CHAPTER 4725
DEPARTMENT OF HEALTH
WATER WELL CONSTRUCTION CODE

4725.0100 DEFINITIONS.

Subpart 1. **Scope.** For the purposes of this chapter adopted under Minnesota Statutes, chapter 103I, the terms defined in this part have the meanings given them, except where the context clearly indicates otherwise.

Subp. 2. [Repealed, 15 SR 78]

Subp. 3. [Repealed, 15 SR 78]

Subp. 4. **APA.** "APA" means the Administrative Procedure Act, Minnesota Statutes, chapter 14.

Subp. 5. **Applicant.** "Applicant" means any person who applies for a well contractor's license, limited well contractor's license, elevator shaft contractor's license, or monitoring well contractor registration under Minnesota Statutes, chapter 103I.

Subp. 6. [Repealed, 15 SR 78]

Subp. 7. [Repealed, 15 SR 78]

Subp. 8. **Commissioner.** "Commissioner" means the commissioner of health or the commissioner's authorized representative.

Subp. 9. **Council.** "Council" means the Advisory Council on Wells and Borings created under Minnesota Statutes, chapter 103I.

Subp. 10. **Licensee.** "Licensee" means a person who is licensed as a well contractor, limited well contractor, or elevator shaft contractor under this chapter and Minnesota Statutes, chapter 103I.

Subp. 11. **Person.** "Person" means any natural person, corporation, partnership, or other business association.

Subp. 12. **Representative.** "Representative" means the individual who is in charge of the licensed or registered contractor's operation and who qualifies for licensure or registration on behalf of a partnership, corporation, or other business association rather than on the individual's own behalf.

Subp. 13. **Upper termination of the well casing.** "Upper termination of the well casing" means a point 12 inches above the established ground surface.

Subp. 14. **Drilling machine.** "Drilling machine" means any machine or device such as a cable tool, hollow rod, or auger used for construction of a well including drive point wells.

Subp. 15. [Repealed, 15 SR 78]

Subp. 16. [Repealed, 15 SR 78]

Subp. 17. **Abandoned well.** "Abandoned well" means a well whose use has been permanently discontinued, or which is in such disrepair that its continued use is impracticable, endangers the quality of the groundwater, or may be a health or safety hazard.

Subp. 18. [Repealed, 15 SR 78]

Subp. 19. **Annular space.** "Annular space" means the space between two cylindrical objects one of which surrounds the other, such as the space between a drillhole and a casing pipe, or between a casing pipe and liner pipe.

Subp. 20. **Approved basement.** "Approved basement" means a private home basement with walls and floor constructed of concrete or equivalent which is not subject to flooding and not located within a floodplain.

Subp. 21. **Aquifer.** "Aquifer" means a water-bearing formation (soil or rock horizon) that transmits water in sufficient quantities to supply a well.

Subp. 22. **Casing.** "Casing" means an impervious durable pipe placed in a well to prevent the walls from caving and to seal off surface drainage or undesirable water, gas, or other fluids to prevent their entering the well and includes specifically but not limited to:

A. "Temporary casing" means a temporary casing placed in soft, sandy, or caving surface formation to prevent the hole from caving during drilling.

B. "Protective casing" means the permanent casing of the well.

Subp. 23. **Cesspool.** "Cesspool" means an underground pit into which raw household sewage or other untreated liquid waste is discharged and from which the liquid seeps into the surrounding soil or is otherwise removed.

Subp. 24. **Coliform group.** "Coliform group" means all of the aerobic and facultative anaerobic, gram-negative, non-spore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35 degrees centigrade.

Subp. 24a. **Confining layer.** "Confining layer" means a stratum or body of soil, sediment, or rock with low vertical permeability relative to the aquifers or beds above or below it.

Subp. 24b. **Contact hour.** "Contact hour" means a minimum of 50 minutes of lecture, demonstration, workshop, or training excluding coffee breaks, registration, meals, or social activities.

Subp. 24c. **Dewatering well.** "Dewatering well" means a nonpotable well used to lower groundwater levels to allow for construction or use of underground space. A dewatering well does not include:

A. excavations 25 feet or less in depth for temporary dewatering during construction; or

B. a well used to lower groundwater levels for control or removal of groundwater contamination.

Subp. 25. [Repealed, 15 SR 78]

Subp. 26. **Drawdown.** "Drawdown" means the extent of lowering of the water surface in a well and aquifer resulting from the discharge of water from the well.

Subp. 27. **Dug well.** "Dug well" means a well in which the side walls may be supported by material other than standard weight steel casing. Water enters a dug well through the side walls and bottom.

Subp. 28. **Established ground surface.** "Established ground surface" means the intended or actual finished grade (elevation) of the surface of the ground at the site of the well.

Subp. 29. **Geological material.** "Geological material" means all materials penetrated in drilling a well.

A. The following table lists materials other than consolidated rock classified according to average particle size (Wentworth 1922).

	Particle Diameters		Screen Slot No.	
Material	Millimeters	Inches	From	To
Clay	Up to 0.005	Up to 0.0002	-	-
Silt	0.005 - 0.062	0.0002 - 0.0025	-	-
Fine Sand	0.062 - 0.250	0.0025 - 0.010	2	10
Medium Sand	0.250 - 0.50	0.010 - 0.020	10	20
Coarse Sand	0.50 - 1.00	0.020 - 0.040	20	40
Very Coarse Sand	1.00 - 2.00	0.040 - 0.080	40	80
Fine Gravel	2.00 - 4.00	0.080 - 0.160	80	160
Coarse Gravel	4.00 - 62.5	0.160 - 2.50	160 and larger	
Cobbles	62.5 - 250.0	2.50 - 10.0	-	-
Boulders	250.0 and larger	10.0 and larger		

B. "Alluvium" is a general term for clay, silt, sand, gravel, or similar unconsolidated material deposited during comparative recent geologic time by a stream or other body of running water as a sorted or semisorted sediment.

C. "Glacial drift (unconsolidated)" means a general term applied to all rock material (clay, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or by running water emanating from the glacier.

D. "Glacial outwash" means a stratified sand and gravel removed or washed out from a glacier by meltwater streams and deposited in front of or beyond the terminal moraine or the margin of an active glacier.

E. "Hardpan" is a term to be avoided if possible, but when used means a hard impervious layer composed chiefly of clay, cemented by relatively insoluble materials, which does not become plastic when mixed with water and definitely limits the downward movement of water and roots.

F. "Shale" means rock consisting of hardened silts and clays.

G. "Sandstone" means cemented or otherwise compacted sediment composed predominately of sand.

H. "Limestone" means rock which contains at least 80 percent of carbonates of calcium and has strong reaction with HCl (muriatic acid).

I. "Dolomite" means rock which contains at least 80 percent of carbonates of magnesium and has a weak reaction with HCl (muriatic acid).

J. "Gypsum" means a soft light colored formation of calcium sulfate crystals and may be found as streaks in a shale formation.

Subp. 30. **Grout.** "Grout" means neat cement, concrete, heavy drilling mud, or heavy bentonite water slurry. Heavy drilling mud or heavy bentonite water slurry when used as grout shall be of sufficient viscosity to require a time of at least 70 seconds to discharge one quart of the material through an API (American Petroleum Institute) marsh funnel viscometer.

Subp. 30a. **Hoist.** "Hoist" means a machine or mechanical device that is mounted on a truck, trailer, or skid which is used to:

A. remove or install a pump or pumping equipment, casing, screen, or pitless adapter or pitless unit;

B. remove an obstruction from a well; or

C. install grout pipe when sealing a well or boring.

Subp. 30b. **Monitoring well.** "Monitoring well" has the meaning given in Minnesota Statutes, section 103I.005, subdivision 14.

Subp. 31. [Repealed, 15 SR 78]

Subp. 31a. **Petroleum bulk storage site.** "Petroleum bulk storage site" means a property on which petroleum products are stored for sale and excludes pipeline terminals and refineries.

Subp. 31b. **Piezometer.** "Piezometer" means an environmental bore hole used to measure water levels or groundwater pressure surfaces. Piezometer does not include devices used to sample, monitor, remediate, or measure pore water pressure in the vadose zone or above a water bearing layer.

Subp. 32. **Pitless adapter.** "Pitless adapter" means a device for above or below ground discharge designed for attachment to one or more openings through a well casing, and constructed so as to prevent the entrance of contaminants into the well.

Subp. 33. **Pitless unit.** "Pitless unit" means an assembly with cap which extends the upper termination of the well casing above grade, and is constructed so as to prevent the entrance of contaminants into the well.

Subp. 34. **Pollution or contamination.** "Pollution" or "contamination" means the presence or addition of any substance to water which is or may become injuri-

ous to the health, safety, or welfare of the general public or private individuals using the well; which is or may become injurious to domestic, commercial, industrial, agricultural, or other uses which are being made of such water.

Subp. 35. **Potable water.** "Potable water" means water which is safe for human consumption in that it is free from impurities in amounts sufficient to cause disease or harmful physiological effects.

Subp. 36. **Pressure tank or hydropneumatic tank.** "Pressure tank" or "hydropneumatic tank" means a closed water storage container constructed to operate under a designed pressure rating to modulate the water system pressure within a selected pressure range.

Subp. 37. **Priming.** "Priming" means the first filling of a pump with water and the action of starting the flow in a pump.

Subp. 37a. **Public water supply.** "Public water supply" has the meaning given in part 4720.0100, subpart 16.

Subp. 38. **Pump house.** "Pump house" means a building constructed over a well exclusively to protect the well, pump, and water treatment equipment.

Subp. 39. **Pump room or well room.** "Pump room" or "well room" means an enclosed structure, either above or in a below grade approved basement housing the pump, top of the well, a suction line or any combination thereof.

Subp. 40. **Pumping water level.** "Pumping water level" means the distance measured from the established ground surface to the water surface in a well being pumped at a specified rate for a specified period of time.

Subp. 41. [Repealed, 15 SR 78]

Subp. 41a. **Registrant.** "Registrant" means a person who is registered as a monitoring well contractor under this chapter and Minnesota Statutes, chapter 103I.

Subp. 41b. **Sealing.** "Sealing" means either:

A. the temporary process of closing or covering a well or boring with a watertight cover or cap and the use of measures to protect the well from contamination; or

B. the process of preparing a well or boring to be permanently filled with grout and the process of permanently filling the well or boring with grout.

Subp. 42. **Sewage.** "Sewage" means the water carried waste products from residences, public buildings, including the excrementious or other discharges from the bodies of human beings or animals together with such groundwater infiltration and surface water as may be present.

Subp. 43. **Seepage pit or dry well.** "Seepage pit" or "dry well" means an underground pit into which a septic tank discharges household sewage or other liquid waste and from which the liquid seeps into the surrounding soil through the bottom and openings in the side of the pit.

Subp. 44. **Septic tank.** "Septic tank" means a watertight tank of durable materials through which sewage flows very slowly and in which solids separate from the liquid to be decomposed or broken down by bacterial action.

Subp. 45. **Sewer.** "Sewer" means a pipe or conduit carrying sewage or into which sewage may back up.

Subp. 46. **Subsurface disposal field, seepage bed, drainfield, percolation system, or tile absorption field.** "Subsurface disposal field," "seepage bed," "drainfield," "percolation system," or "tile absorption field" means a system composed of open jointed tile lines buried in stones and shallow trenches or beds for final disposal into the ground of sewage effluent from a septic tank. The septic tank effluent is applied to land by distribution beneath the surface through the open jointed lines.

Subp. 47. **Static water level.** "Static water level" means the distance measured from the established ground surface to the water surface in a well neither being pumped, nor under the influence of pumping nor flowing under artesian pressure.

Subp. 48. **Subterranean gas.** "Subterranean gas" means a gas occurring below the land surface. It may be flammable such as methane or highly toxic as hydrogen sulfide and may be associated with ground water.

Subp. 49. **Suction line.** "Suction line" means a pipe or line connected to the inlet side of a pump or pumping equipment or any connection to a well casing that may conduct nonsystem water into the well because of negative pressures.

Subp. 49a. **Unconventional well.** "Unconventional well" means a dug well or drive point well.

Subp. 50. **Water varieties.** "Water varieties" mean:

A. "Groundwater" means the water in the zone of saturation in which all of the pore spaces of the subsurface material are filled with water. The water that supplies springs and wells is groundwater.

B. "Near surface water" means water in the zone immediately below the ground surface. It may include seepage from barnyards, disposal beds or leakage from sewers, drains, and similar sources of pollution.

C. "Surface water" means water that rests or flows on the surface of the ground.

Subp. 51. **Well.** "Well" means well as defined in Minnesota Statutes, section 103I.005, subdivision 21. Well includes drinking water supply wells, dewatering wells, monitoring wells, wells used to lower groundwater levels for control or removal of groundwater contamination, and other water supply wells.

Subp. 51a. **Well pump or pumping equipment.** "Well pump or pumping equipment" means a device, machine, or material used to withdraw or otherwise obtain water from a well, and all necessary seals, fittings, pump controls, and primary water storage tanks. Well pump or pumping equipment does not include:

A. accessory water tanks, such as fire protection tanks, and elevated or ground storage tanks used for public water supplies;

B. water sampling devices that are installed in a monitoring well to obtain a water sample and are then removed after the sample is collected; or

C. devices used in the construction or rehabilitation of a well to construct or develop the well.

Subp. 52. **Well seal.** "Well seal" means a device or method used to protect a well casing or water system from the entrance of any external pollutant at the point of entrance into the casing of a pipe, electric conduit, or water level measuring device.

Subp. 53. **Well vent.** "Well vent" means an outlet at the upper terminal of a well casing to allow equalization of air pressure in the well and escape of toxic or flammable gases when present.

Subp. 54. **Yield or production.** "Yield" or "production" means the quantity of water per unit of time which may flow or be pumped from a well under specified conditions.

Statutory Authority: *MS s 103I.101; 156A.01 to 156A.08*

History: *8 SR 1625; 15 SR 78*

4725.0200 APPLICATION TO ALL WELLS, ENVIRONMENTAL BORE HOLES, AND EXCAVATIONS FOR ELEVATOR SHAFTS.

Subpart 1. **Applicability.** This chapter applies to all wells, environmental bore holes, and borings for elevator shafts in Minnesota except those specifically exempted by Minnesota Statutes, chapter 103I. This chapter applies to state and local governments except that, pursuant to Minnesota Statutes, section 103I.112, state and local governments are exempt from fees required under this chapter.

Subp. 2. **Owner responsibility.** The owner of a well or boring is bound by all the provisions of parts 4725.0100 to 4725.7600 which relate to location, construction, maintenance, and sealing of wells or borings.

Statutory Authority: *MS s 103I.101; 156A.01 to 156A.08*

History: *15 SR 78*

4725.0300 PUBLIC WATER SUPPLY.

In accordance with part 4720.0010, no system of water supply, where such system is for public use, shall be installed by any public agency or by any person or corporation, nor shall any such existing system be materially altered or extended, until complete plans and specifications for the installation, alteration, or extension, together with such information as the commissioner may require shall have been submitted in duplicate and approved by the commissioner insofar as any features thereof affect or tend to affect the public health. No construction shall take place except in accordance with the approved plans. The plans for the well shall conform as specified by this chapter. No community public water supply well may be drilled without approval of the site by the commissioner according to part 4720.0010.

Statutory Authority: *MS s 103I.101; 144.08; 144.12; 144.383*

History: *15 SR 78*

4725.0400 [Repealed, 15 SR 1597]

4725.0410 VARIANCE.

Subpart 1. **General.** The commissioner shall grant a variance to any provision of this chapter according to the procedures and criteria specified in parts 4717.7000 to 4717.7050. The variance request must be accompanied by the fee specified in Minnesota Statutes, section 103I.101, subdivision 6.

