

Plumbing Board

Meeting Minutes

April 21, 2015 at 9:30 a.m.

Minnesota Room – Department of Labor and Industry

443 Lafayette Road North, St. Paul, MN 55155

Members

John Parizek (Chair)
Scott Eggen
Jim Kittelson
Larry Justin
John Flagg
Ron Thompson
Phillip Sterner (Secretary)
Jim Lungstrom
Grant Edwards
Joe Beckel
Pete Moulton

Members Absent

Mike McGown
Jeff Brown

DLI Staff & Visitors

Wendy Legge (Chief Gen. Counsel, DLI)
Suzanne Todnem (DLI)
Cathy Tran (DLI)
Jim Peterson (DLI)
Lyndy Lutz (DLI)
Charles Olson (DLI)
Brad Jensen (DLI)
Gary Thaden (MMCA)
Matt Marciniak (IAPMO)
Richard Hauffe (ICC)
Gary Ford (Metro Testing)
Brian Noma (MDH)
Tim Power (MNLA)
Andrew Paulsen (Water Control Corp)
Chad Filek (J-Berd Mech)
Michael Hogenson (Standard Water Control Sys.)
Noah Rouen (Standard Water Control Sys.)
Chris Nelson (Karges-Faulconbridge, Inc.)
Jami Sehm (City of Blaine)
Mike Ritter (MWQA)
Jim Gander (Superior Mechanical)
Charlie Pickard (Aladdin Solar)
Tim Power (MNLA)
Betsy Vohs (Gensler Architecture)
Elizabeth Borer (Marg. A-Cargill Philanthropies)
Shawn Kinniry (Marg. A-Cargill Philanthropies)
James Manning (Gausman & Moore)
Phil Raines (ABC)
Jim Gander (Superior Mechanical)
Scott Thompson (MN Plumbing Training)
Patrick Litchy (DNR)
Peter Paulson (DNR)

I. Call to Order

The meeting was called to order by Chair Parizek at 9:35 a.m. Introductions and housekeeping announcements were made and he asked that Open Forum forms be submitted by anyone wanting to address the Board. Attendance was taken; a quorum was met with 10 of 12 members present.

II. Approval of Meeting agenda

A motion was made by Edwards, seconded by Sterner, to move item D, Chapter 4714 comments to item A under Special Business, and the agenda was approved as amended. The vote was unanimous; the motion carried.

III. Approval of Previous Meeting Minutes

A. Plumbing Board Minutes – January 20, 2015

A motion was made by Kittelson, seconded by Edwards, to approve the minutes with three corrections as follows: Craig Johnson (Leidos Engineering), Chuck Olson (DLI) and the addition of “Attachment A.” The vote was unanimous with two abstentions; the motion carried.

IV. Regular Business

Approval of Expense Reports – Parizek approved the expenses as presented.

V. Committee Reports

A) Department Updates

i. Suzanne Todnem provided an update.

The Commercial Energy Code and the Building Code have progressed through the rulemaking process and the anticipated effective date is June 2, 2015. The High Pressure Piping Systems (HPPS) code became part of the Minnesota State Building Code on January 24, 2015. The Notice of Adoption for HPPS rules was published on March 16, 2015 with an effective date of September 12, 2015, due to the 180-day statutory lag between Notice of Adoption and effective date. For more information on Minnesota’s building codes, visit:

http://www.dli.mn.gov/Sbc_2015.asp

B) Executive Committee

i. Meeting Report – Parizek gave an update. The Executive Committee met to discuss steps involved in the rulemaking process for before and after the hearing.

ii. Report of Chair Parizek

1. Reciprocity North Dakota/South Dakota – Minnesota has adopted Continuing Education (CE) requirements and issues regarding reciprocal licenses between Minnesota and North and South Dakota have risen. North Dakota currently requires 3 or 4 hours of CE requirements every two years to renew. South Dakota has a 4 hour CE requirement every year or 8 hours every two years to renew their license. Minnesota adopted CE requirements now requiring 16 hours every two year cycle or 8 hours/year. When ND/SD

individuals try to renew their MN license they are being told they need to complete 16 hours of CE. If some type of agreement cannot be reached with ND/SD then they will most likely drop their reciprocal agreement with Minnesota. There are a couple of different options, such as:

- 1) Continue to require 16 hours of CE and recognize CE hours completed in ND/SD and apply towards Minnesota's 16 hours; or,
- 2) Provide a straight reciprocal agreement. Valid Minnesota license holders would be able to renew the ND or SD license and valid ND or SD license holders would be able to renew the Minnesota license.

Reciprocal licensing issues would not be addressed until the next rulemaking for chapter 4716.

2. Request for Action – Standard Water Control – Michael Hogenson

Parizek's recommendation was to treat as a Request for Action in the next rulemaking process after current rulemaking is concluded. He noted that this would be a significant change to rule language and should be addressed in the next code cycle.

- C) **Construction Codes Advisory Council – have not met.**
May 14, 2015 is the next scheduled meeting.

VI. Special Business

A) Chapter 4714 comments

- i. **Todnem referred to Comments received by the department (Attachment A).** There were 11 comments received that included 3 letters of support, some of these with technical changes/suggestions, and 60 timely Requests for Hearing received. The Requests for Hearing are not included in "Attachment A" but can be found on the Board's rulemaking docket online at: www.dli.mn.gov/PDF/docket/4715docket3.pdf

Todnem said the primary concern raised in the Requests for Hearing was the selection of the UPC over the IPC. The Board also received three comments centered on the deletion of the RPZ rebuild 5-year requirement. Parizek said he reviewed comments with the department and possible corrections/revisions would be reviewed by the Board.

He noted the proposed changes shown in Attachment B are in response to comments:

- Page 1, line 1.7 Strike "Offices" and add "Officials"
- Page 28, 28.12/28.13 - add language as follows:

4714.0612 Multipurpose Potable Water Piping Systems.

UPC section 612.0 is amended to read as follows:

612.0 Multipurpose Potable Water Piping Systems.

612.1 General. A multipurpose potable water piping system as defined in Minnesota Statutes, chapter 299M shall meet the requirements of this code.

- Page 47 – strike language in line 47.22/47.23 as follows: ~~The velocity at the transition location to gravity shall be reduced to less than three feet per second.~~ Only refer to standard as ASPE Standard 45 and then only the current year would apply.

Parizek recommended the Board approve the proposed three changes as noted above.

A motion was made by Eggen, seconded by Sterner, to make the three recommended changes as noted above: Page 1 – Line 1.7; Page 28 – proposed language for 612.0 and 612.0; and Page 47 – striking language and referencing the ASPE standard without a year so the most current published standard would apply. The vote was unanimous (10 votes); the motion carried by an affirmative two-thirds or more of all the voting members of the board.

ii. **Hearing Process – what will take place during and after**

Wendy Legge gave an update on the Plumbing Hearing to be held at DLI on April 30, 2015 @ 9:30 a.m. in the Minnesota Room. More than 25 Requests for Hearing were received. The hearing would begin with exhibits being offered by Suzanne Todnem on behalf of the Board and a presentation by John Parizek on behalf of the Board. Anyone who wants to comment at the hearing is welcome to attend and sign in. The hearing will last as long as the judge determines it needs to last to ensure everyone has a chance to comment and all of the judge's questions are answered. The judge would then give all parties a maximum of 20 days after the hearing to file additional comments and respond to comments that were made. Legge noted that the Board would be replying to all substantive comments in a written submission or at the hearing and she added that anything that wasn't replied to orally at the hearing would require a written response by the Board no later than May 20, 2015. Following this there would be a 5-day rebuttal period, bringing the date to May 25, 2015. This rebuttal period is only to address additional matters brought up after the hearing. The Board will need to file a response to any new material by May 25, 2015 and this will be the final submission. The judge will then make a determination and issue a report, normally within 30 days. What happens after this will depend on the report. The report can find defects in the rulemaking hearing, find that everything is fine, can make suggestions, etc. If there are defects or suggestions, then this would come back to the Plumbing Board to make changes in the proposed rule in accordance with those defects or suggested changes or the Board could decide not to make the changes/suggestions.

The Board made additional changes to the rule today; therefore, in order for the minutes of today's meeting to be put into the record at the hearing, a Special Meeting was proposed by the Chair. The meeting could be attended by telephone as long as there is at least one Board member attending in person.

The Special Meeting was scheduled for 1:30 p.m. on April 27, 2015 in the Minnesota Room at DLI. The board may want to consider additional changes based on comments at the hearing. The Minnesota Room is being held on May 12, 2015 for this purpose. (This could be a meeting by telephone.) Legge clarified that if the Board wanted to make any additional rule changes these would need to be proposed by May 20, 2015. Parizek noted that all comments would be responded to.

The meeting broke until 10:45 a.m.

B) Petition for Variance – Margaret A. Cargill Philanthropies (Attachment C)

Parizek noted the Variance was reviewed previously and additional information was requested by the Board. Chris Nelson, Karges Falconbridge, Inc. (KFI) addressed the Board in regards to installation of a Gray Water Drip Irrigation System and he referred to their response sent to the Board dated April 7, 2015, questions 1 through 5 (Attachment C).

Nelson said the system is not in place right now – they are waiting on approval. He added that the owner contracts with reputable contractors to perform maintenance services and he noted this information is located in Attachment C. The Owner researched this, KFI helped design it, the training and maintenance is part of the closeout O&M manuals and these will be given to the contractor to make sure the system works correctly. The Board discussed continuing maintenance, log sheets, piping, plumbing code requirements, water safety (contaminants) and administrative authority. Nelson noted that the permanent variance is for only the one property, no others.

A motion was made by Justin, seconded by Eggen, to approve Margaret A. Cargill’s petition for a permanent variance within the scope of the information submitted (Attachment C). The majority vote ruled with 9 votes for and 3 opposed; the motion carried.

A motion was made by Justin, seconded by Sterner, to authorize John Parizek to issue the written order required by Minnesota Statutes 14.056, Subdivision 5, in connection with granting the Margaret A. Cargill variance. The majority vote ruled with 9 for and 3 opposed; the motion carried.

C) Petition for Variance – Graywater Systems at the Lake Vermillion-Soudan Underground Mine State Park Campground Project (Attachment D)

Peter Paulson, AIA, CSI, LEED Green Assoc., Minnesota Department of Natural Resources, stated they are seeking a variance to use a gray water system at the new Lake Vermillion campground. Jim Manning, Gausman & Moore and Andrew Paulsen, Water Control Corporation introduced themselves to the Board.

Peter Paulson referred to Attachment D and said they are experiencing a hardship in getting potable water at the (Lake Vermillion) campground. There is very little opportunity to acquire well water and city water is more than 5 miles away. Potable water would only be obtained by taking water from Lake Vermillion, treating it, bringing it to the campground, storing it, and then using it. Because of this, and the Department of Natural Resource's (DNR) conservation mission, they think a gray water system as a pilot (project) is a good fit.

Peter Paulson said technical questions should be directed to Jim Manning or Andrew Paulsen and that he would answer questions regarding the overall development and timelines of the new state park. Edwards noted that he reviewed the blue prints and said the gray water portion is capturing waste water from lavatories only and then treating it and flushing toilets and urinals. There is make-up water with an RPZ protection.

Jim Manning said there are showers within the building as well, and that the waste water from showers would be included in the water captured. The system that is designed is a continual monitoring type of system that monitors water quality with an internal pumping arrangement that circulates water within the treatment system to maintain it to appropriate water quality levels. They are trying to maintain NSF 350 effluent criteria which would fall under the class C commercial range of water effluent. This water effluent would only be piped to the water closets. Currently the urinals are waterless so the piping would be capped at the urinal location for possible future use. The effluent then flows to the septic sewer system onsite; therefore, instead of sending all of the effluent into the septic system it is trying to intercept the gray water portion, treating it, and then using it in the toilets before it is discharged out to the septic system.

Andrew Paulsen said they would be treating the tank with ozone and using this for the fixture flushing. The fixture flushing load has different capacities for incoming and outgoing. The incoming would be approximately 1,900 gallons (based on onsite sewage capacity of 50 gallons per campsite) and the fixture flushing with a seasonable building, depending upon how many campers are at the facility, would be difficult to gauge; however, they typically say 5 flushes per person per day.

Peter Paulson said the campground incorporates 28 campsites that includes 3 group sites (20-30 individuals per group site), and two buildings.

Andrew Paulsen replied to Tran regarding NSF350 saying this was the target. Ultimately testing is going to be necessary to determine that it is within that NSF350 class C requirement; however, with the system properly maintained, and the expected effluent, it's a reasonable expectation. Tran asked if there were any requirements or certifications that would need to be done. Paulson said there would be the necessary amount of training to ensure that onsite staff understood the operation of the equipment and the overall maintenance requirements as well but that there were no certification requirements.

Jim Manning said the documents (Attachment D) include testing and owner training for the operation and maintenance of the system. Edwards asked how the system would be identified. Manning said their intent is to use schedule 80 PVC and have it the correct color. All of the piping would be maintained within the mechanical space and piped to the water closets as opposed to being distributed throughout the building. None of it would be used for irrigation. It is only going to be discharged to the toilets and the urinal locations. Edwards asked how much fresh water per year using a gray water system would save. Manning said a substantial amount. He added that it would be approximately 50-75% due to the water closet usage relative to the lavatory and other shower usage.

Tran asked where the intention of *backwash water* from the filters was going. Manning said it would be discharged into the sanitary. Tran noted that plans would need to be reviewed by the Department of Labor and Industry and inspections would follow if the variance petition is approved.

Filtering at 25 microns and the possibility of having the water coming out of the system dyed was discussed by the Board. Brian Noma stated that adding a dye to water could be detrimental.

A motion by Edwards, seconded by Moulton, to grant the permanent variance within the scope as described by the Minnesota Department of Natural Resources (Attachment D). Parizek proposed a friendly amendment that the discharge requirements meet rainwater discharge and inspections per guidelines in 1702.9.4 and 1702.12 as it applies to rain water, modified for gray water systems. The friendly amendment was accepted by Edwards but not by Moulton. The chair asked for another second; the friendly amendment failed due to lack of a second. The original motion was voted on. The majority vote ruled with 8 for and 2 opposed; the motion carried.

A motion was made by Sterner, seconded by Eggen, to authorize John Parizek to issue the written order required by Minnesota Statutes 14.056, Subdivision 5, in connection with granting the Minnesota Department of Natural Resources variance. The vote was unanimous; the motion carried.

D) Petition for Variance – Manitou Ridge Golf Course (Attachment E)

There were no representatives at the meeting. The Board reviewed the Petition for Variance for completeness. Legge noted that once the board receives a complete Petition for Variance the Board must act within 60 days. In her opinion, the petition was not complete. The Board could ask for more information or decide to grant or deny the variance, either one. Legge stated that the Board should state exactly what is needed for the Petition for Variance to be “complete”.

Parizek noted that the Variance was incomplete and needed more information.

Parizek made a motion, seconded by Flagg, that the Petition for Variance was incomplete. The vote was unanimous; the motion carried.

Legge referred to Minnesota Statute 14.055, Subd. 4 Discretionary variances, items 1, 2 and 3, shown below:

Subd. 4. Discretionary variances.

An agency may grant a variance if the agency finds that:

- (1) application of the rule to the petitioner would result in hardship or injustice;
- (2) variance from the rule would be consistent with the public interest; and
- (3) variance from the rule would not prejudice the substantial legal or economic rights of any person or entity.

Legge noted that Parizek should send a letter stating specifically what information was missing in their Petition for Variance and the letter should also state that they are not to move forward with the project because it had not been approved.

Parizek said additional information would be requested by way of letter, as follows:

- 1) Information on inlet and discharge water quality.
- 2) Which type of system would be used?
- 3) Proof that the Department of Health received information on Keller Golf Course.
- 4) Ask petitioner to clarify if they want for reuse.
- 5) Ask that a separate petition for variance be submitted for any other properties.

There was some discussion about whether the petitioner should be asked for more information on Minikahda Club. Comments were made that this is not the petitioner's property and therefore the petitioner should not be asked for information about this.

The Board reiterated that it would be advantageous for the petitioner to have a representative that has knowledge of the equipment be present at a Board meeting to answer questions if their Petition for Variance is received by the Board and determined to be complete.

VII. Complaints

There were no complaints directed to the Plumbing Board; however, Parizek said there were complaints dealing with unlicensed activity and he gave these to CCLD's Enforcement unit.

VIII. Open Forum

None

IX. Board Discussion

None

X. Announcements

Special meetings - meetings with be held in the Minnesota Room, Department of Labor and Industry.

- Special meeting to approve the April 21, 2015 meeting minutes scheduled for April 27, 2015 @ 1:30 p.m.
- Tentative special meeting scheduled for May 12, 2015. Whether this meeting takes place will depend on results and comments from the hearing.
- Tentative special meeting scheduled for May 19, 2015.

Next regularly scheduled meetings – all meetings with be held in the Minnesota Room at 9:30 a.m. Executive Committee meetings occur at 8:00 a.m., prior to each regular meeting.

- July 21, 2015 (Annual meeting). Parizek noted he will ask the Governor to attend.
- October 20, 2015

XI. A motion was made by Sterner, seconded by Edwards, to adjourn the meeting at 3:38 p.m. The vote was unanimous; the motion carried.

Respectfully submitted,

Phillip Sterner

Phillip Sterner

Todnem, Suzanne (DLI)

From: Rawalpindiwala Shabbir <Shabbir.Rawalpindiwala@kohler.com>
Sent: Thursday, March 05, 2015 2:20 PM
To: DLIRULES (DLI)
Subject: Comments - Minnesota Plumbing Board Rulemaking Notice

Dear Ms. Todnem,

Thanks for giving me the opportunity to comment on the subject document. Following are the comments to the proposed Minnesota Plumbing Code:

1. Section 4714.0409. In the last sentence of sub-section 4091.1, reference is made to ASME and IAPMO standards. ASME standard needs to be updated to read "ASME A112.19.7-12/CSA B45.10-12, Hydromassage bathtub systems". Also delete reference to IAPMO IGC 155 because it has been discontinued by IAPMO dueto the requirements of IGC have been incorporated in the harmonized ASME/CSA standards.
2. Section 4714.1401. In sub-section 49.1, delete reference to IAPMO IGC 155 for the reasons cited in Item 1.

If you have any questions, please feel free to contact me.

Thanks,
Shabbir

Suzanne Todnem
443 Lafayette Road North
St. Paul, MN 55155
Phone: (651) 284-5006
Fax: (651) 284-5725
dli.rules@state.mn.us

From: Lutz, Lyndy (DLI) [<mailto:Lyndy.Lutz@state.mn.us>]
Sent: Thursday, March 05, 2015 10:34 AM
Cc: DLIRULES (DLI); CCLD BOARDS, CCLD Boards (DLI); Lutz, Lyndy (DLI)
Subject: Minnesota Plumbing Board Rulemaking Notice

Dear Plumbing Board members, Interested Parties, and DLI Staff:

You are receiving this email because under the Minnesota Administrative Procedures Act, each Minnesota agency must make reasonable efforts to notify persons or classes of persons who may be significantly affected by the rule being proposed. The Minnesota Plumbing Board has identified you as a person or organization who may be affected by the proposed rule.

The Minnesota Plumbing Board intends to adopt rules governing the Minnesota Plumbing Code, Minnesota Rules, chapter 4714, that adopt and amend the 2012 Uniform Plumbing Code. The Dual Notice: Notice of Intent to Adopt Rules Without A Public Hearing Unless 25 or More Persons Request a Hearing, and Notice of Hearing if 25 or More Requests for Hearing are Received, will be published in the March 9, 2015, edition of the State Register. The Dual Notice provides full details about the hearing and cancelation

3/10/15

Ms. Suzanne Todnem,
Department of Labor and Industry
443 Lafayette Road North,
St. Paul, MN 55155

Dear Ms. Todnem:

In reviewing the proposed Minnesota amendments to the 2012 Uniform Plumbing Code I would like to make a comment concerning section 4714.0601 subpart 601.1.2.

“601.1.2 Hot Water Recirculation. Hot water supply systems in four story buildings or higher, and or buildings where the developed length of hot water piping from the source of hot water supply to the farthest fixture supplied exceeds 100 feet, shall be of the return circulation type. “

I realize this statement is geared toward buildings where there are multiple fixtures distributed throughout the building along the hot water distribution system. To me the statement “shall be of the return circulation type. “ infers that the hot water would be required to be returned to the heating device. This however does not take into account a remote fixture that may be separated from the majority of fixtures. The cost of running a dedicated hot water line and a recirculation to a single fixture is cost prohibitive in most cases and does not take into account alternate methods of providing hot water to such a fixture.

There are two possible designs that come to mind that would provide hot water to a fixture under this circumstance.

1. Point of use electric water heater: This would eliminate the need for a hot water line and a recirculation line. A cold water would supply the fixture with cold water and cold water to the water heater, thus providing hot water to the fixture.
2. On demand pumping systems: In certain situations the use of an on demand pumping system may be a less expensive method of delivering hot water to a remote fixture without the use of a recirculation line. A hot water supply line is provided to the fixture, but not a hot water recirculation line. The on demand pumping system technically does not recirculate water back to the heater, but instead pumps the hot water into the cold water supply line until a predetermined hot water set point is reached. Control of the pump can be specified to meet the particular installation (occupancy sensor, push button, etc.).

I would propose the following language: **“601.1.2 Hot Water Recirculation.** Hot water supply systems in four story buildings or higher, and or buildings where the developed length of hot water piping from the source of hot water supply to the farthest fixture supplied exceeds 100 feet, shall be of the return circulation type **or provide an alternate method of supplying hot water to the furthest fixture or device.”**

Sincerely,

A handwritten signature in black ink, appearing to read "Alan R. Allmon". The signature is fluid and cursive, with a long horizontal stroke at the end.

Alan Allmon



CITY OF SAINT PAUL
Christopher B. Coleman, Mayor

375 Jackson Street, Suite 220
Saint Paul, Minnesota 55101-1806

Telephone: 651-266-8989
Facsimile: 651-266-9124
Web: www.stpaul.gov/dsi

Date: 3/20/14

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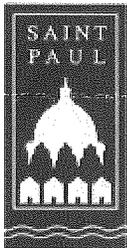
DEPT. OF LABOR & INDUSTRY
LEGAL SERVICES

To: Suzanne Todnem at
Minnesota Department of Labor and Industry
443 Lafayette Road North
Saint Paul Minnesota, 55155

Re: Proposed Permanent Rules Governing the Minnesota Plumbing Code and Adopting the 2012 Uniform Plumbing Code, with Amendments, *Minnesota Rules*, Chapter 4714, and Repeal of *Minnesota Rules*, Chapter 4715.

Members of the Minnesota Plumbing Board,

I would like to express my support of:
Proposed Permanent Rules Governing the Minnesota Plumbing Code and Adopting the 2012 Uniform Plumbing Code, with Amendments, *Minnesota Rules*, Chapter 4714, and Repeal of *Minnesota Rules*, Chapter 4715.



Rick Jacobs

Senior Plumbing Inspector

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City in America

Making Saint Paul the Most Livable City in America

Suzanne Todnem
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Subject: 2015 MN Plumbing Code Comments (#1)

Change: 4714.0050: Line 1.7: replace the word “Offices” with “Officials”

Reason: International Association of Plumbing and Mechanical Offices is incorrect.

1.4	<u>4714.0050 TITLE; INCORPORATION BY REFERENCE.</u>
1.5	<u>Chapters 2 to 11, 14, and 17 of the 2012 edition of the Uniform Plumbing Code</u>
1.6	<u>(UPC) as promulgated by the International Association of Plumbing and Mechanical</u>
1.7	<u>Offices (IAPMO), Ontario, California, and UPC appendices A, B, and I, except for</u>

Submitted by:



Craig Johnson *CPD, LEED AP/BD&C*

Mechanical Designer | Leidos Engineering, LLC

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Subject: 2015 MN Plumbing Code Comments (#2)

Change: 4714.1110: In multiple sections, the year of ASPE Standard 45 needs to be specified.

46.24	<u>1110.2.2 Design. The drainage system shall be designed according to ASPE Standard</u>
46.25	<u>45, Siphonic Roof Drainage, and according to the manufacturer's recommendations</u>

Reason: The current 2012 Mn Plumbing Code and the proposed amendments are based on the ASPE Standard published in 2007. The 2007 version was the first publication, and there have been significant changes to the more recent 2013 ASPE Standard 45. I believe that the 2015 MN Plumbing Code should be based on the updated 2013 ASPE Standard 45. Subparts 1110.2.2, 1110.2.5, 1110.2.9, 1110.3.1, 1401 should be revised to read; "ASPE Standard 45 (2013)"

Submitted by:



Craig Johnson *CPD, LEED AP/BD&C*

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Subject: 2015 MN Plumbing Code Comments (#3)

Change: 4714.11102.9: Strike "The velocity at the transition location to gravity shall be reduced to less than three feet per second." And replace it with "The pipe size after the transition shall be sufficient to return the system to open channel flow."

47.22	<u>The velocity at the transition location to gravity shall be reduced to less than three</u>
47.23	<u>feet per second. The gravity portion of the building storm sewer system receiving the</u>

Reason: The requirement to reduce the velocity to 3 feet per second is not practical and in many cases is impossible. In my opinion, this velocity requirement was a mistake in the 2007 version of ASPE Standard 45 which was corrected in the 2013 version of ASPE Standard 45. The European standard upon which the original 2007 version of ASPE Standard 45 was based required the velocity to be reduced to 3 meters per second. I believe that in the translation from metric to IP, the 3 meters per second was incorrectly translated to 3 feet per second. The 10 or more pipe diameters in both standards (2007 and 2013) is considered sufficient to return the flow to open channel flow.

2007 ASPE Standard 45 Reads

9.9.3 Flare out the discharge piping 10 or more pipe diameters prior to the ventilated manhole or sump to decrease flow velocity to less than 0.9 m/sec (3.0 ft/sec). The resulting pipe diameter should be consistent with the Manning open channel flow diameter for the roof area (water flow) and a pitch of 1%.

2013 ASPE Standard 45 Reads

9.9.3 Flare out the discharge piping 10 or more pipe diameters prior to the vented manhole or sump. The resulting pipe diameter should be sufficient to return the system to open channel flow.

Submitted by:



Craig Johnson CPD, LEED AP/BD&C

Mechanical Designer | Leidos Engineering, LLC

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60 East Plato Boulevard, Suite 300, St Paul, MN 55107
leidos.com/engineering

March 19, 2015

Suzanne Todnem
MN. Department of Labor and Industry
443 Lafayette Road N.
St. Paul, MN 55155

RECEIVED
MAR 26 2015
DEPT. OF LABOR & INDUSTRY
LEGAL SERVICES

Dear Suzanne Todnem:

I want to express my support for the repeal of MN Rule Chapter 4715 and the adoption of the new permanent Rule Chapter 4714. I also want to commend the MN Plumbing Board for the very deliberate and tedious work to amend and merge the Minnesota Plumbing Code and the Uniform Plumbing Code (UPC).

Extensive review of the International Plumbing Code (IPC) by the Department of Health confirmed that the IPC and the Minnesota Plumbing Code were not compatible.

The Plumbing Board in coordination with the MN. Department of Health, MN Department of Labor and Industry, MPCA, MN.DNR and with several IPC representatives in attendance compared the UPC chapter by chapter with the Minnesota Plumbing Code and have amended the UPC Minnesota Edition to incorporate Minnesota's unique plumbing code language while keeping the principles of the plumbing code intact and protecting the health and safety of Minnesotans.

I congratulate all parties that worked on this project for their professionalism and long hours and appreciate the dedication in completing this project.

I look forward to the adoption of the rule change.

Sincerely



Carl Crimmins
Retired President, MN Pipe Trades Association



MINNESOTA PIPE TRADES ASSOCIATION

Affiliate of the United Association
Composed of Journeyman and Apprentices of the Plumbing and Pipe Fitting Industry
Of the United States and Canada
State Federation of Labor – A.F.L.-C.I.O.

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Duluth-Detroit Lakes
Plumbers and Pipefitters
Local #11

Minneapolis-St. Cloud
Plumbers
Local #15

Minneapolis-St. Cloud
Pipefitters
Local #539

Minneapolis-St. Paul
Sprinkler Fitters
Local #417

Minneapolis
Gas Workers
Local #340

Moorhead
Plumbers and Pipefitters
Local #300

Rochester
Plumbers and Pipefitters
Local #6

St. Paul – Mankato
Plumbers
Local #34

St. Paul – Mankato
Pipefitters
Local #455

Virginia
Plumbers and Pipefitters
Local #589

Road Sprinkler Fitters
Local #669
District 28

April 6, 2015

Suzanne Todnem
Minnesota Department of Labor and Industry
443 Lafayette Road N.
St. Paul, MN 55155

Dear Ms. Todnem:

The Minnesota Pipe Trades Association represents approximately 3000 plumbers licensed in the State of Minnesota. On behalf of the members of our Association, I am contacting you to express support of the repeal of MN Rule Chapter 4715 and adoption of the new permanent Rule Chapter 4714.

After extensive review of the International Plumbing Code (IPC), the MN Department of Health confirmed that the IPC and Minnesota Plumbing Code were not compatible.

Upon that determination, the Minnesota Plumbing Board worked diligently to amend and merge the Minnesota Plumbing Code and the Uniform Plumbing Code (UPC).

The Plumbing Board, in coordination with the MN Department of Labor and Industry, MN Department of Health, MPCA, MN Department of Natural Resources, along with a number of IPC representatives in attendance, compared the UPC chapter by chapter with the Minnesota Plumbing Code. The resulting "UPC Minnesota Edition" incorporates Minnesota's unique code language while preserving the principles of the UPC.

I wish to thank and congratulate all that have worked diligently on this effort. The commitment and dedication to the process has been significant.

I look forward to the adoption of the rule change.

Respectfully,

David Ybarra II, President
Minnesota Pipe Trades Association

RECEIVED

APR 06 2015

DEPT. OF LABOR & INDUSTRY
LEGAL SERVICES

RECEIVED

APR 06 2015

DEPT. OF LABOR & INDUSTRY
LEGAL SERVICES



Minnesota Nursery & Landscape Association

1813 Lexington Ave N • Roseville, MN 55113
651-633-4987 • Fax 651-633-4986 • www.MNLA.biz

April 6, 2015

Suzanne Todnem
443 Lafayette Road North
St. Paul, MN 55155

Dear Ms. Todnem:

This letter will serve as the official comments of the Minnesota Nursery and Landscape Association (MNLA) with respect to the Minnesota Plumbing Board's dual notice of intent to Adopt Rules Governing the Minnesota Plumbing Code. The MNLA represents more than 1,100 member businesses, with approximately \$3.5 billion in economic impact in Minnesota, including garden centers; landscape contractors and designers; nursery and greenhouse growers; irrigation contractors; and lawn, tree, and garden services.

The MNLA urges the Minnesota Plumbing Board (MPB) to cease in its intent to amend Minnesota Rules and revisit its decision of April 19th, 2011, in which it chose to consider only Minnesota amendments to the Uniform Plumbing Code (UPC), instead of conducting a side-by-side review of the suitability of both the UPC and the International Plumbing Code (IPC) as a base national code upon which to build a proposed new Minnesota Plumbing Code. The MNLA believes that the best analysis to date of options that the Minnesota Plumbing Board must consider is the *White Paper on Model Code Adoption by the Minnesota State Plumbing Board*, dated April 15, 2011, written by the Association of Minnesota Building Officials. The MNLA is confident that a fair and open comparison of UPC and IPC will result in the MPB's eventual choice of the IPC as a base national code upon which to base a new Minnesota plumbing code.

Sincerely,

A handwritten signature in black ink, appearing to read "Timothy H. Power", written over a horizontal line.

Timothy H. Power
MNLA Government Affairs Director



Benjamin Miller, PhD, RS
Dairy and Food Inspection Division
Minnesota Department of Agriculture
625 Robert St N
Saint Paul, MN 55155
April 6, 2015

Suzanne Todnem
Minnesota Department of Labor and Industry
443 Lafayette Rd N
Saint Paul, MN 55155
dli.rules@state.mn.us

Ms. Todnem:

Please find comments from the Minnesota Department of Agriculture regarding proposed revisions to the Minnesota Plumbing Code below. Please let me know if you have any questions regarding any of these comments.

DEFINITIONS

Part 4717.0210 Subp2 – Health Authority Means the Commissioners of the Minnesota Department of Health and Agriculture or their local delegated agents. This section should be changed to reflect that there are other sections at the departments that may be effected by changes to the code, such as food service establishments and swimming pools.

- MDA supports the addition of Commissioner of Agriculture who regulates and licenses Retail Food Stores under MN Food Code Rule 4626., and Wholesale Manufacturer and Distributor facilities (Code of Federal Regulations).

GENERAL REGULATIONS

Part 4714.0317. Section 317 of the UPC establishes (national) plumbing standards for food-handling establishments. Food establishments in Minnesota inspected by the Department of Agriculture, Department of Health or local authorities that conduct inspections of food establishments are regulated by Minnesota Rules, chapter 4626, the Minnesota Food Code. Part 4626.0960. 4-903.12 of the Food Code prohibits storage of cleaned and sanitized equipment, utensils, laundered items, or single service and single-use articles under a sewer line that is not shielded to intercept potential drips. The proposed language of Part 4714.0317.1 does not require shielding. The proposed language has also removed the requirements in the UPC for leakage protection.

- MDA recommends that the language in 0317.1 of the UPC be retained. We also recommend that a general reference be made to the MN Food Code Rule 4626 which contains a number of plumbing requirements for food establishments, including shielding, not required by the UPC or proposed Minnesota amendments.

FLOOR DRAINS

Part 4714.0418 subpart 1 section 418.4 Food Storage Areas

625 Robert St. N., St. Paul, MN 55155-2538 ☐ 651-201-6000 or 1-800-967-2474 ☐
www.mda.state.mn.us

Where drains are provided in storerooms, walk-in freezers, walk-in cooler, refrigerated equipment, or other locations where food is stored, the drains shall have indirect waste piping.

- MDA would request that above section make reference to 4714.0801 Indirect Wastes. Subpart 1 section 801.1.1. Where floor drains are prohibited in walk-in coolers AND ADD walk-in freezers unless they are specifically required by the licensing authority.
- The reason for this request is to make is very clear that floor drains are prohibited in walk in coolers AND walk in freezers unless required the licensing authority.

INDIRECT WASTES

Part 4714.801.2.3 Food Handling Fixtures. Cooking ranges, steam kettles, potato peelers, ice cream dipper wells, and similar equipment shall be indirectly connected to the drainage system by means of an air gap.

A MDH proposal to add ice machines to the list of fixtures that must be indirectly connected unless no backwater valve is installed, and to add a requirement to trap ice bins was not approved (However, see part 4714.801.2 which requires indirect piping for ice-making machines, refrigerators and similar equipment).

- MDA is OK with this section.

FOOD HANDLING FIXTURES

Part 4714.801.3 MDH proposed that a bar, soda fountain, or counter sink regulated under chapter 4626 serving a commercial food establishment be directly wasted. The proposal was not accepted. Part 4714.801.3 is deleted in its entirety.

- MDA is OK with this deletion.

INDIRECT WASTE RECEPTORS

Part 4714.0804 Indirect Waste Receptors. 804 is amended by adding the following subsection: No plumbing fixture that is used for domestic or culinary purposes shall be used to receive the discharge of an indirect waste.

- MDA is Ok with this section.

VENTS NOT REQUIRED

Part 4714.902.2 The UPC allows bar, soda fountain, and counter sink traps not to be vented where it is not possible to do so. MDH proposed that traps serving commercial food establishments must be vented as required in the food code which adopts NSF Standard 7. The Board deleted all of section 902.2.

- MDA is Ok with this deletion.

Sincerely,



Benjamin Miller, PhD, RS
Food Program and Response Manager
Minnesota Department of Agriculture
benjamin.miller@state.mn.us
651-201-6670



MINNESOTA MECHANICAL CONTRACTORS ASSOCIATION

Officers
Lori Bauer, President
Stu McIntosh, Vice President
Scott Stewart, Secretary
Chuck Albers, Treasurer

Executive Vice President
Steven G. Pettersen

Board of Directors
David Bawek
Brad Kramer
Keith Larson
Chris Young
Tom Elander
Scott Wenzel

April 8, 2015

Suzanne Todnem
Minnesota Department of Labor and Industry
443 Lafayette Road
St. Paul, MN 55155

Re: Proposed Permanent Rules Governing the Minnesota Plumbing Code and Adopting the 2012 Uniform Plumbing Code, with Amendments, Minnesota Rules, Chapter 4714, and Repeal of Minnesota Rules, Chapter 4715.

The Minnesota Mechanical Contractors Association supports the proposed rule including adopting the 2012 Uniform Plumbing Code with Amendments.

