

**Plumbing Board**  
**National Code Review Committee – Meeting Minutes**  
**August 26, 2013 – 9:00 a.m.**  
**Department of Labor and Industry**  
**443 Lafayette Road No., Saint Paul, MN 55155-4344**  
[DLI.CCLDBOARDS@State.MN.US](mailto:DLI.CCLDBOARDS@State.MN.US)

**Committee Members Present**

Joe Beckel  
Chad Filek  
Gale Mount  
John Parizek  
Larry Justin  
Mike McGowan  
Jim Lungstrom

**Board Members Present**

Ron Thompson (MDH)

**Committee Members Absent**

Jim Kittelson  
Grant Edwards  
Phillip Sterner

**DLI Staff & Visitors**

Brian Noma (MDH)  
David Rindal (MDH)  
Brian Soderholm (MWQA/WCC)  
Scott Schiesser (MWQA)  
Mike Ritter (MWQA)  
Gary Thaden (MMCA)  
Matt Marciniak (IAPMO)  
Luke Westman (PHCC)  
Phil Raines (ABC)  
Bob Taylor (Osland Piping)  
Laura Millberg (MPCA)  
Cathy Tran (DLI)  
Jim Peterson (DLI)  
Lyndy Lutz (DLI)

**I. Call to Order**

The meeting was called to order by Chair Lungstrom at 9:05 a.m. Introductions and housekeeping announcements were made.

**II. Approval of Meeting Agenda**

McGowan made a motion, seconded by Justin, to approve the Agenda. The vote was unanimous and the motion carried.

**III. Regular Business**

- A) Approval of the June 18, 2013 and July 16, 2013 Meeting Minutes
  - a. Parizek made a motion, seconded by Filek, to approve the minutes of the June 18, 2013 meeting. The vote was 4 in favor with 3 abstentions.
  - b. Justin made a motion, seconded by Parizek, to approve the minutes of the July 16, 2013 meeting with changes/revisions noted. “Comments” section of the table in “Special Business” were discussed and deemed valid; names not necessary. The vote was 6 in favor with 1 abstention.

- a. Mount referenced a memo from Chair Lungstrom dated 8/27/2012 regarding proposed amendments; he asked for clarification from Chair Lungstrom as to the criteria used to help determine if a proposed amendment should be accepted or denied. These criteria suggest that amendments be based on technical need vs. personal preferences or other arbitrary reasons. Chair Lungstrom stated that these criteria are goals but that the Committee will consider all comments brought forward. The criteria should be kept in mind when voting on amendments.

- B) Approval of Expense Reports and Per Diems  
Parizek approved the expenses as presented.

**IV. Special Business**

- A. Review Suggested Changes to UPC  
Suggested changes being brought forth have been developed by National Code Committee members, interested parties, and members of the public. Suggested changes were proposed for the following chapters:

- I. Chapter 6 – Water Supply and Distribution (Remaining unreviewed items from July meeting)
- II. Chapter 16 – Alternate Water Sources for Nonpotable Applications
- III. Chapter 17 – Nonpotable Rainwater Catchment Systems
- IV. Chapter 1 – Administration
- V. Chapter 2 – Definitions

The following table is a summary of suggested changes to the 2012 Uniform Plumbing Code for incorporation into the MN version of the code. See attached Exhibits for language.

Proposer	Section	Motion To	Motion/Seconded	Comments/Discussion	Vote	Exhibit Number
MDH	603.5.4 (Heat Exchangers)	Deny	Justin / Mount	Rational is that the owner/operator will be aware of a leak / discharge location; being able to observe when the double wall is not protecting the way it should; UPC deals with venting to atmosphere not discharge; new language too specific, prefer current UPC language.	Carries	1
MDH	609.1 (Installation)	Deny	Parizek / Beckel	Discussion regarding freeze protection; clarification on yard piping/building supply yard piping; chapter 3 (312.6) already addresses; footing charts were referenced; final discussion on proposed language not specifying piping should be buried below the frost level.	Carries	2

Proposer	Section	Motion To	Motion/Seconded	Comments/Discussion	Vote	Exhibit Number
MDH	609.9 (Disinfection of Potable Water System)	Deny	Mount / Filek With further discussion by McGowan regarding language to clarify “free” chlorine should be considered for national code language	Discussion on usage and enforcement; clarification on item (4) parts 4740.2010 & 4740.2120 – stating these code numbers could change; suggestion for “certified laboratories” language to read “MDH certified laboratory”; UPC code language is almost identical.	Carries	3
MDH	609.11 (Water Meters)	Accept	Justin / McGowan With further discussion by Parizek that this language is similar to what we already have & asked for clarification on stricken language	Current UPC code language doesn’t address water meters; would this language be included in new language regarding water purveyors, answer: no; language is valid with DLI seeing a handful of these cases/year.	Carries	4
MDH	<b>610.3 (Quantity of Water)</b>	<b>Tabled; September</b>	<b>No Motion</b>		<b>N/A</b>	<b>4b</b>
MWQA <sup>3</sup>	611.0 to 611.4 (Conditioning Equipment)  <b>Bring 611.1 back for further discussion at next meeting – see friendly amendment adding language suggestion</b>	Accept with amendments	Justin / Parizek Motion to approve w/ following amendments: <ul style="list-style-type: none"> <li>Do NOT strike the word “Drinking” in 611.0 &amp; 611.1</li> </ul> Friendly amendment by Parizek: <ul style="list-style-type: none"> <li>Do NOT strike the word “Drinking” in 611.2 &amp; 611.3</li> <li>Add language to 611.1 dealing with manufacturing / assembler / mass produced units – how will these performance standards be met – <b>bring back for further discussion at next meeting</b></li> <li>Add language after the word application in 611.1.2 “wetted materials shall meet ANSI/NSF 61”</li> <li>Strike 611.1.2.1 and 611.1.2.2</li> <li>Strike new language in 611.2, last sentence</li> </ul>	Clarification on point of use on 611.1; Definitions in 611.1.1 and 611.2 Airgap Discharge with Section 603.5.19; UPC 2012 referenced and read aloud; discussion on commercial process vs. residential; why are NSF 42, 44, 53, 58, 62 in 611.1 being stricken from current language in 611.1 – why not reference that these standards are being met and MWQA was asked why NSF standards are being referenced in 611.3 with MWQA stating that they agree with these standards; health issues were raised with eliminating NSF performance standards; 611.2 new language was addressed regarding “salt regenerating.....” with discussion on striking this sentence in its entirety with a suggestion that this sentence belongs in the SONAR instead.	Carries	5

Proposer	Section	Motion To	Motion/Seconded	Comments/Discussion	Vote	Exhibit Number
Greenway	Ch. 6 / 601.2.2 (Color & Information)	Deny	Justin / Parizek	“each side of a partitioning wall” new language proposed	Carries	6
Greenway	Ch. 6 / 603.5.4 (Heat Exchangers)	Tabled; Sept.	No Motion		N/A	6
Greenway	Ch. 6/ 603.5.11 (Nonpotable Water Piping)	Deny (see motion)	Justin / Mount Motion to strike 603.5.11 in its entirety	Discussion on who would be responsible for correction with reference to basic principles in chapter 1	Carries	6
Greenway	Ch. 6 / 604.2 (Copper Tube)	Deny	Mount / Beckel	Type “L” already addresses with no issues	Carries	6
Greenway	Ch. 6 / 605.6.1 (Mechanical Joints)	Deny	Parizek / Mount	Language restricts manufacturers	Carries	6
Parizek	505.4.1, 603.5.4 to 603.5.4.2 (Heat Exchangers)	Tabled; Sept.	No Motion		N/A	7
<i>Broke for lunch break at 11:49 a.m. and meeting resumed at 12:54 p.m.</i>						
DLI	Chapter 16	Not voted on	Not voted on See Parizek Chapter 16 below	Clarification on gray water, black water, discussion on micro-biological, on-site systems, municipal treatment concentration issues, and treatment guidelines. MDH agreed with DLI’s concerns – submitted an RFA earlier deleting chapter 16.	N/A	8
Parizek	Chapter 16 (UPC: Alternate Water Sources for Nonpotable Applications)	Accept in principal with amendments  <b>Working Draft Place-holder position</b>	Justin / Mount Motion to move ahead in principal that there needs to be additional discussion / parameters that everyone can accept before adoption.	No guidelines currently in place, added language “Authoritative Commissioner” so that standards would be set by the state, as a place-holder, once the state determines responsible department; Concerns rose regarding irrigation systems, back-pressure on back-flow preventers – installment standards.	Carries	9
DLI	Chapter 17	Tabled; future discussion	No Motion	DLI supports Parizek Chapter 17 in concept but does not agree with striking Table 1702.9.4.	N/A	10

Proposer	Section	Motion To	Motion/Seconded	Comments/Discussion	Vote	Exhibit Number
Parizek	Chapter 17 (UPC: Nonpotable Rainwater Catchment Systems)	<p>Accept in principal with amendments</p> <ul style="list-style-type: none"> <li>• 1701.1.1 - Strike the word "Alternate" and add in its place the word "Rain"</li> </ul> <p><b>Working Draft Placeholder position</b></p>	Mount / Justin Motion to move ahead in principal that there needs to be additional discussion / parameters that everyone can accept before adoption.	No guidelines for installing systems – Plumbing Board does not have jurisdiction; no one has authority over water quality standards; took IAPMO revisions into consideration; added language "Authoritative Commissioner" so that standards would be set by the state, as a place-holder, once the state determines responsible department. Further discussion on 1702.9.3.1 – "aboveground collection surfaces" asking if there is a legal authority to regulate this; DLI raised concerns regarding inspecting & regulating; 1702.9.3.3 treatment issues – what level of water quality for final use; 1702.9.8 issued raised - UV portable lamps, no standards for ozone treatment; NSF 350 standards.	Carries	11
MDH	Chapter 17 (Rainwater Reuse)	Deny	Justin / Mount	Prefer to wait for water quality reuse study to be completed – approximately 1 year	Carries	12
MPCA <sup>4</sup>	Chapter 17	Withdrew	Withdrew	Withdrew proposal amendment	N/A	13
DLI	Chapter 1 (2012 UPC)	Accept	Mount / Beckel	Clarification on proposed language – added MPCA to "W"; DLI administrative procedures fall under DLI MN Rules, Chapter 1300 and general regulations, alternates, and health and safety are included in proposed Chapter 3 previously presented to committee members.	Carries	14

Proposer	Section	Motion To	Motion/Seconded	Comments/Discussion	Vote	Exhibit Number
DLI	Chapter 2 2012 UPC	Accept  <b>Work in Progress</b>	Justin / Parizek Motion to proceed to accept DLI Chapter 2; with understanding this is a work in progress. Friendly amendment <ul style="list-style-type: none"> <li>• Certified Backflow Assembly Tester: look at language in MN Statutes</li> <li>• add a definition for Health Authority</li> <li>• strike <del>Minnesota Department of Health</del> use "Health Authority"</li> <li>• reference "Authoritative Commissioner"</li> </ul>	Administrative Authority definition is added; specifically links authority having jurisdiction to Administrative Authority; suggestion to add the language - "health authority" for consistency with other discussions brought forward in Chapters 16 & 17; Why is Certified Backflow Assembly Tester language stricken? Definition is already referenced in MN Statutes.  "Plumbing System" basically defines what is regulated, with existing code dealing with point of supply / point of disposal. This new and stricken language appears to deal with everything within the property line. <b>Revise language to be more specific and provide clarification.</b>  "Potable", "Drinking", and "Water Softening" language was discussed. Potable water is a broader term and should be used.	Carries	15

<sup>1</sup>DLI = Department of Labor and Industry    <sup>2</sup>MDH = Minnesota Department of Health  
<sup>3</sup>MWQA = Minnesota Water Quality Association    <sup>4</sup>MPCA = Minnesota Pollution Control Agency

## V. Open Forum

There were no requests to speak during open forum.

## VI. Discussion

There were no further discussions.

## VII. Announcements

### Next Regularly Scheduled National Code Committee Meetings

- I. September 17, 2013 @ 9:00 a.m. – Minnesota Room, DLI
- II. Chapters 16 & 17 are not to be included at September meeting.

## VIII. Adjournment

A motion was made by Parizek, seconded by Filek, to adjourn the meeting at 3:00 p.m. The vote was unanimous and the motion carried.

Respectfully submitted,

*Jim Lungstrom*

Jim Lungstrom

## NATIONAL CODE COMMITTEE COMMENT FORM FOR PROPOSED AMENDMENTS TO THE UPC (This form must be submitted electronically)

*Author/requestor:* Minnesota Department of Health

*Email address:* ronald.thompson@state.mn.us

*Telephone number:* (651) 201-3658

*Firm/Association affiliation, if any:*

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### **Proposed Code Change - Language**

Please provide your proposed UPC amendment in strikeout/underline format. Provide the *specific* language you would like to see changed, with new words underlined and words to be deleted should be ~~stricken~~. Also, state whether the language contained in your proposal is from a code book or from an amendment currently found in Minnesota Rule. (You may provide the language (electronically) on a separate, attached sheet).

XXXX.XXXX CHAPTER 6 WATER SUPPLY AND DISTRIBUTION

#### **Recommendation Denied**

UPC Section 603.54 is amended as follows:

**603.54 Heat Exchangers.** Heat exchangers used for heat transfer, heat recovery, or solar heating shall protect the potable water system from being contaminated by the heat-transfer medium. Single-wall heat exchangers used in indirect-fired water heaters shall meet the requirements of Section 505.4.1. Double Wall heat exchangers shall separate the potable water from the heat-transfer medium by providing a space between the two walls that are vented to the atmosphere. 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.

### **Proposed Code Change – Need and Reason**

Please provide a thorough explanation of the need for this amendment and why this proposed amendment is a reasonable change. During the rulemaking process, the Agency must defend the need and reasonableness of all its proposed changes. The Agency must submit evidence that it has considered all aspects of the proposal. (You may provide the need and reason (electronically) on a separate attached sheet).

The present Minnesota Plumbing Code, part 4715.1941, subpart 1 requires that the discharge of a double wall heat exchanger be visible so that the owner or operator is aware when a leak occurs which may contaminate the potable water system, and requires that the non-potable heat transfer medium (including antifreeze solutions) discharge so that a hazard is not created. The proposed amendment exactly copies the language present in part 4715.19421, subpart 1.

### **Proposed Code Change – Cost/Benefit Analysis**

Please consider whether this proposed amendment will increase/decrease costs or indicate that it will not have any cost implications and explain how it will not. If there is an increased cost, will this cost be offset somehow by a life safety or other benefit? If so, please explain. Are there any cost increases/decreases to enforce or comply with this proposed code change? If so, please explain. (You may provide the cost/benefit analysis (electronically) on a separate, attached sheet).

This amendment does not change existing requirements.

### **Other Factors to Consider Related to Proposed Amendment**

1. Is this proposed code change meant to:

change language contained in a published code book? If so, list section(s).  
This proposal amends Section 603.54.

change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in a published code book? If so, list section(s).

delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

neither; this language will be new language, not found in the code book or in Minnesota Rule.

2. Is this proposed code change required by a Minnesota Statute or new legislation? If so, please provide the citation to the Statute or legislation.

no

3. Will this proposed code change impact other sections of a published code book or of an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.

no

4. Will this proposed code change impact other parts of the Minnesota State Building Code? If so, please list the affected parts of the Minnesota State Building Code.

no

5. Who are the parties affected or segments of industry affected by this proposed code change?  
Owners of heat exchangers and plumbers

6. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.

no

7. Are you aware of any federal requirement or regulation related to this proposed code change? If so, please list the regulation or requirement.

no

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**Proposed Code Change - Language**

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XXXX.XXXX CHAPTER 6, WATER SUPPLY AND DISTRIBUTION

**Recommendation Denied**

UPC Section 609.1 is amended to read:

**609.1 Installation.** Water piping shall be adequately supported in accordance with table 313.1. Burred ends shall be reamed to the full bore of the pipe or tube. Changes in direction shall be made by the appropriate use of fittings, except that changes in direction in copper tubing shall be permitted to be made with bending equipment that does not deform or create a loss in the cross-sectional area of the tubing. Changes in direction are allowed with flexible pipe and tubing without fittings in accordance with the code manufacturer's instructions. Provisions shall be made for expansion in hot water piping. Piping, equipment, appurtenances, and devices shall be installed in a workmanlike manner in accordance with the provisions and intent of the code. Building supply yard piping shall be not less than 12 inches (305 mm) below the average local frost depth. Except that special provisions using insulation or heat, which provide freeze protection, may be used. The cover shall be not less than 12 inches (305mm) below the finish grade.

**Proposed Code Change – Need and Reason**

Please provide a thorough explanation of the need for this amendment and why this proposed amendment is a reasonable change. During the rulemaking process, the Agency must defend the need and reasonableness of all its proposed changes. The Agency must submit evidence that it has considered all aspects of the proposal. (You may provide the need and reason (electronically) on a separate attached sheet).

Manufacturer's instruction are often incomplete, subject to change and do not go through a public review process.

Minnesota Rules, part 4715.0340 allows for freeze protection using methods other than burial below the frost depth. In areas of hard bedrock such as granite at the land surface, excavation below frost depth is extremely expensive.

**Proposed Code Change – Cost/Benefit Analysis**

Please consider whether this proposed amendment will increase/decrease costs or indicate that it will not have any cost implications and explain how it will not. If there is an increased cost, will this cost be offset somehow by a life safety or other benefit? If so, please explain. Are there any cost increases/decreases to enforce or comply with this proposed code change? If so, please explain. (You may provide the cost/benefit analysis (electronically) on a separate, attached sheet).

The proposed amendment will decrease costs substantially in some instances.

### **Other Factors to Consider Related to Proposed Amendment**

8. Is this proposed code change meant to:

change language contained in a published code book? If so, list section(s).  
This proposal amends Section 609.1.

change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in a published code book? If so, list section(s).

delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

neither; this language will be new language, not found in the code book or in Minnesota Rule.

9. Is this proposed code change required by a Minnesota Statute or new legislation? If so, please provide the citation to the Statute or legislation.

no

10. Will this proposed code change impact other sections of a published code book or of an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.

no

11. Will this proposed code change impact other parts of the Minnesota State Building Code? If so, please list the affected parts of the Minnesota State Building Code.

no

12. Who are the parties affected or segments of industry affected by this proposed code change?

The public and plumbers

13. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.

no

14. Are you aware of any federal requirement or regulation related to this proposed code change? If so, please list the regulation or requirement.

no

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**Proposed Code Change - Language**

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XXXX.XXXX CHAPTER 6, WATER SUPPLY AND DISTRIBUTION

**Recommendation Denied**

UPC Section 609.9 is amended as follows:

**609.9 Disinfection of Potable Water System.** New or repaired potable water systems shall be disinfected prior to use except that the requirements for well water-supply systems regulated under Minnesota Rules, Chapter 4725 are contained in part 4725.5550 ~~where required by the Authority Having Jurisdiction.~~ The disinfection method to be followed shall be ~~that prescribed by the Health Authority or, in case no method is prescribed by it, the following:~~

- (1) The pipe system shall be flushed with clean, potable water until potable water appears at the points of outlet.
- (2) The system or parts thereof shall be filled with a water-chlorine solution containing not less than 50 parts per million of free chlorine, and the system or part thereof shall be valved-off and allowed to stand for 24 hours; or, the system or part thereof shall be filled with a water-chlorine solution containing not less than 200 parts per million of free chlorine and allowed to stand for 3 hours.
- (3) Following the allowed standing time, the system shall be flushed with clean, potable water until the chlorine residual in the water coming from the system does not exceed the chlorine residual in the flushing water.
- (4) The procedure shall be repeated where it is shown by bacteriological examination made by an approved agency laboratory certified under parts 4740.2010 to 4740.2120 that contamination persists in the system.

