

CR 93-185

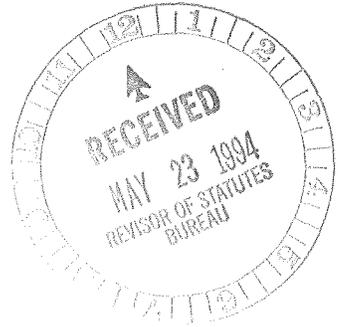


George E. Meyer
Secretary

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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STATE OF WISCONSIN)
)
DEPARTMENT OF NATURAL RESOURCES) SS



TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETINGS:

I, George E. Meyer, Secretary of the Department of Natural Resources and custodian of the official records of said Department, do hereby certify that the annexed copy of Natural Resources Board Order No. WS-54-93 was duly approved and adopted by this Department on March 24, 1994. I further certify that said copy has been compared by me with the original on file in this Department and that the same is a true copy thereof, and of the whole of such original.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the official seal of the Department at the Natural Resources Building in the City of Madison, this 12th day of May, 1994.

George E Meyer
George E. Meyer, Secretary

(SEAL)

9-1-94



ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD
REPEALING, RENUMBERING, RENUMBERING AND AMENDING, AMENDING
AND CREATING AND RULES

IN THE MATTER of repealing ss. NR 112.08(4)(b)8, note following (c)10, 112.17(2)(d)2; renumbering ss. NR 112.17(2)(f), 112.32(1)(b), 1 to 3, (6)(c); renumbering and amending ss. NR 112.07(36), (39), 112.17(2)(d)1.a to d, 112.32(6)(c), (7), (8), amending ss. NR 112.01(1)(a), 112.02(1)(a), (2), (3), 112.04(2), 112.05, 112.07(3), (4), (48), (61m), (74)(b), (79), (81), (82), (107), (119), 112.08(1)(b), (e), (2)(a) to (c), (4)(a)5, 9, 12, 13, (b)5, 7, 11 to 13, (c)10 to 13, (d)1 to 3, (f)6 to 8, (g)1, table A, 112.09(4)(intro.), (a)1, (L), (5), (6), subch. II (title), 112.10(4) figure 63 caption, (5), (9), (11), 112.12(1)(c), (2)(c) table 1, line A, column 3, 12, table 2, lines c to f, (3), (13), (15), (16), 112.13(2)(a)2, (b)1, (3)(a)1, (b)4, 112.14(1)(f)2, (h), (j), (2)(a)1.d, (3)(b), (c), 112.15(2), (3)(intro.), (b) figure 6, headings B, 2.e, 112.16(3)(a), 112.17(1)(a), (b), (2)(a), (b), (c)(intro.), 3, (3)(a)1, 6, 112.20(3)(c), (d)(title), figure 14 caption, (4)(a), (b), 112.21(intro.), (1)(title), (d), (2)(title), (b), (e), (e), 112.22(2)(b)1, (4)(a), (b), (5), (6)(a), (7)(a)(intro.), 112.23(4), (6), 112.25(1), (2)(a)1, 112.26(2)(a)4, (3), (6)(c)(intro.), (7)(a)(intro.), 1.b, 2, 3.a, (4)(title), a, c, 5, subch. III (title), 112.27(2), (4) to (6), 112.28, 112.30(title)(1), (3), (5), 112.31(title), (intro.) (1), figure 28, (2)(a), (b), (d), (3)(a)3, (5)(a), 112.32(1)(c) figure 32, (2)(a)1, 5, figures 36b and 36c labels, (4)(title), (6)(b), 112.33(1)(a)(title), 1, (b), (2)(b)1.a, 112.34(intro.), (1), 112.36(1), 112.37(3)(d), (4)(e)(intro.), 1, 3 to 6, 112.40(intro.), 112.41(1)(intro.), (3)(a), (c), 112.42(1)(intro.), (a), (b), (2)(intro.), (a), (d), (5)(b), (6)(a)2, (b)2, (e), (7)(intro.), (9)(a)(title), 1, 112.43(1); and creating ss. NR 112.02(3), 112.07(27m), (30f), (30m), (30t), (30x), (50m), (55c), (57t), (72m), (79m) (110m), 112.08(1)(e), (4)(a)14, 15, (b)14, 15, (c) 14, 15, (d)4 to 9, (ee), (f)9, 10, 112.09(4)(u), (v), 112.12(1)(e), 112.17(1)(c), (2)(a), Table V (4th note), (c)6, (d)(title), 5 to 7, (d)(note), (e)(title), 112.22(4)(e), 112.26(2)(d), (7)(a)Table C, 6, 112.27(8) and (9), 112.31(5)(intro.), 112.32(1)(a)6, (d), (4)(b)2, 112.37(2)(i), (3)(h), 112.42(4)(f), (6)(b)4, (g) and (7)(e) of the Wisconsin administrative code pertaining to well construction and pump installation.

WS-54-93

Analysis Prepared by Department of Natural Resources

Statutory Authority: ss. 144.025(2)(e) and 162.01(1), Stats.

Statutes Interpreted: chs. 144 and 162, Stats.

When the Natural Resources Board approved the major revision to the fifth edition of this rule in May of 1990, the Board requested the Water Supply Bureau to continue to work with the Wisconsin Water Well Association (WWWA) to make further changes to this rule within a 2-3 year time frame. This agreement was made based on a request to the Board by several officials of the WWWA at the Board meeting. They expressed concerns about some of the provisions of the proposed Fifth Edition of this rule.

During the past three years, representatives of the Bureau of Water Supply have met with the officials of the WWWA in several meetings to effect additional changes to the rule. Further, since the Fifth Edition of the rule involved a major reorganization and rewrite of the fourth edition (1975), minor errors were detected and clarifications were found to be necessary through subsequent daily use of the rule by Department employees, by licensed well drillers and licensed pump installers. The proposed changes to the rule were taken to public hearings in November, 1993. Written comments were also received through November 30, 1993.

This rule establishes minimum standards for the construction of water wells and water systems, the abandonment of wells and drillholes and the installation of pumps. These standards provide for procurement or extraction of groundwater in a sanitary manner and for protection of the groundwater resource.

A summary of the more significant substantive changes are as follows:

- The pitless adapter section of the code (NR 112.31) was changed to end the rule's absolute prohibition against clamp-on and bolt-on pitless adapters. The proposed change will allow only licensed pump installers to install Department-approved clamp-on or bolt-on adapters, only for wells serving single-family residences. The Department will only approve adapters that can be easily installed in a safe, sanitary manner. Criteria were also added to the rule to give the Department clear authority to review, approve or deny specific manufacturer's adapters.
- The "animal yard" and "animal shelter" definitions were changed to exclude single dog kennels and dog houses enclosing three or fewer adult pets on residential lots. This change was made because of the problems well drillers are having locating wells the required minimum of 50 feet from these sources of contamination. A new minimum separating distance of 8 feet was established for single dog kennels and doghouses on residential lots.
- The "drillhole" and "well" definitions were changed to clarify that the underground injection prohibition of s. NR 112.05 will apply to any drillhole or well regardless of the depth.
- The "collector sewer" categories were changed so that a sewer serving more than four living units or a sewer larger than 6-inches in diameter will necessitate the present 50-foot minimum separating distance, while a sewer serving four or fewer living units or 6-inches in diameter or smaller will only require a 25-foot minimum separating distance. Presently the rule requires a 50-foot minimum separating distance for all collector sewers. This change is being proposed

because of the difficulty maintaining the minimum separating distance of 50 feet to private collector sewers (as presently defined) on residential lots.

- A definition for "proposed landfill" was added to the rule so wells would not be constructed within 1,200 feet of these proposed landfill facilities. The rule is presently silent on this issue.
- Likewise, a definition was added for a "solid waste processing facility" to include composting and solid waste transfer facilities and to provide for a minimum separating distance of 250 feet to these sites. The code is also presently silent on this issue.
- A definition for "temporary manure stack" was added to the rule so that a minimum separating distance of 150 feet could be specified for temporary stacks. This change was made because well drillers are presently having difficulty meeting the required 250 foot minimum separating distance to manure stacks.
- The upslope/downslope requirement for new well locations was made reciprocal so that it would not matter what is installed first, the well or the contamination source. In either case the requirement will apply, i.e. the well may not be located directly down-gradient from a contamination source on the property or on an adjacent property.
- Requirements were added for both licensed well drillers and licensed pump installers to be required to return to try to correct a bacteriological unsafe condition with a well within 90 days after the well or pump was completed or within 30 days after the well was placed in service, whichever is longer. The rule presently does not require this and well owners sometimes have trouble getting help to solve this problem.
- The casing pipe section (NR 112.17) was changed to deemphasize the inspection by DNR inspectors of well casing pipe at well drillers yards and, instead, to emphasize such inspection at the actual well construction sites. This change was made because licensed well drillers can be involved in activities other than potable well construction and may legitimately have non-code complying pipe in their yards.
- A requirement was added for thermoplastic well casing pipe whereby a standard dimension ratio of 21 or less will be required. This will ensure a minimum wall thickness and therefore strength for thermoplastic well casing pipe to be used for construction of wells in Wisconsin.
- Language was added to the well abandonment section (NR 112.26) to require any person who improperly abandons a well to return to the well site and make the necessary corrections such that the well is properly abandoned. The rule presently has no such requirement.
- Table C was added to the well abandonment section to clearly list what materials and what methods will be acceptable for well abandonment in Wisconsin.
- The well abandonment section was changed to allow the use of chlorinated, sand-free pea-gravel to fill portions of uncontaminated bedrock wells deeper than 250 feet. This change was based on several experimental well abandonments using this material and will reduce the cost of filling and sealing very deep wells. For this option impermeable 40' plugs will be required at any change in geologic formation.

- The well abandonment section was also changed to allow (without the need for a variance) the use of approved bentonite chips to fill and seal wells as deep as 500 feet having not more than 350 feet of water standing in them. The present restriction is 250 feet deep with not more than 150 feet if water standing in the well. Again this change was based on several experimental well abandonments using bentonite chips for deeper wells and will give contractors more flexibility.
- The pump installation section was changed to require either a smooth-end sample tap or a threaded tap if the threads are filed off. This change was made to reduce the chances of plumbing cross-connections that can contaminate a water supply system.
- Further, many minor changes were made to many sections of the rule to clarify and improve the language of the rule.

SECTION 1. NR 112.01(1)(a) is amended to read:

NR 112.01(1)(a) ~~Procuring uncontaminated~~ Obtaining or extracting groundwater ~~used for potable and nonpotable purposes~~ any purpose; and

SECTION 2. NR 112.02(1)(a) is amended to read:

NR 112.02(1)(a) ~~Monitoring wells~~ Wells governed under ch. NR 141, unless they are high capacity wells, in which case ch. NR 112 also applies.

SECTION 2a. NR 112.02(2) is amended to read:

NR 112.02(2) For the purposes of abandonment, the provisions of this chapter apply to all drillholes and wells including, but not limited to, mining exploration drillholes not regulated by ch. NR 132, wells and drillholes not regulated by s. NR 141.25 and elevator shaft drillholes.

SECTION 3. NR 112.02(3) is created to read:

NR 112.02(3) For the purposes of the prohibition of the underground placement of any substance as defined in s. 160.01(8), Stats., the provisions of this chapter apply to all wells and drillholes.

SECTION 4. NR 112.04(2) is amended to read:

NR 112.04(2) When there is any construction, reconstruction or equipment installation on a noncomplying feature, the feature shall be upgraded and brought into compliance with the specifications in this chapter for new

construction. The well driller or pump installer shall inform the water system owner or user of the water system of other noncomplying features, that are apparent and known, in writing on a department form. A copy of the form shall be filed with the department by the well driller, pump installer or by the water system owner or user within 10 days after the ~~repair~~ initial evaluation of the water system has been completed ~~by the contractor or by the water system owner or user~~ if the required repairs are not made.

SECTION 5. NR 112.05 is amended to read:

NR 112.05 DISPOSAL OF POLLUTANTS; INJECTION PROHIBITION. The use of any well, drillhole or water system for the underground placement of any waste, surface or subsurface water or any substance, as defined in s. 160.01(8), Stats., is prohibited unless the placement is a department-approved activity necessary for the construction, rehabilitation or operation of the well, drillhole or water system or is a department-approved activity necessary for remediation of contaminated soil, groundwater or an aquifer. For the purposes of this section, the term "drillhole" includes any excavation or opening that is deeper than it is wide, even if it extends less than 10 feet below the ground surface and the term "well" includes any excavation that is deeper than it is wide regardless of its depth or purpose. Circulation of water through a closed-loop heat pump system in a drillhole is not prohibited by this section. Groundwater tracers may only be used with approval.

SECTION 6. NR 112.07(3) and (4) are amended to read:

NR 112.07(3) "Animal yard" means an uncovered, paved or unpaved area in which animals are kept or manure is loaded. This includes ~~areas~~ an area where an individual animal is kept, but does not include a single pet kennel enclosing 3 or fewer adult pets on a residential lot.

(4) "Animal shelter" means a covered, paved or unpaved area in which animals are kept. This includes an area where an individual animal is kept, but does not include a single pet house or single pet kennel housing 3 or fewer adult pets on a residential lot.

SECTION 7. NR 112.07(27m), (30f), (30m), (30t) and (30x) are created to read:

NR 112.07(27m) "Crawl space" means the space below a building having no basement; the space being at ground grade, in a depression or in an excavation.

(30f) "Detention basin" means an excavation into soils having low permeability or installed with a liner having low permeability, not having a permanent pool of water, designed and constructed to temporarily hold storm water to reduce peak discharges of storm water for flood control and to allow for the physical settling of pollutants.

(30m) "Detention pond" means an impoundment that has a permanent pool of water and is designed to have the capacity to temporarily store storm water runoff to provide flood control and to allow for the physical settling of pollutants.

(30t) "Ditch" means a long narrow excavation dug in the earth for the drainage of surface water.

(30x) "Downslope location" means a well or reservoir is located directly down-gradient from a contamination source or a potential contamination source, regardless of the presence or absence of a structure between the well and the source, when the ground surface elevation at the well or reservoir is lower than the elevation at the source, and surface water that runs over the source would travel within 8 feet of the well or reservoir.

SECTION 9. NR 112.07(36) and (39) are renumbered 112.07 (61q) and (61u), respectively, and as renumbered are amended to read:

NR 112.07(61q) "~~Earthen manure~~ Manure storage structure, earthen" means an impoundment made by excavation or mounding of soil for treatment or temporary storage of liquid or solid animal wastes. This term includes structures lined with clay, bentonite or synthetic film materials and structures consisting of slats or drainage openings ("picket dams") used to store solid or semi-solid animal waste material from which runoff occurs. This term also includes fabricated manure storage structures that are not watertight situated above, at or below ground grade.

(61u) "~~Fabricated manure~~ Manure storage structure, fabricated" means a ~~liquid tight~~ concrete, steel or otherwise fabricated structure used for treatment or temporary storage of liquid or solid animal waste.

SECTION 10. NR 112.07(48) is amended to read:

NR 112.07(48) "Grease interceptor or trap" means a receptacle designed to intercept and retain grease or fatty substances.

SECTION 11. NR 112.07(50m), (55c) and (57t) are created to read:

NR 112.07(50m) "Heating-air conditioning air shaft" means a vertical, lined excavation extending deeper than 10 feet below the ground surface used for the intake or exhaust of air to or from a heating or air conditioning system.

(55c) "Infiltration basin" means an excavation into permeable soils designed and constructed to temporarily store surface water runoff and allow it to infiltrate so as to provide flood control, groundwater recharge and to allow for the settling of pollutants.

(57t) "Lift station" means a wastewater collection and pumping structure that collects wastewater from collector sewers and pumps it through force main sewers.

SECTION 12. NR 112.07(61m) is amended to read:

NR 112.07(61m) "Manure stack" means solid manure ~~which is stacked for no~~ more than ~~100-120~~ days on the ground surface or on a paved surface.

SECTION 13. NR 112.07(72m) is created to read:

NR 112.07(72m) "Pet waste disposal unit" means a dry well, seepage bed, seepage pit, seepage trench, seepage mound or an absorption field used for the disposal of pet waste material.

SECTION 14. NR 112.07(74)(b) and (79) are amended to read:

NR 112.07(74)(b) "Factory assembled pitless unit" means a pitless unit assembled and pressure tested for leakage at the factory, including a unit fabricated with a pitless receiver tank.

(79) "Privy" means a building or structure with located above a pit or vault buried container or above an unlined excavation used for the deposition of human waste.