The Minnesota Mechanical Contractors Association (MMCA), with 125 members, represents contractors who perform the installation and servicing of plumbing, heating, refrigeration, and cooling equipment. Whether it is water, waste, oil, air or any other medium – plumbing and mechanical contractors do it. Our contractors range in size from one employee to hundreds of employees, and in type from installing a water heater in your home to repiping Flint Hills Refinery. Minnesota MCA members hire over 6,000 employees and performed over \$½ billion of construction business last year. Our contractors spend over \$5 million dollars every year on training apprentices and journeyman. Minnesota MCA contractors and their employees are trained, qualified, and licensed to perform plumbing and mechanical contracting work in order to protect the public and themselves.

Minnesota has been regulating plumbing since in 1933. Until now, we have used a self-generated, home-grown code. But the world changes and it is now time for Minnesota to join most other states and use a nationally recognized code. In 2011 the Minnesota Plumbing Board chose the Uniform Plumbing Code as the base document. Since then they have been drafting Minnesota amendments to that base document. MMCA has been very supportive of the Plumbing Board's effort.

We support the Plumbing Board and the proposed rule for the following reasons:

- With the Uniform Plumbing Code (UPC), all parties get a voice in the writing of the base code document from plumbing contractors, plumbing inspectors, building officials, commercial and residential contractors and plumbing employees .

830 Transfer Road, Suite 1A • St. Paul, MN 55114-1434 • 651-646-2121 • Fax: 651-646-9678
Representing EEO Employers • www.minnesotamca.org



- The Plumbing Board did an extensive review before they decided to go with the UPC.
- The Minnesota Plumbing Board allowed extensive opportunity for input into the process for amending the UPC.
- Costs for converting to the UPC will be less for plumbing contractors since this code is more similar to Minnesota's existing code.
- Many of our surrounding states have adopted the UPC.
- Since the UPC is the national code that most closely resembles Minnesota existing code, code inspection will be smoother for all parties involved.

The Minnesota Mechanical Contractors Association supports the Plumbing Boards adoption of the 2012 Uniform Plumbing Code with Minnesota Amendments. The Plumbing Board has made the right decision in going with the Uniform Plumbing Code.

Sincerely,

A handwritten signature in black ink, appearing to read "Gary Thaden", written in a cursive style.

Gary Thaden
Government Affairs Director
Minnesota Mechanical Contractors Association
651/646-2121 (w), 612/840-1233
GThaden@MinnesotaMCA.org

of hearing. A PDF copy of the Dual Notice is available at: www.dli.mn.gov/PDF/docket/4714notice.pdf. Links to the proposed rules and the Statement of Need and Reasonableness are available at www.dli.mn.gov/PDF/docket/4715docket3.pdf along with other information on the status of the rulemaking proceeding.

The comment period for this rulemaking ends at 4:30 pm on April 8, 2015.

**PROPOSED PERMANENT RULES GOVERNING THE MINNESOTA PLUMBING
CODE AND ADOPTING THE 2012 UNIFORM PLUMBING CODE, WITH
AMENDMENTS, MINNESOTA RULES, CHAPTER 4714, AND REPEAL OF
MINNESOTA RULES, CHAPTER 4715**

**MINNESOTA DEPARTMENT OF HEALTH COMMENTS
APRIL 8, 2015**

Submitted to Suzanne Todnem, Minnesota Department of Labor and Industry, 443 Lafayette
Road North, Saint Paul, Minnesota 55155 dli.rules@state.mn.us

DEFINITIONS

Part 4714.0203. Subpart 1 defines “Administrative Authority.” Subpart 2 defines “Authority Having Jurisdiction” to mean the same as “Administrative Authority.” Both definitions refer to the Department of Labor and Industry or a local government that is administering the Minnesota Plumbing Code. As noted in the Statement of Need and Reasonableness, the term “Authority Having Jurisdiction” is used throughout the Uniform Plumbing Code (UPC) over 500 times. In numerous instances, the UPC and proposed amendments give great discretion to the authority to permit, review, approve, or allow. This discretion may lead to varying interpretations of rule and inconsistencies. We would recommend modification of the definition to limit local authority to implementation of the Minnesota Plumbing Code, and require interpretations of rule, allowance of alternative products and procedures, and issuance of waivers or variances to be vested with the Plumbing Board or Department of Labor and Industry as appropriate.

Part 4714.0210, Subpart 2. We recommend that the proposed definition of “Health Authority” as the “...state health department or local public health agency...” be changed to “...Minnesota Department of Health or local public health agency...” We would also note that other governmental agencies which are not strictly health departments administer health-based requirements, such as the standards of the Minnesota Food Code, Minnesota Rules, Chapter 4626, administered by the Minnesota Department of Agriculture and delegated local governments.

GENERAL REGULATIONS

Part 4714.0317. Section 317 of the Uniform Plumbing Code (UPC) establishes national plumbing standards for food-handling establishments. Food establishments in Minnesota inspected by the Minnesota Department of Agriculture, Minnesota Department of Health, or local authorities are regulated by Minnesota Rules, Chapter 4626: the Minnesota Food Code. Chapter 5 of the Minnesota Food Code is specific to requirements for water, plumbing, and waste. Other rule parts address plumbing-related issues such as part 4626.0960. 4-903.12 which prohibits storage of cleaned and sanitized equipment, utensils, laundered items, or single service and single-use articles under a sewer line that is not shielded to intercept potential drips. The proposed language of part 4714.0317.1 does not require shielding. The proposed language has also removed requirements in the Uniform Plumbing Code for leak protection. We recommend that the full language of UPC section 317.1 be retained. We recognize that a reference to each specific Food Code citation may be impractical, but since the Food Code contains a number of

plumbing requirements for food establishments, we recommend that a reference be made to existence of the Food Code for the benefit of designers and installers.

PLUMBING FIXTURES AND FIXTURE FITTINGS

Uniform Plumbing Code Section 408.8 (4714.0408.8). This provision of the Uniform Plumbing Code (UPC) pertains to public shower floors. The UPC language, not proposed for amendment, states: “Floors of public shower rooms shall have a nonskid surface and shall be drained in such a manner that wastewater from one bather shall not pass over areas occupied by other bathers.” The purpose of the rule is to prevent bathers from being exposed to wastes from other bathers. The existing Minnesota Plumbing Code contains language in part 4715.1380, subpart 2, “Where each shower space is not provided with an individual waste outlet, the waste outlet must be located and floor pitched so that the water from one shower does not flow over the floor area serving another shower.” The UPC language pertains to occupied areas and may not assure that bathers entering or leaving a shower space are not exposed to wastes from other bathers. We recommend that the sentence quoted above from part 4715.1380, subpart 2, be added, or the UPC language be amended to include common areas.

4714.0418. The requirements for food service walk-in cooler and freezer floor drains in part 4714.0801.2.2 and in the Minnesota Food Code are different from the general requirements in this part. We recommend that rule part 4714.0801.2.2 be referenced in rule part 4714.0418 to prevent confusion and possible noncompliance.

WATER SUPPLY AND DISTRIBUTION

Part 4714.0602.4. This amendment proposes to change language in Uniform Plumbing code (UPC) section 602.4 to remove the requirement that the “.....Health Department, or other department having jurisdiction....” approve connection of a private water supply to any other source of supply. The Minnesota Department of Health regulates public and private water supplies under Minnesota statutes and rules. Minnesota Rules, part 4725.3350 contains specific requirements for interconnection of well water systems. Local governments, including community public (municipal) water suppliers, also have authorities concerning use of water sources, connection, interconnection, and back flow protection. We recommend that the language be based on the UPC wording and read “No water piping supplied by a private water supply system shall be connected to any other source of supply without approval of the Authority Having Jurisdiction, Minnesota Department of Health, or other department having jurisdiction.”

4714.603.5.4.2. Double wall heat exchangers typically use non-potable, and sometimes highly toxic heat transfer fluids and additives. It is very important to maintain the integrity of the system to protect potable water and public health. The existing Minnesota Plumbing Code, part 4715.1941, subpart 2, states that “A double-wall heat exchanger must be designed in a way that any failure of a wall must allow the discharge to the atmosphere of the heat transfer medium or the potable water contained by the wall. The discharge location must be visible to the operator or owner of the system and be located so that no hazards are created by the discharge.” We recommend that this language be added.

Part 4714.609.9. The construction, repair, or addition of new components to a potable water system creates a very real potential for the introduction of contaminants including

microorganisms. A water line break, flood, vandalism, loss of pressure, or contamination event, almost assures the introduction of contaminants. Disinfection with a chlorine solution is the standard protocol to eliminate microbiological contaminants. The Uniform Plumbing Code (UPC) specifies in detail the procedures, materials, contact time, and disinfectant chemicals required during disinfection. However, the UPC requires disinfection only when required by the administrative authority. We would recommend that instead of requiring disinfection only when required by the administrative authority, disinfection should be mandatory for all new or repaired potable water systems, or at a minimum, those which show microbiological contamination, are depressurized, or are substantially altered. We point out that disinfection is required of all new and repaired wells and water service pipe by Minnesota Rules, part 4725.2010. We would also recommend that the chlorine concentrations established in the UPC require “free” chlorine, and that analysis be done using a laboratory certified under parts 4740.2010 to 4740.2120.

Part 4714.611.0. Uniform Plumbing Code section 611.1 requires drinking water treatment units to comply with NSF 42 or NSF 53, water softeners to comply with NSF 44, ultraviolet water treatment systems to comply with NSF 58, and reverse osmosis water treatment systems to comply with NSF 62. The NSF standards provide assurance that the devices actually remove the listed contaminants or constituents. The proposed language in part 4714.6100 removes these requirements, and does not establish alternative criteria to assure that the devices are effective. We note that part 4626.1040 5-201.11 of the Food Code specifically requires compliance with NSF standards 42, 44, 53, and 58. We acknowledge that there are limitations of requiring only NSF-complying devices, but removal of the requirement to use a complying device leaves no standard. We recommend that criteria for treatment device effectiveness be added, particularly for health-related contaminant removal.

INDIRECT WASTES

Part 4714.0801.2.2. is titled “Walk-In Coolers” and prohibits floor drains inside walk-in coolers unless they are specifically required by the licensing authority. The requirement is designed to prevent backup of sewage into floor drains that can contaminate food stored in a cooler or freezer. Floor drains are prohibited in walk-in coolers and freezers regulated under the Food Code. We recommend that the title be amended to “Walk-In Coolers and Freezers,” and the first sentence of part 4714.0801.2.2 be amended to read “Floor drains shall not be located inside walk-in coolers or freezers unless they are specifically required by the licensing authority.”

NONPOTABLE RAINWATER CATCHMENT SYSTEMS

The existing Minnesota Plumbing Code requires that potable water be supplied to all plumbing fixtures. The proposed rainwater catchment system rules allow nonpotable rainwater to be captured, stored, and supplied to certain fixtures for nonpotable use. We have two comments.

Part 4714.1702.1 allows rainwater to be used for water closets, urinals, trap primers for floor drains and floor sinks, industrial processes, water features, vehicle washing facilities, cooling tower makeup, and similar uses. While the specified uses should not generally result in direct ingestion through drinking or food, some uses present an increased risk of human exposure, particularly through inhalation. Water features such as fountains, and in particular fountains accessible to the public; cooling towers, which have been implicated in Legionella outbreaks; and the undefined “similar uses” may present an escalated exposure risk to the public. We

recommend removal of these from the list of permitted uses, or establishment of a rigorous review and approval process for these uses through a variance or other approval process.

Part 4714.1702.4 allows the use of reclaimed (recycled) water, as well as potable water, as makeup water for rainwater systems. Reclaimed (recycled) water is tertiary treated domestic wastewater (sewage) from a water/wastewater utility. UPC chapter 16 pertaining to alternate water sources for nonpotable applications, including reclaimed (recycled) water, is not proposed to be adopted at this time. The Water Reuse Interagency Workgroup, a multi-agency group, including representatives of the Plumbing Board, Department of Labor and Industry, Department of Health, Pollution Control Agency, and others has proposed to review Chapter 16 for future consideration in rulemaking. Reuse of reclaimed (recycled) water, gray water, and onsite- treated nonpotable water poses numerous and broad interdisciplinary issues. We recommend that until the issues of reclaimed (recycled) water are better defined, and rules are implemented, the use of reclaimed (recycled) water for rainwater makeup not be allowed.

Ronald D. Thompson, P.G.
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The Lawyers for Employers

Douglas P. Seaton
Attorney at Law

Tel 952.921.4604
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VIA E-MAIL (dli.rules@state.mn.us)

April 8, 2015

Ms. Suzanne Todnem
Minnesota Department of Labor and Industry
443 Lafayette Road North
Saint Paul, MN 55155

Dear Ms. Todnem:

This firm represents the International Code Council, and submits this written comment in opposition to the proposed rules adopting the Uniform Plumbing Code (UPC) as a model plumbing code to replace the current Minnesota State Plumbing Code.

The International Code Council is the developer of the International Plumbing Code (IPC). The International Plumbing Code is part of the family of International codes that includes the International Building Code, the International Fire Code, the International Residential Code, the International Mechanical Code, the International Fuel Gas Code, the International Electrical Code, the International Energy Code, the International Existing Building Code and the International Green Construction Code. These codes are developed and coordinated at the national level. Minnesota has adopted the International fire code, building code, mechanical code, fuel gas code, energy code, residential code and electrical code. The addition of the International Plumbing Code would benefit local enforcement and ultimately conserve resources because it is compatible with these existing codes and therefore more easily integrated into the local code administration and enforcement processes. Despite the obvious advantages of the IPC, it was not considered by the Minnesota State Plumbing Board as a model code replacement.

Instead, the promulgation of the UPC as the replacement for the current Minnesota State Plumbing Code was initiated nearly four years ago without due consideration of any other model codes. At a meeting of the Minnesota State Plumbing Board (MSPB) on April 19, 2011, the MSPB decided to move forward with proposing adoption of the UPC without appropriate consideration of the IPC as a competitor model code. Public notice was not given that the MSPB on that date would vote on adoption of the UPC without reviewing alternative codes, comparison of the IPC and UPC was not performed, and the Board provided no substantive technical or policy reasons for adopting the UPC. The April 19, 2011 meeting agenda of the plumbing board, which was distributed by e-mail on April 14, 2011, did not specify that a substantial change to the rules regulating plumbing would be considered and acted upon. This omission inhibited public participation in the formulation of rules governing plumbing, and deprived the ICC of due process and the opportunity to adequately present the IPC as a replacement model code.

Ms. Suzanne Todnem

April 8, 2015

Page 2

For these reasons, we strongly discourage and oppose adoption of the UPC, and request that the matter be returned to the MSPB in order to ensure full and fair consideration of alternative model codes. Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Douglas P. Seaton". The signature is fluid and cursive, with a large initial "D" and "S".

Douglas P. Seaton

Post-comment period (ending 4.8.15) changes proposed
to Board 4.21.15

01/21/15

REVISOR

SS/JC

RD4139

Attachment B -

1.1 Minnesota Plumbing Board

1.2 Proposed Permanent Rules Governing the Plumbing Code and Adopting the 2012 1.3 Uniform Plumbing Code, with Amendments

1.4 4714.0050 TITLE; INCORPORATION BY REFERENCE.

1.5 Chapters 2 to 11, 14, and 17 of the 2012 edition of the Uniform Plumbing Code
1.6 (UPC) as promulgated by the International Association of Plumbing and Mechanical
1.7 Officials
1.7 ~~Officials~~ (IAPMO), Ontario, California, and UPC appendices A, B, and I, except for
1.8 IS 12-2006, IS 13-2006, IS 26-2006, SIS 1-2003, and SIS 2-2003 of appendix I, are
1.9 incorporated by reference and made part of the Minnesota Plumbing Code except as
1.10 qualified by the applicable provisions in chapter 1300, and as amended in this chapter. The
1.11 UPC is not subject to frequent change and a copy of the UPC, with amendments for use in
1.12 Minnesota, is available in the office of the commissioner of labor and industry. Portions of
1.13 this chapter reproduce text and tables from the UPC, reproduced with permission. The
1.14 UPC is copyright 2012 by the IAPMO. All rights reserved.

1.15 4714.0100 BASIC PLUMBING PRINCIPLES.

1.16 This code is founded upon certain basic principles of environmental sanitation
1.17 and safety through properly designed, acceptably installed, and adequately maintained
1.18 plumbing systems. Some of the details of plumbing construction may vary, but the basic
1.19 sanitary and safety principles desirable and necessary to protect the health of the people
1.20 are the same everywhere. As interpretations may be required, and as unforeseen situations
1.21 arise that are not specifically covered in this code, the 23 principles in items A to W
1.22 shall be used to define the intent.

1.23 A. All premises intended for human habitation, occupancy, or use shall be
1.24 provided with a potable water supply that meets the requirements of the commissioner of
1.25 health. The water supply shall not be connected with unsafe water sources nor shall it
1.26 be subject to the hazards of backflow or back-siphonage.

2.1 B. Proper protection shall be provided to prevent contamination of food, water,
2.2 sterile goods, and similar materials by backflow of sewage. When necessary, the fixtures,
2.3 devices, or appliances shall be connected indirectly with the building drainage system.

2.4 C. Each family dwelling unit shall have at least one water closet, one lavatory,
2.5 one kitchen-type sink, and one bathtub or shower to meet the basic requirements of
2.6 sanitation and personal hygiene. All other structures for habitation shall be equipped
2.7 with sufficient sanitary facilities.

2.8 D. The building sewer in every building with installed plumbing fixtures
2.9 and intended for human habitation, occupancy, or use when located on premises where
2.10 the Authority Having Jurisdiction has determined that a public sewer is available shall
2.11 be connected to the public sewer.

2.12 E. The building drainage system shall be designed to provide adequate
2.13 circulation of air in all pipes with no danger of siphonage, aspiration, or forcing of trap
2.14 seals under conditions of ordinary use.

2.15 F. The drainage system shall be designed, constructed, and maintained to conduct
2.16 the waste water with velocities that prevent fouling, deposition of solids, and clogging.

2.17 G. The drainage system shall be provided with an adequate number of cleanouts
2.18 so arranged that in case of stoppage the pipes may be readily cleaned.

2.19 H. Where a building drainage system may be subjected to backflow of sewage,
2.20 suitable provision shall be made to prevent overflow in the building.

2.21 I. Each vent terminal shall extend to the outer air and be so installed as to
2.22 minimize the possibilities of clogging and the return of foul air to the building.

2.23 J. No substance that will clog or accentuate clogging of pipes, produce
2.24 explosive mixtures, destroy the pipes or their joints, or interfere unduly with the sewage
2.25 disposal process shall be allowed to enter the drainage system.

3.1 K. The piping of the plumbing system shall be of durable material free from
3.2 defective construction and designed and constructed to give satisfactory service for its
3.3 reasonable expected life.

3.4 L. The plumbing system shall be subjected to adequate tests and to inspections
3.5 in a manner that will disclose all leaks and defects in the work or the material.

3.6 M. Plumbing systems shall be maintained in a safe and serviceable condition
3.7 from the standpoint of both mechanics and health.

3.8 N. Plumbing shall be installed with due regard to preservation of the strength
3.9 of structural members and prevention of damage to the walls and other surfaces through
3.10 fixture usage.

3.11 O. Plumbing fixtures shall be made of durable, smooth, nonabsorbent, and
3.12 corrosion-resistant material and be free from concealed fouling surfaces.

3.13 P. Plumbing fixtures, devices, and appurtenances shall be supplied with water
3.14 in sufficient volume and at pressures adequate to enable them to function properly and
3.15 without undue noise under normal conditions of use.

3.16 Q. Plumbing fixtures shall be designed and adjusted to use the minimum
3.17 quantity of water consistent with proper performance and cleaning. Hot water shall be
3.18 supplied to all plumbing fixtures which normally need or require hot water for their
3.19 proper use and function.

3.20 R. All plumbing fixtures shall be installed with regard to spacing as to be
3.21 accessible for their intended use and cleansing.

3.22 S. Each fixture shall be provided with a separate, accessible, self-scouring,
3.23 reliable trap placed as near to the fixture as possible.

3.24 T. No water closet or similar fixture shall be located in a room or compartment
3.25 that is not properly lighted and ventilated.

4.1 U. If water closets or other plumbing fixtures are installed in a building where
4.2 there is no public sewer available as determined by the Authority Having Jurisdiction,
4.3 suitable provisions shall be made for treatment of the building sewage by methods that
4.4 meet the requirements of rules administered by the Pollution Control Agency.

4.5 V. Devices for heating and storing water shall be designed and installed to
4.6 prevent all dangers from explosion and overheating.

4.7 W. Sewage or other waste shall not be discharged into surface or subsurface
4.8 water unless it first has been subjected to an acceptable form of treatment approved by the
4.9 Pollution Control Agency.

4.10 **4714.0101 CONFORMANCE WITH CODE.**

4.11 Subpart 1. Scope. As provided in Minnesota Statutes, sections 326B.43 and
4.12 326B.52, this code applies to all new plumbing installations performed anywhere in the
4.13 state, including additions, extensions, alterations, and replacements.

4.14 Subp. 2. New buildings. In new buildings, all plumbing materials and plumbing
4.15 systems or parts thereof shall be installed to meet the minimum provisions of this code.

4.16 Subp. 3. Existing buildings. In existing buildings and premises in which plumbing
4.17 systems, drainage systems, or other work regulated by this code are to be added, altered,
4.18 renovated, or replaced, the new materials and work shall meet the provisions of this code. If
4.19 the Authority Having Jurisdiction finds that the full performance of bringing the work into
4.20 compliance with all requirements of this code would result in exceptional or undue hardship
4.21 by reason of excessive structural or mechanical difficulty or impracticability, a deviation
4.22 may be granted by the Authority Having Jurisdiction only to the extent the deviation can
4.23 be granted without endangering the health and safety of the occupants and the public.

4.24 Subp. 4. Changes in building occupancy. A plumbing system that is a part of a
4.25 building or structure undergoing a change in use or occupancy, as defined in the building

5.1 code, shall be in accordance with the requirements of this code that are applicable to
5.2 the new use or occupancy.

5.3 Subp. 5. Moved buildings. Plumbing systems that are part of buildings or structures
5.4 moved into this jurisdiction shall be in accordance with this code for new installations. Parts
5.5 of the plumbing systems of a building or part thereof that is moved from one foundation to
5.6 another, or from one location to another, shall be completely tested as new work, except
5.7 that walls or floors need not be removed during such tests where other equivalent means
5.8 of inspection acceptable to the Authority Having Jurisdiction are provided.

5.9 Subp. 6. Health and safety. No provision of this code shall be deemed to require
5.10 a change in a portion of a plumbing or drainage system or other work regulated by this
5.11 code in or on an existing building or lot where the work was installed and is maintained in
5.12 accordance with rule in effect before the effective date of this code. Where the plumbing
5.13 or drainage system or other work regulated by this code is determined by the Authority
5.14 Having Jurisdiction to be dangerous, unsafe, insanitary or a nuisance or a hazard to life,
5.15 health, or property then the owner or owner's agent shall be responsible for bringing the
5.16 existing plumbing installation within the provisions of this code. Where these conditions
5.17 exist, the owner or owner's agent shall be responsible for installing additional plumbing or
5.18 making such corrections as may be necessary to abate such nuisance or hazard and bring
5.19 the existing plumbing installation within the provisions of this code.

5.20 Subp. 7. Commissioner's authority. The commissioner retains the ultimate
5.21 authority to enforce this code and Minnesota Statutes, sections 326B.41 to 326B.59,
5.22 regardless of whether the administrative authority is the commissioner or the governing
5.23 body of a governmental subdivision.

5.24 **4714.0203 TERMS DEFINED BEGINNING WITH A.**

5.25 Subpart 1. Added definitions. UPC section 203.0 is modified by adding the
5.26 following definition:

6.1 **Administrative Authority** - Means the commissioner.

6.2 **Exception:** When a governmental subdivision adopts and maintains a comprehensive
6.3 plumbing enforcement program that is conducted by personnel who are knowledgeable
6.4 about plumbing installation requirements, and includes enforcement of all code
6.5 provisions including materials, methods, inspection, and testing, the administrative
6.6 authority shall be the governing body of the adopting unit of government or a duly
6.7 designated representative of the governing body who is either an employee of the
6.8 governing body or a person working under contract with the governing body.

6.9 Subp. 2. **Amended definitions.** UPC section 203.0 is modified by amending the
6.10 following definitions:

6.11 **Approved** - Means approval by the administrative authority, pursuant to the Minnesota
6.12 Plumbing Code, by reason of inspection, investigation, or testing; accepted principles;
6.13 computer simulations; research reports; or testing performed by a nationally recognized
6.14 testing laboratory.

6.15 **Authority Having Jurisdiction** - Unless otherwise specified in this code, the term
6.16 Authority Having Jurisdiction has the same meaning as administrative authority.

6.17 **4714.0204 TERMS DEFINED BEGINNING WITH B.**

6.18 UPC section 204.0 is modified by adding the following definition:

6.19 **Barometric Loop** - Means a section of pipe in the shape of an inverted "u" located
6.20 upstream and rising a minimum of 35 feet above the highest fixture it supplies.

6.21 **4714.0205 TERMS DEFINED BEGINNING WITH C.**

6.22 Subpart 1. **Amended definitions.** UPC section 205.0 is modified by amending the
6.23 following definitions:

6.24 **Certified Backflow Assembly Tester** - Has the same meaning as backflow prevention
6.25 tester defined in Minnesota Statutes, section 326B.42, subdivision 1c.

7.1 Clear Water Waste - Uncontaminated water discharges, subsoil discharges, and similar
7.2 discharges.

7.3 Code - For purposes of this chapter, "this code" or "the code" means the Minnesota
7.4 Plumbing Code, Minnesota Rules, chapter 4714.

7.5 Subp. 2. Added definitions. UPC section 205.0 is modified by adding the following
7.6 definition:

7.7 Commissioner - Means the commissioner of labor and industry or a duly designated
7.8 representative of the commissioner who is either an employee of the Department of Labor
7.9 and Industry or a person working under contract with the department.

7.10 **4714.0206 TERMS DEFINED BEGINNING WITH D.**

7.11 UPC section 206.0 is modified by amending the following definition:

7.12 Drainage System - Includes all the piping within public or private premises that conveys
7.13 sewage, rainwater, or other liquid wastes to a legal point of disposal, but does not include
7.14 the mains of a public sewer system or a public sewage treatment or disposal plant.

7.15 **4714.0210 TERMS DEFINED BEGINNING WITH H.**

7.16 Subpart 1. Amended definition. UPC section 210.0 is modified by amending the
7.17 following definition:

7.18 Hydromechanical Grease Interceptor - A plumbing appurtenance or appliance that is
7.19 installed in a sanitary drainage system to intercept nonpetroleum fats, oil, and grease
7.20 (FOG) from a wastewater discharge and is identified by flow rate, and separation and
7.21 retention efficiency. The design incorporates air entrainment, hydromechanical separation,
7.22 interior baffling, or barriers in combination or separately, and one of the following:

7.23 A - External flow control, with air intake (vent), directly connected.

7.24 B - External flow control, without air intake (vent), directly connected.

7.25 C - Without external flow control, directly connected.

8.1 These interceptors comply with the requirements of Table 1014.2.1. Hydromechanical
8.2 grease interceptors are generally installed inside.

8.3 Subp. 2. **Added definitions.** UPC section 210.0 is modified by adding the following
8.4 definition:

8.5 **Health Authority** - Means the state health department or local public health agency that
8.6 has authority established under law to enforce rules governing drinking water supply.

8.7 **4714.0218 TERMS DEFINED BEGINNING WITH P.**

8.8 UPC section 218.0 is modified by amending the following definitions:

8.9 **Plumbing System** - Includes all potable water, building supply, and distribution pipes;
8.10 all plumbing fixtures and traps; all drainage and vent pipes; and all building drains and
8.11 building sewers, including their respective joints and connections, devices, receptors, and
8.12 appurtenances within the property lines of the premises and shall include potable water
8.13 pipng, potable water treating or using equipment, and nonpotable water piping serving
8.14 plumbing fixtures.

8.15 **Potable Water** - Water that is satisfactory for drinking, culinary, and domestic purposes
8.16 and that meets the requirements of the Health Authority.

8.17 **Private Sewage Disposal System** - A subsurface sewage treatment system designed for
8.18 use apart from a public sewer as regulated under the rules administered by the Pollution
8.19 Control Agency.

8.20 **4714.0220 TERMS DEFINED BEGINNING WITH R.**

8.21 UPC section 220.0 is modified by adding the following definition:

8.22 **Registered Professional Engineer** - For purposes of this code, "registered professional
8.23 engineer," "engineer," or "registered engineer" means a person practicing professional
8.24 engineering as described in Minnesota Statutes, section 326.02, subdivision 3, and who is
8.25 licensed in the state of Minnesota as a professional engineer by the Board of Architecture,

9.1 Engineering, Land Surveying, Landscape Architecture, Geoscience, and Interior Design
9.2 under Minnesota Statutes, section 326.10.

9.3 **4714.0221 TERMS DEFINED BEGINNING WITH S.**

9.4 UPC section 221.0 is modified by amending the following definition:

9.5 **Single-Family Dwelling** - Has the meaning of dwelling, single-family, in Minnesota
9.6 Rules, part 1309.0202, subpart 1.

9.7 **4714.0301 SECTION 301.0 MATERIALS - STANDARDS AND ALTERNATIVES.**

9.8 Subpart 1. Section 301.1. UPC section 301.1 is amended to read as follows:

9.9 **301.1 Minimum Standards.** Pipe, pipe fittings, traps, fixtures, material, and devices
9.10 used in a plumbing system shall:

9.11 (1) be listed or labeled (third-party certified) by a listing agency (accredited conformity
9.12 assessment body);

9.13 (2) comply with the approved applicable recognized standards referenced in this code; and

9.14 (3) be free from defects.

9.15 Plastic pipe and the fittings used for plastic pipe shall meet the requirements of NSF 14.

9.16 Unless otherwise provided for in this code, materials, fixtures, or devices used or entering
9.17 into the construction of plumbing systems, or parts thereof, shall be submitted to the
9.18 Authority Having Jurisdiction for approval.

9.19 **301.1.1 Marking.** Each length of pipe and each pipe fitting, trap, fixture, material,
9.20 and device used in a plumbing system shall have cast, stamped, or indelibly marked
9.21 on it the manufacturer's mark or name, which shall readily identify the manufacturer
9.22 to the end user of the product. Where required by the approved standard that applies,
9.23 the product shall be marked with the weight and the quality of the product. Materials
9.24 and devices used or entering into the construction of plumbing and drainage systems,
9.25 or parts thereof, shall be marked and identified in a manner satisfactory to the

10.1 Authority Having Jurisdiction. The marking shall be done by the manufacturer. Field
10.2 markings shall not be acceptable.

10.3 **301.1.2 Standards.** Standards listed or referred to in this chapter or other chapters
10.4 cover materials that shall conform to the requirements of this code, where used in
10.5 accordance with the limitations imposed in this or other chapters thereof and their
10.6 listing. Where a standard covers materials of various grades, weights, quality, or
10.7 configurations, the portion of the listed standard that is applicable shall be used.

10.8 Design and materials for special conditions or materials not provided for herein shall
10.9 be permitted to be used only by special permission of the Authority Having Jurisdiction
10.10 after the Authority Having Jurisdiction has been satisfied as to their adequacy. A list
10.11 of accepted plumbing material standards is referenced in Table 1401.1.

10.12 Subp. 2. **Section 301.2.** UPC section 301.2 is amended to read as follows:

10.13 **301.2 Alternate Materials and Methods of Construction Equivalency.** Nothing in
10.14 this code is intended to prevent the use of systems, methods, or devices of equivalent or
10.15 superior quality, strength, fire resistance, effectiveness, durability, and safety over those
10.16 prescribed by this code. Prior to installation, technical documentation shall be submitted
10.17 to the Authority Having Jurisdiction to demonstrate equivalency. Unless prohibited by
10.18 this code or by law, the Authority Having Jurisdiction shall have the authority to approve
10.19 or disapprove the system, method, or device for the intended purpose.

10.20 However, the exercise of this discretionary approval by the Authority Having
10.21 Jurisdiction shall have no effect beyond the jurisdictional boundaries of the Authority
10.22 Having Jurisdiction. An alternate material or method of construction so approved shall not
10.23 be considered as in accordance with the requirements, intent, or both of this Code for a
10.24 purpose other than that granted by the Authority Having Jurisdiction where the submitted
10.25 data does not prove equivalency.

10.26 UPC subsections 301.2.1, 301.2.1.1, and 301.2.1.2 are preserved without amendment.

10.27 Subp. 3. **Section 301.4.6.** UPC section 301.4.6 is amended to read as follows:

11.1 **301.4.6 Inspection and Testing.** The alternative engineered design shall be tested
11.2 and inspected in accordance with the submitted testing and inspection plan and the
11.3 requirements of this code. Prior to the final plumbing inspection, the registered
11.4 professional engineer shall provide written certification to the administrative authority
11.5 that the system has been visually inspected by the registered professional engineer or
11.6 the registered professional engineer's designee, and the installation has been properly
11.7 implemented according to the certified plans, calculations, and specifications.

11.8 **4714.0307 LOCATION.**

11.9 UPC section 307.1 is amended to read as follows:

11.10 **307.1 System.** Except as otherwise provided in this code, no plumbing system, drainage
11.11 system, building sewer, or part thereof shall be located in a lot other than the lot that is the
11.12 site of the building, structure, or premises served by such facilities.

11.13 **4714.0311 INDEPENDENT SYSTEMS.**

11.14 Subpart 1. **Section 311.0.** UPC section 311.0 title is amended to read as follows:

11.15 **311.0 Use of Public Sewer and Water Systems Required.**

11.16 Subp. 2. **Section 311.1.** UPC section 311.1 is amended to read as follows:

11.17 **311.1 General.** If a public sewer is available in a street or alley to a building or premises
11.18 and the connection is feasible, liquid waste from any plumbing system in that building
11.19 shall be discharged into the public sewer unless otherwise prohibited by this code or a
11.20 local ordinance. If a public water supply is accessible, the water distribution system shall
11.21 be connected to it unless otherwise permitted by the Authority Having Jurisdiction. A
11.22 private water well taken out of service because of a connection to a public water supply
11.23 shall be maintained pursuant to Minnesota Rules, chapter 4725, Wells and Borings.

11.24 Every building shall have its own independent water and sewer connection except that
11.25 a group of buildings may be connected to one or more sewer manholes on the premises
11.26 that are constructed to standards set by the Authority Having Jurisdiction.

12.1 **4714.0312 PROTECTION OF PIPING, MATERIALS, AND STRUCTURES.**

12.2 Subpart 1. Section 312.7. UPC section 312.7 is amended to read as follows:

12.3 **312.7 Fire-Resistant Construction.** Piping penetrations of fire-resistance-rated walls,
12.4 partitions, floors, floor/ceiling assemblies, roof/ceiling assemblies, or shaft enclosures
12.5 shall be protected in accordance with the State Building Code.

12.6 Subp. 2. Section 312.9. UPC section 312.9 is amended to read as follows:

12.7 **312.9 Steel Nail Plates.** Plastic and copper piping penetrating framing members to within
12.8 1 inch (25.4 mm) of the exposed framing shall be protected by steel nail plates not less
12.9 than No. 18 gauge (0.0478 inches) (1.2 mm) in thickness. The steel nail plate shall
12.10 extend along the framing member not less than 1-1/2 inches (38 mm) beyond the outside
12.11 diameter of the pipe or tubing.

12.12 **Exception:** See Minnesota Rules, chapter 1346, Minnesota Mechanical and Fuel
12.13 Gas Codes.

12.14 **4714.0313 HANGERS AND SUPPORTS.**

12.15 UPC section 313.7 is deleted in its entirety.

12.16 **4714.0314 TRENCHING, EXCAVATION, AND BACKFILL.**

12.17 UPC sections 314.0 to 314.4 are deleted in their entirety.

12.18 **4714.0315 JOINTS AND CONNECTIONS.**

12.19 UPC section 315.1 is amended to read as follows:

12.20 **315.1 Unions.** Approved unions shall be permitted to be used in drainage piping where
12.21 accessibly located in the trap seal or between a fixture and its trap in the vent system,
12.22 except underground or in wet vents, at a point in the water supply system.

12.23 **4714.0317 FOOD-HANDLING ESTABLISHMENTS.**

12.24 UPC section 317.1 is amended to read as follows:

13.1 **317.1 General.** Soil or drain pipes installed over areas where food or drink will be stored,
13.2 prepared, or displayed shall be installed with the minimum number of joints necessary and
13.3 connected to the nearest adequately sized vertical stack with the following provisions:

13.4 (1) Plumbing openings through floors over such areas shall be sealed watertight to the
13.5 floor construction.

13.6 (2) Floor and shower drains installed above such areas shall be equipped with integral
13.7 seepage pans.

13.8 (3) Cleanouts shall be extended through the floor construction above.

13.9 (4) Piping subject to operation at temperatures that will form condensation on the exterior
13.10 of the pipe shall be thermally insulated.

13.11 (5) Where pipes are installed in ceilings above such areas, the ceiling shall be of the
13.12 removable type, or shall be provided with access panels in order to form a ready access
13.13 for inspection of piping.

