Water Reclamation in Rosemount and Analysis of Minnesota Plumbing Code

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On behalf of

The City of Rosemount

With support from

The Resilient Communities Project

Resilient Communities Project

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This project was supported by the Resilient Communities Project (RCP), a program at the University of Minnesota that convenes the wide-ranging expertise of U of M faculty and students to address strategic local projects that advance community resilience and sustainability. RCP is a program of the Center for Urban and Regional Affairs (CURA).

This publication may be available in alternate formats upon request.

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I - Introduction

Water recycling, or water reclamation, is the process of reusing treated wastewater (EPA, 2015). While the process is most common in arid regions, such as the Pacific Southwest, its benefits are not restricted to those areas. The City of Rosemount is uniquely situated along a treated effluent pipeline, and this, in part, makes Rosemount a good candidate for reclaimed water usage. However, there are a number of planning and policy issues that a water reclamation project would involve. One obstacle to water reclamation in Minnesota is that the state plumbing code currently does not allow for the transport of reclaimed wastewater.

This memorandum begins with discussion of a potential water reclamation project in Rosemount and the benefits that would accompany an additional water source. Section III will introduce the Minnesota Plumbing Code (MPC or the Code), with particular attention paid to the agencies that enforce and modify the Code, and the jurisdictional overlap that often plagues plumbing issues. Section IV will consider recent proposed rulemaking by the Minnesota Plumbing Board (MPB or the Board), which is critical to the permitting of a reuse project such as is anticipated here. Last, Sections V and VI will provide projections on the direction of the state plumbing code action and make recommendations for the City, with respect to any plumbing code modification that it may further require, in consideration of a water reclamation project.

II - Water Reclamation in Rosemount - Anticipated Project

Located in the most water rich state in the United States, Rosemount nevertheless has reason to keep concerned with its water future. Roughly 75 percent of Minnesota's drinking water and almost 90 percent of water used for agricultural irrigation is drawn from groundwater sources, which are mostly nonrenewable due to slow rates of recharge (DNR, 2010).

While industry in Minnesota is responsible for the bulk of water usage in the state, the level of residential water usage for the average Minneapolis citizen is between 60 and 70 gallons of water per day (City of Minneapolis, 2015). In Rosemount, residential usage rates are higher, and in three of the last five years have exceeded 80 gallons per day (with a high of over 90 gallons per day in 2012) (City of Rosemount, 2015). As landscape irrigation is accountable for nearly one-third of residential water use in the United States, it is likely that Rosemount's higher residential usage rates are due, in part, to increased landscape area per resident (EPA, 2015).[1]

In 2013, the Metropolitan Council provided testimony to Minnesota legislature on groundwater issues facing the state (Metropolitan Council, 2013). The council's "areas of concern" presentation included projections of aquifer drawdown by the year 2030 (id.). The areas projected to be most impacted in the Metropolitan area, with drawdown exceeding 50 percent of available head, concentrated in Rosemount and neighboring Apple Valley (id.).

This and other concerns helped motivate Minnesota's largest existing wastewater reclamation project. In 2006, a power company located in Mankato approached the city with a proposal to fund a state-of-the-art treatment facility that would treat wastewater to meet water standards for allowable non-potable uses (Dunbar, 2014).[2] The funding company uses the water for industrial cooling, but excess treated water is used for irrigation and cleaning city vehicles (id.). Excess water from the plant is not available for transport for residential use, as the MPC does not currently allow for wastewater transport systems (MPC, 2012).

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[1] Rosemount's water usage, which rises in years of decreased rainfall, further supports the conclusion that landscape irrigation is a particularly significant factor in the City's residential usage (City of Rosemount, 2015).

[2] As Minnesota does not have its own quality standards for usable treated wastewater, the facility used California standards, which the Minnesota Pollution Control Agency has used since 1992 (MPCA, 2015).