SECTION 15. NR 112.07(79m) is created to read:

NR 112.07(79m) "Proposed landfill" means a solid waste disposal facility for which actual notice of the intention to develop the facility has been given to the owners of property located within 1,200 feet of the proposed facility or for which a request has been made under s. 144.44(1m)(b), Stats., provided that a feasibility report under s. 144.44(2), Stats., is submitted to the department within 2 years after the applicable notice or request.

Proposed landfill does not include a facility the department has determined to be not feasible under s. 144.44(2), Stats., or a facility for which the department has determined that an approval for the facility is not being pursued with reasonable diligence.

SECTION 16. NR 112.07 (81) and (82) are amended to read:

NR 112.07 (81) "Pump installer" has the meaning designated in ~~ch. 162~~ s. 162.02(4), Stats.

Note: The statutory definition of "pump installer" is any person, firm or corporation who has registered as such with the department and shall have paid the annual registration fee and obtained a permit to engage in pump installing.

(82) "Pump installing" means installing, replacing or reinstalling equipment or material needed to withdraw water from a well or spring, ~~including making an entrance to a well, establishing seals and other~~ safeguards to prevent contamination, including installing, replacing or reinstalling a pitless adapter or pitless unit, a pressure tank, a pump, associated discharge piping connecting that connects a pump to a pressure tank or reservoir, ~~installing a water treatment device between a well and a~~ pressure tank ~~and installing,~~ controls needed to operate a pump or a well cap or seal.

SECTION 17. NR 112.07(97m) is created to read:

NR 112.07(97m) "Solid waste processing facility" means a solid waste facility at which solid waste is baled, shredded, pulverized, composted, classified, separated, combusted or otherwise treated or altered by some means to facilitate further transfer, processing, utilization or disposal. Solid waste processing facility does not include an operation conducted by scrap metal, paper, fiber or plastic processors which are excluded from the definition of "solid waste facilities" in ch. NR 500.

SECTION 18. NR 112.07(107) is amended to read:

NR 112.07(107) "Subsoil drain" means that part of the drain system, including foundation drains, which conveys the ground or seepage water from the footings of walls or below the basement floor under buildings to the storm sewer or other point of disposal.

SECTION 19. NR 112.07(110m) is created to read:

NR 112.07(110m) "Temporary manure stack" means solid manure only, piled for no more than 120 days within any one year period.

SECTION 20. NR 112.07(119) is amended to read:

NR 112.07(119) "Well" means any drillhole or other excavation or opening deeper than it is wide that extends more than 10 feet below the ground surface constructed for the purpose of obtaining groundwater.

SECTION 21. NR 112.08(1)(b) (intro.) is amended to read:

NR 112.08(1)(b) (intro.) At the highest point on the property consistent with the general layout and surroundings if reasonably possible, but in any case protected against surface water flow and flooding and not downslope from a contamination source on the property or on an adjacent property regardless of what was installed first, the well or the contamination source. When a contamination source is installed upslope from a well in violation of this section after the well construction has been completed, the violation is not the responsibility of the well driller, except if the well driller knew or should have known of the proposed upslope installation of the contamination source. When there is no location on the property where this requirement can be met, a well may be constructed without a variance if it is constructed with a minimum of 20 or more feet of well casing pipe than is required by ss. NR 112.12 and 112.13 and Tables I and II or with a minimum of 60 feet of well casing pipe provided that the minimum well casing pipe depth requirements of s. NR 112.12 or 112.13 and Table I or II are met. This exception does not apply to high capacity, school or wastewater treatment plant wells. A well or reservoir is located downslope from a contamination source, regardless of the presence or absence of a structure between the well and the contamination source, if:

SECTION 22. NR 112.08(1)(e) is created to read:

NR 112.08(1)(e) Every well shall be located so that it is reasonably accessible with proper equipment for cleaning, treatment, repair, testing, inspection and any other maintenance that may be necessary.

SECTION 23. NR 112.08(2)(a) to (c) are amended to read:

NR 112.08(2)(a) When a well is located outside and adjacent to a building, it shall be located so that the center line of the well extended vertically will clear any projection from the building by not less than 2 feet and so that the top of the well casing pipe extends at least 12 inches above the final established ground grade.

(b) ~~Every well shall be located so that it will be reasonably accessible with proper equipment for cleaning, treatment, repair, testing, inspection, and any other maintenance that may be necessary.~~ When a structure is built over a drilled well, it shall have an access hatch or removable hatch, or provide other access to allow for pulling of the pump. The well casing pipe shall extend at least 12 inches above the floor and be sealed watertight at the point where it extends through the floor.

(c) No well may be located, nor a building constructed, such that the well casing pipe will terminate in or extend through the basement of any building or terminate under the floor of a building having no basement. The top of a well casing pipe may terminate in a walkout basements basement meeting the criteria of s. NR 112.42(9)(b)1. to 4. A well may not terminate in or extend through a crawl space having a below ground grade depression or excavation.

SECTION 24. NR 112.08(4)(a)5., 9., 12. and 13. are amended to read:

NR 112.08(4)(a)5. Buried gravity flow ~~sewer connected~~ foundation drain ~~having pipe conforming to ch. ILHR 84;~~

9. Noncomplying pit, ~~attached pit,~~ subsurface pumphouse, alcove or reservoir;

12. Plastic silage storage and transfer tube; ~~or~~

13. Yard hydrant;

SECTION 25. NR 112.08(4)(a)14. and 15. are created to read:

NR 112.08(4)(a)14. Swimming pool, measured to the nearest edge of the water; or

15. Dog or other small pet house, animal shelter or kennel housing not more than 3 adult pets on a residential lot.

SECTION 26. NR 112.08(4)(b)1. and 5. and 7. are amended to read:

NR 112.08(4)(b)1. ~~Grease~~ Buried grease interceptor or trap;

5. Buried pressurized sanitary building sewer having pipe conforming to ch. ILHR 84;

7. Lake ~~or~~ river, shoreline stream, ditch or stormwater detention pond or basin measured to the regional high water elevation in the case of a lake or stormwater detention pond, to the edge of the floodway in the case of a river or stream or to the edge in the case of a ditch or stormwater detention basin;

SECTION 27. NR 112.08(4)(b)8. is repealed.

SECTION 28. NR 112.08(4)(b)11. to 13. are amended to read:

NR 112.08(4)(b)11. Buried pressurized sewer ~~having pipe conforming to ch. ILHR 84~~ conveying manure juices ~~providing~~ provided that ~~any pressure~~ the pipe used to convey manure is PVC pipe meeting meets ASTM specification D-2241, with standard dimension ratio of 21 or less or pressure pipe meeting the requirements of s. NR 110.13(6)(f) or ~~111.71~~ 811.62.

12. Buried fuel oil tanks serving single family residences, including any associated buried piping; ~~or~~

13. Discharge to ground from a water treatment device;

SECTION 28a. NR 112.08(4)(b)14. and 15. are created to read:

NR 112.08(4)(b)14. Vertical shaft installed below grade used for intake of air for a heating or air conditioning system; or

15. Buried sanitary or storm collector sewer serving 4 or fewer living units or having a diameter of 6 inches or less.

SECTION 29. NR 112.08(4)(c)10. is amended to read:

NR 112.08(4)(c)10. Buried sanitary or storm collector sewer; serving more than 4 living units or larger than 6-inches in diameter except that wells may be located or sewers installed such that a well is less than 50 feet, but at least 25 feet, from gravity collector sewers smaller than 16 inches in diameter or from force main collector sewers 4 inches or smaller in diameter provided that within a 50-foot radius of the well the installed sewer pipe meets the allowable leakage requirements of AWWA C600 and the requirements for water main equivalent type pipe as follows:

a. For sewers > 4" diameter, but <16" diameter:

PVC pipe > 4" diameter, but < 12" diameter shall meet AWWA C900 with elastomeric joints having a standard dimension ratio of 18 or less;

PVC pipe > 12" diameter, but < 16" diameter shall meet AWWA C905 with elastomeric joints having a standard dimension ratio of 18 or less;

Ductile iron pipe shall meet AWWA C115 or AWWA C151 having a thickness class 50 or more.

b. For sewers < 3" diameter, the pipe shall be any rigid pipe in the ch. ILHR 84 "Table for Pipe and Tubing for Water Services and Private Water Mains," including approved ABS, brass, cast iron, CPVC, copper (not including type M copper) ductile iron, galvanized steel, polybutylene (PB), polyethylene (PE), PVC, or stainless steel pipe.

SECTION 29a. The Note immediately following s. NR 112.08(4)(c)10. is repealed.

SECTION 30. NR 112.08(4)(c)11, to 13 are amended to read:

NR 112.08(4)(c)11. ~~Buried sewer force main or an~~ An influent sewer to a wastewater treatment plant;

12. The nearest existing or future grave site in cemeteries; ~~or~~

13. Wastewater treatment plant effluent pipe;

SECTION 31. NR 112.08(4)(c)14. and 15. are created to read:

NR 112.08(4)(c)14. Buried pressurized sewer having pipe not conforming to ch. ILHR 84; or

15. Manure loading area.

SECTION 32. NR 112.08(4)(d)1. to 3. are amended to read:

NR 112.08(4)(d)1. Bulk surface storage tank with a capacity greater than 1,500 gallons or any bulk buried storage tank regardless of capacity, including for both surface or buried tanks, associated buried piping for any solid, semi-solid or liquid product but not including those regulated under par. (b)12. This subdivision includes, but is not limited to petroleum product tanks, waste oil tanks and pesticide or fertilizer storage tanks not regulated under par. (a)11. This subdivision does not include septic, holding and manure reception tanks, or liquified petroleum gas tanks as specified in ch. ILHR 11.

2. Liquid-tight, fabricated manure or silage storage structure, in ground or at ground surface; ~~or~~

3. Wastewater treatment plant structure, conveyance or treatment unit; or

SECTION 33. NR 112.08(4)(d)4. to 9. are created to read:

NR 112.08(4)(d)4. Dry fertilizer or pesticide storage building or area when more than 100 pounds of either or both materials are stored;

5. Well, drillhole or water system used for the underground placement of any waste, surface or subsurface water or any substance as defined in s. 160.01(8), Stats.;

6. Stormwater infiltration basin;

7. Uncovered storage of silage on the ground surface;

8. Water-tight silage storage trench or pit; or

9. Lift station.

SECTION 34. NR 112.08(4)(ee) is created to read:

NR 112.08(4)(ee) One hundred fifty feet between a well or reservoir and a temporary manure stack.

SECTION 35. NR 112.08(4)(f)6. to 8. are is amended to read:

NR 112.08(4)(f)6. Liquid waste disposal system including, but not limited to a treatment pond or lagoon, ridge and furrow system and spray irrigation system;

7. Salvage yard; ~~or~~

8. A salt or deicing material storage area including the building structure and the surrounding area where the material is transferred to vehicles. This subdivision does not include bagged deicing material.

SECTION 37. NR 112.08(4)(f)9. and 10. are created to read:

NR 112.08(4)(f)9. Solid waste processing facility; or

10. Solid waste transfer facility.

SECTION 38. NR 112.08(4)(g)1. is amended to read:

NR 112.08(4)(g)1. The nearest edge of an existing, proposed or abandoned landfill, measured to the nearest fill area of abandoned landfills, if known, otherwise measured to the nearest property line;

Section 39. NR 112.08(4) Table A is amended to read:

TABLE A

MINIMUM SEPARATION DISTANCE REQUIREMENTS
BETWEEN POTABLE OR NONPOTABLE WELLS, RESERVOIRS, SPRINGS
AND POSSIBLE SOURCES OF CONTAMINATION

New installations shall meet the separation requirements in the far-right column. Existing installations shall meet the separation requirements in effect at the time of construction, those in effect at the time of installation of the possible source of contamination, if later, or to the requirements adopted on the effective date of this rule ...[revisor insert date].

Source	Prior to [®] <u>Oct. 1975</u>	Oct. 1975 to <u>Oct. 1981</u>	Oct. 1981 to [Eff. Month of Rule] <u>Jan. 1991</u>	After Feb. 1991 <u>to [Eff. Month of Rule]</u>	After [Eff. <u>Month of Rule]</u>
Absorption Unit (field), soil (See soil absorption unit)	<u>50'</u>	<u>50'</u>	<u>50'</u>	<u>50'</u>	<u>50'</u>
<u>Air shaft-heating/air conditioning (Vertical, Below grade)</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>25'</u>
Animal Barn Pen with Concrete Floor	None** <u>(25/20)**</u>	25'	25'	25'	<u>25'</u>
Animal Shelter <u>(not including small pet shelter housing 3 or fewer adult pets)</u>	None** <u>(50/25)**</u>	50'	50'	50'	<u>50'</u>
Animal Yard-Includes Calf Hutch <u>(but not residential lot dog kennel enclosing 3 or fewer adult pets)</u>	None**	50'	50'	50'	<u>50'</u>
Barn Gutter - Liquid-Tight	None** <u>(25/18)**</u>	25'	25'	25'	<u>25'</u>
Building Overhang (from centerline of well)	2'	2'	2'	2'	<u>2'</u>
Cemetery Grave Sites	None*	100'	100'	50'	<u>50'</u>
Cistern	10'	10'	10'	8'	<u>8'</u>
Coal Storage (greater than 500 tons)	None*	None*	None*	1,200'	<u>1,200'</u>
<u>Composting Site (See Solid Waste Processing Facility)</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>250'</u>
Discharge to ground from a Water Treatment Device	None	None	None	25'	<u>25'</u>
<u>Ditch-Edge of</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>25'</u>
<u>Doghouse or kennel housing 3 or fewer adult pets on residential lot</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>50'</u>	<u>8'</u>
Downspout Outlet	10'	10'	10'	8'	<u>8'</u>
Drain-Sewerage (having pipe conforming to ch. ILHR 84) (Buried)	8' <u>10'</u>	8'	8'	8'	<u>8'</u>
Drain-Sewerage (not having pipe conforming to ch. ILHR 84) (Buried)	25' <u>10'</u>	25'	25'	25'	<u>25'</u>
Drain (any material) (Buried) Clear Water Waste Sewer-Connected	10'	10'	10'	8'	<u>8'</u>

Source	Prior to ^e Oct. 1975	Oct. 1975 to Oct. 1981	Oct. 1981 to [Eff. Month of Rule] Jan. 1991	After Feb. 1991 to [Eff. Month of Rule]	After [Eff. Month of Rule]
Building-Foundation - Clear Water-Sewer Connected	10' -	10'	10'	8'	8'
Building-Foundation - Sewer Connected	15'	15'	15'	8'	8'
<u>Drillhole used for the underground placement of any waste, surface water or any substance as defined in s. 160.01(8), Stats.</u>	None	None	None	None	100'
<u>Fertilizer or Pesticide, any size Storage Tank (Buried tank or surface tank > 1,500 gal.)</u>	None	None	None	100'	100'
Filter Strip	None	None	None	50'	50'
Fuel Oil Tank - Buried	None*	100' (25' Allowed for Private Res. Lots Only)	100' (25' Allowed for Private Res. Lots Only)	100' (Including any associated buried piping)(25' allowed for those serving single family residences)	100' (Including any associated buried piping)(25' allowed for those serving single family residences)
Fuel Oil Tank - Surface (>1,500 gallons) (including any associated buried piping)	None*	None*	None*	100'	100'
<u>Fertilizer or Pesticide (Dry) Storage Area or Building (more than 100 pounds)</u>	None	None	None	None	100'
Gasoline or Other Petroleum or Liquid Products Product Tank--Buried (including any associated piping, not including L.P. tanks)	None*	100'	100'	100' (Including any associated buried piping)	100' (Including any buried associated piping)
Gasoline or Other Petroleum or Liquid Products--Product Tank - Surface (>1,500 gallons, including any associated buried piping)	None*	None*	None*	100'	100'
Glass Lined Feed Storage Facility (Harvester-Type Silos)	None**	25'	25'	50'	50'
Grease Interceptor (Buried) (Trap)	25'	25'	25'	25'	25'
Hazardous Waste Treatment Facility Regulated by DNR	None*	None*	None*	1,200'	1,200'
Holding Tank (Sewage)	25' None	25'	25'	25'	25'
<u>Infiltration basin, Stormwater</u>	None	None	None	None	100'
<u>Kennel on residential lot enclosing 3 or fewer adult pets</u>	None	None	None	50'	8'

