

Chapter NR 812

WELL CONSTRUCTION AND PUMP INSTALLATION

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Note: Chapter NR 112 as it existed on September 30, 1975 was repealed and a new Chapter NR 112 was created effective October 1, 1975. Chapter NR 112 as it existed on January 31, 1991 was repealed and a new Chapter NR 112 was created effective February 1, 1991; Chapter NR 112 was renumbered Chapter NR 812 under s. 13.93 (2m) (b) 1., Stats., Register, September, 1994, No. 465.

Subchapter I General

NR 812.01 Purpose. (1) The purpose of this chapter is to establish uniform minimum standards and methods in conformity with chs. 144 and 162, Stats., for:

- (a) Obtaining or extracting groundwater for any purpose; and
- (b) Protecting groundwater and aquifers from contamination through adequate construction and reconstruction of water systems.

(2) This chapter shall govern the location, construction or reconstruction and maintenance of water systems, the abandonment of wells and drillholes and the installation and maintenance of pumping and treatment equipment.

History: Cr Register, January, 1991, No. 421, eff. 2-1-91; am (1) (a), Register, September, 1994, No. 465, eff. 10-1-94.

NR 812.02 Applicability. (1) For the purposes of construction and installation, the provisions of this chapter apply to all new and existing water systems and drillholes with the following exceptions:

- (a) Wells governed under ch. NR 141, unless they are high capacity wells, in which case ch. NR 812 also applies.
- (b) Community water systems governed under ch. NR 811, and
- (c) Nonpotable surface water systems.

Note: Certain diversions of surface water for nonpotable uses require a permit under ch. 30, Stats.

(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.

(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.

Note: Private water systems and noncommunity water systems, located in counties delegated authority to administer this chapter under ch. NR 145, are subject to county permit requirements.

History: Cr Register, January, 1991, No. 421, eff. 2-1-91; am (1) (a) and (2), cr. (3), Register, September, 1994, No. 465, eff. 10-1-94; correction in (1) (a) and (b) made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1994, No. 465.

NR 812.03 Cooperation with the department. Well drillers, pump installers and well constructors shall, when requested by the department:

(1) Give notice to the department at least on the department work day prior to the day upon which any well construction or reconstruction or any part thereof, any well abandonment or the installation of any pumping equipment, will commence or be completed.

(2) Contact the department to determine if any special construction is required if the well driller is engaged to construct a new well or reconstruct an existing well because the existing well is known to contain contaminants in excess of the drinking water standards in ch. NR 809.

History: Cr Register, January, 1991, No. 421, eff. 2-1-91; correction in (2) made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1994, No. 465.

NR 812.04 Contracts for noncomplying installations.

(1) Well drillers, pump installers and well constructors shall ensure that the construction and reconstruction of wells or the installation of pumping equipment adheres to all the applicable provisions of this chapter or to approved comparable construction or installation requirements. Well drillers, pump installers and well constructors may not enter into any agreement, written or oral, for construction, reconstruction or installation which does not require compliance with the applicable provisions of this chapter or with approved comparable construction or installation requirements.

(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 initial evaluation of the water system has been completed if the required repairs are not made.

History: Cr. Register, January, 1991, No. 421, eff. 2-1-91; am. (2), Register, September, 1994, No. 465, eff. 10-1-94.

NR 812.05 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.

History: Cr. Register, January, 1991, No. 421, eff. 2-1-91; am. Register, September, 1994, No. 465, eff. 10-1-94.

NR 812.06 Drinking water standards. Private or non-community water systems producing water containing contaminant levels in excess of the primary drinking water standards contained in ch. NR 809, the enforcement standards contained in ch. NR 140, or other advisory levels identified by the department may be designated by the department as contaminated.

History: Cr. Register, January, 1991, No. 421, eff. 2-1-91; correction made under s. 13.93 (2m) (b) 7, Stats., Register, September, 1994, No. 465.

NR 812.07 Definitions. The following terms are defined as follows:

(1) "Adequate water supply" means a water supply which has a well yield and the pump capacity to provide the quantity and quality, where obtainable, according to s. NR 812.06, of water necessary for human or sanitary use, or for the preparation of food products and other purposes for which the water is intended to be used.

(2) "Animal barn pen" means a covered, enclosed concrete area where animals are kept.

(3) "Animal yard" means an uncovered, paved or unpaved area in which animals are kept or manure is loaded. This includes 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.

(5) "Annular space" means the space between 2 concentric cylinders or circular objects, such as the space between an upper enlarged drillhole and a well casing pipe.

(6) "API" means American petroleum institute.

(7) "Approval" means the prior approval of the department.

(8) "Approved" means approved by the department.

(9) "ASSE" means American society of sanitary engineering.

(10) "ASTM" means the American society for testing materials.

(11) "Aquifer" means a geological layer of either unconsolidated material, usually sand or gravel or both, or bedrock lying below the ground surface, that is all or partially saturated with

water and permeable enough to allow water to be extracted as from a well.

(12) "Artesian pressure" means water pressure in an aquifer sufficient enough to cause the groundwater level in a well to rise above the level at which it was encountered in the well whether or not the water flows at the ground surface.

(13) "Artesian well" means a well in which the groundwater rises above the level at which it was encountered in the well whether or not the water flows at the ground surface.

(14) "AWWA" means American water works association.

(15) "AWS" means American welding society.

(16) "Bail-down method" means a method for setting a screen whereby the screen is fitted with an open pipe sleeve or a bail-down shoe at its lower end and sediment is removed from below the screen to allow the screen to settle into place.

(17) "Basement" means a subsurface structure or part of a structure in which the floor is entirely below grade.

(18) "Bedrock" means any naturally formed consolidated or coherent material of the earth's crust, composed of one or more minerals, rock fragments or organic material that underlies any soil or other unconsolidated surficial material or is exposed at the surface. Bedrock includes, but is not limited to limestone (dolomite), sandstone, shale and igneous and metamorphic crystalline rock, including granite, rhyolite, quartzite, gabbro, basalt, gneiss, schist, diorite and greenstone.

(19) "Cable-tool drilling machine" means a machine which uses a drill bit with a cutting edge at the bottom of a heavy string of tools suspended on a cable. The drillhole material is broken up by repeated lifting and dropping of the tools and bit.

(20) "Cistern" means a tank in which rainwater is stored or collected.

(21) "Clay" means an inorganic soil with grain size less than 0.074mm and with characteristics of low permeability and a plasticity index (PI) of more than 7.

(22) "Clay slurry" means a fluid mixture of water, clean native clay and drill cuttings or sand having a mud weight of at least 11 pounds per gallon.

(23) "Clear water waste" means cooling water and condensate drainage from refrigeration compressors and air-conditioning equipment, wastewater drainage from equipment chilling processes, condensate from steam heating systems or other equipment, foundation drainage water and other water containing no contaminants.

