

*Metropolitan Council
Recycling Treated Municipal
Wastewater for Industrial Water Use*

LCMR05-07d

MCES Project Number 070186

TECHNICAL MEMORANDUM 5

Stakeholder Input

June 30, 2007

Craddock Consulting Engineers
In Association with
CDM and James Crook

1.0 Introduction

This technical memorandum is the fifth in a series of memoranda developed under a Metropolitan Council (Council) project titled “Recycling Treated Municipal Wastewater for Industrial Water Use.” Funding for this project was recommended by the Legislative Commission on Minnesota Resources (LCMR) from the Minnesota Environment and Natural Resources Trust Fund. The Met Council is providing additional funding for the project through in-kind contributions of staff time. Other state agencies are participating via stakeholder meetings and technical review and input.

In addition to technical issues, there are regulatory, legal, and institutional issues such as funding and fees, agency jurisdictions, ordinances, and public involvement that must be addressed to successfully implement wastewater recycling programs. To begin to address the many facets of implementing wastewater recycled projects in Minnesota, a series of stakeholder meetings were held in conjunction with this study.

There were three stakeholder forums held:

- Regulatory
- Industrial
- Broader base

This memorandum provides a summary of the meetings and serves to record the meeting agenda, meeting notes, and relevant handouts.

2.0 Regulatory Meetings

There were two regulatory meetings held early in the project and included representatives of the MPCA, MDNR, MDH, Dakota County, and Met Council staff from environmental services. These meetings were used to gain input on the state agency setting for wastewater recycling and how these practices are handled now and any plans for the future. Exhibit A provides the regulatory meeting agendas, meeting summary notes, and attendance lists.

3.0 Industry Meetings

There were two meetings held with industrial representatives. A total of 11 industries participated in the workshops with 15 representatives attending. A range of industry sectors and business sizes were represented. Table 1 lists the industries attending the two workshops.

The main question addressed was: What issues/concerns does your industry have with using a recycled wastewater supply? Followup discussions focused on project elements for demonstration projects and any issues the industry might have if looking to site a new facility. The discussion of issues was segmented into technical issues and institutional issues. In some cases, issues overlapped these general categories.

Table 1. Industry Workshop Attendees

March 8, 2007	March 15, 2007
Great River Energy	ADC Telecommunications Inc
Kraemer Mining & Materials, Inc	CertainTeed Corporation
Marathon Petroleum Company LLC	Fagen Engineering LLC
Rock-Tenn Company	Flint Hills Resources LP
Twin City Tanning Co/SB Foot Tanning Co	Gopher Resources Corporation
	Xcel Energy

Exhibit B provides the industry meeting agendas, meeting summary notes, and attendance lists.

4.0 Broader Base Meeting

The third forum brought together a broader spectrum of stakeholders: the same regulatory agencies, two industries from the previous meetings (CertainTeed Corporation and Marathon Petroleum Company), a cross-sector group (Minnesota Environmental Initiative), wastewater utilities (Mankato and Met Council), and a representative from the Water Utility Council, Minnesota Section, American Water Works Association. This group reviewed the outcomes of the previous stakeholder meetings and discussed next steps to promote wastewater recycling on a broader scale in Minnesota.

Exhibit C provides the broader base meeting agenda, meeting summary notes, and attendance list.

4.0 Summary

The general outlook carried from the workshops is that the institutional issues need to be solved or in the evaluation process before significant consideration is given to a recycled wastewater project. While there are certainly some technical issues that must be resolved and better understood, the meeting participants were confident that technical solutions could be found. It would be a matter of cost and related benefits that would dictate the feasibility - if the institutional issues are first addressed.

All participants were encouraged by the interest expressed in the topic of wastewater recycling. The broader base stakeholder workshop was an important step in bringing various parties together.

Exhibit A
Regulatory Stakeholder Meetings

MCES Recycling Treated Wastewater for Industrial Reuse Project Meeting Agenda

Meeting: Informational Meeting-Planning/Regulatory Focus

Meeting No.: ME01

Date: 3/30/06

Location: Mears Park Centre, Rm 1A
230 E 5th St. St. Paul

Time: 1:00 – 3:00 pm

Participants

Claude Anderson	MCES	Sheila Grow	MDH	Patti Craddock	CCE Team
Bill Cook	MCES	Bruce Henningsgaard	MPCA	Jim Crook	CCE Team
Chris Elvrum	MCES	Laurel Reeves	MDNR	Bob Molzahn	CCE Team
Melba Hensel	MCES	David Sahli	MPCA	Jen Packer	CCE Team
Deborah Manning	MCES	David Swenson	Dakota Co	Li Zhang	CCE Team
Bryce Pickart	MCES				

1:00 pm Introductions – Deborah Manning, MCES

1:10 pm Meeting Objectives – Deborah Manning

1:15 pm MCES Direction – Bryce Pickart, MCES

1:25 pm Project Overview & Initial Inquiry – Patti Craddock, Craddock Consulting Engineers

1:40 pm Overview of Water Reuse – Jim Crook, Ph.D., P.E.

- Current Uses
- Water Quality Criteria
- Regulations and Guidelines
- Attributes of a Successful Reuse Program
- Trends in Water Reuse

2:15 pm Dialog on Reuse Topics Pertinent to Minnesota – Patti Craddock

2:55 pm Summary – Deborah Manning

- Recap
- Action Items

MCES Recycling Treated Wastewater for Industrial Reuse Project Meeting Summary

Meeting: Informational Meeting-Planning/Regulatory Focus

Meeting No.: ME01

Location: Mears Park Center, Rm 1A

Date: 3/30/06

Time: 1:00 – 3:00 PM

Attendees:

Name	Organization	Phone	Email
Bryce Pickart	MCES	651-602-1091	bryce.pickart@metc.state.mn.us
Deborah Manning	MCES	651-602-1114	Deborah.Manning@metc.state.mn.us
Claude Anderson	MCES	651-602-8291	clauda.anderson@metc.state.mn.us
Bill Cook	MCES	651-602-1811	Bill.Cook@metc.state.mn.us
Melba Hensel	MCES	651-602-1072	melba.hensel@metc.state.mn.us
Chris Elvrum	MCES	651-602-1000	christopher.elvrum@metc.state.mn.us
Shelia Grow	MDH	651-201-4692	sheila.grow@health.state.mn.us
Bruce Henningsgaard	MPCA	651-296-6300	bruce.henningsgaard@pca.state.mn.us
Laurel Reeves	MDNR	651-296-6157	Laurel.Reeves@dnr.state.mn.us
David Sahli	MPCA	651-296-6300	david.sahli@pca.state.mn.us
David Swenson	Dakota Co	651-438-4418	David.Swenson@co.dakota.mn.us
Patti Craddock	CCE	651-690-0400	pcraddock@craddockconsulting.com
Jim Crook	Consultant	781-659-0414	jimcrook@msn.com
Jen Packer	CDM	651-772-1313	packerjl@cdm.com
Li Zhang	CDM	651-772-1313	zhangl@cdm.com
Bob Molzahn	Consultant	651-772-1313	molzahnre@cdm.com

Summary:

1. Introductions – Deborah Manning opened
2. Meeting Objectives – Deborah Manning
 - Gain broad MCES participation and other stakeholder input in the project.
3. MCES Direction – Bryce Pickart
 - The project will focus on industrial reuse of reclaimed wastewater on a statewide basis, with more specific focus given to the metro area. The project will identify potential industrial customers, evaluate treatment processes required and estimate the costs associated with providing reclaimed water to industrial users. The project will also evaluate regulations/ordinances and identify institutional barriers related to implementation of wastewater reuse.
 - Project requested by legislator and is funded through the Legislative Commission on Minnesota Resources (LCMR).
4. Project Overview & Initial Inquiry – Patti Craddock
 - Refer to presentation slides.
 - Industrial reuse of reclaimed wastewater will be evaluated on three levels (state, metro area, individual wastewater treatment plants (WWTPs)). Empire will be one case study of an individual WWTP.