Source	Prior to ^e Oct. 1975	Oct. 1975 to Oct. 1981	Oct. 1981 to Eff. Month of <u>Rule</u> Jan. 1991	After Feb. 1991 to [Eff. Month of Rule]	After [Eff. Month of Rule]
<u>Kennel, other than above</u>	<u>None</u> -	<u>None</u>	<u>None</u>	<u>50'</u>	<u>50'</u>
Lagoon, Treatment (See liquid waste disposal system)	-	-	-	-	-
<u>Lake Shoreline (Measured to the edge of the floodway)</u>	None*	25'	25' (60' For Schools and High Cap. Wells)	25'	<u>25'</u>
<u>Landfills (existing proposed or abandoned) (Distance to Nearest Fill Area of abandoned landfills if Known; Otherwise to the Property Line)</u>	None*	400 yards	400 yards	1,200'	<u>1,200'</u>
Lift Station **				<u>##</u>	<u>100'</u>
Liquid Waste Disposal System	None	250'	250'-300'	250' [#]	<u>250'[#]</u>
Manure Hopper or Reception Tank - Liquid-Tight	None*	75'	75'-150'	50'	<u>50'</u>
<u>Manure Loading Area</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>50'</u>
Manure Stack	None*	100'	100'-175'	250' ^{***}	<u>250'^{***}</u>
<u>Manure Stack, -Temporary</u>	<u>None</u>	<u>100'</u>	<u>100'</u>	<u>250'</u>	<u>150'</u>
<u>Manure Storage Structure (Earthen or Excavated or Non-liquid tight)</u>	None*	250'	250'-300'	250' ^{***}	<u>250'^{***}</u>
Manure Storage Structure (Fabricated, Liquid-Tight)	None*	100'	100'-175'	100'	<u>100'</u>
Manure - Storage Basin - Liquid-Tight Concrete Floor with an Acceptable Drainage Facility	None*	100'	150'-300'	Now in category of Manure Storage Structure	<u>Now in category of Manure Storage Structure</u>
<u>Mound System (See soil absorption unit) (Measured to the toe of the mound)</u>	<u>50'</u>	<u>50'</u>	<u>50'</u>	<u>50'</u>	<u>50'</u>
Nonpotable Well	None*	None*	None*	8'	<u>8'</u>
<u>Pesticide or Fertilizer (Dry) Storage Area or Building (More than 100 Pounds)</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>100'</u>
Pesticide or Fertilizer Storage Tank (not buried) - less than 1,500 gallons (distance only for nonpotable wells)	None	None	None	8'	<u>8'</u>
<u>Pesticide or Fertilizer Storage Tank - 1,500 gallons and larger Buried tank, any size; or surface tank > 1,500 gal.)</u>	None	None	None	100'	<u>100'</u>
Pet Waste Disposal Unit	None*	50'	50'	50'	<u>50'</u>
Pits - Noncomplying	40' <u>None</u>	10'	10' (20' For Schools, WWTP's, and High Capacity-	8'	<u>8'</u>

Source	Prior to Oct. 1975	Oct. 1975 to Oct. 1981	Oct. 1981 to [Eff. Month of Rule] Jan. 1991	After Feb. 1991 to [Eff. Month of Rule]	After [Eff. Month of Rule]
			Including Approved Pits)		
Plastic Silage Storage and Transfer Tube	None	None	None	8'	<u>8'</u>
<u>Pond, Stormwater detention (Edge of)</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>25'</u>
Pond, Treatment (See liquid waste, disposal system)					
Privy	50' (<u>Sewage Disposal Units</u>)	50'	50'	50'	<u>50'</u>
Quarry (See NR 112.12(16) for well casing depth requirements for wells within 1,200 feet of a quarry.)					
Reservoir - Noncomplying	10' (<u>Cistern</u>)	10'	10'	8'	<u>8'</u>
Ridge and Furrow System (See liquid waste disposal system)					
<u>River or Stream Edge Shoreline (Measured to the edge of the floodway)</u>	None*	25'	25' (60' For Schools and High Cap Wells)	25'	<u>25'</u>
Salt or Deicing Material Storage Area (Including structure and area surrounding where material is transferred to vehicles)	None*	None*	None*	250'	<u>250'</u>
Salvage Yard	None*	None*	None*	250'	<u>250'</u>
Septic Tank	25'	25'	25'	25'	<u>25'</u>
Sewer (ch. ILHR 84 Materials)(Buried)					
-Manure/Gravity	8'	8'	8'	25'	<u>25'</u>
-Manure/Pressurized	8'	8'	25'	25'	<u>25'</u>
-Sanitary or Storm Building/Gravity	8'	8'	8'	8'	<u>8'</u>
-Sanitary Building/ Pressurized	8'	25'	25'	25'	<u>25'</u>
-Sanitary Collector (Serving ≤ 4 living units or ≤ 6" diameter)	8'	50'	50'°	50'°	<u>25'</u>
-Sanitary Collector (Serving >4 living units or >6" diameter)	8'	50'	50'°	50'°	<u>50'°</u>
-Influent	50'	50'	50'	50'	50'
-Storm Collector (≤6" diameter)	8'	50'	50'	50'	50' <u>25'</u>
-Storm Collector (>6" diameter)	8'	50'	50'	50'	<u>50'°</u>
Sewer (not ch. ILHR 84 Materials)(Buried)					
-Manure/Gravity	25'	25'	25'	25'	<u>25'</u>
-Manure/Pressurized	25'	50'	50'	50'	<u>50'</u>
-Sanitary or Storm Building/gravity	25'	25'	25'	25'	<u>25'</u>
-Sanitary building/ Pressurized	25'	25'	25'	25'	<u>50'</u>
-Storm Building	25'	25'	25'	25'	<u>8'</u>

<u>Source</u>	<u>Prior to ^e Oct. 1975</u>	<u>Oct. 1975 to Oct. 1981</u>	<u>Oct. 1981 to [Eff. Month of Rule] Jan. 1991</u>	<u>After Feb. 1991 to [Eff. Month of Rule]</u>	<u>After [Eff. Month of Rule]</u>
-Sanitary or Storm Collector	<u>50'</u>	<u>50'</u>	<u>50'</u>	<u>50'</u>	<u>50'</u>
-Storm Collector	<u>25'</u>	<u>50'</u>	<u>50'</u>	<u>50'</u>	<u>50'</u>
-Influent	<u>50'</u>	<u>50'</u>	<u>50'</u>	<u>50'</u>	<u>50'</u>
Shoreline - Lake, River or Stream (Measured as indicated in s. NR <u>112.08(4)(b)7.</u>)	None*	25'	25' (60' For Schools and High Capacity Wells)	25'	<u>25'</u>
Silage Storage, Earthen Trench or Pit	None*	100'	100'-175'	250'	<u>250'</u>
<u>Silage Storage Structure (Fabricated liquid-tight) (In-ground or surface)</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>100'</u>
<u>Silage Storage-Surface, Uncovered</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>100'</u>
Silage Storage Tube (Plastic)	None	None	None	8'	<u>8'</u>
Silo With Pit	None**	50'	50'	50'	<u>50'</u>
Silo Without Pit But With Concrete Floor and Drain	None**	25'	25'	50'	<u>50'</u>
Sludge Landspreading or Drying	None*	200'	200'	250'	<u>250'</u>
Soil Absorption Unit (<8,000 gal/day, includes alternate unit)	50'	50'	50' (200' for schools as of <u>1978</u>)	50' (200' for schools)	<u>50' (200' for schools)</u>
Soil Absorption Unit (>8,000 ga/day, existing or abandoned)	50'	50'	50' (200' for schools as of <u>1978</u>)	250'	<u>250'</u>
<u>Solid Waste Processing Facility (Including composting facilities)</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>250'</u>
Solid Waste Site (Distance to Nearest Fill Area or Proposed Fill Area If Known; Otherwise to the Property Line)	None	400 yards	400 yards	1,200'	<u>1,200'</u>
<u>Solid Waste Transfer Facility</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>250'</u>
Spray Irrigation Waste Disposal Site (See liquid waste disposal system)					
<u>Stormwater detention pond or basin</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>25'</u>
<u>Stormwater infiltration basin</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>100'</u>
Sump - Watertight clear water	None	None	None	8'	<u>8'</u>
Sump - Wastewater (Watertight) (form. cast-iron equiv.)	None*	8'	8'	25'	<u>25'</u>
Sump - Wastewater (not watertight or equiv. to cast iron)	None*	25'	25'	25'	<u>25'</u>

Source	Prior to ^o Oct. 1975	Oct. 1975 to Oct. 1981	Oct. 1981 to [Eff. Month of Rule] Jan. 1991	After Feb. 1991 to [Eff. Month of Rule]	After [Eff. Month of Rule]
Swimming Pool - Below Ground (from edge of water)	None* -	25' (Below ground)	25' (Below ground)	25' (Below ground)	8' (above or below ground)
Temporary Manure Stack	None	100'	100'	250'	150'
Wastewater Treatment Plant Effluent Pipe	None	None	None	50'	50'
Wastewater Treatment Plant Structure, Conveyance or Treatment Unit	None*	None	150'	100'	100'
<u>Well approved for underground placement of any waste, surface water or any substance as defined in s. 160.01, Stats.</u>	None	None	None	None	100'
Yard Hydrant	40' None	10'	10'	8'	8'

^o The minimum separating distance between a well and a collector sewer serving more than 4 living units or larger than 6 inch diameter is 50 feet regardless of whether the well or the sewer was installed first. However for such sewers less than 16-inch diameter, wells may be located or sewers installed such that a well is less than 50 feet, but greater than at least 25 feet from gravity collector sewers smaller than 16 inches in diameter or from force main collector sewers 4 inches or smaller in diameter provided that within a 50-foot radius of the well the installed sewer pipe meets the allowable leakage requirements of AWWA C600 and the requirements for water-main equivalent type pipe as follows:

- For sewers \geq 4" diameter but <16" diameter:

- o PVC pipe \geq 4" diameter, but \leq 12" diameter shall meet AWWA C900 with elastomeric joints having a standard dimension ratio of 18 or less;
- o PVC pipe $>$ 12" diameter, but $<$ 16" diameter shall meet AWWA C905 with elastomeric joints having a standard dimension ratio of 18 or less.
- o Ductile iron pipe shall meet AWWA C115 or AWWA C151 having a thickness class 50 or more.

- For sewers $<$ 3" diameter, the pipe shall be any rigid pipe in the ch. ILHR 84 "Table for Pipe and Tubing for Water Services and Private Water Mains," including approved ABS, brass, cast iron, CPVC, copper, (not including type M copper), ductile iron, galvanized steel, polybutylene (PB), polyethylene (PE), PVC, or stainless steel pipe.

* "None" Although there were no minimum separation distances required by the code between these possible sources of contamination and a well or reservoir prior to 1975, and in some cases, prior to 1981, it is strongly recommended that the present standard minimum separation distance requirements be met whenever possible.

** Distances were developed under the Public Health Service Grade A Milk Ordinance and have been used by the department of agriculture, trade and consumer protection field inspectors.

*** Variances from these separating distances may be granted for earthen manure storage and temporary manure stacks meeting specifications of Soil Conservation Service Standards No. 425 and 312, respectively.

Variances from this minimum separating distance may be granted for treatment ponds or for storage or treatment lagoons constructed and maintained to the requirements of an approval granted under ch. NR 213.

After Feb. 1, 1991 and prior to the effective date of this rule [revisor insert date] the minimum separating distance between a well or reservoir and a lift station is based on the presence of a sewer force main at the lift station.

a There are several code revisions prior to 1975. The date of these revisions and the minimum separating distances were as follows:

<u>Source</u>	<u>April 24, 1936</u>	<u>March 1939</u>	<u>July 1951</u>	<u>April 10, 1953</u>	<u>May 1, 1971</u>
Building Overhang	2'	2'	2'	2'	2'
Cistern	None	None	10'	10'	10'
Downspout	None	None	10'	10'	10'
Drain					
- Building Foundation	10'	10'	10'	10'	10'
- Sewer Connected Building Foundation	10'	10'	15'	15'	15'
- Clear Water	None	None	10'	10'	10'
- Cast Iron (With Lead Joints)	10'	10'	10'	10'	10'
Grease Trap (Watertight)	None	None	25'	25'	25'
Septic Tank	None	None	25'	25'	25'
Sewage Disposal Unit (Absorption Field)	None	None	50'	50'	50'
Sewer					
- Cast Iron (With Lead Joints)	10'	10'	8'	8'	8'
- Not Cast Iron or equivalent	25'	25'	25'	25'	25'

SECTION 40. NR 112.09(4)(intro.) and (4)(a)1. are amended to read:

NR 112.09(4)(intro.) APPROVALS REQUIRED. Prior department approval is required for the activities described in this subsection. When deemed necessary and appropriate for the protection of public safety, safe drinking water and the groundwater resource, the department may specify more stringent well location, well construction or pump installation specifications for existing and proposed high capacity, school or wastewater treatment plant water systems requiring approval by this subsection or water systems approved by variance. Approval by the department does not relieve any person of any liability which may result from injury or damage suffered by any other person. In addition, failure to comply with any condition of an approval or the construction, reconstruction or operation of any well or water system in violation of any statute, rule or department order shall void the approval. Approval is required for:

(4)(a)1. The department may deny approval, grant a limited approval or modify an approval under which the location, depth, pumping capacity or rate of flow and ultimate use is restricted so that the supply of water for any public utility, as defined by s. 196.01, Stats., will not be impaired. Reduced availability of groundwater to a public utility well may be indicated when calculations using estimated values for aquifer characteristics result in 10 or more feet of water level drawdown in the public utility well based on 30 days of continuous pumping from the proposed high capacity well or well system. The department may also deny approval or condition an approval if the proposed or actual well location, well construction or pump installation features or the use of the well does not meet, at the time of application, the

specifications of this chapter for new well construction and pump installation or water use.

SECTION 41. NR 112.09(4)(1) is amended to read:

NR 112.09(4)(1) The use of well drilling ~~fluid~~ aids and additives ~~and~~ grout ~~or~~ sealing material or well abandonment materials and additives and well rehabilitation materials.

SECTION 42. NR 112.09(4)(u) and (v) are created to read:

NR 112.09 (4)(u) The burial of a pressure tank, other than an approved pitless receiver tank unit.

(v) The use of a nonpressure storage vessel other than a surge tank.

SECTION 44. NR 112.09(5) and (6) are amended to read:

NR 112.09(5) APPROVAL VERIFICATION. A well driller, well constructor, pump installer or contractor shall obtain a copy of the approval for any activity identified in sub. (4) prior to initiation of any work on a well, pump installation or water system. When necessary and appropriate the department may grant a verbal approval to a well driller, pump installer or contractor to initiate an activity before obtaining a written copy of the approval provided the conditions of the approval are complied with.

(6) (title) PERMITS. A well driller, well constructor, pump installer or contractor shall obtain required permits from counties authorized to administer this chapter under ch. NR 145.

SECTION 45. Subchapter II (Title) is amended to read:

Subchapter II - New Well Construction and Reconstruction

SECTION 46. NR 112.10(4), Figure 63 [caption] is amended to read:

NR 112.10(4), Figure 63. Line F. Rotary and percussion methods for low capacity* and nonpotable high capacity wells in limestone and dolomite with less than ~~20~~ 10 feet of overlying material.

*Not including school or wastewater treatment plant wells.

SECTION 47. NR 112.10(5), (9) and (11) are amended to read:

NR 112.10(5) SPECIAL CASING AREAS. Well drillers and well constructors shall comply with the well casing pipe depth requirements in special well casing pipe depth areas established by the department where aquifers have been contaminated or in other special areas. A list of the special well casing pipe depth areas and the special casing pipe depth requirements may be obtained from the department.

Note: In some of these special areas wells are approved by the department on a case by case basis.

(9) PROBLEM WELLS. The well driller or well constructor shall return to the well site to attempt to correct problems when a potable well produces bacteriologically unsafe water; when a well produces sandy or turbid water; or when failure of the well occurs due to a caving or sloughing formation either initially or. The well driller or well constructor shall return within 90 days after the well is completed or 30 days after the well is placed in service, whichever is longer. If noncomplying construction was not the cause of the problem, a fee may be charged by the well driller or well constructor for corrective work.

(11) COMPLETION OF THE WELL. The well driller or his or her agent shall collect a water sample, using his or her test pump, the well owner's pump, air-lift equipment or a bailer, from any new or newly reconstructed potable well upon within 30 days of completion and disinfection and have the sample

analyzed for coliform bacteria at a laboratory certified by DHSS for bacteriological analysis of potable water and having an agreement with the department for submission of copies of lab result forms. The department recommends that the sample also be analyzed for nitrate. The well driller or well constructor shall ~~then~~ disinfect, flush and seal the well. The well driller shall furnish a water sample result to the well owner within 10 days of the well driller's receipt of the result. The well driller or well constructor shall submit a well construction report to the well owner and to the department within 30 days following the date of well completion.