(24) "Community water system" means a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents. Any public water system serving 7 or more homes, 10 or more mobile homes, 10 or more apartment units, or 10 or more condominium units shall be considered a community water system unless information is available to indicate that 25 year-round residents will not be served.

(25) "Conduit" means piping or tubing used to protect discharge or suction piping or electrical wires.

(26) "Confining bed" means a geological layer of either unconsolidated material, usually clay or hardpan, or bedrock, usually shale, that is all or partially saturated with water and having permeability low enough relative to the aquifer to give the water in the aquifer artesian head.

(27) "Contaminant" means any physical, chemical, biological or radiological substance or matter in water.

(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.

(28) "DHSS" means the department of health and family services.

(29) "DILHR" means the department of commerce.

- (30) "Department" means the department of natural resources.
- (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.
- (31) "Drawdown" means the extent to which the water level or water pressure in and near a well is lowered when water is pumped or flows from the well.
- (32) "Drilled wells" means wells or drillholes constructed by digging, boring, drilling, jetting, driving or similar methods. Drilled wells do not include driven point (sand point) wells unless driving the point is combined with a process to remove material below the 10-foot depth.
- (33) "Drillhole" means an excavation, opening or driven point well deeper than it is wide that extends more than 10 feet below the ground surface.
- (a) "Heat exchange drillhole" means a drillhole used for closed loop heat exchange purposes.
- (b) "Lower drillhole" means that part of a drillhole below the vertical zone of contamination or below the well casing pipe.
- (c) "Upper enlarged drillhole" means a drillhole larger in diameter than the well casing pipe.
- (34) "Drilling mud" means a fluid mixture of water, sodium bentonite, drill cuttings and any approved additives.
- (35) "Driven point well" or "sand point well" means a well constructed by joining a drive point with lengths of pipe, and driving the assembly into the ground with percussion equipment or by hand, but without first removing material below the 10-foot depth.
- Note:** All other types of wells, including those constructed by a combination of jetting and driving, are drilled wells.
- (35m) "Dug well" means a well consisting of a large diameter hole, deeper than it is wide, constructed into the ground, usually by hand, but if by mechanical means, by methods other than drilling, jetting or boring; and within which the side walls are supported by a curbing.
- (37) "Established ground surface" means the permanent elevation of the surface of the site of a well.
- (38) "Existing installations" means water systems which were constructed or reconstructed before February 1, 1991.
- (40) "FDA" means U.S. food and drug administration.
- (41) "Feature" means any well construction or pump installation item for which there is a specification in this chapter.
- (42) "Filter strip" means an area of vegetation designed and constructed in accordance with Soil Conservation Service Standard 393 adjacent to an animal yard or animal shelter or adjacent to a manure storage facility, used to remove sediment and organic matter from the runoff from the facility.
- (43) "Floodfringe" means that portion of the floodplain outside of the floodway which is covered by flood water during the regional flood. The term floodfringe is generally associated with standing water rather than flowing water.
- (44) "Floodplain" means that land which has been or may be covered by flood water during the regional flood. The floodplain includes the floodway, floodfringe, shallow depth flooding, flood storage and coastal floodplain areas.
- (45) "Floodway" means the channel of a river or stream and those portions of the floodplain adjoining the channel required to carry the regional flood discharge.
- (46) "Flowing well" means a well from which groundwater flows above the ground surface without pumping.
- (47) "Flushing" means causing a rapid intermittent flow of water from a well by pumping, bailing or similar operation.
- (48) "Grease interceptor or trap" means a receptacle designed to intercept and retain grease or fatty substances.
- (49) "Groundwater" means subsurface water in a zone of saturation.
- (50) "Hazardous waste treatment facility" has the meaning designated in s. 144.61 (14), Stats.
- (50m) "Heating-airconditioning 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.
- (51) "High capacity well" means a well constructed on a high capacity property.
- (52) "High capacity property" means one property on which a high capacity well system exists or is to be constructed.
- (53) "High capacity well system" means one or more wells, drillholes or mine shafts used or to be used to withdraw water for any purpose on one property, if the total pumping or flowing capacity of all wells, drillholes or mine shafts on one property is 70 or more gallons per minute based on the pump curve at the lowest system pressure setting, or based on the flow rate.
- (54) "Holding tank" means a water tight receptacle used for the collection and holding of sewage.
- (55) "Hydrofracturing" means hydraulic fracturing of an aquifer by injecting a fluid into the well under pressures great enough to open the bedrock along bedding planes, joints and fractures and may include injecting sand or a similar approved material to hold the crevices open when the pressure is removed.
- (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.
- (55e) "Influent sewer" means a sanitary collector sewer beyond the last manhole prior to a wastewater treatment plant.
- (56) "Landfill" means a solid waste disposal site or facility, not classified as a landspreading facility or a surface impoundment facility, where solid waste is disposed on land. This term includes existing, proposed and abandoned landfills, open dumps, one-time disposal sites as defined in ch. NR 502, small demolition landfills as defined in ch. NR 502, mining waste disposal sites as defined in ch. NR 182 and hazardous waste disposal facilities as defined in chs. NR 600 to 685.
- (57) "Landing collar" means a metal ring welded near the bottom of the inside of a string of well casing pipe to prevent a drillable grouting plug from dropping out the bottom of the well casing pipe during cement grouting.
- (57t) "Lift station" means a wastewater collection and pumping structure that collects wastewater from collector sewers and pumps it through force main sewers.
- (57m) "Licensed" means registered by the department to engage in the business of well drilling or pump installing in Wisconsin.
- (58) "Liner pipe" means:
- (a) Protective well casing pipe installed subsequent to initial construction to seal off a zone of contamination; or

(b) Well casing pipe installed during or subsequent to the initial well construction to seal off a caving or sloughing formation or to eliminate turbidity.

(59) "Liquid waste" means process wastewater from food processing, product manufacturing and contaminated water removed from underground or open pit workings of a mine. This definition does not include clear water waste.

(60) "Liquid waste disposal system" means a facility for disposing of liquid wastes consisting of a ridge and furrow system, a landspreading system including sludge drying beds at a wastewater treatment plant, a wastewater spray irrigation system, or an absorption, seepage, retention, storage or treatment pond or lagoon.

(61) "Manure hopper or reception tank" means a liquid-tight concrete, steel or otherwise fabricated vessel primarily for the purpose of facilitating conveyance of liquid or solid manure from one point to another in an animal waste handling system.

(61m) "Manure stack" means solid manure stacked for more than 120 days on the ground surface or on a paved surface.

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

(62) "Monitoring well" means a well or drillhole constructed for the purpose of obtaining information on the physical, chemical, radiological or biological characteristics of the groundwater.