13.14 **4714.0319 MEDICAL GAS AND VACUUM SYSTEMS.**

13.15 UPC sections 319.0 to 319.1 are deleted in their entirety.

13.16 **4714.0403 WATER-CONSERVING FIXTURES AND FITTINGS.**

13.17 UPC section 403.3 is amended to read as follows:

13.18 **403.3 Urinals.** Urinals shall have an average water consumption not to exceed 1 gallon
13.19 (4 L) of water per flush.

13.20 **403.3.1 Nonwater urinals.** Nonwater urinals shall be listed and comply with the
13.21 applicable standards referenced in Table 1401.1. Nonwater urinals shall have a barrier
13.22 liquid sealant to maintain a trap seal. Nonwater urinals shall permit the uninhibited
13.23 flow of waste through the urinal to the sanitary drainage system. Nonwater urinals
13.24 shall be cleaned and maintained in accordance with the manufacturer's instructions
13.25 after installation. Where a nonwater urinal is installed, a water-supplied fixture shall
13.26 be installed upstream of the nonwater urinal at the end of that same drainage branch.

14.1 **4714.0406 PROHIBITED FIXTURES.**

14.2 UPC section 406.3 is deleted in its entirety.

14.3 **4714.0409 BATHTUBS AND WHIRLPOOL BATHTUBS.**

14.4 UPC section 409.1 is amended to read as follows:

14.5 **409.1 Application.** Bathtubs and whirlpool bathtubs shall comply with the applicable
14.6 standards referenced in Table 1401.1. Pressure sealed doors within bathtubs and whirlpool
14.7 bathtub enclosures shall comply with the applicable standards referenced in Table 1401.1.
14.8 Whirlpool pedicure tubs shall comply with general requirements and water retention
14.9 sections of ASME A112.19.7, Hydromassage Bathtub Appliances, or IAPMO IGC 155,
14.10 Pipeless Whirlpool Bathtub Appliances.

14.11 **4714.0415 DRINKING FOUNTAINS.**

14.12 UPC section 415.2 is amended to read as follows:

14.13 **415.2 Public Use Fountains.** Installation of a combined cold water faucet and drinking
14.14 fountain is prohibited for public use. If a drinking fountain is provided at a public use
14.15 sink, it shall have at least an 18-inch separation from any other faucet spout.

14.16 **4714.0418 FLOOR DRAINS.**

14.17 Subpart 1. Section 418.4. UPC section 418.4 is amended to read as follows:

14.18 **418.4 Food Storage Areas.** Where drains are provided in storerooms, walk-in freezers,
14.19 walk-in coolers, refrigerated equipment, or other locations where food is stored, the drains
14.20 shall have indirect waste piping. Separate waste pipes shall be run from each food storage
14.21 area, each with an indirect connection to the building sanitary drainage system. Traps shall
14.22 be provided in accordance with Section 801.2.2 and shall be vented.

14.23 Indirect drains shall be permitted to be located in freezers or other spaces where
14.24 freezing temperatures are maintained, provided that traps, where supplied, shall be located
14.25 where the seal will not freeze. Otherwise, the floor of the freezer shall be sloped to a floor
14.26 drain located outside of the storage compartment.

15.1 Subp. 2. Section 418. UPC section 418 is amended by adding the following
15.2 subsections.

15.3 **418.6 Elevator Pit Drain.** An elevator pit drain shall discharge to the sanitary sewer using
15.4 an indirect connection that precludes the possibility of sewage backup into the pit. If a
15.5 sump is used, it shall be outside the pit with a dry pan drain flowing to it.

15.6 **418.7 Garage and Parking Area Floor Drains.** Floor area drains in open parking areas,
15.7 including open areas of parking ramps, shall discharge to the storm sewer or to a place of
15.8 disposal satisfactory to the sewer authority. Floor drains in parking areas that are enclosed,
15.9 and floor drains in areas open or enclosed that are used for maintenance or as vehicle wash
15.10 bays, shall discharge to the sanitary sewer if a municipal sewer is available. An oil and
15.11 flammable liquid interceptor shall be provided if required by Section 1017.

15.12 **Exception:** Floor drains in private garages serving one- and two-family dwellings
15.13 may discharge to daylight if approved by the administrative authority.

15.14 **4714.0420 SINKS.**

15.15 UPC section 420.3 is amended to read as follows:

15.16 **420.3 Waste Outlet.** Kitchen and laundry sinks shall have a waste outlet and fixture
15.17 tailpiece not less than 1-1/2 inches (40 mm) in diameter, except commercial pot and
15.18 scullery sinks shall be provided with waste outlets not less than 2 inches (50 mm) in
15.19 diameter. Service sinks shall have a waste outlet and fixture tailpiece not less than 2 inches
15.20 (50 mm) in diameter. Fixture tailpieces shall be constructed from the materials specified in
15.21 Section 701.1 for drainage piping, provided, however, that the connections where exposed
15.22 or accessible shall be permitted to be of seamless drawn brass not less than No. 20 B & S
15.23 Gauge (0.032 inches) (0.81 mm). Waste outlets shall be provided with an approved strainer.

15.24 **4714.0421 FIXTURES AND FIXTURE FITTINGS FOR PERSONS WITH**
15.25 **DISABILITIES.**

15.26 UPC section 421.2 is amended to read as follows:

16.1 **421.2 Limitation of Hot Water Temperature for Public Lavatories.** Hot water
16.2 delivered from public-use lavatories shall be limited to a maximum temperature of 110°
16.3 F (43° C) by a device that is in accordance with ASSE 1070 or CSA B125.3. The water
16.4 heater thermostat shall not be considered a control for meeting this provision.

16.5 **4714.0422 MINIMUM NUMBER OF REQUIRED FIXTURES.**

16.6 Subpart 1. Section 422.1. UPC section 422.1 is amended to read as follows:

16.7 **422.1 Required Minimum Number of Fixtures.** For all premises subject to Minnesota
16.8 Rules, chapter 4714, plumbing fixtures shall be provided for the type of building
16.9 occupancy and in the minimum number listed in Minnesota Rules, chapter 1305,
16.10 Minnesota Building Code.

16.11 Subp. 2. Sections 422.1.1 to 422.5. UPC sections 422.1.1 to 422.5, including tables,
16.12 are deleted in their entirety.

16.13 Subp. 3. Table 422.1. UPC Table 422.1 is deleted in its entirety.

16.14 **4714.0501 GENERAL.**

16.15 UPC section 501.1 is amended to read as follows:

16.16 **501.1 Applicability.** The regulations of this chapter as amended in this code shall govern
16.17 the construction, location, and installation of fuel-burning and other water heaters heating
16.18 potable water. The minimum capacity for storage water heaters shall be in accordance
16.19 with the first hour rating listed in Table 501.1. Design, construction, and workmanship
16.20 shall be in accordance with accepted engineering practices, manufacturer's instructions,
16.21 and applicable standards and shall be of such character as to secure the results sought to be
16.22 obtained by this code. No water heater shall be hereinafter installed that does not comply
16.23 with the type and model of each size thereof approved by the Authority Having Jurisdiction.

16.24 **4714.0503 INSPECTION.**

16.25 UPC sections 503.0 to 503.2 are deleted in their entirety.

17.1 **4714.0504 WATER HEATER REQUIREMENTS.**

17.2 Subpart 1. Sections 504.1 to 504.2. UPC sections 504.1 to 504.2 are deleted in
17.3 their entirety.

17.4 Subp. 2. Section 504.6. UPC section 504.6 is amended to read as follows:

17.5 **504.6 Temperature, Pressure, and Vacuum Relief Devices.** The installation of
17.6 temperature, pressure, and vacuum relief devices, or combinations thereof, shall be
17.7 installed in accordance with the terms of their listings and the manufacturer's installation
17.8 instructions. A shutoff valve shall not be placed between the relief valve and the water
17.9 heater or on discharge pipes between the valves and the atmosphere. The hourly British
17.10 thermal units (Btu) (kW·h) discharge capacity or the rated steam relief capacity of the
17.11 device shall be not less than the input rating of the water heater. [NFPA 54:10.28.5]

17.12 **4714.0505 OIL-BURNING AND OTHER WATER HEATERS.**

17.13 UPC section 505.4.1 is deleted in its entirety.

17.14 **4714.0506 AIR FOR COMBUSTION AND VENTILATION.**

17.15 UPC sections 506.0 to 506.9, including all figures, are deleted in their entirety.

17.16 **4714.0507 OTHER WATER HEATER INSTALLATION REQUIREMENTS.**

17.17 Subpart 1. Sections 507.6 to 507.11 and 507.14 to 507.23. UPC sections 507.6 to
17.18 507.11 and 507.14 to 507.23 are deleted in their entirety.

17.19 Subp. 2. Section 507.5. UPC section 507.5 is amended to read as follows:

17.20 **507.5 Relief Valve Discharge.** Discharge from a relief valve into a water heater pan
17.21 shall be prohibited. Discharge relief valves shall terminate to a safe place of disposal
17.22 or within 18 inches of the floor.

17.23 **4714.0508 APPLIANCES ON ROOFS.**

17.24 UPC sections 508.0 to 508.4 are deleted in their entirety.

18.1 **4714.0509 VENTING OF APPLIANCES.**

18.2 UPC sections 509.0 to 509.14, including all tables and figures, are deleted in their
18.3 entirety.

18.4 **4714.0510 SIZING OF CATEGORY I VENTING SYSTEMS.**

18.5 UPC sections 510.0 to 510.2, including all tables and figures, are deleted in their
18.6 entirety.

18.7 **4714.0511 DIRECT-VENT APPLIANCES.**

18.8 UPC sections 511.0 to 511.1 are deleted in their entirety.

18.9 **4714.0601 HOT AND COLD WATER REQUIRED.**

18.10 UPC section 601.1 is amended to read as follows:

18.11 **601.1 General.** Each plumbing fixture shall be provided with an adequate supply
18.12 of potable running water piped to it in an approved manner, so arranged as to flush
18.13 and keep the fixture in a clean and sanitary condition without danger of backflow or
18.14 cross-connection. Water closets and urinals shall be flushed by means of an approved
18.15 flush tank or flushometer valve.

18.16 **Exception:** Listed fixtures that do not require water for their operation and are not
18.17 connected to the water supply.

18.18 **601.1.1 Hot Water Required.** In occupancies where plumbing fixtures are installed for
18.19 private use, hot water shall be required for bathing, washing, laundry, cooking purposes,
18.20 dishwashing, and maintenance. In occupancies where plumbing fixtures are installed for
18.21 public use, hot water shall be required for bathing and washing purposes. This requirement
18.22 shall not supersede the requirements for individual temperature control limitations for
18.23 public lavatories, bidets, bathtubs, whirlpool bathtubs, and shower control valves.

18.24 **601.1.2 Hot Water Recirculation.** Hot water supply systems in four-story buildings or
18.25 higher, or buildings where the developed length of hot water piping from the source of

19.1 hot water supply to the farthest fixture supplied exceeds 100 feet, shall be of the return
19.2 circulation type.

19.3 **4714.0602 UNLAWFUL CONNECTIONS.**

19.4 Subpart 1. Section 602.2. UPC section 602.2 is amended to read as follows:

19.5 **602.2 Cross-Contamination.** Unless there is provided a backflow prevention device
19.6 approved for the potential hazard and maintained in accordance with this code, no person
19.7 shall make a connection or allow one to exist between pipes or conduits carrying domestic
19.8 water supplied by a public or private building supply system, and (1) pipes, conduits, or
19.9 fixtures containing or carrying water from any other source or containing or carrying water
19.10 that has been used for any purpose whatsoever, or (2) any piping carrying chemicals,
19.11 liquids, gases, or substances whatsoever.

19.12 Each point of use shall be separately protected where potential cross-contamination of
19.13 individual units exists. Water used for cooling or heating of equipment or other purposes
19.14 shall not be returned to the potable water system. Such water shall be discharged into the
19.15 drainage system through an air-gapped indirect waste or other approved method of disposal.

19.16 Subp. 2. Section 602.4. UPC section 602.4 is amended to read as follows:

19.17 **602.4 Approval by Authority.** No water piping supplied by a private water supply system
19.18 shall be connected to any other source of supply without the approval of the Authority
19.19 Having Jurisdiction.

19.20 **4714.0603 CROSS-CONNECTION CONTROL.**

19.21 Subpart 1. Section 603.2. UPC section 603.2 is amended to read as follows:

19.22 **603.2 Approval of Devices or Assemblies.** Before a device or an assembly is installed
19.23 for the prevention of backflow, it shall have first been approved. Devices or assemblies
19.24 shall be tested in accordance with recognized standards or other approved standards.
19.25 Backflow prevention devices and assemblies shall comply with Table 603.2, except for
19.26 specific applications and provisions as stated in Sections 603.5.1 through 603.5.23.

20.1 Devices or assemblies installed in a potable water supply system for protection
20.2 against backflow shall be maintained in good working condition by the person or persons
20.3 having control of such devices or assemblies. The devices or assemblies shall be tested
20.4 at the time of installation, repair, or relocation and not less than on an annual schedule
20.5 thereafter, or more often where required by the Authority Having Jurisdiction. Where
20.6 found to be defective or inoperative, the device or assembly shall be repaired or replaced.
20.7 No device or assembly shall be removed from use or relocated, or other device or
20.8 assembly substituted, without the approval of the Authority Having Jurisdiction.

20.9 Testing shall be performed by a certified backflow assembly tester in accordance
20.10 with ASSE Series 5000.

20.11 UPC Table 603.2 is not amended.

20.12 Subp. 2. Section 603.5.4. UPC section 603.5.4 is amended to read as follows:
20.13 603.5.4 Heat Exchangers. Heat exchangers used for heat transfer, heat recovery, or
20.14 solar heating shall protect the potable water system from being contaminated by the
20.15 heat-transfer medium.

20.16 603.5.4.1 Single-Wall Heat Exchanger. Installation of a single-wall heat
20.17 exchanger shall meet all of the following requirements:

20.18 (1) Connected to:

20.19 (a) a low-pressure hot water boiler limited to a maximum of 30 pounds-force
20.20 per square inch gauge (psig) (207 kPa) by an approved safety or relief
20.21 valve; or

20.22 (b) a steam system limited to a maximum of 15 psig (103 kPa).

20.23 (2) The heat-transfer medium is either potable water or contains fluids having a
20.24 toxicity rating or Class of 1.

20.25 (3) Bear a label with the word "Caution," followed by the following statements:

21.1 (a) The heat-transfer medium shall be water or other nontoxic fluid having a
21.2 toxicity rating or Class of 1 as listed in Clinical Toxicology of Commercial
21.3 Products, 5th edition.

21.4 (b) The pressure of the heat-transfer medium shall be limited to a maximum
21.5 of 30 psig (207 kPa) by an approved safety or relief valve.

21.6 The word "Caution" and the statements in letters shall have an
21.7 uppercase height of not less than 0.120 inch (3.048 mm). The vertical
21.8 spacing between lines of type shall be not less than 0.046 inch (1.168
21.9 mm). Lowercase letters shall be compatible with the uppercase letter
21.10 size specifications.

21.11 **603.5.4.2 Double-Wall Heat Exchanger.** Double-wall heat exchangers
21.12 shall separate the potable water from the heat-transfer medium by providing
21.13 a space between the two walls that are vented to the atmosphere.

21.14 Subp. 3. **Section 603.5.12.** UPC section 603.5.12 is amended to read as follows:

21.15 **603.5.12 Beverage Dispensers.** Potable water supply to beverage dispensers,
21.16 carbonated beverage dispensers, or coffee machines shall be protected by an
21.17 air gap or a vented backflow preventer in accordance with ASSE 1022. For
21.18 carbonated beverage dispensers, piping materials installed downstream of the
21.19 backflow preventer shall not be made of copper and not be affected by carbon
21.20 dioxide gas.

21.21 Subp. 4. **Section 603.5.18.** UPC section 603.5.18 is amended to read as follows:

21.22 **603.5.18 Potable Water Outlets and Valves.** Potable water outlets, freeze-proof
21.23 yard hydrants, combination stop-and-waste valves, or other fixtures that incorporate a
21.24 stop-and-waste feature that drains into the ground shall not be installed underground
21.25 except for a freeze-proof yard hydrant that is located at least two feet above the water
21.26 table and at least ten feet from any sewer or similar source of contamination.

22.1 Subp. 5. Section 603.5. UPC section 603.5 is amended by adding the following
22.2 subsections:

22.3 **603.5.22 Barometric Loop.** A barometric loop is an acceptable method of protection
22.4 of water connections where an actual or potential backsiphonage hazard exists that
22.5 is not subject to backpressure.

22.6 **603.5.23 Installation of Testable Backflow Prevention Assembly.** Testable
22.7 backflow prevention assemblies meeting ASSE Standard 1013, 1015, 1020, 1047,
22.8 1048, or 1056 shall be installed, tested, maintained, and removed in accordance with
22.9 sections 603.5.23.1 through 603.5.23.4.

22.10 **603.5.23.1 Notification of Installation.** The administrative authority shall be
22.11 notified before installation of a testable backflow prevention assembly. The
22.12 public water supplier shall be notified of the installed testable backflow preventer
22.13 assembly within 30 days following installation on a community public water
22.14 system.

22.15 **603.5.23.2 Testing and Maintenance.** The installation of a testable backflow
22.16 prevention assembly is permitted only when a periodic testing and inspection
22.17 program conducted by qualified personnel is provided by an agency acceptable to
22.18 the administrative authority. Inspection intervals shall not exceed one year. The
22.19 administrative authority may require more frequent testing if deemed necessary
22.20 to ensure protection of the potable water. A testable backflow prevention
22.21 assembly shall be inspected after initial installation to ensure that it has been
22.22 properly installed and that debris resulting from the piping installation has not
22.23 interfered with the functioning of the assembly.

22.24 **603.5.23.3 Inspection and Records.** A test and inspection tag shall be affixed
22.25 to the testable backflow prevention assembly. The tester shall date and sign
22.26 the tag and include the tester's backflow prevention tester certification number.
22.27 Written records of testing and maintenance shall be maintained and submitted to

23.1 the administrative authority, and to the public water supplier, within 30 days of
23.2 testing if installed on a community public water system.

23.3 **603.5.23.4 Notification of Removal.** The Authority Having Jurisdiction, in
23.4 addition to the public water supplier, shall be notified within 30 days following
23.5 removal of a testable backflow prevention assembly from a community public
23.6 water system.

23.7 **4714.0604 MATERIALS.**

23.8 UPC section 604.11 is amended to read as follows:

23.9 **604.11 Lead Content.** Water pipe and fittings with a lead content which exceeds a
23.10 weighted average of 0.25 percent in the wetted surface material, as established in the
23.11 Safe Drinking Water Act, section 1417(d), shall be prohibited in piping systems used
23.12 to convey potable water.

23.13 **4714.0608 WATER PRESSURE, PRESSURE REGULATORS, PRESSURE**
23.14 **RELIEF VALVES, AND VACUUM RELIEF VALVES.**

23.15 UPC section 608.5 is amended to read as follows:

23.16 **608.5 Drains.** Relief valves located inside a building shall be provided with: (1) a drain
23.17 that is not smaller than the relief valve outlet and piping and fittings made of galvanized
23.18 steel, hard-drawn copper, CPVC, or PP; or (2) a listed relief valve drain tube with fittings.
23.19 The drain and drain tube shall not reduce the internal bore of the pipe or tubing (straight
23.20 lengths as opposed to coils) and shall terminate to a safe place of disposal or within 18
23.21 inches of the floor.

23.22 Relief valve drains shall not terminate in a building's crawl space. No part of a drain
23.23 pipe shall be trapped or subject to freezing. The terminal end of the drain pipe shall
23.24 not be threaded.

23.25 **4714.0609 INSTALLATION, TESTING, UNIONS, AND LOCATION.**

23.26 Subpart 1. Section 609.6. UPC section 609.6 is amended to read as follows:

24.1 **609.6 Location.** Except as provided in Section 609.7, no building supply shall be located
24.2 in a lot other than the lot that is the site of the building or structure served by the building
24.3 supply.

24.4 **609.6.1 Water supply near sources of contamination.** Potable water supply pipes
24.5 shall not be located in, under, or above cesspools, septic tanks, septic tank drainage
24.6 fields, seepage pits, soil treatment systems, contaminated soil, sewer manholes,
24.7 catch basins, storm water storage tanks, buried tanks containing chemicals or
24.8 petroleum products, or any other source of contamination that in the judgment of the
24.9 administrative authority might contaminate the potable water supply. A horizontal
24.10 separation of ten feet shall be maintained between the outer edge of the water supply
24.11 pipe and the outer edge of the contamination source.

24.12 Subp. 2. Section 609. UPC section 609 is amended by adding the following
24.13 subsection:

24.14 **609.11 Water Meters.** Water meters shall be located inside a building, installed at least
24.15 12 inches above the finished floor, and readily accessible. All water meter installations
24.16 shall be rigidly supported with a permanent support in order to prevent the meter from
24.17 vibrating when the water is passing through it.

24.18 **Exceptions:** Where installation inside a building is not possible, the water meter may
24.19 be installed in an enclosed structure not subject to flooding, high groundwater, or
24.20 surface drainage runoff, provided the meter is protected from freezing. Provisions
24.21 shall be made to install the meters above grade when possible. When installed below
24.22 grade, the top of the structure shall be located at least 12 inches above the finished
24.23 grade, be secured, and be accessible. This structure shall not be connected to any
24.24 storm or sanitary sewer system.

24.25 **4714.0610 SIZE OF POTABLE WATER PIPING.**

24.26 UPC section 610, Table 610.3, is amended to read as follows:

25.1

TABLE 610.3

25.2

Water Supply Fixture Units (WSFU) and Minimum Fixture Branch Pipe Sizes³

25.3

Minimum

25.4

Fixture

25.5

Branch Pipe

25.6

Appliances, Appurtenances,Size^{1,4}

25.7

or Fixtures²(inches)PrivatePublicAssembly⁶

25.8

Bathtub or Combination Bath/Shower1/24.04.0=

25.9

(fill)

25.10

3/4-inch Bathtub Fill Valve3/410.010.0=

25.11

Bidet1/21.0==

25.12

Clothes Washer1/24.04.0=

25.13

Dental Unit, cuspidor1/2=1.0=

25.14

Dishwasher, domestic1/21.51.5=

25.15

Drinking Fountain or Water Cooler1/20.50.50.75

25.16

Hose Bibb1/22.52.5=

25.17

Hose Bibb, each additional⁸1/21.01.0=

25.18

Lavatory (each basin), or hand sink1/21.01.01.0

25.19

Lawn sprinkler, each head⁵=1.01.0=

25.20

Mobile Home, each (minimum)=12.0==

25.21

Sinks====

25.22

Bar1/21.02.0=

25.23

Clinic Faucet1/2=3.0=

25.24

Clinic Flushometer Valve with or

25.25

without faucet1=8.0=

25.26

Kitchen, domestic with or without

25.27

dishwasher1/21.51.5=

25.28

Laundry1/21.51.5=

25.29

Service or Mop Basin1/21.53.0=

25.30

Washup, each set of faucets1/2=2.0=

25.31

Shower, per head1/22.02.0=

25.32

Urinal, 1.0 GPF Flushometer Valve3/4See Footnote⁷=

26.1	<u>Urinal, greater than 1.0 GPF</u>				
26.2	<u>Flushometer Valve</u>	<u>3/4</u>	<u>See Footnote⁷</u>	<u>=</u>	<u>=</u>
26.3	<u>Urinal, flush tank</u>	<u>1/2</u>	<u>2.0</u>	<u>2.0</u>	<u>3.0</u>
26.4	<u>Wash Fountain, circular spray</u>	<u>3/4</u>	<u>=</u>	<u>4.0</u>	<u>=</u>
26.5	<u>Water Closet, 1.6 GPF Gravity Tank</u>	<u>1/2</u>	<u>2.5</u>	<u>2.5</u>	<u>3.5</u>
26.6	<u>Water Closet, 1.6 GPF Flushometer</u>				
26.7	<u>Tank</u>	<u>1/2</u>	<u>2.5</u>	<u>2.5</u>	<u>3.5</u>
26.8	<u>Water Closet, 1.6 GPF Flushometer</u>				
26.9	<u>Valve</u>	<u>1</u>	<u>See Footnote⁷</u>	<u>=</u>	<u>=</u>
26.10	<u>Water Closet, greater than 1.6 GPF</u>				
26.11	<u>Gravity Tank</u>	<u>1/2</u>	<u>3.0</u>	<u>5.5</u>	<u>7.0</u>
26.12	<u>Water Closet, greater than 1.6 GPF</u>				
26.13	<u>Flushometer Valve</u>	<u>1</u>	<u>See Footnote⁷</u>	<u>=</u>	<u>=</u>

26.14 For SI units: 1 inch = 25 mm

26.15 **Notes:**

26.16 ¹ Size of the cold branch pipe, or both the hot and cold branch pipes.

26.17 ² Appliances, appurtenances, or fixtures not referenced in this table shall be permitted to be sized by reference to fixtures having a similar flow rate and frequency of use.

26.18 ³ The listed fixture unit values represent their load on the cold water building supply.

26.19 The separate cold water and hot water fixture unit value for fixtures having both hot and cold water connections shall be permitted to be each taken as three-quarters of the listed total value of the fixture.

26.20 ⁴ The listed minimum supply branch pipe sizes for individual fixtures are the nominal (I.D.) pipe size.

26.21 ⁵ For fixtures or supply connections likely to impose continuous flow demands, determine the required flow in gallons per minute (gpm) (L/s), and add it separately to the demand in gpm (L/s) for the distribution system or portions thereof.

26.22 ⁶ Assembly [Public Use]. See Minnesota Rules, chapter 1305, International Building Code.

26.23 ⁷ Where sizing flushometer systems, see Section 610.10.

27.1 ⁸ Reduced fixture unit loading for additional hose bibbs is to be used where sizing total
27.2 building demand and for pipe sizing where more than one hose bibb is supplied by a
27.3 segment of water distribution pipe. The fixture branch to each hose bibb shall be sized
27.4 on the basis of 2.5 fixture units.

27.5 **4714.0611 WATER CONDITIONING EQUIPMENT.**

27.6 UPC sections 611.0 to 611.3 are amended to read as follows:

27.7 **611.0 Water Conditioning Equipment.**

27.8 **611.1 Application.** Water conditioning equipment shall comply with the requirements
27.9 in this section.

27.10 **611.1.1 Definition.** "Water conditioning equipment" means any appliance,
27.11 appurtenance, or fixture, or any combination thereof, designed to treat potable
27.12 water, so as to alter, modify, add, or remove any minerals, chemicals, or bacteria
27.13 contained in water. Water conditioning equipment includes but is not limited to
27.14 ion exchange water softeners, backwashing water filters, oxidizing water filters,
27.15 cartridge filters, chemical feed cartridges, ultraviolet lights, and equipment for reverse
27.16 osmosis, ultrafiltration, nanofiltration, pH adjustment, nitrate and arsenic removal,
27.17 and adsorption onto activated carbon.

27.18 **611.1.2 Manufacture and Assembly.** Water conditioning equipment shall: (1) be
27.19 manufactured as a complete system; or (2) be assembled as a complete system by a
27.20 licensed plumbing contractor or licensed water conditioning contractor, using various
27.21 types of water conditioning equipment. Wetted surface materials used in water
27.22 conditioning equipment shall comply with ANSI/NSF 61 standards, or the equipment
27.23 shall comply with the applicable NSF standards as listed in Table 1401.1.

27.24 **Exception:** Water conditioning equipment that treats water for nonpotable
27.25 uses that are protected by an approved backflow device, assembly, or method
27.26 as required in Chapter 6, as amended.

27.27 **611.1.3 Labeling.** All conditioning equipment shall be labeled by:

28.1 (1) the manufacturer of equipment manufactured as a complete system; or
28.2 (2) the licensed plumbing contractor or licensed water conditioning contractor who
28.3 assembled the complete system
28.4 so as to clearly identify the type of equipment and the name and address of the
28.5 manufacturer, licensed plumbing contractor, or licensed water conditioning contractor.

28.6 **611.2 Airgap Discharge.** Any discharge from water conditioning equipment shall enter
28.7 the drainage system through an airgap in accordance with Table 603.3.1 or an airgap
28.8 device in accordance with Table 603.2, NSF 58, or IAPMO PS 65.

28.9 **611.3 Connection Tubing.** The tubing to and from water conditioning units shall be of a
28.10 size and material as recommended by the manufacturer. The tubing shall comply with
28.11 the requirements of NSF 14, NSF 42, NSF 44, NSF 53, NSF 55, NSF 58, NSF 62, or the
28.12 appropriate material standards referenced in Table 1401.1.

See attachment for 4714.0612

28.13 **4714.0701 MATERIALS.**

28.14 UPC section 701.1 is amended to read as follows:

28.15 **701.1 Drainage Piping.** Materials for drainage piping shall be in accordance with one of
28.16 the referenced standards in Table 701.1 except that:

28.17 (1) Galvanized wrought-iron and galvanized steel pipe shall not be used underground and
28.18 shall be kept not less than 6 inches (152 mm) aboveground.

28.19 (2) ABS and PVC DWV piping installations shall be installed in accordance with
28.20 applicable standards referenced in Table 1401.1.

28.21 (3) No vitrified clay pipe or fittings shall be used aboveground or where pressurized by a
28.22 pump or ejector. They shall be kept not less than 12 inches (305 mm) belowground.

28.23 (4) Copper tube for drainage and pipe venting shall have a weight of not less than that of
28.24 copper drainage tube type DWV.

28.25 (5) Stainless steel 304 pipe and fittings shall not be installed underground and shall be kept
28.26 not less than 6 inches (152 mm) aboveground.

29.1 (6) Cast-iron soil pipe and fittings shall be listed and tested in accordance with standards
 29.2 referenced in Table 1401.1. Such pipe and fittings shall be marked with country of
 29.3 origin and identification of the original manufacturer in addition to markings required
 29.4 by referenced standards.

29.5 UPC Table 701.1 is not amended.

29.6 **4714.0702 FIXTURE UNIT EQUIVALENTS.**

29.7 UPC section 702, Table 702.1, is amended to read as follows:

29.8 **TABLE 702.1**

29.9 **Drainage Fixture Unit Values (DFU)**

29.10		<u>Minimum Size</u>			
29.11		<u>Trap and Trap</u>			
29.12	<u>Plumbing Appliances,</u>	<u>Arm⁶</u>			
29.13	<u>Appurtenances, or Fixtures</u>	<u>(inches)</u>	<u>Private</u>	<u>Public</u>	<u>Assembly⁷</u>
29.14	<u>Bathtub or Combination Bath/Shower</u>	<u>1-1/2</u>	<u>2.0</u>	<u>2.0</u>	<u>=</u>
29.15	<u>Bidet</u>	<u>1-1/4</u>	<u>1.0</u>	<u>=</u>	<u>=</u>
29.16	<u>Bidet</u>	<u>1-1/2</u>	<u>2.0</u>	<u>=</u>	<u>=</u>
29.17	<u>Clothes Washer, Domestic,</u>				
29.18	<u>Standpipe²</u>	<u>2</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>
29.19	<u>Dental Unit, Cuspidor</u>	<u>1-1/4</u>	<u>=</u>	<u>1.0</u>	<u>1.0</u>
29.20	<u>Dishwasher, Domestic, with</u>				
29.21	<u>Independent Drain²</u>	<u>1-1/2</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
29.22	<u>Drinking Fountain or Water Cooler</u>	<u>1-1/4</u>	<u>0.5</u>	<u>0.5</u>	<u>1.0</u>
29.23	<u>Food Waste Grinder, Commercial</u>	<u>2</u>	<u>=</u>	<u>3.0</u>	<u>3.0</u>
29.24	<u>Floor Drain, Emergency</u>	<u>2</u>	<u>=</u>	<u>0.0</u>	<u>0.0</u>
29.25	<u>Floor Drain (for Additional Sizes see</u>				
29.26	<u>Section 702.0)</u>	<u>2</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
29.27	<u>Shower, Single-Head Trap</u>	<u>2</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
29.28	<u>Shower, Multi-Head, Each</u>				
29.29	<u>Additional</u>	<u>2</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>
29.30	<u>Lavatory, Single</u>	<u>1-1/4</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>

30.1	<u>Lavatory, in Sets of Two or Three</u>	<u>1-1/2</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
30.2	<u>Washfountain</u>	<u>1-1/2</u>	=	<u>2.0</u>	<u>2.0</u>
30.3	<u>Washfountain</u>	<u>2</u>	=	<u>3.0</u>	<u>3.0</u>
30.4	<u>Mobile Home, Trap</u>	<u>3</u>	<u>12.0</u>	=	=
30.5	<u>Receptor, Indirect Waste^{1,3}</u>	<u>1-1/2</u>		<u>See footnote^{1,3}</u>	
30.6	<u>Receptor, Indirect Waste^{1,4}</u>	<u>2</u>		<u>See footnote^{1,4}</u>	
30.7	<u>Receptor, Indirect Waste¹</u>	<u>3</u>		<u>See footnote¹</u>	
30.8	<u>Sinks</u>	=	=	=	=
30.9	<u>Bar</u>	<u>1-1/2</u>	<u>1.0</u>	=	=
30.10	<u>Bar²</u>	<u>1-1/2</u>	=	<u>2.0</u>	<u>2.0</u>
30.11	<u>Clinical</u>	<u>3</u>	=	<u>6.0</u>	<u>6.0</u>
30.12	<u>Commercial With Food Waste²</u>	<u>1-1/2</u>	=	<u>3.0</u>	<u>3.0</u>
30.13	<u>Commercial Pot or Scullery</u>	<u>2</u>	=	<u>4.0</u>	<u>4.0</u>
30.14	<u>Special Purpose²</u>	<u>1-1/2</u>	<u>2.0</u>	<u>3.0</u>	<u>3.0</u>
30.15	<u>Special Purpose</u>	<u>2</u>	<u>3.0</u>	<u>4.0</u>	<u>4.0</u>
30.16	<u>Special Purpose</u>	<u>3</u>	=	<u>6.0</u>	<u>6.0</u>
30.17	<u>Kitchen, Domestic² (with or</u>				
30.18	<u>without food waste grinder,</u>				
30.19	<u>dishwasher, or both)</u>	<u>1-1/2</u>	<u>2.0</u>	<u>2.0</u>	=
30.20	<u>Laundry² (with or without</u>				
30.21	<u>discharge from a clothes washer)</u>	<u>1-1/2</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
30.22	<u>Service or Mop Basin</u>	<u>2</u>	=	<u>3.0</u>	<u>3.0</u>
30.23	<u>Service or Mop Basin</u>	<u>3</u>	=	<u>3.0</u>	<u>3.0</u>
30.24	<u>Service, Flushing Rim</u>	<u>3</u>	=	<u>6.0</u>	<u>6.0</u>
30.25	<u>Wash, Each Set of Faucets</u>	=	=	<u>2.0</u>	<u>2.0</u>
30.26	<u>Urinal, Integral Trap 1.0 GPF²</u>	<u>2</u>	<u>2.0</u>	<u>2.0</u>	<u>5.0</u>
30.27	<u>Urinal, Integral Trap Greater Than</u>				
30.28	<u>1.0 GPF</u>	<u>2</u>	<u>2.0</u>	<u>2.0</u>	<u>6.0</u>
30.29	<u>Urinal, Exposed Trap²</u>	<u>1-1/2</u>	<u>2.0</u>	<u>2.0</u>	<u>5.0</u>
30.30	<u>Water Closet, 1.6 GPF Gravity Tank</u>	<u>3</u>	<u>3.0</u>	<u>4.0</u>	<u>6.0</u>
30.31	<u>Water Closet, 1.6 GPF Flushometer</u>				
30.32	<u>Tank</u>	<u>3</u>	<u>3.0</u>	<u>4.0</u>	<u>6.0</u>

31.1	<u>Water Closet, 1.6 GPF Flushometer</u>				
31.2	<u>Valve</u>	<u>3</u>	<u>3.0</u>	<u>4.0</u>	<u>6.0</u>
31.3	<u>Water Closet, Greater Than 1.6 GPF</u>				
31.4	<u>Gravity Tank⁵</u>	<u>3</u>	<u>4.0</u>	<u>6.0</u>	<u>8.0</u>
31.5	<u>Water Closet, Greater Than 1.6 GPF</u>				
31.6	<u>Flushometer Valve</u>	<u>3</u>	<u>4.0</u>	<u>6.0</u>	<u>8.0</u>

31.7 For SI units: 1 inch = 25 mm

31.8 **Notes:**

31.9 ¹ Indirect waste receptors shall be sized based on the total drainage capacity of the
 31.10 fixtures that drain therein to, in accordance with UPC Table 702.2(b).

31.11 ² Provide a 2-inch (50 mm) minimum drain.

31.12 ³ For refrigerators, coffee urns, water stations, and similar low demands.

31.13 ⁴ For commercial sinks, dishwashers, and similar moderate or heavy demands.

31.14 ⁵ Buildings having a clothes-washing area with clothes washers in a battery of three
 31.15 or more clothes washers shall be rated at 6-fixture units each for purposes of sizing
 31.16 common horizontal and vertical drainage piping.