SECTION 48. NR 112.12(1)(c) is amended to read:

NR 112.12(1)(c) Will ~~allow reconstruction, when necessary, to~~ provide an adequate and contaminant free water supply, where the natural geologic and groundwater conditions allow.

SECTION 49. NR 112.12(1)(e) is created to read:

NR 112.12(1)(e) Will allow reconstruction, when necessary.

SECTION 50. NR 112.12(2)(c), Table 1, Line A, Minimum Diameter Column for Upper Enlarged Drillhole Requirements for Percussion Methods (third column) is amended to read:

None required with steel well casing pipe.

4" larger diameter than nominal diameter of well casing pipe, if one is constructed for any reason. ~~When one is constructed, the drillhole shall be maintained at full diameter by a properly sized bit or by temporary outer casing or if the well casing pipe is thermoplastic;~~ or 2" larger in diameter than the nominal diameter of the well casing pipe if steel casing pipe is assembled with welded ~~points~~ joints and the annular space sealing material is placed with an approved pressure method.

SECTION 51. NR 112.12(2)(c), Table 1, Line A, Percussion Methods Annular Space Sealing requirements column (column 12) is amended to read:

~~Neat~~ None if steel well casing pipe is driven from the ground surface.
When an upper enlarged drillhole is constructed, the annular space shall be sealed with neat cement grout; or with clay or sodium bentonite slurry with a mud weight of at least 11 pounds per gallon - Only sodium bentonite slurry or clay slurry (as specified above) when thermoplastic well casing pipe is used.

SECTION 52. NR 112.12(2)(c), Table II, Line C, D, E & F, Column for Min. Diam. for lower drillhole is amended to read:

6", but not less than the inside diameter of the well casing pipe.

SECTION 53. NR 112.12(2)(c), Table II, Line E, The Minimum Diameter column for Upper Enlarged Drillhole Requirements for Rotary Methods is amended to read:

~~Same as above.~~ Same as in Line C.

SECTION 54. NR 112.12(2)(c) Table II, Lines E & F, Headings for 2nd & 3rd Columns.

NR 112.12(2)(c) Table II, Lines E & F

2nd Column Heading: ~~Near~~ Depth to Firm Bedrock

3rd Column Heading: Near Surface Geologic Materials

SECTION 55. NR 112.12(2)(c) Table II, Line E, The Lower Drillhole Requirements (In Bedrock) - Method of Cuttings Removal Column is amended to read:

~~Same as above.~~ Air or an approved foam, by bailing, or by circulated drilling mud.

SECTION 56. NR 112.12(3), (13), (15) and (16) are amended to read:

NR 112.12(3) A greater depth of well casing pipe shall be provided in special well casing pipe depth areas designated by the department where well histories show contamination extends to a greater depth. In some of these

areas department approval shall be obtained for each well prior to construction.

(13) Nonpotable wells shall be constructed according to the requirements for low capacity potable wells, except that ~~the~~ well casing pipe 12 inches and diameter and larger used for nonpotable wells may have a lesser wall thickness than is required by Table V for the diameter of the well casing pipe used. ~~Well casing pipe 12 inches in diameter and larger used for nonpotable wells shall have~~ provided the pipe has a minimum wall thickness of 0.250 inches and ~~shall be~~ is adequate in strength to make the well structurally sound. The drilling mud requirements during well drilling and the sodium bentonite annular space sealing requirements do not apply to nonpotable high capacity wells constructed with reverse rotary methods.

(15) More stringent well construction methods including but not limited to deeper well casing pipe depth settings are required by the department for wells constructed through formations where contaminant levels exceed the drinking water standards in s. NR 112.06. ~~Special well casing pipe depth areas have been established by the department where greater depth of well casing pipe is required. A list of these special casing areas may be obtained from the department.~~ When drilling in ~~these~~ where there are contaminated formations consultation with the department is strongly recommended.

(16) When a quarry is within 1,200 feet of any proposed well, the upper enlarged drillhole and well casing pipe depth requirements shall be referenced from the bottom of the quarry ~~or from 60 feet below the ground surface at the well site, whichever is greater.~~ When the bottom of the existing or proposed quarry is or will be at an elevation higher than the elevation of the ground surface at the well site, this requirement does not apply.

SECTION 57. NR 112.13(2)(a)2. and (b)1. and (3)(a)1. and (b)4. are amended to read:

NR 112.13(2)(a)2. Following driving of the well casing pipe any upper enlarged drillhole shall be filled with clay or sodium bentonite slurry having a mud weight of a least 11 pounds per gallon or with neat cement grout, except only neat cement grout may be used for potable high capacity, school or wastewater treatment plant wells. Neat cement grout shall be placed according to s. NR 112.20. If the upper enlarged drillhole extends below the 40-foot depth and the annular space sealing material is clay or sodium bentonite slurry, the sealing material shall be placed with a conductor pipe. When temporary outer casing pipe is used, it shall be removed during or following the sealing process. If the upper enlarged drillhole extends below the 100-foot depth, the annular space sealing material shall be placed with an approved pressure method as specified in s. NR 112.20. If any of the annular space seal settles during or following development of the well, it shall be replaced ~~following development.~~

(b)1. Thermoplastic well casing pipe may only be used for nonpotable high capacity wells and for low capacity wells, ~~except school or wastewater treatment plant wells,~~ developed in unconsolidated formations and constructed in accordance with line A or B of Table I but not including school or wastewater treatment plant wells.

(3)(a)1. An upper enlarged drillhole shall be constructed and maintained at full diameter by circulating drilling mud to the required depth of well casing pipe setting, as specified by Tables I to IV. The well casing pipe shall be set concentrically in the upper enlarged drillhole. The annular space between the upper enlarged drillhole and the permanent well casing pipe shall

be permanently sealed with sodium bentonite and cuttings slurry having a mud weight of at least 11 pounds per gallon or with neat cement grout, except that only neat cement grout may be used for potable high capacity, school and wastewater treatment plant wells. If any of the annular space seal settles during or following development of the well, it shall be replaced ~~following development~~ so as to seal the entire annular space.

(b)4. An upper enlarged drillhole at least 4 inches larger in diameter than the nominal diameter of the thermoplastic well casing pipe shall be constructed and maintained at full diameter by circulating drilling mud to the required depth of well casing pipe settings, as specified in Tables I to IV. The thermoplastic well casing pipe shall be set concentrically in the upper enlarged drillhole full of drilling mud. The drilling mud shall have a mud weight of at least 11 pounds per gallon. If any of the annular space seal settles during or following development of the well, it shall be replaced ~~following development~~ so as to seal the entire annular space.

SECTION 58. NR 112.14(1)(f)2. is amended to read:

NR 112.14(1)(f)2. A drive-shoe may be welded or threaded onto the bottom of the string of well casing pipe and, if the well casing pipe extends more than 63 feet (that is, more than 3 standard pipe lengths) into the bedrock, at least one set of 3 centering guides shall be provided on the casing pipe within the bedrock. If only one set of guides is provided, it shall be installed within 5 feet of the top of the bedrock.

SECTION 59. NR 112.14(1)(h) is amended to read:

NR 112.14(1)(h) When nonpotable high capacity wells and low capacity wells, except school and wastewater treatment plant wells, are completed in igneous or metamorphic crystalline bedrock, normally referred to as "granite"

wells, an initial attempt shall be made to obtain water below the 40-foot depth. The drillhole shall extend to a depth of at least 150 feet, even though water in sufficient quantity may be encountered during drilling in the bedrock above the 40-foot depth. When adequate water quantity is not obtained below the 40-foot depth, the department may approve installation of less than 40 feet of well casing pipe for withdrawal of water from the bedrock above the 40-foot depth. Prior approval is required. Installation of less than 20 feet of grouted well casing pipe will not be approved without continuous chlorination. Installation of less than 25 feet of well casing pipe will not be approved unless the well casing pipe is permanently cement grouted all the way up to the ground surface.

Note: For the installation of pumps in wells with less than 25 feet of well casing pipe, see the requirement in s. NR 112.31(2)(d).

SECTION 60. NR 112.14(1)(j) is amended to read:

NR 112.14(1)(j) Wells constructed or reconstructed to withdraw water from any of the aquifers beneath the "Maquoketa" shale and the "Niagara" formations in the eastern part of the state shall be cased and grouted at least through the "Niagara" formation except in areas designated by the department as special well casing pipe depth areas. The department recommends that such wells also be cased and grouted through the "Maquoketa" shale formation. If a liner is used to case off the "Niagara" formation, the "Maquoketa" shale formation or both, it shall be installed in a manner conforming with the requirements of s. NR 112.21(1).

SECTION 61. NR 112.14(2)(a)1.d. and (3)(b) and (c) are amended to read:

NR 112.14(2)(a)1.d. When an upper enlarged drillhole is constructed, following completion of the driving of the well casing pipe, the annular space

shall be filled with clay or sodium bentonite slurry having a mud weight of at least 11 pounds per gallon or with neat cement grout except that only neat cement grout may be used when the upper enlarged drillhole is constructed more than 5 feet into bedrock. Neat cement grout shall be placed according to the requirements of s. NR 112.20. When temporary outer casing is used, it shall be removed during or immediately after sealing the annular space. When the upper enlarged drillhole extends deeper than the 40-foot depth and the annular space sealing material is clay or sodium bentonite slurry, the slurry shall be placed with a conductor pipe. When the upper enlarged drillhole extends deeper than the 100-foot depth, the annular space sealing material shall be pumped.

(3)(b) For nonpotable high capacity wells and low capacity wells constructed by rotary methods in bedrock, except school and wastewater treatment plant wells:

1. An upper enlarged drillhole at least 2 inches larger in diameter than the nominal diameter of the well casing pipe, shall be constructed according to par. (a) to ~~the depth required in Tables I and II~~ a minimum depth as follows:

a. To the top of firm bedrock when the depth to firm bedrock is 40 feet or more, 30 feet or more for sandstone;

b. To the depth of the well casing pipe setting, but not less than 40 feet, 30 feet for sandstone, when the depth to bedrock is less than 40 feet, less than 30 feet for sandstone; or

c. To the depth of well casing pipe setting, but not less than 60 feet when the depth to firm limestone or dolomite is less than 10 feet below the ground surface.

2. The steel well casing pipe shall be set to the bottom of the upper enlarged drillhole and driven to a firm seat in the bedrock.

3. The annular space between the upper enlarged drillhole and the well casing pipe may be sealed with drilling mud and cuttings having a mud weight of at least 11 pounds per gallon or with neat cement grout, according to the requirements of s. NR 112.20, except that only neat cement grout shall be used whenever the top of the bedrock is encountered above the 40-foot depth, above the 30-foot depth for sandstone, or whenever the upper enlarged drillhole extends more than 5 feet into the top of the bedrock formation.

~~2.4.~~ When the diameter of the upper enlarged drillhole is less than 4 inches larger in diameter than the nominal diameter of the well casing pipe, the well casing pipe shall be assembled with welded joints and the sealing material shall be placed using an approved pressure method as specified in s. NR 112.20(2)(j).

(c) For potable high capacity, school and wastewater treatment plant wells constructed by rotary methods in bedrock:

1. An upper enlarged drillhole at least 3 inches larger in diameter than the outside diameter of the well casing pipe or the outside diameter of the well casing pipe couplings, if used, shall be constructed according to par.

(a) to a minimum depth of:

a. 60 feet, or to the depth of bedrock if the top of bedrock is more than 60 feet below the ground surface; or

b. 100 feet if the well is to supply water for a wastewater treatment plant and there is a treatment pond or lagoon or sludge beds on the property.

2. The well casing pipe shall be set to the bottom of the upper enlarged drillhole and driven to a firm seat in the bedrock.

3. The annular space between the upper enlarged drillhole and the permanent well casing pipe may be sealed with neat cement grout, according to the requirements of s. NR 112.20.

SECTION 62. NR 112.15(2) and (3) (intro.) and (b) Figure 6. (Headings B) and (b)2.e. are amended to read:

NR 112.15(2) A flowing well ~~which is a potable high capacity, school or wastewater treatment plant well~~ shall meet the construction requirements of sub. (3) with the following modifications:

(a) If the flowing well is a potable high capacity, school or wastewater treatment plant well:

1. The reference depth to ~~bedrock~~ the aquifer is 60 feet rather than 40 feet or 30 feet for sandstone, except when the well is installed for a wastewater treatment plant that has a treatment pond or lagoon or sludge beds on the property, the reference depth to ~~bedrock~~ the aquifer is 100 feet.

~~(b)2.~~ The upper enlarged drillhole shall be 3 inches larger in diameter than the outside diameter of the well casing pipe or the outside diameter of the well casing pipe couplings, if used.

~~(c)3.~~ The annular space shall be sealed with cement grout as specified in s. NR 112.20.

(b) If the flowing well is a sandstone bedrock well, and is a nonpotable high capacity well or a low capacity well, except for school and wastewater treatment plant wells, the reference depth to the sandstone bedrock aquifer is 30 feet rather than 40 feet as for other types of bedrock.

(3) (intro.) A flowing well ~~which is a nonpotable high capacity well or a low capacity well, except for school and wastewater treatment plant wells,~~

shall be constructed according to the requirements of this subsection as follows:

(Figure 6.) Step ~~B-B1~~. Permanent casing pipe set to bottom of temporary outer casing. Annular space ~~sealed with neat cement grout~~ filled up to within 10 feet of surface with clay slurry. Permanent casing pipe then drilled and driven to firm seat into the top of the aquifer.

Step ~~B-B2~~. ~~Permanent Casing is drilled and driven through remainder of confining bed to top of aquifer.~~ Annular space sealed with neat cement grout replacing clay slurry.

(b)2.e. The inner well casing pipe shall have a nominal diameter 2 inches smaller than the nominal diameter of the outer well casing pipe, shall meet s. NR 112.17 and Table V requirements and shall be set to the bottom of the inner upper enlarged drillhole, and, if the aquifer is bedrock, driven to a firm seat with a drive-shoe. The annular space may be sealed with the drilling mud and cuttings or with neat cement grout, except when the inner upper enlarged drillhole extends more than 5 feet into bedrock, in which case the annular space shall be sealed with neat cement grout according to the requirements of s. NR 112.20.

SECTION 63. NR 112.16(3)(a) is amended to read:

NR 112.16(3)(a) Screen type. Screens installed within gravel-packs for nonpotable high capacity wells and for low capacity wells, including school and wastewater treatment plant wells, shall be continuous-slot. Screens for potable high capacity wells shall be continuous-slot, V-shaped wire wrap on a rod base. ~~Louvered~~, As an alternative, louvered, shutter-type screens may be used ~~providing~~ with gravel-packs for any type of well provided they are

designed and installed in a manner such that water from the well is practicably free of sand. Screen selection for dewatering wells is optional.

SECTION 64. NR 112.17(1)(a) and (b) are amended to read:

NR 112.17(1)(a) (title) Temporary casing. Temporary casing pipe for all wells, or well casing pipe greater than 12-inch diameter ~~and larger~~ used for nonpotable wells may be a lighter weight steel pipe than specified for a given diameter in Table V. Pipe for nonpotable wells greater than 12-inch diameter shall have ~~of~~ a minimum wall thickness of at least 0.250 inches and be able to withstand the structural stress imposed by construction conditions.

(b) (title) Pipe for liners. Liner pipe installed solely to seal off a caving or sloughing zone in a well shall be new, unused and nonreclaimed steel or thermoplastic ~~but~~ pipe. Steel pipe shall also meet the specifications of Table V except that it may have a lesser wall thickness than what is required in Table V for the diameter of pipe used. Steel pipe for such liners shall have a minimum wall thickness of ~~0.219~~ 0.216 inches ~~for 6-inch diameter pipe and larger.~~ The pipe may have the largest practical diameter allowing installation in the well. When thermoplastic pipe is used for such liners, it shall meet the minimum requirements of sub. (3). Liner pipe used in all other situations shall meet the specifications in Table V for steel pipe or the requirements of sub. (3), and the cement grout annular space seal thickness for thermoplastic pipe may not exceed $1\frac{1}{2}$ inches. For the requirements for the installation of liner pipe see s. NR 112.21.

SECTION 65. NR 112.17(1)(c) is created to read:

NR 112.17(1)(c) Diameter uniformity. Within any separate string of well casing pipe, all lengths of pipe used shall be of the same diameter.

SECTION 66. NR 112.17(2)(a) is amended to read:

NR 112.17(2)(a) (title) Specifications. Steel well casing pipe shall have the dimensions and weights specified in Table V except as exempted in ~~s~~ sub.(1)(a) and (1)(b). ASTM A 120 pipe may not be used. Well casing pipe used in initial well construction or liner pipe used for reconstruction of a well with water containing contaminant levels exceeding the drinking water standards in s. NR 112.06 shall be new steel pipe meeting one of the following standards:

1. ASTM A 53, ~~Grades A or B~~;
2. ASTM A 106;

Note: The ASTM specification for A 120 well casing pipe was withdrawn in 1987.