### **Proposed Code Change – Need and Reason**

Please provide a thorough explanation of the need for this amendment and why this proposed amendment is a reasonable change. During the rulemaking process, the Agency must defend the need and reasonableness of all its proposed changes. The Agency must submit evidence that it has considered all aspects of the proposal. (You may provide the need and reason (electronically) on a separate attached sheet).

Minnesota Rules, Chapter 4725 regulate wells and borings. Part 4725.5500 contains the requirements for water-supply well disinfection which include the well, pumping equipment, and the pipe between the well and building which the well rules calls a “water-supply well pump discharge line” (part 4725.5250). This pipe is one type of “building supply pipe” (UPC) or “water service pipe” (Minnesota Plumbing Code). The UPC requirements are different from the requirements in existing part 4725.550. The proposed amendment eliminates the conflict between the UPC and Minnesota Rules.

Chlorine introduced into a piping system will be used up according to the “chlorine demand” of water and piping components. If the chlorine demand exceeds the amount introduced (50 or 200 parts per million), the chlorine will be used up and will not eliminate microbiological organisms. “Free” chlorine means that the system contains the required and available 50 or 200 parts per million of chlorine.

“Approved” agencies to not do water testing in Minnesota. The Minnesota Department of Health certifies private and public testing laboratories to assure competency and consistency under Minnesota Rules, Chapter 4740.

### **Proposed Code Change – Cost/Benefit Analysis**

Please consider whether this proposed amendment will increase/decrease costs or indicate that it will not have any cost implications and explain how it will not. If there is an increased cost, will this cost be offset somehow by a life safety or other benefit? If so, please explain. Are there any cost increases/decreases to enforce or comply with this proposed code change? If so, please explain. (You may provide the cost/benefit analysis (electronically) on a separate, attached sheet).

This does not change existing requirements.

### **Other Factors to Consider Related to Proposed Amendment**

15. Is this proposed code change meant to:

change language contained in a published code book? If so, list section(s).  
This proposal amends Section 609.9.

change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in a published code book? If so, list section(s).

delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

neither; this language will be new language, not found in the code book or in Minnesota Rule.

16. Is this proposed code change required by a Minnesota Statute or new legislation? If so, please provide the citation to the Statute or legislation.

no

17. Will this proposed code change impact other sections of a published code book or of an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.

no

18. Will this proposed code change impact other parts of the Minnesota State Building Code? If so, please list the affected parts of the Minnesota State Building Code.

no

19. Who are the parties affected or segments of industry affected by this proposed code change?

The public and plumbers

20. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.

no

21. Are you aware of any federal requirement or regulation related to this proposed code change?

If so, please list the regulation or requirement.

no

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### **Proposed Code Change - Language**

Please provide your proposed UPC amendment in strikeout/underline format. Provide the *specific* language you would like to see changed, with new words underlined and words to be deleted should be ~~stricken~~. Also, state whether the language contained in your proposal is from a code book or from an amendment currently found in Minnesota Rule. (You may provide the language (electronically) on a separate, attached sheet).

XXXX.XXXX CHAPTER 6, WATER SUPPLY AND DISTRIBUTION

#### **Recommendation Approved**

UPC section 609 is amended to read as follows:

**609.11 Water Meters.** Water meters shall be located inside a building and installed at least 12 inches above the finished floor and shall be readily accessible. All water meter installations shall be rigidly supported with a permanent support in order to prevent the meter from vibrating when the water is passing through it. Exceptions: Where installation inside a building is not possible, the water meter may be installed in an enclosed structure not subject to flooding, high groundwater, or surface drainage runoff, provided the meter is protected from freezing. Provisions shall be made to install the meters above grade when possible. When installed below grade, the top of the structure shall be located at least 12 inches above the finished grade, be secured, and accessible. This structure shall not be connected to any storm or sanitary sewer system.

### **Proposed Code Change – Need and Reason**

Please provide a thorough explanation of the need for this amendment and why this proposed amendment is a reasonable change. During the rulemaking process, the Agency must defend the need and reasonableness of all its proposed changes. The Agency must submit evidence that it has considered all aspects of the proposal. (You may provide the need and reason (electronically) on a separate attached sheet).

The proposed amendment to the UPC is the exact rule requirement in existing Minnesota Rules, part 4715.2280. The rule is designed to prevent flooding and corrosion of meters if located in a pit, depression, or at floor level, and allow for access to safely repair, replace, and read the meter.

**Proposed Code Change – Cost/Benefit Analysis**

Please consider whether this proposed amendment will increase/decrease costs or indicate that it will not have any cost implications and explain how it will not. If there is an increased cost, will this cost be offset somehow by a life safety or other benefit? If so, please explain. Are there any cost increases/decreases to enforce or comply with this proposed code change? If so, please explain. (You may provide the cost/benefit analysis (electronically) on a separate, attached sheet).

This is an existing requirement of Minnesota Rules, part 4715.2280.

### **Other Factors to Consider Related to Proposed Amendment**

22. Is this proposed code change meant to:

change language contained in a published code book? If so, list section(s).  
This proposal adds new section 609.11.

change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in a published code book? If so, list section(s).

delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

neither; this language will be new language, not found in the code book or in Minnesota Rule.

23. Is this proposed code change required by a Minnesota Statute or new legislation? If so, please provide the citation to the Statute or legislation.

no

24. Will this proposed code change impact other sections of a published code book or of an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.

no

25. Will this proposed code change impact other parts of the Minnesota State Building Code? If so, please list the affected parts of the Minnesota State Building Code.

no

26. Who are the parties affected or segments of industry affected by this proposed code change?

The amendment does not change existing requirements.

27. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.

no

28. Are you aware of any federal requirement or regulation related to this proposed code change? If so, please list the regulation or requirement.

No

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**Proposed Code Change - Language**

Please provide your proposed UPC amendment in strikeout/underline format. Provide the *specific* language you would like to see changed, with new words underlined and words to be deleted should be ~~stricken~~. Also, state whether the language contained in your proposal is from a code book or from an amendment currently found in Minnesota Rule. (You may provide the language (electronically) on a separate, attached sheet).

**Tabled; September**

XXXX.XXXX CHAPTER 6, WATER SUPPLY AND DISTRIBUTION

UPC Section 610.3 is amended as follows:

**610.3 Quantity of Water.** The quantity of water required to be supplied to every plumbing fixture shall be represented by fixture units, as shown in Table 610.3 except for well water systems that are incapable of supplying the calculated quantity. Equivalent fixture values shown in Table 610.3 include both hot and cold water demand.

**Proposed Code Change – Need and Reason**

Please provide a thorough explanation of the need for this amendment and why this proposed amendment is a reasonable change. During the rulemaking process, the Agency must defend the need and reasonableness of all its proposed changes. The Agency must submit evidence that it has considered all aspects of the proposal. (You may provide the need and reason (electronically) on a separate attached sheet).

Some areas of Minnesota, typically in the northeast and southwest parts of the state have inadequate groundwater resources to supply sustained water yields. Wells may only produce 1 gallon per minute or less. In these cases, larger storage or pressure tanks can provide some relief but cannot practically or financially provide a sustained yield of 10 gallons per minute or more depending on the use.

**Proposed Code Change – Cost/Benefit Analysis**

Please consider whether this proposed amendment will increase/decrease costs or indicate that it will not have any cost implications and explain how it will not. If there is an increased cost, will this cost be offset somehow by a life safety or other benefit? If so, please explain. Are there any cost increases/decreases to enforce or comply with this proposed code change? If so, please explain. (You may provide the cost/benefit analysis (electronically) on a separate, attached sheet).

The proposed amendment will reduce costs in some instances.

### **Other Factors to Consider Related to Proposed Amendment**

1. Is this proposed code change meant to:

change language contained in a published code book? If so, list section(s).  
The proposed change amends Section 610.3.

change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in a published code book? If so, list section(s).

delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

neither; this language will be new language, not found in the code book or in Minnesota Rule.

2. Is this proposed code change required by a Minnesota Statute or new legislation? If so, please provide the citation to the Statute or legislation.

no

3. Will this proposed code change impact other sections of a published code book or of an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.

no

4. Will this proposed code change impact other parts of the Minnesota State Building Code? If so, please list the affected parts of the Minnesota State Building Code.

no

5. Who are the parties affected or segments of industry affected by this proposed code change?  
Persons with low yielding water supplies

6. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.

no

7. Are you aware of any federal requirement or regulation related to this proposed code change? If so, please list the regulation or requirement.

no

- Do not strike “Drinking” in 611.0, 611.1, 611.2 & 611.3
- Add language to 611.1 dealing with manufacturing / assembler / mass-produced units; how will these performance standards be met. BRING BACK 611.1 FOR FURTHER DISCUSSION
- 611.1.2 – After the word “application”, add: “wetted materials shall meet ANSI/NSF 61.”
- Strike 611.1.2.1 and 611.1.2.2 in their entirety.
- 611.2 – Strike last sentence (proposed new language) in its entirety.

## 611.0 ~~Drinking Water Treatment Units~~ Conditioning Equipment.

611.1 **Application.** ~~Drinking Water conditioning equipment treatment units~~ shall comply with the standards in this section. NSF 42 or NSF 53. Water softeners shall comply with NSF 44. Ultraviolet water treatment systems shall comply with NSF 55. Reverse osmosis drinking water treatment systems shall comply with NSF 58. Drinking water distillation systems shall comply with NSF 62.

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

611.1.2 **Design, Construction and Assembly.** Water conditioning equipment may be manufactured as a complete system or designed, constructed and assembled for a specific application.

611.1.2.1 **Safe Materials.** Water conditioning equipment shall be made of safe materials so as not to degrade the safety of water for human consumption.

611.1.2.2 **Principal Standard.** The principal standard for materials safety is the requirement prohibiting the imparting of materials into potable water as defined in ANSI/NSF 61.

611.1.3 **Labeling.** All water conditioning equipment must be labeled by the manufacturer, licensed plumber or by the licensed water conditioning contractor who designed, constructed or assembled the equipment so as to clearly identify the type of equipment and the name and address of the manufacturer, licensed plumber or licensed contractor who designed, constructed or assembled the equipment.

611.2 **Airgap Discharge.** Any discharge from drinking water treatment units conditioning equipment shall enter the drainage system through an airgap in accordance with Table 603.3.1 or an airgap device in accordance with Table 603.2, NSF 58, or IAPMO PS 65. Salt regenerating and backwashing water treatment equipment are low hazard devices and require no more backflow protection than provided by a properly sized airgap in accordance with Table 603.3.1.

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

**611.4 Sizing of Residential Softeners.** Residential-use water softeners shall be sized in accordance with Table 611.4.

**TABLE 611.4  
SIZING OF RESIDENTIAL WATER SOFTENERS<sup>4</sup>**

<b>REQUIRED SIZE OF SOFTENER CONNECTION (inches)</b>	<b>NUMBER OF BATHROOM GROUPS SERVED<sup>1</sup></b>
3/4	Up to 2 <sup>2</sup>
1	Up to 4 <sup>3</sup>

For SI units: 1 inch = 25 mm

**Notes:**

- <sup>1</sup> Installation of a kitchen sink and dishwasher, laundry tray, and automatic clothes washer permitted without additional size increase.
- <sup>2</sup> An additional water closet and lavatory permitted.
- <sup>3</sup> Over four bathroom groups, the softener size shall be engineered for the specific installation.
- <sup>4</sup> See also Appendix A, Recommended Rules for Sizing the Water Supply System, and Appendix C, Alternate Plumbing Systems, for alternate methods of sizing water supply systems.

GP:3454142 v2

- 601.2.2 – Recommendation Denied
- 603.5.4 – Tabled; September
- 603.5.11 – Recommendation Denied – Motion to strike 603.5.11 in its entirety
- 604.2 – Recommendation Denied
- 605.6.1 – Recommendation Denied

Submitted by Arvella Greenway, member of Plumbers Local 15 Minneapolis, MN 2-27-2013

*Arvella H. Greenway* arvella.greenway@gmail.com

Comments on Possible Amendment to Rules Governing the Minnesota Plumbing Code,  
Minnesota Rules, Chapter 4715; Revisor's ID Number R-4139

Exhib

General: The adoption of the 2012 Uniform Plumbing Code by the State of Minnesota is overall a positive thing as it brings the state in line with a national code that is recognized as one of the best in the country.

- Chapter 3

301.3.1 Flood Hazard Areas Subject to High Velocity Wave Action: Does not apply in Minnesota

Table 313.1 Hangers and Supports:

Cast Iron Hubless- Support should be on both sides of the coupling within 18"

Schedule 40 PVC and ABS DWV- Support should be every 32" and continuously supported where a dishwasher or other appliance with hot water discharges into plastic waste lines above grade on a horizontal branch.

- Chapter 4

405.2 Continuous Wastes: No. 17 B&S Gauge would last longer than No. 20 and offer continuity with other sections of this Code under traps.

407.2 Special Use Sinks: Restaurant kitchen equipment shall be NSF approved of stainless steel material.

408.7 Lining for Showers and Receptors: Nonmetallic shower subpans and linings consisting of 3 layers of standard grade asphalt impregnated roofing felt should be omitted as there are better and less expensive products on the market.

415.3 Drainage Connection: Drinking Fountains shall be connected directly to the drainage system. Omit indirectly through an air break as it could pose a sanitary risk.

420.3 Waste Outlet: No. 17 B&S Gauge would last longer than No. 20 and offer continuity with other sections of this Code under traps.

- Chapter 6

601.2.2 Color and Information: Marking should not only be required "every 20' but not less than once per room, and shall be visible from the floor", but also on each side of partitioning wall penetrations.

603.5.4 Heat Exchangers: The current Minnesota Single Wall Heat Exchanger standard is very clear and very safe. With the proposed change the system will be permanently marked and only "safe" transfer mediums are supposed to be introduced into the system, but there is no fall safe.

603.5.11 Nonpotable Water Piping: All cross connections between non-potable and potable piping must be corrected.

604.2 Copper Tube: Type M copper tube should not be allowed underground.

605.6 Galvanized Steel Pipe and Joints

605.6.1 Mechanical Joints: Shall be of a cut groove type.

- Chapter 7

704.2 Single Vertical Drainage Pipe: A side by side installation would be hard to service.

705.10.2 Expansion Joints: If expansion joints are allowed all expansion joints shall be accessible.

712.1 Testing Media: we have been successfully air testing plastic piping for years and would find it hard to perform a water test in the middle of the winter on an unheated jobsite.

- Chapter 9

902.2 Bars, Soda Fountains, and Counter: We have not run into a circumstance where it is impossible to vent these fixtures with island vents, so omit not needing to be vented and being able to be drained into a floor sink indirectly.

906.1 Roof Termination and 906.7 Frost or Snow Closure: The proposed 10" would be covered by most winters. We should keep the current minimum of 12" above.

911.1 General: Since this section is titled Engineered Vent System is the registered design professional a professional engineer or a licensed plumbing contractor?

- Chapter 10

1017.0 Oil and Flammable Waste Interceptors

1017.1 Interceptors Required: Shall be installed in covered parking garages housing 4 or more vehicles. Define "Covered" as not open to the sky to directly receive rainwater.

- Chapter 11

1101.1 Where Required: Storm water shall not be directed to flow over public sidewalks.

1101.5.2 Sump: Sump covers shall be of a structural design and the discharge piping shall have an approved backwater valve and gate or full port ball valve for servicing the pump.

1101.11.2.2{B} Combined System: If a combined system is approved flow switches shall be installed on the horizontal overflow system before the combined connection and shall be monitored.

- Appendix D

Sizing Storm Water drainage Systems: We currently use a 4" per hour model to size rain leader systems; the Table D1.1 would have us use a 3" model which would decrease pipe sizes and increase flow velocities and pressures. The University of Minnesota's Climatology Center gives a rate of 5.7" per hour for a hundred year event or a 1% chance event. There are multiple lawsuits and insurance claims every year from rain leaders blowing apart from the current sizing method. Reducing the pipe sizing further would be irresponsible. At a minimum we should keep our current standard of 4" per hour or even increase it to protect property.

- Appendix I

Installation Standard for ABS Building Drain, Waste and Vent Pipe and Fittings:

2.3.2 Support: Shall be continuous if a dishwasher discharges into a horizontal line above grade.

Table 1 Thermal Expansion Table: Temperature variations in Minnesota are -20 degrees F to 100 degrees F. Runs over 35 feet will expand and contract enough to break the branch intervals off, or push them up taking the pitch out of the horizontal branch lines no matter how well they are anchored to prevent such from occurring.

Installation Standard for PVC Building Drain, Waste, and Vent Pipe and Fittings

2.5.2 Support: Shall be continuous if a dishwasher discharges into a horizontal line above grade.

Table 1 Thermal Expansion Table: Temperature variations in Minnesota are -20 degrees F to 100 degrees F. Runs over 35 feet will expand and contract enough to break the branch intervals off, or push them up taking the pitch out of the horizontal branch lines no matter how well they are anchored to prevent such from occurring.

**Tabled; September**

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St. Paul, Minnesota 55155  
www.dli.mn.gov



MINNESOTA DEPARTMENT OF  
**LABOR & INDUSTRY**

(651) 284-5005  
1-800-DIAL-DLI  
TTY: (651) 297-4198

## NATIONAL CODE COMMITTEE COMMENT FORM FOR PROPOSED AMENDMENTS TO THE UPC

(This form must be submitted electronically)

Author/requestor: John Parizek

Email address: jparizek@dunwoody.edu

Telephone number: 612-581-1314

Firm/Association affiliation, if any: Plumbing Board

### Proposed Code Change - Language

Please provide your proposed UPC amendment in strikeout/underline format. Provide the *specific* language you would like to see changed, with new words underlined and words to be deleted should be ~~stricken~~. Also, state whether the language contained in your proposal is from a code book or from an amendment currently found in Minnesota Rule. (You may provide the language (electronically) on a separate, attached sheet).

~~505.4.1 Single-Wall Heat Exchanger. Indirect-fired water heater that incorporate a single-wall heat exchanger shall meet the following requirements:~~

- ~~(1) Connected to a low-pressure hot water boiler limited to a maximum of 30 pounds-force per square inch gauge (psig) (207 kPa) by an approved safety or relief valve.~~
- ~~(2) Heater transfer medium is either potable water or contains fluids having a toxicity rating or Class of 1.~~
- ~~(3) Bear a label with the word "Caution," followed by the following statements:~~
  - ~~(a) The heat transfer medium shall be water or other nontoxic fluid having a toxic rating or Class of 1 as listed in Clinical Toxicology of Commercial Products, 5th edition.~~
  - ~~(b) The pressure of the heat transfer medium shall be limited to a maximum of 30 psig (207 kPa) by an approved safety or relief valve.~~

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

~~603.5.4 Heat Exchangers. Heat exchangers used for heat transfer, heat recovery, or solar heating shall protect the potable water system from being contaminated by the heat-transfer medium. Single-wall heat exchangers used in indirect-fired water heaters shall meet the requirements of Section 505.4.1.~~

~~603.5.4.1 Single-Wall Heat Exchanger. Indirect-fired water heater that incorporate a installation of a single-wall heat exchanger shall meet all of the following requirements:~~

- ~~(1) Connected to a low-pressure hot water boiler limited to a maximum of 30 pounds-force per square inch gauge (psig) (207 kPa) by an approved safety or relief valve.~~
- ~~(2) Heater transfer medium is either potable water or contains fluids having a toxicity rating or Class of 1.~~
- ~~(3) Bear a label with the word "Caution," followed by the following statements:~~
  - ~~(a) The heat-transfer medium shall be water or other nontoxic fluid having a toxic rating or Class of 1 as listed in Clinical Toxicology of Commercial Products, 5th edition.~~
  - ~~(b) The pressure of the heat-transfer medium shall be limited to a maximum of 30 psig (207 kPa) by an approved safety or relief valve.~~

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

- (4) A reduced-pressure principle backflow prevention assembly shall be installed on the building supply before the first branch.