Subp. 2. **Additional standards for construction, repair, or sealing variance requests.** In addition to subpart 1, a request to vary a construction, repair, or sealing provision related to wells or borings in parts 4725.1860 and 4725.2300 to 4725.7600 must also include:

A. the location of the well or boring in terms of township, range, and four-quarter sections;

B. the unique number, if assigned;

C. the name, address, and telephone number of the contractor doing work, the property owner, and the well owner;

D. a scaled map showing the location of the well or boring in relation to all property lines, structures, utilities, and contamination sources cited in part 4725.2000;

E. the proposed depth of the well or boring;

F. the casing type, its diameter, and its depth;

G. a description of the method of construction, grout materials, and method of emplacement;

H. a description of the anticipated geologic conditions; and

I. the depth to water, pumping rate, number of persons served by the well, and a description of the use of the well.

Subp. 3. **Additional standards for variance request from isolation distance.** In addition to the information in subparts 1 and 2, a variance request to parts 4725.1900 to 4725.2200 must include:

A. information on special construction methods or precautions proposed to prevent contamination of the well, boring, or groundwater;

B. a description of the age, design, size, and type of construction of any existing or potential contamination source as specified in part 4725.2000;

C. any testing, inspection, or certification data and the name and address of the person supplying the data;

D. information on soil type from a soil survey, percolation test, or soil boring report; and

E. a copy of any review of contamination sources done by a local or state unit of government under other applicable regulations.

Statutory Authority: *MS s 14.05*

History: *15 SR 1597*

4725.0450 LICENSING AND REGISTRATION.

Subpart 1. **Wells; vertical heat exchangers; groundwater thermal exchange devices.** Except for those persons exempted under Minnesota Statutes, section 103I.205, subdivision 4, paragraph (e), a person must hold a license or registration according to Minnesota Statutes, chapter 103I, to:

A. construct, repair, or seal a well or boring; or

B. construct or seal a vertical heat exchanger or groundwater thermal exchange device.

Subp. 2. **Elevator shafts.** After July 1, 1990, a person may not excavate a hole for an elevator shaft without holding an elevator shaft contractor license or a well contractor license.

Subp. 3. **Well pumps and pumping equipment.** A person may not install a well pump or pumping equipment without holding a well contractor license or a limited well contractor license to install a well pump or pumping equipment as required by Minnesota Statutes, chapter 103I. Nothing in this subpart shall prohibit a monitoring well contractor from installing a well pump or pumping equipment in a monitoring well, a limited dewatering well contractor from installing a pump in a dewatering well, or a limited unconventional well contractor from installing a well pump or pumping equipment in an unconventional well. Nothing in this subpart shall prohibit a licensed plumber or plumbing contractor from installing water pressure tanks not attached to the well casing, or water storage tanks, or from installing and servicing pressure water service lines from the source of supply, according to applicable law.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78; 15 SR 1474*

LICENSING

4725.0500 QUALIFICATIONS FOR CONTRACTOR LICENSE OR REGISTRATION.

Subpart 1. **General.** An applicant for a well contractor, limited well contractor, or elevator shaft contractor license, or a monitoring well contractor registration, must meet the requirements in this part. The applicant must have honesty, integrity, and the ability to perform the work of a contractor. The applicant must submit to the commissioner a properly completed application and successfully complete the examination provided for in this chapter and Minnesota Statutes, chapter 103I.

Subp. 2. **Well contractor.** An applicant for a well contractor license to construct, repair, and seal a well, unconventional well, monitoring well, environmental bore hole, and an excavation for an elevator shaft; and to install a pump or pumping equipment, must have four years of experience. A year of experience is a year in which the applicant personally, and under the supervision of a licensed well contractor, drilled a minimum of five wells and was drilling wells, sealing wells, and installing pumps for 1,000 hours. An applicant drilling 1,000 hours per year and completing fewer than five wells per year may qualify if the experience is gained in constructing one or more large diameter wells (casing outer diameter of ten inches or more) that are more than 500 feet deep. Supervision of a drilling operation shall not be considered as an equivalent to personally drilling a well.

Subp. 2a. **Individual well contractor.** A person may apply as an individual for

a well contractor license if the person meets the license requirements in Minnesota Statutes, section 103I.525, subdivision 1, paragraph (c).

Subp. 3. **Monitoring well contractor.** A person may register as a monitoring well contractor to construct, repair and seal monitoring wells, install pumps in monitoring wells, and construct and seal environmental bore holes, if the person meets the requirements in items A to C.

A. The person must be:

(1) a professional engineer registered with the Board of Architecture, Engineering, Land Surveying, and Landscape Architecture according to Minnesota Statutes, sections 326.02 to 326.15;

(2) a hydrologist or hydrogeologist certified by the American Institute of Hydrology; or

(3) a geologist certified by the American Institute of Professional Geologists.

B. The person must have three years of experience. A year of experience is a year in which the applicant worked a minimum of 500 hours in construction, repair, and sealing of monitoring wells, piezometers, or environmental bore holes including design, field supervision, or actual construction of monitoring wells, piezometers, or environmental bore holes.

C. The applicant must have experience in design or field supervision or actual construction of 50 monitoring wells, piezometers, or environmental bore holes.

Subp. 4. **Limited well contractor.** A person must have a well contractor license or a separate limited well contractor license for each of the categories in items A to C to:

A. construct, repair, and seal unconventional wells;

B. install or repair well screens or pitless units or adaptors and well casings from the pitless unit or adaptor to the upper termination of the well casing;

C. install a well pump or pumping equipment;

D. seal wells; or

E. construct, repair, or seal dewatering wells.

Subp. 5. **Limited well contractor qualifications for unconventional wells.** An applicant for a limited well contractor license to construct, repair, and seal an unconventional well must have three years of experience. A year of experience is a year in which the applicant personally drilled five unconventional wells and worked for a minimum of 1,000 hours constructing, repairing, and sealing unconventional wells, and installing pumps in unconventional wells. An applicant whose experience is constructing unconventional wells must have gained the experience under a licensed well contractor or a limited well contractor licensed to construct, repair, and seal unconventional wells.

Subp. 6. **Limited well contractor license to install or repair well screens or pitless adaptors or units and well casings.** An applicant for a limited well contractor license to install or repair well screens or pitless adaptors or units and well casings from the pitless device to the upper termination of the well must have two years of experience. A year of experience is a year in which the applicant worked a minimum of 1,000 hours and personally installed or repaired five well screens or pitless units or adaptors and well casings from the pitless unit or adaptor to the upper termination of the well. The experience must have been gained under the supervision of a licensed well contractor or limited well contractor licensed to install or repair well screens or pitless units or adaptors and well casings from the pitless unit or adaptor to the upper termination of the well.

Subp. 7. **Limited well contractor qualifications to install a pump or pumping equipment.** An applicant for a limited well contractor license to install a pump or pumping equipment must have two years of experience in pump installation

and repair. The applicant must have personally installed 20 pumps. The work must include a minimum of 1,000 hours installing well pumps or pumping equipment.

Subp. 7a. **Application for limited well contractor license to seal wells.** A person must apply for and obtain a limited well contractor license to:

A. seal wells;

B. remove obstructions from a well before sealing;

C. remove or perforate well casing before sealing; or

D. other activities necessary to seal a well.

Subp. 7b. **Experience requirements for limited well contractor license to seal wells.** An applicant for a limited well contractor license to seal wells must have three years of experience. A year of experience is a year in which the applicant:

A. personally sealed a minimum of five wells; and

B. worked a minimum of 1,000 hours drilling wells, clearing obstructions, removing or perforating well casings, and grouting wells.

An applicant must have gained the experience under a licensed well contractor or limited well sealing contractor.

Subp. 7c. **Application for limited well contractor license to construct, repair, or seal dewatering wells.** A person must apply for and obtain a limited well contractor license to construct, repair, or seal a dewatering well.

Subp. 7d. **Experience requirements for limited well contractor license to construct, repair, or seal dewatering wells.** An applicant for a limited well contractor license to construct, repair, or seal dewatering wells must have two years of experience. A year of experience is a year in which the applicant:

A. worked a minimum of 500 hours designing, constructing, or field supervising the construction, repair, or sealing of dewatering wells; and

B. designed, constructed, or field supervised the construction of a minimum of five dewatering wells.

Subp. 8. **Elevator shaft contractor.** An applicant for an elevator shaft contractor license must have two years of experience related to the construction, repair, and sealing of excavations or borings for the installation of elevator shafts or hydraulic cylinders. The applicant must have designed, supervised, or actually constructed three borings for elevator shafts each year.

Subp. 9. **Experience required in Minnesota.** The experience for an applicant for licensure as a well contractor, limited well contractor, or elevator shaft contractor, or for registration as a monitoring well contractor, must be gained in Minnesota. However, if an applicant who gained experience outside Minnesota provides the commissioner with information demonstrating that the experience was gained in an area with the same or similar geological and drilling conditions as Minnesota, the experience shall be considered to meet the experience requirements of this part. An applicant from a state having no standards or licensing or registration program, or standards less strict than those adopted in Minnesota, must obtain at least one year of experience in Minnesota.

Statutory Authority: *MS s 103I.101; 156A.01 to 156A.08*

History: *15 SR 78; 15 SR 1474*

4725.0600 [Repealed, 15 SR 78]

4725.0700 APPLICATION FOR LICENSURE OR REGISTRATION.

An applicant shall submit an application to the commissioner on forms provided by the commissioner. The application must be accompanied by a filing fee of $50. The fee shall be made payable to the Minnesota state treasurer.

The applicant must submit written documentation of experience as required in part 4725.0500. This includes, but is not limited to, water well records, con-

struction logs for wells or borings, letters from employers verifying employment, and work reports.

The filing fee for an application shall not be refunded for any reason except when an applicant is not found to be qualified to take the written examination. If the applicant meets the requirements in part 4725.0500, the applicant shall take the examination in part 4725.1000.

Subp. 2. [Repealed, 15 SR 78]

Statutory Authority: *MS s 103I.101; 156A.01 to 156A.08*

History: *15 SR 78*

4725.0800 [Repealed, 15 SR 78]

4725.0900 COUNCIL EVALUATION OF APPLICANTS.

Upon request by the commissioner, the council may conduct oral examinations using a standardized examination developed by the commissioner in consultation with the council. Upon request by the commissioner, the council may also provide recommendations as to the appropriate disciplinary action for licensees and registrants found to be in violation of Minnesota Statutes, chapter 103I and this chapter.

Statutory Authority: *MS s 103I.101; 156A.01 to 156A.08*

History: *15 SR 78*

4725.1000 EXAMINATION.

Subpart 1. [Repealed, 15 SR 78]

Subp. 2. **Examination.** An applicant shall take an examination which may be a combination of written and oral questions as determined by the commissioner with the advice of the council. Satisfactory completion of the examination is a mandatory prerequisite for licensure or registration.

Subp. 3. [Repealed, 15 SR 78]

Statutory Authority: *MS s 103I.101; 156A.01 to 156A.08*

History: *15 SR 78*

4725.1050 FEES FOR LICENSURE OR REGISTRATION.

Subpart 1. **Licensure or registration application.** Upon satisfactory completion of the examination, the applicant must submit the required fee for a license or registration within one year after the date on which the applicant is notified of passing the examination. The submittal must be on a form provided by the commissioner, must be completed by the applicant, and must be accompanied by a $250 fee for a well contractor license, a $50 fee for an individual well contractor license, a $50 fee for each of the categories of limited well contractor license, a $50 fee for an elevator shaft contractor license, and a $50 fee for registration as a monitoring well contractor. The license or registration fee shall be made payable to the Minnesota state treasurer. The fee shall not be refunded for any reason.

Subp. 2. **Deadline for receipt of license or registration fee.** If an applicant passes the examination or qualifies for licensure or registration but the commissioner does not receive the fee for licensure or registration within one year from the date of the letter from the commissioner notifying the applicant of eligibility for licensure or registration, no license or registration may be issued.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1100 [Repealed, 15 SR 78]

4725.1200 [Repealed, 15 SR 78]

4725.1250 BONDING.

At the time the fee is submitted for initial licensure or registration or licensure or registration renewal, the person must show proof of holding a corporate surety bond in the amount of $10,000. A copy of the bond shall be submitted to the commissioner. For an applicant seeking more than one limited license under part 4725.0500, subpart 4, only one bond is required. The bond may be used by the commissioner to compensate persons injured or suffering financial loss because of failure of a licensee or registrant to properly perform the duties under part 4725.0450 and Minnesota Statutes, chapter 103I. The term of the bond shall be concurrent with the term of the license or registration. The penal sum of the bond is noncumulative and is not to be aggregated every year that the bond is in force. The bond shall be written by a corporate surety licensed to do business in Minnesota. The corporate surety shall be responsible for providing 30 days' written notice to the commissioner of cancellation of a licensee's or registrant's bond. If a bond is canceled, a licensee or registrant shall not work under the license or registration until another bond meeting the requirements of this part is obtained. A person applying for an individual well contractor license is exempt from the requirements of this part.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1300 LICENSE OR REGISTRATION RENEWAL.

Licenses expire on January 31 of each year and registrations expire on December 31 of each year. Each licensee or registrant shall submit an application for license or registration renewal on forms provided by the commissioner no later than January 31 for licenses and December 31 for registrations. The license or registration renewal application shall be accompanied by a fee of $250 for a well contractor license and $50 for an individual well contractor license, a limited well contractor license, elevator shaft contractor license, or monitoring well contractor registration. A penalty fee of $10 shall also be paid if the renewal is submitted after the January 31 license or December 31 registration deadline. At the time of license or registration renewal, the licensee or registrant shall provide written proof that the continuing education required by part 4725.1650 has been completed and shall provide a copy of the license or registration bond required under part 4725.1250. A renewal license or registration card shall be sent to the licensee or registrant after the license or registration application has been submitted and after all other conditions of licensure or registration have been met. The renewal license or registration shall consist of a card in duplicate and contain the name of the licensee or registrant; the licensee's or registrant's representative, if applicable; expiration date; and the license or registration number. One card shall be kept posted with the original license or registration. The other shall be carried by the licensee or registrant or the licensee's or registrant's representative.

Statutory Authority: *MS s 103I.101; 156A.01 to 156A.08*

History: *15 SR 78*

4725.1325 DENIAL OF LICENSE OR REGISTRATION RENEWAL.

If the licensee or registrant fails to obtain a well permit or to submit a report of construction of a well or elevator shaft or a report of sealing a well or elevator shaft, or violates any other provision of Minnesota Statutes, chapter 103I, the commissioner may deny renewal of the license or registration.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1350 EXPIRATION OF LICENSURE OR REGISTRATION.

A person who does not renew the license or registration within one year as

required under part 4725.1300 must take the examination in part 4725.1000 to relicense or reregister.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1400 LICENSING OR REGISTRATION OF PARTNERSHIPS, CORPORATIONS, BUSINESS ASSOCIATIONS, OR GOVERNMENT AGENCIES.

Subpart 1. **Individuals.** An individual may apply for registration as a monitoring well contractor or for licensure as a well contractor, limited well contractor, or elevator shaft contractor.