3. ASTM A 589-Type I, Grade A or B-Type II, Grade A, Type III-driven well pipe;

4. ~~API 5A~~ API 5CT;
5. ~~API 5AX~~ API 5D; or
6. ~~API 5L; or~~
7. ~~API 5LX.~~

SECTION 67. NR 112.17(2)(a), Table IV (Notes) a 4th note is created and added below Table V as follows:

NR 112.17(2)(a), Table V - 4th Note.

Note: The internal diameter of API 5CT and API 5D, 4 and 5-inch diameter pipe is significantly smaller than the listed diameter indicated in the above table. When using these pipes, care should be taken to ensure that the pump to be installed in the well can be set and removed without difficulty.

SECTION 68. NR 112.17(2)(b) and (c)(intro.) and 3. are amended to read:

NR 112.17(2)(b) (title) Well driller, well constructor responsibilities.

Well drillers and well constructors may not use unmarked or inadequately marked well casing pipe for permanent well casing pipe. It is the well driller's or well constructor's responsibility to use well casing pipe that meets the requirements of this chapter. The well driller or well constructor shall examine all shipments of well casing pipe received and shall reject any defective length of pipe and return it to the manufacturer or supplier ~~or mark it with a yellow band or stripe to designate it as reject pipe.~~ When the well casing pipe or the pipe markings are of questionable condition, the well driller or well constructor shall supply the department with the manufacturer's mill certification papers listing the pipe specifications including the heat numbers.

(2)(c) (intro.) (title) Defective pipe. Well casing pipe may be inspected by the department. Any defective length may be rejected ~~and marked by the department with a yellow band or stripe designating it as reject pipe~~ by the department and may not be used in well construction. Reject pipe may include:

3. Pipe not conforming to the marking requirements of par. ~~(e)~~(d);

SECTION 69. NR 112.17(2)(c)6. is created to read:

NR 112.17(2)(c)6. Pipe with heavy coatings of paint on the outside of the pipe.

SECTION 70. NR 112.17(2)(d) (title) is created to read ~~and the subsection is renumbered as:~~

NR 112.17(2)(d) (title) Marking requirements.

SECTION 71. NR 112.17(2)(d)1. a. to d. are renumbered 1. to 4. and (2)(d)1. and 3., as renumbered are amended to read;

NR 112.17(2)(d)1. ASTM A53:

manufacturer's name or mark;

ASTM designation, specification number and grade;

process of manufacture, continuous welded (type F), electric-resistance -
welded A, electric-resistance-welded B, seamless, or seamless B, XS for extra
strong, XXS for double extra strong.

NR 112.17(2)(d)3. ASTM A 589:

manufacturer's name or mark;

ASTM designation, specification number and grade;

wall thickness;

nominal or outside diameter;

process of manufacture, butt-welded, electric-resistance-welded, or
seamless;

grade, for Type I-Drive Pipe;

.. type number - Type I-Drive Pipe, Type II-Water-Well Reamed and Drifted
Pipe, Type III-Driven Well Pipe, ~~Type IV-Water Well Casing Pipe.~~

SECTION 72. NR 112.17(2)(d)5. to 7. are created to read:

NR 112.17(2)(d)5. API 5D:

manufacturer's name or mark;

API specification;

Compatible standards;

Unfinished pipe (UF), if plain-end;

Size and weight designation;

Grade.

6. API 5L:

manufacturer's name or mark;

API specification;

Compatible standards;

Size and weight designation;

Grade;

Process of manufacture, S for seamless, E for electric-weld, F for continuous-weld pipe;

Heat treatment symbol;

Hydrostatic test pressure, if higher than standard pressure.

7. API 5CT:

manufacturer's name or mark;

API specification;

Compatible Standards;

Unfinished pipe (UF), if plain-end;

Size and weight designation;

Grade;

Process of manufacture;

Test pressure;

Type of thread (if used);

Heat treatment.

SECTION 73. NR 112.17(2)(d)2. is repealed.

SECTION 73a. A note is created following s. NR 112.17(2)(d) to read:

Note: The listed ASTM and API specifications are available for inspection at the offices of the department of natural resources, the secretary of state, and the revisor of statutes and may be obtained for personal use from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103 and the American Petroleum Institute,

Publication and Distribution Section, 1220 L Street, Northwest, Washington, D.C. 20005.

SECTION 74. NR 112.17(2)(f) is renumbered NR 112.17(2)(e).

SECTION 74a. A title is created for s. NR 112.17(2)(e) to read:

NR 112.17(2)(e) (title) Assembly and installation.

SECTION 75. NR 112.17(3)(a)1. and 6. are amended to read:

NR 112.17(3)(a)1. Thermoplastic well casing pipe and couplings shall be new polyvinyl chloride (PVC) or acrylonitrile-butadiene-styrene (ABS) material produced to and meeting ASTM F 480 standard and shall have a standard dimension ratio (SDR) of 21, 17 or 13.5. Styrene-rubber thermoplastic well casing pipe, including ASTM F 480 may not be used.

6. The thermoplastic pipe shall be assembled with either flush-threaded joints, integral-bell, solvent-cemented joints or one-piece solvent cemented couplings in a manner according to the specifications in ASTM F 480. A permanent tag bearing the message "plastic well casing" shall be attached to the top of the well casing pipe, the full pitless unit, or the riser pipe extending up from a short-model pitless unit.

SECTION 76. NR 112.20(3)(c) and (d)(title) and Figure 14 caption and (4)(a) and (b) are amended to read:

NR 112.20(3)(c) Grout (float) shoe-continuous injection. As depicted in figure 13, the bottom of the well casing pipe shall be fitted with a grout (float) shoe equipped with a back pressure (check) valve. A conductor pipe or drill stem shall be connected to the grout shoe and shall extend up through the well casing pipe to a grout pump at the ground surface. The well casing pipe shall be suspended a short distance above the bottom of the upper enlarged drillhole. Grout material shall be pumped through the conductor pipe

and the grout shoe until the entire annular space is filled with grout. The conductor pipe or drill stem shall then be removed. The well casing pipe shall be set to the bottom of the upper enlarged drillhole ~~in an unconsolidated formation well or driven to a firm seat in a bedrock well~~. The grout material shall be allowed to set for at least 12 hours. Once set, the grout shoe and back pressure valve may be drilled out and the well construction continued.

(d)(title) Well seal/tremie pipe-pumped (Braden-head method).

[NR 112.20(3)(d)] Figure 14. Well seal/conductor (tremie) pipe-pumped (Braden-head) method for neat cement grouting.

(4)(a) When percussion methods are used, following completion of the driving of the well casing pipe, a clay or sodium bentonite and cuttings slurry with a mud weight of at least 11 pounds per gallon shall be placed to permanently fill and seal the annular space. Any subsidence shall be made up. If the upper enlarged drillhole extends below the 40-foot depth, the slurry shall be placed with a conductor pipe.

(b) When rotary methods are used, after the upper enlarged drillhole has been completed by circulating drilling mud, the slurry coming out the top of the annular space shall have a mud weight of at least 11 pounds per gallon before the well casing pipe is set in the drillhole. Any subsidence of the drilling mud and cuttings in the annular space shall be made up. The annular space shall remain filled and sealed up to the ground surface. The rotary method of circulating drilling mud during construction described in this paragraph ~~for placing sodium bentonite slurry~~ is an approved pressure method for placing sodium bentonite slurry or drilling mud and cuttings and shall be used when required in Tables I to IV and ss. NR 112.13 to 112.15.

SECTION 77. NR 112.21 (intro.), (1)(title), (d), (2)(title), (b), (c) and (e) are amended to read:

NR 112.21 LINERS. (intro.) Only new steel or thermoplastic well casing pipe as specified in s. NR 112.17 may be used for liner pipe.

(1) (title) LINERS INSTALLED TO CORRECT CONTAMINATED WATER SUPPLIES, TO LINE-OFF THE VERTICAL ZONE OF CONTAMINATION, OR TO PREVENT CROSS-MIGRATION BETWEEN AQUIFERS.

(d) The liner pipe shall be completely sealed in place from the bottom of the liner to the top of the liner with neat cement grout using an approved pressure method according to the grouting requirements of s. NR 112.20. If the liner is thermoplastic, the cement grout thickness ~~shall~~ may not exceed 1-1/2 inches. The liner shall be supported until the grout has set.

(2) (title) LINERS INSTALLED FOR CAVING OR SLOUGHING PROTECTION, FOR A NON-HEALTH-RELATED WATER QUALITY PROBLEM OR FOR A TURBIDITY PROBLEM.

(b) Liner pipe used only to seal off a caving or sloughing zone, for a non-health-related water quality problem or to prevent turbid water may be either steel or thermoplastic meeting the requirements of s. NR 112.17. Steel liner pipe may have a lesser wall thickness than is required in Table V for the diameter of well casing pipe but shall have a wall thickness of at least ~~0.219~~ 0.216 inches ~~for 6-inch diameter and larger pipe~~. When thermoplastic pipe is used and is sealed in place with cement grout, the grout thickness ~~shall~~ may not exceed $1\frac{1}{4}$ inches.

(c) Liner pipe installed for the reasons cited in par. (b) may have the largest practical diameter allowing installation in the well.

(e) Sealing a drillhole with neat cement grout or concrete grout and subsequently drilling through the hardened grout may be used to reconstruct a

well with water containing contaminant levels not exceeding the drinking water standards of s. NR 112.06 ~~and, for non-health-related water quality problems or for turbidity problems.~~

SECTION 78. NR 112.22(2)(b) 1. and (4)(a) and (b) are amended to read:

NR 112.22(2)(b) Chemical conditioning. 1. Noncontinuous chemical treatment of a well, except for batch chlorination, shall be conducted under the supervision of a licensed well driller or a Wisconsin registered professional engineer. Acidation of a well shall be done with approved materials and in a manner to prevent damage to the well or pump and to prevent any hazard to humans or property. The acid shall be inhibited and shall be neutralized upon removal from the well.

(4)(a) The disinfectant shall be dispersed throughout the entire water column in the well. The disinfectant shall also be brought into contact with the inside of the well casing pipe above the static water level ~~by continuous circulation. For batch chlorination the volume of chlorine solution used shall be equal to or greater than the volume of water standing in the well.~~

(b) The disinfectant shall remain in the well for at least & 2 hours except for emergency situations, when water is needed without delay. A contact time of at least 30 minutes shall be provided for emergency situations.

SECTION 79. NR 112.22(4)(e) is created to read:

NR 112.22(4)(e) For batch chlorination, the entire water system shall be thoroughly disinfected with a chlorine solution having a concentration of at least 500 mg/l prepared according to Table B. The volume of chlorine solution shall be equal to or greater than the volume of water standing in the well. The chlorine solution shall be brought into contact with the entire inside of

the well casing pipe by continuous circulation from the water system. A contact time of at least 12 hours shall be provided for the disinfectant.

SECTION 80. NR 112.22(5), (6)(a) and (7)(a)(intro.) are amended to read:

NR 112.22(5) FLUSHING. Wells shall be thoroughly flushed after disinfection. Flushing and disinfection procedures may be performed simultaneously except for batch chlorination procedures when they shall be done separately.

(6)(a) The well driller or his or her agent or the well constructor of a driven point well shall collect a water sample using the well driller's, well constructor's or well owner's pump, air-lift equipment or with a bailer from any new or newly reconstructed, redeveloped or reconditioned potable well. If the well driller uses the well owner as an agent to collect the water sample, the well driller shall provide the owner with an appropriate sample bottle and laboratory form. A sample shall also be collected following any repair work that involves entry of the well for the purpose of installing, replacing or repairing equipment located within the well. The sample shall be collected for coliform bacteriological analysis within 30 days following completion ~~of disinfection and flushing~~ of the well or following completion of rehabilitation or repair. The well is completed when all operations that require the use of drilling, driving or annular space sealing equipment have been completed. If the well driller or well constructor is also the pump installer, the water sample may be collected following completion, disinfection and flushing of the pump installation. A well driller or well constructor does not have to be licensed as a pump installer to install a test pump for well development and sampling.

NR 112.22(7)(a) (intro.) The well driller who contracted to construct the well, the well driller who actually constructed the well, or the well constructor shall submit an original well construction report to the department and to the owner within 30 days following the day the well was completed or reconstructed. A well construction report shall be submitted for any well deepening. A well is completed when all operations that require the use of drilling, driving or annular space sealing equipment have been completed. A well construction report is not required for well screen replacement if the screen is set to a depth not exceeding 5 feet above or below the original screen depth setting. A well construction report is also not required for blasting or hydrofracturing when done within 30 days after original completion of the well construction. Such work shall be reported on the original well construction report or on a copy of the original report. An accurate and complete well construction report shall be submitted on a form prescribed by the department to:

SECTION 81. NR 112.23(4) and (6) are amended to read:

NR 112.23(4) The diameter of the driven point well shall be selected and the expected depth considered so that the pump installation will meet the requirements of this chapter. For static water levels deeper than the lift of a shallow well pump, approximately 20 feet, a well drive pipe diameter sufficient to accommodate the packer-jet assembly in the well shall be selected to allow pumping with a deep well pump. When the requirements of sub. (5) are met and when the use of a shallow well pump is possible, the minimum diameter of the driven point well is 1¼ inches.

(6) Driven point wells ~~shall be~~, when protected against freezing, may be installed with a protective outer sleeve below frost depth as shown in figure

18a. When installed in this manner, the top of the annular space between the well and the protective sleeve shall be sealed watertight with a sanitary well seal.

SECTION 82. NR 112.25(1) and (2)(a)1. are amended to read:

NR 112.25(1) Springs vary from the standpoint of sources, locations, surrounding land uses and elevation. Each spring considered for use as a source of potable water shall be evaluated by the department prior to use as a potable source. Development of a spring as a source of potable water will be approved only after a department evaluation and approval. The placement or driving of a casing pipe into an undeveloped spring in a location easily accessible to the public regardless of the intended use of the spring water is prohibited.

(2)(a)1. The area surrounding the spring to a distance of at least 100 feet laterally and 50 feet downgrade and the area immediately ~~above~~ upslope from the spring to a point beyond the crest of the slope or to a distance of at least 200 feet upslope from the spring, whichever is greater, may not be used for any activity, including human habitation, which may contaminate the spring.

SECTION 83. NR 112.26(2)(a)4. is amended to read:

NR 112.26(2)(a)4. The well or drillhole has been taken out of service or has not been used for 3 or more years and is not needed by the owner in the immediate future as a source of water for human consumption, sanitary purposes, commercial use or for stock watering. As an alternative, the owner may temporarily abandon the well according to sub. (4).