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

### **Proposed Code Change – Need and Reason**

Please provide a thorough explanation of the need for this amendment and why this proposed amendment is a reasonable change. During the rulemaking process, the Agency must defend the need and reasonableness of all its proposed changes. The Agency must submit evidence that it has considered all aspects of the proposal. (You may provide the need and reason (electronically) on a separate attached sheet).

Section 603.5.4 addresses requirements for heat exchangers and refers to section 505.4.1 for single-wall heat exchangers. Section 505.4.1 has been blended into section 603.5.4 to avoid repetition and 505.4.1 deleted. A concern with single-wall heat exchangers has always been the replacement of the heat transfer medium with a higher toxicity rated substance after the initial installation. By requiring the installation of a properly maintained reduced-pressure principle backflow prevention assembly on the building water supply, upstream of the first branch, the possible contamination of the potable water supply will be eliminated. Any contamination of the potable water due to failure of a single-wall heat exchanger will be contained within the building.

### **Proposed Code Change – Cost/Benefit Analysis**

Please consider whether this proposed amendment will increase/decrease costs or indicate that it will not have any cost implications and explain how it will not. If there is an increased cost, will this cost be offset somehow by a life safety or other benefit? If so, please explain. Are there any cost increases/decreases to enforce or comply with this proposed code change? If so, please explain. (You may provide the cost/benefit analysis (electronically) on a separate, attached sheet).

There would be no additional cost since installation of a single-wall heat exchanger is an optional. This amendment to the UPC is also less restrictive than existing Minnesota Plumbing Code, part 4715.1941, subpart 3 and more cost effective. In addition, the potable water supply will have added protection.

**NATIONAL CODE COMMITTEE COMMENT FORM**  
**FOR PROPOSED AMENDMENTS TO THE UPC**  
(This form must be submitted electronically)

*Author/requestor:* DLI Cathy Tran

*Email address:* cathy.tran@state.mn.us

*Telephone number:*

*Firm/Association affiliation, if any:* DLI

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**Proposed Code Change - Language**

***Not voted on – Refer to Parizek’s proposed chapter 16 – Exhibit 9***

Please provide your proposed UPC amendment in strikeout/underline format. Provide the *specific* language you would like to see changed, with new words underlined and words to be deleted should be ~~stricken~~. Also, state whether the language contained in your proposal is from a code book or from an amendment currently found in Minnesota Rule. (You may provide the language (electronically) on a separate, attached sheet).

*Delete Chapter 16*

**Proposed Code Change – Need and Reason**

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*Further review the need of alternate water treatment in the State of MN for these systems including.*

- *Multi-agency effort to address issues for re-use. The need to coordinate with multiple agencies (MPCA, MDH, DNR) as well impact on existing sewer infrastructure and on local authorities relative to sewer management and budget issues.*
- *DLI currently does not have the resource to regulate and administer these applications. Need additional inter-agency resources to review and address these applications.*
- *Public health exposures are of concerns including water treatment standards.*

- *Who will oversee and enforce these systems once regulation is in-placed. Beyond the initial inspection, there are annual inspections that need follow-up as well as operations, maintenance, monitoring, and testing of these systems.*
- *Can industry comply with the requirements if we did adopt regulations and standards? It is not recommended that the PB adopt regulations and standards that industry can not comply with. An example is the reclaimed water system which currently does not exist except for two systems for golf irrigation (land application only and permitted by MPCA). If the reclaimed water is not used as land application, who would regulate the reclaim water from the municipal treatment brought back to the building.*
- *Chapter 16 is vague and would leave the administrative authority to set requirements leading to inconsistent administration and enforcement.*

### **Proposed Code Change – Cost/Benefit Analysis**

Please consider whether this proposed amendment will increase/decrease costs or indicate that it will not have any cost implications and explain how it will not. If there is an increased cost, will this cost be offset somehow by a life safety or other benefit? If so, please explain. Are there any cost increases/decreases to enforce or comply with this proposed code change? If so, please explain. (You may provide the cost/benefit analysis (electronically) on a separate, attached sheet).

**Other Factors to Consider Related to Proposed Amendment**

1. Is this proposed code change meant to:
  - change language contained in a published code book? If so, list section(s).
  - change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
  - delete language contained in a published code book? If so, list section(s).
  - delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
  - neither; this language will be new language, not found in the code book or in Minnesota Rule.
2. Is this proposed code change required by a Minnesota Statute or new legislation? If so, please provide the citation to the Statute or legislation.
3. Will this proposed code change impact other sections of a published code book or of an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
4. Will this proposed code change impact other parts of the Minnesota State Building Code? If so, please list the affected parts of the Minnesota State Building Code.
5. Who are the parties affected or segments of industry affected by this proposed code change?
6. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.
7. Are you aware of any federal requirement or regulation related to this proposed code change? If so, please list the regulation or requirement.

**WORKING DRAFT PLACE-HOLDER POSITION**

**Approved in principle with amendments – There needs to be additional discussion / parameters that everyone can accept before adoption.**

**CHAPTER 2  
DEFINITIONS**

**203.0 - A -**

**Authoritative Commissioner.** The departmental commissioner having the authority to recommend minimum quality standards for alternate water sources used for nonpotable applications, or which has been granted the power to promulgate rules, pursuant to Chapter 14, which include the minimum quality standards required for alternate water sources used for nonpotable applications.

**CHAPTER 16  
ALTERNATE WATER SOURCES FOR NONPOTABLE APPLICATIONS**

**1601.0 General.**

**1601.1 Applicability.** The provisions of this chapter shall apply to the construction, alteration, and repair of alternate water source systems for nonpotable applications.

**1601.1.1 Allowable Use of Alternate Water.** ~~Where approved or required by the Administrative Authority, a~~Alternate water sources shall be permitted to be used in lieu of potable water for the applications identified in this chapter.

**1601.2 System Design.** Components, piping, and fittings used in an alternate water source system shall be listed per Chapter 14 and installed per all applicable chapters of this plumbing code.

**1601.1.2 Irrigation.** Alternate water systems designed for irrigation in combination with any of the applications identified in this chapter shall meet the requirements of this Chapter.

**1601.4 Component Identification.** System components shall be properly identified as to the manufacturer.

**1601.5 Maintenance and Inspection.** Alternate water source systems and components shall be inspected and maintained in accordance with Section 1601.5.1 through Section 1601.5.3.

**1601.5.1 Frequency.** Alternate water source systems and components shall be inspected and maintained in accordance with Table 1601.5 unless more frequent inspection and maintenance is required by the manufacturer.

**1601.5.1.1 Irrigation.** All pressurized irrigation systems shall be visually inspected on an annual basis in accordance with Section 1601.11.2.1.

**1601.5.2 Maintenance Log.** A maintenance log for gray water and on-site treated nonpotable water systems is required and shall be maintained by the property owner and be available for inspection. The property owner or designated appointee shall ensure that a record of testing, inspection and maintenance in accordance with Table 1601.5 is maintained in the log. The log will indicate the frequency of inspection and maintenance for each system.

**1601.5.3 Maintenance Responsibility.** The required maintenance and inspection of alternate water source systems shall be the responsibility of the property owner, ~~unless otherwise required by the Administrative Authority.~~

**TABLE 1601.5  
MINIMUM ALTERNATE WATER SOURCE TESTING, INSPECTION, AND MAINTENANCE FREQUENCY**

DESCRIPTION	MINIMUM FREQUENCY
Inspect and clean filters and screens, and replace.	Every 3 months
Inspect and verify that disinfection, filters and water quality treatment devices and systems are operational and maintaining minimum water quality requirements as determined in 1601.7 <del>by the Administrative Authority.</del>	<del>In accordance with manufacturer's instructions, and the Administrative Authority.</del> <u>After initial installation and monthly thereafter.</u> <u>Exception: Every 12 months thereafter when electronically monitored.</u>
Inspect pumps and verify operation.	After initial installation and every 12 months thereafter
Inspect valves and verify operation.	After initial installation and every 12 months thereafter
Inspect pressure tanks and verify operation.	After initial installation and every 12 months thereafter
Clear debris from and inspect storage tanks, locking devices, and verify operation.	After initial installation and every 12 months thereafter
Inspect caution labels and marking.	After initial installation and every 12 months thereafter
Cross-connection inspection and test*	After initial installation and every 12 months thereafter

\* The annual cross-connection test shall be performed in accordance with the requirements of this chapter by ~~in the presence of an plumber licensed under Minnesota Statutes, section 326B.46 and currently certified to ASSE Standard 5120 individual approved by the Administrative Authority in accordance with the requirements of this chapter.~~

**1601.6 Operation and Maintenance Manual.** An operation and maintenance manual for gray water and on-site treated water systems shall be supplied to the building owner by the system designer. The operating and maintenance manual shall include the following:

- (1) Detailed diagram of the entire system and the location of system components.
- (2) Instructions on operating and maintaining the system.
- (3) Details on maintaining the required water quality as determined ~~in 1601.7 by the Administrative Authority.~~
- (4) Details on deactivating the system for maintenance, repair, or other purposes.
- (5) Applicable testing, inspection, and maintenance frequencies in accordance with Table 1601.5.
- (6) A method of contacting the manufacturer(s).

**1601.7 Minimum Water Quality Requirements.** The minimum water quality for alternate water source systems shall meet the applicable water quality requirements for the intended application as determined by the ~~Authoritative Commissioner~~ Administrative Authority. In the absence of water quality requirements, the EPA/625/R-04/108 contains recommended water reuse guidelines to assist the ~~Authoritative Commissioner~~ Administrative Authority develop, revise, or expand alternate water source water quality standards.

**1601.8 Material Compatibility.** Alternate water source systems shall be constructed of materials that are compatible with the type of pipe and fitting materials, water treatment, and water conditions in the system. Components, piping, and fittings used in an alternate water source system shall be listed per Chapter 14 of this plumbing code.

**1601.9 System Controls.** Controls for pumps, valves, and other devices that contain mercury that come in contact with alternate water source water supply shall not be permitted.

**1601.10 Commercial, Industrial, and Institutional Restroom Signs.** A sign shall be installed in all restrooms in commercial, industrial, and institutional occupancies using reclaimed (recycled) water and on-site treated water, for water closets, urinals, or ~~similar other uses approved by the Administrative Authority.~~ Each sign shall contain ½ inch letters of a highly visible color on a contrasting background. The location of the sign(s) shall be such that the sign(s) shall be visible to all users. The location of the sign(s) shall be approved by the Administrative Authority and shall contain the following text:

TO CONSERVE WATER, THIS BUILDING USES \* \_\_\_\_\_ \* TO FLUSH TOILETS AND URINALS.

**1601.10.1 Equipment Room Signs.** Each room containing reclaimed (recycled) water and on-site treated water equipment shall have a sign posted in a location that is visible to anyone working on or near non-potable water equipment with the following wording in 1 inch letters:

CAUTION: NON-POTABLE \* \_\_\_\_\_ \*, DO NOT DRINK. DO NOT CONNECT TO DRINKING WATER SYSTEM.  
 NOTICE: CONTACT BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK ON THIS WATER SYSTEM.  
 \* \_\_\_\_\_ \* Shall indicate RECLAIMED (RECYCLED) WATER or ON-SITE TREATED WATER, accordingly.

**1601.11 Inspection and Testing.** Alternate water source systems shall be inspected and tested in accordance with Section 1601.11.1 and Section 1601.11.2.

**1601.11.1 Supply System Inspection and Test.** Alternate water source systems shall be inspected and tested in accordance with the plumbing code for testing of potable water piping.

**1601.11.2 Annual Cross-Connection Inspection and Testing.** An ~~initial and subsequent annual~~ inspection and test shall be performed on both the potable and alternate water source systems. The potable and alternate water source system shall be isolated from each other and independently inspected and tested to ensure there is no cross-connection in accordance with Section 1601.11.2.1 through Section 1601.11.2.4.

**1601.11.2.1 Visual System Inspection.** Prior to commencing the cross-connection testing, a dual system inspection shall be conducted by an individual certified to ASSE Standard 5120 ~~approved by the Administrative Authority~~ as follows:

- (1) Meter locations of the alternate water source and potable water lines shall be checked to verify that no modifications were made, and that no cross-connections are visible.
- (2) Pumps and equipment, equipment room signs, and exposed piping in equipment room shall be checked.
- (3) Valves shall be checked to ensure that valve lock seals are still in place and intact. Valve control door signs shall be checked to verify that no signs have been removed.

**1601.11.2.2 Cross-Connection Test.** The procedure for determining cross-connection shall be followed by the ~~applicant in the presence of an individual approved by the Administrative Authority~~ plumbing contractor to determine whether a cross connection has occurred as follows:

- (1) The potable water system shall be activated and pressurized. The alternate water source system shall be shut down, depressurized, and drained.
- (2) The potable water system shall remain pressurized ~~for a minimum period of time specified by the Administrative Authority~~ while the alternate water source system is empty. The minimum period the alternate water source system is to remain depressurized shall be determined on a case-by-case basis, taking into account the size and complexity of the potable and the alternate water source distribution systems, but in no case shall that period be less than 1 hour.

(3) The drain on the alternate water source system shall be checked for flow during the test and all fixtures, potable and alternate water source, shall be tested and inspected for flow. Flow from any alternate water source system outlet indicates a cross-connection. No flow from a potable water outlet shall indicate that it is connected to the alternate water source system.

(4) The potable water system shall then be depressurized and drained.

(5) The alternate water source system shall then be activated and pressurized.

(6) The alternate water source system shall remain pressurized ~~for a minimum period of time specified by the Administrative Authority~~ while the potable water system is empty. The minimum period the potable water system is to remain depressurized shall be determined on a case-by-case basis, but in no case shall that period be less than 1 hour.

(7) All fixtures, potable and alternate water source, shall be tested and inspected for flow. Flow from any potable water system outlet indicates a cross-connection. No flow from an alternate water source outlet will indicate that it is connected to the potable water system.

(8) The drain on the potable water system shall be checked for flow during the test and at the end of the test.

(9) If there is no flow detected in any of the fixtures which would indicate a cross-connection, the potable water system shall be re-pressurized.

**1601.11.2.3 Discovery of Cross-Connection.** In the event that a cross-connection is discovered, the following procedure, ~~in the presence of individuals approved by the Administrative Authority~~, shall be activated immediately:

(1) The alternate water source piping to the building shall be shut down at the meter, and the alternate water source riser shall be drained.

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

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

(4) The building shall be retested following procedures listed in Section 1601.11.2.1 and Section 1601.11.2.2.

(5) The potable water system shall be chlorinated with 50 parts-per-million (ppm) chlorine for 24 hours.

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

**1601.11.2.4 Annual Inspection.** An annual inspection of the alternate water source system, following the procedures listed in Section 1601.11.2.1 shall be required. Annual cross-connection testing of the alternate water source system, following the procedures listed in Section 1601.11.2.2 shall be required unless otherwise specified by the Administrative Authority. In no event shall the cross-connection test occur less than once in ~~45~~ years. Written records must be maintained and submitted to the Administrative Authority. Alternate testing requirements shall be permitted by the Administrative Authority.

**1601.12 Separation Requirements.** All underground alternate water source service piping other than gray water shall be separated from the building sewer in accordance with the plumbing code. Treated non-potable water pipes shall be permitted to be run or laid in the same trench as potable water pipes with a 12 inch minimum vertical and horizontal separation when both pipe materials are approved for use within a building. Where horizontal piping materials do not meet this requirement the minimum separation shall be increased to 60 inches. The potable water piping shall be installed at an elevation above the treated non-potable water piping.

**1601.13 Abandonment.** All alternate water source systems that are no longer in use or fails to be maintained in accordance with Section 1601.5 shall be abandoned. Abandonment shall comply with Section 1601.13.1 and Section 1601.13.2.

**1601.13.1 General.** Every abandoned system or part thereof covered under the scope of this chapter shall be disconnected from any remaining systems, drained, plugged, and capped per the requirements of this plumbing code.

**1601.13.2 Underground Tank.** Every underground water storage tank that has been abandoned or otherwise discontinued from use in a system covered under the scope of this chapter shall be completely drained and filled with earth, sand, gravel, concrete, or other approved material or removed in a manner approved by the Administrative Authority.

**1601.14 Sizing.** Unless otherwise provided for in this supplement, alternate water source piping shall be sized in accordance with Chapter 6 for sizing potable water piping.

## 1602.0 Gray Water Systems.

**1602.1 General.** The provisions of this section shall apply to the construction, alteration, and repair of gray water systems.

### 1602.2 System Requirements.

**1602.2.1 Discharge.** Gray water shall be permitted to be diverted away from a sewer ~~or private sewage disposal system~~, and discharge to a subsurface irrigation or subsoil irrigation system when allowed by the Minnesota Pollution Control Agency. ~~The gray water shall be permitted to discharge to a mulch basin for single family and multi-family dwellings.~~ Gray water shall not be used to irrigate root crops or food crops intended for human consumption that come in contact with soil.

**1602.2.2 Surge Capacity.** ~~A surge tank is required for systems that are unable to accommodate peak flow rates and distribute the total amount of gray water by gravity drainage. The water discharge for gray water systems shall be determined in accordance with Section 1602.8.1 or Section 1602.8.2.~~

**1602.2.3 Diversion.** The gray water system shall connect to the sanitary drainage system downstream of fixture traps and vent connections through an approved and listed gray water diverter valve per Chapter 14. The gray water diverter shall be installed in an accessible location and clearly indicate the direction of flow.

**1602.2.4 Backwater Valves.** Gray water drains subject to backflow shall be provided with a backwater valve so located as to be accessible for inspection and maintenance.

**1602.3 Connections to Potable and Reclaimed (Recycled) Water Systems.** Gray water systems shall have no direct connection to a potable water supply, on-site treated nonpotable water supply, or reclaimed (recycled) water systems. Potable, on-site treated nonpotable, or reclaimed (recycled) water is permitted to be used as makeup water for a non-pressurized storage tank provided the connection is protected by an air gap in accordance with this code.