Subp. 1a. **Partnerships, corporations, business associations, or government agencies.** A partnership, corporation, business association, or government agency may apply for registration as a monitoring well contractor or for licensure as a well contractor, limited well contractor, or elevator shaft contractor. Upon initial registration or licensure, and upon subsequent renewal, a partnership, corporation, business association, or government agency, must designate, on a form provided by the commissioner, at least one licensed or registered individual to serve as a representative for purposes of compliance with the chapter. Each designated representative of a partnership, corporation, business association, or government agency must take the examination in part 4725.1000, but the registrant or licensee shall be the partnership, corporation, business association, or the government agency. Each designated representative shall be responsible for conducting all operations under his or her supervision according to Minnesota Statutes, chapter 103I and this chapter.

A. A person who acts as a representative may not represent more than one well contractor, monitoring well contractor, limited well contractor, or elevator shaft contractor.

B. When a representative no longer works for the registrant or licensee or is otherwise incapable of fulfilling the responsibilities of the registration or license, the registrant or licensee shall inform the commissioner within five days of such fact. If a licensee or registrant has only one designated representative and the representative no longer works for the registrant or licensee, the registrant or licensee shall give the name of a qualified individual who shall be responsible for the work of the registrant or licensee until a new representative is registered or licensed. All applications, examinations, fees, and other requirements must be satisfied in order to qualify the new representative within 90 days. If he or she does not qualify, the contractor shall be without a registration or license and must cease operations.

Subp. 2. **Change of registration or licensure.** If an individual has his or her own registration or license and desires to act as a representative, or if a representative desires to obtain a registration or license in his or her own name, the partnership, corporation, business association, government agency, or the individual, as the case may be, need only submit an application for registration or licensure and the fee. The examination in part 4725.1000 need not be retaken.

Statutory Authority: *MS s 103I.101; 156A.01 to 156A.08*

History: *15 SR 78*

4725.1500 SUSPENSION OR REVOCATION OF LICENSE OR REGISTRATION.

Subpart 1. **Commissioner action.** The commissioner may suspend or revoke a license or registration if the registrant or licensee has violated the provisions of this chapter or Minnesota Statutes, chapter 103I. The commissioner may initiate such proceedings.

Subp. 2. **Investigation.** The commissioner may make an investigation to

determine if there has been a violation of this chapter or Minnesota Statutes, chapter 103I, and, in so doing, may request the registrant or licensee to appear before the commissioner to determine the merits of the situation in question.

Subp. 3. **Disciplinary action.** Any disciplinary action taken under this part shall comply with the provisions of the APA.

Subp. 4. **Revoked license or registration.** A suspended or revoked license or registration certificate along with the current renewal certification must be returned to the commissioner when the license or registration of a well contractor who is subject to part 4725.0450, is revoked or suspended. The disciplinary action shall apply to both the licensee or registrant and the licensee's or registrant's representative.

Statutory Authority: *MS s 103I.101; 156A.01 to 156A.08*

History: *15 SR 78*

4725.1600 REINSTATEMENT.

Subpart 1. **Revoked license or registration.** A revoked license or registration may not be reinstated. The licensee or registrant whose license or registration has been revoked may be relicensed or reregistered by filing the usual applications and fees, and by taking the examination. The commissioner shall require an investigation or review to determine whether the person should be issued a new license or registration; provided, however, that in no case shall a new license or registration be issued prior to one year after the revocation has taken effect.

Subp. 2. **Suspended license or registration.** A licensee or registrant suspended for a specified time shall be automatically reinstated at the end of that time. Nothing in this chapter shall be interpreted to prevent the making of such reinstatement conditional upon terms established by the commissioner in an order of suspension.

A licensee or registrant suspended for an indefinite time may be reinstated at the commissioner's own motion after due investigation to determine that the conditions upon which the suspension was based have been corrected or upon the commissioner receiving reasonable assurance that the conditions will not recur.

Subp. 3. **Petition for reinstatement.** The person whose license or registration has been indefinitely suspended may petition the commissioner for licensure or registration reinstatement. The commissioner may permit oral presentation by the person whose license or registration has been indefinitely suspended upon a showing by the petitioner that reasonable grounds exist for such presentation.

Statutory Authority: *MS s 103I.101; 156A.01 to 156A.08*

History: *15 SR 78*

4725.1650 CONTINUING EDUCATION REQUIREMENTS.

A well contractor, limited well contractor, and elevator shaft contractor may not renew a license, and a monitoring well contractor may not renew a registration, without having successfully completed six contact hours of continuing education activities acceptable to the commissioner during the year preceding the year for which the license or registration renewal is sought.

Applicants initially licensed or registered are exempt from the continuing education requirements for the following year's license or registration renewal.

Certificates of attendance or other documentation of attendance must be submitted with the renewal application.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1675 CRITERIA FOR CONTINUING EDUCATION.

A continuing education activity must meet the criteria in items A to E for credit to be given.

A. The activity must be related to wells and borings, drilling technology, groundwater contamination, health aspects of water quality, groundwater monitoring, geology, hydrology, well construction and sealing, water systems and water treatment, or other subjects approved by the commissioner.

B. The activity must have a specific, written objective that describes expected outcomes for the participant.

C. The activity must be presented by a person knowledgeable about recent developments in the subject. The person's qualifications must be documented by either specialized training in the subject matter or work experience in the subject area.

D. The activity must be at least one contact hour as defined in part 4725.0100, subpart 24b.

E. The activity must document participation, including but not limited to earned credits and verification of attendance. Program sponsors shall maintain attendance sheets for two years.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1685 ADVISORY COUNCIL REVIEW OF CONTINUING EDUCATION PROGRAMS.

The Advisory Council on Wells and Borings may review continuing education programs and make recommendations to the commissioner as to the acceptability for continuing education credits for each license or registration category.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1700 PLACEMENT OF DECALS AND LICENSE OR REGISTRATION NUMBER.

A licensee or registrant shall place in a conspicuous location on both sides of each drilling machine or hoist his or her license or registration number in figures not less than three inches high and 1-1/2 inches wide. The figures shall be in a contrasting color to the rest of the machine or hoist. Decals designating the year for which the license or registration was issued or renewed and the words, "MINNESOTA LICENSED WELL CONTRACTOR, LIMITED WELL CONTRACTOR, OR ELEVATOR SHAFT CONTRACTOR," or "REGISTERED MONITORING WELL CONTRACTOR," whichever is applicable, shall be affixed directly adjacent to and below the license or registration number on each drilling machine or hoist. Contractors using small drilling machines or hoists or other devices for well or elevator shaft installation, well repair, or well or elevator shaft sealing shall attach their decal on a portable display to be shown at the well or boring site. The decals shall be issued by the commissioner upon licensure or registration and renewal.

Statutory Authority: *MS s 103I.101; 156A.01 to 156A.08*

History: *15 SR 78*

4725.1800 DRILLING MACHINE AND HOIST REGISTRATION.

Upon licensure or registration under part 4725.0450, the licensee or registrant must register all drilling machines and hoists and pay a $50 fee for each machine or hoist. Each time the licensee or registrant renews licensure or registration under part 4725.1300, the licensee or registrant must renew each drilling machine and hoist registration and must pay a $50 renewal fee for each drilling

machine or hoist. Upon acquiring additional drilling machines or hoists after initial licensure or registration under part 4725.0450 or after renewal of licensure or registration under part 4725.1300, the licensee or registrant must register the machine or hoist and pay the $50 registration fee. Upon receipt of the required fee and information, a drilling machine or hoist registration card shall be issued for identification purposes for each drilling machine and hoist registered by the contractor. The card shall be carried on the drilling machine or hoist at all times where it may be inspected by the commissioner.

In the case of a licensee or registrant with more than one representative, the licensee or registrant may designate one representative to register all the licensee's or registrant's drilling machines and hoists.

The registration card and decals furnished for a drilling machine or hoist are not transferable. The card and decals shall be returned to the commissioner when a drilling machine is sold, traded, or otherwise disposed of.

Statutory Authority: *MS s 103I.101; 156A.01 to 156A.08*

History: *15 SR 78*

PERMITS AND NOTIFICATIONS

4725.1820 NOTIFICATION FOR CONSTRUCTION OF WELLS.

A well must not be constructed until the owner of the property where the well is to be located, the property owner's agent, a licensed well contractor, or a limited unconventional well contractor submits notification of construction of the proposed well to the commissioner according to this part. This part does not apply to the construction of monitoring wells, dewatering wells, or drive point wells installed by the well owner on the owner's property for residential or agricultural use.

A. Notification is required for all wells constructed by a licensed contractor and other persons allowed to construct wells under Minnesota Statutes, section 103I.205, subdivision 4, paragraph (e).

B. Notification is required for all public water supply wells as defined in part 4725.0100, subpart 37a. Notifications may be submitted with the plan required in part 4725.0300.

C. The property owner, the property owner's agent, a licensed well contractor, or a limited unconventional well contractor must submit the notification on a form provided by the commissioner. The notification must be legible, be accompanied by the fee required in this part, and be signed by the licensed contractor or the owner of the property where the well is located, or the property owner's agent.

D. A notification must be completed for each well.

E. The notification must include the following information for each well:

(1) the name, business address, telephone number, and license number of the licensed contractor;

(2) the name, address, and telephone number of the well owner or property owner, if different;

(3) the legal description or street address of the proposed well location or a map having a scale at least one-half inch to the mile; and

(4) a determination of whether the anticipated capacity of the well pump will be less than or greater than 50 gallons per minute.

F. The owner of the property where a well is to be located must pay a $50 notification fee for each well with a well pump capacity of less than 50 gallons per minute and a $100 fee for each well with a well pump capacity of 50 gallons per minute or more.

G. A new notification must be filed with the commissioner if:

(1) a licensed contractor other than the one listed on the original notification completes the well; and/or

(2) the well is completed on property other than that listed on the original notification.

A new fee is not required for a new notification filed under this item.

H. The notification is valid for one year from the date it is filed. If the property owner, property owner's agent, a licensed well contractor, or a limited unconventional well contractor submits a written request to the commissioner, and shows the well has not been completed or constructed, the commissioner may extend the expiration date for an additional six months.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1825 DEWATERING WELL CONSTRUCTION PERMITS.

This part applies to all dewatering wells as defined in part 4725.0100, subpart 24c, including drive point wells used for dewatering. Until June 30, 1992, this part does not apply to dewatering wells that are constructed and that operate down to 45 feet.

A. A dewatering well must not be constructed until a permit has been issued by the commissioner to the limited dewatering well contractor or well contractor.

B. The limited dewatering well contractor or well contractor must submit to the commissioner a dewatering well permit application on a form provided by the commissioner. The application must be legible and signed by the limited dewatering well contractor or well contractor and the property owner or agent.

C. A permit application must be completed for each dewatering well or dewatering well project.

D. The permit shall include the following information for each well:

(1) the name, business address, and license number of the limited dewatering well contractor or well contractor;

(2) the name and address of the dewatering well owner or property owner, if different;

(3) the legal description or street address of the proposed dewatering well location or a map having a scale at least one-half inch to the mile; and

(4) the anticipated depth of the dewatering well.

E. Permit applications for dewatering wells constructed through a confining layer must include the following information for each well in addition to that required in item D:

(1) the diameter of the dewatering well;

(2) the drilling method;

(3) the casing materials;

(4) the materials and methods used to grout the well; and

(5) a cross-sectional diagram of the well.

F. Permits are not transferable. Only the permit holder is authorized to construct the dewatering well or wells.

G. The permit is valid for one year from the date it is issued. If the permit holder submits to the commissioner a written request for an extension, and shows that the dewatering well has not been completed or constructed, the commissioner may extend the expiration date for an additional six months.

H. The owner of the property where a dewatering well or wells are to be located must pay a $50 permit fee for each dewatering well. However, for a project consisting of more than ten wells, the fee is $500.

I. A copy of the permit shall be made available at the dewatering site at all times during construction.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78; 15 SR 1474*

4725.1830 MONITORING WELL CONSTRUCTION PERMIT.

This part applies to all monitoring wells, including drive point wells used as monitoring wells.

A. A monitoring well must not be constructed until a permit has been issued by the commissioner to the monitoring well contractor or well contractor.

B. A permit is not required for monitoring wells sampled during drilling in an uncased hole that is sealed upon completion of drilling.

C. A monitoring well contractor must submit to the commissioner a monitoring well permit application on a form provided by the commissioner. The application must be legible and signed by the monitoring well contractor or well contractor and the property owner or agent.

D. A permit application must be completed for each monitoring well. However, for monitoring wells used as leak detection devices at a petroleum bulk storage site or a motor fuel retail outlet, a single permit application may be completed for all wells on a site drilled under a single contract.

E. A permit application for a monitoring well owned by a person other than the property owner must verify that a written agreement exists according to Minnesota Statutes, section 103I.205, subdivision 8.

F. The permit application must include the following information for each well:

(1) the name, business address, and registration number of the monitoring well contractor or license number of the well contractor;

(2) the name and address of the monitoring well owner and property owner, if different;

(3) the legal description or street address of the proposed monitoring well location or a map having a scale at least one-half inch to the mile; and

(4) the anticipated well depth.

G. Permit applications for monitoring wells constructed through a confining layer must include the following information for each well in addition to that required in item F:

(1) the diameter of the well;

(2) the drilling method;

(3) the casing materials;

(4) the materials and methods used to grout the well; and

(5) a cross-sectional diagram of the well.

H. Permit applications for at-grade wells must include the following information for each well in addition to that required in item F:

(1) an explanation of why the well casing cannot terminate 12 inches above ground;

(2) a map showing the location of the proposed well referenced to a bench mark, a permanent landmark, or the corners of the property; and

(3) a cross-sectional diagram of the well cap and vault or manhole.

I. Permits are not transferable. Only the permit holder is authorized to construct the well.

J. The permit is valid for six months from the date it is issued. If the permit holder submits to the commissioner a written request for an extension, and shows the monitoring well has not been completed or constructed, the commissioner may extend the expiration date for an additional six months.

K. The owner of the property on which a monitoring well is to be located must pay a $50 permit fee for each monitoring well. One permit is required for monitoring wells drilled under a single contract, used as leak detection devices at a petroleum bulk storage site or retail motor fuel outlet. The permit fee is $50 per site regardless of the number of wells. Subsequent wells drilled on the site under a separate contract are exempt from additional permit fees, but a new permit listing all new wells is required. A site consists of a single continuous piece of property on which the petroleum bulk storage facility or motor fuel retail outlet is located. The site does not include other properties on which monitoring wells are constructed to evaluate a spill or leak associated with the petroleum facility. Owners of petroleum retail outlets or bulk storage facilities installing more than one monitoring well must list each well on the permit.

L. A copy of the permit shall be made available at the monitoring well site at all times during construction.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1835 ELEVATOR SHAFT CONSTRUCTION PERMITS.

This part applies to an excavation or hole for installation of an elevator shaft or hydraulic cylinder for an elevator shaft.

A. After July 1, 1990, an excavation or hole for an elevator shaft must not be constructed until a permit has been issued by the commissioner to the elevator shaft contractor or well contractor.

B. An elevator shaft contractor or well contractor must submit to the commissioner an elevator shaft permit application on a form provided by the commissioner. The application shall be legible and signed by the elevator shaft contractor or well contractor and the elevator shaft owner and property owner or agent.

C. The permit must include the following information for each hole or excavation for the elevator shaft:

(1) the name, business address, and license number of the elevator shaft contractor or well contractor;

(2) the name and address of the elevator shaft owner or property owner, if different;

(3) the legal description or street address of the proposed excavation location or a map having a scale at least one-half inch to the mile; and

(4) the anticipated depth of the elevator shaft hole or excavation.