MCES Recycling Treated Wastewater for Industrial Reuse Project

Meeting Summary

Meeting: Informational Meeting-Planning/Regulatory Focus

Meeting No.: ME01

Location: Mears Park Center, Rm 1A

Date: 3/30/06

Time: 1:00 – 3:00 PM

- Drivers for Reuse in MN:
 - Potable water supply availability is becoming an issue in some areas, notably with planning for the next 20-50 years.
 - Receiving stream load limitations, under evaluation in the ongoing TMDL process, may restrict the discharges of some WWTPs.
- Initial Industrial Customer Inventory Results
 - Presented bar and pie charts showing 2004 Minnesota general water use and industrial (9 categories) water use
 - Presented state, metro area, and Empire WWTP area maps showing location of industries, volume of water used (by size of icon), source of water as surface or ground water, and proximity to WWTPs with capacities greater than 5 mgd.

5. Overview of Water Reuse – James Crook

- Refer to presentation slides
- The major types of wastewater reuse applications can be categorized as urban, industrial, agricultural, recreational, habitat restoration/enhancement, ground water recharge and augmentation of potable supplies.
- Treatment technology is dependent on the industrial need and the quality of the source water. Treatment processes for reclaimed wastewater include coagulation/flocculation, sand filtration, carbon adsorption, membrane processes, and disinfection. Most recent trend in technologies for reuse are with membranes and UV.
- Industrial water quality requirements shown for several industries including cooling water and boiler feed water.
- Regulations vs. Guidelines – reviewed other states and their reuse regulations.
- Water Reuse Criteria – reviewed different levels and applications by various states
 - Water quality requirements
 - Treatment process requirements
 - Treatment reliability requirements
 - Monitoring requirements
 - Operational requirements
 - Cross-connection control provisions
 - Use area controls
- Trends in Reuse

6. Dialog on Reuse Topics Pertinent to Minnesota – Deborah Manning

- Reuse Involvement
 - MPCA:
 - Main involvement has been for golf course irrigation in MN: no place to discharge water.

MCES Recycling Treated Wastewater for Industrial Reuse Project Meeting Summary

Meeting: Informational Meeting-Planning/Regulatory Focus

Meeting No.: ME01

Date: 3/30/06

Location: Mears Park Center, Rm 1A

Time: 1:00 – 3:00 PM

- Involved with Mankato NPDES permit, also one for the Shakopee Mdewakanton Sioux Community (issued by EPA, not MPCA)
- Hennepin Co. Public Works Facility – had no place to discharge
- TMDLS – see reuse as an important option
- MDNR: Previous interaction: to determine if a water appropriation permit is needed for reclaimed water. Possible issues related to funding with the appropriations.
- MDH: Source water protection is one driver for water reuse.
- Dakota County: Interested in reuse of reclaimed water to replenish aquifers by agricultural irrigation. This is a way to keep water used in the watershed.
- MCES:
 - Metro area water sources are being evaluated under another MCES project: Regional Assessment of Water Supply Systems, Water Demand, and Availability and Management Needs. It will provide some additional data/results to this project for metro area water supplies and future demands.
 - Performed literature search on reuse and wrote a white paper.
 - Recognize the benefits to municipal wastewater agencies – but need to keep the focus of the project on industrial reuse. How can reclaimed water benefit industries, where perhaps location of an industry or growth of an industry is restricted by water supply.
- Bob Molzahn:
 - No water supply issue historically to require a state-perspective on reuse.
 - Water supply could be an issue in the future. Establishing regulations for water reuse now will benefit the implementation of water reuse in the future.
 - In looking at industrial reuse: look to the future and scenarios to promote industry location and growth with an available water supply nearby.
- Sources of Data/Target Areas
 - Focus on ethanol plants in the southwestern part of Minnesota where there is a water supply shortage. Also a high-profile industry right now.
 - Mining areas in the north have competing water needs.
 - Areas in northwest and southwest of metro area.
- Regulations vs. case-by-case
 - Threshold to write regulations is uncertain.
 - California & Florida water reuse guideline are good water reuse standards.
 - Public involvement is an important factor in the preparation of water reuse regulation/guidelines.

MCES Recycling Treated Wastewater for Industrial Reuse Project Meeting Summary

Meeting: Informational Meeting-Planning/Regulatory Focus

Meeting No.: ME01

Date: 3/30/06

Location: Mears Park Center, Rm 1A

Time: 1:00 – 3:00 PM

- Minnesota Department of Health will have input in regulations when water reuse involves public health issue (e.g., affecting public drinking water supply, aerosols in spray mists).
 - Need to consider notice to solicit, public review periods, etc.
 - Issues with large ISTSs occurring now.
 - Will come to the forefront by legislators – if an issue they'll be the ones to get the word out and a call for action.
- Regional Assessment of Metro Area Water Supply Systems: Chris Elvrum provided a brief overview and schedule for the project.

7. Summary

- Input from the MCES advisory team and other stakeholders is valuable.
- As the project moves on, the project team will be contacting the stakeholders for data and comments on the technical memos and the final report.
- Next scheduled meeting with stakeholders will be in early 2007. Interim meetings with the planning/regulatory stakeholders at this meeting may be held, with one possible in mid-summer.

Decisions:

No major decisions reached. This was an informational meeting.

Municipal Wastewater Reuse Regulatory Stakeholder Group
June 12, 2006 2:00 – 3:30 PM
Metropolitan Council
Lower Level Room B, 390 N. Robert Street, St. Paul, MN
Agenda

Introductions, Meeting Purpose, and Agenda Review

Recap of Treated Municipal Wastewater Reuse in MN

- Drivers

- Existing Applications/Projects

- Existing Regulations

- Resources from federal government and other states

- MN guidelines

- Agencies/Institutions with Oversight or Role in Reuse

- Mission/goals/roles/jurisdictions

- Experience/history with reuse

- Approach to dealing with reuse cases and opportunities

- Institutional policies/supports/barriers

Is the Regulatory Table Set for Fostering Wastewater Reuse in MN?

- Is the status quo sufficient? What issues need to be addressed that currently aren't?

- Triggers for changing status quo (e.g., moving from guidance to regulations)

- Other groups, initiatives, etc. already addressing the issue

- Other groups that need to be included or consulted

- Examples from other states

- What, if anything, additional is required?

