

Water Resource Availability Data Collection and Analysis

Metro Area Water Supply Advisory Committee - Discussion Brief

August 24, 2006

Introduction

Minnesota Statutes, Section 473.1565 requires the Council to undertake water supply planning activities including:

“development and maintenance of a base of technical information needed for sound water supply decisions including surface and groundwater availability analyses, water demand projections, water withdrawal and use impact analyses, modeling, and similar studies;”

During the recent Council-sponsored workshops conducted as part of the regional water supply planning process, there were an overwhelming number of comments related to the need for better data and analysis of the long-term sustainability of the region’s water resources. Several of the comments related to the need to better understand aquifer recharge, impacts of withdrawals on surface water features, cumulative impacts of withdrawals in the region, and to better coordination of studies, data collection and information sharing.

Current Approach

The information currently being collected/analyzed includes the following. Each of these efforts is described in more detail below.

- Water supply system infrastructure
- Water resource monitoring sites
- Water demand forecasts
- Water availability (surface and groundwater)
- Groundwater contamination
- Aquifer recharge

The above information is being collected in order to evaluate current and projected demands and potential limitations on supplies in the region. The results will be included in the report to the Legislature at the conclusion of Phase I and will be followed by local/subregional evaluation to address potential limitations in Phase II. The ultimate goal is to address resource impacts and/or water availability limitations prior to growth; or, where uncertainty still lies, develop a monitoring and evaluation program. This approach is intended to address issues which have led to delays in the water appropriation permit process as described in the companion brief *Water Supply Regulatory Process and Water Conservation*.

The following paragraphs outline the general approach to groundwater data collection/analysis. While information on surface water flow is being evaluated in Phase I, groundwater analysis constitutes a significant portion of the current effort because much of the developing area relies on groundwater supplies and despite the analysis conducted to date there still remains significant uncertainty as to the availability and sustainability of this resource. Following the groundwater data and analysis section is information about the specific studies and analyses currently underway.

Groundwater Data and Analysis

The goal of Phase I for groundwater data collection/analysis, is to evaluate potential resource limitations to be addressed in Phase II. The data and analysis of groundwater availability in Phase I is primarily of a general, qualitative nature and will be used to identify areas that have potential local/sub-regional limitations. Water demand projections will be compared to local resource availability and potential limitations such as natural resources that could be impacted by withdrawals. This analysis will be used to focus work in Phase II on evaluating resources and developing supply solutions in areas where available resources may not be sufficient to supply current or projected growth.

Currently, a supplier may evaluate the impacts of pumping of their wells on a wetland or their other wells but not necessarily the cumulative impact of other withdrawals, in addition to their own, on the hydrologic system. Also, there may be communities that do not foresee potential limitations beyond their boundaries, which a more regional approach would identify. Therefore, the work in Phase II will be on multiple scales. In areas where potential resource limitations are identified an analysis on an appropriate scale will be conducted which will take into consideration all the withdrawals in the area. This local/sub-regional analysis will also be evaluated on a more regional scale so that cumulative impacts can be assessed.

This approach is intended to provide suppliers and regulators with information about withdrawal impacts and limitations prior to appropriation permit requests. In some areas there may be little likelihood of adverse impacts allowing supplies to be developed and permits to be issued with little reservation. In other situations where the exact impact remains uncertain a monitoring program can be developed as part of the withdrawal permit. The current water resource monitoring inventory will provide a basis for planning additional monitoring. In other areas where limitations are likely, further analysis can be conducted and/or other alternatives can be evaluated.

There may also be situations where communities may need to conduct local studies for well siting or to evaluate impacts on a very local scale for instance where there are no other withdrawals in the area. These local efforts conducted by communities will be incorporated into the regional analysis of the water resources.

In order to determine what tools would be most useful for evaluating regional impacts a group of technical experts who use groundwater data will be convened in September. They will provide input to the benefits of and approach to updating regional groundwater models and/or datasets in Phase II. The use of regional models and datasets are not only useful for examining regional scale issues but are also used as the starting point for most of the local modeling efforts in the region. The Minnesota Pollution Control Agency created a Metro Model with corresponding data sets several years ago but they have not been updated for several years. The group will also be used to peer review the Phase I approach and assist in the scoping of Phase II.