D. Permit applications for elevator shaft excavations constructed through a confining layer must include the following information in addition to that required in item C:

(1) the diameter of the excavation or hole for the elevator shaft;

(2) the drilling method;

(3) the casing materials;

(4) the materials and methods used to grout the excavation or hole; and

(5) a cross-sectional diagram of the excavation or hole.

E. Permits are not transferable. Only the permit holder is authorized to construct the excavation or hole for the elevator shaft.

F. The permit is valid for one year from the date it is issued. If the permit holder submits to the commissioner a written request for an extension, and shows the elevator shaft has not been completed or constructed, the commissioner may extend the expiration date for an additional six months.

G. The owner of the property where the elevator shaft is to be located must pay a $50 permit fee for each elevator shaft excavation or hole.

H. A copy of the permit must be available at the elevator shaft excavation site at all times during excavation of the elevator shaft.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1836 NOTIFICATION AND PERMIT FEES.

The appropriate fees must accompany all notifications and permit applications. Notification or permit fees may be paid electronically. Notification and permit application fees shall be refunded if written application is received within 30 days of submission of incorrect fees, or if written application is received within one year of notification or issuance of a permit if a well or boring was not completed. The notification or permit application may be made by facsimile transmission.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1837 EXCEPTION TO NOTICE AND PERMIT.

A permit or notification is not required for installation of a pump or pumping equipment or repair of an existing well or boring if the repair does not involve deepening the well or boring, or removal or installation of casing.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1838 EMERGENCY NOTIFICATIONS AND PERMITS.

Notifications and applications for permits may be verbally reported under emergency conditions for construction of wells, monitoring wells, and dewatering wells, except for monitoring wells and dewatering wells constructed through a confining layer and for at-grade monitoring wells. Emergency conditions are exceptional circumstances where a delay in starting construction poses an immediate and significant danger to health or safety and there is no time for prior notification or obtaining the required permit.

Exceptional circumstances include, but are not limited to, cases where well failure will leave livestock or persons without drinking water, where inaction presents an imminent threat to contamination of the well, boring, or groundwater, where delay will result in collapse or damage to the well, where delay will result in the endangerment of health or safety such as in an unstable excavation, or where such construction is court ordered.

A. If emergency conditions affecting construction of a well occur during normal business hours, the property owner, the property owner's agent or a licensed contractor may verbally provide to an authorized representative of the commissioner the information required for notification under part 4725.1820. If emergency conditions affecting construction of a monitoring well, dewatering well, or elevator shaft occur during normal business hours, the contractor may verbally provide the information required for permits under part 4725.1825, 4725.1830, or 4725.1835, whichever is applicable, to an authorized representative of the commissioner.

B. If emergency conditions occur after business hours or on a nonbusiness day, construction of a well, monitoring well, or dewatering well, or excavation for an elevator shaft may begin if the property owner or contractor, as required in item A, telephones the Department of Health and leaves a message on the answering service reporting the applicable information required in part 4725.1820, 4725.1825, 4725.1830, or 4725.1835.

C. A written notification or written permit application and the applicable fees must be received by the commissioner within five working days after emergency notification of the start of construction of a well, or within five work-

ing days after the start of construction under an emergency permit for a dewatering well, monitoring well, or elevator shaft. The property owner, the property owner's agent, or a licensed or registered contractor is responsible for submitting a written notification or permit and fee.

D. The emergency notification or permit shall be void if construction is not started within 72 hours of verbal reporting.

E. All construction and location standards in this chapter shall apply to wells and borings constructed under emergency conditions.

F. The commissioner shall not issue emergency permits to or accept emergency notifications from contractors who violate the emergency notification or permit requirements.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1840 UNSUCCESSFUL COMPLETION OF A WELL OR BORING.

If an attempt to complete construction of a well, monitoring well, dewatering well, or excavation for installation of an elevator shaft for which a notification or permit has been filed is unsuccessful, a new notification or permit need not be filed if:

A. the construction and depth of the new well or excavation is not substantially different from the initial well; and

B. the person installing the well or elevator shaft amends the notification or permit to indicate the location of the completed well or boring.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1842 APPROVAL OF CONSTRUCTION PERMITS.

The commissioner shall review a permit application upon submission. A permit shall be issued if the application is complete and is in compliance with this chapter.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1845 DENIAL OF CONSTRUCTION PERMIT APPLICATION.

Subpart 1. **Grounds for denial of application.** The commissioner may deny a permit application or revoke a permit for construction of a monitoring well, dewatering well, or excavation for installation of an elevator shaft if:

A. the person constructing the well or boring is not licensed or registered according to this chapter;

B. information submitted in the permit application is determined to be false or misrepresented;

C. the construction of the well or boring would not be in conformance with this chapter;

D. issuance of the permit conflicts with statute or rule;

E. a provision of the permit is violated;

F. the well or boring would be constructed into or through contaminated soil or groundwater, and construction or use of the well or boring would result in contamination of a well or boring, allow contamination to spread, or would adversely affect groundwater remediation; or

G. pumping from the well or boring would intercept groundwater contamination and construction or use of the well or boring would result in contamination of a well or boring, allow contamination to spread, or would adversely affect groundwater remediation.

Subp. 2. **Notice requirement.** The commissioner shall give the applicant or permit holder written notice of the permit application denial or permit revocation. The notice shall state the reason for denial or revocation. A denied permit application or revoked permit may be revised or corrected and resubmitted to the commissioner for reconsideration.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1848 WELL MAINTENANCE PERMITS.

Subpart 1. **Permit required.** Annual maintenance permits are required for monitoring wells and dewatering wells that are not permanently sealed within 14 months of construction and wells that are not sealed, are inoperable, are not in use, or are disconnected from a power supply.

Subp. 2. **Permit application.** The owner of the property where the well is located must submit to the commissioner a maintenance permit application on a form provided by the commissioner. The application must be legible, accompanied by the correct fee, and signed by the property owner where the well is located. The permit application shall include the following information for each well:

A. the name, telephone number, and address of the property owner and well owner, if different;

B. the legal description of the well location; and

C. the Minnesota unique well number. If the unique number is not known, the depth, diameter, and construction of the well must be reported.

The commissioner shall review a permit application upon submission. A permit shall be issued if the application is complete and is in compliance with this chapter. A permit shall not be issued for a well that is required to be sealed by this chapter or Minnesota Statutes, section 103I.301.

Subp. 3. **Permit conditions.** The conditions in items A to E apply to permits.

A. Maintenance permits are not transferable. If ownership of the property changes, an application must be made for a new maintenance permit.

B. A maintenance permit is valid for one year from the date it is issued.

C. A maintenance permit does not allow construction or repair that would require notification or a permit according to this chapter.

D. All provisions of this chapter involving the proper isolation distance from contamination sources and necessary seals and safeguards apply to a well under a maintenance permit.

E. The commissioner may deny a permit application or revoke a permit for violation of this chapter. The commissioner shall give the applicant or permit holder written notice of the permit application denial or permit revocation. The notice shall state the reason for denial or revocation.

Subp. 4. **Well maintenance permits.** An annual well maintenance permit is required for an unsealed well that is not in use, that is inoperable, or from which the power supply has been disconnected. The owner of the property on which such a well is located must submit an annual $50 permit fee along with the permit application, or have the well sealed.

Subp. 5. **Monitoring well maintenance permits.** The provisions in items A to C apply to monitoring well maintenance permits.

A. The owner of property on which an unsealed monitoring well is located must obtain a maintenance permit starting 14 months after construction of the well and must pay a fee of:

(1) $50 for each monitoring well that is unsealed; or

(2) $50 for each motor fuel retail outlet or petroleum bulk storage site that has unsealed monitoring wells located on the site.

The permit must be renewed annually until the well is sealed.

B. A maintenance permit application must be completed for each monitoring well. However, a single permit application may be completed for monitoring wells used as leak detection devices at a petroleum bulk storage site or a motor fuel retail outlet. The permit must list each well and include the well location and unique well number. A site or outlet consists of a single continuous piece of property on which the petroleum bulk storage or retail motor fuel outlet is located. The site does not include other properties on which monitoring wells are constructed to evaluate a spill or leak associated with the petroleum facility.

C. Monitoring wells that are inoperable or not in use, or for which no maintenance permit has been obtained 14 months after construction, must be permanently sealed.

Subp. 6. **Dewatering well maintenance permits.** The conditions in items A to C apply to dewatering well maintenance permits.

A. No later than 14 months after construction of a dewatering well, the owner of the property on which a dewatering well is located must obtain a maintenance permit for an unsealed dewatering well and must pay a fee of:

(1) $25 for each dewatering well that is unsealed; or

(2) $250 for a dewatering project consisting of ten or more unsealed dewatering wells.

The permit must be renewed annually for wells that are in use.

B. A maintenance permit for a dewatering project of ten or more dewatering wells must list each well and include the well location and unique well number.

C. Dewatering wells that are inoperable or not in use, or for which no maintenance permit has been obtained, must be permanently sealed.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1849 DRIVE POINT WELL CONSTRUCTION NOTIFICATION.

Subpart 1. **Scope.** This part applies to drive point wells constructed by an individual on property that is owned or leased by the individual and that is used for agricultural purposes or as the individual's place of residence.

Subp. 2. **Notification.** Written notification of construction of a drive point well installed by a property owner must be filed with the commissioner within ten days after completion of the well. The owner of the drive point well must provide the following information on a notification form provided by the commissioner:

(1) the name, address, and telephone number of the drive point well owner and property owner, if different;

(2) the legal description of the well location; and

(3) the date the well was constructed.

Subp. 3. **Retail sale of drive point well materials.** A person who sells drive point well materials at retail must:

A. provide each buyer with a copy of the notification form and informational materials provided by the department; and

B. maintain a record of the date of sale and name and address of each purchaser of drive point well materials.

The record must be made available to the commissioner for inspection. The record must be maintained on the premises for three years, or as an alternative may be filed with the commissioner on a yearly basis.

The commissioner shall provide copies of the drive point notification form and information about well regulations to retail sellers of drive point well materials.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.1850 [Repealed, 15 SR 78]

4725.1860 MONITORING WELLS.

Subpart 1. **Use of well.** A monitoring well may not be used as a source of water for human consumption, or for any industrial or agricultural use, or for any public or private water supply. A monitoring well may not be used for any purpose other than groundwater quality testing and monitoring.

Subp. 2. **Installation of well.** A monitoring well may only be installed by a water well contractor licensed under parts 4725.0500 to 4725.1800 or a professional engineer who is registered under part 4725.1850.

Subp. 3. **Applicability of code.** Unless otherwise provided in this rule, all provisions of the water well construction code, this chapter, apply to the construction and abandonment of a monitoring well.

Subp. 4. **Special provisions and exceptions to code.** Special provisions and exceptions to this chapter are as follows:

A. A monitoring well may not interconnect aquifers which are separated by a confining bed. If a confining bed is penetrated below the aquifer to be monitored, the drillhole through the confining bed must be filled with neat cement grout from the bottom of the drillhole to the top of the confining bed.

B. A monitoring well may be constructed into the first aquifer nearest to the ground surface without prior approval by the Department of Health.

Before a monitoring well which is constructed for the purpose of investigating potential, existing, or future groundwater contamination may be drilled into any aquifer which is below the first aquifer nearest to the ground surface, plans, specifications, and construction features of the proposed installation must be submitted to and approved by the administrative authority.

C. Only a monitoring well which is constructed for the purpose of investigating potential, existing, or future groundwater contamination is exempt from the provisions in part 4725.2000 relating to isolation distances from sources of contamination.

D. A monitoring well must be constructed using materials meeting the standards prescribed in parts 4725.3400 to 4725.3600 and 4725.6900 to 4725.7600. In addition, a monitoring well may be constructed using schedule 5 stainless steel pipe which meets the standards of ASTM A 312-81a (American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103).

E. A person constructing a monitoring well need not meet the yield test requirement imposed in part 4725.4700. However, the person constructing the well shall submit the results of any yield tests which may be performed along with the well log.

F. For monitoring wells where the use of chlorine disinfectants will interfere with the intended water quality analyses, alternate disinfection methods or materials may be used if they are approved by the commissioner.

G. A monitoring well is exempt from the venting requirement in part 4725.6300.

H. The inside casing diameter for a monitoring well must be at least 1-1/2 inches, except that a driven well point may be equipped with a casing at least 1-1/4 inches in diameter.

Subp. 5. **Protective measures.** Protective measures are as follows:

A. Every monitoring well must be closed by use of an overlapping, locked metal cap or a wrench-tightened, threaded metal cap. The metal cap must be equivalent to the casing in strength and weight.

B. A monitoring well must be protected from damage by whichever of the methods in subitems (1) to (3) is most appropriate for the existing and anticipated site conditions.

(1) Protection may be by the placement of three posts of at least four-inch diameter, around the well at equal distances from each other and two feet from the casing. The posts must extend four feet above the ground surface and must be installed to a depth of four feet into solid ground or to a depth of two feet if each post is surrounded with six inches of concrete to a depth of two feet. The posts may be made of any of the following materials: schedule 40 steel pipe, if capped with an overlapping, threaded, or welded steel or iron cap, or filled with concrete; reinforced concrete; or preservative-treated wood.

(2) Protection may be by surrounding the casing with a concrete slab which has horizontal dimensions of four feet by four feet, which rises 12 inches vertically above grade at the outer edge, and whose surface is sloped away from the well casing.

(3) If a monitoring well is to be protected by means other than those prescribed in subitems (1) and (2), the licensee or engineer shall first obtain written approval for the other means from the administrative authority. The alternate method must assure a degree of protection at least equal to that provided by the methods in subitem (1) or (2).

C. A monitoring well need not be protected according to the procedures in item B if the well is routinely inspected at least weekly and if the well is located in an area where it is not likely to be damaged by vandals or by impact from heavy equipment, cars, snowmobiles, or similar vehicles.

D. In addition to the measures prescribed in item B, a monitoring well which is cased with plastic must be protected within a watertight schedule 40 steel casing which is embedded in cement or concrete to a depth of two feet. The steel casing must be covered with an overlapping, locking steel cap. The inner casing must be capped or protected with an overlapping, threaded cap.

E. If a monitoring well is damaged, the damage must be corrected within 72 hours of its discovery. If a monitoring well is damaged irreparably, it must be properly sealed and abandoned in accordance with parts 4725.2600 to 4725.2900 within seven days of discovery of the damage.

Statutory Authority: *MS s 156A.03*

History: *8 SR 1625*

LOCATION OF WELLS

4725.1900 LOCATION OF WELL.

A well shall be located consistent with the general layout and surrounding area giving due consideration of the size of the lot, contour of the land, slope of the water table, rock formation, porosity and absorbency of the soil, local groundwater conditions, and other factors necessary to implement the basic policies that follow. A well shall be:

A. Located on a site which has good surface drainage, at a higher elevation than, and at a sufficient distance from, cesspools, buried sewers, septic tanks, privies, barnyards and feedlots, or other possible sources of contamination so that the supply cannot be affected thereby, either underground or from the surface of the ground.

B. Located so that the well and its surrounding area can be kept in a sanitary condition.

C. Adequate in size, design, and development for the intended use.

D. Constructed so as to maintain existing natural protection against pollution of water-bearing formations and to exclude all known sources of pollution from entering the well.

E. Located at least five feet from a property line. A well constructed to produce water for a community public water supply shall be located at least 50 feet from a property line. In locating any well, consideration shall be given to the sources of contamination from adjacent property. "Community public water supply" as prescribed in part 4720.0200 means a system providing piped water for human consumption, which serves 15 service connections or living units or regularly serves at least 25 persons residing in the area for more than six months of the year.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.2000 DISTANCE FROM POLLUTION OR CONTAMINATION SOURCES.

