwater pumping and, according to DNR, the groundwater was basically recirculated to the aquifer through the lake. DNR does not support the concept of lake augmentation. However, at the direction of the legislature, DNR issued a request for proposals for an augmentation feasibility study to refine the costs to build a WBL augmentation system, based on contractor and engineering estimates. The cost estimate ranged from about \$44M to \$48M, but the consultants could not guarantee that water quality in WBL would not degrade, given the water quality in Vadnais Lake. If augmentation is pursued, more work will need to be done to evaluate the type and cost of water treatment needed to maintain WBL's water quality. Assuming further funding and a start date for further water quality evaluation of mid-2018, augmentation startup could be expected by spring 2025.

DNR staff also gave an update on the status of implementing the N & E Metro Groundwater Management Area Plan, and noted substantial progress in these areas:

- Groundwater modeling and analysis
- Setting the protective elevation
- Expanding the monitoring network
- Conducting an evaporation analysis (U of MN)
- Updating water supply plans
- Fostering more water conservation
- Adjusting the appropriations thresholds for some permits

DNR has begun their 10 year water supply planning process. There are over 30 water suppliers in the N & E Metro whose plans were due in December 2016. Only 3 have not been submitted and these were granted extensions. The water conservation portion of the water supply plans was given more emphasis this round and many communities have increased their conservation efforts. For example, Woodbury has private well and lawn watering ordinances. They have hired a water conservation officer and doubled the fines for violations. They also have a pilot project for installing state of the art water controllers. Other communities are distributing toilet leak detection tablets and low flow showerheads. Some are providing cost share funding for raingardens and rebates for installing water efficient appliances.

Rep Fischer asked what the sustainable aquifer level is now and should be into the future. Mr. Moeckel indicated that they will have to evaluate aquifer level declines and available head, but he thinks surface waters will be limited before aquifer levels.

Rep Gruenhagen indicated that MN has plenty of water and lots of flooding and most of our water leaves the state. He suggested that more dams be installed to create holding ponds and hydropower. He also suggested that dense populations stress resources, so tax and regulatory reform should be used to expand growth in rural areas, instead of centered in the metro area. DNR replied that most residents in Hennepin and Ramsey counties use surface water, which has not been limited. The suburbs mostly use groundwater. The availability of groundwater throughout MN is not equal. As an example, a hog facility near Fairmont would need 1 billion gallons of water per year, but an adequate groundwater

source has not been found through test drilling. Rep Gruenhagen felt it was important that we not drain rainwater away.

Referencing the statewide map of new observation well locations, Sen Eken asked why the new observation wells were not being distributed evenly across the state. DNR said the metropolitan area had a dedicated source of funding for the wells in that area and DNR is playing catch-up in Greater MN and focusing installations where there are deficits in information or long-term needs.

Next, Ali Elhassan, Manager of Metropolitan Council's Water Supply Planning Unit, briefly discussed how the Master Water Supply Plan (MWSP) is being implemented in the N & E Metro area. The 1st MWSP was developed in 2010 in response to the stress metro area growth has been placing on water resources. The MWSP was updated in 2015, in collaboration with area stakeholders (there are 186 communities in the metro area). 75% of the metro area population relies on groundwater, which has caused a decline in aquifer levels and impacts surface water features and groundwater quality in some areas. One goal of the 2015 MWSP is to reduce daily per capita water consumption from 95 to 75 gallons. Stakeholders jointly developed strategies to meet the MWSP goals, including:

- establishing collaboration frameworks
- supporting local planning to empower communities to make sound decisions
- providing technical support for all the cities
- supporting conservation
- supporting better regional investment in water supply management

Met Council and the municipal water suppliers have begun implementing the MWSP. Accomplishments in the N&E Metro area include:

- held 3 events to educate stakeholders
- established subregional groups that meet regularly to discuss water issues and solutions
- supported 5 MnTAP internship projects (\$12K each) to help industries conserve water; industries that have implemented recommendations have reduced water use by 50Mgal/yr, saving \$100,000
- awarded 11 water efficiency grants to help install water efficient toilets, washing machines, and irrigation systems to save 17M gal so far
- awarded stormwater reuse grants to enable cities like Hugo to reuse stormwater instead of groundwater for irrigation

Over the last 5-10 years, water use in this area has declined.

All presenters were asked to identify their priorities for what the N & E Metro Area needs next.

- USGS identified a need to analyze the glacial substrate and buried bedrock valleys in this area and to develop a common lake database that includes water elevations and inlet and outlet elevations to help with future analysis
- DNR said completing the transient model will be their primary focus. They hope the legislature will continue funding to develop and maintain the observation well network. Also, they are having initial discussions with Met C and others about real time aquifer monitoring devices to improve well field operations and help assess surface water/groundwater connections. Plus they will continue reviewing and approving the water supply plans and plan a 5-year check on water conservation progress utilizing the forthcoming water conservation tracking tool.
- Met Council noted that 7% of total water use in that region was saved through 2 of their programs. Their recommendation is to keep empowering communities with funding so they can take action to implement the desired changes outlined in the MWSP.

During the question and answer session, Rep Fischer asked if the MWSP goal to move per capita water use from 95 gpd to 75 gpd will result in sufficient savings to offset population increases. Met Council replied that yes, if this goal is met, the savings will accommodate expected new growth and that the 7% reduction already accommodates an additional 4,000 people in N & E metro area.

Rep Fischer also asked what happens to permit appropriations if aquifer declines continue. DNR replied that they would have to adjust permit allocations. The transient model will answer some of those questions and help DNR set a sustainable allocation amount. Rep Fischer asked if the 20 gal/person/day savings are sufficient to allow the aquifer to rebound. Met Council noted that the aquifer levels were stable in 2015; they are not declining or rebounding.

Sen Wiger asked if there is adequate funding to do the work that was outlined in the proposed agency budgets. DNR indicated that they use clean water fund (CWF) and general fund dollars. The House general fund and CWF proposals preserves DNR's s their funding levels. The Senate proposals do not; the general fund allocation of \$2M is \$4M short of their \$6M need and the CWF levels are also lower.

Sen Wiger asked if agencies are operating with optimal efficiency regarding their coordination efforts. DNR replied that the agencies are working exceptionally well together, however each has different roles, but together they provide a strong program.

Sen Scott Newman has formally requested the assistance of the LWC in reviewing the Barr report: "Engineering Cost Analysis of Current and Recently Adopted, Proposed, and Anticipated Changes to Water Quality Standards and Rules for Municipal Stormwater and Wastewater Systems in Minnesota". Rep Gruenhagen moved that LWC undertake this request. THE MOTION PREVAILED.

There will be no May meeting. Director Huberty will send out a Doodle Poll to find a June meeting date.

The meeting adjourned at 8:04 p.m.