Specific Data Collection/Analysis Efforts

Currently in Phase I the Council is conducting the following information collection and analysis:

Water Supply System Information

- Supply source info (wells or intakes)
- Pumping capacity
- Treatment type and capacity
- Storage type and volume
- Service Areas
- Interconnections

The database will be in a format so that the well information can be used in conjunction with groundwater models to evaluate the cumulative impacts of withdrawals on water resources in Phase II. The information will also be used in the development of the master plan to evaluate the need for backup supplies and potential infrastructure projects where local resources do not appear to be sufficient to supply projected demands.

Water Demand Projections

Past water use information is being used to develop water demand projections for each community for years 2010, 2020, 2030, 2040 and 2050. In addition, water demand projections for other use categories (irrigation, private supplied industrial etc) will also be made. The results of these forecasts will be compared to available resources as described below.

Resource Limitation Evaluation

Ground/surface water availability for each community and potential limitations are being evaluated. This includes availability and capacity of aquifers, presence of natural resources of concern (trout streams, fens, wetlands, other surface waters etc.), potential for well interference, susceptibility of water resources to contamination, and mapping of areas with known groundwater contamination. This information will be used to evaluate resources and develop alternatives in local/sub-regional areas where projected demands may exceed locally available resources. In addition, an evaluation of available information on surface water flows in the Mississippi is also being conducted to better quantify availability of that resource. This information will be used to assess the availability of surface water under various scenarios in the development of the master plan.

Resource Monitoring Inventory

A comprehensive database of groundwater and surface water monitoring locations is being developed. This will include information about the resource being monitored, the parameters being measured as well as frequency of the monitoring. The information will be used to identify gaps in monitoring and could be used to recommend monitoring protocols for appropriations. It will also be used to identify available information to be

used in local/sub-regional studies conducted in Phase II. The comprehensive database of monitoring sites will also be made available water resource professionals region wide.

Aquifer Recharge

The Minnesota Geological Survey is conducting an evaluation of aquifer recharge using a geochemistry based approach which will span into Phase II. Aquifer recharge is one of the greatest unknowns in the hydrologic cycle but as the source of all groundwater, is the ultimate the limit of available groundwater. This information will improve estimates of available groundwater and predictions of aquifer sustainability. The evaluation will also improve the understanding of where contaminants can more readily reach groundwater. This can be used to evaluate land use practices to help protect groundwater supplies. Due to the complex nature of groundwater recharge, additional studies based on the results of the current study may be proposed.

Plans to Address

- Develop a scope of work for Phase II to evaluate potential resource limitations identified in Phase I and assess alternatives where supplies are limited (Council)
- Complete the aquifer recharge study (Minnesota Geological Survey) and explore opportunities for additional analysis of recharge (Council)
- Explore the value of updating regional groundwater models and datasets and if determined useful update the models and datasets (Council led with input from regional experts)
- Develop a coordinated monitoring program in areas where there are gaps and resource uncertainty (Council, DNR and other partners)
- Develop a web-based water use reporting system (Council and DNR)

Water Supply Regulatory Process and Water Conservation

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PERMITTING ISSUES

Currently, there are several steps in the water supply regulatory process in the metro area (see attached flow charts). The primary agencies involved include the Minnesota Department of Health (MDH), Minnesota Department of Natural Resources (DNR) and Metropolitan Council (Council). Each agency has a unique role:

- MDH ensures compliance with the Safe Drinking Water Act;
- DNR permits withdrawals and protects the State's natural resources;
- Council ensures the orderly and economic growth of the region.

Typically water suppliers have few complaints in regards to MDH's role and process. During the recent Council-sponsored workshops conducted as part of the regional water supply planning process, several attendees commented that in the current appropriation permitting process for new wells they experience delays or unforeseen restrictions on appropriations which puts too much potential risk on the water supplier. Many comments also related to the need to streamline and simplify the regulatory process.