Cost, both of bringing treatment systems up to permitted standards, and of transporting reclaimed water, can be restrictive. Metropolitan Council Assistant General Manager of Operations, Mike Mereness, commented that one challenge facing wastewater reclamation is that users "would have to be next door or there would have to be a distribution system" (Dunbar, 2014). Rosemount, through which the Metropolitan Council's Empire Wastewater Treatment Plant's effluent line runs, sits in a prime location for wastewater reuse, as it might be able to draw directly from the existing effluent line (Brotzler, n.d.).[3]

If residential transport and use of transport of reclaimed wastewater were permitted under the MPC, Rosemount would be able to draw effluent, once treated to acceptable standards, directly from the effluent line that passes through it. This water could be used in place of groundwater, significantly reducing Rosemount's impact on regional drawdown levels.[4]

III - Minnesota Plumbing Code

The MPC appears in Chapter 4715 of the Minnesota Rules.[5] Since its creation in 2007, the MPB, nested in the Minnesota Department of Labor and Industry (DLI), has had rulemaking

[3] The Empire treatment plant has a daily capacity of 24 million gallons of wastewater per day, an amount in excess of all water used daily in Rosemount, and in excess of daily projections for Rosemount water usage following 40 years of City development. Following treatment, the effluent is piped out, under Rosemount, and dumped in the Mississippi River (Brotzler, n.d.; Metropolitan Council, 2015).

[4] The failure of the Minnesota Plumbing Code to permit residential use of reclaimed water is not the only obstacle to a reclamation project in Rosemount. Other policy issues or practical concerns raised by the City are: (1) how to establish a fourth utility district for treated wastewater; (2) drafting of a joint powers agreement, between the City and Metropolitan Council, for use of the effluent pipeline; (3) drafting a development agreement with covenants for residential developments to unsure uniformity in use of treated wastewater; (4) how use of treated effluent drawn off the pipeline would effect Metropolitan Council discharge rates and treatment permits; and (5) determining potential modifications to Rosemount's stormwater management plan to meet water reuse goals (Brotzler, n.d.).

[5] Licensing and apprentice registration rules appear in Minnesota Rules Chapter 4716. Should proposed rulemaking adopt the Uniform Plumbing Code, the new Code will be located in Chapter 4714, concurrent with repeal of Chapter 4715 (Minnesota Plumbing Board, 2014).

authority over the Code under Minn. Stat. §326B.435. While the MPB enjoys rulemaking authority, the DLI conducts plumbing inspections, and otherwise administers and enforces the Code throughout the state (MPB, 2012).

Despite the Board's clear rulemaking authority over the state plumbing code, various other agencies will be included in the planning process for any code modifications that are likely to have an effect on areas under the jurisdiction of those other agencies. For example, the express purpose of the plumbing code is to protect environmental sanitation and public safety (Minn. Admin. Rule 4715.0200). As a result, rulemaking proposed by the plumbing board that has a potential for environmental or public health consequences will typically involve, at least, the Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Health (MPH) (MPCA, Minutes, 2014).

Minnesota is one of the few remaining states with a homegrown code (MPB, 2012). Universal national plumbing codes, adopted by more than 40 states, have the advantage of being more responsive to new practices and technology (id.). For example, the International Plumbing Code (IPC), published by the International Code Council (ICC), and the Uniform Plumbing Code (UPC), published by the International Association of Plumbing and Mechanical Officials (IAMPO), have provided rules governing the plumbing of wastewater, greywater, and rainwater reuse in successive iterations, while the MPC remains silent on reuse (ICC, 2015; UPC, 2012; Minn. Admin. Rule, Ch. 4715).[6]

[6] Though the MPC considers and regulates nonpotable water use and plumbing, this is not sufficient for the permitting of reclaimed water systems, which would require specific allowances within the language of the Code (Minn. Admin. Rule 4715.1910).

The MPB favors the accommodation of wastewater and rainwater reuse in the state code (MPB, Minutes, 2014).[7] In modification of a homegrown code, a plumbing board must start from scratch, drafting its own language and compiling its own evaluative research in support of the modified rule. In contrast, both the UPC and the IPC are modified and published every three years, following the research and suggestions of the IAMPO and ICC; states using these standardized codes then determine whether an updated version of the standardized code should be adopted, with any necessary amendments (MPB, 2012).

The MPB itself admits that the homegrown Code is outdated and that "updating it would be as time-consuming as adopting a model code but would not yield the benefits of adopting a model code" (id.). In April of 2010 the MPB formed an advisory committee, the Plumbing Board National Code Review Committee (Committee), which was charged with the task of reviewing the MPC, IPC, and UPC in order to recommend which, if any, model code should be adopted (id.).