Other Issues

- Water rights

- Policies

- Local ordinances

- Environmental assessment and impact

- Public perception/education/involvement

- Fee structures

MCES Recycling Treated Wastewater for Industrial Reuse Project Meeting Summary

Meeting: Municipal Wastewater Reuse Regulatory Stakeholder Group

Meeting No.: ME02

Date: 6/12/06

Location: 390 Robert Street, Rm B Lower Level

Time: 2:00 – 3:30 PM

Attendees:

Name	Organization	Phone	Email
Bryce Pickart	MCES	651-602-1091	bryce.pickart@metc.state.mn.us
Deborah Manning	MCES	651-602-1114	Deborah.Manning@metc.state.mn.us
Claude Anderson	MCES	651-602-8291	clauda.anderson@metc.state.mn.us
Bill Cook	MCES	651-602-1811	Bill.Cook@metc.state.mn.us
Melba Hensel	MCES	651-602-1072	melba.hensel@metc.state.mn.us
Sara Bertelsen	MCES	651-602-1035	sara.bertelsen@metc.state.mn.us
Shelia Grow	MDH	651-201-4692	sheila.grow@health.state.mn.us
Bruce Henningsgaard	MPCA	651-296-9289	bruce.henningsgaard@pca.state.mn.us
Laurel Reeves	MDNR	651-259-5692	Laurel.Reeves@dnr.state.mn.us
David Sahli	MPCA	651-296-8722	david.sahli@pca.state.mn.us
David Swenson	Dakota Co	651-438-4418	David.Swenson@co.dakota.mn.us
Patti Craddock	CCE	651-690-0400	pccraddock@craddockconsulting.com

Summary:

1. Introductions – Deborah Manning opened
2. Meeting Focus – Deborah Manning
 - General reuse of treated wastewater effluent.
 - Broaden the topic from the kickoff meeting which had a focus toward industrial reuse applications.
 - Also need to consider reuse in terms of ‘water supply’, not just as a wastewater discharge option.
3. Recap of Treated Municipal Wastewater Reuse Applications in Minnesota
 - List of 7 facilities (handout)
 - To add: the EPA permitted facility for the Shakopee Mdewakanton Sioux Community,
 - 0.639 mgd
 - Membrane filtration with UV disinfection
 - Discharge permitted to a wetland that is used to irrigate the community’s golf course
 - Noted that the list does not include agricultural irrigation practices; these facilities all have a beneficial end use other than as a discharge for treated wastewater (there are facilities in MN that land discharge, such as with rapid infiltration basins (RIBs) or to wetlands, which can be considered reuse applications).

MCES Recycling Treated Wastewater for Industrial Reuse Project

Meeting Summary

Meeting: Municipal Wastewater Reuse Regulatory Stakeholder Group

Meeting No.: ME02

Date: 6/12/06

Location: 390 Robert Street, Rm B Lower Level

Time: 2:00 – 3:30 PM

- Drivers – main driver for those on list was to find a suitable discharge for the wastewater; only the Mankato facility had ‘water supply’ as the primary driver, where Calpine Corporation needed cooling water for their new energy facility.
- Agency/Institution Roles
 - Draft Table – Handout
 - Lists Agency, Mission/Goals, Role with Wastewater Reuse, Jurisdiction, Approach to Reuse, Issues
 - Reviewed list and noted other items, such as:
 - MPCA: Under Approach to Reuse – note that MN uses the California Recycling Criteria as basis of water quality criteria used in NPDES permit; also require under MN Rules that planning (facility plans) for all treatment facilities must evaluate reuse alternatives.
 - MDNR: Noted that there would not be an appropriation fee to ‘reuse’ water for most applications. Gray area is with aquifer recharge applications, where water is reused later by multiple users.
 - MDH: noted that MDH would be involved for issues related to human exposure.

4. Fostering Wastewater Reuse in Minnesota

- Open discussion on this issue.
- Miscellaneous comments provided below.
- Groundwater recharge/irrigation
 - Groundwater recharge, whether by irrigation or more direct practices, will benefit local aquifers
 - MDH must balance recharge need with source protection; issues arisen historically in the state
 - Concern with stormwater basins in wellhead areas
 - Issues with agricultural irrigation – wells high in nitrates
 - Mechanism to reduce transfer of water outside of local watershed.
- Reuse topic has come up at the Metro Area Water Supply meetings (MCES Regional Water Supply Assessment Project).
 - Some stakeholders are knowledgeable in this area.
 - See as a water supply solution.
 - Also discussed as a ‘redundant’ supply option.

5. Public Perception

- No public comments related to health concerns or water quality issues with existing reuse projects (through permit process).

MCES Recycling Treated Wastewater for Industrial Reuse Project Meeting Summary

Meeting: Municipal Wastewater Reuse Regulatory Stakeholder Group

Meeting No.: ME02

Date: 6/12/06

Location: 390 Robert Street, Rm B Lower Level

Time: 2:00 – 3:30 PM

- Not a well-known topic in Minnesota.
- Industrial sector may need some education in this area. Industries are use to internally using water, but not 'reuse' of water from another supply, like municipal WWTPs.

6. Other Stakeholders to Involve

- Minnesota Environmental Initiative
- Minnesota Environmental Partnership
 - Over 90 groups
 - Help organize groups for specific issues
- Concurrent project: MCES Regional Water Supply Assessment
- Southwest and Northwest Metro Area Ground Water Groups
- Clean Water Cabinet
- Industrial
 - Mining (iron range)
 - Red River Basin Committee (well organized group that had addressed ground water supply and surface water for the watershed)
 - Corn Growers (ethanol)
 - MEP
 - Chamber of Commerce – talk with Mike Robertson

7. Summary

- Plan to look to the Water Supply Advisory group for involvement and tie in the water supply driver.
- Additional meetings with the planning/regulatory stakeholders at this meeting and an expanded list of stakeholders will be held, with the timing of the meeting(s) dependent on the other stakeholders that are brought into the project.

Decisions:

No major decisions reached. The intent of this meeting was discussion and information-sharing.

Exhibit B
Industry Stakeholder Meetings

MCES Recycling Treated Wastewater for Industrial Reuse Project Meeting Agenda

Meeting: Industrial Stakeholders

Meeting No.: MP03

Location: Metro 94, Rm 32 South
455 Etna St Suite 32, St. Paul

Date: 3/08/07

Time: 1:00 – 4:00 pm

1:00 pm Introductions – Deborah Manning, MCES

1:10 pm Meeting Objectives – Deborah Manning

1:15 pm Project Overview – Patti Craddock, Craddock Consulting Engineers

1:25 pm Water Use Survey – Patti Craddock

1:30 pm Discussion – Bob Matthews, CDM

- Format and Roles
- Questions to Address
 - What issues/concerns do you have with using a reclaimed water supply?
 - If you site a new facility, what features would encourage you to use a reclaimed water supply?

