

1.1 **4714.0050 TITLE; INCORPORATION BY REFERENCE.**

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

1.12 **4714.0100 BASIC PLUMBING PRINCIPLES.**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3.23 U. If water closets or other plumbing fixtures are installed in a building where
3.24 there is no public sewer available as determined by the Authority Having Jurisdiction,

4.1 suitable provisions shall be made for treatment of the building sewage by methods that
4.2 meet the requirements of rules administered by the Pollution Control Agency.

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

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

4.8 **4714.0101 CONFORMANCE WITH CODE.**

4.9 Subpart 1. **Scope.** As provided in Minnesota Statutes, sections 326B.43 and
4.10 326B.52, this code applies to all new plumbing installations performed anywhere in the
4.11 state, including additions, extensions, alterations, and replacements.

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

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

4.22 Subp. 4. **Changes in building occupancy.** A plumbing system that is a part of a
4.23 building or structure undergoing a change in use or occupancy, as defined in the building
4.24 code, shall be in accordance with the requirements of this code that are applicable to
4.25 the new use or occupancy.

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

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

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

5.22 **4714.0203 TERMS DEFINED BEGINNING WITH A.**

5.23 Subpart 1. **Added definitions.** UPC section 203.0 is modified by adding the
5.24 following definition:

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

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

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

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

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

6.16 **4714.0204 TERMS DEFINED BEGINNING WITH B.**

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

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

6.20 **4714.0205 TERMS DEFINED BEGINNING WITH C.**

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

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

6.25 **Clear Water Waste** - Uncontaminated water discharges, subsoil discharges, and similar
6.26 discharges.

7.1 **Code** - For purposes of this chapter, "this code" or "the code" means the Minnesota
7.2 Plumbing Code, Minnesota Rules, chapter 4714.

7.3 Subp. 2. **Added definitions.** UPC section 205.0 is modified by adding the following
7.4 definition:

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

7.8 **4714.0206 TERMS DEFINED BEGINNING WITH D.**

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

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

7.13 **4714.0210 TERMS DEFINED BEGINNING WITH H.**

7.14 Subpart 1. **Amended definition.** UPC section 210.0 is modified by amending the
7.15 following definition:

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

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

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

7.23 C - Without external flow control, directly connected.

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

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

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

8.5 **4714.0218 TERMS DEFINED BEGINNING WITH P.**

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

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

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

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

8.18 **4714.0220 TERMS DEFINED BEGINNING WITH R.**

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

8.20 **Registered Professional Engineer** - For purposes of this code, "registered professional
8.21 engineer," "engineer," or "registered engineer" means a person practicing professional
8.22 engineering as described in Minnesota Statutes, section 326.02, subdivision 3, and who is
8.23 licensed in the state of Minnesota as a professional engineer by the Board of Architecture,
8.24 Engineering, Land Surveying, Landscape Architecture, Geoscience, and Interior Design
8.25 under Minnesota Statutes, section 326.10.

9.1 **4714.0221 TERMS DEFINED BEGINNING WITH S.**

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

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

9.5 **4714.0301 SECTION 301.0 MATERIALS - STANDARDS AND ALTERNATIVES.**

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

9.7 **301.1 Minimum Standards.** Pipe, pipe fittings, traps, fixtures, material, and devices
9.8 used in a plumbing system shall:

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

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

9.12 (3) be free from defects.

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

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

9.17 **301.1.1 Marking.** Each length of pipe and each pipe fitting, trap, fixture, material,
9.18 and device used in a plumbing system shall have cast, stamped, or indelibly marked
9.19 on it the manufacturer's mark or name, which shall readily identify the manufacturer
9.20 to the end user of the product. Where required by the approved standard that applies,
9.21 the product shall be marked with the weight and the quality of the product. Materials
9.22 and devices used or entering into the construction of plumbing and drainage systems,
9.23 or parts thereof, shall be marked and identified in a manner satisfactory to the
9.24 Authority Having Jurisdiction. The marking shall be done by the manufacturer. Field
9.25 markings shall not be acceptable.

9.26 **301.1.2 Standards.** Standards listed or referred to in this chapter or other chapters
9.27 cover materials that shall conform to the requirements of this code, where used in

10.1 accordance with the limitations imposed in this or other chapters thereof and their
10.2 listing. Where a standard covers materials of various grades, weights, quality, or
10.3 configurations, the portion of the listed standard that is applicable shall be used.
10.4 Design and materials for special conditions or materials not provided for herein shall
10.5 be permitted to be used only by special permission of the Authority Having Jurisdiction
10.6 after the Authority Having Jurisdiction has been satisfied as to their adequacy. A list
10.7 of accepted plumbing material standards is referenced in Table 1401.1.

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

10.9 **301.2 Alternate Materials and Methods of Construction Equivalency.** Nothing in
10.10 this code is intended to prevent the use of systems, methods, or devices of equivalent or
10.11 superior quality, strength, fire resistance, effectiveness, durability, and safety over those
10.12 prescribed by this code. Prior to installation, technical documentation shall be submitted
10.13 to the Authority Having Jurisdiction to demonstrate equivalency. Unless prohibited by
10.14 this code or by law, the Authority Having Jurisdiction shall have the authority to approve
10.15 or disapprove the system, method, or device for the intended purpose.

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

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

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

10.24 **301.4.6 Inspection and Testing.** The alternative engineered design shall be tested
10.25 and inspected in accordance with the submitted testing and inspection plan and the
10.26 requirements of this code. Prior to the final plumbing inspection, the registered
10.27 professional engineer shall provide written certification to the administrative authority

11.1 that the system has been visually inspected by the registered professional engineer or
11.2 the registered professional engineer's designee, and the installation has been properly
11.3 implemented according to the certified plans, calculations, and specifications.

11.4 **4714.0307 LOCATION.**

11.5 UPC section 307.1 is amended to read as follows:

11.6 **307.1 System.** Except as otherwise provided in this code, no plumbing system, drainage
11.7 system, building sewer, or part thereof shall be located in a lot other than the lot that is the
11.8 site of the building, structure, or premises served by such facilities.

11.9 **4714.0311 INDEPENDENT SYSTEMS.**

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

11.11 **311.0 Use of Public Sewer and Water Systems Required.**

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

11.13 **311.1 General.** If a public sewer is available in a street or alley to a building or premises
11.14 and the connection is feasible, liquid waste from any plumbing system in that building
11.15 shall be discharged into the public sewer unless otherwise prohibited by this code or a
11.16 local ordinance. If a public water supply is accessible, the water distribution system shall
11.17 be connected to it unless otherwise permitted by the Authority Having Jurisdiction. A
11.18 private water well taken out of service because of a connection to a public water supply
11.19 shall be maintained pursuant to Minnesota Rules, chapter 4725, Wells and Borings.

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

11.23 **4714.0312 PROTECTION OF PIPING, MATERIALS, AND STRUCTURES.**

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

12.1 **312.7 Fire-Resistant Construction.** Piping penetrations of fire-resistance-rated walls,
12.2 partitions, floors, floor/ceiling assemblies, roof/ceiling assemblies, or shaft enclosures
12.3 shall be protected in accordance with the State Building Code.

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

12.5 **312.9 Steel Nail Plates.** Plastic and copper piping penetrating framing members to within
12.6 1 inch (25.4 mm) of the exposed framing shall be protected by steel nail plates not less
12.7 than No. 18 gauge (0.0478 inches) (1.2 mm) in thickness. The steel nail plate shall
12.8 extend along the framing member not less than 1-1/2 inches (38 mm) beyond the outside
12.9 diameter of the pipe or tubing.

12.10 **Exception:** See Minnesota Rules, chapter 1346, Minnesota Mechanical and Fuel
12.11 Gas Codes.

12.12 **4714.0313 HANGERS AND SUPPORTS.**

12.13 UPC section 313.7 is deleted in its entirety.

12.14 **4714.0314 TRENCHING, EXCAVATION, AND BACKFILL.**

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

12.16 **4714.0315 JOINTS AND CONNECTIONS.**

12.17 UPC section 315.1 is amended to read as follows:

12.18 **315.1 Unions.** Approved unions shall be permitted to be used in drainage piping where
12.19 accessibly located in the trap seal or between a fixture and its trap in the vent system,
12.20 except underground or in wet vents, at a point in the water supply system.

12.21 **4714.0317 FOOD-HANDLING ESTABLISHMENTS.**

12.22 UPC section 317.1 is amended to read as follows:

12.23 **317.1 General.** Soil or drain pipes installed over areas where food or drink will be stored,
12.24 prepared, or displayed shall be installed with the minimum number of joints necessary and
12.25 connected to the nearest adequately sized vertical stack with the following provisions:

- 13.1 (1) Plumbing openings through floors over such areas shall be sealed watertight to the
13.2 floor construction.
- 13.3 (2) Floor and shower drains installed above such areas shall be equipped with integral
13.4 seepage pans.
- 13.5 (3) Cleanouts shall be extended through the floor construction above.
- 13.6 (4) Piping subject to operation at temperatures that will form condensation on the exterior
13.7 of the pipe shall be thermally insulated.
- 13.8 (5) Where pipes are installed in ceilings above such areas, the ceiling shall be of the
13.9 removable type, or shall be provided with access panels in order to form a ready access
13.10 for inspection of piping.