(63) "Near surface water" means water in the zone immediately below the ground surface. It includes, but is not limited to seepage from barnyards, leaching pools and disposal beds or leakage from sewers, drains and similar sources of contaminated water.

(64) "Non-community water system" means a public water system that serves fewer than 25 year-round residents.

(65) "Nominal diameter" means the inside pipe diameter for pipe sizes 1-inch diameter through 12-inch diameter and means the outside pipe diameter for pipe sizes greater than 12-inch diameter.

(66) "Nonpotable" means water supplied for purposes other than human consumption, sanitary use or the preparation of food or pharmaceutical products.

(67) "NSF" means national sanitation foundation.

(68) "One property" means all contiguous land controlled by one owner, lessee, or any other person having a possessory interest. Lands under single ownership bisected by highways or railroad right-of-ways are considered contiguous.

(69) "Outcrop" means bedrock exposed at the ground surface, including roadcuts.

(70) "Percussion drilling method" means a drilling method using a cable-tool drilling machine or a drilling method whereby the permanent well casing pipe is driven, or is set into an upper enlarged drillhole and then driven; soil or rock material inside is broken up or crushed with a drill bit; and the drill cuttings are removed from inside or just below the casing pipe. This method may be performed with a cable-tool drilling machine, a rotary machine with a hammer or with a casing hammer.

(71) "Permit" means a well location or pump installation permit issued by a county authorized to administer ch. NR 812 under ch. NR 145.

(72) "Person" means an individual, corporation, company, association, cooperative, trust institution, partnership, state, public utility, municipality, or federal, state or interstate agency.

(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.

(73) "Pit" means any structure that is completely or partially below the ground surface or below a building floor used for the housing of wells, offset pumps, pressure tanks or valves. Subsurface well or pumphrooms, alcoves, adjoining a basement foundation structure are pits.

(74) "Pitless adapter or unit" means a mechanical device attached to the well casing pipe, usually below the frost level, for underground conveyance of water from the well.

(a) "Weld-on pitless adapter" means a pitless adapter attached to a cut opening in the well casing pipe by a weld applied at the well site.

(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.

(75) "Potable" means water supplied for human consumption, sanitary use or for the preparation of food or pharmaceutical products.

(76) "Preparation of food products" means washing, cooling, cooking, pasteurizing, bottling, canning or otherwise preparing food for human consumption and includes the washing of utensils and equipment used in the production or preparation of food.

(77) "Pressure or box elbow" means a special concentric pipe fitting used to raise the horizontal pressurized concentric piping arrangement between a well and an offset pump vertically to the specified elevation above the floor.

(78) "Private water system" means any water system supplying water that is not a public water system.

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

(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. 289.22 (1m), Stats., provided that a feasibility report under s. 289.23, 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. 289.23, Stats., or a facility for which the department has determined that an approval for the facility is not being pursued with reasonable diligence.

(80) "Public water system" means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days per year. A public water system is either a "community water system" or a "non-community water system." Such system includes:

(a) Any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, and

(b) Any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system.

(81) "Pump installer" has the meaning designated in 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, making an entrance to a well, establishing safeguards to prevent contamination, including installing, replacing or rein-

stalling a pitless adapter or pitless unit, a pressure tank, a pump, associated discharge piping that connects a pump to a pressure tank or reservoir, a water treatment device between a well and a pressure tank, controls needed to operate a pump or a well cap or seal.

(83) "Pumping water level" means the elevation of the surface of the water in a well after a period of pumping at a given rate.

(84) "Quarry" means an open or surface working in bedrock for the extraction of nonmetallic materials, usually construction stone.

(85) "Reconstruction" means modifying the original construction of a well. Reconstruction includes, but is not limited to deepening, lining, installing or replacing a screen, underreaming, hydrofracturing and blasting.

(86) "Regional flood" means a flood determined to be representative of large floods known to have generally occurred in Wisconsin and which may be expected to occur on a particular stream because of like physical characteristics. The flood frequency of the regional flood is such that there is a one percent chance of a flood in any given year.

(87) "Reservoir" means a facility for storage of water constructed entirely above or partially below the ground surface.

(88) "Rotary drilling method" means a drilling method whereby an upper enlarged drillhole is constructed using a circular rotating action applied to a string of hollow drilling rods having a drill bit attached to the bottom.

(89) "Salvage yard" means a site or facility at which salvageable materials are stored or at which wrecking, dismantling or demolition of salvageable materials are conducted. Salvage yards also include those yards with 25 or more inoperable vehicles.

(90) "Sanitary building drain" means the horizontal piping which conveys only sewage located within or under a building and installed below the lowest fixture on the lowest floor level from which fixtures can drain by gravity to the building sewer.

(91) "Sanitary building sewer" means that part of the drain system which conveys only sewage, is not located within or under a building, and which conveys its discharge to a public sewer, private interceptor main sewer, private sewage system or other point of disposal.

(92) "Sanitary collector sewer" means a sanitary sewer serving 2 or more sanitary building sewers.

(93) "Sanitary condition" means, when referring to a well or reservoir:

(a) That the construction of the well or reservoir and the installation of the pumping equipment are such that the well or reservoir is effectively protected against entrance of surface contamination, and

(b) That the location and the surrounding area are free from debris or filth of any character and not subject to flooding.

(94) "School" means a public or private educational facility in which a program of educational instruction is provided to children in any grade or grades from kindergarten through the 12th grade. Water systems serving athletic fields, school forests, environmental centers, home-based schools, day-care centers and Sunday schools are not school water systems.

(95) "Septic tank" means a tank which receives and partially treats sewage through processes of sedimentation, oxygenation, flotation and bacterial action so as to separate solids from liquids in the sewage and discharges the liquid to a soil absorption unit.

(96) "Sinkhole" means a depression or opening on the land surface, usually funnel-shaped, generally formed by solution or collapse of limestone, dolomite or to a lesser extent sandstone bedrock occurring at or near the surface. Sinkholes may be partially or completely filled with unconsolidated material and solution enlargement of vertical passages often extend to the water table. Collapse of mine workings in other consolidated formations are also considered sinkholes.

(96m) "Sodium bentonite" means a clay formed from the decomposition and recrystallization of volcanic ash and is largely composed of the clay mineral montmorillonite ($\text{Na}_{33}(\text{Al}_{1.67}\text{Mg}_{33})\text{Si}_4\text{O}_{10}(\text{OH})_2$), commonly referred to as "western" or "Wyoming" bentonite, and has extensive ability to absorb water and swell to many times its original volume.

(97) "Soil absorption unit" means an absorption field, dry well, seepage bed, seepage pit, seepage mound or seepage trench designed for the disposal of wastewater effluent or clear water wastes by soil absorption. Soil absorption unit includes units both regulated and not regulated by ch. ILHR 83 and units abandoned within 3 years.