2:30 pm Break

2:40 pm Discussion (Continued)

3:30 pm Q&A – Patti Craddock

3:45 pm Summary – Patti Craddock

- Recap
- Action Items

Adjourn

Technical Issues

Topic	Discussion
Reliability	<ul style="list-style-type: none"> • Most industries will require a backup supply; assume can keep existing supply as a backup. • Envision reclaimed supply for a portion of the facility's water uses; want the flexibility of multiple supplies. • Reclaimed water may provide a water supply to areas with groundwater contamination. It is possible that pumping could be restricted in some areas with contamination and an industry may not be able to meet their water supply needs with their well system. Reclaimed water would provide a constant source (emphasizes need for multiple supplies or interconnections between water supply systems in times of emergency).
Pressure	<ul style="list-style-type: none"> • Many industries would want some type of storage facility to provide them the flexibility to meet various pressure requirements. • Many have this in their system now and would expect to keep this for flexibility. • There were no specific pressure requirements of concern noted – industries handle this issue now.
Water Quantity	<ul style="list-style-type: none"> • Need detailed information on supply availability to understand diurnal, weekly, and seasonal patterns; previous inquiries with a WWTP by an industry indicated this data was lacking. • Will there be reservoirs in the system? (depends on demand/supply of specific application; other states have storage for seasonal use [irrigation] and diurnal flow variability) • Issue: Who owns the water? <ul style="list-style-type: none"> ○ Is it the municipality or the state? ○ Who does industry go to for appropriation? ○ This issue surfaced at the regulatory meeting in Mar06 ○ Comment from DNR: if water is piped to another entity, there would be no additional permit process; if the water is put back into the ground or surface water, then a DNR appropriations permit would be required. ○ Need further discussion on this with DNR. • Industries can also provide a water supply: <ul style="list-style-type: none"> ○ Kraemer Mining quarry reservoirs are currently under evaluation as a municipal water supply. Looking to provide a water treatment plant. ○ Rock Tenn Co discharges good water source as cooling water and is a potential supply.

Technical Issues

Topic	Discussion
	<ul style="list-style-type: none"> ○ Have industrial discharges been a potential supply source evaluated in the Metro Area Water Supply Master Plan? ● Many industries have reduced water use with internal process changes or with reuse of their facility's wastewater effluent. <ul style="list-style-type: none"> ○ In most cases, these internal reuse practices are most cost-effective and should be evaluated before looking at a municipal supply. ○ The survey and related project inquiry identified industries recycling treated wastewater from their WWTP as a water supply for other uses at their facility.
Water Quality	<ul style="list-style-type: none"> ● Need better information on water quality for constituents not sampled for NPDES permit. <ul style="list-style-type: none"> ○ Found data lacking on chlorides in evaluating a supply for cooling water. ○ Need a year of data to evaluate seasonal changes; recommend at least 5 years of data. ○ Need to have adequate sample size to characterize the variability in constituents within and in different seasons. ● Need to know fluctuations in quality to adequately adjust industrial process. ● Prefer a source with consistency or at least enough information about variability and when to expect changes, to adjust industrial processes. Need a warning system for abrupt quality changes. ● Concern with pathogens and public perception. ● “Water is water” – know how to treat it, just need to have adequate information to know what treatment is needed and make the right business decision. ● Industries already pretreating water had no problems continuing this practice; those not pretreating the water might consider it, but some may not have the facility space or staff to handle new treatment requirements. Reclaimed water is a less desirable water supply option if it adds to the process needs of a facility.

Institutional Issues

Topic	Discussion
Agreement Terms	<ul style="list-style-type: none"> • Term (years) of appropriation can be longer for water reuse than existing water supplies to make it a more attractive source. • Provide automatic permit renewal for DNR appropriation permit if using reclaimed water (one less permitting task). • Multiple purposes of reclaimed water could be brought into the agreement process. Discussed added benefits of nutrients for agricultural irrigation practices.
Price and Fees	<ul style="list-style-type: none"> • Cost to treat must be justifiable; need facility planning studies. • See water reuse as “the right thing to do” – environmental stewardship should factor into the financial analysis. • Financial incentives – will encourage industries to investigate water reuse options. • Consider a pollution tax credit – no sales tax on effluent reuse project equipment. Similar to previous program in MN. • Need more information to demonstrate that water reuse is economically viable. • Who invests in the pipeline and treatment facilities? • Does it make business sense? Is it economically viable? • Cost-sharing: Who, how, what jurisdictional structures? • Environmental stewardship should be factored into economics – do not want industries punished for doing their part in water conservation.
Regulations	<ul style="list-style-type: none"> • The regulatory requirements for water reuse should reward the environmental stewardship of participating entities and not excessively add to the permitting process. <ul style="list-style-type: none"> ○ Regulations should not be a ‘disincentive’ to using reclaimed water. • Initial inquiries into using reclaimed water indicate that many permit requirements are added to the industry’s NPDES permit – for constituents that are currently met by the WWTP. • The case-by-case basis used by MN: <ul style="list-style-type: none"> ○ Provides uncertainty at the planning level stages on what will be required. ○ Limits/requirements could change once planning and design have started.

Institutional Issues

Topic	Discussion
Liability/ Indemnification	<ul style="list-style-type: none"> • If a quality issue causes a health problem – who is liable? • Industry concerned with taking responsibility for a contaminant measured in their effluent that is from the reclaimed supply – who is at fault for a possible violation or health risk? • Have other states seen problems with contaminants in the reclaimed supply that are discharged by the industry? (No – just a public perception)
Environmental Stewardship	<ul style="list-style-type: none"> • Water reuse is the “right thing to do” • Consider an award category for water reuse to acknowledge industries. • Need a consistent message from the regulatory community. <ul style="list-style-type: none"> ○ Water conservation/resource protection versus public perceptions related to health. • Need to link environmental stewardship to the regulatory policy and structure – “don’t make it hard to do the right thing”
Public Education	<ul style="list-style-type: none"> • Public education seen as critical to success of reuse projects. • Need a public education program which includes data about a specific reuse application (appropriate sampling and measurement to show an application is meeting all regs and environmental indices). • See the need for education up-front to support the concept so when it is time to implement there are no obstacles. • Do not want to begin a capital planning process if public outcry is going to kill it.
Demonstration Project	<ul style="list-style-type: none"> • What is a demonstration project? Is this to demonstrate technology, regulatory process, public education element? (Answer: any or all of the above). • The implementation issues of a reuse project would be an important focus of a demonstration project. <ul style="list-style-type: none"> ○ Document and explore the regulatory aspects, public education efforts and results, data needs at various levels of project planning through construction. ○ Several participants thought the institutional issue inquiry is more important than the technical or treatment technologies – since the technology-related projects would be a very site specific applications. • Better wastewater effluent characterization could be an element of a demonstration project or a separate project to document characteristics for various areas or select WWTPs. • Demonstration project would be a partnership of various entities to ‘walk hand-in-hand’ through the planning and implementation process.

Institutional Issues

Topic	Discussion
Summary/Misc Comments	<ul style="list-style-type: none">• If we can address the issues identified in this meeting, then water reuse is a viable water supply option for some industries.• The larger hurdles are the institutional issues not the technical ones.

MCES Recycling Treated Wastewater for Industrial Reuse Project Meeting Agenda

Meeting: Industrial Stakeholders
Meeting No.: MP04
Location: 390 North Robert St
St. Paul, MN 55101 RM LLB

Date: 3/15/07
Time: 1:00 – 4:00 pm

1:00 pm Introductions – Deborah Manning, MCES

1:10 pm Meeting Objectives – Deborah Manning

1:15 pm Project Overview – Patti Craddock, Craddock Consulting Engineers

1:25 pm Water Use Survey – Patti Craddock

1:30 pm Discussion – Patti Craddock

- Format and Roles
- Questions to Address
 - What issues/concerns do you have with using a reclaimed water supply?
 - What issues should be the focus of a demonstration project?