13.11 **4714.0319 MEDICAL GAS AND VACUUM SYSTEMS.**

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

13.13 **4714.0403 WATER-CONSERVING FIXTURES AND FITTINGS.**

13.14 UPC section 403.3 is amended to read as follows:

13.15 **403.3 Urinals.** Urinals shall have an average water consumption not to exceed 1 gallon
13.16 (4 L) of water per flush.

13.17 **403.3.1 Nonwater urinals.** Nonwater urinals shall be listed and comply with the
13.18 applicable standards referenced in Table 1401.1. Nonwater urinals shall have a barrier
13.19 liquid sealant to maintain a trap seal. Nonwater urinals shall permit the uninhibited
13.20 flow of waste through the urinal to the sanitary drainage system. Nonwater urinals
13.21 shall be cleaned and maintained in accordance with the manufacturer's instructions
13.22 after installation. Where a nonwater urinal is installed, a water-supplied fixture shall
13.23 be installed upstream of the nonwater urinal at the end of that same drainage branch.

13.24 **4714.0406 PROHIBITED FIXTURES.**

13.25 UPC section 406.3 is deleted in its entirety.

14.1 **4714.0409 BATHTUBS AND WHIRLPOOL BATHTUBS.**

14.2 UPC section 409.1 is amended to read as follows:

14.3 **409.1 Application.** Bathtubs and whirlpool bathtubs shall comply with the applicable
14.4 standards referenced in Table 1401.1. Pressure sealed doors within bathtubs and whirlpool
14.5 bathtub enclosures shall comply with the applicable standards referenced in Table 1401.1.
14.6 Whirlpool pedicure tubs shall comply with general requirements and water retention
14.7 sections of ASME A112.19.7, Hydromassage Bathtub Appliances, or IAPMO IGC 155,
14.8 Pipeless Whirlpool Bathtub Appliances.

14.9 **4714.0415 DRINKING FOUNTAINS.**

14.10 UPC section 415.2 is amended to read as follows:

14.11 **415.2 Public Use Fountains.** Installation of a combined cold water faucet and drinking
14.12 fountain is prohibited for public use. If a drinking fountain is provided at a public use
14.13 sink, it shall have at least an 18-inch separation from any other faucet spout.

14.14 **4714.0418 FLOOR DRAINS.**

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

14.16 **418.4 Food Storage Areas.** Where drains are provided in storerooms, walk-in freezers,
14.17 walk-in coolers, refrigerated equipment, or other locations where food is stored, the drains
14.18 shall have indirect waste piping. Separate waste pipes shall be run from each food storage
14.19 area, each with an indirect connection to the building sanitary drainage system. Traps shall
14.20 be provided in accordance with Section 801.2.2 and shall be vented.

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

14.25 Subp. 2. **Section 418.** UPC section 418 is amended by adding the following
14.26 subsections.

15.1 **418.6 Elevator Pit Drain.** An elevator pit drain shall discharge to the sanitary sewer using
15.2 an indirect connection that precludes the possibility of sewage backup into the pit. If a
15.3 sump is used, it shall be outside the pit with a dry pan drain flowing to it.

15.4 **418.7 Garage and Parking Area Floor Drains.** Floor area drains in open parking areas,
15.5 including open areas of parking ramps, shall discharge to the storm sewer or to a place of
15.6 disposal satisfactory to the sewer authority. Floor drains in parking areas that are enclosed,
15.7 and floor drains in areas open or enclosed that are used for maintenance or as vehicle wash
15.8 bays, shall discharge to the sanitary sewer if a municipal sewer is available. An oil and
15.9 flammable liquid interceptor shall be provided if required by Section 1017.

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

15.12 **4714.0420 SINKS.**

15.13 UPC section 420.3 is amended to read as follows:

15.14 **420.3 Waste Outlet.** Kitchen and laundry sinks shall have a waste outlet and fixture
15.15 tailpiece not less than 1-1/2 inches (40 mm) in diameter, except commercial pot and
15.16 scullery sinks shall be provided with waste outlets not less than 2 inches (50 mm) in
15.17 diameter. Service sinks shall have a waste outlet and fixture tailpiece not less than 2 inches
15.18 (50 mm) in diameter. Fixture tailpieces shall be constructed from the materials specified in
15.19 Section 701.1 for drainage piping, provided, however, that the connections where exposed
15.20 or accessible shall be permitted to be of seamless drawn brass not less than No. 20 B & S
15.21 Gauge (0.032 inches) (0.81 mm). Waste outlets shall be provided with an approved strainer.

15.22 **4714.0421 FIXTURES AND FIXTURE FITTINGS FOR PERSONS WITH**
15.23 **DISABILITIES.**

15.24 UPC section 421.2 is amended to read as follows:

15.25 **421.2 Limitation of Hot Water Temperature for Public Lavatories.** Hot water
15.26 delivered from public-use lavatories shall be limited to a maximum temperature of 110°

16.1 F (43° C) by a device that is in accordance with ASSE 1070 or CSA B125.3. The water
16.2 heater thermostat shall not be considered a control for meeting this provision.

16.3 **4714.0422 MINIMUM NUMBER OF REQUIRED FIXTURES.**

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

16.5 **422.1 Required Minimum Number of Fixtures.** For all premises subject to Minnesota
16.6 Rules, chapter 4714, plumbing fixtures shall be provided for the type of building
16.7 occupancy and in the minimum number listed in Minnesota Rules, chapter 1305,
16.8 Minnesota Building Code.

16.9 Subp. 2. **Sections 422.1.1 to 422.5.** UPC sections 422.1.1 to 422.5, including tables,
16.10 are deleted in their entirety.

16.11 Subp. 3. **Table 422.1.** UPC Table 422.1 is deleted in its entirety.

16.12 **4714.0501 GENERAL.**

16.13 UPC section 501.1 is amended to read as follows:

16.14 **501.1 Applicability.** The regulations of this chapter as amended in this code shall govern
16.15 the construction, location, and installation of fuel-burning and other water heaters heating
16.16 potable water. The minimum capacity for storage water heaters shall be in accordance
16.17 with the first hour rating listed in Table 501.1. Design, construction, and workmanship
16.18 shall be in accordance with accepted engineering practices, manufacturer's instructions,
16.19 and applicable standards and shall be of such character as to secure the results sought to be
16.20 obtained by this code. No water heater shall be hereinafter installed that does not comply
16.21 with the type and model of each size thereof approved by the Authority Having Jurisdiction.

16.22 **4714.0503 INSPECTION.**

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

17.1 **4714.0504 WATER HEATER REQUIREMENTS.**

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

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

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

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

17.13 UPC section 505.4.1 is deleted in its entirety.

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

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

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

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

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

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

17.23 **4714.0508 APPLIANCES ON ROOFS.**

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

18.1 **4714.0509 VENTING OF APPLIANCES.**

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

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

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

18.7 **4714.0511 DIRECT-VENT APPLIANCES.**

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

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

18.10 UPC section 601.1 is amended to read as follows:

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

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

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

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

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

19.3 **4714.0602 UNLAWFUL CONNECTIONS.**

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

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

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

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

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

19.20 **4714.0603 CROSS-CONNECTION CONTROL.**

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

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

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

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

20.11 UPC Table 603.2 is not amended.

20.12 Subp. 2. **Section 603.5.4.** UPC section 603.5.4 is amended to read as follows:

20.13 **603.5.4 Heat Exchangers.** Heat exchangers used for heat transfer, heat recovery, or
20.14 solar heating shall protect the potable water system from being contaminated by the
20.15 heat-transfer medium.