SECTION 84. NR 112.26(2)(d) is created to read:

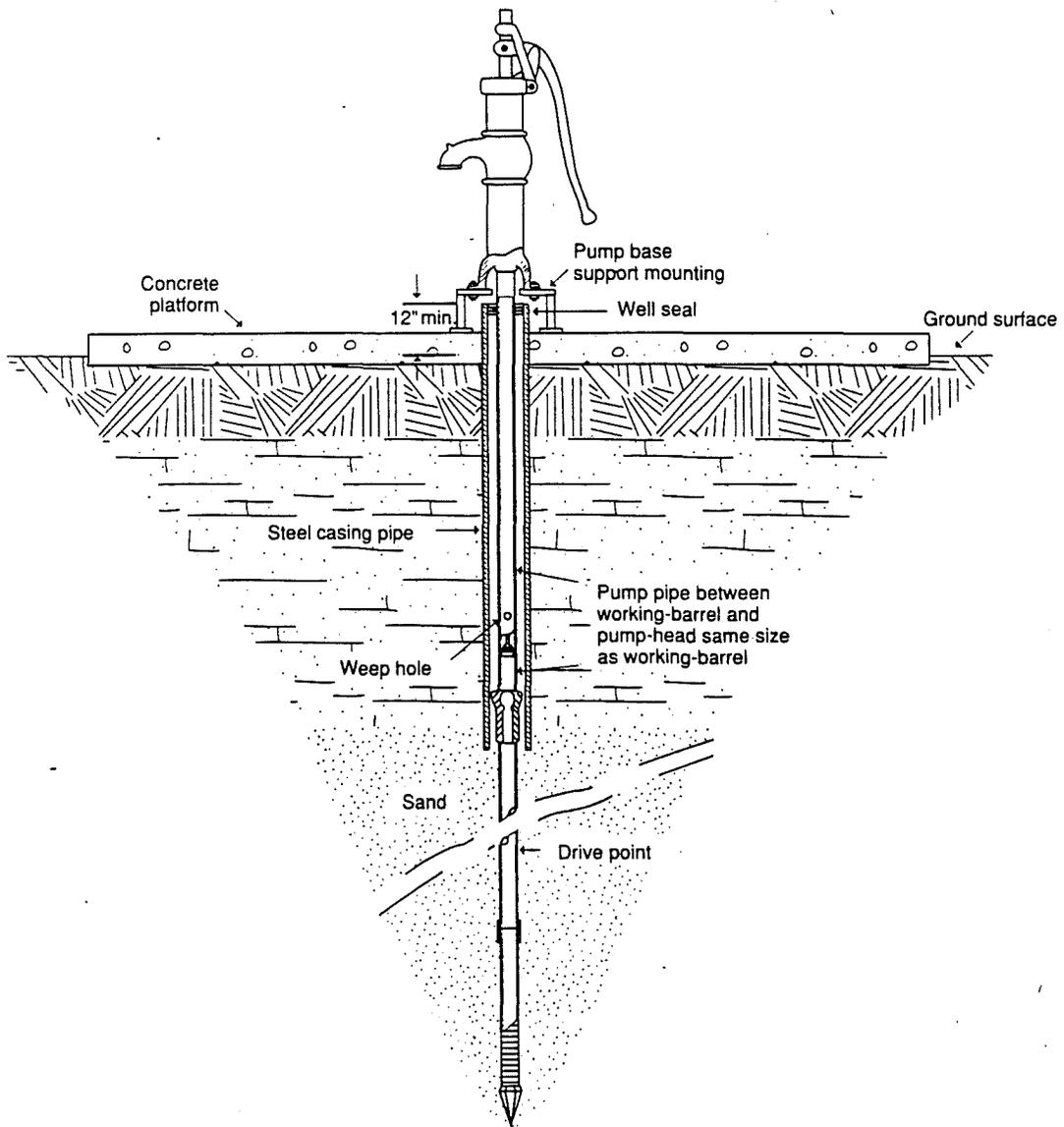


Figure 18a. Hand pump installation protected from frost with outer casing and drainback mechanism.

NR 112.26(2)(d) The department may require any person who has abandoned a well not in compliance with this section to return and take corrective action so that the well is abandoned by him or her in a complying manner.

SECTION 85. NR 112.26(3), (6)(c)(intro.) and (7)(a)(intro.) are amended to read:

NR 112.26(3) REQUIREMENTS FOR WELLS REMOVED FROM SERVICE. Any well or drillhole removed from service shall be properly abandoned according to the criteria and procedures in this section except as exempted by s. NR 123.23(3)(c) or by the department. Any well or drillhole removed from service shall be properly abandoned prior to any demolition or construction work on the property. A well driller or well constructor who removes a well from service shall inform the well owner that the department requires that any well removed from service be permanently abandoned according to the requirements of this section. A well driller or well constructor shall report any well he or she removes from service on the well construction report for any replacement well he or she constructs on the property.

(6)(c)(intro.) The sealing material to be used in permanently abandoning a well or drillhole between 2¼ inches and 30 inches in diameter shall be placed through a ~~metal~~ conductor (tremie) pipe or by means of a dump bailer except when approved chipped bentonite is used. Conductor (tremie) pipe used shall be any of the following:

(7)(a) Methods. (intro.) Once obstructions have been removed from a well or drillhole, it shall be permanently abandoned by filling, from the bottom up, with the materials specified in this paragraph and in Table C with the use of a conductor (tremie) pipe, except where the use of a conductor pipe is specifically exempted, by using one of the following methods:

SECTION 86. NR 112.26(7)(a) Table C is created to read:

[following page],

SECTION 87. NR 112.26(7)(a)1.b. and 2. and 3.a. and 4.(title) a. and c. and 5. are amended to read:

NR 112.26(7)(a)1.b. Driven-point wells and drillholes less than or equal to 2½ inches in diameter completed in unconsolidated formations shall be filled with neat cement grout ~~or clay or sodium bentonite sand slurry with a mud weight of at least 11 pounds per gallon~~ which may be poured or pumped down the drive pipe or drillhole. The use of a conductor pipe is not required. The drive pipe and screen may be removed before placement of the ~~sealant~~ grout if the total well depth is 25 feet or less.

2. Wells and drillholes completed in bedrock formations, ~~All bedrock wells and drillholes~~ shall be completely filled from the bottom up with neat cement grout, concrete grout, concrete or approved bentonite chips as provided in subd. 3. As an alternative for uncontaminated bedrock wells and drillholes deeper than 250 feet, chlorinated, sand-free pea gravel may be used to fill the well or drillhole from the bottom up to the 250-foot depth provided that for wells or drillholes extending through more than one geologic formation, a neat cement grout, concrete or bentonite chip plug at least 40 feet thick is placed at the contact surface between the adjacent geologic formations. When pea gravel is used for this alternative, it may be poured without the use of a conductor pipe provided the well is sounded at 50-foot intervals to ensure that bridging of the gravel in the well does not occur.

3.a. For wells and drillholes 4-inch diameter and larger the total depth may not be deeper than ~~250~~ 500 feet and the number of feet of standing water in the well or drillhole may not be more than ~~150~~ 350 feet. As an alternative

**TABLE C
ACCEPTABLE MATERIALS AND METHODS FOR WELL ABANDONMENT**

WELL TYPE		MATERIALS							METHODS
		Clean Clay or Silt or Clean Native Soil	Approved Bentonite Chips	Neat Cement Grout	Concrete [@]	Sand-cement Grout	Bentonite-sand slurry w/min. mud wt. 11 lbs/gal	Chlorinated, sand-free pea gravel	
UNCONSOLIDATED FORMATION WELLS	Driven-Point (sand-point) Wells* & Drillholes ≤2½" dia.	No	No	Yes	No	No	No	No	Material may be poured without using a conductor* pipe
	Wells & Drillholes >2½" diameter	No	Yes, provided well is 4" minimum diameter & 500' maximum depth	Yes	Yes	Yes	Yes, provided top 5' filled with neat cement grout, sand-cement grout or concrete	*Yes, but in depths below 250'	Conductor* pipe required except when bentonite chips or pea gravel is used
	Dug Wells ■	Yes (top 5' of curbing must be removed following filling)	Yes	Yes	Yes	Yes	No	No	Conductor* pipe not required unless well is ≤18" diameter
BEDROCK WELLS	Bedrock wells not extending through Maquoketa Shale	No	Yes, provided 4" minimum diameter & 500' maximum depth	Yes	Yes	Yes	No	*Yes, but in depths below 250'	Conductor* pipe required except when bentonite chips or pea gravel is used
	Bedrock wells extending through Maquoketa Shale	No	Yes in top 500' & for 40' plugs at top & bottom Maquoketa Shale contact surfaces	Yes	Yes	Yes	No	*Yes, in depths below 250', but not at M. Shale contact surfaces	Conductor* pipe required except when bentonite chips or pea gravel is used
	Dug Wells ■	Yes, but only in unconsolidated portion of well	Yes	Yes	Yes	Yes	No	No	Conductor pipe required only for placement of grout or concrete; or if well is ≤18" diameter
WELL PITS		Yes	Yes	Yes	Yes	Yes	No	No	Must perforate floor & knock out 1 wall of pit

* Driven-Point (Sand-Point) Wells may be pulled prior to filling the hole if the well is 25' deep or less.

■ The top 5 feet of dug well curbing must be knocked out to provide a soil contact with the filling material.

@ When concrete is used, the gravel size may not exceed 1/3 the inside diameter of the conductor pipe used.

* The terms conductor pipe and tremie pipe are synonymous. The bottom of the pipe must remain submerged in the grout throughout the filling procedure. Conductor pipe must be metal pipe, thermoplastic pipe rated for at least 100 psi or rubber-covered hose reinforced with braided fiber or steel and rated for at least 300 psi.

~ Bentonite chips may only be used for wells not deeper than 500 feet and having not more than 350 feet of standing water in them. The chips must be poured across a coarse mesh screen such that excess dust does not enter the well. Pour rate should not be faster than 3 min. per 50 lb. bag to prevent bridging.

♦ 40' Impermeable plugs shall be provided at each bedrock formation change. [See s. NR 112.26(7)(a)]

for uncontaminated wells and drillholes deeper than 250 feet, chlorinated, sand-free pea gravel may be used to fill the well or drillhole from the bottom up to the 250-foot depth provided that for wells or drillholes extending through more than one geologic formation, a bentonite chip plug at least 40 feet thick is placed at the contact surfaces between the adjacent geologic formations. When pea gravel is used for this alternative, it may be poured without the use of a conductor pipe provided the well is sounded at 50-foot intervals to ensure that bridging of the gravel in the well does not occur.

4. Dug and bored wells ~~and drillholes.~~—a. Dug or bored wells ~~and drillholes~~ shall have the cover removed and the top 5 feet of curbing or concrete wall removed ~~before sealing~~. Rock curbing may be caved into the drillhole as the well ~~or drillhole~~ is being sealed only if done in a manner to prevent bridging. The well ~~or drillhole~~ shall ~~then be abandoned~~ filled using clean clay or silt, clean native soil, approved chipped bentonite, concrete, concrete (sand-cement) grout or neat cement grout if constructed in unconsolidated formations.

c. Dug or bored wells ~~or drillholes~~ 30 18 inches in diameter and smaller shall be ~~abandoned~~ filled by means of a conductor (tremie) pipe, except when bentonite chips are used as specified in sub. 3. or when clean clay or silt or clean native soil is used and the dug or bored well is 25 feet deep or less.

5. Well pits. When a well terminating in a pit is abandoned, the pit shall also be abandoned except when the pit is a subsurface pumphouse (alcove) adjoining a basement. Pits shall be abandoned by perforating the floor, knocking out one wall and filling the pit with clean native soil less permeable than the soil surrounding the pit.

SECTION 88. NR 112.26(7)(a)6. is created to read:

NR 112.26(7)(a)6. When wells having non-pressure conduits are abandoned and filled, the basement end of the conduit shall be permanently sealed with a watertight cap or seal.

SECTION 89. Subchapter III (title) is amended to read:

Subchapter III - ~~Pump Installation~~ Requirements for New Pump Installations and Water Treatment.

SECTION 90. NR 112.27(2) and (4) to (6) are amended to read:

NR 112.27(2) LOCATION REQUIREMENT. A Except when the reporting requirements of s. NR 112.04(2) are complied with, a pump may not be installed, replaced or serviced in a well that is not properly located according to the minimum location and separation requirements in effect at the time of construction ~~except when the reporting requirements of s. NR 112.04(2) are complied with~~ and:

(a) According to the minimum location requirements in effect at the time of installation of any potential source of contamination, if the source was installed more recently, or

(b) According to the minimum location requirements of s. NR 112.08.

(4) PITLESS ADAPTERS AND UNITS. Pump installers ~~and constructors~~ or persons installing pumps shall use approved pitless adapters and pitless units to make subsurface connection to wells as specified in s. NR 112.31.

(5) DISINFECTION AND WELL SEALS. The pump installer shall disinfect any potable well and water system according to s. NR 112.22(4) and (5) upon completion of the original pump installation and thereafter anytime the well ~~or pitless adapter or pitless unit~~ is entered for the purpose of installing, replacing or repairing any equipment located within the well. Following

disinfection, the disinfectant shall be flushed according to s. NR 112.22(5). The disinfection and flushing shall be completed before the system is placed into service. The pump installer shall seal or cover the well with an approved vermin-proof cap or seal.

(6) SAMPLING AND REPORTING REQUIREMENTS. The pump installer, ~~constructor~~ or his or her agent, or the person who installed the pump, shall collect a water sample from a potable well within 30 days following completion of the original pump installation and thereafter anytime the well is entered for the purpose of installing, replacing or repairing any equipment located within the well, and shall have the sample analyzed for coliform bacteria at a lab certified by the DHSS for bacteriological analysis of drinking water provided the laboratory has an agreement with the department for sending water sample reports to the department within 30 days after completion of the analysis. The department recommends that the sample also be analyzed for nitrate. The pump installer may designate the owner, the property lessee or any other person the pump installer chooses to designate to collect the sample and have it analyzed. The water sample result shall be furnished to the owner within 10 days of the receipt of the result by the pump installer's or constructor's receipt of the result installer.

SECTION 91. NR 112.27(8) and (9) are created to read:

NR 112.27(8) BACTERIOLOGICALLY UNSAFE WELLS. The pump installer shall return to the well site to attempt to correct a problem with a potable well that produces bacteriologically unsafe water. The pump installer shall return within 90 days after the pump installation is completed or 30 days after the pump is placed into service, whichever is longer. If noncomplying

installation or disinfection was not the cause of the problem, a fee may be charged by the pump installer for any corrective work.

(9) Potable water supplies shall be protected to prevent back-flow, back-siphonage and cross-connections according to the requirements in s. ILHR 82.41.

SECTION 92. NR 112.28 is amended to read:

NR 112.28 PUMP AND SUPPLY PIPE. Pump discharge and supply piping shall conform to the specifications in s. NR 112.17 for steel pipe or shall conform to the requirements in the "Pipe and Tubing for water services and private water mains" table in ch. ILHR 84, except that Type M copper pipe may not be installed underground. Pipe used for year-round installations shall be protected from freezing. Lead-based solder for pipe connections may not be used. The department recommends that galvanized pipe not be used when the water quality is known to be corrosive. Limitations on the use of plastic pipe are found in ch. ILHR 84. Plastic pipe may not be used for buried pipe in soils known to be contaminated with volatile organic chemicals. Plastic pipe may be used as drop pipe installed within a well or for discharge piping between the well and the building served, ~~providing~~ provided it meets ch. ILHR 84 standards and has a minimum pressure rating of 150 pounds per square inch. ~~Lead based solder for connections may not be used.~~ When plastic pipe extends through the seal of a well with an above-ground discharge, the portion of the plastic pipe extending above-ground from the well shall be protected from the sunlight or the plastic pipe used shall be of the type with inhibitors recommended for use in direct sunlight.

Note: The department recommends the installation of torque arresters on the drop pipe for submersible pumps.

SECTION 93. NR 112.30 (title) and (1) and (3) and (5) are amended to read:

NR 112.30 (title) VERMIN-PROOF WELL CAPS AND SEALS. (1) REQUIREMENTS AND DEPARTMENT APPROVAL CRITERIA. ~~The well casing pipe~~ New wells shall be sealed or covered with an approved weather and vermin-proof compression type well cap or seal installed on or in the top of the well casing pipe. Examples are depicted in figures 23 and 24. All well cap or seal approvals shall be based on materials of construction, method of venting, effectiveness of gasket, ease of removal for inspection of the inside of the well and method of attachment to the well casing pipe. Stud bolts are preferred. The nuts and bolts shall be made of ~~noncorrodible~~ material such that corrosion is minimized. A list of approved models is available from the department.

Note: Requirements for vermin-proof caps and seals for existing wells are listed in s. NR 112.42(8).

(3) WELL VENT. A screened downward facing well vent or other vent shall be provided for the well cap or seal for all drilled wells except when the well is a flowing well and the well head must be maintained watertight. The well vent pipe or vent opening ~~may not be less than 1/4 inch in diameter~~ shall provide at least 0.25 square inches of open area, excluding the area occupied by the material of the screen. Vent pipes extending above the well casing pipe shall terminate in a downward facing bend and shall be screened. Screens shall be made of ~~noncorrodible~~ material not easily corroded and shall be firmly seated in the vent opening. Vent openings incorporated as part of the underside of ~~the~~ an approved well cap or seal are allowed.

(5) CONDUIT FOR ELECTRICAL CABLE. Pump electrical cable shall be protected in a metal or plastic conduit ~~and the~~ The conduit shall be threaded tightly into the well cap or seal or shall be sealed in an equivalent manner. If the electrical wires are buried beside the well, the bottom of the conduit shall extend 3 feet below the ground surface, platform or floor ~~or~~ and

shall be sealed ~~at the bottom~~ watertight. If the conduit extends from the well seal to a basement, the end of the conduit shall be sealed in a watertight, vermin-proof manner.

SECTION 94. NR 112.31 (title) and (intro.) and (1) and Figure 28 and (2)(a) and (b) and (d) and (3)(a)3. are amended to read:

NR 112.31 (title) PITLESS ADAPTERS AND PITLESS UNITS. (intro.) Pump installers ~~and constructors~~ or persons installing pumps shall use pitless adapters or pitless units approved by the department to make subsurface connections to wells. Nonpressure conduits may not be used, unless a variance is granted by the department.