~~**1602.4 Location.** No gray water system or part thereof shall be located on a lot other than the lot that is the site of the building or structure that discharges the gray water, nor shall a gray water system or part thereof be located at a point having less than the minimum distances indicated in Table 1602.4.~~

**TABLE 1602.4  
LOCATION OF GRAY WATER SYSTEMS**

<b>MINIMUM HORIZONTAL DISTANCE IN CLEAR REQUIRED FROM</b>	<b>SURGE TANK (feet)</b>	
<del>Building structures<sup>1</sup></del>	<del>5<sup>2, 9</sup></del>	
<del>Property line adjoining private property</del>	<del>5</del>	
<del>Water supply wells<sup>4</sup></del>	<del>50</del>	
<del>On-site domestic water service line</del>	<del>5</del>	
<del>Pressurized public water main</del>	<del>10</del>	

~~1 Including porches and steps, whether covered or uncovered, breezeways, roofed carports, roofed patios, carports, covered walks, covered driveways, and similar structures or appurtenances.~~

~~2 The distance shall be permitted to be reduced to 0 feet for aboveground tanks where first approved by the Administrative Authority.~~

~~4 Where special hazards are involved, the distance required shall be increased as directed by the Administrative Authority.~~

~~9 The distance shall be permitted to be reduced to 0 feet for surge tanks of 75 gallons or less.~~

~~**1602.8 Procedure for Estimating Gray Water Discharge.** Gray water systems shall be designed to distribute the total amount of estimated gray water on a daily basis. The water discharge for gray water systems shall be determined in accordance with Section 1602.8.1 or Section 1602.8.2.~~

~~**1602.8.1 Single Family Dwellings and Multi-Family Dwellings.** The gray water discharge for single family and multi-family dwellings shall be calculated by water use records, calculations of local daily per person interior water use, or the following procedure:~~

~~(1) The number of occupants of each dwelling unit shall be calculated as follows:~~

~~First Bedroom \_\_\_\_\_ 2 occupants~~

~~Each additional bedroom \_\_\_\_\_ 1 occupant~~

~~(2) The estimated gray water flows of each occupant shall be calculated as follows:~~

~~Showers, bathtubs, and lavatories \_\_\_\_\_ 25 gallons per day/occupant~~

~~Laundry \_\_\_\_\_ 15 gallons per day/occupant~~

~~(3) The total number of occupants shall be multiplied by the applicable estimated gray water discharge as provided above and the type of fixtures connected to the gray water system.~~

~~**1602.8.2 Commercial, Industrial, and Institutional Occupancies.** The gray water discharge for commercial, industrial, and institutional occupancies shall be calculated by utilizing the procedure in Section 1602.8.1, water use records, or other documentation to estimate gray water discharge.~~

~~**1602.9 Gray Water System Components.** Gray water system components shall comply with Section 1602.9.1 through Section 1602.9.7.~~

~~**1602.9.1 Surge Tanks.** Where installed, surge tanks shall be in accordance with the following:~~

~~(1) Surge tanks shall be constructed of solid, durable materials not subject to excessive corrosion or decay and shall be watertight. Surge tanks constructed of steel shall be approved by the Administrative Authority, provided such tanks are in accordance with approved applicable standards.~~

~~(2) Each surge tank shall be vented in accordance with this code. The vent size shall be determined based on the total gray water fixture units as outlined in this code.~~

~~(3) Each surge tank shall have an access opening with lockable gasketed covers or approved equivalent to allow for inspection and cleaning.~~

~~(4) Each surge tank shall have its rated capacity permanently marked on the unit. In addition, a sign stating GRAY WATER, DANGER — UNSAFE WATER shall be permanently marked on the holding tank.~~

~~(5) Each surge tank shall have an overflow drain. The overflow drains shall have permanent connections to the building drain or building sewer, upstream of septic tanks. The overflow drain shall not be equipped with a shutoff valve.~~

- ~~(6) The overflow drain pipes shall not be less in size than the inlet pipe. Unions or equally effective fittings shall be provided for piping connected to the surge tank.~~
- ~~(7) Surge tank shall be structurally designed to withstand anticipated earth or other loads. Surge tank covers shall be capable of supporting an earth load of not less than 300 pounds per square foot (lb/ft<sup>2</sup>) where the tank is designed for underground installation.~~
- ~~(8) Where a surge tank is installed underground, the system shall be designed so that the tank overflow will gravity drain to the existing sewer line or septic tank. The tank shall be protected against sewer line backflow by a backwater valve installed in accordance with this code.~~
- ~~(9) Surge tanks shall be installed on dry, level, well-compacted soil where underground or on a level 3 inch thick concrete slab where aboveground.~~
- ~~(10) Surge tanks shall be anchored to prevent against overturning where installed aboveground. Underground tanks shall be ballasted, anchored, or otherwise secured, to prevent the tank from floating out of the ground where empty. The combined weight of the tank and hold down system shall meet or exceed the buoyancy forces of the tank.~~

**1602.9.2 Gray Water Pipe and Fitting Materials.** Aboveground and underground building drainage and vent pipe and fittings for gray water systems shall comply with the requirements for aboveground and underground sanitary building drainage and vent pipe and fittings in this code. These materials shall extend not less than 5 feet outside the building.

**1602.9.5 Valves.** Valves shall be accessible.

**1602.9.6 Trap.** Gray water piping discharging into the surge tank or having a direct connection to the sanitary drain or sewer piping shall be downstream of an approved water seal type trap(s). Where no such trap(s) exists, an approved vented running trap shall be installed upstream of the connection to protect the building from possible waste or sewer gases.

**1602.9.7 Backwater Valve.** A backwater valve shall be installed on gray water drain connections to the sanitary drain or sewer.

**1602.12 Gray Water System Color and Marking Information.** Pressurized gray water distribution systems shall be identified as containing nonpotable water in accordance with Section 601.2 of this code.

~~**1602.13.1 Higher Requirements.** Nothing contained in this chapter shall be construed to prevent the Administrative Authority from requiring compliance with higher requirements than those contained herein, where such higher requirements are essential to maintain a safe and sanitary condition.~~

~~**1602.14 Testing.** Building drains and vents for gray water systems shall be tested in accordance with this code. Surge tanks shall be filled with water to the overflow line prior to and during inspection. Seams and joints shall be left exposed, and the tank shall remain watertight. A flow test shall be performed through the system to the point of gray water discharge.~~

~~**1602.15 Maintenance.** Gray water systems and components shall be maintained in accordance with Table 1601.5.~~

## **1603.0 Reclaimed (Recycled) Water Systems.**

**1603.1 General.** The provisions of this section shall apply to the installation, construction, alteration, and repair of reclaimed (recycled) water systems intended to supply uses such as water closets, urinals, trap primers for floor drains and floor sinks, aboveground and subsurface irrigation, industrial or commercial cooling or air conditioning, and ~~other~~ similar uses approved by the Administrative Authority.

~~**1603.2.1 Plumbing Plan Submission.** No permit for a reclaimed (recycled) water system shall be issued until complete plumbing plans, with data satisfactory to the Administrative Authority, have been submitted in duplicate and approved by the commissioner.~~

~~**1603.3 System Changes.** No changes or connections shall be made to either the reclaimed (recycled) water system or the potable water system within a site containing a reclaimed (recycled) water system without approval by the commissioner Administrative Authority.~~

**1603.4 Connections to Potable or Reclaimed (Recycled) Water Systems.** Reclaimed (recycled) water systems shall have no connection to a potable water supply or alternate water source system. Potable water is permitted to be used as makeup water for a reclaimed (recycled) water storage tank provided the water supply inlet is protected by an air gap or reduced-pressure principle backflow preventer in accordance with this code.

**1603.5 Initial Cross-Connection Test.** A cross-connection test is required in accordance with Section 1601.11.2. Before the building is occupied or the system is activated, the installer plumbing contractor shall perform the initial cross-connection test in the presence of an individual approved by the proper Administrative Authority. The test shall be ruled successful by the Administrative Authority before final approval is granted.

**1603.6 Reclaimed (Recycled) Water System Materials.** Reclaimed (recycled) water supply and distribution system materials shall comply with the requirements of this code for potable water supply and distribution systems, unless otherwise provided for in this section.

**1603.7 Reclaimed (Recycled) Water System Color and Marking Information.** Reclaimed (recycled) water systems shall have a colored background and marking information in accordance with Section 601.2 of this code.

**1603.8 Valves.** Valves, except fixture supply control valves, shall be equipped with a locking feature.

**1603.9 Installation.**

**1603.9.1 Hose Bibbs.** Hose bibbs shall not be allowed on reclaimed (recycled) water piping systems located in areas accessible to the public. Access to reclaimed (recycled) water at points in the system accessible to the public shall be through a quick-disconnect device that differs from those installed on the potable water system. Hose bibbs supplying reclaimed (recycled) water shall be marked with the words: "CAUTION: NONPOTABLE RECLAIMED WATER, DO NOT DRINK," and the symbol in Figure 1603.9.



**FIGURE 1603.9**

**1603.9.2 Required Appurtenances.** The reclaimed (recycled) water system and the potable water system within the building shall be provided with the required valves, air and vacuum relief valves, or other appurtenances to allow for deactivation or drainage as required for a cross-connection test in accordance with Section 1601.11.2.

**1603.9.3 Same Trench as Potable Water Pipes.** Reclaimed (recycled) water pipes shall be permitted to be run or laid in the same trench as potable water pipes with a 12 inches minimum vertical and horizontal separation where both pipe materials are approved for use within a building. Where piping materials do not meet this requirement the minimum horizontal separation shall be increased to 60 inches. The potable water piping shall be installed at an elevation above the reclaimed (recycled) water piping. Reclaimed (recycled) water pipes laid in the same trench or crossing building sewer or drainage piping shall be installed in accordance with this code for potable water piping.

**1603.10 Signs.** Rooms and water closet tanks in buildings using reclaimed (recycled) water shall be in accordance with Section 1601.10.

**1603.11 Inspection and Testing.** Reclaimed (recycled) water systems shall be inspected and tested in accordance with Section 1601.11.

**1604.0 On-Site Treated Nonpotable Water Systems.**

**1604.1 General.** The provisions of this section shall apply to the installation, construction, alteration, and repair of on-site treated nonpotable water systems intended to supply uses such as water closets, urinals, trap primers for floor drains and floor sinks, and ~~similar other~~ uses approved by the Administrative Authority.

**1604.2 Plumbing Plan Submission.** No permit for an on-site treated nonpotable water system shall be issued until complete plumbing plans, ~~with data satisfactory to the Administrative Authority,~~ have been submitted in duplicate and approved by the commissioner.

**1604.3 System Changes.** No changes or connections shall be made to either the on-site treated nonpotable water system or the potable water system within a site containing an on-site treated nonpotable water system without approval by the ~~commissioner~~ Administrative Authority.

**1604.4 Connections to Potable or Reclaimed (Recycled) Water Systems.** On-site treated nonpotable water systems shall have no connection to a potable water supply or reclaimed (recycled) water source system.

**1604.5 Initial Cross-Connection Test.** A cross-connection test is required in accordance with Section 1604.12.2. Before the building is occupied or the system is activated, the ~~installer~~ plumbing contractor shall perform the initial cross-connection test in the presence of ~~an individual approved by the~~ proper Administrative Authority. The test shall be ruled successful ~~by the Administrative Authority~~ before final approval is granted.

**1604.6 On-Site Treated Nonpotable Water System Materials.** On-site treated nonpotable water supply and distribution system materials shall comply with the requirements of this code for potable water supply and distribution systems, unless otherwise provided for in this section.

**1604.7 On-Site Treated Nonpotable Water Devices and Systems.** Devices or equipment used to treat on-site treated nonpotable water in order to maintain the minimum water quality requirements determined in 1601.7 ~~by the Administrative Authority~~ shall be listed, and labeled by a third-party certifying listing agency and approved for the intended application. Devices or equipment used to treat on-site treated non-potable water for use in water closet, urinal flushing, and similar applications shall be listed and labeled to IAPMO IGC207-2009a, NSF 350-2011 ~~or approved by the Administrative Authority.~~

**1604.8 On-Site Treated Nonpotable Water System Color and Marking Information.** On-site treated water systems shall have a colored background and marking information in accordance with Section 601.2 of this code.

**1604.9 Valves.** Valves, except fixture supply control valves, shall be equipped with a locking feature.

**1604.10 Design and Installation.** The design and installation of on-site treated nonpotable systems shall be in accordance with Section 1604.10.1 through Section 1604.10.5.

**1604.10.1 Listing Terms and Installation Instructions.** On-site treated nonpotable water systems shall be installed in accordance with the terms of its listing and the manufacturer's installation instructions.

**1604.10.2 Minimum Water Quality.** On-site treated nonpotable water supplied to toilets, urinals, or for similar other uses in which it is sprayed or exposed shall be disinfected. Acceptable disinfection methods shall include chlorination, ultraviolet sterilization, ozone, or other methods as approved by the Administrative Authority. The minimum water quality for on-site treated nonpotable water systems shall meet the applicable water quality requirements for the intended applications as determined in 1601.7 ~~by the Administrative Authority.~~

**1604.10.3 Deactivation and Drainage.** The on-site treated nonpotable water system and the potable water system within the building shall be provided with the required valves, air and vacuum relief valves, or other appurtenances to allow for deactivation or drainage as required for a cross-connection test in accordance with Section 1601.11.2.2.

**1604.10.4 Near Underground Potable Water Pipe.** On-site treated nonpotable water pipes shall be permitted to be run or laid in the same trench as potable water pipes with a 12 inch minimum vertical and horizontal separation where both pipe materials are approved for use within a building. Where piping materials do not meet this requirement the minimum separation shall be increased to 60 inches. The potable water piping shall be installed at an elevation above the on-site treated nonpotable water piping.

**1604.10.5 Required Filters.** A filter permitting the passage of particulates no larger than 100 microns shall be provided for on-site treated nonpotable water supplied to water closets, urinals, trap primers, or similar other uses ~~approved by the Administrative Authority.~~

**1604.11 Signs.** Signs in buildings using on-site treated nonpotable water shall comply with Section 1601.10.

**1604.12 Inspection and Testing.** On-site treated nonpotable water systems shall be inspected and tested in accordance with Section 1601.11.

**NATIONAL CODE COMMITTEE COMMENT FORM**  
**FOR PROPOSED AMENDMENTS TO THE UPC**  
(This form must be submitted electronically)

*Author/requestor:* DLI Cathy Tran

*Email address:* cathy.tran@state.mn.us

*Telephone number:*

*Firm/Association affiliation, if any:* DLI

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**Proposed Code Change - Language**

**Tabled; Future Discussion**

Please provide your proposed UPC amendment in strikeout/underline format. Provide the *specific* language you would like to see changed, with new words underlined and words to be deleted should be ~~stricken~~. Also, state whether the language contained in your proposal is from a code book or from an amendment currently found in Minnesota Rule. (You may provide the language (electronically) on a separate, attached sheet).

*We support adopting Chapter 17 for applications specifically for automatic vehicle washing facilities, toilet/urinal flushing, floor drain trap primers, and subsurface lawn irrigation. Rainwater harvesting may not be used in toilet/urinal flushing or as trap primers in any health care facilities.*

*Except for subsurface lawn irrigation, recommend 1702.9.4 Min. water quality/treatment standards be adopted for 100 fecal coliform cfu per 100 mL or less*

**Proposed Code Change – Need and Reason**

Please provide a thorough explanation of the need for this amendment and why this proposed amendment is a reasonable change. During the rulemaking process, the Agency must defend the need and reasonableness of all its proposed changes. The Agency must submit evidence that it has considered all aspects of the proposal. (You may provide the need and reason (electronically) on a separate attached sheet).

*The proposed applications consist of minimal risks for the use of rainwater. DLI currently reviews rainwater harvesting as an alternate and would benefit with clear guidance as to when rainwater harvesting is permitted and when not.*

**Proposed Code Change – Cost/Benefit Analysis**

Please consider whether this proposed amendment will increase/decrease costs or indicate that it will not have any cost implications and explain how it will not. If there is an increased cost, will this cost be offset somehow by a life safety or other benefit? If so, please explain. Are there any cost increases/decreases to enforce or comply with this proposed code change? If so, please explain. (You may provide the cost/benefit analysis (electronically) on a separate, attached sheet).

**Other Factors to Consider Related to Proposed Amendment**

8. Is this proposed code change meant to:

change language contained in a published code book? If so, list section(s).

change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in a published code book? If so, list section(s).

delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

neither; this language will be new language, not found in the code book or in Minnesota Rule.

9. Is this proposed code change required by a Minnesota Statute or new legislation? If so, please provide the citation to the Statute or legislation.

10. Will this proposed code change impact other sections of a published code book or of an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.

11. Will this proposed code change impact other parts of the Minnesota State Building Code? If so, please list the affected parts of the Minnesota State Building Code.

12. Who are the parties affected or segments of industry affected by this proposed code change?

13. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.

14. Are you aware of any federal requirement or regulation related to this proposed code change? If so, please list the regulation or requirement.

**WORKING DRAFT PLACE-HOLDER POSITION**

- **Approved in principle with amendments**
- **1701.1.1 – Strike the word “Alternate” and insert in its place “Rain”**

## CHAPTER 2

### DEFINITIONS

#### 203.0 - A -

**Authoritative Commissioner.** The departmental commissioner having the authority to recommend minimum quality standards for alternate water sources used for nonpotable applications, or which has been granted the power to promulgate rules, pursuant to Chapter 14, which include the minimum quality standards required for alternate water sources used for nonpotable applications.

## CHAPTER 17

### NONPOTABLE RAINWATER CATCHMENT SYSTEMS

#### 1701.0 General.

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

**1701.1.1 Allowable Use of Alternate Water.** ~~Where approved or required by the Administrative Authority, r~~Rainwater shall be permitted to be used in lieu of potable water for the applications identified in this chapter.

**1701.4 Component Identification.** System components shall be properly identified as to the manufacturer.

**1701.5 Maintenance and Inspection.** Rainwater systems and components shall be inspected and maintained in accordance with Section 1701.5.1 through Section 1701.5.3.

**1701.5.1 Frequency.** Rainwater systems and components shall be inspected and maintained in accordance with Table 1701.5 unless more frequent inspection and maintenance is required by the manufacturer.

**1701.5.2 Maintenance Log.** A maintenance log for rainwater systems is required. The property owner or designated appointee shall ensure that a record of testing, inspection, and maintenance in accordance with Table 1701.5 is maintained in the log. The log will indicate the frequency of inspection and maintenance for each system.

**1701.5.3 Maintenance Responsibility.** The required maintenance and inspection of rainwater systems shall be the responsibility of the property owner, ~~unless otherwise required by the Administrative Authority.~~

**TABLE 1701.5**  
**MINIMUM ALTERNATE WATER SOURCE TESTING, INSPECTION, AND MAINTENANCE FREQUENCY**

DESCRIPTION	MINIMUM FREQUENCY
Inspect and clean filters and screens, and replace.	Every 3 months
Inspect and verify that <u>required</u> disinfection, filters and water quality treatment devices and systems are operational and maintaining minimum water quality requirements in <u>1701.7 as determined by the Administrative Authority.</u>	<del>In accordance with manufacturer's instructions and the Administrative Authority.</del> After initial installation and monthly thereafter. Exception: <u>Every 12 months thereafter when electronically monitored.</u>
Inspect and clear debris from rainwater gutters, downspouts, and roof washers.	<u>At the beginning of seasonal usage and e</u> Every <del>6-3</del> months
Inspect and clear debris from roof or other aboveground rainwater collection surfaces.	<u>At the beginning of seasonal usage and e</u> Every <del>6-3</del> months
Remove tree branches and vegetation overhanging roof or other aboveground rainwater collection surfaces.	As needed
Inspect pumps and verify operation.	After initial installation and every 12 months thereafter
Inspect valves and verify operation.	After initial installation and every 12 months thereafter
Inspect pressure tanks and verify operation.	After initial installation and every 12 months thereafter
Clear debris from and inspect storage tanks, locking devices, and verify operation.	After initial installation and every 12 months thereafter
Inspect caution labels and marking.	After initial installation and every 12 months thereafter
Cross-connection inspection and test*	After initial installation and <u>at the beginning of seasonal usage</u> <del>every 12 months thereafter</del>

\* The annual cross-connection test shall be performed in accordance with the requirements of this chapter ~~by in the presence of a plumber licensed under Minnesota Statutes, section 326B.46 and currently certified to ASSE Standard 6120 individual approved by the Administrative Authority in accordance with the requirements of this chapter.~~

**1701.6 Operation and Maintenance Manual.** An operation and maintenance manual for rainwater systems shall be supplied to the building owner by the system designer. The operating and maintenance manual shall include the following:

- (1) Detailed diagram of the entire system and the location of system components.
- (2) Instructions on operating and maintaining the system.
- (3) Details on maintaining the required water quality as determined in 1701.7 ~~by the Administrative Authority.~~
- (4) Details on deactivating the system for maintenance, repair, or other purposes.
- (5) Applicable testing, inspection, and maintenance frequencies in accordance with Table 1701.5.
- (6) A method of contacting the manufacturer(s).