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

20.18 (1) Connected to:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

23.7 **4714.0604 MATERIALS.**

23.8 UPC section 604.11 is amended to read as follows:

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

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

23.15 UPC section 608.5 is amended to read as follows:

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

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

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

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

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

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

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

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

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

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

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

TABLE 610.3

25.1	Water Supply Fixture Units (WSFU) and Minimum Fixture Branch Pipe Sizes³				
25.3	Appliances, Appurtenances, or Fixtures ²	Minimum Fixture Branch Pipe Size ^{1,4} (inches)	Private	Public	Assembly ⁶
25.4			25.5	25.6	25.7
25.8	Bathtub or Combination Bath/Shower (fill)	1/2	4.0	4.0	-
25.10	3/4-inch Bathtub Fill Valve	3/4	10.0	10.0	-
25.11	Bidet	1/2	1.0	-	-
25.12	Clothes Washer	1/2	4.0	4.0	-
25.13	Dental Unit, cuspidor	1/2	-	1.0	-
25.14	Dishwasher, domestic	1/2	1.5	1.5	-
25.15	Drinking Fountain or Water Cooler	1/2	0.5	0.5	0.75
25.16	Hose Bibb	1/2	2.5	2.5	-
25.17	Hose Bibb, each additional ⁸	1/2	1.0	1.0	-
25.18	Lavatory (each basin), or hand sink	1/2	1.0	1.0	1.0
25.19	Lawn sprinkler, each head ⁵	-	1.0	1.0	-
25.20	Mobile Home, each (minimum)	-	12.0	-	-
25.21	Sinks	-	-	-	-
25.22	Bar	1/2	1.0	2.0	-
25.23	Clinic Faucet	1/2	-	3.0	-
25.24	Clinic Flushometer Valve with or	-	-	-	-
25.25	without faucet	1	-	8.0	-
25.26	Kitchen, domestic with or without	-	-	-	-
25.27	dishwasher	1/2	1.5	1.5	-
25.28	Laundry	1/2	1.5	1.5	-
25.29	Service or Mop Basin	1/2	1.5	3.0	-
25.30	Washup, each set of faucets	1/2	-	2.0	-
25.31	Shower, per head	1/2	2.0	2.0	-
25.32	Urinal, 1.0 GPF Flushometer Valve	3/4	See Footnote ⁷		-

26.1	Urinal, greater than 1.0 GPF				
26.2	Flushometer Valve	3/4	See Footnote ⁷		—
26.3	Urinal, flush tank	1/2	2.0	2.0	3.0
26.4	Wash Fountain, circular spray	3/4	—	4.0	—
26.5	Water Closet, 1.6 GPF Gravity Tank	1/2	2.5	2.5	3.5
26.6	Water Closet, 1.6 GPF Flushometer				
26.7	Tank	1/2	2.5	2.5	3.5
26.8	Water Closet, 1.6 GPF Flushometer				
26.9	Valve	1	See Footnote ⁷		—
26.10	Water Closet, greater than 1.6 GPF				
26.11	Gravity Tank	1/2	3.0	5.5	7.0
26.12	Water Closet, greater than 1.6 GPF				
26.13	Flushometer Valve	1	See Footnote ⁷		—
26.14	For SI units: 1 inch = 25 mm				

26.15 **Notes:**

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

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

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

26.19 The separate cold water and hot water fixture unit value for fixtures having both hot
26.20 and cold water connections shall be permitted to be each taken as three-quarters of the
26.21 listed total value of the fixture.
26.22

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

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

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

26.29 ⁷ Where sizing flushometer systems, see Section 610.10.

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

27.5 **4714.0611 WATER CONDITIONING EQUIPMENT.**

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

27.7 **611.0 Water Conditioning Equipment.**

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

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

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

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

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

- 28.1 (1) the manufacturer of equipment manufactured as a complete system; or
28.2 (2) the licensed plumbing contractor or licensed water conditioning contractor who
28.3 assembled the complete system.

28.4 so as to clearly identify the type of equipment and the name and address of the
28.5 manufacturer, licensed plumbing contractor, or licensed water conditioning contractor.

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

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

28.13 **4714.0612 MULTIPURPOSE POTABLE WATER PIPING SYSTEMS.**

28.14 UPC section 612.0 is amended to read as follows:

28.15 **612.0 Multipurpose Potable Water Piping Systems.**

28.16 **612.1 General.** A multipurpose potable water piping system as defined in Minnesota
28.17 Statutes, chapter 299M, shall meet the requirements of this code.

28.18 **4714.0701 MATERIALS.**

28.19 UPC section 701.1 is amended to read as follows:

28.20 **701.1 Drainage Piping.** Materials for drainage piping shall be in accordance with one of
28.21 the referenced standards in Table 701.1 except that:

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

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

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

- 29.1 (4) Copper tube for drainage and pipe venting shall have a weight of not less than that of
 29.2 copper drainage tube type DWV.
- 29.3 (5) Stainless steel 304 pipe and fittings shall not be installed underground and shall be kept
 29.4 not less than 6 inches (152 mm) aboveground.
- 29.5 (6) Cast-iron soil pipe and fittings shall be listed and tested in accordance with standards
 29.6 referenced in Table 1401.1. Such pipe and fittings shall be marked with country of
 29.7 origin and identification of the original manufacturer in addition to markings required
 29.8 by referenced standards.
- 29.9 UPC Table 701.1 is not amended.

29.10 **4714.0702 FIXTURE UNIT EQUIVALENTS.**

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

29.12 **TABLE 702.1**

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

29.14		Minimum Size			
29.15		Trap and Trap			
29.16	Plumbing Appliances,	Arm ⁶			
29.17	Appurtenances, or Fixtures	(inches)	Private	Public	Assembly ⁷
29.18	Bathtub or Combination Bath/Shower	1-1/2	2.0	2.0	—
29.19	Bidet	1-1/4	1.0	—	—
29.20	Bidet	1-1/2	2.0	—	—
29.21	Clothes Washer, Domestic,				
29.22	Standpipe ⁵	2	3.0	3.0	3.0
29.23	Dental Unit, Cuspidor	1-1/4	—	1.0	1.0
29.24	Dishwasher, Domestic, with				
29.25	Independent Drain ²	1-1/2	2.0	2.0	2.0
29.26	Drinking Fountain or Water Cooler	1-1/4	0.5	0.5	1.0
29.27	Food Waste Grinder, Commercial	2	—	3.0	3.0
29.28	Floor Drain, Emergency	2	—	0.0	0.0
29.29	Floor Drain (for Additional Sizes see				
29.30	Section 702.0)	2	2.0	2.0	2.0

30.1	Shower, Single-Head Trap	2	2.0	2.0	2.0
30.2	Shower, Multi-Head, Each				
30.3	Additional	2	1.0	1.0	1.0
30.4	Lavatory, Single	1-1/4	1.0	1.0	1.0
30.5	Lavatory, in Sets of Two or Three	1-1/2	2.0	2.0	2.0
30.6	Washfountain	1-1/2	—	2.0	2.0
30.7	Washfountain	2	—	3.0	3.0
30.8	Mobile Home, Trap	3	12.0	—	—
30.9	Receptor, Indirect Waste ^{1,3}	1-1/2		See footnote ^{1,3}	
30.10	Receptor, Indirect Waste ^{1,4}	2		See footnote ^{1,4}	
30.11	Receptor, Indirect Waste ¹	3		See footnote ¹	
30.12	Sinks	—	—	—	—
30.13	Bar	1-1/2	1.0	—	—
30.14	Bar ²	1-1/2	—	2.0	2.0
30.15	Clinical	3	—	6.0	6.0
30.16	Commercial With Food Waste ²	1-1/2	—	3.0	3.0
30.17	Commercial Pot or Scullery	2	—	4.0	4.0
30.18	Special Purpose ²	1-1/2	2.0	3.0	3.0
30.19	Special Purpose	2	3.0	4.0	4.0
30.20	Special Purpose	3	—	6.0	6.0
30.21	Kitchen, Domestic ² (with or				
30.22	without food waste grinder,				
30.23	dishwasher, or both)	1-1/2	2.0	2.0	—
30.24	Laundry ² (with or without				
30.25	discharge from a clothes washer)	1-1/2	2.0	2.0	2.0
30.26	Service or Mop Basin	2	—	3.0	3.0
30.27	Service or Mop Basin	3	—	3.0	3.0
30.28	Service, Flushing Rim	3	—	6.0	6.0
30.29	Wash, Each Set of Faucets	—	—	2.0	2.0
30.30	Urinal, Integral Trap 1.0 GPF ²	2	2.0	2.0	5.0
30.31	Urinal, Integral Trap Greater Than				
30.32	1.0 GPF	2	2.0	2.0	6.0

31.1	Urinal, Exposed Trap ²	1-1/2	2.0	2.0	5.0
31.2	Water Closet, 1.6 GPF Gravity Tank	3	3.0	4.0	6.0
31.3	Water Closet, 1.6 GPF Flushometer				
31.4	Tank	3	3.0	4.0	6.0
31.5	Water Closet, 1.6 GPF Flushometer				
31.6	Valve	3	3.0	4.0	6.0
31.7	Water Closet, Greater Than 1.6 GPF				
31.8	Gravity Tank ⁶	3	4.0	6.0	8.0
31.9	Water Closet, Greater Than 1.6 GPF				
31.10	Flushometer Valve	3	4.0	6.0	8.0

31.11 For SI units: 1 inch = 25 mm

31.12 **Notes:**

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

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

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

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

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

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

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

31.24 **4714.0704 FIXTURE CONNECTIONS (DRAINAGE).**

31.25 UPC section 704.3 is amended to read as follows:

31.26 **704.3 Commercial Dishwashing Machines and Sinks.** Pot sinks, scullery sinks,
31.27 commercial kitchen sinks, beverage service sinks, dishwashing sinks, silverware sinks,
31.28 commercial dishwashing machines, silverware-washing machines, and other similar

32.1 fixtures shall be connected directly to the drainage system. A floor drain constructed
32.2 without backwater valves shall be provided adjacent to the fixture. The fixture shall be
32.3 connected on the sewer side of the floor drain trap and no other drainage line shall be
32.4 connected between the floor drain waste connection and the fixture drain. The fixture and
32.5 floor drain shall be trapped and vented in accordance with this code.

