

**Minutes of the
Groundwater Modeling Technical Advisory Group
Metropolitan Council – M94 Office Park
April 26, 2007
1:30 – 3:00 PM**

Chris Elvrum, Metropolitan Council, moderated the meeting, beginning with a review of the agenda. Introductions were made; an attendance list is attached.

Sue Langer and Chris Sanocki, USGS, presented an update of the mass water level measurement project. They set forth project goals, gave a progress report, and presented a plan for implementation. The final products of this work will include several GIS map layers of historical and current measuring locations, contour maps of historical and current water levels for each aquifer.

During the discussion that followed, Chris Elvrum asked if this study will rely on measurements taken by the USGS's own crew, or if other organizations would be asked to participate and collect additional well measurements. Jim Stark, USGS, responded that the DNR observation well network will be included in the project; those data will be collected by DNR and Conservation District staff. When asked who owns most of the wells being used in this project, Jim explained that most are domestic wells, but there are some industrial as well.

Chris Elvrum asked if the analysis will include using pumping data to quantify the effects of pumping on potentiometric surfaces. Jim responded that the proposed plan does not include the collection of data from pumping wells. The goal is to collect data at observation wells surrounding pumping centers. Bill Olsen, Dakota County, questioned the need for both a winter and summer measurement. Jim explained that these two measurements would be used to calibrate transient models. Bill was concerned that this approach would not adequately capture the effects related to the periodicity of pumping, and he suggested asking municipalities to calibrate their SCADA systems the week before data collection. Jim responded that the USGS was not in a position to do this and suggested that the DNR may be the appropriate organization to make this request. Mark Janovec, Bonestroo, pointed out that several municipalities have standby wells that could be used for observation points near pumping centers. John Greer, Barr, asked if the USGS was looking for new wells to add to the observation well network; if so, there are new observation wells in Prior Lake on the west side of the buried bedrock valley there. Chris Sanocki requested that everyone share information about observation wells not in the USGS or DNR network. Bill Olsen wanted to clarify if the goal of the proposed mass water level measurement project is to resample all wells used in past measurements. Jim acknowledged that this was the goal, although some historical wells have been sealed and new wells will allow for expansion of the monitoring network.

Chris Elvrum asked how quickly the raw data would be made available. Jim Stark responded that the data could be shared as soon as it was compiled. The data will be available before the final report.

Chris Elvrum noted that we would be getting a copy of the data collected during the 1994 measurement from Gail Haglund. Jim Stark believes that the USGS had much of this data, as does the PCA. Andrew Streitz, PCA, clarified that the 1994 data is stored with the DNR's observation well database, but he believes it is in a different format.

Bob Tipping, MGS, asked if all the wells used in past measurements were assigned MN unique well numbers. If not, these wells should be assigned numbers and added to the CWI. Jim Stark agreed that one of the primary goals of this project is good database management to streamline future work. Many records used in past projects are still only in paper format.

Chris Elvrum asked who is cooperating with the USGS on this project. Jim Stark noted that financial support is being provided by the DNR, and the PCA is also considering providing financial support. Staff time is being provided by Metropolitan Council. The USGS is still looking for additional support, including information about wells, people to assist with office and field work, and money. Jim reminded the group that this type of regional mass measurement has taken place approximately every 10 years since the 1940's, and these data have provided valuable information about changes to groundwater availability in that time. Mark Janovec said he will coordinate his data collection with the mass measurement timeline, and he suggested other consultants would be willing to do the same. Chris Elvrum suggested that the MGWA might be willing to advertise for this purpose.

John Freitag asked if the DNR's contribution to the mass water level measurement included data collection at wells monitored by the Soil Conservation Districts. Jim Stark said yes. Chris Elvrum wondered if the conservation districts and watershed districts have wells not included in the DNR observation well network. John Freitag replied that watershed districts in Washington County, at least, have observation wells that are not in the DNR observation well network.

Chris Elvrum discussed Metropolitan Council's plan to conduct a regional water availability analysis. The Council is currently negotiating a contract with Barr Engineering; Barr's approach is to build a regional model to assess availability. The MODFLOW model will be based on the scope of the Metro Model, but it will have transient capability and will include more layers to allow for more aquifer heterogeneity. John Greer, Barr, added that PEST would be used for parameter estimation and uncertainty analysis, which will tell us how seriously we should consider the model outputs. Barr has contracted with John Doherty, creator of PEST.

Lanya Ross, Metropolitan Council, presented her assessment of the state of the data and discussed the benefits of using web service technology to share groundwater modeling data. Existing DNR, Metropolitan Council, EPA and USGS web services were highlighted.

Chris Sanocki discussed some of the technical aspects of web services. Bill Olsen asked if the mass water level measurement data could be provided through a web service. Jim Stark noted that, with over 40 agencies collecting data, all 40 would be responsible for serving up their data. John Freitag commented that this type of application may address the concern that different organizations have different QA/QC concerns.

The possibility of suggesting that everyone provide data through web services was brought up. If this is a goal, a model of how to build a web service would be needed. Chris Sanocki suggested that LMIC may be the organization to support web services for small organizations. There may also be some support through the USGS. His work with web services at the USGS makes him a good resource for this process. Bob Tipping noted that the MGS would need someone with technical knowledge to set up a web service there. Chris Sanocki responded that he would be willing to assist in the development of a strategy for agencies to move from their current data delivery configuration to a web service. Chris Elvrum suggested determining the one-time and ongoing costs associated with developing a web service so that organization can evaluate their resources needed for implementation.

Future work was discussed. Chris Elvrum said Metropolitan Council would continue to work with DNR to provide SWUDS data through the DNR Data Deli. Future work for recharge was also discussed, and the need for a database of groundwater age data was suggested. Bob Tipping pointed out that his ongoing recharge work has included the construction of a database of existing groundwater age dates he has collected from a number of sources including theses, the PCA, the USGS, etc.

Attendees
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