**1701.7 Minimum Water Quality Requirements.** The minimum water quality for rainwater systems shall meet the applicable water quality requirements for the intended application as determined by the Authoritative Commissioner ~~Administrative Authority~~. ~~Water quality for non-potable rainwater catchment systems shall comply with Section 1702.9.4.~~ In the absence of water quality requirements, the EPA/625/R-04/108 contains recommended water reuse guidelines to assist the Authoritative Commissioner ~~Administrative Authority~~ develop, revise, recommend, or expand rainwater quality standards.

**1701.8 Material Compatibility.** Rainwater systems shall be constructed of materials that are compatible with the type of pipe and fitting materials, water treatment, and water conditions in the system. Components, piping, and fittings used in rainwater systems shall be listed per Chapter 14 and installed in accordance with the requirements of this plumbing code.

**+1701.9 System Controls.** Controls for pumps, valves, and other devices that contain mercury that come in contact with rainwater supply shall not be permitted.

**1701.10 Separation Requirements.** All underground rainwater service piping shall be separated from the building sewer in accordance with Section 609.2. Treated non-potable water pipes shall be permitted to be run or laid in the same trench as potable water pipes with a 12 inch minimum vertical and horizontal separation when both pipe materials are approved for use within a building. Where horizontal piping materials do not meet this requirement the minimum separation shall be increased to 60 inches. The potable water piping shall be installed at an elevation above the treated non-potable water piping.

**1701.11 Abandonment.** All rainwater systems that are no longer in use or fails to be maintained in accordance with Section 1701.5 shall be abandoned. Abandonment shall comply with Section 1701.11.1 and Section 1701.11.2.

**1701.11.1 General.** Every abandoned system or part thereof covered under the scope of this chapter shall be disconnected from any remaining systems, drained, plugged, and capped per the requirements of this plumbing code.

**1701.11.2 Underground Tank.** Every underground water storage tank that has been abandoned or otherwise discontinued from use in a system covered under the scope of this chapter shall be completely drained and filled with earth, sand, gravel, concrete, ~~or other approved material~~ or removed in a manner satisfactory to the Administrative Authority.

**1701.12 Sizing.** Unless otherwise provided for in this ~~supplement~~ Chapter, rainwater piping shall be sized in accordance with Chapter 6 for sizing potable water piping.

## **1702.0 Nonpotable Rainwater Catchment Systems.**

**1702.1 General.** The installation, construction, alteration, and repair of rainwater catchments systems intended to supply uses such as water closets, urinals, trap primers for floor drains, industrial processes, water features, cooling tower makeup, and similar ~~other~~ uses shall be approved by the Administrative Authority.

**1702.1.1 Irrigation.** Catchment systems used for irrigation in combination with any uses listed in 1702.1 shall meet the requirements of this Chapter.

**1702.2 Plumbing Plan Submission.** No permit for a rainwater catchment system shall be issued until complete plumbing plans, ~~with data satisfactory to the Administrative Authority,~~ have been submitted in duplicate and approved by the commissioner. ~~No changes or connections shall be made to either the rainwater catchment or the potable water system within a site containing a rainwater catchment water system without approval by the Administrative Authority.~~

**1702.3 System Changes.** No changes or connections shall be made to either the rainwater catchment system or the potable water system within a site containing a rainwater catchment system requiring a permit without approval by the ~~commissioner~~ Administrative Authority.

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

**1702.5 Initial Cross-Connection Test.** Where a portion of a rainwater catchment system is installed within a building, a cross-connection test is required in accordance with Section 1702.11.2. Before the building is occupied or the system is activated, the ~~installer~~ plumbing contractor shall perform the initial cross-connection test in the presence of ~~an individual~~

approved by the proper Administrative Authority. The test shall be ruled successful by the Administrative Authority before final approval is granted.

**1702.6 Sizing.** The design and size of rainwater drains, conductors, and leaders shall comply with Chapter 11 of this code.

**1702.7 Rainwater Catchment System Materials.** Rainwater catchment system materials shall comply with Section 1702.7.1 through Section 1702.7.43.

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

**1702.7.2 Rainwater Catchment System Drainage Materials.** Materials used in rainwater catchment drainage systems shall be in accordance with Chapter 11 and the requirements for storm drainage in this code.

**1702.7.3 Storage Tanks.** Rainwater storage tanks shall comply with Section 1702.9.5.

**1702.8 Rainwater Catchment System Color and Marking Information.** Rainwater catchment systems shall have a colored background in accordance with Section 601.2. Rainwater catchment systems shall be marked, in lettering in accordance with Section 601.2, with the words: "CAUTION: NONPOTABLE RAINWATER WATER, DO NOT DRINK."

**1702.9 Design and Installation.**

**1702.9.1 Outside Hose Bibbs.** Outside hose bibbs shall be allowed on rainwater piping systems. Hose bibbs supplying rainwater shall be marked with the words: "CAUTION: NONPOTABLE WATER, DO NOT DRINK" and Figure 1702.9.



FIGURE 1702.9

**1702.9.2 Deactivation and Drainage for Cross-Connection Test.** The rainwater catchment system and the potable water system within the building shall be provided with the required valves, air and vacuum relief valves, or other appurtenances to allow for deactivation or drainage as required for a cross-connection test in accordance with Section 1702.11.2.

**1702.9.3 Collection Surfaces.**

**1702.9.3.1 Rainwater Catchment System Surfaces.** Rainwater shall be collected from roof surfaces or other manmade, aboveground collection surfaces.

**1702.9.3.2 Other Surfaces.** Natural precipitation collected from surface water runoff, vehicular parking surfaces or manmade surfaces at or below grade shall comply with the storm water requirements for on-site treated non-potable water systems in Section 1604.0.

**1702.9.3.3 Prohibited Discharges.** Discharge from roof-mounted equipment and appliances shall not discharge onto roof surfaces that are intended to collect rainwater.

**1702.9.4 Minimum Water Quality.** The minimum water quality for harvested rainwater shall meet the applicable water quality requirements for the intended applications as determined in 1701.7 by the Administrative Authority. In the absence of water quality requirements determined by the Administrative Authority, the minimum treatment and water quality shall also comply with Table 1702.9.4.

**1702.9.5 Rainwater Storage Tanks.** Rainwater storage tanks shall be constructed and installed in accordance with Section 1702.9.5.1 through Section 1702.9.5.7.

**1702.9.5.1 Construction.** Rainwater storage tanks shall be constructed of solid, durable materials not subject to excessive corrosion or decay and shall be watertight. Storage tanks shall be approved by the Administrative Authority, provided such tanks are in accordance with approved applicable standards.

**1702.9.5.2 Location.** Rainwater storage tanks shall be permitted to be installed above or below grade.

**1702.9.5.3 Above Grade.** Above grade storage tanks shall be of an opaque material, approved for aboveground use in direct sunlight or shall be shielded from direct sunlight. Tanks shall be installed in an accessible location to allow for inspection and cleaning. The tank shall be installed on a foundation or platform that is constructed to accommodate loads in accordance with the building code.

**1702.9.5.4 Below Grade.** Rainwater storage tanks installed below grade shall be structurally designed to withstand anticipated earth or other loads. Holding tank covers shall be capable of supporting an earth load of not less than 300 pounds per square foot ( $\text{lb/ft}^2$ ) where the tank is designed for underground installation. Below grade rainwater tanks installed underground shall be provided with manholes. The manhole opening shall be a minimum diameter of 20 inches above and located not less than 4 inches above the surrounding grade. The surrounding grade shall be sloped away from the manhole. Underground tanks shall be ballasted, anchored, or otherwise secured, to prevent the tank from floating out of the ground when empty. The combined weight of the tank and hold down system shall meet or exceed the buoyancy force of the tank.

**1702.9.5.5 Drainage and Overflow.** Rainwater storage tanks shall be provided with a means of draining and cleaning. The overflow drain shall not be equipped with a shutoff valve. The overflow outlet shall discharge in accordance with this code for storm drainage systems. Where discharging to the storm drainage system, the overflow drain shall be protected from backflow of the storm drainage system by a backwater valve or other approved methods.

**1702.9.5.5(A) Overflow Outlet Size.** The overflow outlet shall be sized to accommodate the flow of the rainwater entering the tank and not less than the aggregate cross-sectional area of inflow pipes.

**1702.9.5.6 Opening and Access Protection.**

**1702.9.5.6(A) Animals and Insects.** Rainwater tank openings shall be protected to prevent the entrance of insects, birds, or rodents into the tank.

**1702.9.5.6(B) Human Access.** Rainwater tank access openings exceeding 12 inches in diameter shall be secured to prevent tampering and unintended entry by either a lockable device or other approved method.

**1702.9.5.7 Marking.** Rainwater tanks shall be permanently marked with the capacity and the language: "NONPOTABLE RAINWATER." Where openings are provided to allow a person to enter the tank, the opening shall be marked with the following language: "DANGER-CONFINED SPACE."

**1702.9.5.8 Storage Tank Venting.** A vent shall be installed on each tank. The vent shall extend from the top of the tank and terminate a minimum of ~~6~~12 inches above grade and shall be a minimum of 1-1/2 inches in diameter. The vent terminal shall be directed downward and covered with a 3/32 inch mesh screen to prevent the entry of vermin and insects.

**1702.9.6 Pumps.** Pumps serving rainwater catchment systems shall be listed per Chapter 14 of this plumbing code. Pumps supplying water to water closets, urinals, and trap primers shall be capable of delivering not less than 15 pounds-force per square inch (psi) residual pressure at the highest and most remote outlet served. Where the water pressure in the rainwater supply system within the building exceeds 80 psi, a listed pressure reducing valve reducing the pressure to 80 psi or less to water outlets in the building shall be installed in accordance with this code.

**1702.9.7 Roof Drains.** Primary and secondary roof drains, conductors, and leaders, shall be designed and installed in accordance with Chapter 11 of this code. Secondary roof drains if used for catchment shall be alarmed.

**1702.9.8 Water Quality Devices and Equipment.** Devices and equipment used to treat rainwater to maintain the minimum water quality requirements determined in 1701.7 ~~by the Administrative Authority~~ shall be listed, and labeled by a third-party certifying listing agency and approved for the intended application.

**1702.9.9 Freeze Protection.** Tanks and piping installed in locations subject to freezing shall be provided with an approved means of freeze protection.

**1702.9.10 Debris Removal.** The rainwater catchment conveyance system shall be equipped with a debris excluder or other approved means to prevent the accumulation of leaves, needles, other debris, and sediment from entering the storage tank. Devices or methods used to remove debris or sediment shall be accessible and sized and installed in accordance with manufacturer's installation instructions.

**1702.9.11 Required Filters.** A filter permitting the passage of particulates not larger than 100 microns shall be provided for rainwater supplied to water closets, urinals, trap primers or similar other uses approved by the Administrative Authority.

**1702.10 Signs.** Signs in buildings using rainwater shall be in accordance with Section 1702.10.1 and Section 1702.10.2.

**1702.10.1 Commercial, Industrial, and Institutional Restroom Signs.** A sign shall be installed in restrooms in commercial, industrial, and institutional occupancies using nonpotable rainwater for water closets, urinals, or similar other uses approved by the Administrative Authority. Each sign shall contain 1/2 inch letters of a highly visible color on a contrasting background. The location of the sign(s) shall be such that the sign(s) shall be visible to users. The number and location of the signs shall be approved by the Administrative Authority and shall contain one the following texts determined by the following applications:

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

- 1702.10.1(B)** TO CONSERVE WATER, THIS BUILDING USES RAINWATER TO FLUSH TOILETS.  
**1702.10.1(C)** TO CONSERVE WATER, THIS BUILDING USES RAINWATER TO FLUSH URINALS.  
**1702.10.1(D)** TO CONSERVE WATER, THIS BUILDING USES RAINWATER TO \* \_\_\_\_\_ \*  
 \* \_\_\_\_\_ \* Shall indicate the Rainwater usage.

**1702.10.2 Equipment Room Signs.** Each equipment room containing nonpotable rainwater equipment shall have a sign posted with the following wording in 1 inch letters:

CAUTION NONPOTABLE RAINWATER, DO NOT DRINK. DO NOT CONNECT TO DRINKING WATER SYSTEM.  
 NOTICE: CONTACT BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK ON THIS WATER SYSTEM.

This sign shall be posted in a location that is visible to anyone working on or near rainwater water equipment.

**1702.11 Inspection and Testing.** Rainwater catchment systems shall be inspected and tested in accordance with Section 1702.11.1 and Section 1702.11.2. Storage tanks shall be filled with water to the overflow opening for a period of 24 hours and during inspection ~~or by other means as approved by the Administrative Authority.~~ All seams and joints shall be exposed during inspection and checked for water tightness.

**1702.11.1 Supply System Inspection and Test.** Rainwater catchment systems shall be inspected and tested in accordance with the applicable provisions of this code for testing of potable water and storm drainage systems.

**1702.11.2 Annual Cross-Connection Inspection and Testing.** ~~An initial and subsequent annual inspection and test in accordance with Section 1702.5 shall be performed on both the potable and rainwater catchment water systems.~~ The potable and rainwater catchment water systems shall be isolated from each other and independently inspected and tested to ensure there is no cross-connection in accordance with Section 1702.11.2.1 through Section 1702.11.2.43.

**1702.11.2.1 Visual System Inspection.** Prior to commencing the cross-connection testing, a dual system inspection shall be conducted by an individual certified to ASSE Standard 5120 ~~approved by the Administrative Authority~~ as follows:

(1) Pumps, equipment, equipment room signs, and exposed piping in an equipment room shall be checked.

**1702.11.2.2 Cross-Connection Test.** The procedure for determining cross-connection shall be followed by the applicant ~~in the presence of an individual approved by the Administrative Authority~~ plumbing contractor to determine whether a cross-connection has occurred as follows:

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

(2) The potable water system shall remain pressurized ~~for a minimum period of time specified by the Administrative Authority~~ while the rainwater catchment water system is empty. The minimum period the rainwater catchment water system is to remain depressurized shall be determined on a case-by-case basis, taking into account the size and complexity of the potable and rainwater catchment water distribution systems, but in no case shall that period be less than 1 hour.

(3) Fixtures, potable water, and rainwater systems shall be tested and inspected for flow. Flow from a rainwater catchment water system outlet shall indicate a cross-connection. No flow from a potable water outlet shall indicate that it is connected to the rainwater water system.

(4) The drain on the rainwater catchment water system shall be checked for flow during the test and at the end of the period.

(5) The potable water system shall then be completely drained.

(6) The rainwater catchment water system shall then be activated and pressurized.

(7) The rainwater catchment water system shall remain pressurized ~~for a minimum period of time specified by the Administrative Authority~~ while the potable water system is empty. The minimum period the potable water system is to remain depressurized shall be determined on a case-by-case basis, but in no case shall that period be less than 1 hour.

(8) Fixtures, potable water, and rainwater systems shall be tested and inspected for flow. Flow from a potable water system outlet shall indicate a cross-connection. No flow from a rainwater catchment water outlet shall indicate that it is connected to the potable water system.

(9) The drain on the potable water system shall be checked for flow during the test and at the end of the period.

(10) Where there is no flow detected in the fixtures which would indicate a cross-connection, the potable water system shall be re-pressurized.

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

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

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

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

- (4) The building shall be retested following procedures listed in Section 1702.11.2.1 and Section 1702.11.2.2.  
 (5) The potable water system shall be chlorinated with 50 ppm chlorine for 24 hours.  
 (6) The potable water system shall be flushed after 24 hours, and a standard bacteriological test shall be performed. Where test results are acceptable, the potable water system shall be permitted to be recharged.

**1702.11.2.43 Annual Inspection and Test.** An annual inspection of the rainwater catchment water system, following the procedures listed in Section 1702.11.2.1 shall be required. Annual cross-connection testing, following the procedures listed in Section 1702.11.2.2 shall be required by the Administrative Authority, unless site conditions do not require it otherwise specified by the Administrative Authority, but in no event shall the test occur less than once in 45 years. Written records must be maintained and submitted to the Administrative Authority. Alternate testing requirements shall be permitted by the Administrative Authority.

**Table 1702.9.4**  
**Minimum Water Quality**

<b>Application</b>	<b>Minimum Treatment</b>	<b>Minimum Water Quality</b>
Car Washing	Debris excluder or other approved means in compliance with Section 1702.9.10 and 1702.9.11.	N/A
Urinal and water closet flushing, clothes washing, and trap priming	Debris excluder or other approved means in compliance with Section 1702.9.10 and 1702.9.11.	Escherichia coli: <100 CFU/100 ml and Turbidity: <10 NTU
Ornamental Fountains and other water features	Debris excluder or other approved means in compliance with Section 1702.9.10 and 1702.9.11.	Escherichia coli: <100 CFU/100 ml and Turbidity: <10 NTU
Cooling tower make up water	Debris excluder or other approved means in compliance with Section 1702.9.10 and 1702.9.11.	Escherichia coli: <100 CFU/100 ml and Turbidity: <10 NTU

**NATIONAL CODE COMMITTEE COMMENT FORM**  
**FOR PROPOSED AMENDMENTS TO THE UPC**  
(This form must be submitted electronically)

*Author/requestor:* Minnesota Department of Health

*Email address:* [ronald.thompson@state.mn.us](mailto:ronald.thompson@state.mn.us)

*Telephone number:* 651-201-3658

*Firm/Association affiliation, if any:*

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**Proposed Code Change - Language**

**Recommendation Denied**

Please provide your proposed UPC amendment in strikeout/underline format. Provide the *specific* language you would like to see changed, with new words underlined and words to be deleted should be ~~stricken~~. Also, state whether the language contained in your proposal is from a code book or from an amendment currently found in Minnesota Rule. (You may provide the language (electronically) on a separate, attached sheet).

XXXX.XXXX CHAPTER 17 NONPOTABLE RAINWATER CATCHMENT SYSTEMS

UPC Chapter 17 is deleted.

**Proposed Code Change – Need and Reason**

Please provide a thorough explanation of the need for this amendment and why this proposed amendment is a reasonable change. During the rulemaking process, the Agency must defend the need and reasonableness of all its proposed changes. The Agency must submit evidence that it has considered all aspects of the proposal. (You may provide the need and reason (electronically) on a separate attached sheet).

The Plumbing Board has discussed rainwater and other wastewater reuse since at least 2008. Widely varying discussions involving the “green” building code, proposed legislation, adoption of national standards, and drafting of specific amendments to the Minnesota Plumbing Code have not led to a consensus. The 2012 Uniform Plumbing Code, Chapter 17, has been very recently proposed to be adopted. We recommend that the chapter not be adopted at the present time for the following reasons: (1) inadequate time has been provided to adequately involve the numerous parties and resolve the numerous issues. Rainwater harvesting system design involves elements that include fields outside of plumbing; (2) the chapter addresses the development and enforcement of water quality standards which do not fall under the jurisdiction of the Plumbing Board or Department of Labor and Industry; (3) the chapter does not differentiate the extremely wide variation in water sources and water uses; (4) the chapter does not adequately address the multitude of existing

agency authorities such as the wastewater treatment and potable water treatment authorities of the Minnesota Pollution Control Agency and the Minnesota Department of Health respectively; (5) the chapter includes numerous undefined, vague, and discretionary terms and statements; and (6) the chapter contains numerous technical and administrative issues that require discussion and amendment.