32.6 **4714.0705 JOINTS AND CONNECTIONS.**

32.7 UPC subsection 705.10.2 is amended to read as follows:

32.8 **705.10.2 Expansion Joints.** Expansion joints shall be accessible and shall be
32.9 permitted to be used where necessary to provide for expansion and contraction
32.10 of the pipes.

32.11 **4714.0707 CLEANOUTS.**

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

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

32.18 **4714.0710 DRAINAGE OF FIXTURES LOCATED BELOW THE NEXT**
32.19 **UPSTREAM MANHOLE OR BELOW THE MAIN SEWER LEVEL.**

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

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

32.25 **710.12.1 Discharge Piping.** The discharge piping shall be sized in accordance with
32.26 the manufacturer's installation instructions and shall be not less than 1 1/4 inches (32

33.1 mm) in diameter. A check valve and fullway-type shutoff valve shall be located
33.2 within the discharge line.

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

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

33.9 **710.13.1 Sumps.** The sump shall be watertight and gastight.

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

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

33.19 **4714.0712 TESTING.**

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

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

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

34.1 **712.4 Negative Test.** Concrete manholes and sewer lines shall be tested by negative
34.2 pressure in accordance with ASTM Standards C1214-13 and C1244-11 or the Hydrostatic
34.3 Test Method in section 1109.2.2.

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

34.10 **712.6 Test Plugs or Caps.** Test plugs or caps for roof terminals shall extend above or
34.11 outside the end of the vent pipe to provide a visible indication for removal after the test
34.12 has been completed.

34.13 **4714.0713 SEWER REQUIRED.**

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

34.15 **713.1 Where Required.** A building in which plumbing fixtures are installed and premises
34.16 having drainage piping thereon shall have a connection to a public or private sewer, except
34.17 as provided in sections 713.2 and 713.4 and Minnesota Rules, part 4714.0101, subpart 6.

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

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

34.20 **713.7 Installation.** In cities, counties, or both where the installation of building sewers is
34.21 under the jurisdiction of a municipal utility easement, the provisions of this code relating
34.22 to building sewers do not apply.

34.23 **Exception:** Single-family and two-family dwellings and buildings or structures
34.24 accessory thereto, when connected to an approved private sewage disposal system
34.25 prior to the time of connecting the premises to the public sewer need not connect to

35.1 the public sewer when there is insufficient grade or slope to permit drainage to the
35.2 public sewer by gravity and the following conditions are met:

- 35.3 (1) no hazard, nuisance, or unsanitary condition is evidenced from the private sewage
- 35.4 disposal system;
- 35.5 (2) the private sewage system is maintained properly; and
- 35.6 (3) written permission has been obtained from the Authority Having Jurisdiction.

35.7 **4714.0714 DAMAGE TO PUBLIC SEWER OR PRIVATE SEWAGE DISPOSAL**
35.8 **SYSTEM.**

35.9 UPC section 714.5 is amended to read as follows:

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

35.15 **4714.0715 BUILDING SEWER MATERIALS.**

35.16 UPC section 715.3 is amended to read as follows:

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

35.22 **4714.0717 SIZE OF BUILDING SEWERS.**

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

35.24 **TABLE 717.1**

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

35.26 **SLOPE (inches per foot)**

35.27 Size of Pipe (inches)	1/16	1/8	1/4
------------------------------------	-------------	------------	------------

36.1	6 and smaller	(As specified in Table 703.2/No minimum loading)		
36.2	8	1950/1500	2800/625	3900/275
36.3	10	3400/1600	4900/675	6800/300
36.4	12	5600/1700	8000/725	11 200/325
36.5	For SI units: 1 inch = 25 mm, 1 inch per foot = 83.3 mm/m			

36.6 **4714.0721 LOCATION.**

36.7 UPC Table 721.1 is amended to read as follows:

36.8 **TABLE 721.1**

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

36.10	Water supply wells	See M.R. Chapter 4725 ¹
36.11	Building supply	10 ²

36.12 For SI units: 1 foot = 304.8 mm

36.13 **Notes:**

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

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

36.18 **4714.0722 ABANDONED SEWERS AND SEWAGE DISPOSAL FACILITIES.**

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

36.20 **4714.0723 BUILDING SEWER TEST.**

36.21 UPC section 723.1 is amended to read as follows:

36.22 **723.1 General.** Building sewers shall be tested by plugging the end of the building sewer
36.23 at its points of connection with the public sewer or private sewage disposal system and
36.24 completely filling the building sewer with water from the lowest to the highest point
36.25 thereof, or by approved equivalent low-pressure air test. Testing of building sewers shall

37.1 be in accordance with Section 712, as amended. The building sewer shall be gastight
37.2 or watertight.

37.3 **4714.0724 RECREATIONAL VEHICLE SANITARY DISPOSAL STATION.**

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

37.5 **724.0 Recreational Vehicle Sanitary Disposal Station.**

37.6 **724.1 Construction.** Each recreational vehicle sanitary disposal (dump) station shall have
37.7 a concrete slab with the drainage system located as to be on the road (left) side of the
37.8 recreational vehicle. The slab shall be not less than 3 feet by 3 feet (914 mm by 914 mm),
37.9 not less than 3-1/2 inches (89 mm) thick, and properly reinforced. The slab surface shall
37.10 be troweled to a smooth finish and sloped from each side inward to a drainage system inlet.

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

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

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

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

38.1 **4714.0801 INDIRECT WASTES.**

38.2 Subpart 1. **Section 801.2.2.** UPC section 801.2.2 is amended to read as follows:
38.3 **801.2.2 Walk-In Coolers.** Floor drains shall not be located inside walk-in coolers
38.4 unless they are specifically required by the licensing authority. Where required,
38.5 floor drains shall be connected to a separate drainage line discharging into an
38.6 outside receptor. The flood-level rim of the receptor shall not be less than 6 inches
38.7 (152 mm) lower than the lowest floor drain. The floor drains shall be trapped and
38.8 individually vented. Cleanouts shall be provided at 90 degree (1.57 rad) turns and
38.9 shall be accessibly located. The waste shall discharge through an air gap or air break
38.10 into a trapped and vented receptor, except that a full-size air gap is required where
38.11 the indirect waste pipe is under vacuum.

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

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

38.24 **4714.0804 INDIRECT WASTE RECEPTORS.**

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

39.1 **804.2 Domestic or Culinary Type Fixtures Prohibited as Receptors.** No plumbing
39.2 fixture that is used for domestic or culinary purposes shall be used to receive the discharge
39.3 of an indirect waste.

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

39.6 **4714.0813 SWIMMING POOLS.**

39.7 UPC section 813.1 is amended to read as follows:

39.8 **813.1 General.** Pipes carrying wastewater from swimming or wading pools, including
39.9 pool drainage and backwash from filters, water from scum gutter drains and pool deck
39.10 drains, shall be installed as an indirect waste. Where a pump is used to discharge waste pool
39.11 water to the drainage system, the pump discharge shall be installed as an indirect waste.

39.12 **4714.0814 CONDENSATE WASTES AND CONTROL.**

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

39.14 **814.1 Condensate Disposal.** Condensate from air washers, air-cooling coils, fuel-burning
39.15 condensing appliances, the overflow from evaporative coolers, and similar water-supplied
39.16 equipment or similar air-conditioning equipment shall be collected and discharged to an
39.17 approved plumbing fixture or disposal area. Where discharged into the drainage system,
39.18 equipment shall drain by means of an indirect waste pipe. The waste pipe shall have a
39.19 slope of not less than 1/8 inch per foot (10.4 mm/m) or 1 percent slope and shall be made
39.20 of an approved corrosion-resistant material.

39.21 Subp. 2. **Table 814.1.** UPC Table 814.1 is deleted.

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

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

39.24 **814.3 Point of Discharge.** Air-conditioning condensate waste pipes shall connect
39.25 indirectly to the interior drainage system through an air gap or air break to: (1) properly

40.1 trapped and vented receptors; (2) the tailpiece of an approved plumbing fixture; or (3) an
40.2 exterior place of disposal approved by the Minnesota Pollution Control Agency.

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

40.4 **4714.0902 VENTS NOT REQUIRED.**

40.5 UPC section 902.2 is deleted in its entirety.

40.6 **4714.0903 MATERIALS.**

40.7 UPC section 903.1 is amended to read as follows:

40.8 **903.1 Applicable Standards.** Vent pipes and fittings shall comply with the applicable
40.9 standards referenced in Table 701.1, except that:

40.10 (1) Galvanized steel or 304 stainless steel pipe shall not be installed underground and shall
40.11 be not less than 6 inches (152 mm) aboveground.