31.17 ⁶ Trap sizes shall not be increased to the point where the fixture discharge is capable
 31.18 of being inadequate to maintain their self-scouring properties.

31.19 ⁷ Assembly [See Minnesota Rules, chapter 1305, International Building Code].

31.20 **4714.0704 FIXTURE CONNECTIONS (DRAINAGE).**

31.21 UPC section 704.3 is amended to read as follows:

31.22 **704.3 Commercial Dishwashing Machines and Sinks.** Pot sinks, scullery sinks,
 31.23 commercial kitchen sinks, beverage service sinks, dishwashing sinks, silverware sinks,
 31.24 commercial dishwashing machines, silverware-washing machines, and other similar
 31.25 fixtures shall be connected directly to the drainage system. A floor drain constructed
 31.26 without backwater valves shall be provided adjacent to the fixture. The fixture shall be
 31.27 connected on the sewer side of the floor drain trap and no other drainage line shall be

32.1 connected between the floor drain waste connection and the fixture drain. The fixture and
32.2 floor drain shall be trapped and vented in accordance with this code.

32.3 **4714.0705 JOINTS AND CONNECTIONS.**

32.4 UPC subsection 705.10.2 is amended to read as follows:

32.5 **705.10.2 Expansion Joints.** Expansion joints shall be accessible and shall be
32.6 permitted to be used where necessary to provide for expansion and contraction
32.7 of the pipes.

32.8 **4714.0707 CLEANOUTS.**

32.9 UPC section 707.4 is amended by adding a new subsection:

32.10 **707.4.1 Back-to-Back.** A cleanout shall be provided on a common vertical
32.11 fixture drain or common vent serving two fixture traps that connect to a vertical
32.12 drain at the same level. The cleanout shall be the same nominal pipe size as the
32.13 drain serving the fixtures. Where the vertical drain is accessible through the trap
32.14 opening, the cleanout may be eliminated.

32.15 **4714.0710 DRAINAGE OF FIXTURES LOCATED BELOW THE NEXT**
32.16 **UPSTREAM MANHOLE OR BELOW THE MAIN SEWER LEVEL.**

32.17 Subpart 1. Section 710.12. UPC section 710.12 is amended to read as follows:

32.18 **710.12 Grinder Pump Ejector.** Grinder pumps shall be permitted to be used. The
32.19 sump basin storage volume and the pump capacity shall be sized adequately to prevent
32.20 overloading and shall at a minimum accommodate water demand peak flow from all
32.21 fixtures.

32.22 **710.12.1 Discharge Piping.** The discharge piping shall be sized in accordance with
32.23 the manufacturer's installation instructions and shall be not less than 1 1/4 inches (32
32.24 mm) in diameter. A check valve and fullway-type shutoff valve shall be located
32.25 within the discharge line.

32.26 Subp. 2. Section 710.13. UPC section 710.13 is amended to read as follows:

33.1 **710.13 Macerating Toilet Systems.** Listed macerating toilet systems shall be permitted as
33.2 an alternate to a sewage pump system only in one- or two-family dwellings when gravity
33.3 flow is not possible. Not more than one bathroom group is permitted to discharge into
33.4 a macerating toilet system. One bathroom group consists of: a toilet; a lavatory; and a
33.5 shower or bathtub. Components of macerating toilet systems shall be accessible.

33.6 **710.13.1 Sumps.** The sump shall be watertight and gastight.

33.7 **710.13.2 Discharge Piping.** The discharge piping shall be sized in accordance
33.8 with the manufacturer's instructions and shall be not less than 3/4-inch (20 mm)
33.9 in diameter. The developed length of the discharge piping shall not exceed the
33.10 manufacturer's instructions. A check valve and fullway-type shutoff valve shall be
33.11 located within the discharge line or internally within the device.

33.12 **710.13.3 Venting.** The plumbing fixtures that discharge into the macerating device
33.13 shall be vented in accordance with this code. The sump shall be vented in accordance
33.14 with the manufacturer's instructions and the vent shall be permitted to connect to
33.15 the fixture venting.

33.16 **4714.0712 TESTING.**

33.17 Subpart 1. **Section 712.1.** UPC section 712.1 is amended to read as follows:

33.18 **712.1 Media.** The piping of the plumbing, drainage, and venting systems shall be tested
33.19 with water or air. The Authority Having Jurisdiction shall be permitted to require the
33.20 necessary points of access to ascertain whether the pressure has reached all parts of the
33.21 system.

33.22 Subp. 2. **Section 712.** UPC section 712 is amended by adding subsections to read
33.23 as follows:

33.24 **712.4 Negative Test.** Concrete manholes and sewer lines shall be tested by negative
33.25 pressure in accordance with ASTM Standards C1214-13 and C1244-11 or the Hydrostatic
33.26 Test Method in section 1109.2.2.

34.1 **712.5 Finished Plumbing.** After the plumbing fixtures have been set and their traps
34.2 filled with water, their connections shall be tested and proven gastight and watertight by
34.3 plugging the stack openings on the roof and the building drain where it leaves the building,
34.4 and air introduced into the system equal to the pressure of a 1-inch water column. Such
34.5 pressure shall remain constant for 15 minutes or the duration of the inspection without
34.6 the introduction of additional air.

34.7 **712.6 Test Plugs or Caps.** Test plugs or caps for roof terminals shall extend above or
34.8 outside the end of the vent pipe to provide a visible indication for removal after the test
34.9 has been completed.

34.10 **4714.0713 SEWER REQUIRED.**

34.11 Subpart 1. **Section 713.1.** UPC section 713.1 is amended to read as follows:

34.12 **713.1 Where Required.** A building in which plumbing fixtures are installed and premises
34.13 having drainage piping thereon shall have a connection to a public or private sewer, except
34.14 as provided in sections 713.2 and 713.4 and Minnesota Rules, part 4714.0101, subpart 6.

34.15 Subp. 2. **Section 713.5.** UPC section 713.5 is deleted in its entirety.

34.16 Subp. 3. **Section 713.7.** UPC section 713.7 is amended to read as follows:

34.17 **713.7 Installation.** In cities, counties, or both where the installation of building sewers is
34.18 under the jurisdiction of a municipal utility easement, the provisions of this code relating
34.19 to building sewers do not apply.

34.20 **Exception:** Single-family and two-family dwellings and buildings or structures
34.21 accessory thereto, when connected to an approved private sewage disposal system
34.22 prior to the time of connecting the premises to the public sewer need not connect to
34.23 the public sewer when there is insufficient grade or slope to permit drainage to the
34.24 public sewer by gravity and the following conditions are met:

34.25 (1) no hazard, nuisance, or unsanitary condition is evidenced from the private sewage
34.26 disposal system;

35.1 (2) the private sewage system is maintained properly; and

35.2 (3) written permission has been obtained from the Authority Having Jurisdiction.

35.3 **4714.0714 DAMAGE TO PUBLIC SEWER OR PRIVATE SEWAGE DISPOSAL**
35.4 **SYSTEM.**

35.5 UPC section 714.5 is amended to read as follows:

35.6 **714.5 Tanks.** An approved-typed, watertight sewage or wastewater holding tank, the
35.7 contents of which, due to their character, shall be periodically removed and disposed of at
35.8 some approved off-site location, shall be installed where required by the Authority Having
35.9 Jurisdiction to prevent anticipated surface or subsurface contamination or pollution,
35.10 damage to the public sewer, or other hazardous or nuisance conditions.

35.11 **4714.0715 BUILDING SEWER MATERIALS.**

35.12 UPC section 715.3 is amended to read as follows:

35.13 **715.3 Existing Sewers.** Replacement of existing building sewer and building storm
35.14 sewers using cured-in-place pipe lining trenchless methodology and materials shall be
35.15 installed in accordance with ASTM F 1216. Replacement using cured-in-place pipe liners
35.16 shall not be used on collapsed piping or when the existing piping is compromised to a point
35.17 where the installation of the liners will not eliminate hazardous or insanitary conditions.

35.18 **4714.0717 SIZE OF BUILDING SEWERS.**

35.19 UPC section 717, Table 717.1, is amended to read as follows:

35.20 **TABLE 717.1**

35.21 **Maximum/Minimum Fixture Unit Loading on Building Sewer Piping**

35.22 **SLOPE (inches per foot)**

35.23 <u>Size of Pipe (inches)</u>	<u>1/16</u>	<u>1/8</u>	<u>1/4</u>
35.24 <u>6 and smaller</u>	<u>(As specified in Table 703.2/No minimum loading)</u>		
35.25 <u>8</u>	<u>1950/1500</u>	<u>2800/625</u>	<u>3900/275</u>
35.26 <u>10</u>	<u>3400/1600</u>	<u>4900/675</u>	<u>6800/300</u>
35.27 <u>12</u>	<u>5600/1700</u>	<u>8000/725</u>	<u>11 200/325</u>

36.1 For SI units: 1 inch = 25 mm, 1 inch per foot = 83.3 mm/m

36.2 **4714.0721 LOCATION.**

36.3 UPC Table 721.1 is amended to read as follows:

36.4 **TABLE 721.1**

36.5 **Minimum Horizontal Distance Required from Building Sewer (feet)**

36.6 Water supply wells See M.R. Chapter 4725¹

36.7 Building supply 10²

36.8 For SI units: 1 foot = 304.8 mm

36.9 **Notes:**

36.10 ¹ The minimum horizontal setback distance between a building sewer and a water supply
 36.11 well is governed by Minnesota Rules, chapter 4725.

36.12 ² Unless otherwise permitted by the Administrative Authority and when installed in
 36.13 accordance with Section 720.

36.14 **4714.0722 ABANDONED SEWERS AND SEWAGE DISPOSAL FACILITIES.**

36.15 UPC sections 722.0 to 722.5 are deleted in their entirety.

36.16 **4714.0723 BUILDING SEWER TEST.**

36.17 UPC section 723.1 is amended to read as follows:

36.18 **723.1 General.** Building sewers shall be tested by plugging the end of the building sewer
 36.19 at its points of connection with the public sewer or private sewage disposal system and
 36.20 completely filling the building sewer with water from the lowest to the highest point
 36.21 thereof, or by approved equivalent low-pressure air test. Testing of building sewers shall
 36.22 be in accordance with Section 712, as amended. The building sewer shall be gastight
 36.23 or watertight.

36.24 **4714.0724 RECREATIONAL VEHICLE SANITARY DISPOSAL STATION.**

36.25 UPC chapter 7 is amended by adding the following sections:

36.26 **724.0 Recreational Vehicle Sanitary Disposal Station.**

37.1 **724.1 Construction.** Each recreational vehicle sanitary disposal (dump) station shall have
37.2 a concrete slab with the drainage system located as to be on the road (left) side of the
37.3 recreational vehicle. The slab shall be not less than 3 feet by 3 feet (914 mm by 914 mm),
37.4 not less than 3-1/2 inches (89 mm) thick, and properly reinforced. The slab surface shall
37.5 be troweled to a smooth finish and sloped from each side inward to a drainage system inlet.

37.6 The drainage system inlet shall consist of a 4-inch (102 mm), self-closing,
37.7 foot-operated hatch of materials meeting these rules with the cover milled to fit tight. The
37.8 hatch body shall be set in the concrete of the slab with the lip of the opening flush with
37.9 its surface to facilitate the cleansing of the slab with water. The hatch shall be properly
37.10 connected to a drainage system inlet, which shall discharge to a public or private sewer
37.11 meeting the standards of this section.

37.12 **724.2 Flushing Device.** The recreational vehicle sanitary disposal station flushing device
37.13 shall consist of a supported riser terminating not less than 2 feet (610 mm) above the
37.14 ground surface, with a 3/4-inch (20 mm) valved outlet adaptable for a flexible hose. The
37.15 flexible hose shall be designed such that it cannot lie on the ground. The water supply to
37.16 the flushing device shall be protected from backflow by means of a listed vacuum breaker
37.17 or backflow prevention device located downstream from the last shutoff valve.

37.18 Adjacent to the recreational vehicle sanitary disposal station shall be posted a sign of
37.19 durable material not less than 2 feet by 2 feet (610 mm by 610 mm) in size. Inscribed on
37.20 the sign in clearly legible letters shall be the following:

37.21 "DANGER - NOT TO BE USED FOR DRINKING OR DOMESTIC PURPOSES."

37.22 **4714.0801 INDIRECT WASTES.**

37.23 Subpart 1. Section 801.2.2. UPC section 801.2.2 is amended to read as follows:

37.24 **801.2.2 Walk-In Coolers.** Floor drains shall not be located inside walk-in coolers *and walk-in*
37.25 unless they are specifically required by the licensing authority. Where required, *freezers*
37.26 floor drains shall be connected to a separate drainage line discharging into an
37.27 outside receptor. The flood-level rim of the receptor shall not be less than 6 inches

38.1 (152 mm) lower than the lowest floor drain. The floor drains shall be trapped and
38.2 individually vented. Cleanouts shall be provided at 90 degree (1.57 rad) turns and
38.3 shall be accessibly located. The waste shall discharge through an air gap or air break
38.4 into a trapped and vented receptor, except that a full-size air gap is required where
38.5 the indirect waste pipe is under vacuum.

38.6 Subp. 2. Section 801.2.3. UPC section 801.2.3 is amended to read as follows:
38.7 801.2.3 Food-Handling Fixtures. Cooking ranges, steam kettles, potato peelers,
38.8 ice cream dipper wells, and similar equipment shall be indirectly connected to the
38.9 drainage system by means of an air gap. Bins, cooling counters, compartments, and
38.10 other equipment having drainage connections and used for the storage of unpackaged
38.11 ice used for human ingestion, or used in direct contact with ready-to-eat food, shall be
38.12 indirectly connected to the drainage system by means of an air gap. Each indirect waste
38.13 pipe from food-handling fixtures, storage or holding compartments, or equipment shall
38.14 be separately trapped and piped to the indirect waste receptor and shall not combine
38.15 with other indirect waste pipes. The piping from the equipment to the receptor shall
38.16 be not less than the drain on the unit, and in no case less than 3/4 inch (20 mm).

38.17 Subp. 3. Section 801.3. UPC section 801.3 is deleted in its entirety.

38.18 **4714.0804 INDIRECT WASTE RECEPTORS.**

38.19 UPC section 804 is amended by adding the following subsection:

38.20 **804.2 Domestic or Culinary Type Fixtures Prohibited as Receptors.** No plumbing
38.21 fixture that is used for domestic or culinary purposes shall be used to receive the discharge
38.22 of an indirect waste.

38.23 Exception: Domestic use dishwashers may discharge into a sink, or discharge to a
38.24 sink tailpiece or food-waste grinder when installed in accordance with Section 807.4.

38.25 **4714.0813 SWIMMING POOLS.**

38.26 UPC section 813.1 is amended to read as follows:

39.1 **813.1 General.** Pipes carrying wastewater from swimming or wading pools, including
39.2 pool drainage and backwash from filters, water from scum gutter drains and pool deck
39.3 drains, shall be installed as an indirect waste. Where a pump is used to discharge waste pool
39.4 water to the drainage system, the pump discharge shall be installed as an indirect waste.

39.5 **4714.0814 CONDENSATE WASTES AND CONTROL.**

39.6 Subpart 1. Section 814.1. UPC section 814.1 is amended to read as follows:

39.7 **814.1 Condensate Disposal.** Condensate from air washers, air-cooling coils, fuel-burning
39.8 condensing appliances, the overflow from evaporative coolers, and similar water-supplied
39.9 equipment or similar air-conditioning equipment shall be collected and discharged to an
39.10 approved plumbing fixture or disposal area. Where discharged into the drainage system,
39.11 equipment shall drain by means of an indirect waste pipe. The waste pipe shall have a
39.12 slope of not less than 1/8 inch per foot (10.4 mm/m) or 1 percent slope and shall be made
39.13 of an approved corrosion-resistant material.

39.14 Subp. 2. Table 814.1. UPC Table 814.1 is deleted.

39.15 Subp. 3. Section 814.2. UPC section 814.2 is deleted in its entirety.

39.16 Subp. 4. Section 814.3. UPC section 814.3 is amended to read as follows:

39.17 **814.3 Point of Discharge.** Air-conditioning condensate waste pipes shall connect
39.18 indirectly to the interior drainage system through an air gap or air break to: (1) properly
39.19 trapped and vented receptors; (2) the tailpiece of an approved plumbing fixture; or (3) an
39.20 exterior place of disposal approved by the Minnesota Pollution Control Agency.

39.21 Condensate waste shall not drain over a public way or in areas causing a nuisance.

39.22 **4714.0902 VENTS NOT REQUIRED.**

39.23 UPC section 902.2 is deleted in its entirety.

39.24 **4714.0903 MATERIALS.**

39.25 UPC section 903.1 is amended to read as follows:

- 40.1 **903.1 Applicable Standards.** Vent pipes and fittings shall comply with the applicable
40.2 standards referenced in Table 701.1, except that:
40.3 (1) Galvanized steel or 304 stainless steel pipe shall not be installed underground and shall
40.4 be not less than 6 inches (152 mm) aboveground.
40.5 (2) ABS and PVC DWV piping installations shall be in accordance with the applicable
40.6 standards referenced in Table 1401.1.

40.7 **4714.0905 VENT PIPE GRADES AND CONNECTIONS.**

40.8 UPC section 905.3 is amended to read as follows:

- 40.9 **905.3 Vent Pipe Rise.** Except as provided elsewhere in this code, each vent shall rise
40.10 vertically to a point not less than 6 inches (152 mm) above the flood-level rim of the fixture
40.11 served before offsetting horizontally, and where two or more vent pipes converge, each
40.12 such vent pipe shall rise to a point not less than 6 inches (152 mm) in height above the
40.13 flood-level rim of the plumbing fixture it serves before being connected to any other vent.

40.14 **4714.0906 VENT TERMINATION.**

40.15 Subpart 1. Section 906.1. UPC section 906.1 is amended to read as follows:

- 40.16 **906.1 Roof Termination.** Each vent pipe or stack shall extend through its flashing and
40.17 shall terminate vertically not less than 12 inches (305 mm) above the roof.

40.18 Subp. 2. Section 906.3. UPC section 906.3 is amended to read as follows:

- 40.19 **906.3 Use of Roof.** Vent pipes shall be extended separately or combined and of full
40.20 required size, not less than 12 inches (305 mm) above the roof. Flagpoling of vents shall
40.21 be prohibited except where the roof is used for purposes other than weather protection.
40.22 Vents within 10 feet (3,048 mm) of a part of the roof that is used for such other purposes
40.23 shall extend not less than 7 feet (2,134 mm) above the roof and shall be securely stayed.

40.24 Subp. 3. Section 906.7. UPC section 906.7 is amended to read as follows:

- 40.25 **906.7 Frost or Snow Closure.** Vent terminals shall be not less than 2 inches (50 mm) in
40.26 diameter and shall not be smaller than the required vent pipe. Any change in diameter

41.1 shall be made inside the building not less than 12 inches (305 mm) below the roof in an
41.2 insulated space and terminate not less than 12 inches (305 mm) above the roof.

41.3 **4714.1001 TRAPS REQUIRED.**

41.4 UPC section 1001.1 is amended to read as follows:

41.5 **1001.1 Where Required.** Each plumbing fixture shall be separately trapped by an
41.6 approved type of liquid seal trap. This section shall not apply to fixtures with integral
41.7 traps. Not more than one trap shall be permitted on a trap arm. Food waste disposal units
41.8 installed with a set of restaurant, commercial, or industrial sinks shall be connected to
41.9 a separate trap. Each domestic clothes washer and each laundry tub shall be connected
41.10 to a separate and independent trap, except that a laundry tub shall be permitted to also
41.11 receive the waste from a clothes washer set adjacent thereto. The vertical distance
41.12 between a fixture outlet and the trap weir shall be as short as practicable, but in no case
41.13 shall the tailpiece from a fixture exceed 24 inches (610 mm) in length. One trap shall be
41.14 permitted to serve a set of not more than three single compartment sinks or laundry tubs
41.15 of the same depth or three lavatories immediately adjacent to each other and in the same
41.16 room where the waste outlets are not more than 30 inches (762 mm) apart and the trap is
41.17 centrally located where the three compartments are installed.

41.18 **4714.1007 TRAP SEAL PROTECTION.**

41.19 UPC section 1007 is deleted in its entirety.

41.20 **4714.1008 BUILDING TRAPS.**

41.21 UPC section 1008 is deleted in its entirety.

41.22 **4714.1009 INDUSTRIAL INTERCEPTORS (CLARIFIERS) AND SEPARATORS.**

41.23 UPC section 1009.2 is amended to read as follows:

41.24 **1009.2 Approval.** The size, type, and location of each interceptor (clarifier) or separator
41.25 shall meet the requirements of this chapter.

42.1 **Exception:** Interceptors or separators that are engineered and manufactured and are
42.2 documented by the manufacturer and the project registered professional engineer
42.3 to be properly designed and sized for the specific project, and are approved by the
42.4 Authority Having Jurisdiction.

42.5 No wastes other than those requiring treatment or separation shall be discharged into an
42.6 interceptor (clarifier) or separator unless specifically permitted elsewhere in this code.

42.7 **4714.1010 SLAUGHTERHOUSES, PACKING ESTABLISHMENTS, ETC.**

42.8 UPC section 1010.1 is amended to read as follows:

42.9 **1010.1 Slaughterhouses.** Slaughtering and dressing room drains shall be equipped with
42.10 separators or interceptors approved by the administrative authority, which shall prevent
42.11 the discharge into the drainage system of feathers, entrails, or other material likely to
42.12 clog the drainage system.

42.13 **4714.1014 GREASE INTERCEPTORS.**

42.14 UPC section 1014.3.7 is amended to read as follows:

42.15 **1014.3.7 Abandoned Gravity Grease Interceptors.** Abandoned gravity grease
42.16 interceptors shall be pumped and filled as required by the Authority Having
42.17 Jurisdiction.

42.18 **4714.1101 GENERAL.**

42.19 Subpart 1. **Section 1101.1.** UPC section 1101.1 is amended to read as follows:

42.20 **1101.1 Where Required.** Roofs, paved areas, yards, courts, courtyards, vent shafts, light
42.21 wells, or similar areas having rainwater, shall be drained into a separate storm sewer system
42.22 or into a combined sewer system where a separate storm sewer system is not available, or
42.23 to some other place of disposal satisfactory to the Authority Having Jurisdiction. In no
42.24 case shall water from roofs or any building roof drainage flow onto the public sidewalk. In
42.25 the case of one- and two-family dwellings, storm water shall be permitted to be discharged

43.1 on flat areas, such as lawns, so long as the storm water shall flow away from the building
43.2 and away from adjoining property and shall not create a nuisance.

43.3 Subp. 2. Section 1101.2. UPC section 1101.2 is amended to read as follows:

43.4 1101.2 Storm Water Drainage to Sanitary Sewer Prohibited. Storm water shall not be
43.5 drained into sewers intended for sanitary drainage unless approved by the municipal sewer
43.6 authority or stated elsewhere in this code.

43.7 Subp. 3. Section 1101.3. UPC section 1101.3 is amended to read as follows:

43.8 1101.3 Material Uses. Rainwater piping placed within the interior of a building or run
43.9 within a vent or shaft shall be of cast-iron, galvanized steel, wrought iron, brass, copper,
43.10 lead, Schedule 40 ABS DWV, Schedule 40 PVC DWV, stainless steel 304 or 316L
43.11 [stainless steel 304 pipe and fittings shall not be installed underground and shall be kept
43.12 not less than 6 inches (152 mm) aboveground], or other approved materials. Changes
43.13 in direction shall be in accordance with Section 706.0. ABS and PVC DWV piping
43.14 installations shall be installed in accordance with IS 5 and IS 9.

43.15 Subp. 4. Section 1101.11. UPC section 1101.11 is amended to read as follows:

43.16 1101.11 Roof Drainage.

43.17 1101.11.1 Primary Roof Drainage. When roof areas of a building are drained
43.18 by roof drains, the location and sizing of the drains shall be coordinated with the
43.19 structural design and pitch of the roof in accordance with section 1106 or as permitted
43.20 elsewhere in this code. The roof drainage system shall be sized on a basis of a rate of
43.21 rainfall of at minimum 4 inches per hour.

43.22 1101.11.2 Secondary Drainage. Secondary (emergency) roof drainage shall be
43.23 provided in accordance with Minnesota Rules, chapter 1305.

43.24 UPC Table 1101.11 is not amended.

44.1 Subp. 5. Sections 1101.11.2.1, 1101.11.2.2, 1101.2.2 (A), and 1101.11.2.2 (B).
44.2 UPC subsections 1101.11.2.1, 1101.11.2.2, 1101.11.2.2 (A), and 1101.11.2.2 (B) are
44.3 deleted in their entirety.

44.4 **4714.1106 SIZE OF LEADERS, CONDUCTORS, AND STORM DRAINS.**

44.5 UPC section 1106.3 is amended to read as follows:

44.6 **1106.3 Reduction in Size Prohibited.** Except for siphonic roof drainage systems, storm
44.7 drain piping shall not reduce in size in the direction of flow, including changes in direction
44.8 from horizontal to vertical.

44.9 **4714.1108 CONTROLLED-FLOW ROOF DRAINAGE.**

44.10 UPC section 1108.1 is amended to read as follows:

44.11 **1108.1 Application.** The controlled-flow roof drainage system shall be sized on the basis
44.12 of controlled flow and storage of the storm water on the roof, provided the design is based
44.13 on a minimum of 4 inches per hour and the following conditions are met:

44.14 (1) The water from a 25-year-frequency storm shall not be stored on the roof for more
44.15 than 24 hours.

44.16 (2) During the storm, the water depth on the roof shall not exceed the depths specified
44.17 in Table 1108.1 (2).

44.18 (3) Not less than two drains shall be installed in roof areas of 10,000 square feet (929 m²)
44.19 or less, and not less than one additional drain shall be installed for each additional 10,000
44.20 square feet (929 m²) or less of roof area.

44.21 (4) Each roof drain shall have a precalibrated, fixed (nonadjustable), and proportional
44.22 weir (notched) in a standing water collar inside the strainer. No mechanical devices or
44.23 valves shall be allowed.

44.24 (5) Pipe sizing shall be based on the precalibrated rate of flow (gpm) (L/s) of the
44.25 precalibrated weir for the maximum allowable water depth, and Tables 1101.7 and 1101.11.

45.1 (6) The height of stones or other granular material above the waterproofed surface shall
45.2 not be considered in water depth measurement, and the roof surface in the vicinity of the
45.3 drain shall not be recessed to create a reservoir.

45.4 (7) Roof design, where controlled-flow roof drainage is used, shall be such that the design
45.5 roof live load is not less than 40 lb/ft².

45.6 (8) Scuppers shall be provided in parapet walls. The distance of scupper bottoms above the
45.7 roof level at the drains shall not exceed the maximum distances specified in Table 1108.1(8).

45.8 (9) Scupper openings shall be not less than 4 inches (102 mm) high and have a width equal
45.9 to the circumference of the roof drain required for the area served, sized in accordance
45.10 with Table 1101.11.

45.11 (10) Flashings shall extend above the top of the scuppers.

45.12 (11) At a wall or parapet, 45-degree (0.79 rad) cants shall be installed.

45.13 (12) Separate storm and sanitary drainage systems shall be provided within the building.

45.14 (13) Calculations for the roof drainage system shall be submitted, along with the plans, to
45.15 the Authority Having Jurisdiction for approval.

45.16 UPC Table 1108.1(2) and Table 1108.1(8) are not amended.

45.17 **4714.1109 TESTING.**

45.18 Subpart 1. Section 1109.1. UPC section 1109.1 is amended to read as follows:

45.19 **1109.1 Testing Required.** Building storm drainage systems that are new and parts of
45.20 existing systems that have been altered, extended, or repaired shall be tested in accordance
45.21 with section 712 to disclose leaks and defects, except as provided in section 1109.2. Any
45.22 section of the building storm sewer that passes through contaminated soils or contaminated
45.23 water must be air tested in accordance with section 712.3.

45.24 Subp. 2. Section 1109.2. UPC section 1109.2 is amended to read as follows:

45.25 **1109.2 Exceptions.**

45.26 **1109.2.1 Testing is not required for:**

46.1 (1) outside leaders;
46.2 (2) perforated or open drain tile; or
46.3 (3) portions of storm drainage system and sewers that are located more than ten feet
46.4 from buildings, more than ten feet from buried water lines, and more than 50 feet from
46.5 water wells, and that do not pass through soil or water identified as being contaminated.
46.6 **1109.2.2** Building storm sewers shall be tested in accordance with section 712 or the
46.7 Hydrostatic Test Method from the City Engineers Association of Minnesota. The
46.8 Hydrostatic Test Method, provisions E2 and E3, as specified in Standard Utilities
46.9 Specifications for Watermain and Service Line Installation and Sanitary Sewer and
46.10 Storm Sewer Installation, written and published by the City Engineers Association
46.11 of Minnesota, 2013 edition, is incorporated by reference, is not subject to frequent
46.12 change, and is available in the office of the commissioner of labor and industry.

46.13 **4714.1110 SIPHONIC ROOF DRAINAGE SYSTEM.**

46.14 UPC chapter 11 is amended by adding a new section and subsections as follows:

46.15 **1110.0 Siphonic Roof Drainage System.**

46.16 **1110.1 General Requirements.** Siphonic roof drainage systems shall be designed as an
46.17 engineered siphonic roof drainage system when allowed by the administrative authority.

46.18 The engineered siphonic roof drainage system shall meet the requirements of Sections
46.19 1110.2 and 1110.3.

46.20 **1110.2 Design Criteria.** The siphonic roof drainage system shall be designed and certified
46.21 by a registered professional engineer.

46.22 **1110.2.1 Sizing.** The system shall be sized on the basis of a minimum rate of rainfall
46.23 of 4 inches per hour.

46.24 **1110.2.2 Design.** The drainage system shall be designed according to ASPE Standard
46.25 45, Siphonic Roof Drainage, and according to the manufacturer's recommendations
46.26 and requirements. Manufacturer design software shall be in accordance with ASPE
46.27 Standard 45.

- 47.1 **1110.2.3 Roof drain bodies.** Roof drains shall meet ASME A112.6.9, Siphonic
47.2 Roof Drains.
- 47.3 **1110.2.4 Water accumulation.** When designed for water accumulation, the roof shall
47.4 be designed for the maximum possible water accumulation according to Section
47.5 1108.1 (7), as amended in this code, and Minnesota Rules, chapter 1305.
- 47.6 **1110.2.5 Pipe size and cleanouts.** Minimum pipe size shall be 1-1/2 inches. All pipe
47.7 sizes and cleanouts in the drainage system shall be designed and installed according
47.8 to ASPE Standard 45.
- 47.9 **1110.2.6 Horizontal pipes.** Horizontal pipe size shall not reduce in the direction of
47.10 flow.
- 47.11 **1110.2.7 Plans and specifications.** The plans and specifications for the drainage
47.12 system shall indicate the siphonic roof drainage system as an engineered method
47.13 used for the design.
- 47.14 **1110.2.8 Markings.** The installed drainage system shall be permanently and
47.15 continuously marked as a siphonic roof drainage system at approved intervals and
47.16 clearly at points where piping passes through walls and floors. Roof drains shall be
47.17 marked in accordance with ASME A112.6.9.
- 47.18 **1110.2.9 Transition locations.** The transition locations from the siphonic roof
47.19 drainage system to a gravity system shall be determined by the registered professional
47.20 engineer at a location approved by the administrative authority. The design, sizing,
47.21 and venting of the transition location shall be in accordance with ASPE Standard 45.
- 47.22 The velocity at the transition location to gravity shall be reduced to less than three
47.23 feet per second. The gravity portion of the building storm sewer system receiving the
47.24 siphonic roof drainage system shall be sized for the design rate but not less than a
47.25 rainfall rate of 4 inches per hour and in accordance with Section 1106.0.
- 47.26 **1110.2.10 Required submissions.** All plans, specifications, and calculations shall
47.27 be signed and sealed by the registered professional engineer and submitted to the

48.1 administrative authority. The submitted calculations shall include performance
48.2 data for the drainage system for the required rainfall rate, including the minimum
48.3 and maximum calculated operating pressures and velocities verifying that the
48.4 design solution is within the operating parameters required by the design standard.
48.5 All performance data shall be reported as the extreme maximum and minimum
48.6 calculations and shall not be presented as averaged data.

48.7 **1110.3 Proof of Suitability.** Upon completion of the project: proper tests, inspections,
48.8 and certification of the siphonic roof drainage system shall be performed according
48.9 to items 1110.3.1 and 1110.3.2:

48.10 **1110.3.1 Testing.** Testing shall be performed according to ASPE Standard 45.

48.11 **1110.3.2 Written certification.** Prior to the final plumbing inspection, the registered
48.12 professional engineer shall provide written certification to the administrative authority
48.13 that the system has been visually inspected by the registered professional engineer or
48.14 the registered professional engineer's designee and the installation has been properly
48.15 implemented according to the certified design, plans, calculations, and specifications.
48.16 The submitted written certification shall include any field modification from the
48.17 initial design involving dimensions, location, or routing of the siphonic roof drainage
48.18 system that shall be reapproved and recertified by the registered professional engineer
48.19 and be accompanied by a final as-built design of the altered system and supported
48.20 by calculated data to show that the overall system remains in accordance with ASPE.
48.21 Standard 45.

48.22 **4714.1401 REFERENCED STANDARDS.**

48.23 Table 1401.1 is amended to add the following:

48.24 ASPE Standard 45, Siphonic Roof Drainage, and applies to roof drainage referenced
48.25 in sections 1110.2.5, 1110.2.9, 1110.3.1, and 1110.3.2.

48.26 ASTM Standards C1214-13 referenced in section 712.4.

48.27 ASTM Standards C1244-11 referenced in section 712.4.

49.1 IAPMO IGC 155-2008, Pipeless Whirlpool Bathtub Appliances referenced in section
49.2 409.1.

49.3 Standard Utilities Specifications for water main and service line installation and
49.4 sanitary sewer and storm sewer installation referenced in section 1109.2.2.

49.5 **4714.1701 GENERAL.**

49.6 UPC section 1701.1 is amended to read as follows:

49.7 **1701.1 Applicability.** The provisions of this chapter shall apply to the installation,
49.8 construction, alteration, and repair of rainwater catchment systems for nonpotable
49.9 applications listed in Section 1702.1.

49.10 **1701.1.1 Irrigation.** Rainwater catchment systems used for lawn irrigation are not
49.11 covered under this chapter.

49.12 **1701.1.2 Combination Systems.** Rainwater catchment systems used for lawn
49.13 irrigation in combination with any uses listed in Section 1702.1 shall meet the
49.14 requirements of this chapter. The irrigation system shall be separated by an air gap or
49.15 proper backflow protection as required for potable water.

49.16 **4714.1702 NONPOTABLE RAINWATER CATCHMENT SYSTEMS.**

49.17 Subpart 1. Section 1702.1. UPC section 1702.1 is amended to read as follows:

49.18 **1702.1 General.** The installation, construction, alteration, and repair of rainwater
49.19 catchment systems intended to supply uses such as water closets, urinals, trap primers for
49.20 floor drains and floor sinks, industrial processes, water features, vehicle washing facilities,
49.21 cooling tower makeup, and similar uses shall be approved by the commissioner.

49.22 Subp. 2. Section 1702.2. UPC section 1702.2 is amended to read as follows:

49.23 **1702.2 Plumbing Plan Submission.** No permit for a rainwater catchment system shall
49.24 be issued until complete plumbing plans have been submitted and approved by the
49.25 commissioner in accordance with Minnesota Rules, part 1300.0215, subpart 6.

49.26 Subp. 3. Section 1702.4. UPC section 1702.4 is amended to read as follows:

50.1 **1702.4 Connections to Potable or Reclaimed (Recycled) Water Systems.** Rainwater
50.2 catchment systems shall have no direct connection to a potable water supply or alternate
50.3 water source system. Potable or reclaimed (recycled) water is permitted to be used
50.4 as makeup water for a rainwater catchment system provided the potable or reclaimed
50.5 (recycled) water supply connection is protected by an air gap or reduced-pressure principle
50.6 backflow preventer in accordance with this code. An automatic means to supply the
50.7 rainwater catchment system with makeup water shall be installed when there is insufficient
50.8 rainwater to meet the required demand or due to system failure.

50.9 Subp. 4. **Section 1702.5.** UPC section 1702.5 is amended to read as follows:
50.10 **1702.5 Initial Cross-Connection Test.** Where a portion of a rainwater catchment
50.11 system is installed within a building, a cross-connection test is required in accordance
50.12 with Section 1702.11.2, as amended. Before the building is occupied or the system is
50.13 activated, the plumbing contractor shall perform the initial cross-connection test in the
50.14 presence of the Authority Having Jurisdiction. The test shall be ruled successful before
50.15 final approval is granted.

50.16 Subp. 5. **Section 1702.7.** UPC section 1702.7 is amended to read as follows:
50.17 **1702.7 Rainwater Catchment System Materials.** Rainwater catchment system materials
50.18 shall comply with Sections 1702.7.1 through 1702.7.4.