(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.

(98) "Solid waste transfer facility" means a solid waste site for baling or transferring solid waste from one vehicle or container to another.

(99) "Special well casing pipe depth area" means an area established by the department requiring greater depth of well casing pipe and stringent well construction methods because of contamination. A list is available from the department.

(100) "Specific capacity" means the continuous yield of water from a well at a given discharge expressed in gallons per minute per foot of drawdown.

(101) "Spring" means a place where groundwater flows naturally from rock or soil onto the land surface or into a body of water.

(102) "Standard dimension ratio" means the ratio of average outside pipe diameter to minimum pipe wall thickness.

(103) "Static water level" means the level of the surface of the water in a well or water pressure at the top of a well, when no water flows or is being pumped. For flowing wells with a positive water pressure at the top of the well, the static water elevation is determined either by a stilling pipe or pressure gauge. Water levels are referenced to the elevation of the top of the well or the established ground surface at the well.

(104) "Storm building drain" means horizontal piping which conveys storm water wastes, clear water wastes or other similar water from roofs, area ways, courtyards, canopies, enclosed parking areas and other sources within or under any building or structure, installed below the lowest fixture or the lowest floor level, from which fixtures or sources can drain by gravity to the building sewer.

(105) "Storm building sewer" means that part of the building sewer which conveys storm water waste or clear wastes, or both, discharge from storm building drains, parking lots, yard fountains or other similar sources, is not located within or under a building and which discharges to a storm collector sewer, private interceptor main sewer, private sewage system or other point of disposal.

(106) "Storm collector sewer" means a storm sewer serving 2 or more storm building sewers.

(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.

(108) "Sump" means a tank or other receptacle which receives sewage or liquid wastes and which is located below the normal grade of the gravity system and must be emptied by mechanical means.

(109) "Surge tank" means a tank into which overflow from a flowing well, spring or other water source is discharged and is repumped to a pressure tank or the water system.

(110) "Telescoping method" means a method for setting a well screen where the well casing pipe is driven to the proposed screen setting depth and the well casing pipe is then pulled back to expose the screen. A packer is used to seal the annulus between the top of the screen and the bottom of the well casing pipe.

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

(111) "Top of bedrock" means the top of firm rock. The determination of the top of bedrock shall be based on the change in the action of the drilling machine and on the change in the type and size of the drill cuttings. The presence of bedrock shall be indicated when a majority of the drill cuttings consist of either angular rock fragments, as in the case of crystalline bedrock, or rock fragments composed of individual grains or rock particles that are cemented together to form an aggregate, as opposed to single sediment particles, such as in sand.

(112) "UL" means underwriters laboratories, inc.

(112g) "Treatment pond" means a structure that is used for the treatment or storage of liquid waste. Treatment pond includes absorption, retention, storage and treatment ponds or lagoons.

(112q) "Variance" means a department approval to construct or install a water system or a portion of a water system in a manner not in strict compliance with the requirements of this chapter, but providing comparable sanitary protection in accordance with conditions specified by the department in its approval.

(113) "Vertical zone of contamination" means that depth of geologic formations, generally near the ground surface, containing connecting pore spaces, crevices or similar openings, including artificial channels, such as unprotected wells or drillholes, through which contaminated water or contaminants gain access to a well or to the groundwater.

(114) "Walkout basement" means a basement, with the floor at ground grade level on at least one side of the structure, from which it is possible to walk directly outside without walking upstairs or uphill.

(115) "Wastewater" means any water carrying wastes created in and conducted away from residences, industrial establishments and public buildings with ground or surface water which may be present including any liquid wastes except clear water wastes.

(116) "Wastewater treatment plant" has the meaning designated in ch. NR 114.

(117) "Water supply" means the sources, wells, pumps and intake and storage structures from which water is supplied for any purpose.

(118) "Water system" means the water supply, storage, treatment facilities and all structures and piping by which water is provided for any purpose.

(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.

(120) "Well cap or seal" means an approved apparatus or device used to cover the top of a well casing pipe.

(121) "Well casing pipe" means pipe meeting standards specified in s. NR 812.17 which is driven or set to seal off the vertical zone of contamination.

(122) "Well constructor" means any person, firm or corporation that constructs a well which is not required to be constructed by a licensed well driller.

(123) "Well driller" has the meaning as designated in ch. 162.

(124) "Well drilling" has the meaning designated in ch. 162, Stats., and includes any activity which requires the use of a well drilling rig or similar equipment, any activity which changes the character of a drilled well or which is conducted using a well drilling rig or similar equipment with the exception of the driving of points. Well drilling includes constructing, reconstructing or

deepening a well, installation of a liner, installing or replacing a screen, well rehabilitation, hydrofracturing, blasting and chemical conditioning.

(125) "Well-point driving" means constructing a well by joining a drive point screen with lengths of pipe and driving the assembly into the ground with percussion equipment or by hand, but without removing material from a drillhole more than 10 feet below the ground surface.

(126) "Well vent" means a screened opening in a well seal to allow atmospheric pressure to be maintained in the well.

(127) "Well yield" means the quantity of water which may flow or be pumped from the well per unit of time.

(128) "Zone of saturation" means that part of the earth's crust beneath the shallowest water table in which all voids are filled with water under pressure greater than atmospheric.

History: Cr. Register, January, 1991, No. 421, eff. 2-1-91; am. (3), (4), (48), (61m), (74) (b), (79), (81), (82), (107) and (119), cr. (27m) (30f), (30m), (30t), (30x), (72m), (79m), (97m) and (110m), renum. (36) and (39) to be (61q) and (61u) and am. Register, September, 1994, No. 465, eff. 10-1-94; corrections made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1994, No. 465; correction in (29), (30) and (79m) made under s. 13.93 (2m) (b) 6. and 7., Stats., Register, September, 1996, No. 489.

NR 812.08 Well, reservoir and spring location. (1)

GENERAL. Any potable or nonpotable well or reservoir shall be located:

(a) So the well and its surroundings can be kept in a sanitary condition.

(b) 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 812.12 and 812.13 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 812.12 or 812.13 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:

1. The ground surface elevation at the well or reservoir is lower than the elevation at the contamination source, and
2. Surface water that washes over the contamination source would travel within eight feet of the well or reservoir, or over the well or reservoir.

(c) As far away from any known or possible source of contamination as the general layout of the premises and the surroundings allow.

Note: Section PSC 114.234 C8 requires that a horizontal clearance of at least 3/4 of the vertical clearance of the conductors, including overhead power lines to the ground required by Rule 232 shall be maintained between open conductors and wells. Persons installing wells must comply with this requirement.