IV - Pending Adoption of the Uniform Plumbing Code

During an April 2011 meeting of the MPB, representatives from the IAMPO and the ICC presented on the merits of their respective model codes (MPB, 2012). The Board then passed, with the required two-third majority, a motion to adopt a national model code (id.). A second motion then passed, again with a two-thirds majority, adopting the UPC, with amendments (id.).[8]

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[7] While wastewater can be, and has been, treated to potable standards (many residents in California and Texas consume potable treated wastewater), the MPB is currently interested in accommodating nonpotable residential and industrial uses only.

[8] As the Board's Chair noted at the administrative law hearing, the adoption of the UPC is the largest and longest undertaking in the Board's short history. Since the beginning of the start of the rulemaking process, which adopted the 2012 version of the UPC, IAMPO has published a 2015 version. While successful passage of the rules will only adopt the 2012 version, it is likely that the Board will use the earliest opportunity to incorporate more recent versions of the UPC as they are published (MPB, 2014).

The Committee met regularly for the next two years, considering and suggesting amendments to the UPC in order to recommend a satisfactory version for ultimate passage by the Board (id.). The Board, following the recommendations of the Committee, approved the proposed rules at an October, 2014 meeting (MPB, 2014; Proposed Minn. Admin. Rule, Ch. 4714).

Notice for the Board's proposed rulemaking was published November 13, 2012, commencing a public comment period that lasted through March 4, 2013 (Minn. Exec. Branch, 2012). Several public comments questioned the validity of the Board's adoption of the UPC (DLI, 2015). Dual notice, of the proposed permanent rule as amended, was published on March 9, 2015, commencing another comment period ending April 8, 2015 (Minn. Exec. Branch, 2015). Since 25 or more timely requests for a public administrative hearing on the proposed rules submitted, Administrative Law Judge LaFave conducted a hearing on April 30, 3015 and a ruling is forthcoming (DLI, 2015).[9]

The final permanent rules proposed by the board incorporate by reference chapters 2 through 11, 14, and 17 of the UPC (MPB, 2015).[10] Chapter 16 of the UPC, titled "Alternate Water Sources for Nonpotable Applications," if adopted by the Board, would allow for the transport of reclaimed wastewater to residential units (UPC, 2012).[11] The Board supported adoption of Chapter 16, but various state agencies would be affected by passage of Chapter 16, including the MDH, MPCA, Metropolitan Council, and the Minnesota Department of Natural Resources (DNR) (MPCA, 2014). Concern with jurisdictional overlap, potential public health

[9] For further information on the timeline of the proposed rules adopting the UPC, complete with links to PDF versions of relevant documents, see the DLI's *Rulemaking Docket*, *available at* http://www.dli.mn.gov/PDF/docket/4715docket3.pdf.
[10] UPC chapters omitted from the Minnesota proposed rules concern administration; fuel piping; health care facilities, medical gas, and vacuum systems; firestop protection; and alternate water sources for nonpotable applications (MPB, 2015; IAMPO, 2012).
[11] The IPC also permits systems that would accommodate residential use of treated wastewater (IPC, 2015).

issues, and potential cost of sufficient enforcement and permitting of new plumbing systems motivated the establishment of a Water Reuse Interagency Work Group (WRIW), which considered whether or not Chapter 16 ought to be adopted as a part of the current rulemaking (MPB, 2014).

After consideration of UPC Chapter 16, the WRIW did not support adoption in the currently proposed rules (id.). The WRIW acknowledged a need for water reclamation in the state, noting that "water quantity issues are real in Minnesota" (MPCA, 2014). Even so, questions of specific standards, jurisdictional overlap, and cost and delegation of oversight were not adequately settled by the WRIW, and the Board, at a January 21, 2014 meeting, unanimously deleted Chapter 16 from the proposed rules (MPB, 2014). Importantly, the Board and WRIW each recognized that water reuse as allowed by Chapter 16 is desirable, and the Board clarified that adoption of Chapter 16 will be a point of emphasis in discussions of future amendments to the Code (id.). The concern is not that water reuse as accommodated by Chapter 16 is dangerous, but rather that the various agencies charged with oversight of the Code are prepared to oversee new systems.