2:30 pm Break

2:40 pm Discussion (Continued)

3:30 pm Q&A

3:45 pm Summary

- Recap
- Action Items

Adjourn

Technical Issues

Topic	Discussion
Reliability	<ul style="list-style-type: none"> • Concerned about control of water quality and quantity <ul style="list-style-type: none"> ○ Industries perceive they have that control now ○ Relates to their performance • How will seasonal quantity requirements be addressed? • Expect to have some source as a backup <ul style="list-style-type: none"> ○ Maintaining a backup supply has a cost <ul style="list-style-type: none"> ▪ Need to exercise equipment and maintain pipes ▪ Maintain intakes and other features ▪ Need to account for this in a facility analysis ○ Will there be permit changes for the backup supply? <ul style="list-style-type: none"> ▪ Could affect both NPDES and Appropriations permits ▪ Ex: some permits have flow-based restrictions that will trigger requirements. <ul style="list-style-type: none"> • If a reclaimed supply is not available and a backup supply must be used and the amount/quality exceeds a permit limit or requirement – who pays the penalty or the extra costs to meet the permit limit (which would not have been incurred if the reclaimed supply had been available)? ○ If backup supply is used – need to handle two different source waters and the quality differences ○ Could reduce the storage requirements if another supply is used to augment rather than just backup a reclaimed supply <ul style="list-style-type: none"> ▪ Need to assess the quality issues with a blended supply ▪ Need to assess the infrastructure requirements (piping, valving, painting and signage) and costs for a specific application • Reclaimed supply can also be a backup to the main supply (emergency source if the ground or surface water supply has a contamination – comment brought in from March 8 meeting) • Who handles the maintenance, particularly of the transmission mains? Will the municipality have access?

Technical Issues

Topic	Discussion
Pressure	<ul style="list-style-type: none"> • No specific issues identified. Recognize the need to have infrastructure and industry facilities to meet pressure needs for a specific facility.
Water Quantity	<ul style="list-style-type: none"> • Relationships of water demand and reclaimed supply in Minnesota. <ul style="list-style-type: none"> ○ Location of larger water users not often near a WWTP or a municipality large enough to produce a reclaimed supply. ○ Proximity of industries and WWTPs not a good fit for large facilities (NIMBY). ○ In some areas, low flow periods for WWTP may be when there is greater demand. For example, during dry summers, when urban water uses are higher, the wastewater flows are lower (less influence from storm events). • Question to Industry: Would you accept an agreement to use a certain amount of water? <ul style="list-style-type: none"> ○ No – for industries with production dependent on economic cycles ○ Yes – for those with very consistent water uses; but would weigh any economic benefits to a base amount vs the risk of not using the agreed amount
Water Quality	<ul style="list-style-type: none"> • Will reuse water bring in metals/other constituents that will cause the industry to exceed pretreatment or NPDES permit limits? <ul style="list-style-type: none"> ○ Need sampling on influent to industry for all parameters in the pretreatment permit ○ Likewise for any NPDES permits ○ This could be done at the exit to the WWTP to alleviate industry from burden of sampling; however, need assurance to protocol, etc. ○ Noted that the federal pretreatment standards apply to the process stream of an industry, so may not be an issue for the discharge stream to the sewer ○ Could there be some type of waiver if an industry uses reclaimed water? • Want to know how uniform the water quality is and will there be a warning if quality changes. • Need analytical consistency: understand timing of sampling between WWTP and industry. Need information to make process decisions in a timely manner and not affect quality of product and effluent limits. • As part of the permitting process, need to evaluate if an industry can move or with a new industry, discharge back to the WWTP versus having own discharge (NPDES permit) <ul style="list-style-type: none"> ○ Provides more control in permitting process if agency supplying reclaimed water is receiving industry discharge

Technical Issues

Topic	Discussion
	<ul style="list-style-type: none"> ○ Mankato-Calpine discussed as an example ● Using a reclaimed supply can result in transfer of pollutants to other watersheds or to different stream segments of a watershed <ul style="list-style-type: none"> ○ What are the implications of this transfer on the TMDL process? ○ What impact will this have on NPDES permits? ○ While there are multiple pollutants that could be involved, mercury is one example that was discussed. ● Source water quality can affect some facilities from meeting their NPDES permits. For example, during low-flow periods there are TDS requirements. If the TDS of the source water coming in is too high, it may not be a concern for the industry's process, but could be a problem for the discharge permit. ● Temperature and cooling water: if reclaimed water is warmer than an existing supply, then it could result in warmer water being discharged and negatively impact the receiving water. ● Need to prepare for situation where a WWTP has a process upset – results in catastrophic failure of the industry's equipment and service <ul style="list-style-type: none"> ○ How are damages handled? ○ How is lost production handled?

Institutional Issues

Topic	Discussion
Agreement Terms	<ul style="list-style-type: none"> • Key item is liability
Price and Fees	<ul style="list-style-type: none"> • Initial project/task is needed to evaluate funding sources and incentives for both industry and municipality <ul style="list-style-type: none"> ○ need capital to make changes in a facility to have new water system piping and related appurtenances ○ while municipalities can bond for capital projects, need to plan now and without assurances that implementation hurdles can be overcome, it may delay or keep a water reuse project from occurring • Recognized that cost is a factor, but at this point need to handle other issues. • Incentives and funding for initial projects were seen as an important feature in getting reuse applications going in Minnesota.
Regulations	<ul style="list-style-type: none"> • Case-by-case permitting process was viewed by some industries as preferable. <ul style="list-style-type: none"> ○ The flexibility provided the ability to handle specific quantity and quality issues for each industry. ○ Better to build a knowledge base using a case-by-case approach prior to setting overall standards. • What agencies will be involved in the permitting process? • Who will decide whether an industrial water use is contact or non-contact (human)? <ul style="list-style-type: none"> ○ Likely MDH will be involved in this determination • Issue of pollutant transfer in the watershed(s) is one discussed under water quality and also a topic for overall environmental protection. • See water quality discussion for link to regulatory considerations
Liability/ Indemnification	<ul style="list-style-type: none"> • Need to evaluate if legislation is necessary to address the issue of liability for a municipal entity supplying reclaimed water. <ul style="list-style-type: none"> ○ Can a government agency accept the liability? ○ The liability issue was considered to be above an agreement level and applicable to state liability laws.

Institutional Issues

Topic	Discussion
	<ul style="list-style-type: none"> ○ Would be difficult for private sector to enter an agreement without liability being addressed. ○ Main issues: <ul style="list-style-type: none"> ▪ If there is a public health problem that is related to the reclaimed water – who is at fault? ▪ If the industry has damage or loss of production because of the water quality or quantity – how is lost revenue to be paid? ▪ If a discharge or pretreatment permit is violated and it is related to the reclaimed water – who pays penalty, how is fault decided? ○ How do different states handle the liability laws? ● Are there liability issues with the transmission mains? Who's right-of-way?
Environmental Stewardship	<ul style="list-style-type: none"> ● Interest in a reclaimed water supply at this stage is motivated by the environmental benefits and not for technical and cost reasons. While costs and institutional factors may drive a decision to use a reclaimed supply, the initial interest is the 'bigger picture' view of water resource protection.
Public Education	<ul style="list-style-type: none"> ● Recognize the need to educate public; also employees at facilities using reclaimed water.
Demonstration Project	<ul style="list-style-type: none"> ● Evaluate specific processes to demonstrate human health safety for workers and local community residents. ● Evaluate the implementation process of a water reuse project to identify hurdles and participation requirements of various state, municipal, and private entities, including the general public. Envision a team of participants that walks through the process together. ● Evaluate industries where water supply is an issue. This will provide focus to technologies for specific source water in areas with most benefit to water supply conservation. ● Further definition of institutional issues that must be addressed in a water reuse project. <ul style="list-style-type: none"> ○ Range of institutional issues including regulatory permitting process, public education, liability, user agreements. ○ Specifically address role of agencies and industry in determining regulatory limits and which category specific water uses fall under.