40.12 (2) ABS and PVC DWV piping installations shall be in accordance with the applicable
40.13 standards referenced in Table 1401.1.

40.14 **4714.0905 VENT PIPE GRADES AND CONNECTIONS.**

40.15 UPC section 905.3 is amended to read as follows:

40.16 **905.3 Vent Pipe Rise.** Except as provided elsewhere in this code, each vent shall rise
40.17 vertically to a point not less than 6 inches (152 mm) above the flood-level rim of the fixture
40.18 served before offsetting horizontally, and where two or more vent pipes converge, each
40.19 such vent pipe shall rise to a point not less than 6 inches (152 mm) in height above the
40.20 flood-level rim of the plumbing fixture it serves before being connected to any other vent.

40.21 **4714.0906 VENT TERMINATION.**

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

40.23 **906.1 Roof Termination.** Each vent pipe or stack shall extend through its flashing and
40.24 shall terminate vertically not less than 12 inches (305 mm) above the roof.

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

41.1 **906.3 Use of Roof.** Vent pipes shall be extended separately or combined and of full
41.2 required size, not less than 12 inches (305 mm) above the roof. Flagpoling of vents shall
41.3 be prohibited except where the roof is used for purposes other than weather protection.
41.4 Vents within 10 feet (3,048 mm) of a part of the roof that is used for such other purposes
41.5 shall extend not less than 7 feet (2,134 mm) above the roof and shall be securely stayed.

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

41.7 **906.7 Frost or Snow Closure.** Vent terminals shall be not less than 2 inches (50 mm) in
41.8 diameter and shall not be smaller than the required vent pipe. Any change in diameter
41.9 shall be made inside the building not less than 12 inches (305 mm) below the roof in an
41.10 insulated space and terminate not less than 12 inches (305 mm) above the roof.

41.11 **4714.1001 TRAPS REQUIRED.**

41.12 UPC section 1001.1 is amended to read as follows:

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

42.1 **4714.1007 TRAP SEAL PROTECTION.**

42.2 UPC section 1007 is deleted in its entirety.

42.3 **4714.1008 BUILDING TRAPS.**

42.4 UPC section 1008 is deleted in its entirety.

42.5 **4714.1009 INDUSTRIAL INTERCEPTORS (CLARIFIERS) AND SEPARATORS.**

42.6 UPC section 1009.2 is amended to read as follows:

42.7 **1009.2 Approval.** The size, type, and location of each interceptor (clarifier) or separator
42.8 shall meet the requirements of this chapter.

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

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

42.15 **4714.1010 SLAUGHTERHOUSES, PACKING ESTABLISHMENTS, ETC.**

42.16 UPC section 1010.1 is amended to read as follows:

42.17 **1010.1 Slaughterhouses.** Slaughtering and dressing room drains shall be equipped with
42.18 separators or interceptors approved by the administrative authority, which shall prevent
42.19 the discharge into the drainage system of feathers, entrails, or other material likely to
42.20 clog the drainage system.

42.21 **4714.1014 GREASE INTERCEPTORS.**

42.22 UPC section 1014.3.7 is amended to read as follows:

42.23 **1014.3.7 Abandoned Gravity Grease Interceptors.** Abandoned gravity grease
42.24 interceptors shall be pumped and filled as required by the Authority Having
42.25 Jurisdiction.

43.1 **4714.1101 GENERAL.**

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

43.3 **1101.1 Where Required.** Roofs, paved areas, yards, courts, courtyards, vent shafts, light
43.4 wells, or similar areas having rainwater, shall be drained into a separate storm sewer system
43.5 or into a combined sewer system where a separate storm sewer system is not available, or
43.6 to some other place of disposal satisfactory to the Authority Having Jurisdiction. In no
43.7 case shall water from roofs or any building roof drainage flow onto the public sidewalk. In
43.8 the case of one- and two-family dwellings, storm water shall be permitted to be discharged
43.9 on flat areas, such as lawns, so long as the storm water shall flow away from the building
43.10 and away from adjoining property and shall not create a nuisance.

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

43.12 **1101.2 Storm Water Drainage to Sanitary Sewer Prohibited.** Storm water shall not be
43.13 drained into sewers intended for sanitary drainage unless approved by the municipal sewer
43.14 authority or stated elsewhere in this code.

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

43.16 **1101.3 Material Uses.** Rainwater piping placed within the interior of a building or run
43.17 within a vent or shaft shall be of cast-iron, galvanized steel, wrought iron, brass, copper,
43.18 lead, Schedule 40 ABS DWV, Schedule 40 PVC DWV, stainless steel 304 or 316L
43.19 [stainless steel 304 pipe and fittings shall not be installed underground and shall be kept
43.20 not less than 6 inches (152 mm) aboveground], or other approved materials. Changes
43.21 in direction shall be in accordance with Section 706.0. ABS and PVC DWV piping
43.22 installations shall be installed in accordance with IS 5 and IS 9.

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

43.24 **1101.11 Roof Drainage.**

43.25 **1101.11.1 Primary Roof Drainage.** When roof areas of a building are drained
43.26 by roof drains, the location and sizing of the drains shall be coordinated with the

44.1 structural design and pitch of the roof in accordance with section 1106 or as permitted
44.2 elsewhere in this code. The roof drainage system shall be sized on a basis of a rate of
44.3 rainfall of at minimum 4 inches per hour.

44.4 **1101.11.2 Secondary Drainage.** Secondary (emergency) roof drainage shall be
44.5 provided in accordance with Minnesota Rules, chapter 1305.

44.6 UPC Table 1101.11 is not amended.

44.7 Subp. 5. Sections **1101.11.2.1, 1101.11.2.2, 1101.2.2 (A), and 1101.11.2.2 (B).**
44.8 UPC subsections 1101.11.2.1, 1101.11.2.2, 1101.11.2.2 (A), and 1101.11.2.2 (B) are
44.9 deleted in their entirety.

44.10 **4714.1106 SIZE OF LEADERS, CONDUCTORS, AND STORM DRAINS.**

44.11 UPC section 1106.3 is amended to read as follows:

44.12 **1106.3 Reduction in Size Prohibited.** Except for siphonic roof drainage systems, storm
44.13 drain piping shall not reduce in size in the direction of flow, including changes in direction
44.14 from horizontal to vertical.

44.15 **4714.1108 CONTROLLED-FLOW ROOF DRAINAGE.**

44.16 UPC section 1108.1 is amended to read as follows:

44.17 **1108.1 Application.** The controlled-flow roof drainage system shall be sized on the basis
44.18 of controlled flow and storage of the storm water on the roof, provided the design is based
44.19 on a minimum of 4 inches per hour and the following conditions are met:

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

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

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

- 45.1 (4) Each roof drain shall have a precalibrated, fixed (nonadjustable), and proportional
45.2 weir (notched) in a standing water collar inside the strainer. No mechanical devices or
45.3 valves shall be allowed.
- 45.4 (5) Pipe sizing shall be based on the precalibrated rate of flow (gpm) (L/s) of the
45.5 precalibrated weir for the maximum allowable water depth, and Tables 1101.7 and 1101.11.
- 45.6 (6) The height of stones or other granular material above the waterproofed surface shall
45.7 not be considered in water depth measurement, and the roof surface in the vicinity of the
45.8 drain shall not be recessed to create a reservoir.
- 45.9 (7) Roof design, where controlled-flow roof drainage is used, shall be such that the design
45.10 roof live load is not less than 40 lb/ft².
- 45.11 (8) Scuppers shall be provided in parapet walls. The distance of scupper bottoms above the
45.12 roof level at the drains shall not exceed the maximum distances specified in Table 1108.1(8).
- 45.13 (9) Scupper openings shall be not less than 4 inches (102 mm) high and have a width equal
45.14 to the circumference of the roof drain required for the area served, sized in accordance
45.15 with Table 1101.11.
- 45.16 (10) Flashings shall extend above the top of the scuppers.
- 45.17 (11) At a wall or parapet, 45-degree (0.79 rad) cants shall be installed.
- 45.18 (12) Separate storm and sanitary drainage systems shall be provided within the building.
- 45.19 (13) Calculations for the roof drainage system shall be submitted, along with the plans, to
45.20 the Authority Having Jurisdiction for approval.

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

45.22 **4714.1109 TESTING.**

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

45.24 **1109.1 Testing Required.** Building storm drainage systems that are new and parts of
45.25 existing systems that have been altered, extended, or repaired shall be tested in accordance
45.26 with section 712 to disclose leaks and defects, except as provided in section 1109.2. Any

46.1 section of the building storm sewer that passes through contaminated soils or contaminated
46.2 water must be air tested in accordance with section 712.3.