Subpart 1. **Distances.** A well shall be at least:

A. One hundred fifty feet from a preparation area or storage area of spray materials, commercial fertilizers, or chemicals that may result in pollution of the soil or groundwater.

B. One hundred feet from a below-grade manure storage area if in conformance with Minnesota Pollution Control rule SW 52(2)(e).

A below grade manure storage area may present a special hazard to groundwater quality which may require a greater isolation distance than provided for in these rules depending upon hydrologic and geologic conditions.

C. Seventy-five feet from cesspools, leaching pits, and dry wells.

D. Fifty feet from a buried sewer, septic tank, subsurface disposal field, grave, animal or poultry yard or building, privy, or other contaminants that may drain into the soil.

E. Twenty feet from a buried sewer constructed of cast iron pipe or plastic pipe (ASTM 2665 for polyvinyl chloride pipe or ASTM 2661 for acrylonitrile-butadiene-styrene pipe, as prescribed in the Minnesota Plumbing Code, part 4715.0420, subpart 3 with tested watertight joints, a pit or unfilled space below ground surface, a sump or a petroleum storage tank except that a well may be drilled closer than 20 feet to an approved basement, but no closer than as provided in part 4725.2100. A community public water supply well shall be isolated at least 50 feet from any source of contamination.

"Sump" means a watertight tank which receives sewage or liquid waste and which is located below the normal grade of the gravity system and must be emptied by mechanical means.

F. Wells with casings less than 50 feet in depth and not encountering at least ten feet of impervious material shall be located at least 150 feet from cesspools, leaching pits, or dry wells and at least 100 feet from a subsurface disposal field, manure storage pile, or similar source of contamination.

For example, a manure storage pile, would be considered as a potential source of contamination to the well; however, the presence of animals in open pasture in an area would not necessarily concentrate contaminants to the degree that would cause contamination to enter the groundwater.

Subp. 2. **Waste landfill.** The safe distance that a well should be located from a waste landfill or waste stabilization pond (lagoon) cannot be assigned a fixed number because of the varieties of hydrologic and geologic parameters associated with the undetermined types and amounts of materials that may be carried by groundwater from leachates discharged from the waste landfill or waste stabilization ponds (lagoons). It is recommended that wells not be located in an area between the landfill or waste stabilization ponds (lagoons) sites and the point of groundwater discharge to a surface water source.

Any well that may intercept leachates from a waste landfill or waste stabilization pond (lagoon) by water withdrawal from the well shall not be used for potable water.

Subp. 3. [Repealed, 8 SR 1625]

Subp. 4. **Modifications of isolation distances.** The administrative authority may modify the isolation distances in these rules for individual well installations. The request for modifications shall be made according to the provisions of part 4725.0400. A request for modification of the isolation distance from existing wells shall be submitted and signed by the owner. In addition any experts or persons involved in providing documentary evidence in support of the request shall sign the request submitted by the owner. The request shall also include: the well depth, geological formations encountered, casing type and depth, method of construction and grouting, and location of the well on the property in relation to possible sources of contamination.

Statutory Authority: *MS s 156A.01 to 156A.08*

NOTE: The cross-reference to Minnesota Pollution Control rule in subpart 1, item B cannot be converted to a Minnesota Rule number because SW 52(2)(e) has been repealed.

4725.2100 WELLS ADJACENT TO BUILDINGS, GAS LINES, OR OVERHEAD ELECTRIC POWERLINES.

A well shall be located:

A. at least three feet horizontally from a building or any projection thereof, except for a pumphouse, unless modified in writing by the administrative authority;

B. accessible for cleaning, treatment, repair, test inspection, and other attention as may be necessary.

No well shall be located within the footing of any building or room beneath the floor under which there are buried sewers.

A well shall not be located within 15 feet of a gas line or overhead electric distribution line or 25 feet from an electric transmission line which is in excess of 50 kV except for the underground electrical service line to the well. These distances should be observed when locating a gas line or overhead electric line in the vicinity of an existing well or known proposed well. Where there is a question of the voltage in an electrical line the 25-foot distance should be observed or where less distance is required the utility company should be consulted for their recommendation for safe distances.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.2200 AREAS SUBJECT TO FLOODING.

Subpart 1. **Location of well.** A well shall not be located in areas subject to flooding unless the casing extends at least two feet above the level of the highest known flood of record or otherwise protected as prescribed in writing by the administrative authority. The ground surface immediately adjacent to the well casing shall be graded so that surface water is diverted away from the casing. The well shall be located at least 50 feet horizontally from the normal high water mark of a stream, river, or lake and at a higher established ground surface elevation than the soil absorption system, septic tank, or other source of contamination.

Subp. 2. **Community public water supply.** For a community public water supply:

A. The surface of the ground at the well site shall be at least two feet above the highest known water level of any lake, pond, river, stream, or any other body of surface water, the waters of which at the highest level would approach to within 50 feet measured horizontally of the well.

B. The earth surfaces shall be sloped to drain away from the well and be so graded as to prevent the accumulation and retention of surface water within 50 feet of the well.

C. Filling shall be protected from erosion by riprap or other suitable means.

Subp. 3. **Radial water collector.** Projection of collectors shall be in areas and at depths approved by the director. The exact location of all caisson construction joints and porthole assemblies shall be indicated. The caisson wall shall be substantially reinforced. Procedures shall be employed which will assure minimum vertical rise of the collectors. The top of the caisson shall be covered with a watertight floor and pump openings shall be curbed. Pump discharge piping shall not be placed through the caisson walls. There shall be no construction joint within ten feet of the original ground surface.

Statutory Authority: *MS s 156A.01 to 156A.08*

GENERAL PROTECTION OF GROUNDWATER QUALITY AND RESOURCES

4725.2300 REUSE OF WATER, DISPOSAL, RECHARGE, OR GAS STORAGE WELLS.

A well for the storage of gas or liquid under pressure may not be drilled without first having secured a permit therefor from the commissioner of natural resources in accordance with Minnesota Statutes, sections 84.57 to 84.58.

Water used for cooling parts of engines, air compressors, or other equipment or water used for air conditioning, shall not be returned to any part of the potable water system.

A well shall not be used for disposal of surface water, near surface water, or groundwater or any other liquid, gas, or chemical.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.2400 MAINTENANCE AND REPAIR OF WELLS.

Subpart 1. **Maintenance to protect water sources.** Every well shall be maintained in a condition whereby it will conserve and protect the groundwater resources, and whereby it will not be a source or channel of contamination or pollution to the water supply of that well or any aquifer.

Subp. 2. **Materials used for maintenance.** All materials used in maintenance, replacement, or repair of any well shall meet the requirement of these rules for new installation.

Subp. 3. **Repair.** Broken, punctured, or otherwise defective or unserviceable casing, screens, fixtures, seals, or any part of the well head shall be repaired or replaced. The well shall be abandoned in accordance with the requirements of these rules if such repair or replacement is not performed. Repairs to wells completed with the well head terminating below ground (buried seal) where practicable, should include extending the well casing, pitless adapter, or pitless unit above the land surface. Extension of the casing above grade shall be accomplished in accordance with rules for new wells.

Subp. 4. **Precautions for acid treating of wells.** Before acid treating a well, subpart 3 shall be complied with to prevent a hazardous condition caused by release of H_2S (hydrogen sulfide) or other toxic gases in a pit or confined space. All confined spaces shall be blown out with fresh air before entry and a supply of fresh air provided during occupancy. Pits or chambers should not be entered without a lifeline and adequate lifting power on the surface to quickly haul up a worker. Where there is any question whether the air supply procedure has provided a safe atmosphere, a self-contained breathing apparatus shall be worn (ordinarily canister-type gas masks do not protect against atmospheres low in oxygen).

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.2500 ABANDONMENT OF WELLS.

Any water well which is to be abandoned must be abandoned in accordance with these rules. The owner of a well which is no longer being used will be ordered to sample the well and to disinfect or otherwise pump or remove the contamina-

tion before the well is plugged. If a well provides a potential or actual source of contamination for the aquifer, the commissioner may order that the well be permanently plugged and abandoned.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.2600 TEMPORARY ABANDONMENT.

Prior to placement into service or when temporarily removed from service, the well shall be sealed with a watertight steel cap. A well removed from service and not permanently abandoned may be temporarily abandoned if approved in writing by the commissioner. The licensee and the owner shall submit a request for temporary abandonment on forms provided by the department.

The well shall be maintained whereby it is not a source or channel of contamination when not in service.

Until a well is permanently abandoned by sealing procedures, all provisions for protection of the water against contamination and pollution and for maintaining satisfactory sanitary conditions around the well shall be carried out to the same extent as though the well were in routine use.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.2700 PERMANENT ABANDONMENT OF WELLS.

Subpart 1. **Closing the well.** A well that is to be permanently abandoned shall be disconnected from the system and the hole filled to prevent contaminating materials from entering the water-bearing ground formations. Concrete or cement grout shall be used for sealing material; however, if the well is so large that the use of these materials is not practical, the filling materials should be selected so as to restore natural conditions as nearly as possible. Neat cement grout or concrete, as defined in part 4725.3800 (grouting) and part 4725.0100, subpart 30, are satisfactory for filling parts of wells in rock formations. Sand and heavy drilling fluid may be used in sand and gravel sections of wells.

All materials, debris, and obstructions that may interfere with sealing operations shall be removed from the well. Liner pipe shall be removed or perforated when necessary to assure placement of an effective seal. The administrative authority will be consulted for instruction in case of abandonment of a contaminated well or where there is a question of proper procedure.

All casing and screen may be salvaged except casing that has been cemented in place. The well shall be filled with appropriate sealing materials as described in parts 4725.2700 to 4725.2900 prior to removal of the casing. The top of the hole shall be filled with ten feet of cement or concrete grout to within two feet of the land surface. Casing remaining in the hole shall be cut off at least two feet below land surface. The remaining top two feet of hole shall be filled with native topsoil.

Subp. 2. **Sealing the well.** An abandoned well shall be filled and sealed by one of the following methods in accordance with the materials penetrated, in such a manner as to prevent it from acting as a channel for pollution. A report of the method of sealing shall be filed with the commissioner on water well record forms provided:

A. A well in unconsolidated deposits shall be filled with clean sand and puddled clay, neat cement grout or concrete grout to provide a permeability no greater than the natural condition.

B. The section of a well in a cavernous or creviced rock (such as cavernous limestone or basalt lava rock, creviced granite, etc.) shall be filled with concrete or neat cement grout or alternate layers of concrete or neat cement grout, gravel, or stone aggregate. The filling shall be completed at the top by a layer of neat cement grout or concrete grout extending at least ten feet into the above overlying formation and finished as provided in parts 4725.2700 to 4725.2900.

C. When concrete, cement grout, puddled clay, or heavy drilling fluid is used for sealing an abandoned well, it shall be inserted in the well through a grout pipe from the bottom of the well upward to the surface under pressure and in one continuous operation.

D. Test wells shall be sealed to prevent the well from being a channel for the vertical movement of water and a source of contamination to the groundwater supply in accordance with well abandonment provisions of parts 4725.2500 to 4725.2900.

E. The flow in a flowing well shall be confined, if possible, and the well filled in accordance with well abandonment provisions of parts 4725.2500 to 4725.2900.

Proper judgment shall be exercised in the feasibility and practicability of sealing flowing wells. In some cases the confining formation may have been so badly disturbed that sealing may only cause the flow to discharge in a less appropriate location. In other situations, the flow may have eroded so much material that the landscape has taken on the appearance of a natural spring. The sealing in this case may be impracticable, if not impossible.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.2800 OWNER'S RESPONSIBILITY FOR SEALING WELL.

The owner shall be responsible for the permanent sealing of an abandoned well except:

A. As mutually agreed upon in a written contract between the owner and licensee and in accordance with these rules to protect the groundwater aquifer.

B. When the licensee improperly locates, constructs, or completes the well or fails to meet the conditions of his contract; in which case the licensee shall be responsible for the sealing of the well.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.2900 ABANDONMENT.

A licensee shall permanently abandon any well that he removes from service in accordance with parts 4725.2500 to 4725.2900 and shall report such abandonment to the commissioner. A licensee shall report to the commissioner any unsealed abandoned water wells.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.3000 [Repealed, 8 SR 1625]

4725.3100 TEST HOLES AND BORINGS.

Test holes shall be permanently abandoned and sealed by the well contractor after the drilling, logging, and testing have been completed unless the owner or his agent has submitted a request to the director and obtained his written permission to extend the time limit, or the well is being completed as a water supply or other approved type well.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.3200 DEWATERING AND DEPRESSURIZING AND OTHER WELLS.

Subpart 1. **Prevention of contamination of groundwater.** Dewatering and depressurizing wells shall be constructed in a manner and with such materials to prevent the contamination of the groundwater system. Discharges from the dewatering system shall not be cross connected to a potable water supply.

Subp. 2. **Temporary water supply.** There may be incidents during construction where nearby residences with private water supplies will lose their source of supply during dewatering operations. If such a situation occurs, the licensee shall cooperate with the homeowner as may be required to provide a temporary supply of water during construction operations, including, but not necessarily limited to,

supplying bottled water for drinking and cooking purposes and potable bulk water for other uses.

Subp. 3. **Notification requirements.** The commissioner shall be notified prior to commencement of a groundwater dewatering operation by the licensee. The licensee shall report the approximate area to be dewatered, the maximum depth to be dewatered, the number of wells to be affected, and the measures that will be taken to provide potable water to persons adversely affected by the dewatering operation. This may be reported by phone. The licensee shall retain the name of the commissioner's staff member taking the information and shall report this information in writing to the commissioner within three days of commencement of the groundwater dewatering operation.

Subp. 4. **Licensee compliance with orders of the commissioner.** The licensee shall comply with any orders issued by the commissioner which may include but not be limited to the collection of water samples from wells in the dewatered area for analysis to determine any health hazards prior to the commissioner relieving the licensee of responsibility for furnishing a safe water supply to well owners in the area affected by the dewatering operation. If the licensee has been released of his responsibility but thereafter difficulties develop in the water supply of well owners in the area affected by the dewatering operation as a result of such operation, the licensee may again be required to comply with subpart 2.

Subp. 5. **Elevator shafts.** Wells constructed or holes drilled for the installation of elevator shafts or hydraulic cylinders shall be cased, sealed, and maintained in a manner to prevent the vertical movement of water as a source of contamination to the groundwater or any aquifer and as approved by the commissioner.

Subp. 6. **All other wells.** All wells except those specifically exempted by the act shall be constructed and maintained in accordance with standards for water supply wells except when prior exemption has been obtained from the commissioner.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.3300 OTHER WATER SOURCES, CROSS-CONNECTIONS, AND STORAGE RESERVOIRS.

Subpart 1. **Storage reservoirs.** If a storage reservoir, excluding a pressure tank, is used, plans shall be submitted to the administrative authority for approval. The plans shall meet the standards specified in the Manual of Water Supply Sanitation, section VII, paragraph 715, published in 1969 by the department.

Subp. 2. **Other water sources.** In cases where a potable water supply cannot be obtained by well drilling, permission may be granted by the administrative authority to use springs, infiltration tile lines, or other similar sources as a water supply or to install water treatment facilities. Plans and specifications for such facilities, together with operating procedures, shall be approved by the administrative authority. The plans shall meet the standards of the Manual of Water Supply Sanitation, section VI, published in 1962 by the department.