We believe that adoption of rainwater reuse rules should be pursued. Chapter 17, or the previous Department of Labor and Industry rule draft of 8/19/2011 can provide a starting place. We would be pleased to participate in a broad and thorough review.

### **Proposed Code Change – Cost/Benefit Analysis**

Please consider whether this proposed amendment will increase/decrease costs or indicate that it will not have any cost implications and explain how it will not. If there is an increased cost, will this cost be offset somehow by a life safety or other benefit? If so, please explain. Are there any cost increases/decreases to enforce or comply with this proposed code change? If so, please explain. (You may provide the cost/benefit analysis (electronically) on a separate, attached sheet).

This does not change existing requirements.

### Other Factors to Consider Related to Proposed Amendment

15. Is this proposed code change meant to:

change language contained in a published code book? If so, list section(s).

change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in a published code book? If so, list section(s).  
This proposal deletes UPC Chapter 17

delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

neither; this language will be new language, not found in the code book or in Minnesota Rule.

16. Is this proposed code change required by a Minnesota Statute or new legislation? If so, please provide the citation to the Statute or legislation.

No, but is outlined in the Minnesota Water Sustainability Framework commissioned by the legislature (Objective A.3).

17. Will this proposed code change impact other sections of a published code book or of an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.  
no

18. Will this proposed code change impact other parts of the Minnesota State Building Code? If so, please list the affected parts of the Minnesota State Building Code.  
no

19. Who are the parties affected or segments of industry affected by this proposed code change?  
The public, government agencies, plumbers, and other water industry professionals

20. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.  
no

21. Are you aware of any federal requirement or regulation related to this proposed code change? If so, please list the regulation or requirement.  
no

**Proposal withdrawn in its entirety**

Proposed Amendments to Uniform Plumbing Code from Laura Millberg (MPCA) 10-02-2012

**1702.9.3 Collection Surfaces.**

**Recommendation** – Amend the section as follows: **1702.9.3 Collection Surfaces.** Rainwater shall ~~may~~ be collected from ~~(1) Roof surfaces. A rainwater catchment system shall not collect rainwater from:~~ ~~(2) Vehicular parking surfaces~~ ~~(23) Surface water runoff~~ ~~(34) Bodies of standing water~~ according to the standards of the Authority Having Jurisdiction for the intended end use of the water being collected.

**Rationale** – Minnesota Statutes, section 115.03, subdivision 5c, states that the Minnesota Pollution Control Agency (MPCA) “shall develop performance standards, design standards, or other tools to enable and promote the implementation of low-impact development and other storm water management techniques...Using the low-impact development approach, storm water is managed on-site and the rate and volume of predevelopment storm water reaching receiving waters is unchanged.” Rainwater catchment systems are a storm water management technique that may need to capture water from more than just roof systems within the site boundaries in order to effectively maintain predevelopment rates and volume. The intended end use of the harvested water, not the stormwater management technique, should determine the appropriate collection surfaces for rainwater catchment systems.

**1702.9.4 Minimum Water Quality.**

**Recommendation** – Do not accept any amendments at this time that specify additional requirements or assign jurisdiction to any agency/organization other than the MPCA.

**Rationale** – The MPCA regulates storm water in Minn. Rules Chapter 7090. The MPCA defines water quality standards for all the waters of the state in Minn. Rules Chapter 7050. “Based on considerations of best usage and the need for water quality protection in the interest of the public,” Chapter 7050 creates classifications for beneficial use, including Class 1 use as a source of supply for drinking or food processing, Class 2 use for recreation such as bathing, Class 3 use as a source of supply for cooling water, Class 4 use for agricultural purposes such as irrigation, and Class 5 use for aesthetic enjoyment. MPCA fits the definition of *Authority Having Jurisdiction* regarding minimum water quality requirements for outdoor beneficial uses.

**1702.9.5.5 Drainage and Overflow.**

**Recommendation** – Delete the entire section **1702.9.5.5**, including **1702.9.5.5(A) Overflow Outlet Size.**

**Rationale** – Drainage and overflow should be designed as part of the stormwater management technique, not the plumbing code, according to standards already/soon-to-be developed by the MPCA or another appropriate Authority Having Jurisdiction.

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**1702.11 Inspection and Testing.**

**Recommendation** – Delete the entire section **1702.11** (through 1702.11.2.4.), section **1702.5 Initial Cross-Connection Test**, and section **1702.9.2 Deactivation and Drainage for Cross-Connection Test**.

**Rationale** – *NONPOTABLE RAINWATER CATCHMENT SYSTEMS* (the chapter title) are a storm water management technique and therefore, by definition, are not intended to be used for potable water or storm drainage, so the plumbing code provisions specified in 1702.11.1 are not applicable. The intended end use of the harvested water, not the collection method, should determine the appropriate inspection and testing standards for this storm water management technique. Legislative authority to develop standards for storm water management techniques has been given to MPCA.

## NATIONAL CODE REVIEW COMMITTEE SUGGESTION FORM

(This form must be submitted electronically)

*Author/requestor:* Cathy Tran

*Email address:* cathy.tran@state.mn.us

*Telephone number:* 651/284-5898

*Firm/Association affiliation, if any:* DLI

### **Suggested Code Change - Language**

Please provide your suggested change using a strikeout and underline format. Provide the *specific* language you would like to see changed, with new words underlined and ~~strikeout~~ the words to be deleted. Tell us whether the language you are suggesting or changing is from a code book or from Minnesota Rules, chapter 4715. (You may provide the language (electronically) on a separate attached sheet).

**2012 UPC Chapter 1** -See attached documentation.

### **Recommendation Approved**

### **Suggested Code Change – Need and Reason**

Please provide a thorough explanation of the need for the suggested changed and why the change is a reasonable one. During the rulemaking process, the Board must defend the need for and reasonableness of all its proposed changes. (You may provide the need and reason (electronically) on a separate attached sheet).

See attached documentation.

### **Suggested Code Change – Cost/Benefit Analysis**

Please explain whether the change you suggest will increase or decrease costs, or that the change will not have any cost implications. If there is an increased cost, will this cost be offset somehow by a life-safety or other benefit? If so, please explain. Are there any cost increases or decreases to enforce or comply with the suggested change? If so, please explain. (You may provide the cost/benefit analysis (electronically) on a separate attached sheet).

No cost implications.

**Please explain:**

22. Is the suggested change meant to:

change language contained in a published code book? If so, list section(s).

change language contained in an existing Minnesota Rule in chapter 4715? If so, list the Rule part(s).

delete language contained in a published code book? If so, list section(s).

delete language contained in an existing Minnesota Rule in chapter 4715? If so, list Rule the part(s).

neither; the suggested change is new language and is not in a code book or in Minnesota Rules, chapter 4715.

23. Is the suggested change required by a federal requirement or regulation, state statute or new legislation? If so, please explain and provide the citation to the regulation, statute or legislation.

MN Statutes 326b.43

24. Will the suggested change impact other sections of a published code book or the Minnesota State Building Code or other administrative rules? If so, please list the affected sections or rule parts.

25. Who are the parties affected or segments of industry that might be affected by the suggested change?

26. Can you think of other means or methods to achieve the purpose of the suggested change? If so, please explain what they are and why your suggested change is the preferred method or means to achieve the desired result.

no

27. Are you aware of any federal requirement or regulation related to this proposed code change? If so, please list the regulation or requirement.

No

## CHAPTER 1 - 2012 UPC DLI Proposed changes

Propose to delete chapter 1 in its entirety and replace with the following:

### CHAPTER 1 BASIC PLUMBING PRINCIPLES

#### 101.0 BASIC PLUMBING PRINCIPLES.

This code is founded upon certain basic principles of environmental sanitation and safety through properly designed, acceptably installed and adequately maintained plumbing systems. Some of the details of plumbing construction may vary but the basic sanitary and safety principles desirable and necessary to protect the health of the people are the same everywhere. As interpretations may be required, and as unforeseen situations arise which are not specifically covered in this code, the twenty three principles which follow shall be used to define the intent.

A. All premises intended for human habitation, occupancy, or use shall be provided with a potable water supply which meets the requirements of the Commissioner of Health. Such water supply shall not be connected with unsafe water sources nor shall it be subject to the hazards of backflow or back-siphonage.

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

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

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

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

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

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

H. Where a building drainage system may be subjected to back flow of sewage, suitable provision shall be made to prevent its overflow in the building.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Sonar:** This lists 23 basic principles of health and sanitation, and safety that are the basis of the Plumbing Code. These principles are used to define the intent of the code by providing a proper functioning plumbing system that is safe and sanitary. The listed principles are used as interpretation maybe required, and unforeseen situations may arise that are not covered in the code, the principles are used to define the intent.

# NATIONAL CODE REVIEW COMMITTEE SUGGESTION FORM

(This form must be submitted electronically)

*Author/requestor:* Cathy Tran

*Email address:* cathy.tran@state.mn.us

*Telephone number:* 651/284-5898

*Firm/Association affiliation, if any:* DLI

## **Suggested Code Change - Language**

Please provide your suggested change using a strikeout and underline format. Provide the *specific* language you would like to see changed, with new words underlined and ~~strikeout~~ the words to be deleted. Tell us whether the language you are suggesting or changing is from a code book or from Minnesota Rules, chapter 4715. (You may provide the language (electronically) on a separate attached sheet).

**2012 UPC Chapter 2** –Definition, see attached documentation.

**Recommendation approved with understanding this is a work in progress – see friendly amendments**

## **Suggested Code Change – Need and Reason**

Please provide a thorough explanation of the need for the suggested changed and why the change is a reasonable one. During the rulemaking process, the Board must defend the need for and reasonableness of all its proposed changes. (You may provide the need and reason (electronically) on a separate attached sheet).

See attached documentation.

## **Suggested Code Change – Cost/Benefit Analysis**

Please explain whether the change you suggest will increase or decrease costs, or that the change will not have any cost implications. If there is an increased cost, will this cost be offset somehow by a life-safety or other benefit? If so, please explain. Are there any cost increases or decreases to enforce or comply with the suggested change? If so, please explain. (You may provide the cost/benefit analysis (electronically) on a separate attached sheet).

No cost implications.

**Please explain:**

28. Is the suggested change meant to:

change language contained in a published code book? If so, list section(s).

change language contained in an existing Minnesota Rule in chapter 4715? If so, list the Rule part(s).

delete language contained in a published code book? If so, list section(s).

delete language contained in an existing Minnesota Rule in chapter 4715? If so, list Rule the part(s).

neither; the suggested change is new language and is not in a code book or in Minnesota Rules, chapter 4715.

29. Is the suggested change required by a federal requirement or regulation, state statute or new legislation? If so, please explain and provide the citation to the regulation, statute or legislation.

MN Statutes 326b.43

30. Will the suggested change impact other sections of a published code book or the Minnesota State Building Code or other administrative rules? If so, please list the affected sections or rule parts.

31. Who are the parties affected or segments of industry that might be affected by the suggested change?

32. Can you think of other means or methods to achieve the purpose of the suggested change? If so, please explain what they are and why your suggested change is the preferred method or means to achieve the desired result.

no

33. Are you aware of any federal requirement or regulation related to this proposed code change? If so, please list the regulation or requirement.

No

- **Look at language regarding Certified Backflow Assembly Tester**
- **Add a definition for Health Authority**
- **Strike Minnesota Department of Health and insert Health Authority**
- **May need to reference Authoritative Commissioner**
- **Revise "Plumbing System" definition to be more specific and provide clarification**

## **CHAPTER 2 - 2012 UPC DLI Proposed changes**

### **DEFINITIONS**

#### **201.0 General.**

**201.1 Applicability.** For the purpose of this code, the following terms have the meanings indicated in this chapter.

No attempt is made to define ordinary words, which are used in accordance with their established dictionary meanings, except where a word has been used loosely and it is necessary to define its meaning as used in this code to avoid misunderstanding.

#### **202.0 Definition of Terms.**

**202.1 General.** The definitions of terms are arranged alphabetically according to the first word of the term.

#### **203.0**

– A –

**ABS.** Acrylonitrile-butadiene-styrene.

**Accessible.** Where applied to a fixture, connection, appliance, or equipment, "accessible" means having access thereto, but which first may require the removal of an access panel, door, or similar obstruction.

**Accessible, Readily.** Having a direct access without the necessity of removing a panel, door, or similar obstruction.

**Administrative Authority.** "Administrative authority" means the commissioner of labor and industry. (When a governmental subdivision adopts and maintains a comprehensive plumbing enforcement program that is conducted by personnel who are knowledgeable about plumbing installation requirements, and includes enforcement of all code provisions including materials, methods, inspection, and testing, the administrative authority shall be the governing body of the adopting unit of government, its agents, and employees; however, the commissioner of labor and industry retains the ultimate authority to enforce Minnesota Statutes, sections 326B.43 to 326B.49, and provisions of this chapter that are necessary to ensure compliance.)

**SONAR:** This is needed to provide a specific definition for the term "Administrative Authority" for consistent use in the statewide plumbing administration as well as providing clarity that the department is ultimate authority to enforce the plumbing code in accordance MS 326B.106.

**Air Break.** A physical separation which may be a low inlet into the indirect waste receptor from the fixture, appliance, or device indirectly connected.

**Air Gap, Drainage.** The unobstructed vertical distance through the free atmosphere between the lowest opening from a pipe, plumbing fixture, appliance, or appurtenance conveying waste to the flood-level rim of the receptor.

**Air Gap, Water Distribution.** The unobstructed vertical distance through the free atmosphere between the lowest opening from a pipe or faucet conveying potable water to the flood-level rim of a tank, vat, or fixture.

**Alternate Water Source.** Nonpotable source of water that includes but not limited to gray water, on-site treated non-potable water, rainwater, and reclaimed (recycled) water.

**Anchors.** See Supports.

~~**Appliance Categorized Vent Diameter/Area.** The minimum vent area/diameter permissible for Category I appliances to maintain a nonpositive vent static pressure where tested in accordance with nationally recognized standards. [NFPA 54:3.3.7]~~

~~**Appliance Fuel Connector.** An assembly of listed semi-rigid or flexible tubing and fittings to carry fuel between a fuel-piping outlet and a fuel-burning appliance.~~

**Approved.** Acceptable to the Authority Having Jurisdiction.

**Approved Testing Agency.** An organization primarily established for purposes of testing to approved standards and approved by the Authority Having Jurisdiction.

**Area Drain.** A receptor designed to collect surface or storm water from an open area.

**Aspirator.** A fitting or device supplied with water or other fluid under positive pressure that passes through an integral orifice or constriction, causing a vacuum.

~~**Authority Having Jurisdiction.** Unless specify otherwise in this code, the term "Authority Having Jurisdiction" has the same meaning as the "Administrative Authority". The organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, installations, or procedures. The Authority Having Jurisdiction shall be a federal, state, local, or other regional department or an individual such as a plumbing official, a mechanical official, labor~~

~~department official, health department official, building official, or others having statutory authority. In the absence of a statutory authority, the Authority Having Jurisdiction may be some other responsible party. This definition shall include the Authority Having Jurisdiction's duly authorized representative.~~

**SONAR:** The proposed change is to clarify that the definition of Authority Having Jurisdiction, unless specify otherwise, has the same meaning as Administrative Authority when used in this code. This proposed change is needed since the term Authority Having Jurisdiction is widely used in this code and if not changed, will consists of many entities and authorities which may or may not apply to this code. This will create more confusion as to who is the responsible person enforcing the code. In addition, this proposed change will minimize amendments to this code when the term "Authority Having Jurisdiction" is used.

## 204.0

### - B -

**Backflow.** The flow of water or other liquids, mixtures, or substances into the distributing pipes of a potable supply of water from sources other than its intended source. See Backsiphonage, Backpressure Backflow.

**Backflow Connection.** An arrangement whereby backflow can occur.

**Backflow Preventer.** A backflow prevention device, an assembly, or other method to prevent backflow into the potable water system.

**Backpressure Backflow.** Backflow due to an increased pressure above the supply pressure, which may be due to pumps, boilers, gravity, or other sources of pressure.

**Backsiphonage.** The flowing back of used, contaminated, or polluted water from a plumbing fixture or vessel into a water supply pipe due to a pressure less than atmospheric in such pipe. See Backflow.

**Backwater Valve.** A device installed in a drainage system to prevent reverse flow.

**Bathroom.** A room equipped with a shower, bathtub, or combination bath/shower.

**Bathroom Group.** Any combination of fixtures, not to exceed one water closet, two lavatories, either one bathtub, or one combination bath/shower, and one shower, and may include a bidet and an emergency floor drain.

**Bathroom, Half.** A room equipped with only a water closet and lavatory.

**Battery of Fixtures.** A group of two or more similar, adjacent fixtures that discharge into a common horizontal waste or soil branch.

**Boiler Blowoff.** An outlet on a boiler to permit emptying or discharge of sediment.

~~**Bonding Jumper.** A reliable conductor to ensure the required electrical conductivity between metal parts required to be electrically connected. [NFPA 70:100.1]~~

**Branch.** A part of the piping system other than a main, riser, or stack.

**Branch, Fixture.** See Fixture Branch.

**Branch, Horizontal.** See Horizontal Branch.

**Branch Vent.** A vent connecting one or more individual vents with a vent stack or stack vent.

**Building.** A structure built, erected, and framed of component structural parts designed for the housing, shelter, enclosure, or support of persons, animals, or property of any kind.

**Building Drain.** That part of the lowest piping of a drainage system that receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the building sewer beginning 2 feet (610 mm) outside the building wall.

**Building Drain (Sanitary).** A building drain that conveys sewage only.

**Building Drain (Storm).** A building drain that conveys storm water or other drainage, but no sewage.

**Building Sewer.** That part of the horizontal piping of a drainage system that extends from the end of the building drain and that receives the discharge of the building drain and conveys it to a public sewer, private sewer, private sewage disposal system, or other point of disposal.

**Building Sewer (Combined).** A building sewer that conveys both sewage and storm water or other drainage.

**Building Sewer (Sanitary).** A building sewer that conveys sewage only.

**Building Sewer (Storm).** A building sewer that conveys storm water or other drainage, but no sewage.

**Building Subdrain.** That portion of a drainage system that does not drain by gravity into the building sewer.

**Building Supply.** The pipe carrying potable water from the water meter or other source of water supply to a building or other point of use or distribution on the lot.

## 205.0

### - C -

~~**Certified Backflow Assembly Tester.** A person who has shown competence to test and maintain backflow assemblies to the satisfaction of the Authority Having Jurisdiction.~~

**Cesspool.** A lined excavation in the ground that receives the discharge of a drainage system or part thereof, so designed as to retain the organic matter and solids discharging therein, but permitting the liquids to seep through the bottom and sides.