50.19 **1702.7.1 Water Supply and Distribution Materials.** Rainwater catchment water
50.20 supply and distribution materials shall comply with Chapter 6, as amended in this
50.21 code, and the requirements of this code for potable water supply and distribution
50.22 systems, unless otherwise provided for in this section.

50.23 **1702.7.2 Rainwater Catchment System Drainage Materials.** Materials used in
50.24 rainwater catchment drainage systems, including gutters, downspouts, conductors,
50.25 and leaders shall be in accordance with Chapter 11, as amended in this code, and the
50.26 requirements of this code for storm drainage.

- 51.1 1702.7.3 Storage Tanks. Rainwater storage tanks shall comply with Section
- 51.2 1702.9.5, as amended in this code.
- 51.3 1702.7.4 Collection Surfaces. The collection surface shall be constructed of a hard,
- 51.4 impervious material.
- 51.5 Subp. 6. Section 1702.9. UPC section 1702.9.3 is amended to read as follows:
- 51.6 1702.9.3 Collection Surfaces. Rainwater catchment systems shall collect rainwater
- 51.7 only from roof surfaces. Rainwater catchment systems shall not collect rainwater from:
- 51.8 (1) vehicular parking surfaces;
- 51.9 (2) surface water runoff;
- 51.10 (3) bodies of standing water; or
- 51.11 (4) similar nonroof surfaces.
- 51.12 1702.9.3.1 Prohibited Discharges. Overflows and bleed-off pipes from roof-mounted
- 51.13 equipment and appliances, condensate, and other waste disposal shall not discharge
- 51.14 onto roof surfaces that collect rainwater for rainwater catchment systems.
- 51.15 Subp. 7. Section 1702.9. UPC section 1702.9.4 is amended to read as follows:
- 51.16 1702.9.4 Minimum Water Quality. The minimum water quality for rainwater
- 51.17 catchment systems shall meet the applicable water quality recommendations in Table
- 51.18 1702.9.4.
- 51.19 Subp. 8. Section 1702.9.4. UPC section 1702.9.4 is amended by adding the
- 51.20 following table:

TABLE 1702.9.4

<u>Measure</u>	<u>Limit</u>
51.23 <u>Turbidity (NTU)</u>	<u><1</u>
51.24 <u>E. coli (MPN/100 mL)</u>	<u>2.2</u>
51.25 <u>Odor</u>	<u>Non-offensive</u>
51.26 <u>Temperature (degrees Celsius)</u>	<u>MR</u>

52.1 Color MR

52.2 pH MR

52.3 MR = measured and recorded only

52.4 Treatment:

52.5 5 micron or smaller absolute filter

52.6 Minimum .5-log inactivation of viruses

52.7 Subp. 9. Section 1702.9.5. UPC subsection 1702.9.5.1 is amended to read as follows:

52.8 1702.9.5.1 Construction. Rainwater storage shall be constructed of solid,
52.9 durable materials not subject to excessive corrosion or decay, watertight, and
52.10 suitable for rainwater storage.

52.11 Subp. 10. Section 1702.9.5. UPC section 1702.9.5.6 (A) is amended to read as
52.12 follows:

52.13 1702.9.5.6 (A) Animals and Insects. Rainwater tank openings shall be protected
52.14 to prevent the entrance of insects, birds, or rodents into the tank and piping
52.15 system. Screen installed on vent pipes, inlets, and overflow pipes shall be
52.16 corrosion-resistant and have an aperture of not greater than 1/16 inch (1.6 mm)
52.17 and shall be close-fitting.

52.18 Subp. 11. Section 1702.9.5. UPC section 1702.9.5 is amended by adding a new
52.19 subsection as follows:

52.20 1702.9.5.8 Storage Tank Venting. A vent shall be installed on each tank. The
52.21 vent shall extend from the top of the tank and terminate a minimum of 12
52.22 inches above grade, shall be a minimum of 1-1/2 inches in diameter, and shall
52.23 be turned downward.

52.24 Subp. 12. Section 1702.9.6. UPC section 1702.9.6 is amended to read as follows:

52.25 1702.9.6 Pumps. Pumps serving rainwater catchment systems shall be listed.
52.26 Pumps supplying water to water closets, urinals, and trap primers shall be capable

53.1 of delivering not less than 15 pounds-force per square inch (psi) (103 kPa) residual
53.2 pressure at the highest and most remote outlet served. Where the water pressure in
53.3 the rainwater supply system within the building exceeds 80 psi (552 kPa), a listed
53.4 pressure-reducing valve reducing the pressure to 80 psi (552 kPa) or less to water
53.5 outlets in the building shall be installed in accordance with this code.

53.6 Subp. 13. Section 1702.9.7. UPC section 1702.9.7 is amended to read as follows:
53.7 **1702.9.7 Roof Drains.** Primary and secondary roof drain systems shall be designed
53.8 and installed in accordance with Chapter 11, as amended in this code. Secondary roof
53.9 drains shall be equipped with a working alarm.

53.10 Subp. 14. Section 1702.9.8. UPC section 1702.9.8 is amended to read as follows:
53.11 **1702.9.8 Water Quality Devices and Equipment.** The rainwater catchment system
53.12 shall include filtration and disinfection to maintain the minimum water quality
53.13 requirements in Table 1702.9.4. At a minimum, a 5-micron absolute filter shall be
53.14 provided along with disinfection to provide a 0.5-log inactivation of viruses. Devices
53.15 and equipment used to treat rainwater shall be suitable for rainwater catchment
53.16 system applications, properly designed, sized, and documented for the specific project
53.17 by a Minnesota registered professional engineer.

53.18 Subp. 15. Sections 1702.9.11 and 1702.9.12. UPC sections 1702.9.11 and 1702.9.12
53.19 are deleted in their entirety.

53.20 Subp. 16. Section 1702.10. UPC section 1702.10.1 is amended to read as follows:
53.21 **1702.10.1 Commercial, Industrial, and Institutional Restroom Signs.** A sign shall
53.22 be installed in restrooms in commercial, industrial, and institutional occupancies
53.23 using nonpotable rainwater for water closets, urinals, or both. Each sign shall contain
53.24 1/2-inch (12.7 mm) letters of a highly visible color on a contrasting background. The
53.25 location of the sign(s) shall be such that the sign(s) shall be visible to users. Each sign
53.26 shall contain one of the following texts as determined by the application:

54.1 1702.10.1 (A) TO CONSERVE WATER, THIS BUILDING USES RAINWATER
 54.2 TO FLUSH TOILETS AND URINALS.

54.3 1702.10.1 (B) TO CONSERVE WATER, THIS BUILDING USES RAINWATER
 54.4 TO FLUSH TOILETS.

54.5 1702.10.1 (C) TO CONSERVE WATER, THIS BUILDING USES RAINWATER
 54.6 TO FLUSH URINALS.

54.7 1702.10.1 (D) TO CONSERVE WATER, THIS BUILDING USES RAINWATER
 54.8 TO * _____ *

54.9 * _____ * shall indicate the rainwater usage.

54.10 Subp. 17. Section 1702.11. UPC section 1702.11.2 is amended to read as follows:

54.11 1702.11.2 Cross-Connection Inspection and Testing. The potable and rainwater
 54.12 catchment water systems shall be isolated from each other and independently
 54.13 inspected and tested to ensure there is no cross-connection in accordance with
 54.14 Sections 1702.11.2.1 through 1702.11.2.4.

54.15 1702.11.2.1 Visual System Inspection. Prior to commencing the
 54.16 cross-connection testing and annually thereafter, a dual system inspection shall
 54.17 be conducted as follows:

54.18 Pumps, equipment, equipment room signs, and exposed piping in an equipment
 54.19 room shall be inspected for visible cross-connections, proper operation, and
 54.20 damage.

54.21 1702.11.2.2 Cross-Connection Test. The following procedure shall be followed
 54.22 by the plumbing contractor in the presence of the Authority Having Jurisdiction
 54.23 to determine whether a cross-connection has occurred:

54.24 (1) The potable water system shall be activated and pressurized. The rainwater
 54.25 catchment water system shall be shut down and completely drained.

54.26 (2) The potable water system shall remain pressurized while the rainwater
 54.27 catchment water system is completely drained. The minimum period the

- 55.1 rainwater catchment water system is to remain completely drained shall be
55.2 determined based on the size and complexity of the potable water system and
55.3 rainwater catchment water distribution system, but in no case shall that period
55.4 be less than one hour.
- 55.5 (3) Fixtures, potable water, and rainwater, shall be tested and inspected
55.6 for flow. Flow from a rainwater catchment water system outlet indicates
55.7 a cross-connection. No flow from a potable water outlet indicates that it is
55.8 connected to the rainwater catchment water system.
- 55.9 (4) The drain on the rainwater catchment water system shall be checked for flow
55.10 during the test and at the end of the testing period.
- 55.11 (5) The potable water system shall then be completely drained.
- 55.12 (6) The rainwater catchment water system shall then be activated and pressurized.
- 55.13 (7) The rainwater catchment water system shall remain pressurized for a
55.14 minimum time specified by the Authority Having Jurisdiction while the potable
55.15 water system is completely drained. The minimum period the potable water
55.16 system is to remain completely drained shall be based on the size and complexity
55.17 of the potable water system and rainwater catchment water distribution system
55.18 but in no case shall that period be less than one hour.
- 55.19 (8) Fixtures, potable and rainwater catchment, shall be tested and inspected for
55.20 flow. Flow from a potable water system outlet indicates a cross-connection.
55.21 No flow from a rainwater catchment water outlet indicates that it is connected
55.22 to the potable water system.
- 55.23 (9) The drain on the potable water system shall be checked for flow during the
55.24 test and at the end of the testing period.
- 55.25 (10) Where there is no flow detected in the fixtures that would indicate a
55.26 cross-connection, the potable water system shall be repressurized.

56.1 **1702.11.2.3 Discovery of Cross-Connection.** In the event that a cross-connection
56.2 is discovered, the following procedure, in the presence of the Authority Having
56.3 Jurisdiction, shall be activated immediately:

56.4 (1) Rainwater catchment water piping to the building shall be shut down at the
56.5 meter and the rainwater water riser shall be drained.

56.6 (2) Potable water piping to the building shall be shut down at the meter.

56.7 (3) The cross-connection shall be uncovered and disconnected.

56.8 (4) The building shall be retested following procedures listed in Sections
56.9 1702.11.2.1 and 1702.11.2.2.

56.10 (5) The potable water system shall be chlorinated with 50 ppm chlorine for 24
56.11 hours.

56.12 (6) The potable water system shall be flushed after 24 hours, and a standard
56.13 bacteriological test shall be performed. Where test results are acceptable, the
56.14 potable water system shall be permitted to be recharged.

56.15 **1702.11.2.4 Inspection.** An annual inspection of the rainwater catchment water
56.16 system, following the procedures in Section 1702.11.2.1, shall be required.

56.17 Cross-connection testing, following the procedures listed in Section 1702.11.2.2,
56.18 shall be required every five years.

56.19 Alternate testing requirements shall be permitted by the Authority Having
56.20 Jurisdiction.

56.21 Subp. 18. **Section 1702.** UPC section 1702 is amended by adding the following
56.22 section:

56.23 **1702.12 Maintenance and Inspection.** Rainwater catchment water systems and
56.24 components shall be inspected and maintained in accordance with Sections 1702.12.1
56.25 through 1702.12.3.

57.1 **1702.12.1 Frequency.** Rainwater catchment systems and components shall be
 57.2 inspected and maintained in accordance with Table 1702.12 unless more frequent
 57.3 inspection and maintenance is required by the manufacturer.

57.4 **1702.12.2 Maintenance Log.** A maintenance log for rainwater catchment systems is
 57.5 required. The property owner or designated appointee shall ensure that a record of
 57.6 testing, inspection, and maintenance in accordance with Table 1702.12 is maintained
 57.7 in the log. The log shall indicate the frequency of inspection and maintenance for
 57.8 each system.

57.9 **1702.12.3 Maintenance Responsibility.** The required operation, maintenance,
 57.10 monitoring, testing, and inspection of rainwater catchment systems shall be the
 57.11 responsibility of the property owner.

57.12 Subp. 19. Section 1702.12. UPC section 1702.12 is amended by adding the
 57.13 following table:

57.14 **TABLE 1702.12**

57.15 **Minimum Alternate Water Source Testing, Inspection, and Maintenance Frequency**

57.16 <u>Description</u>	57.16 <u>Minimum Frequency.</u>
57.17 <u>Inspect and clean filters and screens, and replace.</u>	57.17 <u>Every three months.</u>
57.18 <u>Inspect and verify that required disinfection, filters,</u> 57.19 <u>and water quality treatment devices and systems are</u> 57.20 <u>operational and maintaining minimum water quality</u> 57.21 <u>requirements in Table 1702.9.4.</u>	57.18 <u>After initial installation and</u> 57.19 <u>monthly thereafter.</u> 57.20 <u>Exception: Every 12 months</u> 57.21 <u>thereafter when electronically</u> 57.22 <u>monitored.</u>
57.23 <u>Inspect and clear debris from rainwater gutters,</u> 57.24 <u>downspouts, and roof washers.</u>	57.23 <u>At the beginning of seasonal</u> 57.24 <u>usage and monthly during</u> 57.25 <u>seasonal usage.</u>
57.26 <u>Inspect and clear debris from roof or other aboveground</u> 57.27 <u>rainwater collection surfaces.</u>	57.26 <u>At the beginning of seasonal</u> 57.27 <u>usage and monthly during</u> 57.28 <u>seasonal usage.</u>
57.29 <u>Remove tree branches and vegetation overhanging roof</u> 57.30 <u>or other aboveground rainwater collection surfaces.</u>	57.29 <u>As needed.</u>

- 58.1 Inspect pumps and verify operation. After initial installation and every
 58.2 12 months thereafter.
- 58.3 Inspect valves and verify operation. After initial installation and every
 58.4 12 months thereafter.
- 58.5 Inspect pressure tanks and verify operation. After initial installation and every
 58.6 12 months thereafter.
- 58.7 Clear debris from and inspect storage tanks and After initial installation and every
 58.8 locking devices and verify operation. 12 months thereafter.
- 58.9 Inspect caution labels and marking. After initial installation and every
 58.10 12 months thereafter.
- 58.11 Cross-connection inspection and test.* After initial installation and
 58.12 thereafter in accordance with
 58.13 Section 1702.11.2.4.
- 58.14 *The cross-connection inspection and test shall be performed in accordance with this
 58.15 chapter by a plumber licensed under Minnesota Statutes, section 326B.46, and certified
 58.16 to ASSE Standard 5120.

- 58.17 Subp. 20. Section 1702. UPC section 1702 is amended by adding a section as follows:
 58.18 1702.13 Operation and Maintenance Manual. An operation and maintenance manual
 58.19 for rainwater catchment systems shall be supplied to the building owner by the system
 58.20 designer. The operating and maintenance manual shall include the following:
- 58.21 (1) Detailed diagram of the entire system and the location of system components.
 58.22 (2) Instructions on operating and maintaining the system.
 58.23 (3) Details on maintaining the required water quality in Table 1702.9.4.
 58.24 (4) Details on deactivating the system for maintenance, repair, or other purposes.
 58.25 (5) Applicable testing, inspection, and maintenance frequencies in accordance with Table
 58.26 1702.12.
 58.27 (6) A method of contacting the manufacturer(s).

- 58.28 Subp. 21. Section 1702. UPC section 1702 is amended by adding the following
 58.29 section:

59.1 **1702.14 Separation Requirements.** All underground rainwater service piping shall be
 59.2 separated from the building sewer piping in accordance with Section 609.2. Treated,
 59.3 nonpotable water pipes shall be permitted to be run or laid in the same trench as potable
 59.4 water pipes with a 12-inch minimum vertical and horizontal separation when both pipe
 59.5 materials are approved for use within a building. Where horizontal piping materials do not
 59.6 meet this requirement, the minimum separation shall be increased to 60 inches. The potable
 59.7 water piping shall be installed at an elevation above the treated-nonpotable water piping.

59.8 Subp. 22. **Section 1702.** UPC section 1702 is amended by adding the following
 59.9 section:

59.10 **1702.15 Abandonment.** All rainwater catchment systems that are no longer in use and
 59.11 fail to be maintained in accordance with Section 1702.12 shall be considered abandoned.

59.12 Abandoned rainwater catchment systems are subject to Sections 1702.15.1 and 1702.15.2.

59.13 **1702.15.1 General.** Every abandoned rainwater catchment system or part thereof
 59.14 covered under the scope of this chapter, as amended in this code, shall be disconnected
 59.15 from any remaining systems, drained, plugged, and capped per the requirements of this
 59.16 code. Abandoned systems must comply with chapter 11, Storm Drainage, as amended.

59.17 **1702.15.2 Underground Tank.** Every underground water storage tank that has been
 59.18 abandoned or otherwise discontinued from use in a rainwater catchment system
 59.19 covered under the scope of this chapter, as amended in this code, shall be completely
 59.20 drained and filled with earth, sand, gravel, or concrete or removed in a manner
 59.21 approved by the administrative authority.

59.22 **REPEALER.** Minnesota Rules, parts 4715.0100; 4715.0200; 4715.0300; 4715.0310;
 59.23 4715.0320; 4715.0330; 4715.0340; 4715.0400; 4715.0410; 4715.0420; 4715.0500;
 59.24 4715.0510; 4715.0520; 4715.0530; 4715.0540; 4715.0550; 4715.0560; 4715.0570;
 59.25 4715.0580; 4715.0590; 4715.0600; 4715.0610; 4715.0620; 4715.0630; 4715.0640;
 59.26 4715.0700; 4715.0710; 4715.0720; 4715.0730; 4715.0740; 4715.0750; 4715.0760;
 59.27 4715.0770; 4715.0780; 4715.0790; 4715.0800, subparts 1, 2, 4, 5, 6, 6a, and 7; 4715.0805;

- 60.1 4715.0810; 4715.0815; 4715.0820; 4715.0830; 4715.0840; 4715.0850; 4715.0860;
60.2 4715.0870; 4715.0880; 4715.0890; 4715.0900; 4715.0910; 4715.0920; 4715.0930;
60.3 4715.0940; 4715.0950; 4715.0960; 4715.0970; 4715.1000; 4715.1010; 4715.1020;
60.4 4715.1030; 4715.1100; 4715.1105; 4715.1120; 4715.1130; 4715.1140; 4715.1150;
60.5 4715.1160; 4715.1200; 4715.1210; 4715.1220; 4715.1230; 4715.1240; 4715.1250;
60.6 4715.1260; 4715.1300, subparts 1, 2, 3, 4, and 6; 4715.1305; 4715.1310; 4715.1320;
60.7 4715.1330; 4715.1340; 4715.1350; 4715.1360; 4715.1370; 4715.1380; 4715.1390;
60.8 4715.1400; 4715.1410; 4715.1420; 4715.1430; 4715.1440; 4715.1500; 4715.1510;
60.9 4715.1520; 4715.1530; 4715.1540; 4715.1550; 4715.1560; 4715.1570; 4715.1580;
60.10 4715.1590, subparts 1, 2, 3, and 4; 4715.1600; 4715.1610; 4715.1700; 4715.1710;
60.11 4715.1720; 4715.1730; 4715.1740; 4715.1750; 4715.1760; 4715.1770; 4715.1800;
60.12 4715.1810; 4715.1900; 4715.1910; 4715.1911; 4715.1912; 4715.1920; 4715.1940;
60.13 4715.1941; 4715.1950; 4715.1960; 4715.2000; 4715.2010; 4715.2020; 4715.2030;
60.14 4715.2100; 4715.2110; 4715.2120; 4715.2150; 4715.2160; 4715.2161; 4715.2162;
60.15 4715.2163; 4715.2165; 4715.2170; 4715.2180; 4715.2190; 4715.2200; 4715.2210;
60.16 4715.2215; 4715.2220; 4715.2230; 4715.2240; 4715.2250; 4715.2280; 4715.2300;
60.17 4715.2310; 4715.2320; 4715.2330; 4715.2340; 4715.2350; 4715.2360; 4715.2370;
60.18 4715.2400; 4715.2410; 4715.2420; 4715.2430; 4715.2440; 4715.2450; 4715.2500;
60.19 4715.2510; 4715.2520; 4715.2530; 4715.2540; 4715.2550; 4715.2560; 4715.2570;
60.20 4715.2580; 4715.2600; 4715.2610; 4715.2620; 4715.2630; 4715.2640; 4715.2650;
60.21 4715.2655; 4715.2660; 4715.2700; 4715.2710; 4715.2720; 4715.2730; 4715.2740;
60.22 4715.2750; 4715.2760; 4715.2770; 4715.2780; 4715.2790; 4715.2820; 4715.2840;
60.23 4715.2850; 4715.2860; 4715.2870; 4715.3500; 4715.3600; 4715.3700; 4715.3800,
60.24 subparts 1, 2, 3, 4, 5, 6, 7, 8, 9, 10a, and 11a; 4715.4100; 4715.5000; 4715.5100;
60.25 4715.5200; 4715.5300; 4715.5400; 4715.5500; and 4715.5700, are repealed.

Office of the Revisor of Statutes

Administrative Rules



RECEIVED

JAN 23 2015

DEPT. OF LABOR & INDUSTRY
LEGAL SERVICES

TITLE: Proposed Permanent Rules Governing the Plumbing Code and Adopting the 2012 Uniform Plumbing Code, with Amendments

AGENCY: Minnesota Plumbing Board

MINNESOTA RULES: Chapters 4714 and 4715

INCORPORATION BY REFERENCE:

Part 4714.0050: Chapters 2 to 11, 14, and 17 of the 2012 edition of the Uniform Plumbing Code (UPC) as promulgated by the International Association of Plumbing and Mechanical Offices (IAPMO), Ontario, California, and UPC appendices A, B, and I, except for IS 12-2006, IS 13-2006, IS 26-2006, SIS 1-2003, and SIS 2-2003 of appendix I. UPC is copyright 2012 by the IAPMO.

Part 4714.1109, subpart 2: Section 712 or the Hydrostatic Test Method from the City Engineers Association of Minnesota. Hydrostatic Test Method, provisions E2 and E3, as specified in Standard Utilities Specifications for Watermain and Service Line Installation and Sanitary Sewer and Storm Sewer Installation, written and published by the City Engineers Association of Minnesota, 2013 edition.

Available in the office of the commissioner of labor and industry.

The attached rules are approved for
publication in the State Register

Sheree Speer
Senior Assistant Revisor

Attachment referenced at page 28.12/28.13:

4714.0612 Multipurpose Potable Water Piping Systems.

UPC section 612.0 is amended to read as follows:

612.0 Multipurpose Potable Water Piping Systems.

612.1 General. A multipurpose potable water piping system as defined in Minnesota Statutes, chapter 299M shall meet the requirements of this code.



April 7, 2015

John Parizek, Chair
Plumbing Board
c/o Department of Labor and Industry
443 Lafayette Road North
Saint Paul, MN 55155
dli.cclboards@state.mn.us

RE: **Petition for Variance**

Dear Mr. Parizek:

Rowland Shady Oak Properties, LLC ("Owner" or "Petitioner") owns property located at 6889 Rowland Road, Eden Prairie, Minnesota to provide office space for three philanthropic organizations: Margaret A. Cargill Foundation, Anne Ray Charitable Trust, and Akaloa Resource Foundation (collectively, "Margaret A. Cargill Philanthropies" or "MACP"). As charitable grantmaking organizations, MACP shares a common mission: To provide meaningful assistance and support to society, the arts, and the environment.

Our goal to provide meaningful assistance and support includes preserving and promoting sustainable use of the environment. Our mission begins at our home. To accommodate MACP's growing operations, we are renovating and expanding our building located at 6889 Rowland Road in Eden Prairie. We are incorporating environmentally sustainable features, including pursuing a LEED Platinum rating for the building expansion project. As you know, as part of these efforts, we would like to install a Gray Water Drip Irrigation System.

MACP has worked closely with the engineers at Karges-Falconbridge, Inc. ("KFI") to design a safe and sustainable Gray Water Drip Irrigation System. The permanent Gray Water Drip Irrigation System will allow us to collect gray water from lavatory sinks, showers, and clothes washers to irrigate designated landscape areas (it will not be used for food production). We are confident that the system will support our charitable mission to protect the environment and it will serve the public interest as we explore new sustainability technology. We anticipate that it will not, however, prejudice the legal or economic rights of any other person or entity. As other states around the country embrace gray water technology, we are pleased that Minnesota is considering our request for this variance as well. We are eager to work with the Plumbing Board and local industry experts to implement gray water technology for our use in

Eden Prairie. We are also hopeful that this project may serve as a model to promote environmental sustainability efforts and encourage further development in the industry.

On October 17, 2014, we requested a variance to implement the gray water technology at our building. We received a letter from the Plumbing Board, dated March 13, 2015, which listed five items needed to complete the variance petition. We have provided responses to your inquiries in bold below.

1. *Under Minn. Stat. § 14.056, subd. 1(3), the petition must include the scope and duration of the requested variance. Are you requesting a temporary variance or a permanent variance? Is the request for a seasonal variance?*

Response: Petitioner requests a permanent variance.

2. *Under Minn. Stat. § 14.056, subd. 1(4), the petition for variance must contain “the reasons that the petitioner believes justify a variance, including a signed statement attesting to the accuracy of the facts asserted in the petition.” Minn. Stat. § 14.055, subd. 3, describes the situations in which the Board must grant a variance (a mandatory variance):*

“An agency shall grant a variance from a rule as applied to the particular circumstances of the petitioner, if the agency finds that the application of the rule, as applied to the circumstances of that petitioner, would not serve any of the purposes of the rule.”

Minn. Stat. § 14.055, subd. 4, describes the situations in which the Board may grant a variance (a discretionary variance):

“An agency may grant a variance if the agency finds that:

- (1) application of the rule to the petitioner would result in hardship or injustice;*
- (2) variance from the rule would be consistent with the public interest; and*
- (3) variance from the rule would not prejudice the substantial legal or economic rights of any person or entity.”*

Please explain why you believe that a variance is justified either as a mandatory variance or a discretionary variance under Minn. Stat. § 14.055. Please include a statement, signed by a person with legal authority to sign on behalf of Margaret A. Cargill Philanthropies, attesting to the accuracy of all facts asserted in the petition and in all supplemental information submitted by or on behalf of Margaret A. Cargill Philanthropies to the Plumbing Board in connection with the petition.

Response: Petitioner requests a discretionary variance in order to fulfill its charitable mission of preserving and promoting sustainable use of the environment:

- (a) Application of the rule to the petitioner would result in hardship or injustice. The Minnesota Plumbing Code does not have a provision for a Gray Water Drip Irrigation System and therefore application of the rule would result in hardship or injustice because Petitioner would not be able to pursue this safe and effective tool that is designed to preserve environmental sustainability on its property. Petitioner has invested time and resources in this effort by engaging reputable engineers and**

landscape irrigation designers to develop an effective gray water collection and filtration system. Petitioner's building expansion project is now underway and incorporating the Gray Water Drip Irrigation System before construction is complete will be both more cost effective and efficient. Granting this variance will allow Petitioner to continue to advance its mission through good stewardship practices by promoting water conservation and reuse. Denying the petition for variance may cause injustice because it will obstruct environmental protection efforts. Delaying approval of the petition may also cause hardship because it would likely be more expensive and less efficient for Petitioner to implement the design after construction of Petitioner's building is complete.

- (b) Variance from the rule would be consistent with the public interest. Petitioner has worked with the City of Eden Prairie and the Nine Mile Creek Watershed District to carefully restore the wetland and native prairie landscape adjacent to its offices. Petitioner intends to be a leader in environmental sustainability efforts in Minnesota by pursuing LEED Platinum Certification for its building expansion. Approving this variance for the Gray Water Drip Irrigation System supports the public interest by allowing Petitioner to invest in new technology to conserve natural resources. Not only will granting the variance promote restoration and healthy environmental practices on Petitioner's site, it will also provide an opportunity to further develop the technology locally and educate the public about conservation efforts. Petitioner is committed to maintaining the gray water technology and sharing information about the operation of the System.
- (c) Variance from the rule would not prejudice the substantial legal or economic rights of any person or entity. Neither Petitioner nor KFI know of any legal or economic rights that would be prejudiced by granting this variance. Rather, the Gray Water Drip Irrigation System will be installed on private property for use by MACP's charitable nonprofit organizations. MACP may share information about the System for educational purposes, but the System is not intended to otherwise impact any other outside parties.

3. *Under Minn. Stat. § 14.056, subd. 1(7), the petition must include the name, address, and telephone number of any person the petitioner knows would be adversely affected by the grant of the petition. Please include this information or a statement that the petitioner knows of no such persons.*

Response: Petitioner knows of no such persons.

4. *Under Minn. Stat. § 14.056, subd. 3, the Board may require the petitioner to serve notice on any other person or entity in the manner specified by the agency. Please provide notice of your variance petition, along with a copy of all supporting documents and a copy of this*

letter, by first-class mail to each person listed in your response to item 3 above, and also to each of the following:

- a. The Commissioner of the Minnesota Pollution Control Agency;
- b. The Commissioner of the Minnesota Department of Health;
- c. The Mayor of the City of Eden Prairie; and
- d. The Commissioner of the Minnesota Department of Natural Resources.

Response: Simultaneous with this submission to the Plumbing Board, Petitioner will send copies of the Petition and all supporting documents to the above-listed individuals.

5. Under Minn. Stat. § 14.056, subd. 2 (a), the Board may charge a petitioner a variance fee. It will be determined if charging a reasonable variance fee is warranted and you will be contacted to discuss the amount.

Response: We will wait for additional information from the Plumbing Board on this matter.

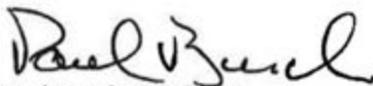
In accordance with Minnesota Statutes sections 14.055 and 14.056, we respectfully request that the Plumbing Board grant a variance to allow us to install a permanent Gray Water Drip Irrigation System at our office building in Eden Prairie. In addition to this signed statement, the following enclosed documents comprise our Petition for Variance:

- Revised Memorandum from Karges-Faulconbridge, Inc., dated April 3, 2015, with attached documents: (1) Gray Water System Example; (2) MACP Drawings
- Letter from Plumbing Board, dated March 13, 2015

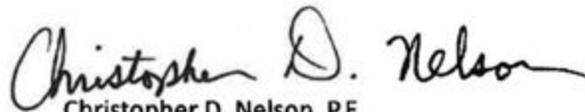
In accordance with Minnesota Statutes section 14.056, subdivision 1(4), we confirm that the facts asserted in the Petition for Variance are true and correct to the best of our knowledge.

We appreciate your continued consideration of this request.

Sincerely,



Paul Busch, President
Rowland Shady Oak Properties, LLC
Margaret A. Cargill Philanthropies



Christopher D. Nelson, P.E.
Mechanical Engineer, LEED A.P. BD+C
Karges-Faulconbridge, Inc.

cc: John Linc Stine, Commissioner, Minnesota Pollution Control Agency
Dr. Edward Ehlinger, Commissioner, Minnesota Department of Health
Nancy Tyra-Lukens, Mayor, City of Eden Prairie
Tom Landwehr, Commissioner, Minnesota Department of Natural Resources



MEMORANDUM

Karges-Faulconbridge, Inc.
Engineers

Date: 04-03-15
To: Minnesota State Plumbing Board
From: Christopher D. Nelson
KFI Project Number: 13-430

Subject: Margaret A. Cargill Philanthropies (MACP) Gray Water Drip Irrigation System- Permanent Variance Request

SUMMARY VARIANCE REQUEST:

The design team and Owner understands that MN Plumbing Code does not have a provision for a Gray Water Drip Irrigation System and thus we are asking for a Variance per MN Statutes 14.055 & 14.056. Specifically, the design intent is to collect gray water from only lavatory sinks, showers, and clothes washers for use in a separately zoned gray water drip irrigation system in a designated area.

Gray water will be collected and treated with a manufactured piece of equipment with primary 100 micron filter, ozone treatment system, secondary 100 micron cartridge filter, and UV light sterilizer. The estimated discharge is 145 gallons per day.

The City of Eden Prairie has indicated they will provide permitting (as described in this variance request) of a Gray Water Drip Irrigation System and that the collection and filtration equipment is to be designed by MN registered Engineer. But the City of Eden Prairie has asked that the design team receive a Variance through the Minnesota State Plumbing Board before they will provide a permit. Note: the City of Eden Prairie has coordinated with Hennepin County, in such that they have agreed that the City of Eden Prairie would issue the permit as they are the local unit of government who administers the Minnesota Pollution Control Agency Rules Chapter 7080.2240.

BACKGROUND:

The Owner, Margaret A. Cargill Philanthropies (MACP), is planning an expansion of their existing facility at 6889 Rowland Road in Eden Prairie, MN. Their current facility achieved a USGBC LEED Gold rating in 2010 but for the new expansion their goal is to achieve a LEED Platinum rating. The MACP has set these goals to be good stewards of all resources with a special interest in water conservation and reuse. They also would like to use their facility as a means of promoting sustainable products. By allowing gray water reuse for landscape irrigation in a designated area, the MACP will be able to reach their sustainability goals, educate the general public, and fulfill its mission statement- "To provide meaningful assistance and support to society, the arts and the environment".

CODE REVIEW:

The design team has reviewed the MN Plumbing Code, MN Pollution Control Agency Rules, and model codes. The design team has also reviewed installation practices with contractors. Based on this information KFI has made MN Plumbing Code variance requests and provided model codes that the design team would follow.

MN Plumbing Code

The design team has reviewed the MN Plumbing Code and found references that would impede the implementation of a Gray Water Drip Irrigation System. Minnesota Plumbing Code references are below:

4715.0310 USE OF PUBLIC SEWER AND WATER SYSTEMS REQUIRED.

If a public sewer is accessible in a street or alley to a building or premises and the connection is feasible, liquid wastes from any plumbing system in that building must be discharged into the public sewer unless otherwise prohibited by this code or a local ordinance.



If a public water supply system is accessible, the water distribution system must be connected to it unless otherwise permitted by the administrative authority. A water well taken out of service because a person is connecting to a public water supply must either be maintained for a use such as irrigation, or sealed and abandoned in accordance with the Minnesota Water Well Construction Code. (Minnesota Rules, chapter 4725)

If either a public sewer or water supply system or both are not available, an individual water supply or sewage disposal system, or both, conforming to the published standards of the administrative authority must be provided. Every building must have its own independent connection with a public or private sewer, except that a group of buildings may be connected to one or more manholes which are constructed on the premises, and connected to a public or private sewer. These manholes must conform to the standards set by the local sewer authority

4715.1200 CONNECTIONS TO PLUMBING SYSTEM REQUIRED.

All plumbing fixtures and drains used to receive or discharge liquid wastes or sewage shall be connected to the drainage system of the building in accordance with the requirements of the code.

MN Pollution Control Agency Rules

The design team has reviewed the Minnesota Pollution Control Agency Rules and have found references Gray Water Systems under MN Rules Chapter 7080. The MPCA has commented and clarified that the MPCA rules do apply and following should be followed:

- Certified landscape contractors could perform the work as long as they were supervised by a SSTS contractor.
- The effluent quality for BOD, TSS and FOG from the treatment device will need to be determined and matched with the design of the drip dispersal system.

The MACP project is anticipated to discharge 145 gallon/day. Note: the City of Eden Prairie has coordinated with Hennepin County, in such that they have agreed that the City of Eden Prairie would issue the permit as they are the local unit of government who administers the Minnesota Pollution Control Agency Rules Chapter 7080.2240. Refer to Landscape Irrigation Distribution Piping section for soils distribution.

Model Codes:

The design team has reviewed model codes and have found several sample codes and issue years that referenced Gray Water Recycling Systems. Specifically, Gray Water Recycling Systems appear in the following sample codes:

- 2006 International Plumbing Code: Appendix C
- 2009 International Plumbing Code: Appendix C
- 2009 Uniform Plumbing Code: Chapter 16
- 2012 Uniform Plumbing Code: Chapter 16
- 2012 International Plumbing Code: Chapter 13 **Legge noted this should read Chapter 16**

Specifically, we intend to base the design of gray water collection and filtration equipment on the language contained in the 2012 International Plumbing Code Chapter 13 Gray Water Recycling Systems, less section 1302 (Systems for Flushing Water Closets and Urinals) and section 1303 (Subsurface Landscape Irrigation Systems). This model code will be used to quantify gray water collection and filtration requirements. Note: we are not asking for approval to use gray water for flushing of water closets or urinals; nor will there be any domestic water make-up provisions. See attached references from the 2012 International Plumbing Code Chapter 16.

NEED AND RESONS FOR THE CHANGE:

Request:

The design team has met with the City of Eden Prairie asking for approval to collect and filter gray water for reuse but the City has requested that we seek approval through the DLI. The City of Eden Prairie has indicated they will provide permitting of a Gray Water Drip Irrigation System and that the collection and filtration equipment is to be designed by MN registered Engineer.