Subp. 3. **Cross-connections.** Cross-connections between water wells and other systems or equipment containing water or other substances of unknown or questionable safety, including pesticides and fertilizers, are prohibited, except where equipped with a suitable protective device such as a break tank or backflow preventer which is approved by the commissioner and which the owner agrees to install, test, and maintain to assure proper operation.

Statutory Authority: *MS s 156A.01 to 156A.08*

STANDARDS FOR CONSTRUCTION OF WELLS

4725.3400 CASING FOR PERMANENT WELLS.

Subpart 1. **Casing materials.** A permanent well casing used for the protective or outside casing shall be of at least standard weight (schedule 40) steel or iron pipe through eight inches inside diameter. Larger diameter casing shall have minimum weights and thicknesses as specified in subpart 10. Dimensions and weights of schedule 40 pipe are given in Standard B36.10-1959 of the American Standards Association, 29 West 39th Street, New York, New York and Standards A53-69a or A120-69 of the American Society for Testing Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103. Casing for permanent wells shall be of ferrous material or, where permitted by statute, plastic material. For ferrous pipe, the specifications and installation procedures are prescribed below. For plastic pipe, the specifications and installation procedures are prescribed in parts 4725.6900 to 4725.7600.

Subp. 2. **Casing joints.** A protective well casing shall be watertight throughout its length, with threaded or welded joints or other types of joints given written approval by the director. Recessed or reamed and drifted couplings shall be used on threaded casing, or, as an alternate, other couplings can be used but the design, taper, and type of thread of the coupling shall match that of the pipe. No thread shall be exposed on the pipe when the pipe is joined to the coupling. Other casing design or materials shall be approved only by official written order of the commissioner.

Subp. 3. **Standard for pipe.** Pipe used as the protective casing in the permanent construction of a well shall be new pipe produced to recognized standards of the American Society for Testing Materials, No. 5L (1970) of the American Petroleum Institute, 1271 Avenue of the Americas, New York, New York, or NM. C201-66 and C202-64 of the American Water Works Association, 2 Park Avenue, New York, New York, or other grade weldable new pipe having a quality equal to or greater than those heretofore specified. New pipe, when salvaged within 30 days of the drilling of a water well test hole or dry hole only, may be used as new pipe if still in new condition.

Subp. 4. **Specification marked on pipe.** Pipe shall be marked with the specification designation or marked "Meets Minnesota Well Construction Code Standards." Such markings shall include wall thickness, weight per foot, and identification of supplier. The commissioner may require that such pipe be submitted to an independent testing laboratory for evaluation and verification that the pipe will equal or exceed minimum standards. Failure of the pipe supplier to submit the pipe for evaluation and verification or failure of the pipe to meet minimum standards specified in subparts 1 and 3 shall be sufficient cause for automatic rejection of such pipe for use in well construction in Minnesota.

Subp. 5. **Examination of pipe.** Pipe intended for water well use that is sold within this state, regardless of specification designation, is subject to random examination by the administrative authority who may require any lot of pipe or part thereof containing defective lengths to be rejected. Defective lengths or lots shall include, but not be limited to pipe with girth welded joints, pipe with welded patches, and lots having more than five percent of the pipe with lengths less than five feet.

Subp. 6. **Temporary, inner, and protective casing; liner.** Temporary casing may be standard weight pipe or lighter pipe, but lightweight material shall be of such minimum thickness as is required to withstand the structural load imposed by conditions both inside and outside the well. In no case shall the casing have a wall thickness of less than specified in subpart 10. An inner casing shall be surrounded by at least two nominal inches of neat cement grout when welded joints are used. Subpart 11 lists inner and outer pipe size combinations which would be appropriate to fulfill the requirements of these rules. If couplings are used the

annular space shall be at least four inches in diameter larger than the outer diameter of the coupling. The annular space between the casing and open hole shall be grouted with neat cement, concrete grout, or as provided in part 4725.3800, 4725.3900, 4725.4000, or 4725.4100.

An inner casing shall be grouted for its entire length with the grout material being added from the bottom upward in one continuous operation or as provided in part 4725.4100.

Casings to be grouted shall be provided with sufficient centering guides, welded to the casing, to permit unobstructed flow and deposition of the grout.

Subp. 7. **Inside casing diameter.** Under no conditions shall the casing inside diameter be less than two inches except for a driven well point which shall be equipped with a casing pipe of at least 1-1/4 inches inside diameter. The well shall also be of sufficient diameter to receive a pump or pumping apparatus of sufficient size to discharge the design capacity including anticipated decline in water levels.

Subp. 8. **Vertical extension.** A well casing or extension thereof shall extend vertically at least 12 inches above ground surface or above the floor of an approved basement offset, pump room, or well room. However, in an above grade installation the casing shall extend at least six inches above the floor or slab.

Subp. 9. **Offsets.** Well casing offsets are prohibited.

Subp. 10. **Casing pipe weight and dimensions.**

Size in Inches	Wgt. Lbs. Per Ft. Plain End	Wgt. Lbs. Per Ft. Thrds. & Cplgs.*	Wgt. Lbs. Per Ft. Thrds. R&D Cplgs.	Thickness in Inches	Diameter–Inches External	Diameter–Inches Internal	Thrds. per Inch	Couplings Minimum External Diameter Inches	Couplings Minimum Length Inches
1	1.68	1.68	1.70	.133	1.315	1.049	11½	1.576	2-5/8
1¼	2.27	2.28	2.30	.140	1.660	1.380	11½	1.900	2-3/4
1½	2.72	2.73	2.75	.145	1.900	1.610	11½	2.200	2-3/4
2	3.65	3.68	3.75	.154	2.375	2.067	11½	2.750	2-7/8
2½	5.79	5.82	5.90	.203	2.875	2.469	8	3.250	3-15/16
3	7.58	7.62	7.70	.216	3.500	3.068	8	4.000	4-1/16
3½	9.11	9.20	9.25	.226	4.000	3.548	8	4.625	4-3/16
4	10.79	10.89	11.00	.237	4.500	4.026	8	5.200	4-5/16
5	14.62	14.81	15.00	.258	5.563	5.047	8	6.296	4-1/2
6	18.97	19.18	19.45	.280	6.625	6.065	8	7.390	4-11/16
8	28.55	29.35		.322	8.625	7.981	8	9.625	5-1/16
10	40.48	41.85		.365	10.750	10.020	8	11.750	5-9/16
12	49.56	51.15		.375	12.750	12.000	8	14.000	5-15/16
14	54.57	57.00		.375	14.000	13.250	8	15.000	6-3/8
16	62.58	65.30		.375	16.000	15.250	8	17.000	6-3/4
18	70.59	73.00		.375	18.000	17.250	8	19.000	7-1/8
20	78.60	81.00		.375	20.000	19.250	8	21.000	7-5/8
22	86.61			.375	22.000	21.250			
24	94.62			.375	24.000	23.376			
26	102.63			.375	26.000	25.250			
30	118.65			.375	30.000	29.250			
32	126.66			.375	32.000	31.250			
34	134.67			.375	34.000	33.250			
36	142.68			.375	36.000	35.250			

*Nominal weight based on length of 20 feet including coupling.

Subp. 11. **Inner and outer casing combinations providing the minimum annular space when welded joints are used.**

Inner Casing in nominal inches	Outer Casing in nominal inches
2	6
4	8
5	10
6	12
8	14
10	16
12	18
14	20
16	22
18	24
20	26
22	30
24	30
26	32
30	36

Subp. 12. **Gauges for steel or galvanized steel casing irrigation wells in shallow continuous glacial outwash material penetrating nonartesian water.**

Diameter of Plain and Perforated Casing (inches)				Diameter of Corrugated Metal Pipe (inches)		
12	14	16	18	12	15	18
		Gauge			Gauge	
12	10	10	10	12	12	12

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.3500 WELLS IN SHALLOW CONTINUOUS GLACIAL OUTWASH MATERIAL PENETRATING NONARTESIAN WATER.

A well drilled for irrigation purposes in shallow continuous glacial outwash material penetrating nonartesian water may be constructed of pipe as specified in part 4725.3400, subpart 12. The annular space shall be closed by washing the fine-grained caving material around the casing.

Well casing in part 4725.3400, subpart 12 shall be new pipe; however, salvaged pipe may be used if the condition of the salvaged pipe is yet of new pipe quality.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.3600 MINIMUM PROTECTIVE DEPTHS OF WELLS.

All wells shall be watertight to such depth as may be necessary to exclude pollution. A well shall be constructed so as to seal off formations that are, or may be contaminated or undesirable.

Requirements will be fulfilled to the minimum extent when the protective casing has been installed in conformity with the applicable construction set forth in parts 4725.3400 to 4725.5200. Where it is not feasible to follow the standards contained in this part, the licensee shall obtain approval of the administrative authority as to the design of the well before proceeding. The acceptability of the formation for well development shall be based on the satisfactory results of analysis of the water. Any water-bearing formation yielding water which is contaminated, as evidenced by the presence of chemicals or bacteria of sewage origin, shall be regarded as unsatisfactory for use as a potable supply unless adequate treatment is provided. The Minnesota Department of Health shall be consulted

for measures that may be feasible to adequately treat the water to provide a potable supply.

Any potable water supply well constructed entirely in glacial outwash or alluvium earth formations in which the casing does not extend to a depth of 50 feet below established ground level or through at least ten feet of impervious soil formation shall be located in accordance with part 4725.2000, subpart 1, item F.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.3700 CASING USED AS A SUCTION LINE.

A well casing used for a potable water supply shall not be used as a suction line unless protected by a standard weight outer casing to a depth of at least ten feet. The top of both casings shall be finished in accordance with parts 4725.5700 to 4725.6500.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.3800 GROUTING.

Subpart 1. **Grouting required.** A well having an open annular space around the casing, or between the surface casing and protective casing, or between an inner casing surrounded by an outer casing, shall be grouted from the lower termination of the casing to the ground surface or to the base of the pitless unit. Grouting shall be commenced without delay upon completion of drilling of the well or any portion of a well which must be grouted. Grouting shall be performed by adding the mixture through the casing or a grout pipe from the bottom of the space to be grouted upward to the surface in one continuous operation. Concrete grout may be used in the dry portion of a hole. Neat cement grout or concrete grout shall be allowed to set a minimum of 12 hours when hi-early cement is used or a minimum of 48 hours when regular cement is used, before drilling operations are resumed. Heavy drilling mud or heavy bentonite water slurry may be used as grout in wells developed in glacial drift.

Subp. 2. **Concrete grout.** Concrete grout is a mixture of cement, sand, and water, in the same proportion of one bag of Portland cement (94 pounds) (ASTM C150-69a) and an equal volume of dry sand to not more than six gallons of clean water. Where large volumes are required to fill annular openings, gravel not larger than one-half inch size may be added. Concrete grout shall not be used as grout below the water level in the well.

Subp. 3. **Neat concrete grout.** Neat cement grout is a mixture of one bag (94 pounds) of Portland cement (ASTM C150-69a) to not more than six gallons of clean water. Bentonite up to two percent by weight of cement to reduce shrinkage or other admixtures (ASTM C494-68) to reduce permeability and/or control time of set may be used.

Subp. 4. **Heavy drilling fluid.** Heavy drilling fluid when used as grout in a rotary drilled well shall contain a high percentage of clay or bentonite to minimize shrinkage of the slurry within the annular space. Heavy bentonite water slurry is a mixture of ten percent by weight of bentonite added to clean water or approximately five percent bentonite added to drilling mud. Bentonite shall contain 85 percent of the mineral montmorillonite and shall meet American Petroleum Institute specification standard 13A (March 1966). Saline, acid, or alkaline substances or other additives to cause a temporary increase in viscosity of the bentonite slurry are not permitted.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.3900 ROTARY, BORED, OR AUGERED WELLS.

Rotary, bored, or augered wells shall have the annular space around the casing tightly sealed in accordance with the materials and procedures which are appropriate to the particular geological and hydrologic conditions at the well site, as prescribed in parts 4725.3800, 4725.4100, 4725.4200, 4725.4300, and

4725.5000. Drilling mud additives shall be stored in clean containers and shall be free of material that may adversely affect the well, aquifer, or quality of the water to be pumped from the well.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.4000 DRIVEN CASING WELLS.

Where the upper drillhole is clay or similar material of ten feet or more in thickness, the annular space between the drillhole and casing shall be kept filled with clay, slurry, or equivalent material when driving the protective casing. In lieu of this, a starting casing should be used and sealed with 20 feet of concrete grout. (When a pitless adapter or pitless unit is used, see part 4725.5500.)

The bottom of the protective well casing shall be equipped with a drive shoe or otherwise protected from damage during construction of the well as dictated by drilling procedures and conditions of each particular well.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.4100 UNCONSOLIDATED GLACIAL DRIFT WELLS.

A well drilled into unconsolidated glacial drift may be completed with a tight seal made around the protective casing if the annular space is closed by washing the fine-grained caving material around the casing prior to disinfection of the well. Wells shall be pumped promptly after setting the casing until clear, and native materials shall be washed immediately into the annular space. Any annular space remaining unfilled shall be grouted with neat cement or concrete using a tremie pipe to pump the grout under pressure from the bottom up in one continuous operation.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.4200 ROCK WELLS.

Subpart 1. **Rock at depth greater than 25 feet.** Where rock is encountered, i.e., consolidated as opposed to unconsolidated geological material, at a depth greater than 25 feet from the surface the protective casing shall be equipped with a drive shoe which shall be driven firmly into stable rock to provide a tight joint that will prevent pollution or sand from entering the well.

Subp. 2. **Rock encountered within 25 feet of the surface.** Where rock is encountered within 25 feet of the surface, an oversized hole shall be drilled. Such hole shall be four inches larger than the nominal casing size when welded construction is used, and four inches larger in diameter than the coupling if threaded joints are used. The annular space shall be pressure grouted with neat cement or concrete grout as prescribed in part 4725.3800 to a depth sufficient to exclude water which is or may be contaminated.

Subp. 3. **Well in fractured, jointed, noncavernous rock.** In an area where a well can be developed only in fractured, jointed, but noncavernous rock, the casing may terminate in the formation if there is at least 25 feet of sand or clay material above the rock, there is no record of this rock containing contaminated or polluted water, and geologic conditions offer no natural direct surface or near surface water inlets into the rock aquifer. Where there is less overburden or deeper strata will not produce potable water, the administrative authority shall be consulted and its written approval obtained by the well owner for water treatment and well construction features necessary to provide a safe water supply.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.4300 CAVERNOUS ROCK WELLS.

Subpart 1. **Special conditions.** Geological formations which are creviced or cavernous (limestone or dolomite) shall not be used as a potable source of groundwater unless overlain by at least 50 feet of drift material and/or by a firm insoluble rock material (sandstone) extending for at least one mile horizontal dis-

tance from the well in all directions to render the movement of contaminated water in the formation to the well improbable. The casing shall be equipped with a drive shoe and seated into the top of the limestone or dolomite formation.

Where the pumping level is determined to be at least ten feet above the top of the cavernous formation the well shall be cased at least ten feet below the pumping level. Any unfilled annular space shall be sealed according to the procedure prescribed in either part 4725.3800 or 4725.4100.

Where the pumping level is determined to be less than ten feet above the top of the limestone or dolomite formation the drill hole shall be at least four inches larger in diameter than the nominal casing size if welded construction is used, and four inches larger than the couplings if threaded joints are used. The annular space shall be filled with neat cement or concrete grout as prescribed in part 4725.3800.