**Chemical Waste.** See Special Wastes.

~~**Chimney.** A vertical shaft enclosing one or more flues for conveying flue gases to the outside atmosphere.~~

~~**Chimney, Factory-Built.** A chimney composed of listed factory built components assembled in accordance with the terms of listing to form the completed chimney. [NFPA 54:3.3.18.2]~~

~~**Chimney, Masonry.** A field constructed chimney of solid masonry units, bricks, stones, listed masonry chimney units, or reinforced portland cement concrete, lined with suitable chimney flue liners. [NFPA 54:3.3.18.3]~~

~~**Chimney, Metal.** A chimney constructed of metal with a minimum thickness not less than 0.127 inch (3.23 mm) (No. 10 manufacturer's standard gauge) steel sheet.~~

**Clarifier.** See Interceptor.

~~**Clear Water Waste.** Cooling water and condensate drainage from refrigeration and air conditioning equipment; cooled condensate from steam heating systems; and cooled boiler blowdown water. Uncontaminated water discharges, subsoil discharges and similar discharges.~~

**Clinic Sink.** A sink designed primarily to receive wastes from bedpans and having a flush rim, an integral trap with a visible trap seal, and the same flushing and cleansing characteristics as a water closet.

~~**Code.** A standard that is an extensive compilation of provisions covering broad subject matter or that is suitable for adoption into law independently of other codes and standards.~~

**Combination Thermostatic/Pressure Balancing Valve.** A mixing valve that senses outlet temperature and incoming hot and cold water pressure and compensates for fluctuations in incoming hot and cold water temperatures, pressures, or both to stabilize outlet temperatures.

**Combination Waste and Vent System.** A specially designed system of waste piping embodying the horizontal wet venting of one or more sinks or floor drains by means of a common waste and vent pipe, adequately sized to provide free movement of air above the flow line of the drain.

**Combined Building Sewer.** See Building Sewer (Combined).

**Combustible Material.** As pertaining to materials adjacent to or in contact with heat-producing appliances, vent connectors, gas vents, chimneys, steam and hot water pipes, and warm air ducts, materials made of or surfaced with wood, compressed paper, plant fibers, or other materials that are capable of being ignited and burned. Such material shall be considered combustible even though flame-proofed, fire-retardant treated, or plastered. [NFPA 54:3.3.67.1]

**Common.** That part of a plumbing system that is so designed and installed as to serve more than one appliance, fixture, building, or system.

**Conductor.** A pipe inside the building that conveys storm water from the roof to a storm drain, combined building sewer, or other approved point of disposal.

**Confined Space.** A room or space having a volume less than 50 cubic feet per 1000 British thermal units per hour (Btu/h) (4.83 m<sup>3</sup>/kW) of the aggregate input rating of all fuel-burning appliances installed in that space.

**Contamination.** An impairment of the quality of the potable water that creates an actual hazard to the public health through poisoning or through the spread of disease by sewage, industrial fluids, or waste. Also defined as High Hazard.

**Continuous Vent.** A vertical vent that is a continuation of the drain to which it connects.

**Continuous Waste.** A drain connecting the compartments of a set of fixtures to a trap or connecting other permitted fixtures to a common trap.

**CPVC.** Chlorinated Poly (Vinyl Chloride).

**Critical Care Area.** Those special care units, intensive care units, coronary care units, angiography laboratories, cardiac catheterization laboratories, delivery rooms, operating rooms, post anesthesia recovery rooms, emergency departments, and similar areas in which patients are intended to be subjected to invasive procedures and connected to line-operated, patient-care-related electrical appliances. [NFPA 99:3.3.138.1]

**Critical Level.** The critical level (C-L or C/L) marking on a backflow prevention device or vacuum breaker is a point conforming to approved standards and established by the testing laboratory (usually stamped on the device by the manufacturer) that determines the minimum elevation above the flood-level rim of the fixture or receptor served at which the device may be installed. Where a backflow prevention device does not bear a critical level marking, the bottom of the vacuum breaker, combination valve, or the bottom of such approved device shall constitute the critical level.

**Cross-Connection.** A connection or arrangement, physical or otherwise, between a potable water supply system and a plumbing fixture or a tank, receptor, equipment, or device, through which it may be possible for nonpotable, used, unclean, polluted, and contaminated water, or other substances to enter into a part of such potable water system under any condition.

**Debris Excluder.** A device installed on the rainwater catchment conveyance system to prevent the accumulation of leaves, needles, or other debris in the system.

**Department Having Jurisdiction.** The Authority Having Jurisdiction, including any other law enforcement agency affected by a provision of this code, whether such agency is specifically named or not.

**Design Flood Elevation.** The elevation of the “design flood,” including wave height, relative to the datum specified on the community’s legally designated flood hazard map. In areas designated as Zone AO, the design flood elevation is the elevation of the highest existing grade of the building’s perimeter plus the depth number (in feet) specified on the flood hazard map. In areas designated as Zone AO where a depth number is not specified on the map, the depth number is taken as being equal to 2 feet (610 mm).

**Developed Length.** The length along the center line of a pipe and fittings.

**Diameter.** Unless specifically stated, “diameter” is the nominal diameter as designated commercially.

**Direct-Vent Appliances.** Appliances that are constructed and installed so that air for combustion is derived directly from the outdoors and flue gases are discharged to the outdoors. [NFPA 54:3.3.6.3]

**Domestic Sewage.** The liquid and water-borne wastes derived from the ordinary living processes, free from industrial wastes, and of such character as to permit satisfactory disposal, without special treatment, into the public sewer or by means of a private sewage disposal system.

**Downspout.** The rain leader from the roof to the building storm drain, combined building sewer, or other means of disposal located outside of the building. See Conductor and Leader.

**Drain.** A pipe that carries waste or waterborne wastes in a building drainage system.

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

**Dry Vent.** A vent that does not receive the discharge of any sewage or waste.

**Durham System.** A soil or waste system in which all piping is threaded pipe, tubing, or other such rigid construction, using recessed drainage fittings to correspond to the types of piping.

## 207.0

– E –

~~**Effective Ground Fault Current Path.** An intentionally constructed, low impedance electrically conductive path designed and intended to carry current under ground fault conditions from the point of a ground fault on a wiring system to the electrical supply source and that facilitates the operation of the overcurrent protective device or ground fault detectors on high impedance grounded systems. [NFPA 54 12:3.3.36]~~

**Effective Opening.** The minimum cross-sectional area at the point of water supply discharge measured or expressed in terms of: (1) diameter of a circle or (2) where the opening is not circular, the diameter of a circle of equivalent cross-sectional area. (This is applicable also to air gap.)

**Essentially Nontoxic Transfer Fluid.** Essentially nontoxic at practically nontoxic, Toxicity Rating Class 1 (reference "Clinical Toxicology of Commercial Products" by Gosselin, Smith, Hodge, & Braddock).

~~**Excess Flow Valve (EFV).** A valve designed to activate where the fuel gas passing through it exceeds a prescribed flow rate. [NFPA 54:3.3.105.3]~~

**Existing Work.** A plumbing system or any part thereof that has been installed prior to the effective date of this code.

## 208.0

– F –

**F Rating.** The time period that the penetration firestop system limits the spread of fire through the penetration, where tested in accordance with ASTM E 814 or UL 1479.

**Fixture Branch.** A water supply pipe between the fixture supply pipe and the water distribution pipe.

**Fixture Drain.** The drain from the trap of a fixture to the junction of that drain with any other drain pipe.

**Fixture Supply.** A water supply pipe connecting the fixture with the fixture branch.

**Fixture Unit.** A quantity in terms of which the load-producing effects on the plumbing system of different kinds of plumbing fixtures are expressed on some arbitrarily chosen scale.

**Flammable Vapor or Fumes.** The concentration of flammable constituents in air that exceeds 25 percent of its lower flammability limit (LFL).

**Flood Hazard Area.** The greater of the following two areas:

- (1) The area within a floodplain subject to a 1 percent or greater chance of flooding in any given year.
- (2) The area designated as a flood hazard area on a community’s flood hazard map, or otherwise legally designated.

**Flood Hazard Area Subject to High-Velocity Wave Action.** Area within the flood hazard area that is subject to high velocity wave action, and shown on a Flood Insurance Rate Map or other flood hazard map as Zone V, VO, VE or V1-30.

**Flood Level.** See Flooded.

**Flood-Level Rim.** The top edge of a receptor from which water overflows.

**Flooded.** A fixture is flooded where the liquid therein rises to the flood-level rim.

~~**Flue Collar.** That portion of an appliance designed for the attachment of a draft hood, vent connector, or venting system. [NFPA 54:3.3.46]~~

**Flush Tank.** A tank located above or integral with water closets, urinals, or similar fixtures for the purpose of flushing the usable portion of the fixture.

**Flush Valve.** A valve located at the bottom of a tank for the purpose of flushing water closets and similar fixtures.

**Flushometer Tank.** A tank integrated within an air accumulator vessel that is designed to discharge a predetermined quantity of water to fixtures for flushing purposes.

**Flushometer Valve.** A valve that discharges a predetermined quantity of water to fixtures for flushing purposes and is actuated by direct water pressure.

**FOG Disposal System.** A grease interceptor that reduces nonpetroleum fats, oils, and grease (FOG) in effluent by separation, mass, and volume reduction.

~~**Fuel Gas.** Natural, manufactured, liquefied petroleum, or a mixture of these.~~

~~**Fuel Gas Quick Disconnect.** A hand-operated device that provides a means for connecting and disconnecting an appliance or an appliance connector to a gas supply and that is equipped with an automatic means to shut off the gas supply where the device is disconnected. [NFPA 54:3.3.29.3]~~

~~**Fuel Gas Vent.** A listed factory-made vent pipe and vent fittings for conveying flue gases to the outdoors.~~

~~**Fuel Gas Venting System.** A continuous open passageway from the flue collar or draft hood of an appliance to the outdoors for the purpose of removing flue or vent gases. [NFPA 54:3.3.100.7]~~

## 209.0

### – G –

**Gang or Group Shower.** Two or more showers in a common area.

~~**Gas Piping.** An installation of pipe, valves, or fittings that is used to convey fuel gas, installed on a premises or in a building, but shall not include:~~

- ~~(1) A portion of the service piping.~~
- ~~(2) An approved piping connection 6 feet (1829 mm) or less in length between an existing gas outlet and a gas appliance in the same room with the outlet.~~

~~**Gas Piping System.** An arrangement of gas piping or regulators after the point of delivery and each arrangement of gas piping serving a building, structure, or premises, whether individually metered or not.~~

**General Care Areas.** General care areas are patient bedrooms, examining rooms, treatment rooms, clinics, and similar areas in which it is intended that the patient will come in contact with ordinary appliances such as a nurses-call system, electric beds, examining lamps, telephones, and entertainment devices. [NFPA 99:3.3.138.2]

**Grade.** The slope or fall of a line of pipe in reference to a horizontal plane. In drainage, it is usually expressed as the fall in a fraction of an inch (mm) or percentage slope per foot (meter) length of pipe.

**Gravity Grease Interceptor.** A plumbing appurtenance or appliance that is installed in a sanitary drainage system to intercept nonpetroleum fats, oils, and greases (FOG) from a wastewater discharge and is identified by volume, 30 minute retention time, baffle(s), not less than two compartments, a total volume of not less than 300 gallons (1135 L), and gravity separation. [These interceptors comply with the requirements of Chapter 10 or are designed by a registered professional engineer.] Gravity grease interceptors are generally installed outside.

**Gray Water.** Untreated wastewater that has not come into contact with toilet waste, kitchen sink waste, dishwasher waste or similarly contaminated sources. Gray water includes wastewater from bathtubs, showers, lavatories, clothes washers, and laundry tubs. Also known as grey water, graywater, and greywater.

**Gray Water Diverter Valve.** A valve that directs gray water to the sanitary drainage system or to a subsurface irrigation system.

**Grease Interceptor.** A plumbing appurtenance or appliance that is installed in a sanitary drainage system to intercept nonpetroleum fats, oil, and greases (FOG) from a wastewater discharge.

**Grease Removal Device (GRD).** A hydromechanical grease interceptor that automatically, mechanically removes non-petroleum fats, oils and grease (FOG) from the interceptor, the control of which are either automatic or manually initiated.

~~**Grounding Electrode.** A device that establishes an electrical connection to the earth.~~

## 210.0

### – H –

**Hangers.** See Supports.

**Heat-Fusion Weld Joints.** A joint used in some thermoplastic systems to connect pipe to fittings or pipe lengths directly to one another (butt-fusion). This method of joining pipe to fittings includes socket-fusion, electro-fusion, and saddle-fusion. This method of welding involves the application of heat and pressure to the components, allowing them to fuse together forming a bond between the pipe and fitting.

**High Hazard.** See Contamination.

**Horizontal Branch.** A drain pipe extending laterally from a soil or waste stack or building drain with or without vertical sections or branches, which receives the discharge from one or more fixture drains and conducts it to the soil or waste stack or to the building drain.

**Horizontal Pipe.** A pipe or fitting that is installed in a horizontal position or which makes an angle of less than 45 degrees (0.79 rad) with the horizontal.

**Hot Water.** Water at a temperature exceeding or equal to 120°F (49°C).

**House Drain.** See Building Drain.

**House Sewer.** See Building Sewer.

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

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

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

C - Without external flow control, directly connected.

~~D - Without external flow control, indirectly connected.~~

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

## 211.0

– I –

**Indirect-Fired Water Heater.** A water heater consisting of a storage tank equipped with an internal or external heat exchanger used to transfer heat from an external source to heat potable water. The storage tank either contains heated potable water or water supplied from an external source, such as a boiler.

**Indirect Waste Pipe.** A pipe that does not connect directly with the drainage system but conveys liquid wastes by discharging into a plumbing fixture, interceptor, or receptacle that is directly connected to the drainage system.

**Individual Vent.** A pipe installed to vent a fixture trap and that connects with the vent system above the fixture served or terminates in the open air.

**Industrial Waste.** Liquid or water-borne waste from industrial or commercial processes, except domestic sewage.

**Insanitary.** A condition that is contrary to sanitary principles or is injurious to health.

Conditions to which “insanitary” shall apply include the following:

- (1) A trap that does not maintain a proper trap seal.
- (2) An opening in a drainage system, except where lawful, that is not provided with an approved liquid-sealed trap.
- (3) A plumbing fixture or other waste discharging receptor or device that is not supplied with water sufficient to flush and maintain the fixture or receptor in a clean condition.
- (4) A defective fixture, trap, pipe, or fitting.
- (5) A trap, except where in this code exempted, directly connected to a drainage system, the seal of which is not protected against siphonage and backpressure by a vent pipe.
- (6) A connection, cross-connection, construction, or condition, temporary or permanent, that would permit or make possible by any means whatsoever for an unapproved foreign matter to enter a water distribution system used for domestic purposes.
- (7) The foregoing enumeration of conditions to which the term “insanitary” shall apply, shall not preclude the application of that term to conditions that are, in fact, insanitary.

**Interceptor (Clarifier).** A device designed and installed so as to separate and retain deleterious, hazardous, or undesirable matter from normal wastes and permit normal sewage or liquid wastes to discharge into the disposal terminal by gravity.

**Invert.** The lowest portion of the inside of a horizontal pipe.

## 212.0

– J –

**Joint, Brazed.** A joint obtained by joining of metal parts with alloys that melt at temperatures exceeding 840°F (449°C), but less than the melting temperature of the parts to be joined.

**Joint, Soldered.** A joint obtained by the joining of metal parts with metallic mixtures or alloys that melt at a temperature up to and including 840°F (449°C).

**Joint, Welded.** A gastight joint obtained by the joining of metal parts in the plastic molten state.

### 213.0

– K –

No definitions.

### 214.0

– L –

**Labeled.** Equipment or materials bearing a label of a listing agency (accredited conformity assessment body). See Listed (third-party certified).

**Lavatories in Sets.** Two or three lavatories that are served by one trap.

**Leader.** An exterior vertical drainage pipe for conveying storm water from roof or gutter drains. See Downspout.

~~**Liquefied Petroleum Gas (LPG) Facilities.** Liquefied petroleum gas (LPG) facilities means tanks, containers, container valves, regulating equipment, meters, appurtenances, or any combination thereof for the storage and supply of liquefied petroleum gas for a building, structure, or premises.~~

**Liquid Waste.** The discharge from a fixture, appliance, or appurtenance in connection with a plumbing system that does not receive fecal matter.

**Listed (Third-party certified).** Equipment or materials included in a list published by a listing agency (accredited conformity assessment body) that maintains periodic inspection on current production of listed equipment or materials and whose listing states either that the equipment or material complies with approved standards or has been tested and found suitable for use in a specified manner.

**Listing Agency.** An agency accredited by an independent and authoritative conformity assessment body to operate a material and product listing and labeling (certification) system and that is accepted by the Authority Having Jurisdiction, which is in the business of listing or labeling. The system includes initial and ongoing product testing, a periodic inspection on current production of listed (certified) products, and makes available a published report of such listing in which specific information is included that the material or product is in accordance with applicable standards and found safe for use in a specific manner.

**Lot.** A single or individual parcel or area of land legally recorded or validated by other means acceptable to the Authority Having Jurisdiction on which is situated a building or which is the site of any work regulated by this code, together with the yards, courts, and unoccupied spaces legally required for the building or works, and that is owned by or is in the lawful possession of the owner of the building or works.

**Low Hazard.** See Pollution.

### 215.0

– M –

**Macerating Toilet System.** A system comprised of a sump with macerating pump and with connections for a water closet and other plumbing fixtures, which is designed to accept, grind, and pump wastes to an approved point of discharge.

**Main.** The principal artery of a system of continuous piping to which branches may be connected.

**Main Sewer.** See Public Sewer.

**Main Vent.** The principal artery of the venting system to which vent branches may be connected.

**May.** A permissive term.

~~**Medical Air.** For purposes of this code, medical air is air supplied from cylinders, bulk containers, medical air compressors, or has been reconstituted from oxygen USP and oil free, dry nitrogen NF [NFPA 99:3.3.106]. Medical air shall be required to have the following characteristics:~~

- ~~(1) Be supplied from cylinders, bulk containers, medical air compressor sources, or be reconstituted from oxygen USP and oil-free dry nitrogen NF.~~
- ~~(2) Meet the requirements of medical air USP.~~
- ~~(3) Have no detectable liquid hydrocarbons.~~
- ~~(4) Have less than 25 parts per million (ppm) gaseous hydrocarbons.~~
- ~~(5) Have equal to or less than 1.8 E-10 pounds per cubic inch (lb/in<sup>3</sup>) (5 mg/m<sup>3</sup>) of permanent particulates sized one micron or larger in the air at normal atmospheric pressure. [NFPA 99:5.1.3.5.1]~~

~~**Medical Gas.** Gas used in a medical facility, including oxygen, nitrous oxide, carbon dioxide, helium, medical air, and mixtures of these gases. Standards of purity apply.~~

~~**Medical Gas Building Supply.** The pipe from the source of supply to a building or structure.~~

~~**Medical Gas Manifold.** A device for connecting outlets of one or more gas cylinders to the central piping system for that specific gas. [NFPA 99:3.3.103]~~

~~**Medical Gas System.** Complete system consisting of a central supply system (manifold, bulk, or compressors), including control equipment and piping extending to station outlets at the points where medical gases are required.~~

~~**Medical Vacuum System.** See Vacuum System—Level 1.~~

**Mobile Home Park Sewer.** That part of the horizontal piping of a drainage system that begins 2 feet (610 mm) downstream from the last mobile home site and conveys it to a public sewer, private sewer, private sewage disposal system, or other point of disposal.

~~**Mulch.** Organic materials, such as wood chips and fines, tree bark chips, and pine needles that are used in a mulch basin to conceal gray water outlets and permit the infiltration of gray water.~~

~~**Mulch Basin.** A subsurface catchment area for gray water that is filled with mulch and of sufficient depth and volume to prevent ponding, surfacing, or runoff.~~

## 216.0

– N –

**Nitrogen, NF (Oil Free, Dry)** (Nitrogen for Brazing and Testing). Nitrogen complying, at a minimum, with oil free, dry nitrogen NF. [NFPA 99:3.3.120.1]

**Nonpotable Water.** Water that is not safe for drinking, culinary, and domestic purposes, and does not meet the water quality requirements of the Health Department for drinking or consumption.