Specifically, we are asking for a permanent variance from the above MN Plumbing Code references and the use of the 2012 International Plumbing Code Chapter 13 Gray Water Recycling Systems, less section 1302 (Systems for Flushing Water Closets and Urinals) and section 1303 (Subsurface Landscape Irrigation Systems). Note: we are not asking for



approval to use gray water for flushing of water closets or urinals. The Owner is willing to use their facility as a test site to further the research of these systems. This specific project proposes to collect drain water from lavatories, showers, and clothes washer drains via a Gray Water processor and use the processed water for a gray water drip irrigation system in a designated location.

Background:

The Margaret A. Cargill Philanthropies (MACP) is planning an expansion of their existing facility at 6889 Rowland Road in Eden Prairie, MN. Their current facility achieved a LEED Gold rating in 2010 but for the new expansion their goal is to achieve a LEED Platinum rating. The MACP has set these goals to be good stewards of all resources with a special interest in water conservation and reuse. They also would like to use their facility as a means of testing and promoting sustainable products. By allowing gray water reuse for landscape irrigation in a designated area, the MACP will be able to reach their sustainability goals, educate the general public, and fulfill its mission statement- "To provide meaningful assistance and support to society, the arts and the environment".

OWNER RESPONSIBILITIES:

Design Team:

The Owner will contract with reputable engineers and landscape irrigation designers for a fully designed Gray Water Irrigation System. The gray water collection and filtration equipment will be designed by Minnesota licensed professional engineers. The drip irrigation distribution equipment will be designed by a certified landscape irrigation designer who is also a US EPA WaterSense Partner.

The design team will design the system to meet the MN Plumbing code with variance request and model code 2012 International Plumbing Code, Chapter 13 Gray Water Recycling Systems, less section 1302 (Systems for Flushing Water Closets and Urinals) and section 1303 (Subsurface Landscape Irrigation Systems) . The design team will provide drawings and specifications for the system to document the installation. The design team will be involved in the review and commissioning of the system to ensure the system is working properly per the design intent.

Construction Team:

The Owner will contract with reputable master plumbers holding licensure with the State of Minnesota for the installation of the gray water collection and filtration equipment. Installation of the landscape irrigation distribution equipment will be conducted by a landscape irrigation contractor with the following credentials:

- MN Licenced Technology Systems Contractor employing not less than one Power Limited Technician who shall conduct or supervise the conduct of work at all times.
- Certified Irrigation Contractor (third-party accredited national certification) as offered by the Irrigation Association, Falls Church, Virginia with continuous onsite installation and supervision by a power limited technician.
- US EPA WaterSense Partner who shall conduct or supervise the conduct of work at all times.

A SSTS contractor will be required to supervise the installation of landscape irrigation distribution equipment.

Landscape Irrigation Distribution Piping

The gray water distribution via a below grade drip irrigation will be in a designated area. The equipment used will be standard landscape irrigation components with continuous and permanent marking in purple. Grade level signage will be installed indicating the area is irrigated with reuse gray water.

Installation of gray water drip irrigation piping will be not less than 3" below grade and within the root zone of the plants receiving gray water. Soils in the designated reuse gray water area will be engineered to accept discharge of gray water without surface runoff.

Note: The City of Eden Prairie has indicated they will provide permitting (as described in this variance request) of a Gray Water Drip Irrigation System as they are the local unit of government who administers the Minnesota Pollution Control Agency Rules Chapter 7080.2240.



Maintenance:

The Owner currently has a maintenance contact with a reputable contractor to perform building and grounds maintenance. The installation of the proposed gray water collection and filtration equipment will be added to the contractor's responsibilities. Maintenance includes:

- Site observation of system on a weekly basis for the first month of operation; with log sheet.
 - Verify primary filter is in place and self regulating back wash system is operational.
 - Verify pump is operational and that gray water is discharged every 24hrs.
 - Verify ozone and UV conditioning equipment are operating.
 - Verify final filter is in place and condition is acceptable.
 - Verify overflow is unobstructed.
 - Verify diversion valve is normally closed during normal operation.
- Site observation of system controls on a quarterly basis after the first month of operation; with log sheet.
 - Perform primary filter cleaning per maintenance guide; per quarter or more often depending on filter loading.
 - Perform final filter cleaning per maintenance guide; per quarter or more often depending on filter loading.
 - Verify filter is in place and self regulating back wash system is operational.
 - Verify pump is operational and that gray water is discharged every 24hrs.
 - Verify ozone and UV conditioning equipment are operating.
 - Verify overflow is unobstructed.
 - Verify diversion valve is normally closed during normal operation.
- System Shutdown Maintenance: Once irrigation is no longer needed (approx. October), the system diversion valve shall be manually turned to open to bypass all greywater flow to the building sanitary sewer. Verify flow is diverting and system is isolated. System to be flushed with clean water and pumped down to zero water level. Tank filters are to be cleaned manually and placed back into the tank. Ozone and UV systems to be deactivated and cleaned. Final filter to be cleaned or replaced and placed back into cartridge container. Irrigation system to be cleared via compressed air. System to be tagged as shutdown.

Public Health:

The gray water system is being equipped with 100 micron filters, tank ozone treatment system, secondary 100 micron cartridge filter, and UV light sterilizer. These systems are installed to ensure that the gray water is cleaned to industry standards. These cleaning systems will reduce the bacteria counts significantly as well as effectively destroy pathogens. The gray water distribution system is designed to be below grade with engineered soils so that the gray water will not become surface runoff. This design is intended to not allow for human contact of the gray water. In addition, the gray water irrigation area will be a separate designated area with grade level signage to notify the public of its use.

The Owner is committed to providing the resources necessary to maintain this system. Please see the attached letter from the Owner indicating their understanding of the process and their commitment to the project.

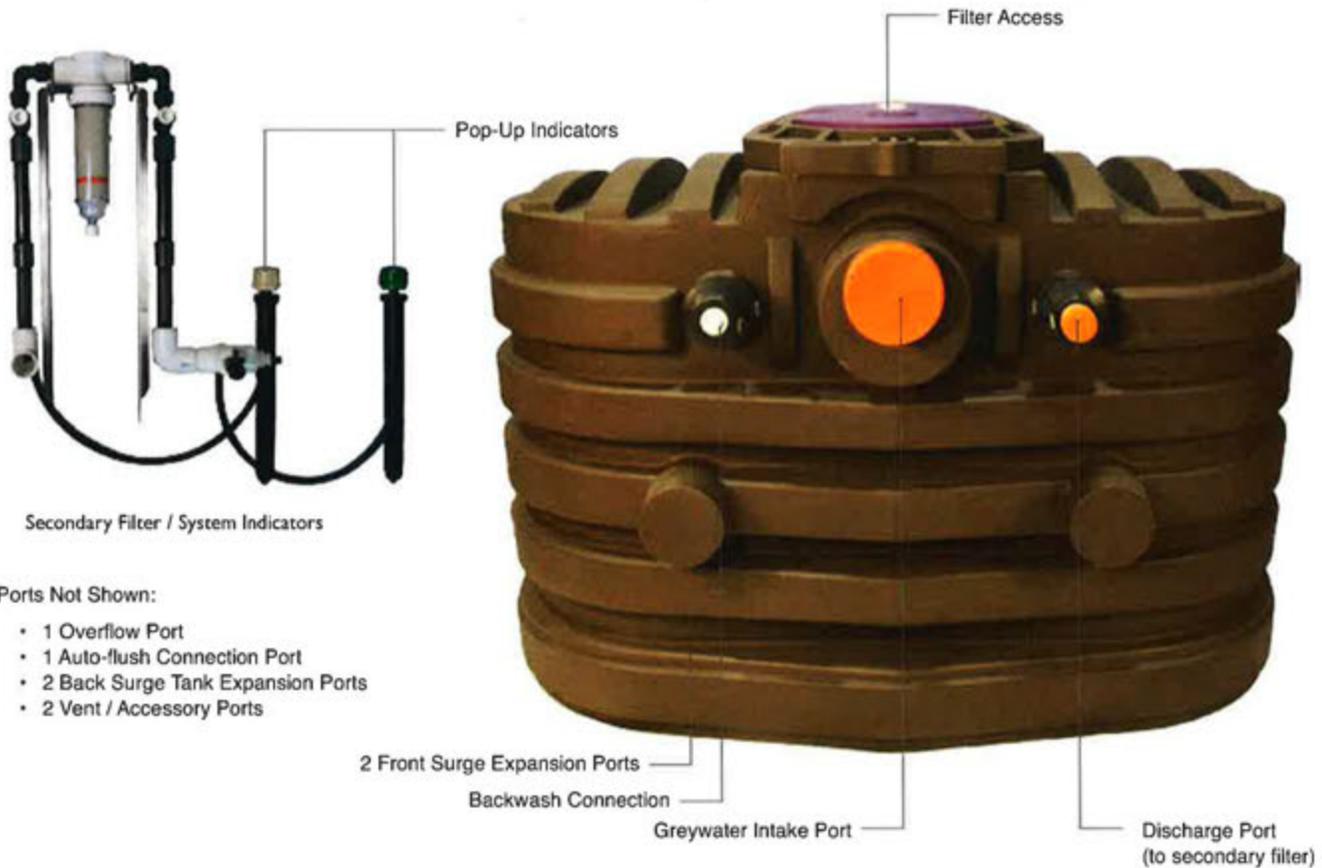
Attached Documents:

1. Gray Water System Example
2. MACP Drawings



GXL SERIES | GREYWATER FILTERS

The GXL series provides extra large surge and filtering capacity for a landscape requiring a large amount of water and many greywater sources. Several pumping pressure models are listed for landscapes with moderate to steep terrain.



Ports Not Shown:

- 1 Overflow Port
- 1 Auto-flush Connection Port
- 2 Back Surge Tank Expansion Ports
- 2 Vent / Accessory Ports

PRODUCT CODE	PUMP	POWER USAGE	TOTAL SURGE CAPACITY (GALLONS)
GXL-390-2SP	1/2 HP	115v / 5.5 amp / 650 watt	390
GXL-390-3SP	3/4 HP	115v / 8.4 amp / 900 watt	390
GXL-390-4SP	1 HP	115v / 9.8 amp / 1100 watt	390

GREYWATER FIXTURE	SURGE REQUIRED (GALLONS)
Bathroom Sink	.25*
Shower	25*
Washing Machine	25*
Bathtub	50*

* Average usage.



STL -165 Add-on Surge Tanks can be connected for further surge expansion of GXL Series Greywater Filters. For more information see www.flotender.com

GXL SERIES GREYWATER FILTERS

FEATURES:

- Weight: 326 lbs
- Dimensions: L: 70", W: 51.5", H: 48"
- 3" Large intake port
- Two Stainless Steel 150 Mesh Filter Baskets
- 1/2 HP, 3/4 HP or 1 HP multi-stage pumping

- Large pumping chamber
- Bolt down integrated lid system
- Convenient filter access
- Removable filter carriage
- Surge tank expansion ports for Add-on Surge Tanks
- Includes Secondary Filter & System Indicators

GXL SERIES | GREYWATER FILTERS

TECHNICAL SPECIFICATION

MODELS: GXL-390-2SP, GXL-390-3XP, GXL-390-4SP

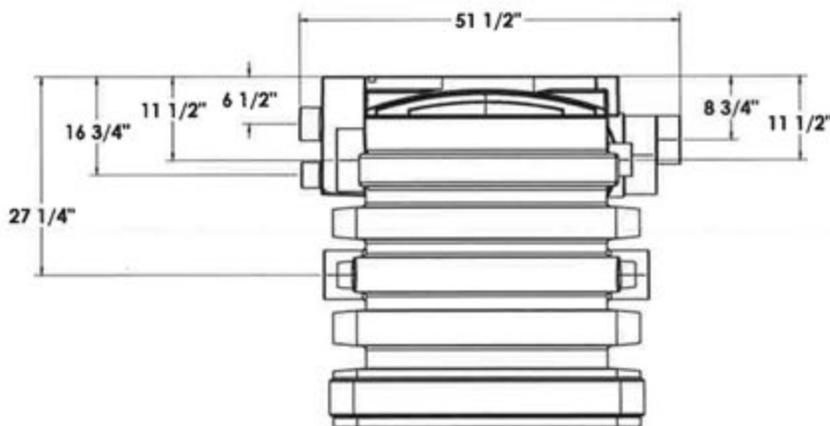
(greywater filter & pumping unit)

The GXL Series Greywater Filter shall include two top-access filter baskets with detachable 100 micron (150 mesh) 316 stainless steel filter elements. The Greywater Filter shall feature a removable, integrated filter carriage, providing unobstructed access to the pump chamber. The Filter Carriage shall also include an integrated overflow. The Greywater Filter shall include a self regulating back wash system capable of removing debris from the exterior of the primary stainless steel filter. The Greywater Filter shall include a high-pressure pump capable of producing

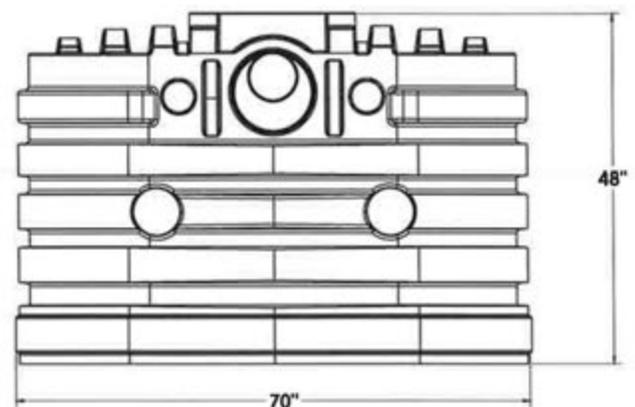
at least 75 feet of head and a float switch to control the pumping operation. The Greywater Filter shall include an internal stainless steel support system to ensure that internal components are held securely in place. The Greywater Filter shall include an external 150 mesh secondary filter with dual pop-up performance indicators to allow for optional expansion via 4 module expansion ports. The Greywater Filter shall include 9 internal pipe connection ports. The Greywater Filter shall include a bolted lid with an inner filter element access cap for convenient filter removal.

The Greywater Filter shall provide 390 gallons of built-in surge capacity.

The Greywater Filter shall be manufactured by Flotender, a division of the Filtrific Company LLC, Woodinville Washington.



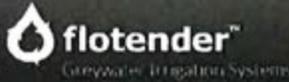
GXL SERIES
GREYWATER FILTER - SIDE



GXL SERIES
GREYWATER FILTER - FRONT

Flotender™ by Filtrific®
15500 Woodinville-Redmond Road
Suite C-100 Woodinville, WA 98072
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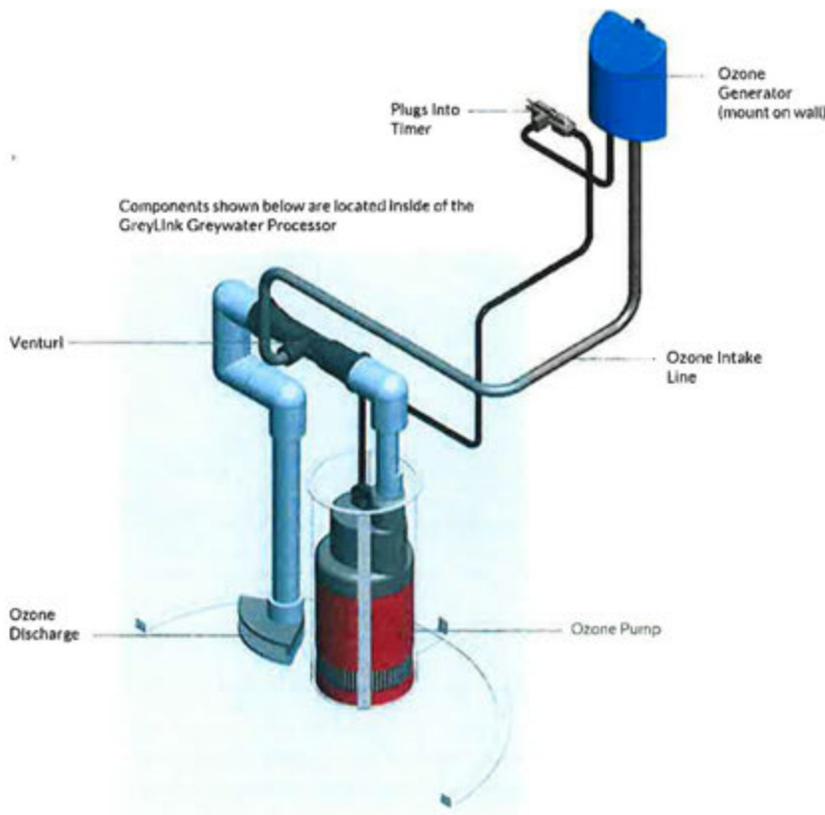
www.flotender.com



Flotender Ozone Treatment System

Providing effective greywater treatment

The Flotender Ozone system provides powerful ozone treatment for both immediate and timed Flotender greywater irrigation systems.



Flotender Ozone System

For GS, GL & GXL Series Systems

Price: \$1,760.00

Model: OZ-50

Ozone Output: 50 mg/hour

Ozone Generator Power:

120v, 60hz, 50mA

Ozone Pump Power:

115v, 60hz, 650 watts, 5.5A

Included Components:

- 1 - 1/2 HP Pump
- 1 - 115v Ozone Generator
- 1 - Ozone Discharge Device
- 1 - Venturi
- 1 - Outdoor Timer

* All tubing and connection fittings included

** When purchased with the Flotender system, the ozone system is pre-installed within the Flotender Greywater Processor.

Effective Greywater Treatment

Although most regional greywater reuse codes do not require any type of treatment for bacteria or other dissolved compounds, some public-facing projects call for an extended degree of greywater treatment.

Greywater when treated with ozone has been shown to reduce the chemical and biological oxygen demands (Mohamed et al., 2013) by oxidizing bacteria, viruses, molds, and protozoans. Ozone is also known to effectively remove common pollutants found in personal care products such as benzalkonium chloride, tonalide, and nonylphenol by at least 90% (Hernandez-leal et al., 2011)

References:

Hernandez, Leal, L., Temmink, H., Zeeman, G., & Buisman, C. J.N. 2011. Removal of micro-pollutants from aerobically treated greywater via ozone and activated carbon. *Water research*, 45, 2887-2896.

Store Greywater for Longer

Because the Flotender ozone treatment system effectively destroys microorganisms, greywater can be contained longer in a timed irrigation system than if ozone filtration is not present.

*Please refer to your local greywater reuse code for regulations on the maximum greywater storage period.

Combine with UV

The Flotender ozone treatment system can be combined with the Flotender UV system to provide two forms of effective microorganism filtration.

Mohamed, R., Kassim, A., Anda, M., & Dallas, S., 2013. A monitoring of environmental effects from household greywater reuse for garden irrigation. Environmental Monitoring and Assessment, 185, 8473-8488

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Custom Systems

Is your project a little outside of the box? Flotender Systems are fully customizable to fit the requirements of your project.

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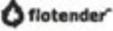
Questions?

Toll Free: 800.906.0604
Local: 425.643.2312

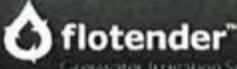
(Monday - Friday 8am - 5pm PST)

Email: support@flotendersystem.com

[Contact Us Form >](#)



 Greywater Irrigation Systems from Filtrix
 Questions? Call: (800) 906-0604

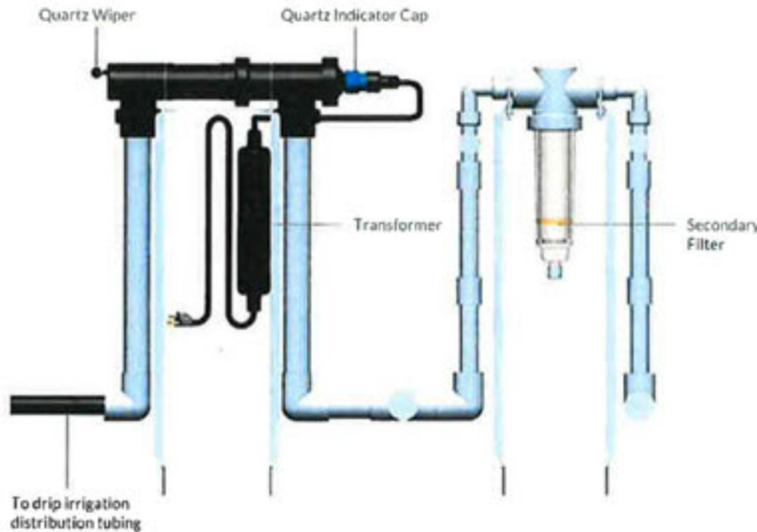


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[BROCHURE](#)
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Flotender Ultraviolet Sterilizer

Bacterial Control for Greywater Irrigation Systems.

The Flotender ultraviolet sterilizer provides ultraviolet filtration for both immediate and timed Flotender greywater irrigation systems.



The Flotender ultraviolet sterilizer is plumbed in-line immediately after the Flotender secondary filter. The ultraviolet sterilizer is mounted on a stainless-steel riser system which allows for convenient access to the sterilizer for occasional service.

Flotender Ultraviolet Sterilizer

For GS, GL & GXL Series Systems
 2" pipe connection
 Price: \$1,269.00
 Model: UV-57
 Lamp Strength: 57 watt
 Power Requirements:
 115v, 57 watt, 48A

Included Components:

- 1 - Ultraviolet Sterilizer
- 1 - Stainless Steel Riser Assembly

* All tubing and connection fittings included

Effectively Controls Bacteria

UV sterilization is a proven technology for safely controlling bacteria and viruses along with reducing common water treatment chemicals like chlorine.

Destroys Microorganisms

Although most regional greywater reuse codes do not require microorganism filtration, some public-facing projects call for an extended degree of filtration. Ultraviolet filtration is very effective at inactivating microorganisms which may be present in the greywater.

Built-In Wiper

The built-in wiper allows for easy cleaning of the quartz sleeve to optimize ultraviolet transmission.

High Quality Quartz Sleeve

The ultraviolet sanitizer's quartz sleeve is constructed of hard quartz which allows for a 99.9% transmission rate.

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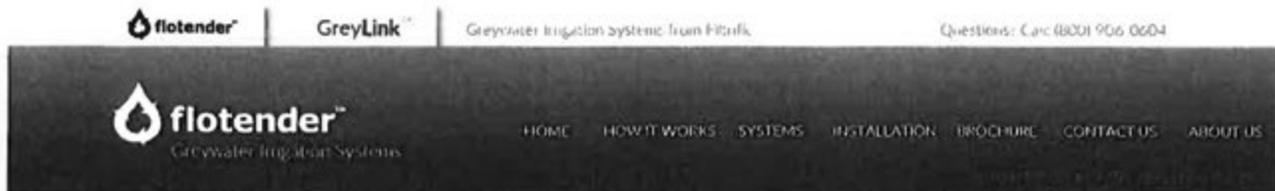
Questions?

Toll Free: 800.906.0604
 Local: 425.643.2312

(Monday - Friday 8am - 5pm PST)

Email: support@flotendersystem.com

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Flotender Maintenance Guide

Please refer to the maintenance guide below for approximate maintenance intervals on the Flotender GS, GL and GXL Systems.

GS Series

Greywater Fixture Approximate Gallons Processed Between Minimum Maintenance Intervals

Shower + Sink	10,000
Shower + Sink + Washing Machine	2,000
Washing Machine Only	500

Approximate Greywater Fixture Greywater Production (per use)

Sink: .25 / gallon
 Shower: 25 gallons
 Washing Machine: 25 gallons

GL Series

Greywater Fixture Approximate Gallons Processed Between Minimum Maintenance Intervals

Shower + Sink	20,000
Shower + Sink + Washing Machine	4,000
Washing Machine Only	1,000

Sinks

Sinks produce very little greywater when compared to a shower or washing machine. On average a single use sink produces 1/4 gallon of greywater per use or 1/100 of a shower. Because of this low flow there is not a maintenance interval assigned specifically for sinks.

GXL Series

Greywater Fixture Approximate Gallons Processed Between Minimum Maintenance Intervals

Shower + Sink	40,000
Shower + Sink + Washing Machine	8,000
Washing Machine Only	8,000

Recommended Maintenance

The Flotender self-cleaning primary filter will continue to operate regardless of whether or not the recommended maintenance interval is followed however system efficiency will be effected if excessive debris is allow to build up in the primary filter.

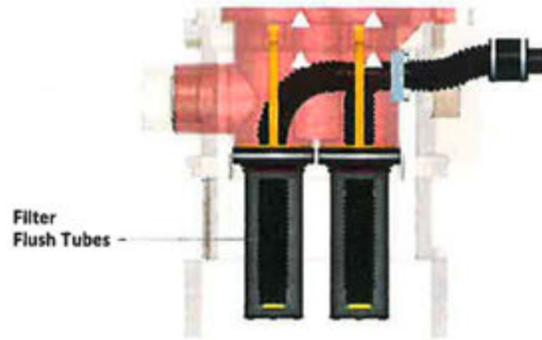
Cleaning the Primary Filter

To ensure optimal system performance it is recommended that the primary filter is manually cleaned on occasion. This process can be accomplished in approximately 5 minutes.

1

Remove the Flush Tubes

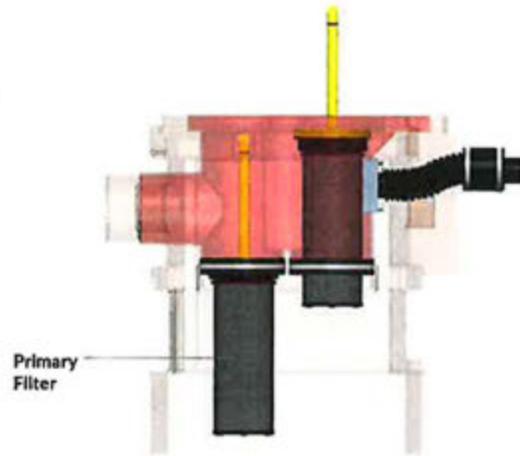
The filter flush tubes insert into the slide receptacle on the red filter carriage. Simply pull up on the joined tubes and slide upward and out through the access cap.



2

Remove the Primary Filters

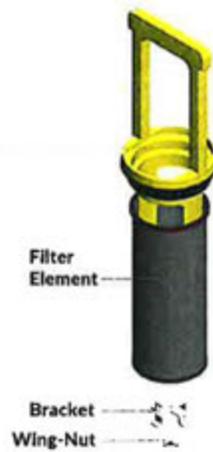
With the filter flush tubes removed, remove the primary filters from the red filter carriage.



3

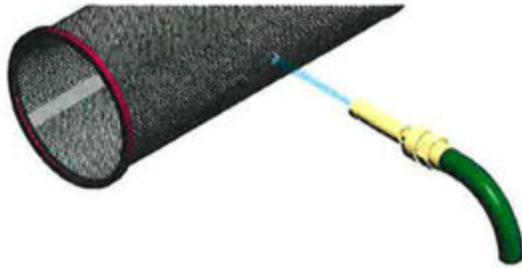
Remove the Filter Element from the Filter Frame

Unscrew the mounting wing-nut and bracket from the bottom of the filter frame to release the element.



Using a standard garden hose, rinse the debris from the primary filter element.





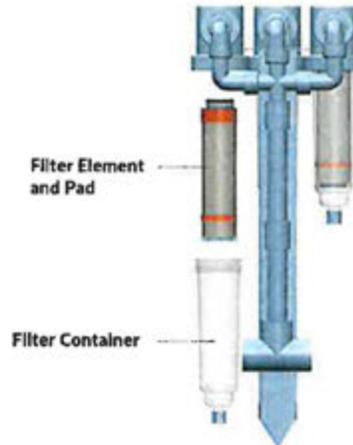
Cleaning the Secondary Filter

This process can be accomplished in approximately 5 minutes.

1

Remove the Filter Containers

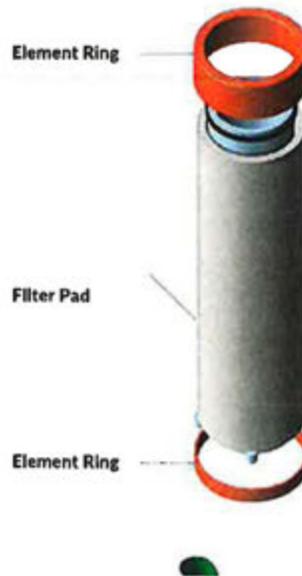
Unscrew the filter container from the secondary filter frame. The container and the enclosed element with pad will drop into the container when removed.



2

Remove the Filter Pad

Remove the top and bottom ring from the filter element.



Using a standard garden hose, rinse off the element and pad to remove any attached debris. In some cases where heavy debris has been captured, it may be necessary to replace the filter pad. Replacement pads are available from **Remove Debris from Element and Pad**

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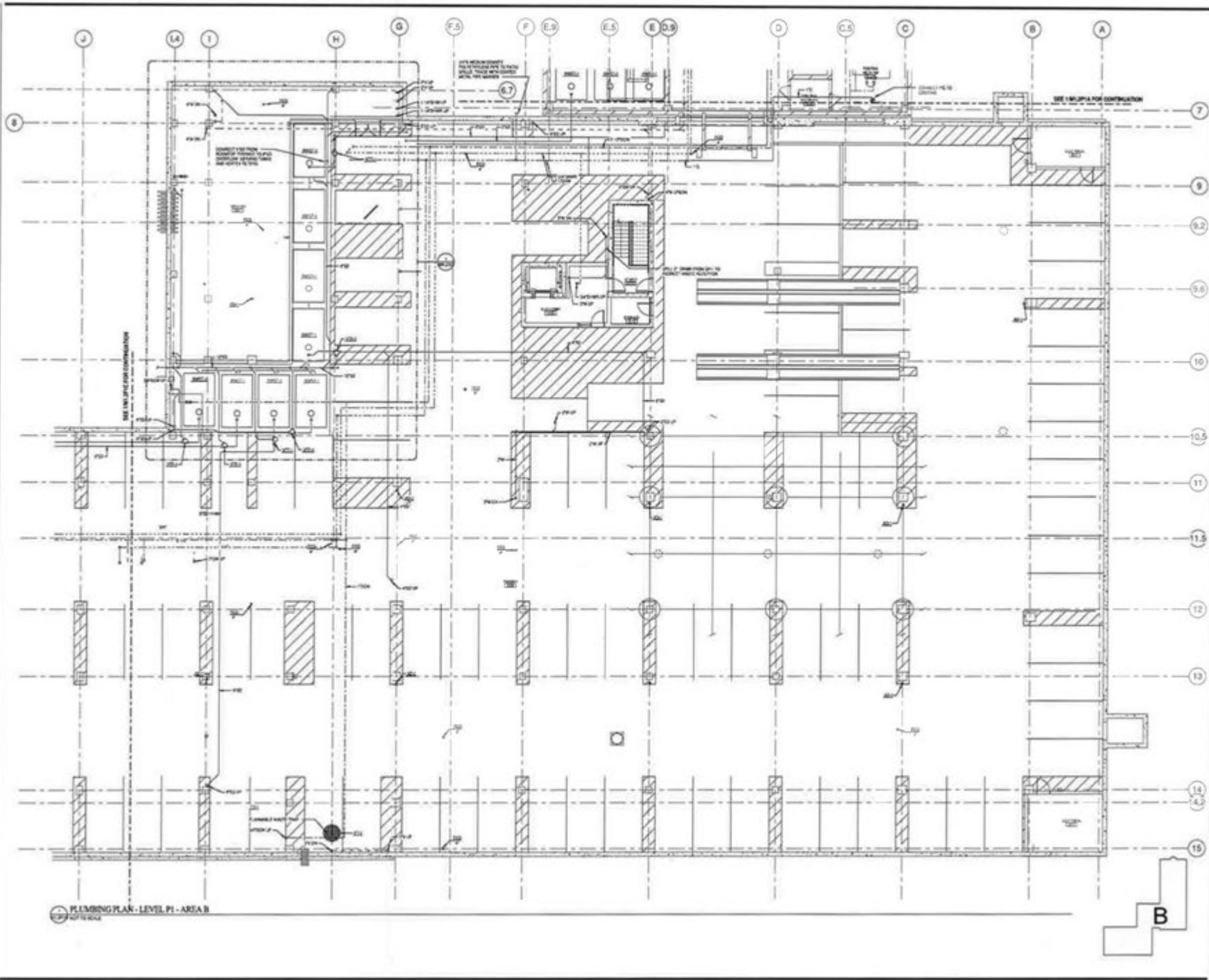
Questions?