(d) Such that any potential contaminant source, not identified in this section or in Table A, is a minimum of 8 feet from the well or reservoir.

(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.

(2) **RELATION TO BUILDINGS.** In relation to buildings, the location of any potable or nonpotable well shall be as follows:

(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) 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 basement meeting the criteria of s. NR 812.42 (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.

(3) RELATION TO FLOODPLAINS. (a) A potable or nonpotable well may be constructed, reconstructed or replaced in a flood-fringe provided that the top of the well is terminated at least 2 feet above the regional flood elevation for the well site.

(b) A well may be reconstructed or replaced in a floodway provided that the top of the well is terminated at least 2 feet above the regional flood elevation for the well site.

(c) A well may not be constructed on a floodway property that is either undeveloped or has building structures but no existing well.

(d) The regional flood elevation may be obtained from the department.

(4) RELATION TO CONTAMINATION SOURCES. Minimum separating distances between any new potable or nonpotable well, reservoir or spring and existing sources of contamination; or between new sources of contamination and existing potable or nonpotable wells, reservoirs or springs shall be maintained as described in this subsection. The minimum separating distances of this subsection do not apply to dewatering wells approved under s. NR 812.09 (4) (a). Greater separation distances may be required for wells requiring plan approval under s. NR 812.09. Separation distance requirements to possible sources of contamination will not be waived because of property lines. Minimum separating distances are listed in Table A and are as follows:

(a) Eight feet between a well or reservoir and a:

1. Buried gravity flow sanitary or storm building drain having pipe conforming to ch. ILHR 84;
2. Buried gravity flow sanitary or storm building sewer having pipe conforming to ch. ILHR 84;
3. Watertight clear water waste sump;
4. Buried clear water waste drain having pipe conforming to ch. ILHR 84;
5. Buried gravity flow foundation drain;
6. Rainwater downspout outlet;
7. Cistern;
8. Buried building foundation drain connected to a clear water waste drain or other subsoil drain;
9. Noncomplying pit, subsurface pumphouse, alcove, or reservoir;
10. Nonpotable well;
11. Fertilizer or pesticide storage tank with a capacity of less than 1,500 gallons, but only when the well is nonpotable;

Note: For potable wells see par. (d) 1.

12. Plastic silage storage and transfer tube;
13. Yard hydrant;
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.

(b) Twenty-five feet between a well or reservoir and a:

1. Buried grease interceptor or trap;
2. Septic tank;
3. Holding tank;
4. Buried building drain or building sewer having pipe not conforming to ch. ILHR 84, wastewater sump, or non-watertight clear water waste sumps;
5. Buried pressurized sanitary building sewer having pipe conforming to ch. ILHR 84;
6. Buried gravity manure sewer;
7. Lake, river, 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;
9. Liquid-tight barn gutter;
10. Animal barn pen with concrete floor;
11. Buried pressurized sewer pipe conveying manure provided that the pipe 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 811.62.
12. Buried fuel oil tanks serving single family residences, including any associated buried piping;
13. Discharge to ground from a water treatment device;
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.

(c) Fifty feet between a well or reservoir and a:

1. Soil absorption unit receiving less than 8,000 gallons/day, existing, abandoned or alternate, but not including a school soil absorption unit;

Note: For school soil absorption units see par. (e); for soil absorption units receiving more than 8,000 gallons/day see par. (f) 3.

2. Privy;
3. Pet waste pit disposal unit;
4. Animal shelter;
5. Animal yard;
6. Silo;
7. Buried sewer used to convey manure having pipe conforming to ch. ILHR 84 that does not meet the specifications in par. (b);
8. Liquid tight manure hopper or reception tank;
9. Filter strip;
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.

11. An influent sewer to a wastewater treatment plant;

- 12. The nearest existing or future grave site in cemeteries;
- 13. Wastewater treatment plant effluent pipe;
- 14. Buried pressurized sewer having pipe not conforming to ch. ILHR 84; or
- 15. Manure loading area.

Note: 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.

(d) One hundred feet between a well or reservoir and a:

- 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. Comm 11.
- 2. Liquid-tight, fabricated manure or silage storage structure, in ground or at ground surface;
- 3. Wastewater treatment plant structure, conveyance or treatment unit; or
- 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.

(e) Two hundred feet between a school well and a soil absorption unit receiving less than 8,000 gallons per day, existing or abandoned.

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

(f) Two hundred fifty feet between a well or reservoir and a:

- 1. Manure stack;
- 2. Earthen or excavated manure storage structure;

Note: Variances from the separating distances may be granted as specified in s. NR 812.43 for earthen storage and manure stacks constructed and maintained to the specifications of Soil Conservation Standards No. 425 or 312, respectively.

- 3. Soil absorption unit receiving 8,000 or more gallons per day, existing, abandoned, or alternate;
- 4. Sludge landspreading or drying area;
- 5. An earthen silage storage trench or pit;
- 6. Liquid waste disposal system including, but not limited to a treatment pond or lagoon, ridge and furrow system and spray irrigation system;

Note: Variance from this separating distance may be granted for treatment ponds or lagoons constructed and maintained to an approval granted under ch. NR 213.

- 7. Salvage yard;
- 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;
- 9. Solid waste processing facility; or
- 10. Solid waste transfer facility.

(g) Twelve hundred feet between a well or reservoir and:

- 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;
- 2. The nearest edge of a coal storage area in excess of 500 tons; or
- 3. A hazardous waste treatment facility regulated by the department.

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 October 1, 1994.

Source	Prior to Oct. 1975	Oct. 1975 to Oct. 1981	Oct. 1981 to Jan. 1991	Feb. 1991 to Oct. 1994	After Oct. 1994
Absorption Unit (field), soil	50'	50'	50'	50'	50'
Air shaft-heating/air conditioning (Vertical, Below grade)	None	None	None	None	25'
Animal Barn Pen with Concrete Floor	None** (25/20)**	25'	25'	25'	25'
Animal Shelter (not including small pet shelter housing 3 or fewer adult pets)	None** (50/25)**	50'	50'	50'	50'
Animal Yard—Includes Calf Hutch (but not residential lot dog kennel enclosing 3 or fewer adult pets)	None**	50'	50'	50'	50'
Barn Gutter—Liquid-Tight	None** (25/18)**	25'	25'	25'	25'
Building Overhang (from centerline of well)	2'	2'	2'	2'	2'
Cemetery Grave Sites	None*	100'	100'	50'	50'
Cistern	10'	10'	10'	8'	8'
Coal Storage (greater than 500 tons)	None*	None*	None*	1,200'	1,200'
Composting Site (See Solid Waste Processing Facility)	None	None	None	None	250'
Discharge to ground from a Water Treatment Device	None	None	None	25'	25'
Ditch—Edge of	None	None	None	None	25'
Doghouse or kennel housing 3 or fewer adult pets on residential lot	None	None	None	50'	8'