V - Projections

Administrative Judge LaFave is likely to issue a report in the near future, as final written comments are due May 20, 2015 (DLI, 2015). Despite strong and organized opposition to the Board's decision to adopt the UPC, the UPC is in effect in a number of states, including California, Iowa, North Dakota, and South Dakota (MPB, n.d.).[12] Opponents of the proposed

[12] Importantly, individuals and organizations opposing adoption of the UPC do not wish to keep the homegrown code, but instead encourage adoption of the IPC, which proponents suggest is more responsive, performance-based, and more cost-efficient. In its preference for the UPC over the IPC, the Board stressed importance of reciprocity with Iowa, North Dakota, and South

rule did not suggest that adoption of the UPC would pose a public health risk, but rather that there were benefits to adoption of the IPC that were not appropriately considered by the Board.

This pending administrative law report will likely allow the Board to adopt the rule as proposed, or with minimal modifications. Following adoption, the Board will begin to consider amendments for the next iteration of the Code, which is anticipated in 2018, but could occur earlier. As Chapter 16 was only recently omitted from the proposed rules, and has the general support of the Board and its Chair, it is likely that the Board will continue to work with and encourage the WRIW to settle jurisdictional and public safety concerns in support of an amended version of Chapter 16. By 2018, there is a strong possibility that the Code will allow for plumbing systems that transport reclaimed wastewater to residential units.

If Administrative Law Judge LaFave reasons that an adverse finding is appropriate, the Chief Administrative Law Judge will issue the adverse finding (DLI, 2015). If this occurs, the Board will attempt to remedy any issues in the proposed rulemaking, likely through modifications to its Statement of Need and Reasonableness and additional fact-finding. Even so, whether through adoption of the UPC, IPC, or even in a future iteration of the homegrown code, interested bodies are relatively unified in support of a plumbing code that allows for reclaimed water usage. While an adverse finding might further delay adoption of Chapter 16 or its equivalent, it is unlikely such a finding would be fatal to eventual adoption. The WRIW is likely to continue its consideration of the issues raised by wastewater reuse and will support amendment of the plumbing code in some satisfactory version.

VI - Recommendations

Dakota, and its determination that the UPC more closely resembles the homegrown code, which will also provide consistency (MPB, 2012)

If UPC Chapter 16 – or any parallel rule allowing plumbing systems that would transport reclaimed wastewater for residential use – is adopted to the MPC, various remaining issues will require attention before a wastewater reclamation project is undertaken. Even so, the Code must accommodate the use of permitted plumbing systems before treated wastewater may be used in the residential setting.

In support of a potential wastewater reclamation project in Rosemount, the City should monitor the results of the proposed rulemaking, and take the following actions, dependent on future Code movement:

- If the proposed permanent rules are adopted, the City should notify the Board, the Chair of the Board, WRIW, MPCA, and Metropolitan Council of the City's interest in a wastewater reclamation project. Voicing an interest in wastewater reclamation for residential use will encourage the Board and other interested groups to prioritize inclusion of Chapter 16 at the earliest opportunity. The Chair of the Board has repeatedly signified an interest in adoption of Chapter 16 and might be able to use specific projects to encourage WRIW to settle their issues with Chapter 16.
- If Administrative Judge LaFave issues an adverse finding, the Board may modify or withdraw the proposed rule. While an adverse finding could significantly delay adoption of accommodating language in the Code, Rosemount should notify the Board and its Chair, WRIR, MPCA, and Metropolitan Council of the City's interest in water reclamation for residential use.

VII - Conclusion

Rosemount, along with the rest of Minnesota, faces significant water quantity concerns. Unlike many other cities, Rosemount rests atop a Metropolitan Council effluent line, which makes a wastewater reclamation project a viable and cost-efficient option. In order to use reclaimed water in a residential setting, the City would require the MPC to permit treated wastewater systems to allow for transport of nonpotable water. Proposed MPB rulemaking is likely to take a large step towards the permitting of wastewater reuse systems, but the City would do well to involve itself in ongoing conversations with the responsible bodies, most importantly the MPB, it's chair, and the WRIW.

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