The central issue that has been repeatedly raised is that there is not a thorough analysis of available supplies and potential limitations prior to growth. The regional availability of roads and sewer service is evaluated but no assessment of water supplies is typically conducted. This lack of assessment has been due primarily to the relative abundance of groundwater resources serving growing communities but has also led to limitations or restrictions on withdrawals. Exacerbating the problem is the fact that water suppliers currently apply to the DNR for an appropriations permit only after a new well is installed. The DNR requires well performance information (e.g. drawdowns, sustainable flow rate) that can only be obtained after installation in order to issue a permit. However, at this point in the process a significant investment has already been made by the community and the demand for water is already there making delays and restrictions particularly aggravating for all parties involved.

Several circumstances which can cause delays or situations where the DNR may issue a permit with restrictions on withdrawals include:

- Potential unaddressed resource limitations/impacts
- Lack of water conservation programs
- Incomplete application
- Water demand forecasts inconsistent with local comprehensive plan or Council forecasts
- DNR staff workload

The existing water appropriations permitting process could be modified so that both the DNR and water providers can proceed with more confidence to construct, test, and verify the sustainable capacity of a new well. Such modifications should address the following issues:

- Consideration of well permits with the larger context of water supply plan approvals;
- A more consistent approach to water conservation;

- Linking of well permits to a longer planning time frame; and
- Integration of the permitting process with more comprehensive planning information as to resource limitations, providing for more certainty upfront regarding potential restrictions placed on wells located in certain areas.

Natural Resource Limitations/Impacts

As mentioned above, one of the central issues with the appropriation permitting process is the lack of analysis of resource limitations/impacts prior to growth. This can cause delays or withdrawal limitations resulting from evaluation of impacts on natural resources or other users from proposed withdrawals. In most cases these issues are raised very late in the process. A community may have growth planned or underway when concerns are raised. One of the main goals of the master planning process is to address this issue (see also the companion brief *Water Availability Data Collection and Analysis*).

Water Conservation

Minnesota Statutes, Sections 103G.291 and 473.859 require communities with municipal water supply systems, within the metro area, to prepare a water conservation plan as part of their emergency and conservation/water supply plan. Specifically, the statutes require communities to have an education program and to evaluate water conservation rate structures.

The Council and the DNR developed a template to help communities update their water emergency and conservation/water supply plan, due between the years of 2006 and 2008. In addition to other information, the plan update guidelines outline specific water conservation goals and suggest programs to help communities reach those goals. (See the companion brief *Water Supply Plan Review Process*.)

The DNR requires that communities have water conservation programs in place prior to requesting additional water appropriations. Such conservation programs should include: 1) having a minimum of two education events per year, 2) performing water audits to determine unaccounted water, 3) implementing a water conserving rate structure, 4) providing incentive programs to customers such as offering a rebate for water conserving appliances, and 5) ordinances for watering restrictions or other conservation measures.

In some cases, appropriation permits can be held up because communities have not provided documentation of conservation programs with an appropriation permit request. In others, communities may have not implemented any or very few water conservation programs.

Attendees at recent Council workshops conducted as part of the regional water supply planning process offered several comments and recommendations related to water conservation. Many of these comments focused on the need to continue to encourage conservation across the region and to tailor conservation programs and requirements to the climate and geography of Minnesota, not other more arid parts of the country.

Incomplete Application/Inconsistent Forecasts

In addition to the lack of water conservation program documentation mentioned above, omitting other information on applications can cause delays in the water appropriation permit review. In addition, communities may include forecasts in their applications which are not consistent with Council forecasts, which can also cause delays in permit approval.

DNR Staff Workload

Water appropriation permits are reviewed and issued by DNR Area Hydrologists. In addition to being responsible for the review of over 100 Emergency and Conservation Plans, the five Metro Area Hydrologists are responsible for overseeing about 150 flood plain ordinances, 60 shoreland ordinances and about 35 critical area and wild and scenic river ordinances. In addition, these staff are responsible for issuing all permits for work in the bed of public waters, and all water appropriation permits. They are involved in the development and review of all local water plans, and review and comment on numerous EAW's, AUAR's and EIS's affecting the metro area. They are also involved in dam construction issues, well interference issues, public water and wetland violation issues and numerous other issues and programs.