Note: In areas especially prone to lightning strikes to wells having submersible pumps, the department will grant variances to the prohibition against nonpressure conduits.

(1) DEPARTMENT APPROVAL CRITERIA. The design criteria on which pitless adapter or pitless unit approvals are based ~~includes~~ include, but ~~is~~ are not limited to, materials of construction, thickness of pipe or tubing, thickness of other component parts, method of fabrication ~~and~~, method of connection and the integrity of the seal to the well casing pipe. ~~Clamp-on or bolt-on adapters will not be approved.~~ The department may require additional standards and tests, including minimum pressure test performance, that the department deems necessary to demonstrate the sanitary integrity of any adapter or unit submitted for department approval. A list of approved models is available from the department. Pitless receiver tanks, factory-assembled pitless units, both short and full length models are depicted in figures 25 to 28.

[Figure 28 is amended as shown.]

(2)(a) A pitless subsurface pipe connection to a well casing pipe shall be made with an approved weld-on, clamp-on or bolt-on pitless adapter or an

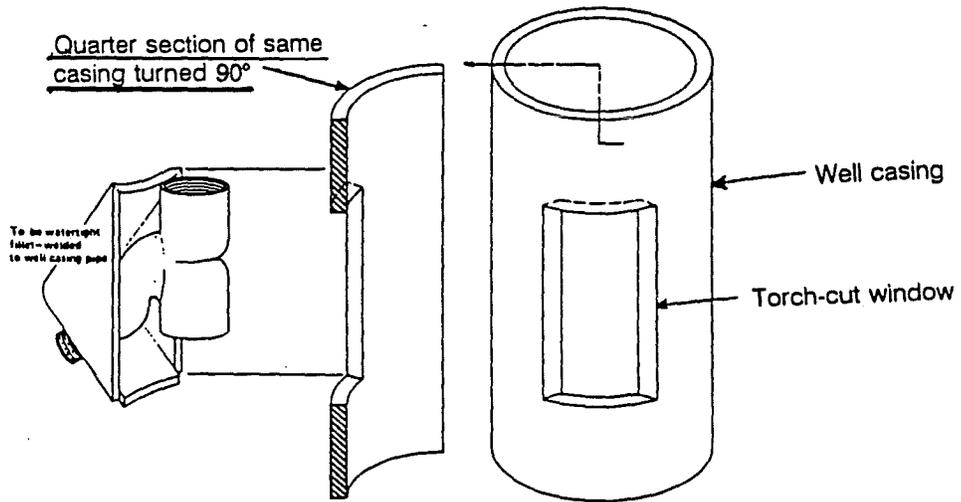


Figure 28. A weld-on pitless adapter.

approved factory-assembled pitless unit, Approved weld-on adapters or approved pitless units shall be welded or threaded to the well casing pipe according to sub. (3) or (4). All welding shall be performed in accordance with s. NR 112.18. An approved clamp-on or bolt-on pitless adapter may only be installed for a well that will serve a single family residence. An approved clamp-on or bolt-on adapter may only be installed by a pump installer. It shall be installed according to any approval conditions and according to the manufacturer's instructions.

Note: The Department will reevaluate the effectiveness of clamp-on and bolt-on adapters over time and may request information from pump installers concerning location of installations, manufacturer's name and model number.

(b) The inside diameter of ~~the~~ a pitless unit shall ~~shall~~ may not be smaller than the inside diameter of the well casing pipe. No part of a pitless adapter may extend into the inside of the well casing pipe so that setting or removal of the pump, pump piping or other appurtances is impeded.

(d) An ~~above-ground~~ above-ground discharge shall be provided for crystalline (granite) bedrock wells approved for installation of 25 or less feet of well casing pipe. When installing the above-ground discharge, the required neat cement grout surrounding the well casing pipe may not be removed.

(3)(a)3. Welding a pipe nipple, having threads on one end, beveled on the other end and meeting the requirements of s. NR 112.17(2), to the cut off top beveled end of the well casing pipe and threading a full-length standard recessed coupling watertight to the threaded end of the unit and to the nipple. The top of the well casing pipe and the bottom of the pipe nipple to be welded shall both have beveled ends. If the pitless unit has female

threads, the unit may be threaded watertight directly to the threaded end of the nipple.

SECTION 97. NR 112.31(5) (intro.) is created to read:

NR 112.31(5) (intro.) Pitless receiver tank units shall be approved by the department.

SECTION 98. NR 112.31(5)(a) is amended to read:

NR 112.31(5)(a) Steel buried tanks that are part of an approved pitless unit shall have a minimum wall thickness of ~~3/16~~ 1/4-inch and shall have an identifying seal, label or plate showing the manufacturer's name and model number.

~~Note: It is the intent of the department to have a 1/4-inch minimum wall thickness not 3/16 inch. See s. NR 112.33(1)(a)1.~~

SECTION 99. NR 112.32(1)(a)6. is created to read:

NR 112.32(1)(a)6. Installed in a manner so that it is accessible for maintenance, repair and removal.

SECTION 100. NR 112.32(1)(c), Figure 32 is amended to read:

SECTION 101. NR 112.32(1)(d) is created to read:

NR 112.32(1)(d) When water is pumped or flows to discharge into a body of water, the end of the discharge pipe shall be extended at least 2 pipe diameters above the highest elevation of the water.

SECTION 102. NR 112.32(2)(a)1. is amended to read:

NR 112.32(2)(a)1. Buried suction pipes shall be enclosed in a ~~pressure~~ pressurized conduit and the annular space between the 2 pipes shall be maintained under system water pressure at all times ~~with water from the system provided by a pipe extending from the pump watertight to the conduit.~~

~~Nonpressure conduits may not be used.~~

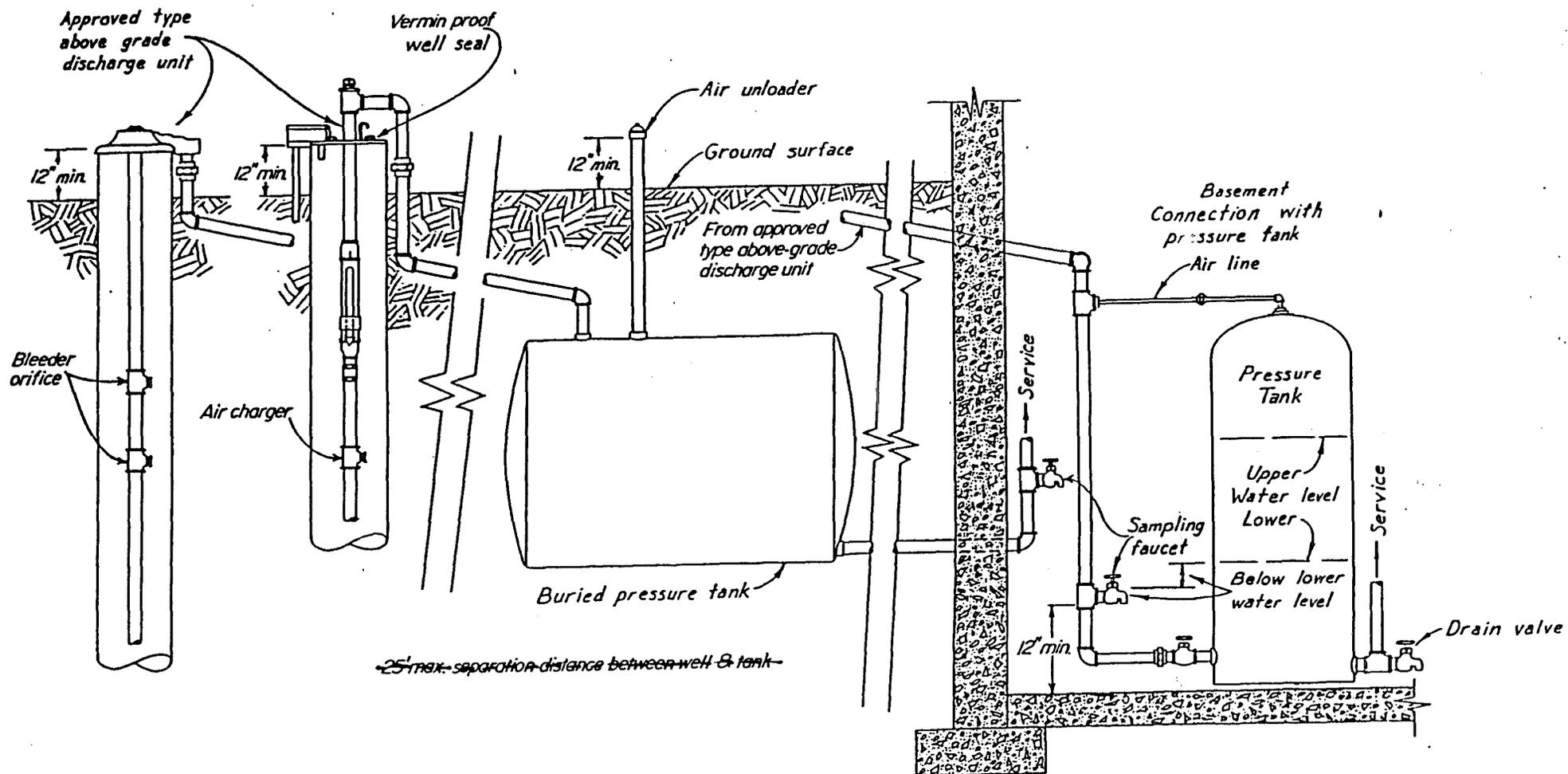


Figure 32. Discharge piping arrangements for wells with above ground discharges.

SECTION 103. NR 112.32(2)(a)5. (Figures 36b and 36c) Labels for box elbows are amended to read:

NR 112.32(2)(a)5., Figures 36b and 36c BOX (BALL) ELBOW MAY BE

~~BURIED~~BURIED

SECTION 104. NR 112.32(4) (title) is amended to read:

NR 112.32(4) (title) BURIED DISCHARGE LINES FROM SUBMERSIBLE PUMPS.

SECTION 105. NR 112.32(4)(b) is renumbered 112.32(4)(b)1.

SECTION 106. NR 112.32(4)(b)2. is created to read:

NR 112.32(4)(b) 2. When a water discharge line extends parallel or roughly parallel with a sewer, the water discharge line shall be separated a minimum distance from the sewer as follows:

a. Water discharge lines 2 1/2 inches in diameter and larger shall be separated at least 8 feet horizontally from a sanitary sewer, measured from center to center of the 2 pipes.

b. Except as provided in subpar. c., water discharge lines 2 inches or smaller in diameter shall be separated at least 30 inches horizontally from a sanitary sewer, measured from center to center of the 2 pipes.

c. Water discharge lines 2 inches in diameter and smaller may be installed less than 30 inches horizontally separated from a sanitary sewer if the bottom of the water discharge line is installed at least 12 inches above the sewer, except that portion of the water discharge line within 5 feet of the point where the line enters the building may be less than 12 inches above the sewer.

d. A water discharge line shall be separated from a storm sewer by at least 6 inches.

SECTION 107. NR 112.32(6)(b) is amended to read:

NR 112.32(6)(b) Nonpressurized. Buried discharge lines from lineshaft turbine pumps that are not maintained under system pressure at all times shall contain an UL approved check valve or shall contain an air-vacuum relief valve near the pump, and prior to any buried portion of discharge pipe. When water is pumped to a pond or other body of water, the end of the pump discharge pipe shall be extended at least 2 pipe diameters above the highest elevation of the water in the pond or other body of water.

SECTION 108. NR 112.32(6)(c) is renumbered 112.32(7) and amended to read:

NR 112.32(7) HAND PUMPS. (a) Hand pump heads shall be designed and fabricated so there are no unprotected openings, other than the spout, to the interior of the pump. The water spout shall turn downward and be closed on top. A separate watertight port shall be is provided for priming, it shall be sealed watertight when not being used. Unsealed openings may not exist in the pumpbase. If the pump is installed outside, a concrete crack-free watertight pump platform at least 6 feet in diameter, as depicted in figure 40 shall be provided. The top of this platform may be at ground grade, but in any case the platform shall be mounded so that water does not accumulate around the well. If excess water flow from the pump spout is channelized, it shall be directed to a point at least 8 feet from the well with a drain pipe or watertight channel.

(b) Hand pumps shall be connected firmly to the well casing pipe by threading in small diameter well casing pipe or by bolting the pumpbase flange to a well casing pipe flange with a gasket to seal the top of the casing. This is depicted in figure 40. Other types of hand pump bases may be used if they meet the approval criteria in s. NR 112.30(1) for vermin-proof caps and seals.

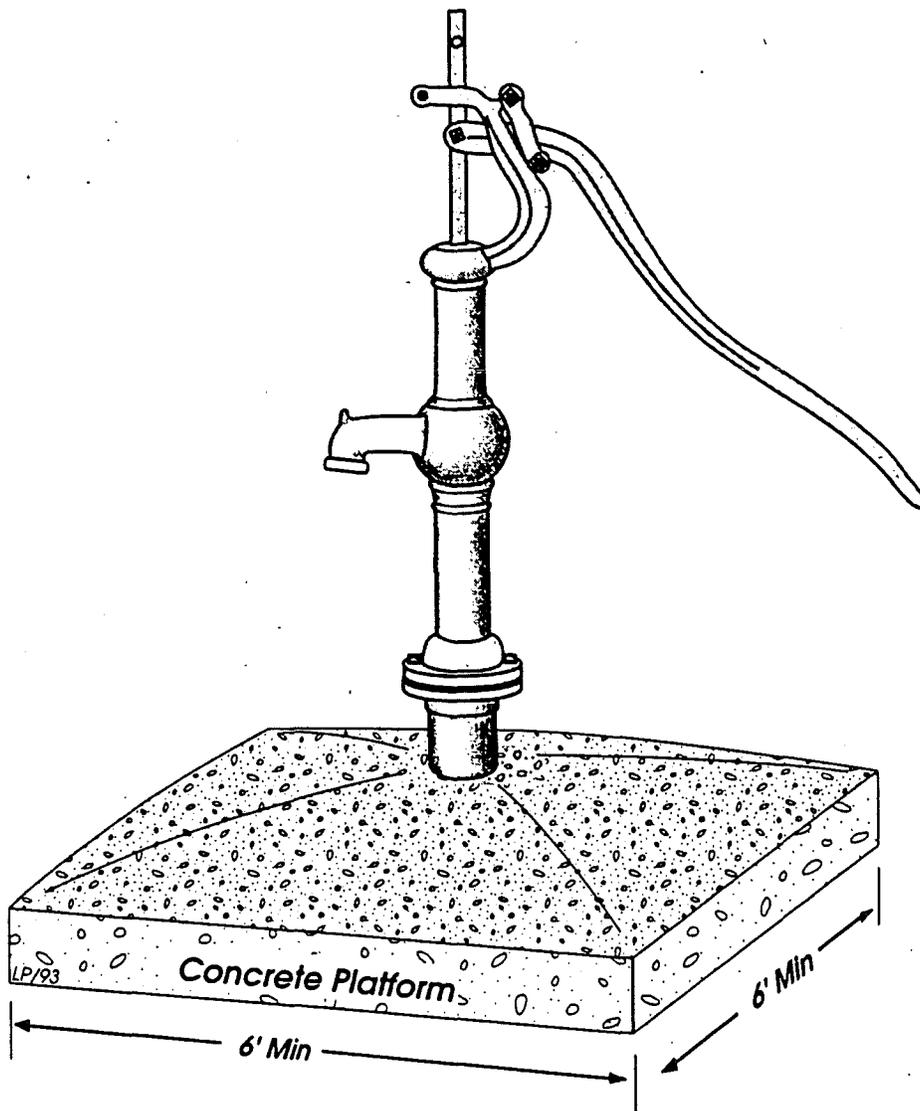


Figure 40. Required watertight concrete pump platform for hand pumps installed outside. The platform shall be mounded so water does not accumulate around the well casing.

SECTION 109. NR 112.32(7) and (8) are renumbered s. NR 112.32(8) and (9) and (9)(c) 2. and 3, as renumbered, are amended to read:

NR 112.32(9)(c)2. A controlled overflow pipe ~~may~~ or other means shall be installed for a flowing well to prevent damage from overflowing water or to prevent freezing of the top of the well.

3. Overflow to prevent freezing shall be limited to a minimum to preserve groundwater and water pressure. The overflow pipe shall be installed to extend at least 12 inches above ground grade or shall extend from a surge tank. The overflow pipe shall terminate at least 2 pipe diameters above any drain at the well site, building or building basement ~~and the~~. If the overflow is installed at the well, an air gap of at least 2 pipe diameters shall be provided at the well and the receiving drain shall discharge to the ground or to a gravel pocket at a point at least 8 feet from the well. A funnel receptacle shall be installed on the inlet of the drain to accept all of the overflow water, to prevent splashing and to prevent ponding of water around the well casing pipe.