Subp. 2. **Wells underlying cavernous rock.** Where an adequate and safe water supply is available in a geological formation overlain by one or more faulty rock formations, all faulty rock formations should be completely cased off. The casing should extend at least 15 feet into the safe aquifer if such exists, or at least 15 feet into a stable, insoluble, noncavernous or noncreviced geological formation beneath the lowest faulty rock formation and above the aquifer and at least ten feet below the pumping level. The drill hole extending through the creviced rock formation and 15 feet into the firm rock formation or aquifer should be at least four nominal inches larger in diameter than the casing if welded construction is used, and four nominal inches larger in diameter than the couplings if threaded joints are used. The annular space shall be filled with cement grout as provided in part 4725.3800.

Subp. 3. **Protective mantle over cavernous and noncavernous aquifer.** Where any faulty rock formation which overlies a safe aquifer is itself overlain by a protective mantle of drift, or by a firm insoluble consolidated formation of sufficient depth and for a sufficient radius as described in subpart 1, the casing need not extend through the protected faulty rock formation. The casing shall also extend ten feet below the pumping level. The acceptability of water taken from a well so constructed will be dependent upon treatment of the water, if the need for treatment is indicated by analytical studies of the water.

Subp. 4. **Water entry.** A well shall not provide water entry from more than one aquifer.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.4400 FLOWING ARTESIAN WELLS.

Flowing artesian wells should be constructed to prevent erosion of the aquifer or the overlying confining mantle. This provision will not be interpreted so as to preclude licensees from attempting to drill a well in a flowing artesian area, when it is likely that a water well can be safely installed if proper precautionary measures are followed.

Flow control from a flowing artesian well shall be provided, consisting of valved pipe connections, watertight pump connections, or a receiving tank set at an altitude corresponding to that of the artesian head. A direct connection between the discharge pipe and a receiving tank or a sewer or other source of pollution or contamination shall be prohibited.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.4500 WELL SCREENS.

A well installed in unconsolidated sand and gravel aquifers shall ordinarily be fitted with a screen properly sized so the aquifer can be properly developed to produce sand-free water at the pumping rate of the permanent pump. Wells shall provide sand-free water to the extent that the sand will not interfere with the intended use and operation of the water supply system.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.4600 CAPPING.

Temporary capping of a well until the pumping equipment is installed shall be such that no pollution or foreign objects can enter the well.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.4700 YIELD TEST.

Every well shall be test pumped to produce a minimum initial supply of 600 gallons of sand-free water per hour if geological conditions permit. A well in which a pump of a capacity of 20 gallons per minute or more is to be installed shall be tested for yield and drawdown with periodic water level measurements being made where possible, during the drawdown and subsequent recovery periods. The well shall be test pumped at rates greater than is expected from the well during its normal usage as follows: up to 400 gpm, 1.5 times; 400 to 600 gpm, 1.4 times; 600 to 800 gpm, 1.3 times; 800 to 1,000 gpm, 1.2 times; 1,000 gpm and over, 1.1 times. Shallow nonartesian wells used for irrigation purposes may be test pumped at a rate equivalent to the yield of the aquifer and for a period of at least 12 hours. Wells shall be test pumped for a minimum of one hour or more if more is required by the well owner or as prescribed by the consulting engineer or hydrologist.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.4800 ALIGNMENT.

A well shall not vary from the vertical or alignment so as to interfere with installation and operation of the pump.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.4900 DRILLING WATER.

Water used for drilling, development, or rehabilitation purposes, other than from the well itself, shall be chlorinated clear water containing a free chlorine residual at the time of use and be conveyed in clean sanitary containers or water lines.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.5000 DUG OR BORED WELLS.

A dug or bored well constructed with materials other than those authorized in parts 4725.3400 to 4725.3600 may be constructed only in glacial drift formations and shall:

A. Be cased with material of sufficient strength to withstand the pressures of the formation.

B. Be installed in an oversized hole at least six inches in diameter larger than the casing, with the annular space between the casing and the formation filled three inches thick with neat cement or concrete grout placed in one operation to a depth sufficient to exclude water which is or may be contaminated, or to a depth of ten feet, whichever is greater; or

C. Be installed with a watertight concrete curbing or casing at least four inches thick poured in one operation to a depth sufficient to exclude water which is or may be contaminated, or ten feet, whichever is greater. The annular space between the casing and the formation shall be filled as provided in part 4725.3900 or 4725.4100.

D. Be protected with a heavy precast overlapping steel reinforced concrete cover or a heavy locked overlapping metal cover not less than 3/16 inch in thickness. The cover shall be tight fitting so as to exclude vermin, dust, or other contaminants from the well.

E. Have pump openings and any below grade connection sealed with concrete or cement as prescribed in item C.

Prior to constructing a dug or bored well, the licensee shall obtain from the owner an agreement to the following conditions: the owner will maintain the isolation distances prescribed in part 4725.2000, subpart 1; once per year, or as otherwise prescribed by the Minnesota Department of Health, the owner will have the water from the dug or bored well analyzed for nitrate and for bacteria. This agreement shall be documented on forms provided by the Minnesota Department of Health and shall be returned to the department along with the water well record.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.5100 WELL DEVELOPMENT.

The well shall be developed to remove native silts and clays deposited on the aquifer face during the drilling, drilling fluid, and the predetermined finer fraction of the gravel pack, all of which shall be done to ensure that the maximum practical specific capacity will be obtained from the completed well.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.5200 DISPOSAL OF MATERIAL.

Drilling mud, cuttings, and discharged water shall not be disposed in a manner so as to create damage to public or private property. During the test pumping discharged water shall be piped to a point of overland drainage.

Statutory Authority: *MS s 156A.01 to 156A.08*

WELL CASING SEALS AND CONNECTIONS

4725.5300 WATER LEVEL MEASUREMENT DESIGN.

Provisions shall be made in the well seal with a minimum one-half inch diameter threaded plug for future measurements of static and pumping water levels. A minimum one-inch diameter threaded plug is preferred where feasible.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.5400 ABOVE-GRADE CONNECTIONS.

An above-grade connection into the top or side of a well casing shall be at least 12 inches above the established ground surface or two feet above the regional flood level whichever is higher, and constructed so as to exclude dirt or other foreign matter by one or more of the following methods, as may be applicable:

A. threaded connection;

B. welded connection;

C. rubber expansion sealer;

D. bolted flanges with rubber gaskets;

E. overlapping well cap; and

F. extension of the casing at least one inch into the base of a power pump mounted and sealed on a concrete pedestal and at least 12 inches above the established ground surface or the floor of an approved basement, pump room, or well room.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.5500 BELOW-GRADE CONNECTION.

A connection to a well casing made below ground, or less than 12 inches above the established ground surface, shall be protected by a pitless adapter or pitless unit. The pitless adapter or pitless unit shall be approved by the commissioner on the basis of design and materials. A below-ground connection shall not be submerged in water at the time of installation. The director will furnish a list of approved pitless adapters and pitless units that meet the requirements of these rules. Native materials shall be packed tightly around the casing and pitless adapter or pitless unit after installation.

A connection to a well casing located at least 12 inches above the floor of an approved basement offset is considered equal to an above-grade installation for residential use only. An approved basement offset shall be a room with a floor 12 inches above the floor of an approved basement, shall extend beyond the footings of the building. The well shall extend three feet beyond any roof projection. Any basement located in a regional flood zone shall not be considered an approved basement. Water from a well located within a basement offset of a farm home may be piped for use in other farm buildings.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.5600 OTHER METHODS.

Any other method of connection to a well casing shall be specifically approved in writing by the director before installation.

Statutory Authority: *MS s 156A.01 to 156A.08*

PUMP INSTALLATION

4725.5700 PUMP AND WELL ROOMS.

A room housing pumping equipment or the top of a well casing shall be constructed above the established ground surface permitting access to the pump and well for maintenance or repair, or may be located below-grade if the containing room is located in or attached to an approved basement.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.5800 SLABS, PLATFORM, AND FLOORS.

A well, except where an approved pitless adapter or pitless unit is used, shall be protected by a durable watertight concrete or equal slab, platform or floor, at least four inches thick, extending horizontally at least one foot in every direction from the well casing, and sloped to divert water away from the casing. A watertight seal, which may be asphalt or similar material to provide resiliency, shall be provided between the casing and the platform, pump room, or approved basement floor or slab.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.5900 PUMPS AND PUMPING EQUIPMENT.

Subpart 1. **Specifications.** A pump shall be constructed so that no unprotected openings into the interior of the pump or well casing exist.

A hand pump, hand pump head, stand or similar device shall have a closed spout, directed downward, and a pump rod that operates through a stuffing box.

A power driven pump shall be attached to the casing or approved suction or discharge line by a watertight connection, including flange connections, hose clamp type connections, or other flexible couplings, or shall have a base plate meeting the requirements of part 4725.5300.

Subp. 2. **Priming requirements.** A pump shall be designed, installed, and maintained so that priming is not required for ordinary use. Pumps installed for use only on a well water irrigation system are exempted but priming water shall be clear water free of contamination and carrying a chlorine residual. An irrigation well equipped with a centrifugal pump may be primed without chlorination when the pump is filled with water taken directly from the well.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.6000 WATER SUCTION LINES.

A water suction line shall be constructed of copper, galvanized iron or steel, cast iron, or plastic pipe as approved by the director, or other material given written approval by the director. Aluminum pipe is acceptable for well water irrigation systems in addition to the above materials. A water suction line extending

outside the well casing shall not be used unless protected by one or more of the following methods:

A. fully exposed in an approved basement offset, pump room, or well room and at least 12 inches above the floor of an approved below-grade structure;

B. fully exposed above grade; and

C. lying within an outer casing with the annular space filled with water from the system and maintained at system pressure.

An unprotected suction line may be installed below grade only for nonpotable irrigation wells located in agricultural fields and installed in shallow glacial outwash material penetrating nonartesian aquifers for manifold collection systems under negative pressures provided the area is sufficiently isolated from potable water wells.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.6100 PUMP DISCHARGE LINES.

A buried discharge line between the well casing and the pressure tank in any installation, including a deepwell turbine or a submersible pump, shall not be under negative pressure at any time. If a check valve is installed in a buried water line between the well casing and the pressure tank, the water line between the well casing and the check valve shall meet the requirements for a suction line unless equipped with an air release valve. Pump discharge lines shall be materials as approved for suction lines in part 4725.6000. A frostproof yard hydrant shall be located at least ten feet from the well.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.6200 PRESSURE TANKS.

It is recommended that a pressure tank be installed in an approved pump room or well room. However, partially buried pressure tanks shall project horizontally above the ground or into an approved basement. A totally buried pressure tank may be used if the manufacturer's unit has been approved in writing by the commissioner as to its design, type of material and specification for its installation. A pressure relief or air release valve on a pressure tank which may contain subterranean gases and which is located within a building shall be vented to the outside.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.6300 VENTS.

All wells shall be vented. A casing vent shall be of materials complying with part 4725.6000 with watertight joints terminating at least two feet above the regional flood level or one foot above the established ground surface or the floor of a pump room, well room, or approved basement, whichever is higher. The casing vent shall be screened and point downward. Vents may be offset provided they meet the provisions of this part. Any submersible pump shall be installed with a vented cap on the top of the well casing or pitless unit to prevent drawing near surface water, mud, sand, etc., into the well through shielding around the electric cable. Flowing artesian wells may be exempted if protected by a specially designed pitless unit or if the casing is protected as provided in part 4725.3700. Where the well casing on small diameter wells (1-1/2 inches or less) is used as a suction pipe, the casing need not be equipped with a vented cap, provided the casing is protected in accordance with part 4725.3700.

If toxic or flammable gases are present, they shall be vented from the well. The vent shall extend to the outside atmosphere above the roof level at a point where the gases will not produce a hazard. Openings in pump bases shall be sealed watertight. If the type of gas is not known and is to be carried through the water supply, the administrative authority shall be consulted for proper identification and treatment.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.6400 SAMPLING FAUCET.

In a pressure water system provision shall be made for collection of water samples by installation of a faucet or sampling device in a convenient location as near to the well as possible.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.6500 DISINFECTION.

A new, repaired, or reconditioned well or pump installation shall be thoroughly pumped to waste until the water is as clear as is reasonably possible, dependent upon groundwater conditions in the area. Thereafter the well and pumping equipment shall be disinfected with chlorine so applied that a concentration of at least 50 parts per million of chlorine shall be obtained in all parts of the well. The chlorine solution shall be introduced into the well in a manner to flush the well surfaces above the static level with chlorine solution. A minimum contact period of two hours shall be provided before pumping the well to waste and flushing the chlorine solution from the distribution system.

A licensee shall be responsible for chlorinating the work he performs on the well, pump, or pumping equipment.

Disinfection in a well repair operation may be accomplished at the beginning of the operation with chlorine applied to obtain a concentration of 200 parts per million for the period of the well repair operation. The water shall be pumped to waste prior to taking of water samples or use being made of the water.

Statutory Authority: *MS s 156A.01 to 156A.08*

RECORDS AND SAMPLES

4725.6600 WATER SAMPLE.

Prior to placing the well into service, the licensee will be responsible for collecting one or more water samples from the installation for water quality analysis. Such samples shall be submitted to the Minnesota Department of Health in containers and in accordance with procedures issued by the director. The results of the data will be stored in a ground water quality information system. The sample must be received within 30 hours of collection. Results of water sample analysis for a domestic supply not acceptable for drinking water will be reported to the well owner and the licensee along with recommendations for corrective actions. The results of the sample analysis are not intended to provide a basis of water quality for a transaction involving the sale or purchase of property.

If the licensee chooses to submit the water sample to a laboratory other than that of the Minnesota Department of Health, that laboratory must be certified by the Minnesota Department of Health for determination of the presence of coliform bacteria. The sample must be collected in containers approved by the director and must be received by the certified laboratory within 30 hours of the time of collection. The costs of such analysis shall be paid by the licensee. Results of the analysis shall be submitted to the Minnesota Department of Health.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.6700 WATER WELL RECORDS.

A water well record shall be completed and submitted to the commissioner by the licensee within 30 days after completion of any well. The licensee shall furnish the well owner one copy, the director three copies, and retain one copy in his files, of a well record containing such available information as required on the form furnished by the director. Terms when used for describing formations on the well log form shall conform to definitions set forth in these rules.

A water well record shall be submitted for a dry hole. Information on several dry holes within a small area may be submitted on a single well record form if the geologic materials are similar.

A well record shall be submitted after an abandoned well has been sealed showing the method of sealing.

Statutory Authority: *MS s 156A.01 to 156A.08*

WELL LABEL RECORDS, LABELS, SAMPLES

4725.6750 WELL IDENTIFICATION LABEL.

Subpart 1. **Label required.** Upon completing construction and before placing a well into service, an identification label provided by the commissioner must be attached to the well by the person constructing the well.

Subp. 2. **Exceptions.** Wells installed for temporary use that are permanently sealed within 90 days of construction are exempt from the labeling requirements of this part.

Subp. 3. **Markings.** The person who installs a well shall mark the well identification label with the depth of the well, the name or license or registration number of the person who constructed the well, and the date the well was constructed. The markings shall be stamped, engraved, or embossed in permanent letters and numbers no less than five millimeters (3/16 inch) high. As an alternative to marking the well identification label, the person may attach a separate label to the well casing, well cap, pump control box, or electrical panel. The separate label shall be marked with the depth of the well, the name or license or registration number of the person who constructed the well, and the date the well was constructed.

Subp. 4. **Attachment of label.** The well identification label provided by the commissioner shall be attached to the well casing in a visible location by use of a stainless steel clamp or metal band or strap. Alternately, the label may be attached to a concrete pump base or pedestal by the use of screws or fasteners, or may be attached to a monitoring well manhole or vault.