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Local: 425.643.2312

(Monday - Friday 8am - 5pm PST)

Email: support@flotendersystem.com

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Gensler
 41 South 9th Street
 Suite 300
 Minneapolis, MN 55402
 Tel: 612.338.1000

1000 Hennepin Avenue, Suite 1000
 Minneapolis, MN 55402
 Tel: 612.338.1000

REIGSTAD
 & ASSOCIATES, Inc.
 1000 Hennepin Avenue, Suite 1000
 Minneapolis, MN 55402
 Tel: 612.338.1000

415 North 1st Street, Suite 100
 Minneapolis, MN 55401
 Tel: 612.338.1000

415 North 1st Street, Suite 100
 Minneapolis, MN 55401
 Tel: 612.338.1000

PRELIMINARY
 NOT FOR CONSTRUCTION

1. 9/20/14 - Issue for Permit & Construction
 2. 12/14/14 - Addendum 2
 3. 12/15/14 - DD Issues - Interiors
 4. 1/6/15 - 100% DD - Interiors

Scale: 1/8" = 1'-0"

Description:
 1. 100% DD - Interiors

Project Name:
 M.1.2P1B

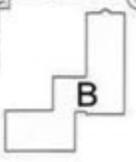
Project Number:
 100000

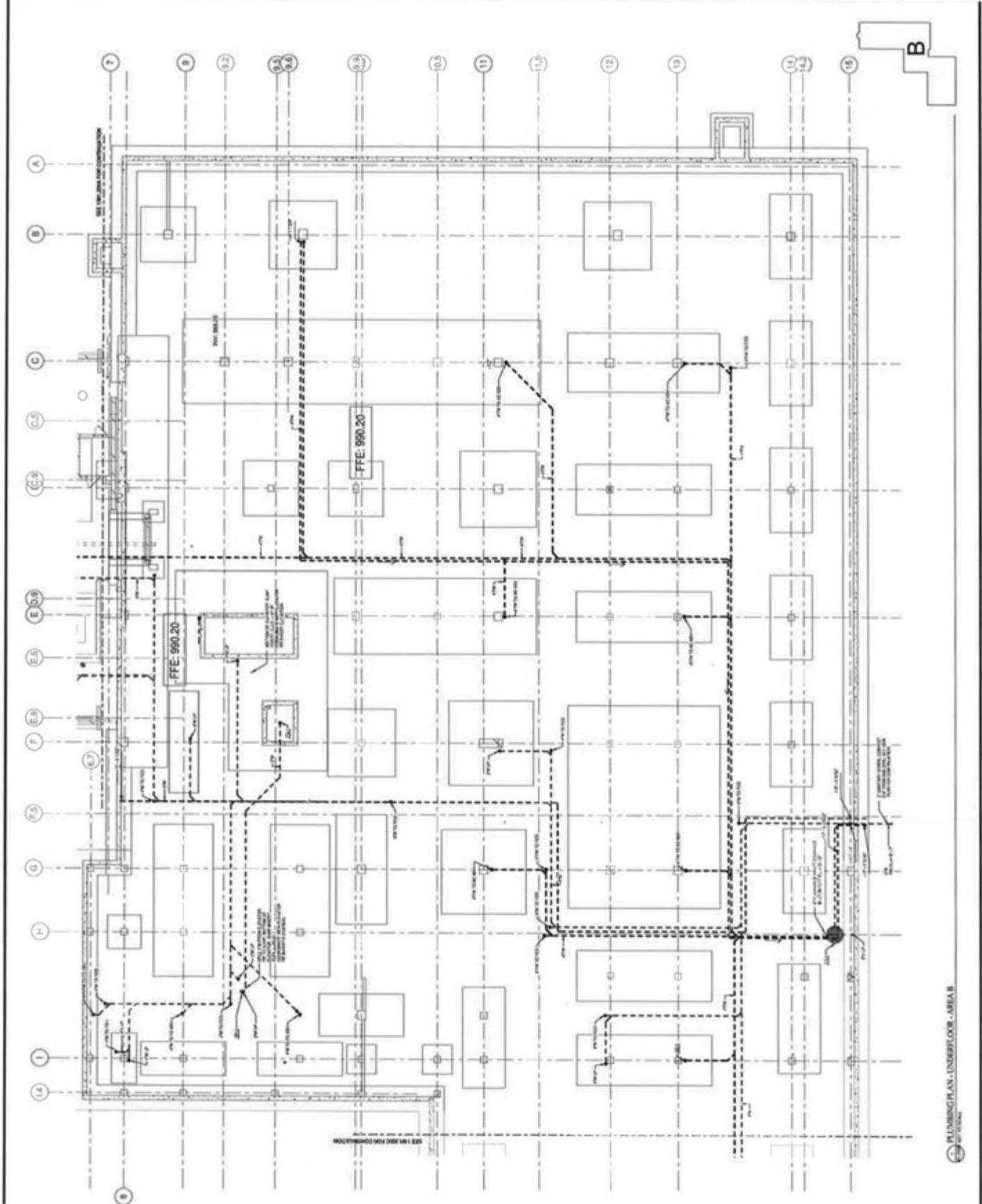
Scale:
 1/8" = 1'-0"

Description:
 1. 100% DD - Interiors

M1.2P1B

PLUMBING PLAN - LEVEL P1 - AREA B
 12/15/14

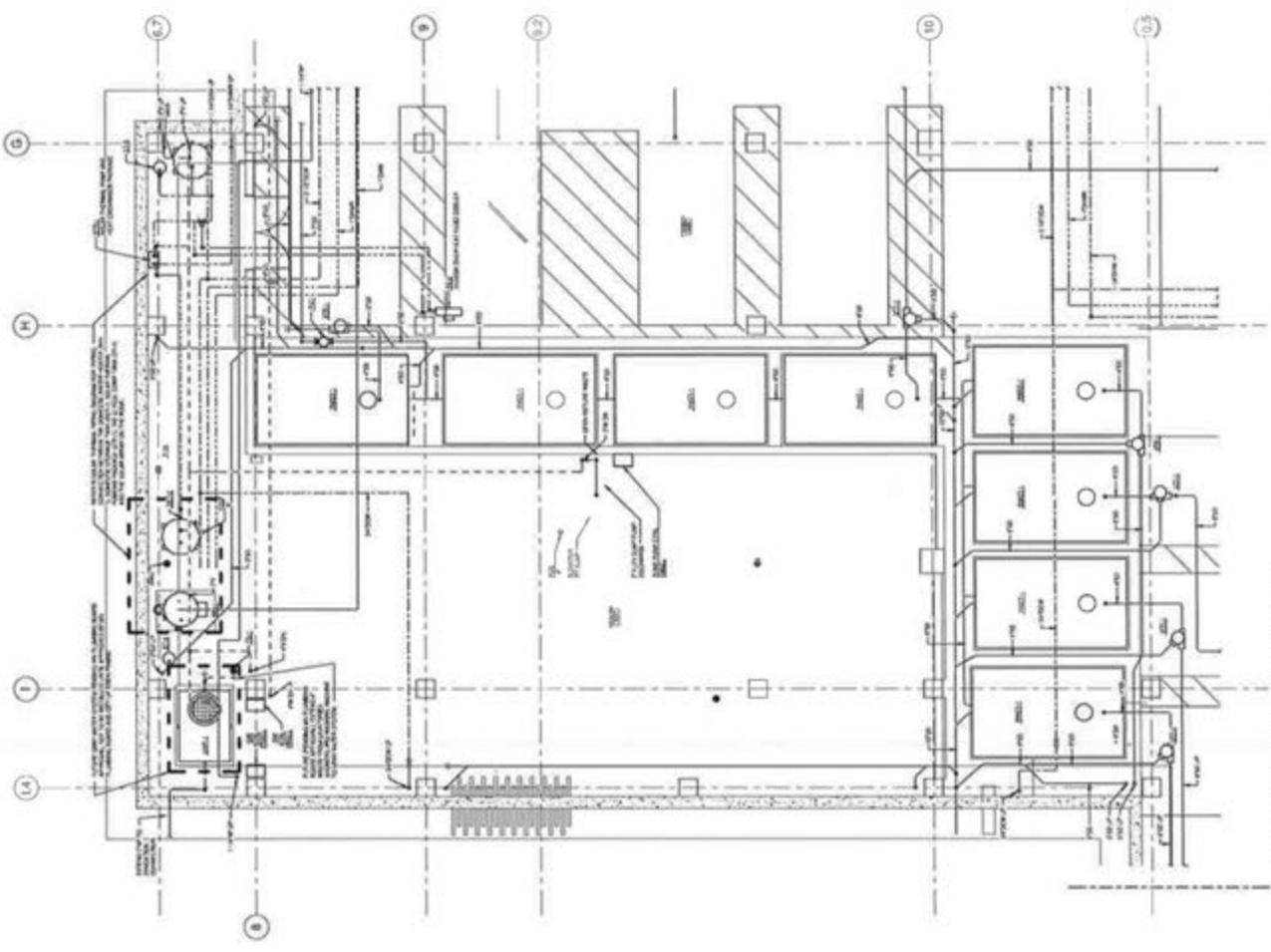




PRELIMINARY
NOT FOR CONSTRUCTION

- 1. DESIGN
- 2. PERMIT APPLICATION
- 3. DESIGN DEVELOPMENT
- 4. PERMIT

Project Name	MARGARET A. CARGILL PHILANTHROP 501
Project Number	100000000
Client Name	MARGARET A. CARGILL PHILANTHROP 501
Client Address	1000 Pennsylvania Avenue, N.W. Washington, D.C. 20004
Scale	AS SHOWN
Sheet No.	M4.200
Sheet Title	MECHANICAL ROOM PLUMBING PLAN - LEVEL P1



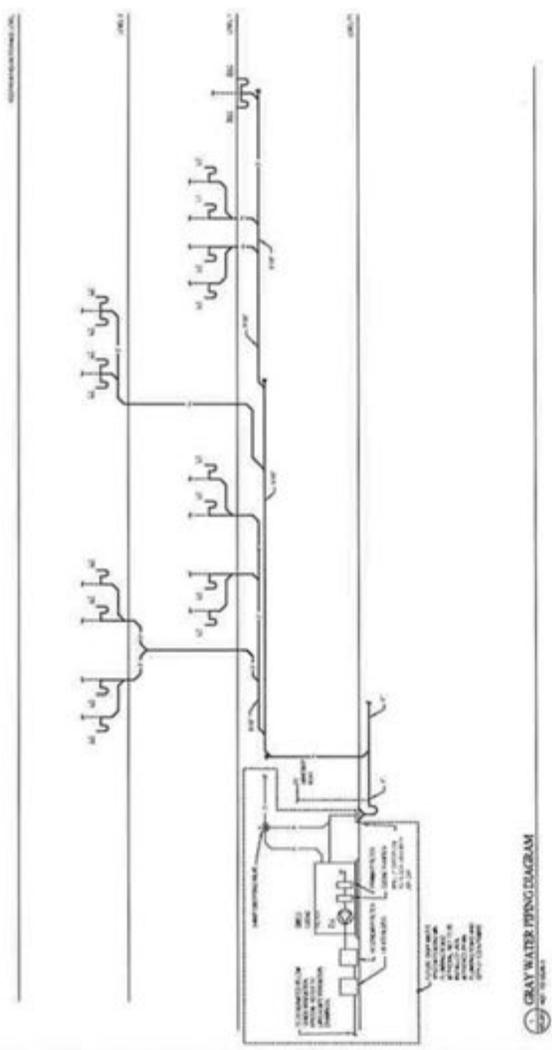
MECHANICAL ROOM PLUMBING PLAN - LEVEL P1

PRELIMINARY
 NOT FOR CONSTRUCTION

1. 1000 North 10th Street
 2. 1000 North 10th Street
 3. 1000 North 10th Street

Notes:
 1. See General Notes
 2. See General Notes
 3. See General Notes

M5.201



GRAY WATER RECYCLING DIAGRAM

Plumbing Board
c/o Department of Labor and Industry
443 Lafayette Road North
Saint Paul, MN 55155-4344
dli.cclboards@state.mn.us

March 13, 2015

Shawn P. Kinnery
Manager, Office and Facilities
Margaret A. Cargill Philanthropies
skinniry@macphil.org

Dear Mr. Kinnery:

At the January 20, 2015, meeting of the Plumbing Board, the Board began a review of your variance request. Christopher D. Nelson of Karges-Faulconbridge, Inc., spoke to the Board regarding your request, as outlined in Mr. Nelson's memorandum dated October 17, 2014. This request is considered a Petition for Variance under Minnesota Statutes section 14.056, subdivision 1. Your petition was not complete because it did not contain all of the information required by that statute. (Please note that the 60-day deadline referred in statute is referring to 60 days after an agency receives a **completed** petition. Because the Board has not received a completed petition from Margaret A. Cargill Philanthropies, the 60 days referenced in statute does not apply.)

In order for the petition to be complete, the Board needs the following additional information:

1. Under Minn. Stat. § 14.056, subd. 1(3), the petition must include the scope and duration of the requested variance. Are you requesting a temporary variance or a permanent variance? Is the request for a seasonal variance?
2. Under Minn. Stat. § 14.056, subd. 1(4), the petition for variance must contain "the reasons that the petitioner believes justify a variance, including a signed statement attesting to the accuracy of the facts asserted in the petition." Minn. Stat. § 14.055, subd. 3, describes the situations in which the Board must grant a variance (a mandatory variance):
"An agency shall grant a variance from a rule as applied to the particular circumstances of the petitioner, if the agency finds that the application of the rule, as applied to the circumstances of that petitioner, would not serve any of the purposes of the rule."
Minn. Stat. § 14.055, subd. 4, describes the situations in which the Board may grant a variance (a discretionary variance):
"An agency may grant a variance if the agency finds that:
(1) application of the rule to the petitioner would result in hardship or injustice;
(2) variance from the rule would be consistent with the public interest; and
(3) variance from the rule would not prejudice the substantial legal or economic rights of any person or entity."

Shawn P. Kinnery
Manager, Office and Facilities
Margaret A. Cargill Philanthropies
March 13, 2015
Page Two

Please explain why you believe that a variance is justified either as a mandatory variance or a discretionary variance under Minn. Stat. § 14.055. Please include a statement, signed by a person with legal authority to sign on behalf of Margaret A. Cargill Philanthropies, attesting to the accuracy of all facts asserted in the petition and in all supplemental information submitted by or on behalf of Margaret A. Cargill Philanthropies to the Plumbing Board in connection with the petition.

3. Under Minn. Stat. § 14.056, subd. 1(7), the petition must include the name, address, and telephone number of any person the petitioner knows would be adversely affected by the grant of the petition. Please include this information or a statement that the petitioner knows of no such persons.
4. Under Minn. Stat. § 14.056, subd. 3, the Board may require the petitioner to serve notice on any other person or entity in the manner specified by the agency. Please provide notice of your variance petition, along with a copy of all supporting documents and a copy of this letter, by first-class mail to each person listed in your response to item 3 above, and also to each of the following:
 - a. The Commissioner of the Minnesota Pollution Control Agency;
 - b. The Commissioner of the Minnesota Department of Health;
 - c. The Mayor of the City of Eden Prairie; and
 - d. The Commissioner of the Minnesota Department of Natural Resources.
5. Under Minn. Stat. § 14.056, subd. 2 (a), the Board may charge a petitioner a variance fee. It will be determined if charging a reasonable variance fee is warranted and you will be contacted to discuss the amount.

Respectfully,



John Parizek, Chair
Plumbing Board

cc: Christopher D. Nelson



Minnesota Department of Natural Resources

Operations Services Division

Peter K. Paulson
500 Lafayette Road
St. Paul, Minnesota 55155-4029
651.259.5486 TTY: 651.296.5484 Fax: 651.297.5818
Peter.Paulson@state.mn.us

March 10, 2015

To:

John Parizek, Exec/Board Chair
Minnesota Plumbing Board
5646 Cedarwood Trail
Prior Lake, MN 55372
jparizek@dunwoody.edu

Grant Edwards, Board Vice Chair
Minnesota Plumbing Board
5872 Jefferson St NE
Fridley, MN 55432
grantandsarah@live.com

From:

Peter Paulson
DNR Principal Architect

Subject: Variance Petition for use of Graywater Systems at the Lake Vermilion-Soudan
Underground Mine State Park Campground Project

DNR Project No.: *8P107*

I am sending this variance request (attached) as a follow-up to my 12/29/14 letter. As mentioned, DNR has a strong interest in pursuing and implementing innovative water efficiency strategies in our new buildings; and specifically, non-potable graywater reuse systems for toilet flushing at the new Lake Vermilion-Soudan Underground Mine State Park Campground project.

The new campground is scheduled to begin construction in 2015 and will include two campground sanitation buildings, an RV dumpstation, and onsite septic systems; however, providing well water of sufficient quantity and quality at this site poses a considerable hardship as noted in the attached variance request.

In addition to graywater systems, it's our intention to implement typical and/or available water efficiency strategies at the new campground, including low-flow/'WaterSense' fixtures and devices such as toilets, faucets and shower heads; and also waterless urinals.

Also attached to this request: graywater system plans and specifications; cutsheets of proposed system equipment; a description of onsite septic system capabilities; and a system maintenance/operational description. Please feel free to contact me if you have questions or require additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Peter Paulson', is written over a horizontal line.

Peter Paulson, ALA, CSI, LEED Green Assoc

cc: Deb Boyd, Kath Ouska, Trent Luger, Dave Sobania, Patrick Litchy, Licia Oligmueller, Cathy Tran, Jim Peterson

VARIANCE PETITION

Non-potable graywater reuse systems for toilet flushing
Lake Vermilion-Soudan Underground Mine State Park Campground Project

14.056 RULE VARIANCES

Subdivision 1: Contents of variance petition

A petition for a variance under section 14.055 must include the following information:

1. The name and address of the person or entity for whom a variance is being requested:

Minnesota Department of Natural Resources
Operations Services Division
500 Lafayette Road
St. Paul, MN 55155

2. A description of and, if known, a citation to the specific rule for which a variance is requested:

4715.0200 Item U

"If water closets or other plumbing fixtures are installed in a building where there is no public sewer available as determined by the authority having jurisdiction, suitable provision must be made for treatment of the building sewage by methods which meet the design criteria of the Minnesota Pollution Control Agency."

(Item U, requires plumbing fixtures be discharged onto an approved treatment system by methods which meet the design criteria of the MPCA. On-site gray water system and treatment as proposed is not yet a recognized treatment method by MPCA per plumbing code.)

4715.0310

"If a public sewer is accessible in a street or alley to a building or premises and the connection is feasible, liquid wastes from any plumbing system in that building must be discharged into the public sewer unless otherwise prohibited by this code or a local ordinance.

If a public water supply system is accessible, the water distribution system must be connected to it unless otherwise permitted by the administrative authority. A water well taken out of service because a person is connecting to a public water supply must either be maintained for a use such as irrigation, or sealed and abandoned in accordance with the Minnesota Water Well Construction Code. (Minnesota Rules, chapter 4725)

If either a public sewer or water supply system or both are not available, an individual water supply or sewage disposal system, or both, conforming to the published standards of the administrative authority must be provided.

Every building must have its own independent connection with a public or private sewer, except that a group of buildings may be connected to one or more manholes which are constructed on the premises, and connected to a public or private sewer. These manholes must conform to the standards set by the local sewer authority."

(Rule language requires liquid waste from any plumbing system discharged into a sewage disposal system (SSTS system) administered by MPCA.)

4715.1200

“All plumbing fixtures and drains used to receive or discharge liquid wastes or sewage shall be connected to the drainage system of the building in accordance with the requirements of the code.”

(Rule language requires all fixtures to connect to the building drainage system. The definition of “drainage system” requires all sewage and liquid wastes be connected to a legal point of disposal and therefore design and installation must meet part 4715.0200, U for legal disposal.)

3. The variance requested, including the scope and duration of the variance:

Scope: Installation of non-potable graywater reuse systems for toilet flushing in two campground sanitation buildings at the new Lake Vermilion-Soudan Underground Mine State Park Campground project.

Duration: This is a permanent installation, so duration is for the lifetime of the two buildings.

4. The reasons that the petitioner believes justify a variance, including a signed statement attesting to the accuracy of the facts asserted in the petition:

Our request for this variance is due to a considerable hardship we are experiencing at this site. Well water of sufficient quantity and quality is not available to fulfill our operational needs due to the unique geology/hydrology of the site (mostly bedrock and wetlands), and sourcing potable water from the town of Soudan (4-5 miles of force main) is not at all practical or cost effective. Hardship issues include:

- a. Potable water for the new campground and subsequent project phases must be sourced directly from Lake Vermilion, with treatment and storage facilities installed as part of the phase-one development.
- b. For this project, we are specifying the graywater systems as a bid alternate, and are therefore pursuing the variance process to gain approval for final use. Graywater construction documents (plans and specifications) were prepared by Gausman & Moore Engineers based on systems and equipment information supplied by Soderholm & Associates and Water Control Inc.
- c. The DNR conservation mission coupled with an increasing focus on water efficiency as required by Governor Dayton’s Executive Order 11-13 (paragraph 1.d) and sustainable building guidelines such as B3 and LEED are all compelling us to pursue water efficiency innovation.
- d. Many DNR facilities and worksites (especially state park campgrounds) are located in areas where municipal services are not available, and use of well water and onsite septic systems in our buildings is common. Use of well water can deplete aquifers, and aquifer depletion can cause unintended negative consequences.
- e. Reductions in potable (well) water use can reduce the size, impact and cost of onsite septic systems, many of which are located by necessity within highly sensitive DNR sites (ex. state park campgrounds such as this) where natural and cultural resource protection is an imperative.
- f. Suitable terrain for onsite septic systems at Lake Vermilion-Soudan Underground Mine State Park is extremely limited.

The signed cover letter (attached to this variance request) constitutes our statement that the facts asserted in this petition are accurate.

5. A history of the agency's action relative to the petitioner, as relates to the variance request:

This is our first request to the Plumbing Board regarding graywater systems. Previous DNR variance requests to DLI were regarding other (non-graywater) topics.

6. Information regarding the agency's treatment of similar cases, if known:

We are not aware of any similar cases at this time.

7. The name, address, and telephone number of any person the petitioner knows would be adversely affected by the grant of the petition:

The new campground project is geographically isolated and entirely within Lake Vermilion-Soudan Underground Mine State Park. The town of Soudan is approximately 5+ miles from the campground; Ely, approximately 20 miles. The nearest residences and cabin sites (9 – 10 total) are located to the east of the park on Armstrong Bay Road, approximately ½ mile from the campground to the closest residence.

In our estimation, no persons will be adversely affected if this petition is granted.

Subdivision 2: Fees

An agency may charge a petitioner a variance fee. The fee is:

1. \$10, which must be submitted with the petition, and is not refundable; or
2. The estimated cost for the agency to process the variance petition, if the agency estimates that the cost will be more than \$20.

If an agency intends to charge costs to the petitioner under paragraph clause 2, the agency and the petitioner must agree on the costs and the timing and manner of payment.

The DNR is willing to pay a reasonable fee to the Plumbing Board to process this variance request.

Onsite Septic System Capabilities:

Lake Vermilion-Soudan Underground Mine Campground

Using graywater treated from sinks and showers to flush toilets in the sanitation buildings: Due to less water from showers and sinks, the waste concentrations will likely be stronger. The septic system design is based on MN Chapter 7080 with residential waste strengths of 170 mg/l BOD and 60 mg/l TSS. Due to limited areas for final soil distribution, Advantex AX 100 filter media was incorporated into the design as a pretreatment unit.

The exact waste strengths will not be known until system is in full operation. However Sara Heger (University of Minnesota Water Resource Center) has completed research on MNDOT Hwy Rest Areas which we believe to be very similar to DNR sanitation buildings utilizing graywater systems. She suggested a (conservative) waste strength of 400 mg/l BOD and 100 mg/l TSS leaving the septic tank.

Jesten Brenner with Orenco Systems, Inc. provided the following information on how the Advantex AX 100 would perform on the larger system 1900 gpd with an assumed 30% and 50% fresh water reduction due to grey water system.

Influent parameters:

- BOD: 400 mg/L
- TSS: 100 mg/L
- For the Design flow of 1900 gpd (30% reduction):
- $0.00133 \text{ MGD} \times 400 \text{ mg/L BOD} \times 8.34 = 4.44 \text{ lb/day}$
- $4.44 \text{ lb/day} / 0.08 \text{ lbs BOD/ sqft/ day} = 55.5 \text{ sqft of textile required}$
- For the Design flow of 1900 gpd (50% reduction):
- $.00095 \text{ MGD} \times 400 \text{ mg/L BOD} \times 8.34 = 3.17 \text{ lb/day}$
- $3.17 \text{ lb/day} / 0.08 \text{ lbs BOD/sqft/day} = 39.6 \text{ sqft of textile required}$
- An AX100 has a nominal square footage of 100 sqft, so it will be adequate for this portion of the onsite WWTP.

Waste strengths can be tested to determine if pumping the septic tank more often is necessary. Note: Sara Heger suggested installing two smaller septic tanks instead of one large one. The first tank could be pumped more often at a cheaper cost than one large tank, with the same waste strength reduction.

System Maintenance/Operational Description:

Lake Vermilion-Soudan Underground Mine Campground

DNR Park staff currently operating the Soudan Underground mine dewatering and treatment system will *also* operate the proposed campground sanitation building graywater systems; and will perform daily monitoring and all necessary maintenance of the graywater systems after installation.

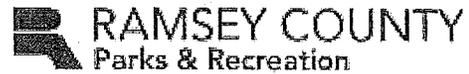
Current staff include (4) millwright level maintenance staff and two master electricians. The millwrights maintain the mine's dewatering and treatment system. The electricians have experience with PLC controlling. Plumbing and repair duties are performed daily at the mine. Dawn Voges, (assistant park manager) holds a Class D Wastewater Treatment Licensure.

The existing mine dewatering and treatment facility is a high pressure system that includes multiple sumps, each with its own float and pump system. Most of the pumps underground in the mine are 50hp 480 volt 3 phase pumps. In the above-ground facility, water is treated using smaller Variable Frequency Drive (VFD's) pumps that are controlled by monitoring pressure and flow rate. The treatment at this time is relatively straightforward with pre-filter followed by Ion Exchange Tanks.

DNR staff is on duty 7 days per week, 365 days per year.

The campground graywater systems will not be used during the winter months (sanitation buildings are seasonal use only and are drained down and winterized every fall).

Attachment E -



January 23, 2015

Plumbing Board
c/o Department of Labor and Industry
443 Lafayette Road North
St Paul MN 55155-4344

Re: Petition for a Variance
Manitou Ridge Golf Course – White Bear Lake, MN
DOLI Plan No. PLB1306-00125

To Whom It May Concern:

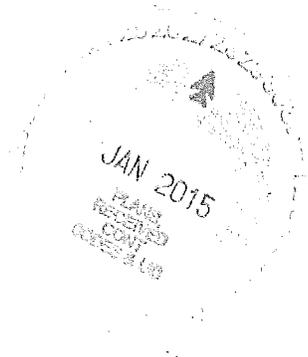
Please find attached our formal response to your letter dated January 13, 2015 regarding the above-listed variance petition.

Please contact me if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Scott Yonke', written in a cursive style.

Scott Yonke
Director of Planning & Development
Ramsey County Parks & Recreation
2015 N. Van Dyke St.
Maplewood, MN 55109



January 23, 2015

Plumbing Board
c/o Department of Labor and Industry
443 Lafayette Road North
St Paul MN 55155-4344

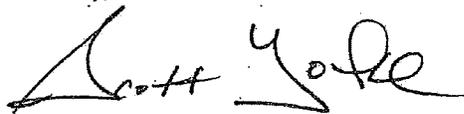
Re: Petition for a Variance
Manitou Ridge Golf Course – White Bear Lake, MN
DOLI Plan No. PLB1306-00125

Response to January 13, 2015 Letter, Item #2

To Whom It May Concern:

The facts asserted in the above named petition, and in all supplemental information submitted by or on behalf of Ramsey County Parks & Recreation to the Plumbing Board in connection with this petition, is accurate.

Sincerely,



Scott Yonke
Director of Planning & Development
Ramsey County Parks & Recreation
2015 N. Van Dyke St.
Maplewood, MN 55109



January 15, 2015

Plumbing Board
c/o Department of Labor and Industry
443 Lafayette Road North
St Paul MN 55155-4344

Re: Petition for a Variance.
Manitou Ridge Golf Course – White Bear Lake, MN
DOLI Plan No. PLB1306-00125

Response to January 13, 2015 Letter, Question #3

To Whom It May Concern:

We know of no person who would be adversely affected by the granting of the above-named petition.

Sincerely,

A handwritten signature in black ink that reads 'Scott Yonke'.

Scott Yonke
Director of Planning & Development
Ramsey County Parks & Recreation
2015 N. Van Dyke St.
Maplewood, MN 55109

January 23, 2015

Plumbing Board
c/o Department of Labor and Industry
443 Lafayette Road North
St Paul MN 55155-4344

Re: Petition for a Variance
Manitou Ridge Golf Course – White Bear Lake, MN
DOLI Plan No. PLB1306-00125

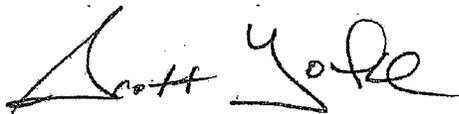
Response to January 13, 2015 Letter, Item #4

To Whom It May Concern:

Copies of the variance petition, all supporting documents, and a copy of your letter dated January 13, 2015 have been sent to the following parties:

1. Commissioner of the Minnesota Pollution Control Agency
2. Commissioner of the Minnesota Department of Health
3. Mayor of the City of White Bear Lake
4. Chair of the Metropolitan Council
5. Mayor of the City of Maplewood (to cover Goodrich Golf Course)

Sincerely,



Scott Yonke
Director of Planning & Development
Ramsey County Parks & Recreation
2015 N. Van Dyke St.
Maplewood, MN 55109

January 23, 2015

Plumbing Board
c/o Department of Labor and Industry
443 Lafayette Road North
St Paul MN 55155-4344

Re: Petition for a Variance
Manitou Ridge Golf Course – White Bear Lake, MN
DOLI Plan No. PLB1306-00125

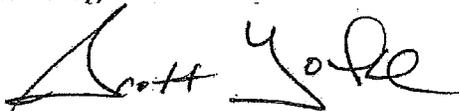
Response to January 13, 2015 Letter, Item #5

To Whom It May Concern:

As requested, the following information is being provided in regards to similar installations at Keller Golf Course in Maplewood and Minikahda Club in Minneapolis.

1. **Keller Golf Course.** The authority having jurisdiction did not require a variance to install the Watermaze system. The attached plan review letter from the project, dated October 9, 2002, takes no exception to the system.
2. **Minikahda Club.** This is not a Ramsey County Parks & Recreation facility, so details for the construction and installation of the Watermaze system are unavailable to the petitioner.

Sincerely,



Scott Yonke
Director of Planning & Development
Ramsey County Parks & Recreation
2015 N. Van Dyke St.
Maplewood, MN 55109

January 15, 2015

Plumbing Board
c/o Department of Labor and Industry
443 Lafayette Road North
St Paul MN 55155-4344

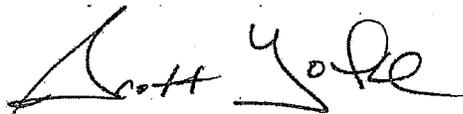
Re: Petition for a Variance
Manitou Ridge Golf Course – White Bear Lake, MN
DOLI Plan No. PLB1306-00125

Response to January 13, 2015 Letter, Item #1

To Whom It May Concern:

As previously described in a letter dated September 3, 2014 included in the variance petition noted above, Ramsey County Parks and Recreation is requesting a permanent variance to install a wash water treatment and recycling system at Manitou Ridge Golf Course in White Bear Lake and Goodrich Golf Course in Maplewood. The Manitou Ridge Golf Course maintenance facility is currently under construction. Goodrich Golf Course does not currently have a dedicated wash station.

Sincerely,



Scott Yonke
Director of Planning & Development
Ramsey County Parks & Recreation
2015 N. Van Dyke St.
Maplewood, MN 55109

MINNESOTA DEPARTMENT OF HEALTH
Division of Environmental Health
REPORT ON PLANS

Plans and specifications on plumbing: Keller Golf Course Maintenance Shop, 2166 Maplewood Drive, Maplewood, Ramsey County, Minnesota, Plan No. 030792

OWNERSHIP: Ramsey County Parks and Recreation, 2015 North Van Dyke Street, Maplewood, Minnesota 55109-3796

SUBMITTER(S): Bredahl Plumbing Inc., 7916 73rd Avenue North, Brooklyn Park, Minnesota 55428

Plans Dated:

Date Received: September 3, 2002

Date Reviewed: October 9, 2002

SCOPE: This review is limited to the design of this particular project only insofar as the provisions of the Minnesota Plumbing Code, as amended, apply, and does not cover the water supply or sewerage system to which this plumbing system is connected. The review is based upon the supposition that the data on which the design is based are correct, and that necessary legal authority has been obtained to construct the project. The responsibility for the design of structural features and the efficiency of equipment must be taken by the project designer. Approval is contingent upon satisfactory disposition of any requirements included in this report. Special care should be taken to insure that the material and installation of the plumbing system are in accordance with the provisions of the Minnesota Plumbing Code. **A copy of the approved plans and specifications should be retained at the project location for future reference.**

A set of the identified plans and specifications is being returned to Bredahl Plumbing Inc.

INSPECTIONS: All plumbing installations must be tested and inspected in accordance with the requirements of the Minnesota Plumbing Code. As specified in Minnesota Rules, part 4715.2830, no plumbing work may be covered prior to completing the required tests and inspections. Provisions must be made for applying an air test at the time of the roughing-in inspection as outlined in Minnesota Rules, part 4715.2820, subpart 2, of the code. A manometer test, as specified in Minnesota Rules, part 4715.2820, subpart 3, is required at the time of the finished plumbing inspection. It is the responsibility of the contractor/installer to notify the Minnesota Department of Health when an installation for a state contract job, licensed facility, or project in an area where there is no local administrative authority is ready for an inspection and test. To schedule inspections, contact the state plumbing standards representative for your region, or call the metro office inspection hotline at 1-800-926-6216 (7:30 a.m. to 9 a.m.), or 651/215-0836 (8 a.m. to 9 a.m.) on Monday, Wednesday or Friday.

REQUIREMENT(S):

1. The flammable waste trap shall be constructed in accordance with the Minnesota Plumbing Code, Minnesota Rules, part 4715.1120. The interceptor shall include:
 - a. A minimum holding capacity of 35 cubic feet.
 - b. At least 3 feet of depth below the invert of the discharge pipe.
 - c. A water seal of not less than 3 inches on the inlet and not less than 18 inches on the outlet.
 - d. A minimum size 3-inch vent must extend separately through the roof. The vent must rise vertically or within 45 degrees of the vertical to a point at least 6 inches above the interceptor. The vent shall be constructed of approved metallic pipe material.
 - e. Drains that discharge into the interceptor shall be the dry-pan-type, and be at least 3 inches in size.
 - f. The interceptor shall be located so it is readily accessible for service and maintenance.

2. Showers or combination showers-baths shall be equipped with antiscald-type control valves. These valves must be of the thermostatic or pressure balance type in accordance with ANSI/ASSE Standard 1016-90 (see Minnesota Rules, part 4715.1380, subpart 5).
3. Water closets in public bathrooms must have elongated bowls with open-front seats.
4. The combination fire protection/domestic water service shall comply with the backflow protection requirements of AWWA-M14, Chapter 6 (1990) with the exception that the following statement is ~~deleted~~ from section 6.3: "At any time where the fire sprinkler piping is not an acceptable potable water system material, there shall be a backflow-prevention assembly isolating the fire sprinkler system from the potable water system."
5. Shower drains must be provided with an individual vent in accordance with Minnesota Rules, part 4715.1300, subpart 4.
6. Faucets equipped with threaded hose connections must be provided with approved backflow preventers.
7. Water supply connections to fixtures or equipment which have submerged inlets, or inlets below the spill line of the fixture or equipment, must be provided with an air gap arrangement, approved backflow preventer or backflow preventer assembly as specified in Minnesota Rules, part 4715.2000 and part 4715.2010.
8. The drain line serving the combined waste discharge from the laundry tub, the mop sink, and the standpipe shall be 3 inches.
9. It appears from the plans that the building does not have an interior storm drain system. Verify that roof scuppers discharge to a place of disposal satisfactory to the administrative authority. In no case, shall water from the roofs be allowed to flow upon the public sidewalk. If the building is to be served by an internal storm drainage system, provide roof plans which indicate the arrangement of the storm drainage system for review and approval before installation.
10. The water piping system shall be disinfected in accordance with Minnesota Rules, part 4715.2250. The plumbing system shall be tested in accordance with Minnesota Rules, part 4715.2820.
11. The copper water distribution piping must meet ASTM Standard B 88. PVC plastic pipe used for the drain, waste, and vent system shall comply with ASTM Standard D 2665, D 2949 or F 891 (see Minnesota Rules, part 4715.0570 through part 4715.0600).
12. All plumbing shall be installed in accordance with the Minnesota Plumbing Code (see Minnesota Rules, part 4715.0320).

NOTE(S):

1. The scope of this project consists of a new building. Installation includes bathroom groups, a flammable waste interceptor, water heater, showers, laundry tub, mop sink, standpipe, floor drains, mop sink, and trench drains.

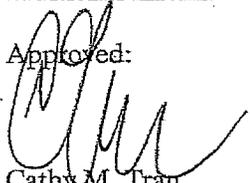
8

Keller Golf Course Maintenance Shop
Plumbing
Plan No. 030792
Page 3
October 9, 2002

2. This facility is served by new municipal water and sewer service connections.

Authorization for construction in accordance with the approved plans may be withdrawn if construction is not undertaken within a period of two years. The fact that the plans have been approved does not necessarily mean that recommendations or requirements for change will not be made at some later time when changed conditions, additional information, or advanced knowledge make improvements necessary.

Approved:



Cathy M. Tran
Public Health Engineer
Environmental Health Services Section
P.O. Box 64975
St. Paul, Minnesota 55164-0975
651/215-0840

CMT:lss

cc: Bredahl Plumbing Inc.
Ramsey County Parks and Recreation ✓
Mr. Bill Walsh, Plumbing Inspector
Plumbing Unit
File

January 13, 2015

Scott Yonke
Director of Planning and Development
Ramsey County Parks and Recreation Department

Mr. Yonke,

The Plumbing Board began a review of the Petition for Variance, which was submitted by Emanuelson-Podas Consulting Engineers (EPCE) on behalf of the Ramsey County Parks and Recreation Department (RCPR), at the quarterly meeting held October 21, 2014. This Petition for Variance was incomplete because it did not contain all of the information required under Minnesota Statutes section 14.056, subdivision 1. (Please note that the 60-day deadline referred in statute is referring to 60 days after an agency receives a **completed** petition. Because the Board has not received a completed petition from RCPR, the 60 days referenced in statute does not apply.)

In order for the petition to be complete, the Board needs the following additional information:

1. Under Minn. Stat. § 14.056, subd. 1(3), the petition must include the scope and duration of the requested variance. Are you requesting a temporary variance until you take additional action, or are you requesting a permanent variance? What is currently being done, and at what locations?
2. Under Minn. Stat. § 14.056, subd. 1(4), the petition for variance must include a statement signed by the petitioner, attesting to the accuracy of the facts asserted in the petition. Please submit a statement, signed by a person with legal authority to sign on behalf of RCPR, attesting to the accuracy of all facts asserted in the petition and in all supplemental information submitted by or on behalf of RCPR to the Plumbing Board in connection with the petition.
3. Under Minn. Stat. § 14.056, subd. 1(7), the petition must include the name, address, and telephone number of any person the petitioner knows would be adversely affected by the grant of the petition. Please include this information or a statement that the petitioner knows of no such persons.
4. Under Minn. Stat. § 14.056, subd. 3, the Board may require the petitioner to serve notice on any other person or entity in the manner specified by the agency. Please provide notice of your variance petition, along with a copy of all supporting documents and a copy of this letter, by first-class mail to each person listed in your response to item 3 above, and also to each of the following:
 - a. The Commissioner of the Minnesota Pollution Control Agency;
 - b. The Commissioner of the Minnesota Department of Health;
 - c. The Mayor of the City of White Bear Lake; and
 - d. The Chair of the Metropolitan Council.
5. Under Minn. Stat. § 14.056, subd. 4, the Board may request additional information from the petitioner before granting or denying a variance petition. The Board has authorized me, as

the Board Chair, to request additional information. Please provide the following additional information:

Documentation submitted by EPCE referenced installations at the Keller Golf Course in Maplewood and the Minikahda Club in Minneapolis in order to obtain permission for those installations. Did the agency having authority at the time of those installations grant a variance for those installations? Please provide information regarding which agency, if any, granted a variance, as well as a copy of any petition for variance submitted to another agency and that agency's response to any petition for variance.

6. Under Minn. Stat. § 14.056, subd. 2 (a), the Board may charge a petitioner a variance fee. It will be determined if charging a reasonable variance fee is warranted and you will be contacted to discuss the amount.

Respectfully,

John Parizek, Chair
Plumbing Board

January 7, 2015



Department of Labor and Industry
Plumbing Board
Attn: John Parizek, Chair
443 Lafayette Road North
St Paul MN 55155-4344



Re: Petition for a Variance
Manitou Ridge Golf Course – White Bear Lake, MN
DOLI Plan No. PLB1306-00125

To Mr. Parizek:

On September 9, 2014, Emanuelson-Podas Consulting Engineers (EPCE), on behalf of Ramsey County Parks and Recreation Department (RCPRD), submitted a Petition for Variance to allow for installation of a water treatment and recycling system for Manitou Ridge Golf Course in White Bear Lake, MN and Goodrich Golf Course in Maplewood, MN. On October 14, 2014, the Plumbing Board notified the EPCE and RCPRD the petition was on the agenda for a future board meeting. This is the only communication received to date on this Petition. EPCE requested an update on the petition via email on October 28 and again on December 1. No response was given.