INTEGRATED 10-YEAR PERMIT-PLAN

The DNR has recently developed a more flexible approach to appropriations, attempting to integrate supply planning, permitting and water conservation and resolve some of the problems with the existing process (see the attached document *Water Emergency and Conservation Plans and Water Appropriation Permit Approvals*). Under the “permit-plan” concept, in conjunction with approval of an updated water emergency and conservation plan, a community can apply for pre-approval of its 10-year water appropriations. As a condition of approval of such an appropriation, a community is required to either meet certain water conservation benchmarks or commit to implementing water conservation measures and programs intended to address any shortfalls.

The water conservation benchmarks in this regulatory concept include the following:

- Maintain unaccounted for water at less than 10% of withdrawals
- Maintain residential per capita water usage less than or equal to 75 gallons per day
- Maintain peak daily demands at less than or equal to 2.6 times average daily demands
- Maintain a water conserving or “conservation neutral” rate structure that does not include any volume of water in the base charge (except for discretionary “lifeline” exceptions addressing essential indoor use.)
- Following an approved monitoring plan.
- Undertake mitigation efforts related to resource impacts or limits.

In addition, the community will need to provide water demand forecasts and a schedule for additional well installations. If approved, the community would simply send in the well log with the fee when a new well is drilled. However, if the community’s water demand projections change they would need to update their plan and re-apply for the 10-year permit. The DNR will also reserve the right to modify a permit if natural resources appear to be adversely impacted or other conditions change.

RECOMMENDATIONS

In order to streamline the water appropriation permitting process and address some of the issues outlined above, the following recommendations are proposed:

- Address potential limitations prior to growth through data collection and analysis and the development of the Metro Area Water Supply Master Plan (Council, DNR and other partners) (see the companion brief *Water Availability Data Collection and Analysis*)
- Endorse the integrated 10-year permit-plan (Advisory Committee, Metropolitan Council)
- Develop a water conservation toolbox for communities to meet the minimum requirements of the 10-year permit (Council, DNR)
- Coordinate plan reviews to ensure consistency between water demand and demographic forecasts (DNR, Council, Communities)
- Develop clear instructions on what will be necessary to review both the 10-year permit and other water appropriation permit requests (DNR, Council)

Water Emergency and Conservation Plans and Water Appropriation Permit Approvals

Water Emergency and Conservation Plan (E & C Plan) approvals may also include approval for increased water volumes and/or new wells that are planned over the ten year life of the plan. Requesting permit approvals as part of the E & C Plan is optional and would most likely benefit growing communities that anticipate large increases in water use or a number of new wells over the next ten years. To qualify for the ten year permit approval certain benchmarks or conservation measures are required along with adequate documentation on the need for increased water volumes and new wells.

Benchmarks and Conservation Measures. Permit approvals will be based on meeting specified benchmarks listed below. If water demands exceed Benchmarks for unaccounted water, residential per capita, and peak demands then permit approval will be contingent on implementation of one or all the listed Conservation Measures or Programs until the benchmark is achieved.	
Benchmarks	Conservation Measures or Programs
Unaccounted Water (water withdrawals minus sales) Less than 10%	If over 10%, a plan is required that addresses reduction of unaccounted water through universal metering and accounting of water use, routine meter testing and repair, and distribution system leak detection and repair. <ul style="list-style-type: none"> ➤ Metering of source water and customers. ➤ Accounting for public uses. ➤ Water audits to determine unaccounted water. ➤ A leak detection survey that also includes an inspection of hydrants once each year. ➤ Operational procedures that include an established schedule for repairing leaks within 30 days. ➤ Operational procedures that include an established schedule for meter testing, maintenance and repair.
Residential Gallons Per Capita Less than 75 GPCD	If over 75 GPCD, a plan is required that evaluates and implements measures targeted at reducing residential per capita. <ul style="list-style-type: none"> ➤ Analyze residential customer use to determine reasons for high per capita use. ➤ Customer education a minimum of four times per year that targets reduction of indoor and outdoor uses. ➤ Contact customers with high volumes and large volume increases and offer home audits and conservation tips. ➤ Incentive programs to reduce per capita use, such as distributing showerheads, aerators, leak detection kits, or soil moisture meters, rebates for washing machines or ULF toilets rebate programs, or other types of incentives.