Institutional Issues

Topic	Discussion
	<ul style="list-style-type: none"> ○ Specifically address the risks/unknowns <ul style="list-style-type: none"> ▪ How to set up an agreement to handle risks? ▪ What happens if the water reuse system does not perform as agreed? ● Establish a multi-agency group to foster water reuse projects. <ul style="list-style-type: none"> ○ This group could promote demonstration projects and be affiliated with the review of demonstration projects. ○ Review and identify funding sources and incentives for reuse projects. ○ This group could have a liason associated with related groups in the state such as the Metropolitan Area Water Supply Advisory Committee, Ethanol team established by MPCA, and others ● Evaluate specific facility modifications required to retrofit an existing supply (potable, well, or surface water source) to a reclaimed supply. ● One component of a project should include education of facility personnel on water reuse. <ul style="list-style-type: none"> ○ Need to understand processes in place to minimize health risks. ○ Educate employees on a reclaimed water source at their facility, the piping design requirements, operational considerations, and maintenance to keep it a safe supply. ● Recognize that there are a multitude of industries with potential uses – could target one case study that would handle issues common to all (such as the institutional) and technical issues that would benefit a cross-section of industries. ● Possible funding source for demonstration projects or studies to evaluate reuse applications is a SEP, supplemental environmental project. Most permittees would rather put penalty money to a good use, with added benefit to their watershed.
Miscellaneous	<ul style="list-style-type: none"> ● Water discharge versus energy use – this is a topic for areas with limited receiving waters that require zero discharge. <ul style="list-style-type: none"> ○ Some facilities must evaporate and use energy to do this. See tradeoff to the environment for more energy use and related pollutants to those discharged to a water body. ○ Water reclamation could offer options to facilities on a specific receiving stream with no discharge allowed and look to minimize energy use.

Institutional Issues

Topic	Discussion
	<ul style="list-style-type: none"> • Question: Why is MCES evaluating water reuse? <ul style="list-style-type: none"> ○ Protection of water resources <ul style="list-style-type: none"> ▪ To sustain water supplies - keep potable supplies available for potable uses. ▪ To meet water quality goals established for Minnesota’s waters – reduced discharges is one option to meet more stringent discharge limits in the future. ○ Requested by the legislature <ul style="list-style-type: none"> ▪ State-wide evaluation ▪ Metro area focus particularly with access to resources and data for metro area facilities and industries. • This question promoted discussion of industries using a reclaimed supply – extent of the benefit. <ul style="list-style-type: none"> ○ Need a consumption of a water supply by an industry to provide benefit to a receiving stream in terms of reduced pollutant loadings <ul style="list-style-type: none"> ▪ For facilities using once-through cooling, taking river water and discharging it back to the river – there is limited benefit to the receiving stream. ▪ However, if the surface water source has limited withdrawals, then replacing the surface water supply with a reclaimed supply can benefit the waterway with sustained flows/lake or reservoir levels. ○ Replacing a ground water supply with reclaimed water conserves the potable supply, regardless if the water is consumed by industry operations. • Reclaimed water can be a competitor to water utilities, particularly those with excess capacity.

Industry Stakeholder Workshop Attendance
MCES Recycling Treated Wastewater for Industrial Water Use

March 8, 2007 Meeting	
Person	Organization
Sara Wilson	Kraemer Mining & Materials, Inc
Dennis Taylor	Great River Energy
Herbie Owen	Marathon Ashland Petroleum LLC
Joe Strukel	Rock-Tenn Company
Travis Richins	Rock-Tenn Company
Brian West	Rock-Tenn Company
John Smith	Twin City Tanning Co/SB Foot Tanning Co
Deborah Manning	MCES
Bill Cook	MCES
Melba Hensel	MCES
Claude Anderson	MCES
Bob Pohlman	MCES
Patti Craddock	CCE
Bob Matthews	CDM
Li Zhang	CDM

March 15, 2007 Meeting	
Person	Organization
Sue Newton	ADC Telecommunications Inc
John Kimble	Certainteed Corporation
Pete Anderson	Certainteed Corporation
Mike Rutledge	Fagen Engineering LLC
Mike Falk	Flint Hills Resources LP
Wayne Duerfeldt	Gopher Resources Corporation
Patrick Flowers	Xcel Energy
Jeff Berrington	Xcel Energy
Deborah Manning	MCES
Melba Hensel	MCES
Claude Anderson	MCES
Bob Pohlman	MCES
Patti Craddock	CCE

Exhibit C
Broader Base Stakeholder Meeting

MCES Recycling Treated Wastewater for Industrial Reuse Project Meeting Agenda

Meeting: Water Reuse Stakeholder
Meeting No.: MP05
Location: Metro 94, Rm 32
455 Etna St Suite 32, St. Paul

Date: 4/24/07
Time: 1:00 – 3:30 pm

1:00 pm Introductions – Deborah Manning, MCES

1:05 pm Meeting Objectives – Deborah Manning

1:10 pm Project Overview – Patti Craddock, Craddock Consulting Engineers

1:15 pm Discussion: Water Reuse Implementation Considerations – Patti Craddock

- Environmental Stewardship *(complete by 1:30 pm)*
- Regulatory Leadership *(complete by 1:55 pm)*
- Liability *(complete by 2:10 pm)*
- Partnered Project *(complete by 2:25 pm)*

2:25 pm *Break – 10 minutes*

- Economic Incentives *(complete by 2:50 pm)*
- Supply Issues *(complete by 3:15 pm)*

3:15 pm Q&A – Patti Craddock

3:25 pm Summary – Deborah Manning

- Recap
- Action Items

3:30 pm Adjourn

Water Reuse for Minnesota Industries – Implementation Considerations

Discussion with Stakeholders, April 24, 2007

Topic	Key Points	Potential Actions
Environmental Stewardship	<ul style="list-style-type: none"> • Water reuse for many industries will be driven by their commitment to sustainable resources. 	<ul style="list-style-type: none"> • Establish an award program for water reuse. • Evaluate existing award programs and how water reuse practices would fit under these programs. • Support a public education/outreach effort linking water reuse to environmental stewardship and sustainability.
Regulatory Leadership	<ul style="list-style-type: none"> • Approval and Permitting Process: The regulatory requirements and permitting process should encourage industries and municipalities to pursue water reuse. • Water Reuse Image: Recognition that this is a practice the state encourages for water resource protection. • Watershed Transfer of Pollutants: Address pollutant transfer in the TMDL process and NPDES permitting. • Appropriations Permit: Clarify the need for a DNR Appropriations Permit. 	<ul style="list-style-type: none"> • Establish a regulatory ‘water reuse group’ with individuals as the key point of contact for each agency involved in establishing a permit to provide and use a reclaimed water supply. • The water reuse group or a subcommittee will engage in a partnered project that recommends regulatory topics for further evaluation. • Provide fact sheets and other guidance documents for municipalities and industries to reference as they consider water reuse applications, to include: <ul style="list-style-type: none"> ○ Related permits required ○ State agency approvals required • Other information as deemed necessary
Liability	<ul style="list-style-type: none"> • Industries need to be assured they are not taking on undue liability with the use of a reclaimed supply. There is concern for facility damages/loss of production, permit violations, and health problems associated with using a reclaimed supply. 	<ul style="list-style-type: none"> • Establish a group or fund a project to resolve the liability and indemnification issues of water reuse applications.