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

46.4 **1109.2 Exceptions.**

46.5 **1109.2.1** Testing is not required for:

46.6 (1) outside leaders;

46.7 (2) perforated or open drain tile; or

46.8 (3) portions of storm drainage system and sewers that are located more than ten feet
46.9 from buildings, more than ten feet from buried water lines, and more than 50 feet from
46.10 water wells, and that do not pass through soil or water identified as being contaminated.

46.11 **1109.2.2** Building storm sewers shall be tested in accordance with section 712 or the
46.12 Hydrostatic Test Method from the City Engineers Association of Minnesota. The
46.13 Hydrostatic Test Method, provisions E2 and E3, as specified in Standard Utilities
46.14 Specifications for Watermain and Service Line Installation and Sanitary Sewer and
46.15 Storm Sewer Installation, written and published by the City Engineers Association
46.16 of Minnesota, 2013 edition, is incorporated by reference, is not subject to frequent
46.17 change, and is available in the office of the commissioner of labor and industry.

46.18 **4714.1110 SIPHONIC ROOF DRAINAGE SYSTEM.**

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

46.20 **1110.0 Siphonic Roof Drainage System.**

46.21 **1110.1 General Requirements.** Siphonic roof drainage systems shall be designed as an
46.22 engineered siphonic roof drainage system when allowed by the administrative authority.
46.23 The engineered siphonic roof drainage system shall meet the requirements of Sections
46.24 1110.2 and 1110.3.

46.25 **1110.2 Design Criteria.** The siphonic roof drainage system shall be designed and certified
46.26 by a registered professional engineer.

47.1 **1110.2.1 Sizing.** The system shall be sized on the basis of a minimum rate of rainfall
47.2 of 4 inches per hour.

47.3 **1110.2.2 Design.** The drainage system shall be designed according to ASPE Standard
47.4 45, Siphonic Roof Drainage, and according to the manufacturer's recommendations
47.5 and requirements. Manufacturer design software shall be in accordance with ASPE
47.6 Standard 45.

47.7 **1110.2.3 Roof drain bodies.** Roof drains shall meet ASME A112.6.9, Siphonic
47.8 Roof Drains.

47.9 **1110.2.4 Water accumulation.** When designed for water accumulation, the roof shall
47.10 be designed for the maximum possible water accumulation according to Section
47.11 1108.1 (7), as amended in this code, and Minnesota Rules, chapter 1305.

47.12 **1110.2.5 Pipe size and cleanouts.** Minimum pipe size shall be 1-1/2 inches. All pipe
47.13 sizes and cleanouts in the drainage system shall be designed and installed according
47.14 to ASPE Standard 45.

47.15 **1110.2.6 Horizontal pipes.** Horizontal pipe size shall not reduce in the direction of
47.16 flow.

47.17 **1110.2.7 Plans and specifications.** The plans and specifications for the drainage
47.18 system shall indicate the siphonic roof drainage system as an engineered method
47.19 used for the design.

47.20 **1110.2.8 Markings.** The installed drainage system shall be permanently and
47.21 continuously marked as a siphonic roof drainage system at approved intervals and
47.22 clearly at points where piping passes through walls and floors. Roof drains shall be
47.23 marked in accordance with ASME A112.6.9.

47.24 **1110.2.9 Transition locations.** The transition locations from the siphonic roof
47.25 drainage system to a gravity system shall be determined by the registered professional
47.26 engineer at a location approved by the administrative authority. The design, sizing,
47.27 and venting of the transition location shall be in accordance with ASPE Standard 45.

48.1 The gravity portion of the building storm sewer system receiving the siphonic roof
48.2 drainage system shall be sized for the design rate but not less than a rainfall rate of 4
48.3 inches per hour and in accordance with Section 1106.0.

48.4 **1110.2.10 Required submissions.** All plans, specifications, and calculations shall
48.5 be signed and sealed by the registered professional engineer and submitted to the
48.6 administrative authority. The submitted calculations shall include performance
48.7 data for the drainage system for the required rainfall rate, including the minimum
48.8 and maximum calculated operating pressures and velocities verifying that the
48.9 design solution is within the operating parameters required by the design standard.
48.10 All performance data shall be reported as the extreme maximum and minimum
48.11 calculations and shall not be presented as averaged data.

48.12 **1110.3 Proof of Suitability.** Upon completion of the project: proper tests, inspections,
48.13 and certification of the siphonic roof drainage system shall be performed according
48.14 to items 1110.3.1 and 1110.3.2:

48.15 **1110.3.1 Testing.** Testing shall be performed according to ASPE Standard 45.

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

49.1 **4714.1401 REFERENCED STANDARDS.**

49.2 Table 1401.1 is amended to add the following:

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

49.5 ASTM Standards C1214-13 referenced in section 712.4.

49.6 ASTM Standards C1244-11 referenced in section 712.4.

49.7 IAPMO IGC 155-2008, Pipeless Whirlpool Bathtub Appliances referenced in section
49.8 409.1.

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

49.11 **4714.1701 GENERAL.**

49.12 UPC section 1701.1 is amended to read as follows:

49.13 **1701.1 Applicability.** The provisions of this chapter shall apply to the installation,
49.14 construction, alteration, and repair of rainwater catchment systems for nonpotable
49.15 applications listed in Section 1702.1.

49.16 **1701.1.1 Irrigation.** Rainwater catchment systems used for lawn irrigation are not
49.17 covered under this chapter.

49.18 **1701.1.2 Combination Systems.** Rainwater catchment systems used for lawn
49.19 irrigation in combination with any uses listed in Section 1702.1 shall meet the
49.20 requirements of this chapter. The irrigation system shall be separated by an air gap or
49.21 proper backflow protection as required for potable water.

49.22 **4714.1702 NONPOTABLE RAINWATER CATCHMENT SYSTEMS.**

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

49.24 **1702.1 General.** The installation, construction, alteration, and repair of rainwater
49.25 catchment systems intended to supply uses such as water closets, urinals, trap primers for

50.1 floor drains and floor sinks, industrial processes, water features, vehicle washing facilities,
50.2 cooling tower makeup, and similar uses shall be approved by the commissioner.

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

50.4 **1702.2 Plumbing Plan Submission.** No permit for a rainwater catchment system shall
50.5 be issued until complete plumbing plans have been submitted and approved by the
50.6 commissioner in accordance with Minnesota Rules, part 1300.0215, subpart 6.

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

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

50.16 Subp. 4. **Section 1702.5.** UPC section 1702.5 is amended to read as follows:

50.17 **1702.5 Initial Cross-Connection Test.** Where a portion of a rainwater catchment
50.18 system is installed within a building, a cross-connection test is required in accordance
50.19 with Section 1702.11.2, as amended. Before the building is occupied or the system is
50.20 activated, the plumbing contractor shall perform the initial cross-connection test in the
50.21 presence of the Authority Having Jurisdiction. The test shall be ruled successful before
50.22 final approval is granted.

50.23 Subp. 5. **Section 1702.7.** UPC section 1702.7 is amended to read as follows:

50.24 **1702.7 Rainwater Catchment System Materials.** Rainwater catchment system materials
50.25 shall comply with Sections 1702.7.1 through 1702.7.4.

51.1 **1702.7.1 Water Supply and Distribution Materials.** Rainwater catchment water
51.2 supply and distribution materials shall comply with Chapter 6, as amended in this
51.3 code, and the requirements of this code for potable water supply and distribution
51.4 systems, unless otherwise provided for in this section.

51.5 **1702.7.2 Rainwater Catchment System Drainage Materials.** Materials used in
51.6 rainwater catchment drainage systems, including gutters, downspouts, conductors,
51.7 and leaders shall be in accordance with Chapter 11, as amended in this code, and the
51.8 requirements of this code for storm drainage.

51.9 **1702.7.3 Storage Tanks.** Rainwater storage tanks shall comply with Section
51.10 1702.9.5, as amended in this code.

51.11 **1702.7.4 Collection Surfaces.** The collection surface shall be constructed of a hard,
51.12 impervious material.

51.13 Subp. 6. **Section 1702.9.** UPC section 1702.9.3 is amended to read as follows:

51.14 **1702.9.3 Collection Surfaces.** Rainwater catchment systems shall collect rainwater
51.15 only from roof surfaces. Rainwater catchment systems shall not collect rainwater from:

51.16 (1) vehicular parking surfaces;

51.17 (2) surface water runoff;

51.18 (3) bodies of standing water; or

51.19 (4) similar nonroof surfaces.

51.20 **1702.9.3.1 Prohibited Discharges.** Overflows and bleed-off pipes from roof-mounted
51.21 equipment and appliances, condensate, and other waste disposal shall not discharge
51.22 onto roof surfaces that collect rainwater for rainwater catchment systems.

51.23 Subp. 7. **Section 1702.9.** UPC section 1702.9.4 is amended to read as follows:

51.24 **1702.9.4 Minimum Water Quality.** The minimum water quality for rainwater
51.25 catchment systems shall meet the applicable water quality recommendations in Table
51.26 1702.9.4.