<p>Peak Demands Maximum Day to Average Day Ratio Less than 2.6</p>	<p>If over a ratio of 2.6, a plan is required to reduce peak demands.</p> <ul style="list-style-type: none"> ➤ Ordinances for lawn watering including time of day, scheduling (along with information on how often to water) and water wasting (runoff) with adequate enforcement and penalties for non-compliance. ➤ Development approvals with criteria that minimize large open turf areas, require organic soil augmentation for new turf areas on sandy soils, and require one or more trees for new construction. ➤ Customer education/conservation tips during summer peak demands a minimum of four times between May and September of each year. ➤ Conservation Water Rate Structure: Increasing block or summer surcharge with 25-cent minimum increments between blocks or normal rates.
<p>Rate Structures - A conservation or conservation neutral rate structure is required that does not include any volume of water in the service or base charge (lifeline exceptions allowed).</p>	
<p>Monitoring Plan – A monitoring plan approved by DNR that includes monthly water level readings in production wells and/or observation that may be required. Monitoring data must be submitted to DNR once each year or upon request.</p>	
<p>Sustainability – All impacts and limits on natural resources and other water users must be satisfied.</p>	

Permit Approval Requests and Process

- 1) The Water Emergency and Conservation Plan must be approved by DNR.
- 2) A letter summarizing the permit approvals being requested for new water sources (CIP) and increased volumes (demand projections) for the next 10 years along with documentation that Benchmarks or Conservation Measures and Programs are being implemented.
- 3) Billing for permit amendment fee.
- 4) DNR review of permit request, which may require additional information or discussions with the public water supplier.
- 5) DNR final action on request (approve, approve with limitations, or deny).
- 6) Compliance reporting by public water supplier.

Water Supply/Emergency and Conservation Plan Review

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PLAN REQUIREMENTS

- DNR – Public Water Suppliers statewide serving over 1,000 people must prepare an Emergency and Conservation Plan, Minnesota Statute 103G.291.
- Metropolitan Council – Metro communities with a water supply system required to prepare a Water Supply Plan as part of their local comprehensive plan, Minnesota Statute 473.859.
- One plan meets both requirements – DNR and Met Council prepared a template for communities.
- Plans due to DNR October 2006, October 2007 or October 2008.
- Plans due to Met Council with 2008 Comp Plan.

REVIEW

- Council – reviews plan to ensure that it is complete and consistent with Council Policy and Regional Framework
- DNR – reviews plan to ensure that it has sufficient demand reduction measures and protects natural resources
- DNR adopted Council review in first round. Both agencies intend to review from their perspective in current round.

REVIEW COORDINATION (Current Arrangement)

- Council reviews plan and provides comments to DNR
- DNR incorporates Council comments in their approval letter
- Communities reference approved plan in 2008 Comp Plan and if necessary provide additional or updated information identified in Council's review to make consistent with Comp Plan.

ISSUES

- Review overlap between agencies
- Plan due dates differ between agencies
- Perception of two separate plans
- Water supply plan forecasts not consistent with Council forecasts and DNR unable to issue permit until forecasts resolved in comp plan (up to 2 years later) or issues permit based on inaccurate forecasts

RECOMMENDATIONS

- Formalize review coordination (Council and DNR)
- Recommend legislative changes requiring that plans in the metro be submitted on the same schedule, in addition to a coordinated review process (Advisory Committee, DNR and Metropolitan Council)
- Recommend legislative changes to clarify roles and outline plan requirements in only one State Statute (Advisory Committee, DNR and Metropolitan Council)

BACKGROUND

Communities with a municipal water supply system within the Metropolitan Area are required to prepare water supply plans as part of their communities' local comprehensive plans (Minnesota Statutes, Section 473.859). Public water suppliers that serve more than 1,000 people must also prepare a Water Emergency and Conservation Plan for the Minnesota Department of Natural Resources (DNR) (Minnesota Statutes, Section 103G.291). Both plans are to be updated every ten years. Because both plans require similar information, the Metropolitan Council (Council) and the DNR together developed a template so communities can prepare one plan to meet the requirements of both agencies.