SECTION 110. NR 112.33(1)(a) (title) and 1. and (b) and (2)(b) 1.a. are amended to read:

NR 112.33(1)(a) (title) General. 1. ~~A minimum wall thickness of 1/4 inch thickness for pitless~~ Pressure tanks other than approved pitless receiver tanks may only be buried with prior department approval. Pressure tanks to be buried shall be steel and shall have a minimum wall thickness of 0.25 inches. Pitless receiver tanks, when they are part of approved pitless receiver units attached directly to the well casing pipe, shall also have a minimum wall thickness of 1/4 inch. Any air unloader pipe or any other pipe connection extending up to the ground surface shall terminate at least 12 inches above ground grade.

(b) (title) Pressure tanks larger than 1,000 gallons gross volume. An approval shall be obtained for pressure tanks having a gross volume greater than 1,000 gallons. The department recommends that pressure tanks having a volume greater than 1,000 gallons be installed above ground. When ~~approved~~ tanks of this size are ~~buried~~, approved for burial, the head end of the tank shall be cradled in a basement wall or in the wall of an approved pit to provide access and shall be constructed to the specifications for pits described in s. NR 112.36(2) to provide access to the head of the tank. The pit shall have other additional support cradles. This is depicted in figure 44. Pitless receiver tanks having a volume greater than 1,000 gallons may be installed without an access pit.

(2)(b)1.a. Gravity supply pipes shall be located entirely above grade and shall be conducted to the reservoir through the roof or through the curbing for the manhole. The overflow pipe described in ~~sub-~~ subpar. b. may be installed at such a level to provide a free-air gap. Buried supply pipe shall be maintained under a continuous pressure head which is greater than the ground surface elevation.

Note: The department recommends that trees and shrubs not be planted within 25 feet of a reservoir.

SECTION 112. NR 112.34 (intro.) and (1) are amended to read:

NR 112.34 SAMPLING FAUCETS. (intro.) In all pressure water systems, provision shall be made for collection of water samples directly from the well by installation of a sampling faucet before the pressure tank and any water treatment equipment. The sampling faucet shall be installed at least 12 inches above the floor, have a downturned spout and be in an accessible location. All sample faucets shall be metal and shall have a diameter of at least one-quarter inch. The sample faucet shall have a smooth end, or if

threaded faucets are used, the threads shall be filed off. Petcocks may not be used as sample faucets except when ~~they are~~ the spout is at least ¼ inch in diameter and has a smooth end. When a petcock is installed for a sample tap, an auxiliary, smooth-end faucet shall also be installed to provide a tap for recirculation during batch chlorinations. Sample faucets shall be installed in the pump discharge piping ahead of the pressure tank entry except:

(1) When a buried pressure tank, a pitless receiver tank or an above ground discharge unit is installed, ~~in which case~~ the sampling faucet shall be installed immediately following the point of entry into the building or building basement.

SECTION 113. NR 112.36(1) is amended to read:

NR 112.36(1) APPROVALS TO CONSTRUCT PITS. A pit structure that is completely or partially below the ground surface or below a building floor used for the housing of wells, ~~valves,~~ offset pumps, pressure tanks or heads of pressure tanks may not be constructed without prior written approval. Subsurface well or pump rooms (alcoves) adjoining a basement are pits. Applications shall be submitted to the department on forms provided by the department. Pits used only for the housing of valves are exempt from the requirements of this section except that a pit used for this purpose shall be watertight, may not be connected to a sewer, shall be be drained to permeable soil or to the ground surface and may not be subject to flooding.

SECTION 114. NR 112.37(2)(i) is created to read:

NR 112.37(2)(i) All chemicals used for addition to a water system shall be certified by NSF according to NSF Standard No. 60 or shall be approved by the department.

SECTION 114a. A note is created following s. NR 112.37(2)(i) to read:

Note: The listed NSF standard is available for inspection at the department of natural resources, the secretary of state and the revisor of statutes, and may be obtained for personal use from the National Sanitation Foundation Testing Laboratories, Inc.; P.O. Box 1468, Ann Arbor, MI 48106.

SECTION 115. NR 112.37(3)(d) is amended to read:

NR 112.37(3)(d) The water treatment device or treatment system is intended to control corrosion or to control, or remove or prevent contaminant levels in excess of primary drinking water standards ~~or~~, health advisories or action levels in a noncommunity water system.

SECTION 116. NR 112.37(3)(h) is created to read:

NR 112.37(3)(h) The installation of a water treatment plant facility.

SECTION 117. NR 112.37(4)(e) (intro.), 1. and 3. to 6. are amended to read:

NR 112.37(4)(e) (intro.) At a minimum, fluoride treatment installations or corrosion control treatment system installations shall comply with the following standards:

1. The fluoride or the corrosion control chemical is added with a positive displacement-type feed pump;
3. A spring loaded check valve is installed to prevent the siphoning of fluoride or corrosion control chemical into the water;
4. The feed pump and the well pump are electrically wired in interlock with a flow switch connected in series from the feed pump into the well pump and there are no water outlets upstream of the point of fluoride or corrosion control chemical injection;
5. The feed pump has a metering device for measuring fluoride or corrosion control chemical flow rates; and
6. The chemical storage tank is covered and installed at an elevation lower than the feed pump.

[Drafter's note: Notes 1 and 2 remain unchanged]

SECTION 118. NR 112.40 (intro.) is amended to read:

NR 112.40 ABOVE GROUND PUMPHOUSES. (intro.) When a structure is constructed to house a well, ~~it pump, pressure tank, other appurtenances or any combination thereof, the structure~~ shall be weather- and frost-proof, if needed. Above ground pumphouses shall be constructed with the following minimum features:

SECTION 119. NR 112.41(1) (intro.), (3)(a) and (c) are amended to read:

NR 112.41(1) DISINFECTION. When a potable well ~~cap or well seal is removed from the well casing pipe or from the top of a pitless unit, or whenever a pitless adapter or pitless unit is entered in a buried portion of the adapter, or a portion to be buried,~~ for the purpose of installing, replacing or repairing equipment located within the well, the well and discharge piping shall be thoroughly disinfected by the pump installer or ~~constructor by the person who installed the pump using either a chlorine bleach,~~ sodium hypochlorite or calcium hypochlorite ~~solution~~. Chlorine compounds having additives may not be used.

(3)(a) For potable wells, the pump installer, ~~constructor~~ or his or her agent or the owner shall collect a water sample to be analyzed for coliform bacteria following completion of the original pump installation before the system is placed into service or thereafter anytime the well or well casing pipe is entered for the purpose of installing, replacing or repairing equipment located within the well. If the pump installer uses the well owner as the agent to collect the water sample, the pump installer shall provide the owner with the appropriate sample bottle and laboratory form. The department recommends the sample also be analyzed for nitrate. When required, the sample shall be collected within 30 days after completion of the work. If the

installation is completed at a time when the sample will be received at a certified laboratory later than 48 hours after the sample was collected, the sample does not have to be taken before the system is placed into service.

Note: The department strongly recommends that a water sample be collected in all cases.

Note: The pump installer may designate the owner, the property lessee or any other person to flush the system or collect the sample.

(c) The pump installer ~~or constructor~~ shall provide the well owner or the well owner's agent with a copy of the laboratory analysis report within 10 days of the pump installer's ~~or constructor's~~ receipt of the report.

SECTION 120. NR 112.42 (1)(intro.), (a), (b), (2)(intro.), (a) and (d) are amended to read:

NR 112.42 (1) LOCATION, WELL CONSTRUCTION AND WATER QUALITY. (intro.) Each existing water supply installation shall be viewed as an individual unit and its acceptability for use as a source of ~~potable~~ water shall be determined on the basis of its location, construction, pump installation, pump discharge piping arrangement and water quality. Existing installations shall be evaluated according to and shall comply with the ~~location and construction standards~~ requirements in effect at the time they were constructed or installed, or if constructed or installed prior to April 24, 1936, with the standards adopted on that date, except that installations shall meet the further water quality, pit, reservoir, dug well, pump and pump discharge and well location requirements of this section. The owner shall verify the date of construction or installation or both. Existing installations having features not meeting the requirements of this section or the code in effect at the time of construction or installation shall be upgraded as specified in s. NR 112.04(2) according to requirements for new construction or shall be abandoned according to the criteria and requirements of s. NR 112.26. The department may deny approval for operation of an existing well requiring

approval under s. NR 112.09(4), if the well does not meet the specifications of this chapter for new wells.

(a) Location. The well location shall conform to the requirements in effect at the time the well was constructed, or ~~if~~ to the location requirements of s. NR 112.08. However, if a contamination source was installed after the well was constructed, the well location shall conform to the requirements in effect at the time of installation of the contamination source. If the well was constructed prior to April 24, 1936, the well shall be in a location that provides reasonable sanitary protection. A well which meets the location requirements in effect at the time of construction, but does not meeting meet the location requirements of s. NR 112.08 may only be reconstructed with approval.

(b) Well construction. The well construction shall be in compliance with the construction requirements in effect at the time the well was constructed, except if the well was constructed prior to April 10, 1953, in which case the well construction shall be in compliance with the standards adopted on that date. A well ~~which was~~ constructed to meet the requirements in effect at the time of construction, but not meeting the requirements of ss. NR ~~112.12-112.11~~ to 112.15 may only be reconstructed with approval.

(2) PITS. (intro.) Existing pits used only for the housing of valves are exempt from the requirements of this section except that a pit used for this purpose shall be watertight, may not be connected to a sewer, shall be drained to permeable soil or to the ground surface, and may not be subject to flooding. Existing well or pressure tank pits, alcoves and subsurface pumphrooms constructed after April 10, 1953 shall be approved and shall either comply with the conditions of an approval to construct the pit if constructed after April 10, 1953 or the minimum requirements of s. NR 112.36(2). Pits

constructed prior to April 10, 1953 shall meet the following minimum requirements:

(a) Construction. The entire pit or subsurface pumphouse structure shall be constructed of reinforced watertight poured concrete. If the pit or a subsurface pumphouse pit connected to a basement (alcove) has a history of being continuously dry, walls of concrete block, brick or stone with mortared joints may be ~~approved~~ accepted. The walls, floor and roof shall be crack-free and watertight. The junction of walls and floors and all openings in the structure shall be sealed watertight. The roof or deck shall be at or above the ground surface. Requirements for existing pits are depicted in figures 47 and 48.

(d) Well height. The well casing pipe shall terminate at least 6 inches above the floor of a pit or a subsurface pumphouse pit (alcove) connected to a basement and shall be provided with an approved sanitary well seal. If the well casing pipe does not extend at least 6 inches above the floor, the pit may remain in service only if the well casing pipe is extended to at least 12 inches above the pit floor and if the pit structure meets the requirements of this section. If the pit is a subsurface pumphouse (alcove) connected to a basement and the pit floor is lower than the basement floor, the floor shall be raised to a height at least even with the basement floor by pouring concrete. The well casing pipe shall be extended at least 12 inches above the height of the newly poured pit floor.

SECTION 121. NR 112.42(4)(f) is created to read:

NR 112.42(4)(f) When a below ground-grade reservoir is to be abandoned, it shall be filled according to dug well abandonment requirements of s. NR 112.26(7)(a)4. for dug wells.

SECTION 122. NR 112.42(5)(b), (6)(a)2, and (b)2. are amended to read:

NR 112.42(5)(b) Depth. If the well was dug after June, 1975, the watertight curbing shall extend to a depth of at least 25 feet below ground surface and the well shall produce bacteriologically safe water. If the well was dug prior to June, 1975, the watertight curbing shall extend to at least ~~the 12-foot~~ 15-foot depth and the well shall produce bacteriologically safe water.

(6)(a)2. For off-set pump installations, any buried suction pipe shall be contained in a sealed pressurized conduit or ~~in a~~ nonpressurized conduit, meeting the pipe requirements of Table V, between the connection to the well casing pipe and a basement, or shall be properly connected to the well with an approved pitless adapter or pitless unit designed for and used with a concentric piping arrangement. Unprotected buried suction lines not enclosed in conduit may not be used. Nonpressure conduit shall be welded or threaded watertight to the well casing pipe and shall be at least 4 inches in diameter and shall enter the basement such that the bottom of the conduit is at least 6 inches above the basement floor.

(b)2. For off-set pump installations, any suction pipe shall be enclosed in a sealed pressurized conduit between the connection to the well casing pipe and a basement, or shall be connected to the well with an approved factory-assembled pitless unit designed for and having a concentric pressurized piping arrangement. Unprotected buried suction lines or suction lines enclosed in nonpressure conduits may not be used. The pipe for a pressurized conduit shall meet the requirements of Table V and shall enter the basement such that ~~the bottom of the conduit is at least 6 inches above the basement floor~~ any pump suction pipe in the basement not enclosed in a pressurized conduit shall be at least 6 inches above the basement floor. The department recommends that the pump impeller or cylinder of pump units be located in basements not

subject to flooding and be at least one foot above the floor. See figures 34-36 for pressurized conduit installations.

SECTION 123. NR 112.42(6)(b)4. is created to read:

NR 112.42(6)(b)4. When an existing offset pump installation using a non-pressure conduit has been or will be converted to a submersible pump installation, the basement end of the non-pressure conduit shall be permanently sealed watertight, except when the conduit does not extend at least 6 inches above the basement floor, in which case the non-pressure conduit shall be completely eliminated and replaced with pressurized discharge piping according to the requirements of ss. NR 112.28 and 112.32(4).

SECTION 124. NR 112.42(6)(e) is amended to read:

NR 112.42(6)(e) (title) Hand pumps. Hand pumps may be continued in service if the pump base flange is bolted watertight to a well casing pipe flange and has a gasket seal; if the pump is firmly threaded to the well casing pipe for small diameter pipe; or if the structured base of the pump has recesses and is bolted to the top of the well casing pipe which is at least 2 feet above the regional flood elevation. The well casing pipe flange or the top of the well casing pipe shall terminate at the height indicated in sub. (7).

SECTION 125. NR 112.42(6)(g) is created to read:

NR 112.42(6)(g) Pump installations for flowing wells. Pump installations for flowing wells shall meet the requirements of s. NR 112.32(9).

SECTION 126. NR 112.42(7)(intro.) is amended to read:

NR 112.42(7) HEIGHTS OF EXISTING WELLS.(intro.) ~~The height wells~~ When a well is not terminated in a basement, a pit, an alcove or a subsurface pumproom, the well casing pipe shall extend above grade is as follows:

SECTION 127. NR 112.42(7)(e) is created to read:

NR 112.42(7)(e) All wells constructed on or after October 1, 1975 located in a floodplain shall extend at least 2 feet above the regional flood elevation for the well site.

SECTION 128. NR 112.42(9)(a)(title) and 1. are amended to read:

NR 112.42(9) WELLS IN BASEMENTS AND WALKOUT BASEMENTS. (a) (title) Wells in basements, not including wells in subsurface pumprooms (alcoves). 1. Wells constructed after April 10, 1953 terminating in basements or wells constructed after July of 1951 terminating under a building addition shall be permanently abandoned according to the requirements of s. NR 112.26 unless otherwise accepted by the department.

SECTION 129. NR 112.43(1) is amended to read:

NR 112.43 (1) When strict compliance with the requirements of this chapter is not feasible a variance may be requested. All variance requests shall be in writing, except that for situations that require an immediate response, a variance may be requested verbally from the owner or the owner's agent and a verbal variance may be granted by the department and followed up with a written confirmation. If the verbal request is made by the owner's agent, the agent shall provide confirmation of the owner's concurrence with the request. A variance request shall include the names of the owner or owners and, if known, the well driller, well constructor or pump installer, ~~or constructor and the~~. The reasons compliance with the requirements for this chapter is not feasible shall be provided. The department may request that additional information be submitted by an owner or an owner's agent ~~but the~~. The owner or owners shall sign the variance request. The department may condition the issuance of a variance by requiring additional construction or installation features to safeguard the groundwater and water supplied by the installation from contamination. Failure to comply with the conditions of a

variance or the applicable requirements of this chapter voids the variance approval.

The foregoing rules were approved and adopted by the State of Wisconsin Natural Resources Board on March 24, 1994.

The rules shall take effect on the first day of the month following publication in the Wisconsin Administrative register as provided in s. 227.22(2)(intro.), Stats.

Dated at Madison, Wisconsin 5/12/94

STATE OF WISCONSIN

DEPARTMENT OF NATURAL RESOURCES

George E Meyer

(SEAL)

George E. Meyer

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