**Water Reuse for Minnesota Industries – Implementation Considerations
Discussion with Stakeholders, April 24, 2007**

Topic	Key Points	Potential Actions
Partnered Project	<ul style="list-style-type: none"> • Projects initiated, reviewed and documented by the various stakeholders will provide a resource that will encourage water reuse practices. 	<ul style="list-style-type: none"> • Identify regulatory, industry, municipal wastewater utility, water utility, local community groups, and other partners to form a working group that is involved with the project(s). This group would walk “hand-in-hand” through the project and provide review and assessment of the project upon completion. • Projects can be case studies of the complete project process or focus on key features of water reuse projects, such as: public information programs, specific technologies, or regulatory guidelines.
Economic Incentives	<ul style="list-style-type: none"> • Incentives are needed to attract industries to use a reclaimed supply and municipalities to incorporate reuse in their WWTP practices. • Water reuse systems can be funded and operated by a variety of management structures – different options should be considered to provide the best incentives and optimize system costs. 	<ul style="list-style-type: none"> • Evaluate and promote the use of the Supplemental Environmental Project (SEP) program as a source of money for water reuse projects. • Recommend state grants (LCMR) for initiation projects with in-kind contributions by partnering entities. • Evaluate SRF project selection process to identify features that would encourage water reuse projects. • Consider a pollution tax credit for equipment used in a water reuse project.

Water Reuse for Minnesota Industries – Implementation Considerations Discussion with Stakeholders, April 24, 2007

Topic	Key Points	Potential Actions
Supply Issues	<ul style="list-style-type: none"> • Reliability: A reclaimed supply can be the primary supply, backup supply or supplemental supply for an industry. The management of multiple water supplies must be considered in the facility infrastructure and processes, the storage requirements to meet variable demand patterns, and related permit requirements. • Dual Systems: Future development should consider dual water systems (potable and reclaimed supplies). • Water Quality Data: There are insufficient data available on the WWTP effluent from most municipalities. This makes it difficult to assess the treatment requirements and associated costs that would be needed to use a reclaimed supply. • Water Sampling to Assure Permit Compliance and Acceptability for Intended Use: The potential unknown contaminants that could occur in a municipal WWTP effluent and the concern for industry process problems and discharge permit compliance will require additional sampling to assure established water quality goals are met. 	<ul style="list-style-type: none"> • Establish a funded program for analysis of municipal WWTP effluent for parameters of concern for water reuse applications. This program could target WWTP with highest benefits for reuse and establish a historic data base for water quality that can be referenced in the planning for water reuse projects. • Incorporate reliability, water sampling, and other supply consideration issues as key elements of study in a 'partnered project'.

**Water Reuse Stakeholder Meeting
April 24, 2007
Discussion Summary**

Overview

The Water Reuse Stakeholder Meeting, held April 24, 2007 from 1-3:30 pm at Metropolitan Council Environmental Services (MCES) Metro 94 Complex Meeting Rm 32, brought together regulatory, industrial, water utility, wastewater utility, and community representatives. This document summarizes the questions and comments made during the meeting. The discussion documentation follows the table of Implementation Topics and Initial Recommendations handed out at the meeting and provided in Exhibit 1. The topics summarize issues and practices identified through earlier workshops with regulators and industries and the recommendations listed served as an initial list to generate discussion with this group of stakeholders, as presented below. Exhibit 2 contains the meeting participant list and agenda.

Discussion Summary

Environmental Stewardship

1. How or are we going to incorporate goals for water reuse?
 - a. Have we established any benchmarks?
 - b. MCES still needs to discuss this with Council members.
2. One goal could be to implement a project (demonstration or partnered project).
3. Rewards program could be fostered after community programs similar to solid waste recycling programs. These are ongoing programs that acknowledge industry's commitment to using recycled materials/products and recycling their byproducts.
4. MnTap Award - could qualify for one based on industry's commitment to reducing water use.
5. Important that the award program is an ongoing program, this fosters competition and more recognition.
6. Industry supports these award programs, but there is an economic threshold.
7. Responsible Care - American Chemistry Council sponsored award program. Acknowledges reductions in green house gas emissions and other air and water quality pollutant reductions.

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8. Brewing company in Colorado – took on the corporate culture for environmental stewardship and conservation. This affected the construction, materials selection, etc for their facility and daily operations.
9. Reuse of water will offset use of ground and surface waters = protect natural resources.

Regulatory

1. One industry had difficulty in early discussions with a municipality and regulators on a potential water reuse project. The extra monitoring and hoops to jump through were too many and the industry did not make much progress on evaluating reuse.
2. Industry would like direction on pre-approved processes to know if their water uses would qualify.
 - a. It would be helpful to know options before they get too far in the planning process.
 - b. Want clarification on uses that qualify as ‘non-contact’ water uses.
3. The CA Recycling Criteria specify water quality criteria for specific uses and can be referenced as a source.
4. Current regulations: MN handles on a case-by-case basis using the California Water Recycling Criteria.
 - a. How do we begin the process to decide if regulations, guidelines, or case-by-case approach is best for Minnesota?
 - o One method is to set up a Technical Advisory Committee (TAC)
 - TAC consists of experts from other states and within the state, regulators, industries, and community groups.
 - Who leads this effort for a TAC? In other states it is lead by the regulatory agency that permits water reuse.
 - b. Can we just adopt the California criteria given the differences in climate? For example the influence of humidity and more significant seasonal temperature changes.
 - o In Texas, they first adopted tougher turbidity criteria than the CA criteria for turbidity and then went back and revised this because they could not technically justify it.
5. MN has prepared case-by-case water reuse permits for the following applications:
 - a. Golf course irrigation

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- b. Agricultural irrigation, mostly alfalfa and corn for animal feed
 - c. Toilet flush water
 - d. Power plant cooling water with mist spray from towers
6. Invest in a pilot study to demonstrate that a process meets the public health and other water quality criteria.
- a. Example provided for industry that made cardboard boxes that were in contact with fruits and vegetables.
 - b. Documented process parameters such as temperature and water quality parameters, plus final product use
 - c. No health issues noted; met water quality criteria
7. Water reuse information can be provided on the MPCA website (given followup with other MPCA departments).
8. Is there a demand for reclaimed water that requires investment in water regulation development?
- a. How do we forecast this demand and plan for it?
 - b. Regulatory community would support setting criteria if there was a demand.
9. Questions were raised by municipalities on whether their NPDES limits would be changed given the changes in their discharge from the receiving stream to reuse applications.
- a. There are some cases where the reduced quantity could affect a municipality from meeting a concentration limit. For example, for plants with ammonia limits that handle ammonia recycle from their digesters - often need the volume to meet the concentration limit, but are fine with the mass limit.
 - b. Will the NPDES limits be changed to correspond to the reduced flow and mass to the receiving stream that is directed to reuse?
 - c. For reclaimed water that is used by an entity and a portion discharged back to a receiving stream located in a different watershed or stream segment - how will this affect the TMDL for the associated streams?
 - d. Concern expressed that in the TMDL process, the existing allocation for the WWTP will be reallocated because of the reduction in discharge for reuse. However, the reuse customer may go out of business or change practices and then the municipality would need to go back to the receiving stream. The WWTP would then be in violation of their permit.
 - e. How the TMDL process affects a permit will depend on the timing of the NPDES permit revisions for water reuse with the TMDL process for the associated receiving stream.