During the recent Council-sponsored workshops conducted as part of the regional water supply planning process, several attendees commented that a more coordinated approach to planning and streamlining of the regulatory process is desirable. The coordinated water supply plan review process is intended to address these comments.

WATER SUPPLY/EMERGENCY AND CONSERVATION PLAN REVIEW:

During the first round of water emergency and conservation/ water supply plans, due January 1, 1996, the DNR adopted the Council's review and the plan reviews became the Council's responsibility. The second round of water emergency and conservation/ water supply plans are due to the DNR beginning in October 2006, October 2007, or October 2008. The DNR established the schedule in order to avoid overloading staff. The Council is not requiring that plans be submitted until they submit their 2008 Comp Plan, but will review them as they are submitted to the DNR. As in the first round, the Council and the DNR developed guidelines and a template for communities to follow. However, for this round, both agencies intend to review sections of each plan within the Metropolitan Area from their perspective. The DNR and Council have agreed that the Council's comments will be incorporated into the DNR's approval.

The plan requirements are divided into 4 sections:

- I. Water Supply System Description and Evaluation
- II. Emergency Response Procedures
- III. Water Conservation Plan
- IV. Items for Metropolitan Area Public Supplies

Sections II and III are required by both the DNR and Council statutes, 103G.291 and 473.859, respectively. However, because only one agency needs to review these sections, the Council plans to rely on the DNR's review comments and will only ensure that they are complete and appear adequate. For section I, both agencies will be evaluating different portions based on their interests. Section IV pertains only to metro suppliers and will be reviewed only by the Council. Although both agencies will be reviewing parts of the plan, there will be little redundancy in the review process. The Council will be reviewing parts of Section I and all of Section IV from a regional perspective assuring that the plans are consistent with regional plans, Council policy and the communities' local comprehensive plan. The DNR will be reviewing parts of Section I, and all of Sections II and III for consistency with communities' appropriation permits and for natural resource protection. The attached table outlines each agencies interest in the plan reviews.

COMMUNITY WATER SUPPLY PLANNING STATUTES

Minnesota Statutes, Section 473.859 requires the following be included in communities' water supply plans:

- (i) a description of the existing water supply system, including the source of water, well and treatment plant locations, and major supply lines; an inventory of commercial and industrial users; an indication of the community's intent to make future changes or additions to the system, including projections for population and industrial and commercial use and the methods by which this growth will be served;
- (ii) a statement of the community's objectives, policies, and standards for operating the water supply system;
- (iii) a conservation program that contains the goals of the program, demand and supply conservation techniques to be used, an evaluation of pricing methods that could be used to reduce demand, the conditions under which conservation actions would occur, a process for reducing nonessential uses according to the priority system under section [103G.261](#), and the education program that will be used to inform the public of the need to conserve and the methods available to achieve conservation;
- (iv) an emergency preparedness or contingency plan, as described in section [103G.291](#), subdivision 3;
- (v) an indication of the possibility for joint efforts with neighboring communities or other public entities for sharing water sources and treatment, interconnection for routine or emergency supply, pursuit of alternative supplies, and water source protection;
- (vi) a statement of the water supply problems that the community experiences or expects to experience and any proposed solutions, especially those that would impact other communities or the region; and
- (vii) a wellhead protection plan prepared in accordance with rules adopted by the commissioner of health under section [103I.101](#), subdivision 5, clause (9).

Minnesota Statutes, Section 103G.291 requires:

Every public water supplier serving more than 1,000 people must submit an emergency and conservation plan to the commissioner (DNR) for approval by January 1, 1996. The plan must address supply and demand reduction measures and allocation priorities and must identify alternative sources of water for use in an emergency. Public water suppliers must update the plan and submit it to the commissioner for approval every ten years.