Source	Prior to® Oct. 1975	Oct 1975 to Oct. 1981	Oct 1981 to Jan. 1991	Feb. 1991 to Oct. 1994	After Oct. 1994
Downspout Outlet	10'	10'	10'	8'	8'
Drain-Sewerage (having pipe conforming to ch. ILHR 84) (Buried)	10'	8'	8'	8'	8'
Drain-Sewerage (not having pipe conforming to ch. ILHR 84) (Buried)	10'	25'	25'	25'	25'
Drain (any material) (Buried)					
indent } Clear Water Waste	10'	10'	10'	8'	8'
	Building-Foundation	10'	10'	8'	8'
	Building-Foundation-Sewer Connected	15'	15'	15'	8'
Drillhole used for the underground placement of any waste, surface water or any substance as defined in s 160 01 (8), Stats.	None	None	None	None	100'
Fertilizer or Pesticide, any size Storage Tank (Buried tank or surface tank > 1,500 gal.)	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'
Fertilizer or Pesticide (Dry) Storage Area or Building (more than 100 pounds)	None	None	None	None	100'
Gasoline or Other Petroleum or Liquid Product Tank - Buried (not including L.P. tanks)	None*	100'	100'	100' (Including any associated buried piping)	100' (Including any associated buried piping)
Gasoline or Other Petroleum or Liquid Product Tank-Surface (>1,500 gallons including any associated buried piping)	None*	None*	None*	100'	100'
Glass Lined Feed Storage Facility (Harvestor-Type Silos)	None**	25'	25'	50'	50'
Grease Interceptor (Trap) (Buried)	25'	25'	25'	25'	25'
Hazardous Waste Treatment Facility Regulated by DNR	None*	None*	None*	1,200'	1,200'
Holding Tank (Sewage)	None	25'	25'	25'	25'
Infiltration basin, Stormwater	None	None	None	None	100'
Kennel on residential lot enclosing 3 or fewer adult pets	None	None	None	50'	8'
Kennel, other than above	None	None	None	50'	50'
Lagoon, Treatment (See liquid waste disposal system)	—	—	—	—	—
Lake Shoreline (Measured to the edge of the floodway)	None*	25'	25' (60' For Schools and High Cap. Wells)	25'	25'
Landfills (existing, proposed or abandoned) (Distance to Nearest Fill Area of abandoned landfills if Known; Otherwise to the Property Line)	None*	400 yards	400 yards	1,200'	1,200'
Lift Station##				##	100'
Liquid Waste Disposal System	None	250'	250'-300'	250'#	250'#
Manure Hopper or Reception Tank-Liquid-Tight	None*	75'	75'-150'	50'	50'
Manure Loading Area	None	None	None	None	50'
Manure Stack	None*	100'	100'-175'	250'***	250'***
Manure Stack,—Temporary	None	100'	100'	250'	150'
Manure—Storage Structure (Earthen, Excavated or Non-liquid tight)	None*	250'	250'-300'	250'***	250'***
Manure Storage Structure (Fabricated, Liquid-Tight)	None*	100'	100'-175'	100'	100'
Manure—Storage Basin—Liquid-Tight Concrete Floor with an Acceptable Drainage Facility	None*	100'	150'-300'	Now in category of Manure Storage Structure	Now in category of Manure Storage Structure
Mound System (Measured to the toe of the mound)	50'	50'	50'	50'	50'
Nonpotable Well	None*	None*	None*	8'	8'

Source	Prior to [®] Oct. 1975	Oct. 1975 to Oct. 1981	Oct. 1981 to Jan. 1991	Feb. 1991 to Oct. 1994	After Oct. 1994
Pesticide or Fertilizer (Dry) Storage Area or Building (More than 100 Pounds)	None	None	None	None	100'
Pesticide or Fertilizer Storage Tank (not buried)—less than 1,500 gallons (distance only for nonpotable wells)	None	None	None	8'	8'
Pesticide or Fertilizer Storage Tank—Buried tank, any size, or surface tank >1,500 gal.)	None	None	None	100'	100'
Pet Waste Pit Disposal Unit	None*	50'	50'	50'	50'
Pits—Noncomplying	None	10'	10'	8'	8'
			(20' For Schools, WWTP's, and High Capacity—Including Approved Pits)		
Plastic Silage Storage and Transfer Tube	None	None	None	8'	8'
Pond, Stormwater detention (Edge of)	None	None	None	None	25'
Pond, treatment (See liquid waste, disposal system)					
Privy	50' (Sewage Disposal Units)	50'	50'	50'	50'
Quarry (See s. NR 812.12 (16) for well casing depth requirements for wells within 1,200 feet of a quarry.)					
Reservoir—Noncomplying	10' (Cistern)	10'	10'	8'	8'
Ridge and Furrow System (See liquid waste disposal system)					
River or Stream Edge (Measured to the edge of the floodway)	None*	25'	25'	25'	25'
			(60' For Schools and High Cap. Wells)		
Salt or Deicing Material Storage Area (Including structure and area surrounding where material is transferred to vehicles)	None*	None*	None*	250'	250'
Salvage Yard	None*	None*	None*	250'	250'
Septic Tank	25'	25'	25'	25'	25'
Sewer (ch. ILHR 84 Materials) (Buried)					
—Manure/Gravity	8'	8'	8'	25'	25'
—Manure/Pressurized	8'	8'	25'	25'	25'
—Sanitary or Storm Building/Gravity	8'	8'	8'	8'	8'
—Sanitary Building/Pressurized	8'	25'	25'	25'	25'
—Sanitary Collector					
(Serving ≤ 4 living units or ≤ 6" diameter)	8'	50'	50'	50'	25'
—Sanitary Collector					
(Serving > 4 living units or > 6" diameter)	8'	50'	50'	50'	50'
—Influent	50'	50'	50'	50'	50'
—Storm Collector					
(≤ 6" diameter)	8'	50'	50'	50'	25'
—Storm Collector					
(> 6" diameter)	8'	50'	50'	50'	50'
Sewer (not ch. ILHR 84 Materials) (Buried)					
—Manure/Gravity	25'	25'	25'	25'	25'
—Manure/Pressurized	25'	50'	50'	50'	50'
—Sanitary Building/gravity	25'	25'	25'	25'	25'
—Sanitary Building/Pressurized	25'	25'	25'	25'	50'
—Storm Building	25'	25'	25'	25'	8'
—Sanitary Collector	50'	50'	50'	50'	50'
—Storm Collector	25'	50'	50'	50'	50'
—Influent	50'	50'	50'	50'	50'
Shoreline—Lake, River or Stream (Measured as indicated in sub. (4) (b) 7.)	None*	25'	25'	25'	25'
			(60' For Schools and High Capacity Wells)		
Silage Storage, Earthen Trench or Pit	None*	100'	100'–175'	250'	250'
Silage Storage Structure (Fabricated liquid-tight) (In-ground or surface)	None	None	None	None	100'