52.1 Subp. 8. **Section 1702.9.4.** UPC section 1702.9.4 is amended by adding the
52.2 following table:

52.3 **TABLE 1702.9.4**

52.4	Measure	Limit
52.5	Turbidity (NTU)	<1
52.6	E. coli (MPN/100 mL)	2.2
52.7	Odor	Non-offensive
52.8	Temperature (degrees Celsius)	MR
52.9	Color	MR
52.10	pH	MR

52.11 MR = measured and recorded only

52.12 Treatment:

52.13 5 micron or smaller absolute filter

52.14 Minimum .5-log inactivation of viruses

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

52.16 **1702.9.5.1 Construction.** Rainwater storage shall be constructed of solid,
52.17 durable materials not subject to excessive corrosion or decay, watertight, and
52.18 suitable for rainwater storage.

52.19 Subp. 10. **Section 1702.9.5.** UPC section 1702.9.5.6 (A) is amended to read as
52.20 follows:

52.21 **1702.9.5.6 (A) Animals and Insects.** Rainwater tank openings shall be protected
52.22 to prevent the entrance of insects, birds, or rodents into the tank and piping
52.23 system. Screen installed on vent pipes, inlets, and overflow pipes shall be
52.24 corrosion-resistant and have an aperture of not greater than 1/16 inch (1.6 mm)
52.25 and shall be close-fitting.

52.26 Subp. 11. **Section 1702.9.5.** UPC section 1702.9.5 is amended by adding a new
52.27 subsection as follows:

53.1 **1702.9.5.8 Storage Tank Venting.** A vent shall be installed on each tank. The
53.2 vent shall extend from the top of the tank and terminate a minimum of 12
53.3 inches above grade, shall be a minimum of 1-1/2 inches in diameter, and shall
53.4 be turned downward.

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

53.6 **1702.9.6 Pumps.** Pumps serving rainwater catchment systems shall be listed.

53.7 Pumps supplying water to water closets, urinals, and trap primers shall be capable
53.8 of delivering not less than 15 pounds-force per square inch (psi) (103 kPa) residual
53.9 pressure at the highest and most remote outlet served. Where the water pressure in
53.10 the rainwater supply system within the building exceeds 80 psi (552 kPa), a listed
53.11 pressure-reducing valve reducing the pressure to 80 psi (552 kPa) or less to water
53.12 outlets in the building shall be installed in accordance with this code.

53.13 Subp. 13. **Section 1702.9.7.** UPC section 1702.9.7 is amended to read as follows:

53.14 **1702.9.7 Roof Drains.** Primary and secondary roof drain systems shall be designed
53.15 and installed in accordance with Chapter 11, as amended in this code. Secondary roof
53.16 drains shall be equipped with a working alarm.

53.17 Subp. 14. **Section 1702.9.8.** UPC section 1702.9.8 is amended to read as follows:

53.18 **1702.9.8 Water Quality Devices and Equipment.** The rainwater catchment system
53.19 shall include filtration and disinfection to maintain the minimum water quality
53.20 requirements in Table 1702.9.4. At a minimum, a 5-micron absolute filter shall be
53.21 provided along with disinfection to provide a 0.5-log inactivation of viruses. Devices
53.22 and equipment used to treat rainwater shall be suitable for rainwater catchment
53.23 system applications, properly designed, sized, and documented for the specific project
53.24 by a Minnesota registered professional engineer.

53.25 Subp. 15. **Sections 1702.9.11 and 1702.9.12.** UPC sections 1702.9.11 and 1702.9.12
53.26 are deleted in their entirety.

54.1 Subp. 16. **Section 1702.10.** UPC section 1702.10.1 is amended to read as follows:
54.2 **1702.10.1 Commercial, Industrial, and Institutional Restroom Signs.** A sign shall
54.3 be installed in restrooms in commercial, industrial, and institutional occupancies
54.4 using nonpotable rainwater for water closets, urinals, or both. Each sign shall contain
54.5 1/2-inch (12.7 mm) letters of a highly visible color on a contrasting background. The
54.6 location of the sign(s) shall be such that the sign(s) shall be visible to users. Each sign
54.7 shall contain one of the following texts as determined by the application:

54.8 **1702.10.1 (A)** TO CONSERVE WATER, THIS BUILDING USES RAINWATER
54.9 TO FLUSH TOILETS AND URINALS.

54.10 **1702.10.1 (B)** TO CONSERVE WATER, THIS BUILDING USES RAINWATER
54.11 TO FLUSH TOILETS.

54.12 **1702.10.1 (C)** TO CONSERVE WATER, THIS BUILDING USES RAINWATER
54.13 TO FLUSH URINALS.

54.14 **1702.10.1 (D)** TO CONSERVE WATER, THIS BUILDING USES RAINWATER
54.15 TO * _____ *

54.16 * _____ * shall indicate the rainwater usage.

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

54.18 **1702.11.2 Cross-Connection Inspection and Testing.** The potable and rainwater
54.19 catchment water systems shall be isolated from each other and independently
54.20 inspected and tested to ensure there is no cross-connection in accordance with
54.21 Sections 1702.11.2.1 through 1702.11.2.4.

54.22 **1702.11.2.1 Visual System Inspection.** Prior to commencing the
54.23 cross-connection testing and annually thereafter, a dual system inspection shall
54.24 be conducted as follows:

54.25 Pumps, equipment, equipment room signs, and exposed piping in an equipment
54.26 room shall be inspected for visible cross-connections, proper operation, and
54.27 damage.

- 55.1 **1702.11.2.2 Cross-Connection Test.** The following procedure shall be followed
55.2 by the plumbing contractor in the presence of the Authority Having Jurisdiction
55.3 to determine whether a cross-connection has occurred:
- 55.4 (1) The potable water system shall be activated and pressurized. The rainwater
55.5 catchment water system shall be shut down and completely drained.
- 55.6 (2) The potable water system shall remain pressurized while the rainwater
55.7 catchment water system is completely drained. The minimum period the
55.8 rainwater catchment water system is to remain completely drained shall be
55.9 determined based on the size and complexity of the potable water system and
55.10 rainwater catchment water distribution system, but in no case shall that period
55.11 be less than one hour.
- 55.12 (3) Fixtures, potable water, and rainwater, shall be tested and inspected
55.13 for flow. Flow from a rainwater catchment water system outlet indicates
55.14 a cross-connection. No flow from a potable water outlet indicates that it is
55.15 connected to the rainwater catchment water system.
- 55.16 (4) The drain on the rainwater catchment water system shall be checked for flow
55.17 during the test and at the end of the testing period.
- 55.18 (5) The potable water system shall then be completely drained.
- 55.19 (6) The rainwater catchment water system shall then be activated and pressurized.
- 55.20 (7) The rainwater catchment water system shall remain pressurized for a
55.21 minimum time specified by the Authority Having Jurisdiction while the potable
55.22 water system is completely drained. The minimum period the potable water
55.23 system is to remain completely drained shall be based on the size and complexity
55.24 of the potable water system and rainwater catchment water distribution system
55.25 but in no case shall that period be less than one hour.
- 55.26 (8) Fixtures, potable and rainwater catchment, shall be tested and inspected for
55.27 flow. Flow from a potable water system outlet indicates a cross-connection.

56.1 No flow from a rainwater catchment water outlet indicates that it is connected
56.2 to the potable water system.

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

56.5 (10) Where there is no flow detected in the fixtures that would indicate a
56.6 cross-connection, the potable water system shall be repressurized.

56.7 **1702.11.2.3 Discovery of Cross-Connection.** In the event that a cross-connection
56.8 is discovered, the following procedure, in the presence of the Authority Having
56.9 Jurisdiction, shall be activated immediately:

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

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

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

56.14 (4) The building shall be retested following procedures listed in Sections
56.15 1702.11.2.1 and 1702.11.2.2.

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

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

56.21 **1702.11.2.4 Inspection.** An annual inspection of the rainwater catchment water
56.22 system, following the procedures in Section 1702.11.2.1, shall be required.

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

56.25 Alternate testing requirements shall be permitted by the Authority Having
56.26 Jurisdiction.

57.1 Subp. 18. **Section 1702.** UPC section 1702 is amended by adding the following
57.2 section:

57.3 **1702.12 Maintenance and Inspection.** Rainwater catchment water systems and
57.4 components shall be inspected and maintained in accordance with Sections 1702.12.1
57.5 through 1702.12.3.

57.6 **1702.12.1 Frequency.** Rainwater catchment systems and components shall be
57.7 inspected and maintained in accordance with Table 1702.12 unless more frequent
57.8 inspection and maintenance is required by the manufacturer.

57.9 **1702.12.2 Maintenance Log.** A maintenance log for rainwater catchment systems is
57.10 required. The property owner or designated appointee shall ensure that a record of
57.11 testing, inspection, and maintenance in accordance with Table 1702.12 is maintained
57.12 in the log. The log shall indicate the frequency of inspection and maintenance for
57.13 each system.