	Metropolitan Council	Department of Natural Resources
Section I. Water supply system description and evaluation	<i>Text in blue denotes areas where reviews overlap</i>	
Analysis of water demand		
Treatment and storage capacity	<ul style="list-style-type: none"> ▪ Is storage capacity appropriate for rate of water use today and into the future? 	
Water Sources	<ul style="list-style-type: none"> ▪ What are the water supply sources and how much and at what rate is the community using the sources? ▪ Will this impact neighboring communities? ▪ What kind of interconnections, if any, does the community have? Are there opportunities for interconnections? 	
Demand Projections	<ul style="list-style-type: none"> ▪ Do the population estimates match the Council's forecasts? 	<ul style="list-style-type: none"> ▪ Is the water demand rate per person 75 gpd or below? ▪ What was the community's method for calculating its projections?
Resource Sustainability	<ul style="list-style-type: none"> ▪ How will the community's pumping activities impact neighboring communities' water supplies and existing natural resources? ▪ Does the community have an up-to-date source water protection plan? ▪ <i>Are water supply resources being used and anticipated to be used adequate for meeting the needs of today and into the future?</i> 	<ul style="list-style-type: none"> ▪ Does the community have a well monitoring system in place or planned in areas where known resource limitations exist? ▪ What, if any, impacts will the community's water pumping have on surrounding natural resources? ▪ <i>Are water supply resources being used and anticipated to be used adequate for meeting the needs of today and into the future?</i>
Capital Improvement Plan	<ul style="list-style-type: none"> ▪ Are water supply installations, treatment facilities and distribution systems adequate to sustain current and projected demand? ▪ If anticipated, does the community's CIP include list of new wells or intakes? ▪ If new water sources are being proposed, are there any possibilities of joint efforts with neighboring communities for development of supplies ▪ <i>The number of new installations and projected water demands from each for the next ten years and the geologic source formation, well location, and proposed pumping capacity.</i> 	<ul style="list-style-type: none"> ▪ If new wells/intakes are anticipated has the community investigated possible supply alternatives? ▪ <i>The number of new installations and projected water demands from each for the next ten years and the geologic source formation, well location, and proposed pumping capacity.</i>

	Metropolitan Council	Department of Natural Resources
II. Emergency Response Procedures		
Federal Emergency Response Plan	<ul style="list-style-type: none"> Is this section complete? 	<ul style="list-style-type: none"> If required, does the community have one? If not required, does the community have emergency telephone contact information and procedures in place to augment water supplies in an emergency?
Allocation and demand reduction procedures	<ul style="list-style-type: none"> Is this section complete? 	<ul style="list-style-type: none"> What are the community's water use priorities? What are the triggers for allocation and demand reduction actions? How does the community enforce its procedures?
III. Water Conservation Plan		
Conservation goals	<ul style="list-style-type: none"> Is this section complete? Do the goals seem reasonable? 	<ul style="list-style-type: none"> Is the community's unaccounted water use at or below 10%? If not, does it have programs in place to help reduce the amount of unaccounted water? Is residential per capita demand at or below 75gcd (metro average)? If not, does the community have programs in place to help reduce residential water use? Is the overall per capita water use decreasing? If not, what are goals to help prevent future increases? Is the peak demand ratio at or below 2.6 (average maximum day to average day demand)? If not, what measures are in place to help reduce the ratio?

	Metropolitan Council	Department of Natural Resources
Water Conservation Programs	<ul style="list-style-type: none"> ▪ Is this section complete? ▪ Do the programs seem adequate? 	<ul style="list-style-type: none"> ▪ Does the community meter all water taken into its system by customer category? ▪ In regards to unaccounted for water use, has the community estimated the cost to install meters and projected the water savings from metering water use? ▪ Does the community meter water at the source? What has been done to identify, quantify and verify and revenue losses? ▪ How does the community anticipate it will reduce its unaccounted for water use? ▪ Has the community evaluated water conservation rates? ▪ Does the community have any regulations in place to help reduce water demand? If so, what are they? ▪ Are ordinances enforced? If so, how? ▪ What type of education programs does the community use? ▪ Does the community have any proposed education programs? ▪ Does the community have a retrofitting program in place?
IV. Items for Metropolitan Area Public Suppliers	<ul style="list-style-type: none"> ▪ Has the community provided a statement on the principles that will dictate operation of the water supply utility? ▪ Has the community identified potential impacts the adoption of its water supply plan will have on the rest of its local comprehensive plan, including implications for future growth of the community, economic impact on the community and changes to the comprehensive plan that might result? ▪ Are the community's demand projections consistent with the Council's forecasts? 	