Source	Prior to [®] Oct. 1975	Oct. 1975 to Oct. 1981	Oct. 1981 to Jan. 1991	Feb 1991 to Oct. 1994	After Oct. 1994
Silage Storage—Surface, Uncovered.	None	None	None	None	100'
Silage Storage Tube (Plastic)	None	None	None	8'	8'
Silo With Pit	None**	50'	50'	50'	50'
Silo Without Pit But With Concrete Floor and Drain	None**	25'	25'	50'	50'
Sludge Landspreading or Drying	None*	200'	200'	250'	250'
Soil Absorption Unit (< 8,000 gal/day, includes alternate unit)	50'	50'	50' (200' for schools as of 1978)	50' (200' for schools)	50' (200' for schools)
Soil Absorption Unit (≥ 8,000 gal/day, existing or abandoned)	50'	50'	50' (200' for schools as of 1978)	250'	250'
Solid Waste Processing Facility (Including composting facilities)	None	None	None	None	250'
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'	1,200'
Solid Waste Transfer Facility	None	None	None	None	250'
Spray Irrigation Waste Disposal Site (See liquid waste disposal system)					
Stormwater detention pond or basin	None	None	None	None	25'
Stormwater infiltration basin	None	None	None	None	100'
Sump—Watertight clear water	None	None	None	8'	8'
Sump—Wastewater (Watertight) (form. cast-iron equiv.)	None*	8'	8'	25'	25'
Sump—Wastewater (not watertight or equiv. to cast iron)	None*	25'	25'	25'	25'
Swimming Pool (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'
Well approved for underground placement of any waste, surface water or any substance as defined in s. 160.01, Stats.	None	None	None	None	100'
Yard Hydrant	None	10'	10'	8'	8'

° 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 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 ≥ 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.
- 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 October 1, 1994 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.

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

Source	April 24, 1936	March 1939	July 1951	April 10, 1953	May 1, 1971
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'

Source	April 24, 1936	March 1939	July 1951	April 10, 1953	May 1, 1971
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'

History: Cr. Register, January, 1991, No. 421, eff. 2-1-91; am. (1) (b) 1., (2) (a) to (c), (4) (a) 5., 9., 12. and 13., (b) 1., 5., 7., 11. and 13., (c) 10. to 13., (d) 1. to 3., (f) 6. to 8., (g) 1. and Table A, cr. (1) (e), (4) (a) 14. and 15., (b) 14. and 15., (c) 14. and 15., (d) 4. to 9. and (ee), r. (4) (b) 8., Register, September, 1994, No. 465, eff. 10-1-94; corrections made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1994, No. 465; correction in (4) (d) 1. made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1996, No. 489

NR 812.09 Department approvals. (1) REVIEW PERIOD.

Unless another time period is specified by law, the department shall complete its review and make a determination on all applications for licenses or approvals within 65 business days after receipt of a complete application. Incomplete applications will be returned. The start of the 65 day review period will not begin until a complete application is received by the department. All requests for approval shall be in writing, except that for situations that require immediate response, an approval may be requested verbally and an advanced verbal approval may be granted by the department and followed up with a written confirmation.

(2) APPROVAL APPLICATION AND SUBMISSION. The property owner or lessee shall obtain a written approval from the department. When an application is submitted by someone other than the owner of the subject property, the owner or authorized agent shall sign the application. Application information, outlines or forms may be obtained from the department. Applications shall provide information regarding the owner's and operator's name, address and firm name, if applicable, and any other information requested by the department. The department may request, but is not limited to descriptions or sketches of well construction, geology, pump installation, plumbing, possible contamination sources, property boundary, water use and, water sample results, depending on the type of application.

(3) PLANS AND SPECIFICATION PREPARATION. Plans and specifications for a school water system shall be submitted by a registered professional engineer or well driller for wells, and by a registered professional engineer or pump installer for pumps, discharge piping, storage tanks and controls. Plans and specifications for a wastewater treatment plant water system shall be submitted by a registered professional engineer, by a well driller for the well or a pump installer for the pump. If construction or installation of a water system described in this subsection has not commenced within 2 years of approval date, the approval is void.

(4) 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:

(a) The construction, reconstruction, or operation of a high capacity well or well system, including dewatering wells. An application for a high capacity well or well system approval shall include, for every well, the location, construction or reconstruc-

tion features, pump installation features, the proposed rate of operation and the distance to nearby public utility wells, as defined in s. 196.01, Stats.

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.

2. When an owner or operator relinquishes control of the operation of a high capacity well or well system, a new approval shall be obtained by the new operator, owner or lessee before operation of the high capacity well or well system is continued.

3. The owner or operator of a high capacity well or well system shall submit pumpage and well water level reports to the department on department forms at the time periods indicated by the department.

4. Emergency approval for a high capacity well or well system may be granted when fire hazard, imminent crop damage or other similar emergency requires if the department determines that the high capacity well or well system proposed will not adversely affect or reduce the availability of water to a public utility, as defined in s. 196.01, Stats.

5. High capacity test drillholes may be constructed without approval to test for aquifer yield to determine if a high capacity well or well system is feasible. The well casing pipe for such test drillholes shall not exceed 6-inch diameter unless the well driller notifies the department. High capacity test drillholes may be test pumped at a rate of 70 gallons per minute or more if the test does not last more than a total of 72 hours. After testing, the drillhole shall be abandoned according to the requirements of s. NR 812.26 or shall be converted, with approval, to a high capacity well or well system which meets the requirements of this chapter or ch. NR 811 and of any approved plans and specifications.

Note: *State v. Michels Pipeline Construction, Inc.*, 63 Wis.2d 278, 217 N.W.2d 339 (1974) established that the doctrine of reasonable use applies to property rights in groundwater. Persons adversely affected by the operation of a high capacity well or well system may take action against the operator or owner of the high capacity well or well system.

(b) The construction, reconstruction or operation of a school or wastewater treatment plant well or water system.

(c) Installation of water treatment devices or chemical addition to a well or water system as specified in s. NR 812.37.

(d) A variance from any provision of this chapter.

(e) The construction of a granite or other crystalline bedrock well with less than 40 feet of well casing pipe.

(f) The construction or reconstruction of a well located in designated special well casing pipe depth areas.

Note: A list of these special well casing pipe depth areas is available from the department.

(g) The construction of a well open to both an unconsolidated formation and a bedrock formation.