Subp. 5. **Removal of label.** The well identification label may only be removed by a person licensed or registered to modify the well. Upon completion of modification or repair of the well, the label must be reattached.

Subp. 6. **Well modification.** A new well identification label must be attached to the well by any person who alters the well depth, diameter, or casing.

Statutory Authority: *MS s 103I.101*

History: *15 SR 78*

4725.6800 WATER WELL CUTTING FORMATION SAMPLES.

Subpart 1. **Procedures for obtaining information.** In order to improve the state's water information system, more detailed geologic and hydrologic information is needed about the rocks and sediments which contain the state's groundwater resources. Water well cuttings provide the least expensive source of this kind of information. The information derived from such a program is essential to the better understanding and protection of the state's groundwater resources. Subparts 2 to 7 set forth the means by which such information shall be obtained.

Subp. 2. **Determination of area to be sampled.** The commissioner, in consultation with the Minnesota Geological Survey (hereinafter referred to as the survey), shall determine areas where water well-cutting samples are needed to provide subsurface geological and hydrological information required by the commissioner, the survey, and other state agencies for development of the state water information system. The general standards to be used in making such a determination are:

A. To obtain the minimum amount of detailed geologic and hydrologic information needed for the state water information system, at least one set of water well-cutting samples per township in rural areas and at least one set of water well-cutting samples per section in urban areas are required. The latest State Planning Agency land use map will be used for determining rural and urban areas for collection of well cutting formation samples.

B. The commissioner, in consultation with the survey, may determine that more information is required from specific areas for accuracy and detail in the state water information system.

C. Water well-cutting samples will be required only where there is reason to believe that a well will encounter bedrock materials below glacial sediments or from a well which the licensee estimates will reach a depth of at least 200 feet. The commissioner may require water well-cutting samples from areas other than as specified in this subpart where needed for accuracy and detail in the state water information system.

Any licensee who has reason to believe that a well may be of exceptional geologic or hydrologic interest is encouraged to call the survey collect to inform that agency of the opportunity to obtain samples, even if the well is not within the area currently designated for collection of samples.

Subp. 3. **Notification to licensees.** The commissioner, through the survey, shall notify licensees of the general areas from which water well-cutting samples are required and provide the licensees most frequently operating within such areas with maps or lists indicating counties, townships, section, or other designated areas where cutting samples are required. In addition, the commissioner shall specify the approximate number and depths of wells from which cutting samples are needed in the designated areas.

Subp. 4. **Sampling materials furnished to licensee.** The survey shall furnish all licensees so notified with well-cutting sample bags, labels, and return postage cards for collecting and reporting water well-cutting samples.

Subp. 5. **Collection of samples by licensees.** Licensees so notified and supplied with sample collecting materials shall collect cutting samples during the course of drilling wells in the designated areas according to the requirements specified in the notification. Licensees not supplied with sample collecting materials but who shall have occasion to drill a well in an area designated for sampling shall notify the survey. Licensees shall collect the cutting samples in an accurate manner so as to ensure that they are representative of the materials encountered. Samples shall be taken at five-foot intervals and at every change in rock or sediment type. The cuttings shall be placed in the sample bags provided by the survey which shall have an attached tag on which the commissioner's recording form well-record number of the well, the well owner's name, the well location, and the sample depth (example: five feet) must be written.

Subp. 6. **Notification to Minnesota Geological Survey of completion.** Licensees shall notify the survey within 30 days after the well's completion so that the cutting samples can be collected. Pending collection, the contractor shall store the samples in a proper manner, so that they are protected from weather and disturbance and segregated in such a way that all samples may be properly identified with respect to the commissioner's recording form well-record number and depth interval.

Subp. 7. **Collection of samples by survey.** The survey, upon notification by the licensee, shall collect the samples from the contractor. The cutting samples shall be described and a geologic log prepared. The geologic log will be retained in the files of the Minnesota Geological Survey, with a copy being sent to the contractor.

Statutory Authority: *MS s 156A.01 to 156A.08*

PLASTIC WELL CASING

4725.6900 PLASTIC WELL CASING; GENERALLY.

In addition to complying with parts 4725.0100 to 4725.6800, an installer who uses plastic well casing must comply with the provisions of parts 4725.6900 to 4725.7600 with regard to construction and installation.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.7000 DEFINITIONS.

Subpart 1. **Scope.** The following terms shall have the meanings given to them.

Subp. 2. **Installer.** "Installer" means any person who constructs a well using plastic casing, whether or not such person is a driller or contractor who is licensed pursuant to Minnesota Statutes, chapter 156A.

Subp. 3. **Plastic.** "Plastic," when used in parts 4725.0100 to 4725.7600, means a thermo-plastic pipe or casing material composed of either polyvinyl chloride (PVC) or acrylonitrile-butadiene-styrene (ABS).

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.7100 STANDARDS.

Subpart 1. **Approved materials.** Any plastic pipe used for water well casing shall meet the standards of the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103, which are referenced as Standard Specification for Thermoplastic Water Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), ASTM F-480. Such pipe shall be capable of withstanding pressures equal to or greater than 200 pounds per square inch (psi). Subpart 2 lists the pipe included in ASTM F-480 which meets the 200 psi rating.

Subp. 2. **Standard thermoplastic dimension ratios (SDR) and water pressure ratings (PR) at 23 degrees Celsius (73 degrees Fahrenheit) for nonthreaded PVC and ABS plastic pipe equal to or greater than 200 psi.**

Pressure Rating of PVC Pipe Materials

SDR	PVC 1120 PVC 1220 PVC 2120 psi	PVC 2116 psi	PVC 2112 psi
13.5	315	250	200
17	250	200	
21	200		

Pressure Rating of ABS Pipe Materials

SDR	ABS 1316 psi	ABS 2112 psi
13.5	250	200
17	200	

Any plastic pipe, couplings, components, solvents, cements, or primers used in water well casing construction shall have the approval of a testing laboratory which has demonstrated the use of unbiased, reliable and appropriate testing methods, as determined by the commissioner of health. Such laboratory must approve the material as being intended for use in the transport of potable water. This approval shall be stamped on the pipe as prescribed in part 4725.7200.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.7200 PIPE MARKINGS.

Subpart 1. **Well casing pipe.** The plastic well casing pipe shall be marked at least every 1.5 m (five feet), in letters not less than five mm (3/16 inch) high in a contrasting color with the following information:

A. nominal well casing pipe size (for example, five inches), as specified in ASTM F-480;

B. well casing pipe standard dimension ratio, in accordance with designation code given in part 4725.3400, subpart 10 (for example, SDR 17, 1316);

C. type of plastic casing pipe material (for example, ABS or PVC);

D. the wording, "well casing," followed by the impact classification (for example, IC-3);

E. designation "ASTM F-480" including the year of issue of the standard with which the well casing pipe complies;

F. manufacturer's name or trademark;

G. manufacturer's code for resin manufacture, lot number, and date of manufacture;

H. the seal or mark of the laboratory making the evaluation of the plastic for potable water use spaced at intervals specified by the laboratory; and

I. pressure rating (must be 200 psi or more).

Subp. 2. **Coupling markings.** Plastic well casing pipe couplings shall be marked in letters not less than five mm (3/16 inch) high, with the following information:

A. nominal well casing pipe coupling size (for example, five inches), as specified in ASTM F-480;

B. type of plastic well casing pipe coupling material (for example, ABS or PVC);

C. designation "ASTM F-480," including year of issue of the standard with which the well casing pipe coupling complies;

D. manufacturer's name or trademark; and

E. the seal or mark of the laboratory making the evaluation of the plastic for potable water use spaced at intervals specified by the laboratory.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.7400 STORAGE, HANDLING, AND COMPONENTS.

The installer shall:

A. Not use pipe and couplings that have been stored in direct sunlight. Pipe must be stored in such a manner so as to prevent sagging or bending.

B. Inspect pipe and couplings carefully for cuts, gouges, deep scratches, damaged ends, and other major imperfections and shall not use any plastic pipe or coupling which has such defects or imperfections.

C. Use solvent cement meeting the requirements of the specifications for the particular plastic used. The cement used shall provide sufficient open time for making good joints but the installer shall complete joints immediately upon applying the solvent cement.

D. Use only pipe and coupling combinations that give close and satisfactory interference fits which will readily mate when the solvent cement is applied and the pieces are joined. The pipe shall enter the socket to between one-half or two-thirds of the socket depth when inserted and turned.

E. An installer may use plastic pipe couplings with molded or formed threads but he must use only the thread lubricant which is suitable for the particular type of plastic being used.

F. When the installer connects plastic pipe to a nonplastic well screen, he shall use a coupling appropriate for the specific transition intended.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.7500 TECHNIQUE FOR JOINING PLASTIC WELL CASING.

Subpart 1. **Cutting.** The installer shall use fine-tooth blades with little or no set for cutting the pipe. Pipe ends shall be cut square. A plastic pipe cutter equipped with extra-wide rollers and thin cutting wheels may be used. Standard steel pipe or tubing cutters shall not be used for cutting plastic pipe.

Subp. 2. **Cleaning.** The installer shall clean all dirt, dust, moisture, and burrs from pipe ends and couplings. The installer may use only chemical or mechanical cleaners which are suitable for the particular plastic material being used. All burrs shall be removed.

Subp. 3. **Primer.** The installer shall use a primer when, because of the type of plastic material being used, the pipe and coupling surfaces must be softened and dissolved in order to form a continuous bond between the mating surfaces, and/or when the particular type of solvent cement being used requires one.

Subp. 4. **Cement application.** The installer shall apply a moderate and even coat of cement to the inside of the coupling to cover the distance of the joining surface only. The installer shall then quickly apply an even coat of cement to the outside of the pipe being joined to a distance which is equal to the depth of the pipe coupling socket.

Caution should be used when handling solvent cement to avoid skin contact or inhalation of vapors.

Subp. 5. **Assembly.** The installer shall:

A. make the joint as quickly as possible after application of the cement, and before it dries;

B. reapply cement before assembling if the cement dries partially;

C. insert the pipe into the coupling socket, turning the pipe to ensure even distribution of cement;

D. make sure that the pipe is inserted to the full depth of the coupling socket, and assemble pipe by using pipe joiners;

E. remove excess solvent cement from the exterior of the joint with a clean, dry cloth;

F. tighten a threaded joint by no more than one full turn using a strap wrench;

G. not disturb the coupling joint until after the cement has set, in order to avoid damage to the joint and loss of fit;

H. allow sufficient time for the joint to develop good handling strength based on the setting times given in subpart 6.

Subp. 6. **Initial set time.**

Temperature Range During Initial Set Time		Set Time for Pipe Sizes 2 to 3 in	Set Time for Pipe Sizes 3-1/2 to 12 in
degrees C	(degrees F)		
15 to 40	(60 to 100)	30 min.	1 hr.
5 to 15	(40 to 60)	2 hrs.	4 hrs.
-20 to +5	(0 to 40)	6 hrs.	12 hrs.

Statutory Authority: *MS s 156A.01 to 156A.08*

4725.7600 INSTALLATION OF PLASTIC WELL CASING.

Subpart 1. **Drilling an open hole.** The installer shall drill an open hole which is four inches larger than the nominal casing size where:

A. Rock (consolidated as opposed to unconsolidated geological material) is encountered within 25 feet of the surface. The annular space shall be grouted with neat cement or concrete grout as prescribed in part 4725.3800.

B. Rock is encountered at a depth greater than 25 feet from the surface. The casing shall extend at least five feet into the stable rock formation. The casing shall be sealed into the rock using neat cement grout. The remaining annular space shall be grouted as prescribed in part 4725.3800 or 4725.4100.

C. Boulders or unstable geologic conditions require than an oversized hole be drilled in order to install and protect the well casing. The annular space shall be grouted as prescribed in part 4725.3800 or 4725.4100.

D. The well screen is to be gravel packed. The gravel pack shall not extend more than ten feet above the static water level nor within 50 feet of the land surface. The remaining annular space shall be grouted as prescribed in part 4725.3800 or 4725.4100.

Subp. 2. **Drilling inside of plastic casing prohibited.** An installer may not insert the drill stem inside the plastic casing when drilling any kind of well.

Subp. 3. **Grouting.** The installer shall fill the annular space between the drill hole wall and the casing pipe with grout as prescribed in part 4725.3800 or 4725.4100 to assure equal loading around the casing in order to prevent collapse or deformation of the casing and to prevent any contamination from entering the well. Native sand may be used in nonartesian wells drilled in outwash material having no clay lense or lenses (a geological stratum composed of clay). The upper 30 feet in any type of well shall be grouted with neat cement grout (defined in part 4725.3800, subpart 3) using a tremie pipe. A tremie pipe is one which is small enough to fit in the annular space and which carries the grout to the bottom of a hole. The grout shall be fed under pressure from the bottom to the top in one continuous operation.

Because of its high heat of hydration, grout made of rapid-setting cement is not permitted for use in wells which are cased with PVC pipe.

The following shows the strength of PVC at various temperatures based on 73.4 degrees Fahrenheit being 100 percent of its tested strength:

A. 50 degrees Fahrenheit, 114 percent;

B. 60 degrees Fahrenheit, 107 percent;

C. 70 degrees Fahrenheit, 101 percent;

D. 80 degrees Fahrenheit, 95 percent;

E. 90 degrees Fahrenheit, 88 percent;

F. 100 degrees Fahrenheit, 83 percent;

G. 110 degrees Fahrenheit, 77 percent;

H. 120 degrees Fahrenheit, 72 percent;

I. 130 degrees Fahrenheit, 65 percent;

J. 140 degrees Fahrenheit, 40 percent; and

K. 150 degrees Fahrenheit, 10 percent.

Subp. 4. **Protection for plastic-cased wells.** All plastic-cased wells must terminate above grade as prescribed in parts 4725.1900 to 4725.2200 and 4725.3400, subpart 8. The installer may equip a plastic-cased well with a steel casing or steel pitless unit which is satisfactory for use in plastic-cased wells, to a depth equal to or greater than the frost line. Where a steel casing or steel pitless unit is not used, the plastic casing shall be extended above grade to a distance prescribed in parts 4725.1900 to 4725.2200 and 4725.3400, subpart 8, and must be protected with any one of the following:

A. an oversize steel casing which extends from the top of the plastic casing down to a depth below the frost line; or

B. at least three posts (schedule 40 steel pipe) of at least four inch diameter at equal distances from each other and which are placed two feet from the center of the plastic casing. Such posts shall be installed to a depth of four feet into solid ground, or to a depth of two feet if each post is surrounded with one foot of concrete to a depth of two feet; or

C. a well house which is constructed so as to provide a degree of protection which is equivalent to that provided in item B.

Subp. 5. **Abandonment.** The installer shall plug and abandon a bore hole as prescribed in parts 4725.2700 to 4725.2900;

A. whenever the plastic casing cannot be installed without exerting pressure; or

B. whenever a screen or pump cannot be installed without force; or

C. whenever the casing fails during the construction or pumping stages.

Subp. 6. **Cavernous rock wells.** Plastic water well casing shall not be used as an outside casing in wells cased and cement grouted through cavernous rock for-

mations. However, in such formations, plastic casing may be used as an inner casing pursuant to the requirements of part 4725.3400, subpart 6, if surrounded by an outer casing.

Subp. 7. **Use of screws.** Screws shall not be used to join solvent weld joints.

Statutory Authority: *MS s 156A.01 to 156A.08*