Water Supply System Safety and Security

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Background

Water suppliers face many safety and security concerns including natural disasters, intentional acts, power loss and contamination. During the recent Council-sponsored workshops conducted as part of the regional water supply planning process, many attendees commented that the region should ensure there are sufficient backup water supplies and redundancy in systems. Several other comments surrounded the need to prepare for drought and protect supplies from contamination.

The 2002 Federal Bioterrorism Act required vulnerability assessments and emergency response plans for all suppliers serving over 3,300 people, nationwide. In Minnesota, all suppliers serving over 1,000 people and all suppliers in the metro area are also required to prepare emergency preparedness plans to meet state requirements. Groundwater suppliers in the State are also required to prepare wellhead protection plans which outlined strategies for protecting their sourcewaters from contamination. There is not a requirement that surface water suppliers prepare sourcewater protection plans, however, the Cities of Minneapolis, St. Paul and St. Cloud are voluntarily preparing such plans.

In addition to the local plans focused specifically on water supplies, there are other local, state and national programs that have been prepared to respond to emergencies in general. The Minnesota Department of Health has an All Hazards Plan developed to provide an organizational framework for response to incidents involving public health. The National Incident Management System (NIMS) and Minnesota Incident Management System are designed to provide consistent emergency response organization and terminology, as well as to train those who respond to incidents. The Water Information Sharing and Analysis Center (WaterISAC) offers a secure database, expert analysis, information gathering, and the rapid distribution of reports and government alerts about threats to America's drinking water and wastewater utilities. The Minnesota Department of Health is a subscriber to this service.

Other national programs under development will help to increase water supply system security. The EPA is developing a system for timely detection and response to drinking water contamination incidents called the WaterSentinel Program. It uses multiple triggers as potential indicators of contamination to increase chances of detection. The AWWA, ASCE and WEF are developing the Water Infrastructure Security Enhancement (WISE) Consensus Standards. They are using an accredited ANSI standard development process with the Consensus of security experts and utilities to develop standards to address all aspects of security and safety.

The Minnesota Department of Health has recently begun to develop a statewide Water/Wastewater Agency Response Network (WARN). It's a "Utilities helping utilities" concept where a mutual aid/assistance network is developed to provide a method to obtain emergency personnel, equipment, materials from other water/wastewater utilities during an emergency.

Recommendations

Although there are many plans and programs in place or under development to address water supply safety and security, the following recommendations could further enhance reliability of the region's water supplies.

- Support the development of backup water supplies in the region. Currently, the two largest water suppliers, Minneapolis and St. Paul Regional Water, have a plan to interconnect their systems and are seeking funding to support the project. The Governor recommended that a 2006 bonding request to fund a portion of the effort be delayed until the Council completes its 2007 report to the Legislature. A potential recommendation could be to support this specific interconnect as well as others in general.

In addition to interconnections, support the development of a regional plan to supply water from outside sources including bottled water and tanker delivery (Advisory Committee and Metropolitan Council)

- Support the efforts of the cities of Minneapolis, St. Paul, and St. Cloud to implement their sourcewater protection plan. Because virtually all of the sourcewater area is beyond the jurisdictional boundaries of these communities, State endorsement of their plan and/or an oversight entity could assist in the implementation of their plans (Advisory Committee and Metropolitan Council)
- Clarify who is required to take NIMS training and provide guidance to utilities on what personnel it would be prudent for them to have NIMS trained (Council staff with endorsement from Advisory Committee and Metropolitan Council)
- Support the development of the State WARN (Advisory Committee and Metropolitan Council)
- Track the development of emerging security standards and programs such as the WISE standards and WaterSentinel Program and determine the applicability to the regional planning effort. If determined to be applicable, support the dissemination of information relating to the standards and programs (Council staff)
- Evaluate the practicability of developing regional plans to address water treatment chemicals and supplies, fuel and power availability in the event of an emergency (Council staff)