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10. How did the TMDL process fit with existing reuse applications in MN?
 - a. For the golf course irrigation projects, land application was required for WWTP effluent because there was no discharge to waterways available/allowed.
 - b. Mankato is in an area with an existing TMDL. In this case it was unique, because the reclaimed flow was directed back to the WWTP and was discharged with their effluent.

11. Is a DNR Appropriations Permit required? In most cases no. As with Mankato/Calpine Corporation, Calpine did not need one. It is possible if the reclaimed supply passes a watershed divide or other circumstances, then an appropriations permit may be required.

12. Seasonal nutrient removal limits for receiving streams promote reuse for agricultural or urban irrigation.

Liability

1. In other states, compliance with permit limits provides the assurance of a safe supply for public health. Agreements are used to list specific requirements for quality and quantity for a given industry. Monitoring assesses compliance with limits and serves as a record to determine if the supply causes a problem in the industry's production process

2. If a problem arises from use of a potable supply, an industry would not make a claim against a public water utility for resulting damages.

3. Liability related caps:
 - Environmental damage - \$250,000
 - Product damage - \$1M

4. Wastewater quality is more variable and there is limited control over illegal dumping into the system. A wastewater utility could track a problem to an industrial discharge – putting fault on another entity.

5. Use reservoirs/storage to dampen spikes or other variability in wastewater quality.

6. Concern expressed on cross-connections to the potable supply.
 - a. Need an ongoing inspection program to ensure infrastructure is performing adequately to prevent backflow of reclaimed system into potable system.
 - b. Need standards for back-flow prevention devices.
 - c. Place as a requirement of the user.

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Partnered Project

1. Goal: to implement a project with the supplier, user, and regulators that documents the steps, obstacles, and decisions made from planning through operation.
 - a. Purpose would be more for the institutional issues vs. the technical ones
 - b. Multiple options or points of focus
2. MPCA would be interested in working with a wastewater utility and industry on this project. There was a good working team with Calpine and Mankato in developing that project.
3. How would a project be funded?
 - a. There are national funding sources from WaterReuse Foundation, AWWARF, WERF. Not many on industrial projects from these sources.
4. There is not a widespread understanding that there are water supply issues in MN. Education is required to show reuse is important for MN's water resources.
5. There are different issues or considerations for adding reuse to existing infrastructure than for future facilities. Future WWTPs could be sited to incorporate industry, agricultural land, transportation, etc. around the beneficial reuse of water.
6. What criteria will be used to determine if reuse is necessary? If we look 50 years down the road, what will push the state to reuse? Will the TMDL process bring us there? Will our visionary approach to the metro area water supply indicate it is water supply? How about other MN communities?
7. Who would be in the project group? MPCA, MN OSHA, MDH with industry and wastewater utility.
8. Lead organization:
 - a. Some participants felt it was too early to state this.
 - b. Others thought it should be those that want to make it happen - the municipality or the industry.
 - c. See regulator as the protector of citizen's interests.
 - d. Ex. Mankato/Calpine Corporation.
9. DNR supported working with a group with multiple agencies to look at opportunities for reuse or ways to promote reuse.
10. TMDL process is not an issue for a partnering project.

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11. Conservation. Our discussion today has not focused on this. It is important to ensure the project notes that all conservation practices should continue to be pursued and that water reuse presents an additional conservation practice. We should continue to reduce water use and what water we use we should recycle.

Economic Incentives/Funding

1. What type of financial plan has been considered for a reuse system? Answer: none yet.
2. Proximity of a reuse customer to the WWTP would be important given transmission costs.
3. Funding and financing depends on the driver. In the case of MCES, if it is water quality driven then funding could follow the same method as done for treatment and discharge to our waterways - cost is shared in the metro area.
4. Priority List for PFA funding:
 - a. Get more points or higher on list if discharge is to land treatment vs. receiving stream. This will help projects with irrigation reuse, but not reuse to industries.
 - b. Need a rule change to get higher points for water reuse.
5. Concern expressed by industry if looking at reuse to offset costs required to treat wastewater based on revised water quality limits - and cost is transferred to the industry.
6. Industrial facility near a WWTP - why pay for the water if industry pays for pipe to get it there and provides any additional treatment for their water supply requirements?
7. Could the water utility structure the rates to provide more incentive for industry to consider reuse?
 - a. Concern expressed that for those with few options and that have already reduced water use this would not be fair.
 - b. Idea is to consider linking water utility and reclaimed rates. This is easier to do with a community that has same entity for both the water and wastewater utilities.
8. Need incentives to look ahead and be prepared - drivers may not be here now, but expect reuse will have a role in the future.

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Technical Supply Issues/Public Perception

1. Technical issues are site specific and variable.
2. Example provided of the SMSC plant
 - a. 2 trains with different treatment to meet different end quality requirements
 - b. Aquifer recharge is an ongoing discussion
3. All points noted in the Implementation Considerations table need to be considered.

Public Education – not addressed earlier

4. The topic of public awareness is critical to address in the implementation of water reuse practices in Minnesota.
5. The Minnesota public needs to be aware that reuse is for the good of the environment and that health concerns are addressed.
6. Reuse is an opportunity to be of benefit to the environment.
7. Public involvement process must begin early – up-front in the planning process need to involve community.
8. Issue for some – is this going into the tap water?
9. Consider TCAAP and Riley Tar – contaminated supplies are being treated and used by the communities. Community was educated on the treatment process and accepting of technology to use the supply. Cost was covered by federal funds for site cleanup and remediation.
10. Similar public perception issue seen with biosolids. Some communities are not allowing biosolids applications on their fields.
11. California regulations are based on significant studies. These can serve as sources to show the public the extent of scientific research that has been done in the development of regulations and related risk assessments.
12. Reuse can be part of our environmental ethic.
13. In other similar efforts to promote an environmental issue or treatment technology – it took one person or agency to take the lead. A similar model could work for water

Water Reuse Stakeholder Meeting
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reuse. Also, implementation could target one industry sector and gain acceptance from that type industry and type of water uses.

14. The Office of Environmental Assistance and their mission appear to align with the conservation basis of water reuse. Can they become involved?

**Water Reuse Stakeholder Meeting - April 24, 2007
Participant List**

MCES Recycling Treated Wastewater for Industrial Water Use

First Name	Last Name	Organization
Lih-in	Rezania	MN Dept of Health
Jim	Japs	MN Dept of Natural Resources
Lisa	Thorvig	MN Pollution Control Agency
David	Sahli	MN Pollution Control Agency
Katrina	Kessler	MN Pollution Control Agency
Bradley	Nordberg	MN Pollution Control Agency
Mary	Fralish	City of Mankato
Bob	Cockriel	City of Bloomington/WUC Representative
Shelley	Shreffler	Minnesota Environmental Initiative
Herbie	Owen	Marathon Petroleum
John	Kimble	CertainTeed Corporation
Bryce	Pickart	MCES
Bill	Cook	MCES
Deborah	Manning	MCES
Melba	Hensel	MCES
Claude	Anderson	MCES
Bob	Pohlman	MCES
Chris	Elvrum	MCES
Patti	Craddock	Craddock Consulting Engineers
Bob	Molzahn	CDM
Bob	Matthews	CDM