**Sonar:** The proposed definition is to clarify that water that is intended for nonpotable water use are not safe for drinking or consumption. One type of nonpotable water is alternate water source.

**Nuisance.** Includes, but is not limited to:

- (1) A public nuisance known at common law or in equity jurisprudence.
- (2) Where work regulated by this code is dangerous to human life or is detrimental to health and property.
- (3) Inadequate or unsafe water supply or sewage disposal system.

## 217.0

– O –

**Offset.** A combination of elbows or bends in a line of piping that brings one section of the pipe out of line but into a line parallel with the other section.

**Oil Interceptor.** See Interceptor.

**On-Site Treated Nonpotable Water.** Nonpotable water, including gray water that has been collected, treated, and intended to be used on-site and is suitable for direct beneficial use.

## 218.0

– P –

**Patient Care Area.** A portion of a health care facility wherein patients are intended to be examined or treated. [NFPA 99:3.3.138]

**PB.** Polybutylene.

**PE.** Polyethylene.

**PE-AL-PE.** Polyethylene-aluminum-polyethylene.

**PE-RT.** Polyethylene of raised temperature.

**Penetration Firestop System.** A specific assemblage of field-assembled materials, or a factory-made device, which has been tested to a standard test method and, where installed properly on penetrating piping materials, is capable of maintaining the fire-resistance rating of assemblies penetrated.

**Person.** A natural person, his heirs, executor, administrators, or assigns and shall also include a firm, corporation, municipal or quasi-municipal corporation, or governmental agency. Singular includes plural, male includes female.

**PEX.** Cross-linked polyethylene.

**PEX-AL-PEX.** Cross-linked polyethylene–aluminum–cross-linked polyethylene.

**Pipe.** A cylindrical conduit or conductor conforming to the particular dimensions commonly known as “pipe size.”

**Plumbing.** The business, trade, or work having to do with the installation, removal, alteration, or repair of plumbing and drainage systems or parts thereof.

**Plumbing Appliance.** A special class of device or equipment that is intended to perform a special plumbing function. Its operation, control, or both may be dependent upon one or more energized components, such as motors, controls, heating elements, or pressure- or temperature-sensing elements. Such device or equipment may operate automatically through one or more of the following actions: a time cycle, a temperature range, a pressure range, a measured volume or weight; or the device or equipment may be manually adjusted or controlled by the user or operator.

**Plumbing Appurtenance.** A manufactured device, a prefabricated assembly, or an on-the-job assembly of component parts that is an adjunct to the basic piping system and plumbing fixtures. An appurtenance demands no additional water supply, nor does it add a discharge load to a fixture or the drainage system. It performs some useful function in the operation, maintenance, servicing, economy, or safety of the plumbing system.

**Plumbing Fixture.** An approved-type installed receptacle, device, or appliance that is supplied with water or that receives liquid or liquid-borne wastes and discharges such wastes into the drainage system to which it may be directly or indirectly connected. Industrial or commercial tanks, vats, and similar processing equipment are not plumbing fixtures, but may be connected to or discharged into approved traps or plumbing fixtures where and as otherwise provided for elsewhere in this code.

**Plumbing Official.** See Authority Having Jurisdiction.

**Plumbing System.** Includes all potable water, building supply, and distribution pipes; all plumbing fixtures and traps; all drainage and vent pipes; and all building drains and building sewers, including their respective joints and connections, devices, receptors, and appurtenances within the property lines of the premises and shall include potable water piping, potable water treating or using equipment, and nonpotable water piping serving plumbing fixtures, medical gas and medical vacuum systems, liquid and fuel gas piping, and water heaters and vents for same.

**Plumbing Vent.** A pipe provided to ventilate a plumbing system, to prevent trap siphonage and backpressure, or to equalize the air pressure within the drainage system.

**Plumbing Vent System.** A pipe or pipes installed to provide a flow of air to or from a drainage system or to provide a circulation of air within such system to protect trap seals from siphonage and backpressure.

**Pollution.** An impairment of the quality of the potable water to a degree that does not create a hazard to the public health but which does adversely and unreasonably affect the aesthetic qualities of such potable water for domestic use. Also defined as Low Hazard.

**Potable Water.** Water that is satisfactory for drinking, culinary, and domestic purposes and that meets the requirements of the Minnesota Health Department Authority Having Jurisdiction.

**PP.** Polypropylene.

**Pressed Fitting.** A mechanical connection for joining copper tubing that uses a crimping tool to affix the O-ring seal copper or copper alloy fitting to the tubing. The tubing shall be inserted into the fitting, and the crimp shall be made using the tool recommended by the manufacturer.

**Pressure.** The normal force exerted by a homogeneous liquid or gas, per unit of area, on the wall of the container.

**Residual Pressure.** The pressure available at the fixture or water outlet after allowance is made for pressure drop due to friction loss, head, meter, and other losses in the system during maximum demand periods.

**Static Pressure.** The pressure existing without any flow.

**Pressure-Balancing Valve.** A mixing valve that senses incoming hot and cold water pressures and compensates for fluctuations in either to stabilize outlet temperature.

**Pressure-Lock-Type Connection.** A mechanical connection that depends on an internal retention device to prevent pipe or tubing separation. Connection is made by inserting the pipe or tubing into the fitting to a prescribed depth.

**Private or Private Use.** Applies to plumbing fixtures in residences and apartments, to private bathrooms in hotels and hospitals, and to restrooms in commercial establishments where the fixtures are intended for the use of a family or an individual.

**Private Sewage Disposal System.** A septic tank with the effluent discharging into a subsurface disposal field, into one or more seepage pits, or into a combination of subsurface disposal field and seepage pit designed for use or of such other facilities as may be use apart from a public sewer as regulated under rules administered by the Minnesota Pollution Control Agency permitted under the procedures set forth elsewhere in this code. This system is also referred to as Subsurface Sewage Treatment System (SSTS).

**SONAR:** This proposed change is to clarify that the Minnesota Pollution Control Agency is the agency that administers the rules and regulation of private sewer disposal systems.

**Private Sewer.** A building sewer that receives the discharge from more than one building drain and conveys it to a public sewer, private sewage disposal system, or other point of disposal.

**Provision for Location of Point of Delivery.** ~~The location of the point of delivery shall be acceptable to the serving gas supplier. [NFPA 54:5.2]~~

**Public or Public Use.** Applies to plumbing fixtures that are not defined as private or private use.

**Public Sewer.** A common sewer directly controlled by public authority.

~~**Purge, Flow (Medical Gas).** The removal of oxygen from a system by oil free dry nitrogen during brazing.~~

~~**Purge, System (Medical Gas).** The removal of nitrogen from a system with the medical gas required for that system.~~

**Push Fit Fitting.** A mechanical fitting where the connection is assembled by pushing the tube or pipe into the fitting and is sealed with an "O" ring.

**PVC.** Poly(vinyl chloride).

**PVDF.** Polyvinylidene Fluoride.

**Quick-Disconnect Device.** A hand-operated device that provides a means for connecting and disconnecting a hose to a water supply and that is equipped with a means to shut off the water supply where the device is disconnected.

## 220.0

## – R –

**Rainwater.** Natural precipitation that has not been contaminated by use.

**Rainwater Catchment System.** A system that utilizes the principal of collecting, storing, and using rainwater from a rooftop or other manmade, aboveground collection surface. Also known as a rainwater harvesting system.

**Rainwater Storage Tank.** The central component of the rainwater catchment system. Also known as a cistern or rain barrel.

**Receptor.** An approved plumbing fixture or device of such material, shape, and capacity as to adequately receive the discharge from indirect waste pipes, so constructed and located as to be readily cleaned.

**Reclaimed (Recycled) Water.** Nonpotable water provided by a water/wastewater utility that, as a result of tertiary treatment of domestic wastewater, meets requirements of the public health Authority Having Jurisdiction for its intended uses.

**Regulating Equipment.** Includes valves and controls used in a plumbing system that are required to be accessible or readily accessible.

**Relief Vent.** A vent, the primary function of which is to provide circulation of air between drainage and vent systems or to act as an auxiliary vent on a specially designed system.

**Remote Outlet.** Where used for sizing water piping, it is the furthest outlet dimension, measuring from the meter, either the developed length of the cold-water piping or through the water heater to the furthest outlet on the hot-water piping.

**Rim.** See Flood-Level Rim.

**Riser.** A water supply pipe that extends vertically one full story or more to convey water to branches or fixtures.

**Roof Drain.** A drain installed to receive water collecting on the surface of a roof and to discharge it into a leader, downspout, or conductor.

**Roof Washer.** A device or method for removal of sediment and debris from a collection surface by diverting initial rainfall from entry into the cistern(s). Also known as a first flush device.

**Roughing-In.** The installation of all parts of the plumbing system that can be completed prior to the installation of fixtures. This includes drainage, water supply, gas piping, vent piping, and the necessary fixture supports.

## 221.0

## – S –

**Sand Interceptor.** See Interceptor.

**SCFM.** Standard cubic feet per minute. [NFPA 99:3.3.163]

**SDR.** An abbreviation for “standard dimensional ratio,” which is the specific ratio of the average specified outside diameter to the minimum wall thickness for outside controlled diameter plastic pipe.

**Seam, Welded.** See Joint, Welded.

**Seepage Pit.** A lined excavation in the ground which receives the discharge of a septic tank so designed as to permit the effluent from the septic tank to seep through its bottom and sides.

**Septic Tank.** A watertight receptacle that receives the discharge of a drainage system or part thereof, designed and constructed so as to retain solids, digest organic matter through a period of detention, and allow the liquids to discharge into the soil outside of the tank through a system of open joint piping or a seepage pit meeting the requirements of this code.

**Service Piping.** The piping and equipment between the street gas main and the gas piping system inlet that is installed by, and is under the control and maintenance of, the serving gas supplier.

**Sewage.** Liquid waste containing animal or vegetable matter in suspension or solution and that may include liquids containing chemicals in solution.

**Sewage Ejector.** A device for lifting sewage by entraining it on a high-velocity jet stream, air, or water.

**Sewage Pump.** A permanently installed mechanical device, other than an ejector, for removing sewage or liquid waste from a sump.

**Shall.** Indicates a mandatory requirement.

**Shielded Coupling.** An approved elastomeric sealing gasket with an approved outer shield and a tightening mechanism.

**Shock Arrester.** See Water Hammer Arrester.

**Should.** Indicates a recommendation or that which is advised but not required.

**Single-Family Dwelling.** A building designed to be used as a home by the owner of such building, which shall be the only dwelling located on a parcel of ground with the usual accessory buildings. Refer to Chapter 1309, Minnesota State Building Code.

**SONAR:** The proposed change is necessary to refer the definition to the Minnesota State Building Code for consistent enforcement of the term. Chapter 1309, Adoption of the International Residential Code, is one of the chapters that make up the Minnesota State Building Code.

**Size and Type of Tubing.** See Diameter.

**Slip Joint.** An adjustable tubing connection, consisting of a compression nut, a friction ring, and a compression washer, designed to fit a threaded adapter fitting or a standard taper pipe thread.

**Slope.** See Grade.

**Soil Pipe.** A pipe that conveys the discharge of water closets, urinals, clinic sinks, or fixtures having similar functions of collection and removal of domestic sewage, with or without the discharge from other fixtures, to the building drain or building sewer.

~~**Special Hazard Area (Medical Gas).** An area such as a kitchen or electrical switch gear room.~~

**Special Wastes.** Wastes that require some special method of handling, such as the use of indirect waste piping and receptors, corrosion-resistant piping, sand, oil or grease interceptors, condensers, or other pretreatment facilities.

**Stack.** The vertical main of a system of soil, waste, or vent piping extending through one or more stories.

**Stack Vent.** The extension of a soil or waste stack above the highest horizontal drain connected to the stack.

**Standard.** A document, the main text of which contains only mandatory provisions using the word "shall" to indicate requirements and which is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions shall be located in an appendix, footnote, or fine print note and are not to be considered a part of the requirements of a standard.

~~**Station Inlet.** An inlet point in a medical surgical piped vacuum distribution system at which the user makes connections and disconnections. [NEPA 99:3.3.171]~~

~~**Station Outlet.** An inlet point in a piped medical/surgical vacuum distribution system at which the user makes connections and disconnections. [NEPA 99:3.3.172]~~

**Storm Drain.** See Building Drain (Storm).

**Storm Sewer.** A sewer used for conveying rainwater, surface water, condensate, cooling water, or similar liquid wastes.

**Subsoil Drain.** A drain that collects subsurface or seepage water and conveys it to a place of disposal.

~~**Subsoil Irrigation Field.** Gray water irrigation field installed in a trench within the layer of soil below the topsoil. This system is typically used for irrigation of deep rooted plants.~~

~~**Subsurface Irrigation Field.** Gray water irrigation field installed below finished grade within the topsoil.~~

**Sump.** An approved tank or pit that receives sewage or liquid waste and which is located below the normal grade of the gravity system and which must be emptied by mechanical means.

**Supports.** Supports, hangers, and anchors are devices for properly supporting and securing pipe, fixtures, and equipment.

~~**Surge Tank.** A reservoir to modify the fluctuation in flow rates to allow for uniform distribution of gray water to the points of irrigation.~~

222.0

- T -

~~**T Rating.** The time period that the penetration firestop system, including the penetrating item, limits the maximum temperature rise of 325°F (163°C) above its initial temperature through the penetration on the nonfire side, where tested in accordance with ASTM E 814 or UL 1479.~~

**Tailpiece.** The pipe or tubing that connects the outlet of a plumbing fixture to a trap.

**Thermostatic (Temperature Control) Valve.** A mixing valve that senses outlet temperature and compensates for fluctuations in incoming hot or cold water temperatures.

~~**Transition Gas Riser.** A listed or approved section or sections of pipe and fittings used to convey fuel gas and installed in a gas piping system for the purpose of providing a transition from belowground to aboveground.~~

**Trap.** A fitting or device so designed and constructed as to provide, where properly vented, a liquid seal that will prevent the back passage of air without materially affecting the flow of sewage or wastewater through it.

**Trap Arm.** That portion of a fixture drain between a trap and the vent.

**Trap Primer.** A device and system of piping that maintains a water seal in a remote trap.

**Trap Seal.** The vertical distance between the crown weir and the top dip of the trap.

**Crown Weir (Trap Weir).** The lowest point in the cross-section of the horizontal waterway at the exit of the trap.

**Top Dip (of trap).** The highest point in the internal cross-section of the trap at the lowest part of the bend (inverted siphon).

By contrast, the bottom dip is the lowest point in the internal cross-section.

~~**Type B Gas Vent.** A factory made gas vent listed by nationally recognized testing agency for venting listed or approved appliances equipped to burn only gas.~~

**Type BW Gas Vent.** A factory made gas vent listed by a nationally recognized testing agency for venting listed or approved gas-fired vented wall furnaces.

**Type L Gas Vent.** A venting system consisting of listed vent piping and fittings for use with oil burning appliances listed for use with Type L or with listed gas appliances.

## 223.0

– U –

**Unconfined Space.** A room or space having a volume equal to not less than 50 cubic feet per 1000 Btu/h (4.83 m<sup>3</sup>/kW) of the aggregate input rating of all fuel-burning appliances installed in that space. Rooms communicating directly with the space in which the appliances are installed, through openings not furnished with doors, are considered a part of the unconfined space.

**Unsanitary.** See Insanitary.

**Use Point.** A room or area of a room where medical gases are dispensed to a single patient for medical purposes. A use point is permitted to be comprised of a number of station outlets of different gases.

**User Outlet.** See Station Outlet.

## 224.0

– V –

**Vacuum.** A pressure less than that exerted by the atmosphere.

**Vacuum Breaker.** See Backflow Preventer.

**Vacuum Relief Valve.** A device that prevents excessive vacuum in a pressure vessel.

~~**Vacuum System Level 1.** A system consisting of central vacuum producing equipment with pressure and operating controls, shutoff valves, alarm warning systems, gauges, and a network of piping extending to and terminating with suitable station inlets at locations where patient suction could be required. [NFPA 99:3.3.91]~~

**Valve, Isolation.** A valve that isolates one piece of equipment from another.

**Valve, Riser.** A valve at the base of a vertical riser that isolates that riser.

**Valve, Service.** A valve serving horizontal piping extending from a riser to a station outlet or inlet.

**Valve, Source.** A single valve at the source that controls a number of units that make up the source.

~~**Valve, Zone.** A valve that controls the gas or vacuum to a particular area.~~

**Vent.** See Plumbing Vent; Dry Vent; Wet Vent.

~~**Vent Connector, Gas.** That portion of a gas venting system that connects a listed gas appliance to a gas vent and is installed within the space or area in which the appliance is located.~~

**Vent Pipe.** See Plumbing Vent.

**Vent Stack.** The vertical vent pipe installed primarily for the purpose of providing circulation of air to and from any part of the drainage system.

**Vent System.** See Plumbing Vent System.

**Vented Flow Control Device.** A device installed upstream from the hydromechanical grease interceptor having an orifice that controls the rate of flow through the interceptor, and an air intake (vent) downstream from the orifice, which allows air to be drawn into the flow stream.

**Vertical Pipe.** A pipe or fitting that is installed in a vertical position or that makes an angle of not more than 45 degrees (0.79 rad) with the vertical.

## 225.0

– W –

**Wall-Hung Water Closet.** A water closet installed in such a way that no part of the water closet touches the floor.

**Waste.** See Liquid Waste and Industrial Waste.

~~**Waste Anesthetic Gas Disposal.** The process of capturing and carrying away gases vented from the patient breathing circuit during the normal operation of gas anesthesia or analgesia equipment. [NFPA 99:3.3.184]~~

**Waste Pipe.** A pipe that conveys only liquid waste, free of fecal matter.

**Water-Conditioning or Treating Device.** A device that conditions or treats a potable water supply so as to change its chemical content or remove suspended solids by filtration.

**Water Distribution Pipe.** In a building or premises, a pipe that conveys potable water from the building supply pipe to the plumbing fixtures and other water outlets.

**Water Hammer Arrestor.** A device designed to provide protection against hydraulic shock in the building water supply system.

**Water Heater or Hot Water Heating Boiler.** An appliance designed primarily to supply hot water for domestic or commercial purposes and equipped with automatic controls limiting water temperature to a maximum of 210°F (99°C).

**Water Main (Street Main).** A water supply pipe for public or community use.

**Water Supply System.** The building supply pipe, the water distribution pipes, and the necessary connecting pipes, fittings, control valves, backflow prevention devices, and all appurtenances carrying or supplying potable water in or adjacent to the building or premises.

**Water/Wastewater Utility.** A public or private entity which may treat, deliver, or do both functions to reclaimed (recycled) water, potable water, or both to wholesale or retail customers.

~~**Welder, Pipe.** A person who specializes in the welding of pipes and holds a valid certificate of competency from a recognized testing laboratory, based on the requirements of the ASME Boiler and Pressure Vessels code, Section IX.~~

**Wet Vent.** A vent that also serves as a drain.

**Whirlpool Bathtub.** A bathtub fixture equipped and fitted with a circulating piping system designed to accept, circulate, and discharge bathtub water upon each use.

**226.0**

– X –

No definitions.

**227.0**

– Y –

**Yoke Vent.** A pipe connecting upward from a soil or waste stack to a vent stack for the purpose of preventing pressure changes in the stacks.

**228.0**

– Z –

No definitions.