Section 14.056 (Rule Variances; Procedures), Subd. 5 of the 2014 Minnesota Statutes states:

The agency shall grant or deny a variance petition as soon as practicable, and within 60 days of receipt of the completed petition, unless the petitioner agrees to a later date. Failure of the agency to act on a petition within 60 days constitutes approval of the petition.

Since the Department Labor and Industry has not acted on this petition within the allotted 60 days, please issue the approved variance order for the above petition. A copy of the original petition is attached for your reference.

Sincerely,

A handwritten signature in black ink that reads 'Scott Yonke'.

Scott Yonke, ASLA, PLA
Landscape Architect
Director of Planning and Development
Ramsey County Parks and Recreation Department
Maplewood, MN 55109

Cc: Ryan Ries, Ramsey County Parks and Recreation
Scott A. Vander Heiden, Emanuelson-Podas Consulting Engineers

Enc: Original Petition Letter
Supplemental reference information



emanuelson-podas
consulting engineers

PETITION FOR VARIANCE

September 9, 2014

Plumbing Board
c/o Department of Labor and Industry
443 Lafayette Road North
St Paul MN 55155-4344

RE: **Petition for a Variance**
Manitou Ridge Golf Course – White Bear Lake, MN
DOLI Plan No. PLB1306-00125

We are submitting this petition for a variance per the standards and procedures set forth in MN 14.055, 14.056 on behalf of:

Ramsey County Parks & Recreation
2015 Van Dyke St N
Maplewood, MN 55109

Background

With an eye toward environmental stewardship, Ramsey County Parks & Recreation installed their first Water Maze water treatment system at Keller Golf Course in Maplewood in 2003. For over a decade, the Water Maze system has effectively treated drainage from the golf cart wash pad. The waste stream from the wash pad contains an inordinate amount of grass and other organics plus total petroleum hydrocarbons from pesticides, herbicides and insecticides. The Water Maze system filters out the organics and then utilizes a blend of microbes and aeration to break down the hydrocarbons to harmless CO₂ and H₂O prior to discharging to sanitary sewer.

Ramsey County Parks & Recreation would like to apply this same technology at Manitou Ridge Golf Course in one of the following two ways:

- 1) **Treat** waste stream from golf cart wash pad and **discharge** into sanitary sewer.
- 2) **Treat** waste stream from golf cart wash pad and **recycle** water to be re-used for golf cart washing.

Petition for Variance

The petition for variance is related to the following Minnesota rule:

"4715.1200

All plumbing fixtures and drains used to receive or discharge liquid wastes or sewage shall be connected to the drainage system of the building in accordance with the requirements of the code."

The petition for variance is two-part as follows:

- (1) In lieu of a direct connection from the trench drain to the building drainage system, install a water treatment system to treat the waste water prior to discharge into the drainage system.
- (2) In lieu of a direct connection from the trench drain to the building drainage system, install a water treatment system to treat the waste water and then recycle the water for re-use in cart washing.

Description of the proposed system:

1. The project includes a covered golf cart wash pad on the exterior of the new golf maintenance building.
2. The wash pad and trench drain is designed such that no rainwater will get into the system with the following provisions:
 - a. wash pad is covered with a canopy
 - b. all grade slopes away from pad
 - c. there is curbing around the trench drain
3. The trench drain is connected to a sump basin.
4. A sump pump would pump the waste water from the sump to a receiver mounted on the exterior wall of the building. The receiver has a strainer to filter out grass clippings and the like.
5. The waste water then flows into the Water Maze treatment system.
6. See the enclosed memo from Allen Hurtado, application and process engineer from Water Maze, for a complete description of the Water Maze system.
7. The Water Maze can be set up for one of two functions:
 - a. Treat and discharge:
 - i. Water Maze treats waste water as described above.
 - ii. Then discharges treated water into sanitary sewer system through floor sinks located below the water maze system.
 - b. Recycling System:
 - i. An extra unit is added to the water maze to further treat the water and this water is pumped through a hose connection available to recycle.
 - ii. A building water connection is also made to the Water Maze to allow for water use when recycled water is not available. An RPZ provides cross connection control.
8. An additional overflow drain line that pipes directly from the sump basin (@ same elevation as inlet to basin) to the sanitary sewer could be added to the configuration. In case of a failure of the sump pump in the basin, the water would rise up and eventually drain directly into the sewer line upstream of a flammable waste trap.

Reasons for a Variance

The Water Maze water treatment system as applied to golf course cart washing is a fully engineered system that has been successfully used on thousands of installations across the country.

The system is a sustainable solution, providing water treatment and recycling, thereby reducing water usage.

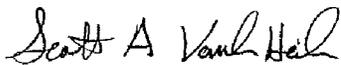
The system poses very little, if any, health risk. For more than 10 years, the county has successfully maintained the same system at Keller Golf Course.

It seems that the main reason that this system was rejected in plumbing plan review is simply that the MN Plumbing Code does not address gray water recycling systems. In effect, the reviewers have their hands tied due to the fact that the plumbing code has not been updated in this area (UPC and IPC both address said systems).

We are asking that the Minnesota Plumbing Board grant a variance to allow the use of the Water Maze system as a recycling system, thereby taking full advantage of the system capabilities.

Please contact me with any further information that you may need to make a decision.

Cordially,



Scott Vander Heiden, PE MN#40918

Enclosures

- Letter from Paul Diegau, Golf Course Superintendent – Keller Golf Course
- Letter from Ryan Ries – Ramsey County Parks & Recreation
- Memo from Allen Hurtado, Application and Process Engineer – Water Maze
- Maintenance procedures – Treat and Discharge System
- Maintenance procedures – Recycle System
- List of Project References



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FROM THE DESK OF: Allen Hurtado, Application and Process Engineer

Date: September 2, 2014

Project Identification: Ramsey Co. Minnesota, Manitou Golf Course

Water Maze Dealer: American Pressure

Attention: Scott Vander Heiden, P.E., Emanuelson Podas Inc., Shaun McMillen, Fluid Solutions Inc., Authorized Water Maze Dealer

Reviewed by: Allen Hurtado

Supporting Data: Water Maze O&M manual, Partial List of Water Maze Installations

The purpose of this memo is to answer some specific questions regarding the proposed installation and operation of a Water Maze CLB biological water treatment system and ancillary equipment. In addition to past information that has conveyed, the following is a question and answer format to recent questions pertinent to application for a waiver from recent denial of approval by the local regulatory authority.

Worth noting in the discussion is that the proposed treatment approach is in widespread use, not only throughout North America, but in Minnesota as well. The primary treatment process is simply an accelerated version of natural biological processes that convert organic wastes into harmless byproducts.

The following questions (Q.) have been posed by Scott and answered (A.) by Allen Hurtado:

Q. Describe how the system works to treat the water

A: Summary of the treatment process:

1. Water from the equipment and vehicle washing process is collected on a wash pad designed with strategically sloped floor and trenches. The pad and trenches should be designed to capture easily-settleable solids that are denser than water.
 - a. The solids are removed by manual maintenance.
 - b. Water flows through the trench to a collection sump.
 - c. NOTE: this step is commonly referred to as part of pre-treatment ahead of primary treatment.
2. Pump in the collection sump transfers water through a HydroScreen device to separate larger neutral and light-density solids (mainly vegetable matter) from the wastewater stream and collect them in a screened dumpster for transportation and disposal to a composting area.
 - a. NOTE: this step is commonly referred to as part of pre-treatment, ahead of primary treatment.
3. HydroScreened wastewater is transferred to an aerobic digester vessel with a working volume of approximately 550-gallons.



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- a. After heavy and light density solids are separated by gravity and screening pre-treatment the waste water contains primarily soluble detergent/cleaning products, golf-cart food and beverage residuals, dirt/grime, vegetation juices, small amounts of lawn and turf care chemistry, small amounts of oil/grease from equipment.
- b. Depending on the waste water processing volume, contaminant load and final disposition of the treated water for a given system, a secondary digester and/or treated water storage tank may be installed in series. If so configured, the water from the final tank is recirculated back to the primary digester for reprocessing.
4. Aeration, recirculation, and dosing of pH adjustment (if necessary), beneficial aerobic microbes and microbial nutrient are introduced and maintained in the digester on a programmed basis.
5. The beneficial aerobic microbes consume the organic content of the raw water over a period of several hours, converting the simple and complex organic compounds to primarily carbon dioxide and water byproducts.
 - a. A small amount of settleable solids are captured in a separate sludge management container.
 - b. An automatic electrical control system with Operator Interface controls the various functions of pumps, valves and solution dosing systems.
 - c. Tank configuration therefor will be one of the following:
 - i. Primary digester -> Treated water storage -> Recycle with fraction to discharge
 - ii. Primary digester -> Secondary digester -> Treated water storage -> Recycle large fraction. Small fraction to discharge
 - iii. Primary digester -> Secondary digester -> Discharge
6. Optional – In some applications where water is to be recycled to the wash process, a measure of disinfection may be desirable. A polishing particulate filter and high-intensity ultraviolet sterilizer may be added to inactivate both pathogenic and non-pathogenic microbes that may be present in the finished water. The ultraviolet disinfection device should be located as close as possible to the dispensing point of the recycled water.

Q. What is the condition of the treated water?

A. Customary golf/turf BOD counts of 500-1,500 are typically reduced by 85-95%. Visible color and measurable color units are reduced 60-90%. Dissolved solids are unaffected. Metals are unaffected.

Q. What maintenance is required?

A. Regular maintenance of the system is minimal

- a. Scoop out and dispose of heavy settleable solids (dirt, sand) from the bottom of the trench drains. Typically 1-3-times per week depending on wash pad design and golf course terrain.
- b. Dispose of vegetation material collected in the collection dumpster. Typically 1-3-times per week depending on golf course turf, vegetation and cut styles
- c. Replenish beneficial microbe and nutrient solutions as needed. Check weekly.
- d. Inspect bio-digester vessel internally. Monthly. Typically no action required.
- e. Inspect and/or clean fixed-film bio-media. Yearly.
- f. Overall inspection of pumps, aeration system and valve operation. Yearly.



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g. Please see O&M manuals submitted by Fluid Solutions for further details.

Q. What happens if maintenance is not done - what is the worst that can happen?

A. Assuming that mechanical operations (aeration, pumps, valves) continue to function, but that operator attention to replenishment does not take place, the population of beneficial aerobic microbes will fluctuate. When the microbe population fluctuates low, it may not fully handle high influent BOD loads that occur normally on a daily or weekly basis - depending on golf course activity. The system will exhibit normal to diminished levels of organic digestion that exhibit as higher BOD count and visible color. An excess of beneficial microbes poses no problem as the population is self-regulating when influent BOD loads diminish. The dosed nutrient maintains sufficient microbial population during low influent BOD loading periods.

Q. How has the system been used in other states.

A. (answered by Bernie Larson, Water Maze National Sales Manager):

Water Maze, which originated in 1987 as "Landa Water Cleaning Systems", has sold over 15,000 wash water treatment systems into the global markets. Our first bioremediation system (a.k.a. Water Stax, or BioSystem) was produced between 1995 and 1996.

Although we have applied our bioremediation technology to other applications, our BioSystem is designed specifically for treating water generated from washing golf course maintenance equipment. Over the past many years, our BioSystems have been installed in almost every state in the USA, Australia, Korea, Singapore, and U.A.E.

When a U.S.A. National Cemetery is upgrading or building a new wash rack facility, our BioSystem is specified by the US Government. Although I do not have an exact number, based on my 20 years work history with Water Maze, I estimate that we have sold more than 600 BioSystems.

Thank you for the opportunity to provide this additional information in support of your project.

Sincerely,

Allen Hurtado

Allen Hurtado

waterMaze
WATER TREATMENT SYSTEMS

CLB

Advanced Biological Treatment
Systems for Golf Courses and
Turf Wastewater Treatment

Modular BioSystems for Total Flexibility

All-Natural Recycle or Discharge Systems

Works for Golf-Turf and Industrial Applications

Easy to Maintain with Automatic Purge Feature

■ Patented **Air Stick** injects into the waste stream higher levels of dissolved oxygen than air blowers or compressed air to maximize aerobic digestion rates and overcome high BOD levels.

■ Wastewater initially passes through an optional stainless steel **HydroScreen** that separates grass clippings and deposits them in a grass cart for easy **Disposal**.

■ Optional stainless steel mesh lined **Grass Cart** for easy dewatering and handling of grass clippings.

ISO
9001
REGISTERED



Certified to
UL-1081 Safety
Standards

With a NEW
**WaterStax
Golf Course
Package**



The CLB BioSystem is available with a **WaterStax Golf Course** package for treating wash-water with a high content of grass clippings and other greenery.



Optional cart for easy disposal of grass clippings

CLT-300 pre-treatment tank with optional HydroScreen

Optional recycled water holding tank

CLB-603A/B main bio-digestion unit with automated controls

CLT-600 for enhanced bio-digestion (add more CLT units as needed)

■ More than 2,000 cubic feet of **Bio-Media** create an ideal breeding ground for aerobic bacteria to quickly multiply and consume hydrocarbon-based contaminants, converting them to harmless H₂O and CO₂. The media is kept in bags that are easy to remove and service.

■ **Timer-controlled Purge System** automatically removes sludge and also flushes the system with treated water for ease of maintenance.

■ Optional submersible, cast iron **Sump Pump** is designed to lift heavy solids typically found in industrial applications.

■ **Water-resistant, metal cabinet** is protected by a powder-coat epoxy finish and houses the **Control Center**, including timers and dispensing pumps. A water-resistant Nema 4 fiberglass control box protects electrical componentry.

■ **3/4 HP Circulation Pump** increases microbial digestion by creating optimum exposure of the wastewater to the bags of bio-media.

■ Conveniently located **Hose Connections** are clearly labeled for water inlet, fresh-water make-up, rainwater overflow and recycling (CLB-603 only).

■ **Durable, high-density, crosslinked polyethylene BioSystem Tanks** are extra-resistant to chemical fatigue and ultraviolet exposure. The polyethylene also attracts oils and organics providing additional surface area for biological growth.

■ **Cone-bottom CLT Tanks** have a 60° slope to enhance the settling and removal of suspended solids in the wastestream.

■ **High-output UV Ozone Generator** for additional polishing of the water (CLB-603 only).

CLB

Advanced Biological Treatment Systems for Golf Course Wash Facilities and Turf Applications

Modular BioSystems for Total Flexibility | Recycle or Discharge Units | For Golf-Turf, Commercial & Industrial Applications

The Water Maze BioSystem or CLB series employs the latest bio-technology for treating and recycling commercial and industrial wastewater, including golf and turf applications



Liquid concentrate of the BioStax 900 microbe solution comes in a variety of sizes along with our BioNutrient enhancer.

where there's a high organic content in the wash water.

The CLB's unique design features modular

components so the system is customized to match each customer's application requirements as well as to keep the equipment cost and performance to only what is truly needed. Moreover, the systems are automated for ease of maintenance.

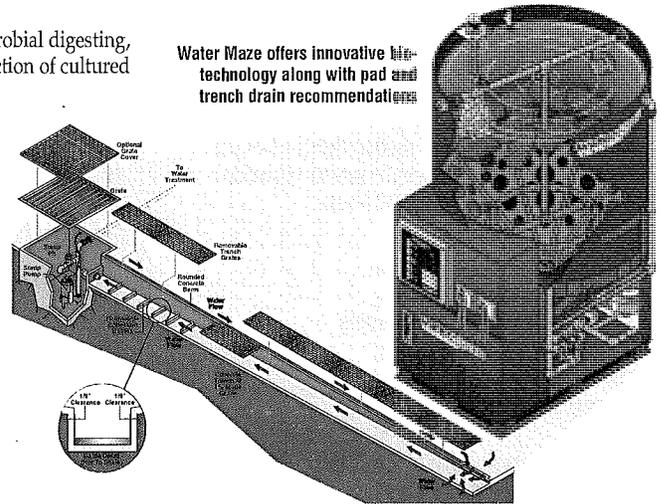
Water Maze's advanced bio-technology fea-

tures super-efficient aerobic microbial digesting, enhanced water circulation, injection of cultured microbes at concentrated levels and the introduction of a special microbial nutrients blend.

Unlike filtration systems, which create a sometimes hazardous sludge, the BioSystem naturally converts organic contaminants, such as oil, grease, etc., in a waste stream into harmless water and carbon dioxide.

Other features include: high-density, crosslinked, polyethylene tanks; water-resistant electronics control panel; and 2,087 sq. ft. of bio-media.

Water Maze offers innovative bio-technology along with pad and trench drain recommendations



CLB Specifications

	RECYCLE SYSTEM	DISCHARGE SYSTEM	AUXILIARY UNIT
MODEL	CLB-603A, B	CLB-600D	CLB-30D
Designed For	Recycle	Discharge	Auxiliary
Tank Capacity	600 gal.	600 gal.	600 gal.
Tank Material	Polyethylene	Polyethylene	Polyethylene
Processing Rate	See explanation at right	See explanation at right	See explanation at right
Bio-Media	2087 sq.ft.	2087 sq.ft.	2087 sq.ft.
Sump Pump	Optional	Optional	Optional
In-Feed / Circulation Pump	3/4 HP	3/4 HP	N / A
Transfer Pump	3/4 HP (2 HP optional)	N / A	N / A
Ozone Pump	3/4 HP	N / A	N / A
Ozone Generator	4-Tube Ultraviolet	N / A	N/A
Electrical	A: 230V 1ph 20 amps B: 230V 3ph 20 amps	120V 1ph 9 amps	120V 1ph 1 amp
Aeration	VBT-100 "Airstick"	VBT-100 "Airstick"	VBT-100 "Airstick"
Dimensions	65" L x 54" W x 105" H	65" L x 54" W x 105" H	65" L x 54" W x 101" H
Ship Weight	1,050 lbs	TBD	TBD

THE PROCESSING RATE varies for each site. Factors that must be considered are:

- Average daily flow (gallons per day)
- BOD levels (ppm);
- Oxygen input (dissolved oxygen);
- Hydraulic retention time (HRT);
- Total petroleum hydrocarbons (TPH);
- water temperature and pH.

Based on these factors a qualified Water Maze sales engineer will calculate the estimated processing rate and make a recommendation as to the size of system needed.

Distributed by:

OPTIONS INCLUDE: BioStax 900, 1800 or 100 Hawaiian Blend, microbe concentrate; BioNutrient microbe nutrient source; 300- and 600-gallon tanks for added processing; pH controller; sump pump; oil skimmer with collection tank; sludge tub with lid; sump pump; grass cart, dumpster and HydroScreen for filtering grass clippings.

See your Water Maze Dealer for part numbers and pricing.



PN #97-0094GC Effective 9/05 800-535-0941 Fax: 800-535-9164 info@wmaze.com
Specifications and product descriptions subject to change without notice. © 2005

CLB MAINTENANCE

DAILY MAINTENANCE

To keep your Bio-System in peak performance you need to perform minimal daily maintenance. This service is best performed each morning before using the wash area..

- Check and clean catch basin and trench.
- Empty the debris dumpster.
- Wash down front and back of hydro-screen, preferably with a pressure washer.

WEEKLY MAINTENANCE

- Check that purge drain valves work properly.
- Check that timers are set properly.

MONTHLY MAINTENANCE

Monthly maintenance for the Bio-System and replenishment of BioStax 900 is required. Schedule a regular day and time each month to perform the maintenance. Record your maintenance in the monthly log to provide a record in the event of an inspection.

- Replenish BioStax 900.
- Replenish BioNutrient.
- Check the automatic microbe dispenser pump and make sure the tubing is not cracked or worn. Replace tubing if required (every 6-12 months). Clean screen in tubing going in microbe bucket.
- Visually inspect external hoses and fittings.
- Confirm pressure switch setting on transfer pump.

CLB MAINTENANCE

	DAILY	WEEKLY	MONTHLY	BI-YEARLY
Check pits for water level (Overflow/dry).	X			
Check for voltage to machine and that control panel switches are on.	X			
Check all plumbing for leaks.	X			
Check inlet flow meter for proper flow. Clean meter if needed.	X			
Check that inlet and discharge manifold hoses and valves are in proper position.	X			
Clean and test pH probe if applicable*.		X		
Suction pits of sludge and debris.*			X	
Check and clean sump pump of dirt and debris.*			X	
Clean floats in sump if accumulating dirt or grease. *			X	
Check float wires for cuts or frays.			X	
Check and clean chemical injectors.			X	
Check tubing on pH controller for splits or cracking.			X	
Check standard cubic feet per hour (SCFM) on ozone generator.			X	
Open drain valve to purge solids.	X			
Empty debris dumpster	X			
Pressure wash front and back of debris dumpster.	X			
Clean trench	X			
Check timers for proper settings		X		
Replenish BioStax 900 and BioNutrient if applicable*			X	

* Note: this is a guide. Depending on your wash load these items may have to be done more or less often

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CLB MAINTENANCE

DAILY MAINTENANCE

To keep your Bio-System in peak performance you need to perform minimal daily maintenance. This service is best performed each morning before using the wash area..

- Check and clean catch basin and trench.
- Empty the debris dumpster.
- Wash down front and back of hydro-screen, preferably with a pressure washer.

WEEKLY MAINTENANCE

- Check that purge drain valves work properly.
- Check that timers are set properly.

MONTHLY MAINTENANCE

Monthly maintenance for the Bio-System and replenishment of BioStax 1800 is required. Schedule a regular day and time each month to perform the maintenance. Record your maintenance in the monthly log to provide a record in the event of an inspection.

- Replenish BioStax 1800.
- Replenish BioNutrient.
- Check the automatic microbe dispenser pump and make sure the tubing is not cracked or worn. Replace tubing if required (every 6-12 months). Clean screen in tubing going in microbe bucket.
- Visually inspect external hoses and fittings.
- Confirm pressure switch setting on transfer pump.

CLB MAINTENANCE

	DAILY	WEEKLY		BI-YEARLY
Check pits for water level (Overflow/dry).	X			
Check for voltage to machine and that control panel switches are on.	X			
Check all plumbing for leaks.	X			
Check inlet flow meter for proper flow. Clean meter if needed.	X			
Check that inlet and discharge manifold hoses and valves are in proper position.	X			
Check ozone generator bulb. Bright light-replace. Dim light good.	X			
Clean and test pH probe if applicable*.		X		
Suction pits of sludge and debris.*			X	
Check and clean sump pump of dirt and debris.*			X	
Clean floats in sump if accumulating dirt or grease. *			X	
Check float wires for cuts or frays.			X	
Check and clean chemical injectors.			X	
Check tubing on pH controller for splits or cracking.			X	
Check standard cubic feet per hour (SCFM) on ozone generator.			X	
Check surge tank pressure.				X
Check transfer pump switch settings.			X	
Open drain valve to purge solids.	X			
Empty debris dumpster	X			
Pressure wash front and back of debris dumpster.	X			
Clean trench	X			
Check timers for proper settings		X		
Replenish BioStax 1800 and BioNutrient if applicable*			X	

* Note: this is a guide. Depending on your wash load these items may have to be done more or less often.

WATERSTAX INSTALLATIONS

Alaska Ft. Wainwright Golf Maint. Facility Fairbanks.	Maryvale Golf Course Phoenix	Williams AFB Ph
Arkansas Pleasant Valley Golf Club Little Rock	ArroyoDunes Golf Course Yuma	Hassayampa Golf Course
Sedona Golf & Tennis Sedona	The Raven at South Mountain Phoenix	California The Victoria Club Riverside
Torreon Maintenance Facility Show Low	Apache, Desert Mountain Scottsdale	Simi Hills Golf Course Simi Hills
Imperial Nat. Wildlife Refuge Yuma	Paradise Valley Country Club Country Club	Redhawk Golf Course Temecula
Stonecreek Golf Club Paradise Valley	Vulcan Sun City Phoenix	The Plantation La Quinta
Sanctuary Golf Culb Scottsdale	Sheraton El Con Quistador Tucson	Vineyard at Escondido Escondido
Valley Truck & Trailer Service Glendale	Estrella Mt Ranch Golf Goodyear	The Bridges at Gale Ranch San Ramon
Cabreza Prieta Refuge Ajo	Whirlwind Golf Club Chandler	San Diego Country Club Chula Vista
Army Corp of Engineers	Mountain Brook Village Apache Junction	The Auld Course Chula Vista
Eagle's Landing Country Club Phoenix	Raven Golf Club, Sebino Springs Tucson	The Crosby National Golf Club Rancho Santa Fe
Rancho Manana Glof Club Phoenix	Renegade, Desert Mountain Scottsdale	Ranch Vista Golf Club Palmdale
Tucson Country Club Tucson	Heritage Highlands Tucson	Lake Tahoe Golf Course S. Lake Tahoe
Talking Stick Scottsdale	Eagle Mountain Fountain Hill	Valley Club of Montecito Santa Barbara
Estrella Mountain Ranch Phoenix	Tatum Ranch Golf Club Cave Creek	Cypress Ridge Golf Course Arroyo Grande
Prestwick Development Phoenix	Quail Run Maintenance Sun City	Morgan Run Resort & Club Rancho Sante Fe
Troon North Golf Club Scottsdale	DC Ranch Scottsdale	Moreno Valley Ranch Golf Club Moreno Valley
The Ridge at Castle Pines Colorado	Stonecreek Phoenix	Landmark Golf Club Indio
	Desert Forest Golf Course Carefree	Ocean Traila Golf Club Rancho Palos Verdes

WATERSTAX INSTALLATIONS

Yucaipa Valley Golf Course Yucaipa Valley	Watertown Golf Club Watertown	Idaho Valley Golf Club Hailey
Annandale Country Club Pasadena	Country Club of Waterbury Waterbury	Kansas Colbert Hills Country Club Manhattan
Rolling Hills Country Club Rolling Hills Estates	Foxx Hopyard Golf Club East Haddam	Nicklaus Golf Club at Lions Gate Oakland Park
Rancho San Marcos Santa Barbara	Florida Lost Key Plantation Perdido Key	Massachusetts MA Veterans Memorial Cemetery Agawam
Virginia Country Club Long Beach	Inverrary Country Club Lauderhill	Pine Hill Golf Course Plymouth
Sun City Palm Desert Palm Desert	Golden Bear Golf Club Hammock Creek	Maryland Cattail Creek Country Club Glenwood
City of Santa Barbara Santa Barbara	Fiddler's Creek Naples	Minnesota Minikahda Club Minneapolis
City of Ventura Ventura	Sail Fish Pointe Stewart	Nevada Seven Hills Henderson
Hanson Dam City of LA Los Angeles	Orange County National Orlando	MGM Golf Course Boulder City
Crystal Springs City of LA Los Angeles	Georgia Champions Club of Gwinette Snellville Cherokee Run GC Conyers	Reflection Bay Golf Maintenance Henderson
South Bay Wilmington City of LA Los Angeles	Trophy Club of Atlantic Alpharetta	Spanish Trail Golf Course Las Vegas
Balboa City of LA Los Angeles	White Columns Golf Club Alpharetta	Gragon Ridge Golf Course Las Vegas
Indian Ridge Country Club Palm Desert	Stone Mountain Golf Club Stone Mountain	The Casablanca Hotel/Casino Mesquite
Wente Golf Livermore	Polo Golf Club Cumming	Bear's Best Las Vegas Las Vegas
Round Hill Walnut Creek	Bears Best Atlanta Sugar Hill	New Mexico Tueras Arroyo Golf Course Kirkland AFB
Colorado Broadmore Golf Club Colorado Springs	The Club at Savannah Harbor Savannah	New York Foxfire Golf Course Baldwinsville
The Ridge at Castle Pines Castle Rock	Nicklaus Golf Club Birch River Dahlonega	
Connecticut Clinton Country Club Clinton Country Club		

WATERSTAX INSTALLATIONS

Greystone Golf Course
Walworth

North Carolina

Governors Club
Chapel Hill

Oregon

Langdon Farms Golf Course
Aurora

South Carolina

Moss Creek Country Club
Hilton Head

Rivertowne Country Club
Mt Pleasant

Texas

Prescott

Grand Prairie Country Club
Grand Prairie

The Regals Three Systems
Fort Worth

Commanche Trace Ranch GC
Kerrville

The Creeks at Beechwood
Fort Worth

Yaupon Golf Course
Austin

The Hills at Lakeway
Austin

Prof. Turf Products of Texas
Houston, Dallas, San Antonio

Sweetwater Country Club
Houston

Utah

New Star General Contractors
Park City

Vermont

Vermont National Country Club
South Burlington

Brandermill Country Club
Richmond

Baymark Construction Corp
Cape Charles

Washington

Port Ludlow Golf
Golf

Indian Summer
Olympia

Canterwood Golf & Country Club
Gig Harbour

Sudden Valley Golf Course
Bellingham

Trophy Lake Golf & Casting
Port Orchard

Washington National Golf Course
Auburn

International

Country Club Philippines
Manila

Punta Mita Golf Course
Puerta Vallarta, MX

September 3, 2014



Plumbing Board
c/o Department of Labor and Industry
443 Lafayette Road North
St. Paul, MN 55155-4344

To Whom It May Concern:

Please find attached a variance application to permit the use of a wash-water treatment and recycling system at a project currently under construction at Manitou Ridge Golf Course in White Bear Lake and a 2015 project at Goodrich Golf Course, both owned by Ramsey County. The County would like to install a system for treating and recycling water used to wash golf carts and mowing equipment at each location. The Department of Labor and Industry has previously rejected this system in their plumbing plan review of the Manitou Ridge Project.

Ramsey County, and in particular the Parks & Recreation department, takes its role as a steward of the environment seriously. The proposed wash-water system is an example of this commitment. The system was funded by a Leadership in Environmental Stewardship grant from Ramsey County Public Health and the City of St. Paul. As a government agency, the County owes its constituents to provide safe, environmentally-friendly facilities.

Furthermore, the County is committed to doing its part to alleviate the water usage concerns surrounding White Bear Lake, which is near Manitou Ridge. In recent years, the County has been forced to close its beach on White Bear Lake as a result of decreasing water levels. Since golf courses use a significant amount of water, it is in the best interest of those who live near or depend on White Bear Lake to develop innovative ways to limit water demand on the aquifer. The proposed system does just that.

The County has a similar treatment system installed at Keller Golf Course. Enclosed you will find a letter from the course superintendent detailing the maintenance requirements the County has followed for more than 10 years. The County is committed to, and has demonstrated, periodic and seasonal maintenance of the proposed system per the manufacturer's requirements. Similar systems are installed in various courses across the state (and nation); to our knowledge, no safety concerns have ever been reported regarding these systems.

The DOLI Plan Review has indicated this system is not "required" since downstream wastewater treatment can currently treat contaminated water from the course. This is myopic to say the least. Again, the County strongly believes in being a steward of the communities it serves, and attempts to proactively reduce the impact of its facilities on the environment. By "doing the right thing", the County hopes to serve as an example to residents and other stakeholders and to ensure the services and facilities it provides will serve future generations as well as current ones. These values mirror those of such State agencies as the Minnesota Pollution Control Agency (whose mission is: "Working to protect and improve our environment and enhance human health"). While the County understands DOLI's responsibility to ensure compliance with current plumbing codes, it is also reasonable to expect

flexibility in instances where said compliance comes at the expense of the environment and in direct opposition to the State's various environmental policies.

The proposed wash-water treatment and recycling system at Manitou Ridge Golf Course and Goodrich Golf Course is safe, easy to maintain, and environmentally-friendly. It is the County's sincere hope that the State approves this variance in the best interests of our shared constituents and natural resources.

Should you have any questions regarding this application, please do not hesitate to contact me.

Thank you.

Sincerely,

A handwritten signature in black ink that reads "Ryan Ries". The signature is written in a cursive style with a large initial "R".

Ryan Ries
Project Manager
Ramsey County Parks & Recreation
2015 N. Van Dyke St.
Maplewood, MN 55109
651-748-2500
ryan.ries@co.ramsey.mn.us



August 28, 2014

To Whom It May Concern:

As the superintendent at Keller Golf Course in Maplewood, I have significant experience with the Watermaze treat-and-discharge wash water system proposed at the Manitou Ridge Maintenance Facility project in White Bear Lake. It has been a wonderful system for our course, and I would encourage the State to approve a variance to allow this system to be installed at Manitou Ridge and other locations.

The Watermaze system at Keller has been operational since 2003. In the 11 years it has been in service it has never "failed". The microbes used by the system are totally safe. This product is a two-part liquid blend of a non-toxic, non-pathogenic microbial concentrate. There are no hazardous by-products as the bacteria converts hydrocarbons into carbon dioxide and water. Additionally, the wash pad is covered and surface grades surrounding the pad do not allow rainwater to flow onto the pad. Simply put, the system is completely safe.

Additionally, the maintenance is minimal. Product is added to the system once a month, and the system is winterized at the end of the year. The cost of the product is approximately \$112/month. This is funded out of our operating budget, just like fertilizer, golf course chemicals, etc. Periodic maintenance is the core of what golf course maintenance is about – when to mow, when to fertilize, and so forth. The Watermaze system maintenance requirements are minimal compared to the rigorous daily maintenance required out on the course itself.

I understand the system proposed at Manitou Ridge has a recycling component to allow re-use of wash water. We would love to have a recycling system here. Golf courses in the Southwestern part of the country are required to recycle wash water due to water shortage concerns. Given recent issues with decreasing water levels at White Bear Lake, it seems imperative that facilities utilize all water conservation methods available. The future of the golf course industry suggests that the recycling requirement will spread to the rest of the country in the next 5 to 10 years.

I highly recommend the Watermaze system as a best practice, environmentally friendly, easy-maintenance solution for golf course equipment washing.

Sincerely

Paul Diegnau, CGCS
Golf Course Superintendent
Keller Golf Course
2166 Maplewood Drive
Maplewood, MN 55109

14.056 RULE VARIANCES; PROCEDURES.

Subdivision 1. **Contents of variance petition.** A petition for a variance under section 14.055 must include the following information:

- (1) the name and address of the person or entity for whom a variance is being requested;
- (2) a description of and, if known, a citation to the specific rule for which a variance is requested;
- (3) the variance requested, including the scope and duration of the variance;
- (4) the reasons that the petitioner believes justify a variance, including a signed statement attesting to the accuracy of the facts asserted in the petition;
- (5) a history of the agency's action relative to the petitioner, as relates to the variance request;
- (6) information regarding the agency's treatment of similar cases, if known; and
- (7) the name, address, and telephone number of any person the petitioner knows would be adversely affected by the grant of the petition.

Subd. 2. **Fees.** (a) An agency may charge a petitioner a variance fee. The fee is:

- (1) \$10, which must be submitted with the petition, and is not refundable; or
- (2) the estimated cost for the agency to process the variance petition, if the agency estimates that the cost will be more than \$20.

(b) If an agency intends to charge costs to the petitioner under paragraph (a), clause (2):

- (1) the agency and the petitioner must agree on the costs and the timing and manner of payment;
- (2) for purposes of the 60-day limit in subdivision 5, the petition is not complete until there is agreement with the petitioner on the costs and timing and manner of payment; and
- (3) if the payment made by the petitioner exceeds the agency's actual costs, the agency must refund the overpayment to the petitioner. The payment is not otherwise refundable.

(c) Proceeds from fees charged under this subdivision are appropriated to the commissioner of management and budget. The commissioner of management and budget may transfer amounts to the fund and agency that supports the program that is the subject of the variance petition when the agency makes a request for the fee proceeds and the commissioner of management and budget determines the agency needs the fee proceeds to implement this section. Annually, the commissioner of management and budget must transfer proceeds from fees that are not transferred to agencies to the general fund.

Subd. 3. **Notice.** In addition to any notice required by other law, an agency shall make reasonable efforts to ensure that persons or entities who may be affected by the variance have timely notice of the request for a variance. The agency may require the petitioner to serve notice on any other person or entity in the manner specified by the agency.

Subd. 4. **Additional information.** Before granting or denying a variance petition, an agency may request additional information from the petitioner.

Subd. 5. **Order; timing.** An agency must issue a written order granting or denying a variance and specifying the scope and period of any variance granted. The order must contain an agency statement of the relevant facts and the reasons for the agency's action. The agency shall grant or deny a variance petition as soon as practicable, and within 60 days of receipt of the completed petition, unless the petitioner agrees to a later date. Failure of the agency to act on a petition within 60 days constitutes approval of the petition.

Subd. 6. **Order; delivery.** Within five days of issuing a variance order, the agency shall send the order to the petitioner and to any other person entitled to notice under other law.

Subd. 7. **Record.** An agency shall maintain a record of all orders granting and denying variances under section 14.055. The records must be indexed by rule and be available for public inspection to the extent provided in chapter 13.

History: 2001 c 179 s 3; 2009 c 101 art 2 s 109