57.14 **1702.12.3 Maintenance Responsibility.** The required operation, maintenance,
57.15 monitoring, testing, and inspection of rainwater catchment systems shall be the
57.16 responsibility of the property owner.

57.17 Subp. 19. **Section 1702.12.** UPC section 1702.12 is amended by adding the
57.18 following table:

57.19 **TABLE 1702.12**

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

57.21	Description	Minimum Frequency
57.22	Inspect and clean filters and screens, and replace.	Every three months.
57.23	Inspect and verify that required disinfection, filters,	After initial installation and
57.24	and water quality treatment devices and systems are	monthly thereafter.
57.25	operational and maintaining minimum water quality	Exception: Every 12 months
57.26	requirements in Table 1702.9.4.	thereafter when electronically
57.27		monitored.

- 58.1 Inspect and clear debris from rainwater gutters, At the beginning of seasonal
- 58.2 downspouts, and roof washers. usage and monthly during
- 58.3 seasonal usage.
- 58.4 Inspect and clear debris from roof or other aboveground At the beginning of seasonal
- 58.5 rainwater collection surfaces. usage and monthly during
- 58.6 seasonal usage.
- 58.7 Remove tree branches and vegetation overhanging roof As needed.
- 58.8 or other aboveground rainwater collection surfaces.
- 58.9 Inspect pumps and verify operation. After initial installation and every
- 58.10 12 months thereafter.
- 58.11 Inspect valves and verify operation. After initial installation and every
- 58.12 12 months thereafter.
- 58.13 Inspect pressure tanks and verify operation. After initial installation and every
- 58.14 12 months thereafter.
- 58.15 Clear debris from and inspect storage tanks and After initial installation and every
- 58.16 locking devices and verify operation. 12 months thereafter.
- 58.17 Inspect caution labels and marking. After initial installation and every
- 58.18 12 months thereafter.
- 58.19 Cross-connection inspection and test.* After initial installation and
- 58.20 thereafter in accordance with
- 58.21 Section 1702.11.2.4.

58.22 *The cross-connection inspection and test shall be performed in accordance with this

58.23 chapter by a plumber licensed under Minnesota Statutes, section 326B.46, and certified

58.24 to ASSE Standard 5120.

58.25 Subp. 20. **Section 1702.** UPC section 1702 is amended by adding a section as follows:

58.26 **1702.13 Operation and Maintenance Manual.** An operation and maintenance manual

58.27 for rainwater catchment systems shall be supplied to the building owner by the system

58.28 designer. The operating and maintenance manual shall include the following:

58.29 (1) Detailed diagram of the entire system and the location of system components.

58.30 (2) Instructions on operating and maintaining the system.

58.31 (3) Details on maintaining the required water quality in Table 1702.9.4.

- 59.1 (4) Details on deactivating the system for maintenance, repair, or other purposes.
- 59.2 (5) Applicable testing, inspection, and maintenance frequencies in accordance with Table
- 59.3 1702.12.
- 59.4 (6) A method of contacting the manufacturer(s).

59.5 Subp. 21. **Section 1702.** UPC section 1702 is amended by adding the following

59.6 section:

59.7 **1702.14 Separation Requirements.** All underground rainwater service piping shall be

59.8 separated from the building sewer piping in accordance with Section 609.2. Treated,

59.9 nonpotable water pipes shall be permitted to be run or laid in the same trench as potable

59.10 water pipes with a 12-inch minimum vertical and horizontal separation when both pipe

59.11 materials are approved for use within a building. Where horizontal piping materials do not

59.12 meet this requirement, the minimum separation shall be increased to 60 inches. The potable

59.13 water piping shall be installed at an elevation above the treated-nonpotable water piping.

59.14 Subp. 22. **Section 1702.** UPC section 1702 is amended by adding the following

59.15 section:

59.16 **1702.15 Abandonment.** All rainwater catchment systems that are no longer in use and

59.17 fail to be maintained in accordance with Section 1702.12 shall be considered abandoned.

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

59.19 **1702.15.1 General.** Every abandoned rainwater catchment system or part thereof

59.20 covered under the scope of this chapter, as amended in this code, shall be disconnected

59.21 from any remaining systems, drained, plugged, and capped per the requirements of this

59.22 code. Abandoned systems must comply with chapter 11, Storm Drainage, as amended.

59.23 **1702.15.2 Underground Tank.** Every underground water storage tank that has been

59.24 abandoned or otherwise discontinued from use in a rainwater catchment system

59.25 covered under the scope of this chapter, as amended in this code, shall be completely

59.26 drained and filled with earth, sand, gravel, or concrete or removed in a manner

59.27 approved by the administrative authority.

60.1 **REPEALER.** Minnesota Rules, parts 4715.0100; 4715.0200; 4715.0300; 4715.0310;
60.2 4715.0320; 4715.0330; 4715.0340; 4715.0400; 4715.0410; 4715.0420; 4715.0500;
60.3 4715.0510; 4715.0520; 4715.0530; 4715.0540; 4715.0550; 4715.0560; 4715.0570;
60.4 4715.0580; 4715.0590; 4715.0600; 4715.0610; 4715.0620; 4715.0630; 4715.0640;
60.5 4715.0700; 4715.0710; 4715.0720; 4715.0730; 4715.0740; 4715.0750; 4715.0760;
60.6 4715.0770; 4715.0780; 4715.0790; 4715.0800, subparts 1, 2, 4, 5, 6, 6a, and 7; 4715.0805;
60.7 4715.0810; 4715.0815; 4715.0820; 4715.0830; 4715.0840; 4715.0850; 4715.0860;
60.8 4715.0870; 4715.0880; 4715.0890; 4715.0900; 4715.0910; 4715.0920; 4715.0930;
60.9 4715.0940; 4715.0950; 4715.0960; 4715.0970; 4715.1000; 4715.1010; 4715.1020;
60.10 4715.1030; 4715.1100; 4715.1105; 4715.1120; 4715.1130; 4715.1140; 4715.1150;
60.11 4715.1160; 4715.1200; 4715.1210; 4715.1220; 4715.1230; 4715.1240; 4715.1250;
60.12 4715.1260; 4715.1300, subparts 1, 2, 3, 4, and 6; 4715.1305; 4715.1310; 4715.1320;
60.13 4715.1330; 4715.1340; 4715.1350; 4715.1360; 4715.1370; 4715.1380; 4715.1390;
60.14 4715.1400; 4715.1410; 4715.1420; 4715.1430; 4715.1440; 4715.1500; 4715.1510;
60.15 4715.1520; 4715.1530; 4715.1540; 4715.1550; 4715.1560; 4715.1570; 4715.1580;
60.16 4715.1590, subparts 1, 2, 3, and 4; 4715.1600; 4715.1610; 4715.1700; 4715.1710;
60.17 4715.1720; 4715.1730; 4715.1740; 4715.1750; 4715.1760; 4715.1770; 4715.1800;
60.18 4715.1810; 4715.1900; 4715.1910; 4715.1911; 4715.1912; 4715.1920; 4715.1940;
60.19 4715.1941; 4715.1950; 4715.1960; 4715.2000; 4715.2010; 4715.2020; 4715.2030;
60.20 4715.2100; 4715.2110; 4715.2120; 4715.2150; 4715.2160; 4715.2161; 4715.2162;
60.21 4715.2163; 4715.2165; 4715.2170; 4715.2180; 4715.2190; 4715.2200; 4715.2210;
60.22 4715.2215; 4715.2220; 4715.2230; 4715.2240; 4715.2250; 4715.2280; 4715.2300;
60.23 4715.2310; 4715.2320; 4715.2330; 4715.2340; 4715.2350; 4715.2360; 4715.2370;
60.24 4715.2400; 4715.2410; 4715.2420; 4715.2430; 4715.2440; 4715.2450; 4715.2500;
60.25 4715.2510; 4715.2520; 4715.2530; 4715.2540; 4715.2550; 4715.2560; 4715.2570;
60.26 4715.2580; 4715.2600; 4715.2610; 4715.2620; 4715.2630; 4715.2640; 4715.2650;
60.27 4715.2655; 4715.2660; 4715.2700; 4715.2710; 4715.2720; 4715.2730; 4715.2740;

- 61.1 4715.2750; 4715.2760; 4715.2770; 4715.2780; 4715.2790; 4715.2820; 4715.2840;
- 61.2 4715.2850; 4715.2860; 4715.2870; 4715.3500; 4715.3600; 4715.3700; 4715.3800,
- 61.3 subparts 1, 2, 3, 4, 5, 6, 7, 8, 9, 10a, and 11a; 4715.4100; 4715.5000; 4715.5100;
- 61.4 4715.5200; 4715.5300; 4715.5400; 4715.5500; and 4715.5700, are repealed.