(h) The use of the Halliburton grouting methods or the grout displacement grouting method as described in s. NR 812.20 (3) (e), (f) and (g) for wells when the upper enlarged drillhole is more than 200 feet deep or when drilling mud or bentonite slurry has not been circulated up to the ground surface in the annular space prior to grouting.

(i) The development of a spring for use as a potable water supply as provided in s. NR 812.25.

(j) The construction or reconstruction of a pit as provided in s. NR 812.36 or in s. NR 812.42 (2).

(k) The installation of a hung well casing pipe or a hung liner.

(L) The use of well drilling aids and additives, grout, sealing or well abandonment materials and additives and well rehabilitation materials.

(m) The construction or reconstruction of a dug well as provided in s. NR 812.24.

(n) Well casing pipe testing procedures.

(o) The use of pitless adapters, pitless units, above ground discharge units, vermin-proof caps and seals and any treatment equipment to be installed directly in a well. The department may prohibit the use of any water supply equipment if the department finds there is substantial evidence that the equipment poses a significant hazard to safe drinking water or the groundwater. The department shall state its findings and conclusions in writing to the manufacturer, the licensed well drillers or pump installers, or both, and the industry representatives including the Wisconsin Water Well Association and the Wisconsin Pump and Well Suppliers Association. The effective date of the prohibition will have a 6 month delay for any well casing pipe product or a 12 month delay for other water supply equipment.

(p) The installation of a pressure tank with a volume greater than 1,000 gallons.

(q) The installation of a heat exchange or cathodic protection drillhole.

(r) The continued operation of a well or drillhole that meets the criteria in s. NR 812.26 (2) that requires permanent abandonment of the well or drillhole.

(s) The development of surface water for use as a potable water supply.

(t) Noncontinuous-slot well screens as specified in s. NR 812.13 (1) (e).

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

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

History: Cr Register, January, 1991, No. 421, eff. 2-1-91; am. (4) (intro.), (a) 1., (4) (l), (5) and (6); cr. (4) (u) and (v), Register, September, 1994, No. 465, eff. 10-1-94; corrections made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1994, No. 465; r. (4) (u), Register, September, 1996, No. 489, eff. 10-1-96.

Subchapter II

New Well Construction and Reconstruction

NR 812.10 Well driller and well constructor requirements. **(1) LICENSE.** Well drillers shall hold a valid Wisconsin well drilling license. The name of the well driller and the well drilling license number shall be displayed on all well drilling rigs used

in the construction of wells. The letters and numbers shall be at least 2 inches in height with at least 1/4 inch wide brush stroke. The identification shall have a sharp color contrast with the background on which it is applied. The identification shall remain legible.

(2) LOCATION. Well drillers and well constructors shall be responsible for proper location of a well. Wells shall be located in sanitary locations and meet the separation requirements specified in s. NR 812.08. Separation distance requirements to possible sources of contamination will not be waived because of property lines. Wells may not be constructed within 1,200 feet of a landfill site without a variance. Variances from location requirements require approval.

(3) EQUIPMENT AND MATERIALS. Well drillers and well constructors shall be adequately equipped to comply with the well construction requirements of ss. NR 812.11 to 812.16 and Tables I-IV. All materials installed in a well shall be new, unused and approved for use, except as specified in s. NR 812.26 (5). The department may prohibit the use of any material or equipment that poses a significant hazard to public health, safe drinking water or groundwater.

(4) CONSTRUCTION METHODS. Well drillers and well constructors shall comply with this chapter in the construction and reconstruction of all wells. Adequate protection shall be provided for the top of the drillhole and the top of the well casing pipe to prevent surface contamination from entering the well during the drilling operation and when the driller is not at the drilling site. Well construction methods are depicted in figures 51 to 75.

(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.

(6) GROUTING AND SEALING. Well drillers and well constructors shall be responsible for completing all grouting and sealing requirements using the mixtures and methods of s. NR 812.20. Grouting methods are depicted in figures 11 to 18.

(7) DEVELOPMENT AND TEST PUMP. Well drillers and well constructors shall, upon completion of the well, develop and test pump the well according to s. NR 812.22. The well shall be pumped and developed until the water is practicably clear and free of sand, and until a stable pumping water level is established.

(8) NONCOMPLYING WELLS. When a well driller or well constructor has constructed a well not initially located or constructed in compliance with this chapter, the well driller or well constructor shall pay all costs for bringing the well into compliance with this chapter, including abandonment costs, other than those costs that would have been charged for an initial complying construction.

(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. 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.

(10) NOTIFICATION OF CONTAMINATED WELLS. Well drillers and well constructors shall notify the well owner if the well driller or well constructor becomes aware that the water from the well contains contaminants in excess for the primary drinking water standards in ch. NR 809.

(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 within 30 days of completion 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 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.

Note: The well driller or agent is required to have the water sample analyzed for bacteria. However, in some areas of Wisconsin the useable aquifer is contaminated throughout its entire vertical extent, so it may not be possible to obtain a bacteriologically safe water sample.

History: Cr. Register, January, 1991, No. 421, eff. 2-1-91; am. (5), (9) and (11), Register, September, 1994, No. 465, eff. 10-1-94; corrections made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1994, No. 465.

NR 812.11 Well construction equipment & materials.

(1) **ADEQUACY OF EQUIPMENT.** Well drillers and well constructors shall be adequately equipped to enable him or her to fully comply with all legal requirements applicable to any well construction, reconstruction or well abandonment undertaken by him or her.

(a) **Drill bits.** The diameter of drill bits shall be within 1/4" of the diameter of any drillhole to be constructed. A drill bit more than 1/4" smaller in diameter than the diameter of an upper enlarged drillhole to be constructed, may not be worked around within the drillhole to construct the specified diameter of the drillhole.

(b) **Conductor (tremie) pipes.** Any conductor (tremie) pipe used for grouting shall meet the requirements of s. NR 812.20 (2) (b).

(c) **Mud balances.** When rotary drilling mud and cuttings or clay slurry are used to seal the annular space of a well as specified by Tables I and II, a mud balance shall be used to determine that the mud weight is at least 11 pounds per gallon.

(d) **Test pumps.** A test pump shall be used to perform a well yield test upon completion of the well. A well yield test may be conducted using air-rotary equipment.

(2) **MATERIALS.** All materials permanently installed in a well shall be new, unused and approved for use except as specified in s. NR 812.26 (5). Lead compounds used to lubricate and seal drill stem joints or any equipment entering a well may not be used. Materials containing lead having a lead content greater than 8% by weight, may not be installed in a well. Component parts of manufactured products containing lead shall not have a lead content of more than 5% of the total product weight. "Lead wool" or other products containing more than 8% lead may not be used as seals in the bottom of an open-ended well casing pipes or as screens terminating in coarse formations.

(a) **Well casing pipe.** Well casing pipe and liner pipe shall meet the requirements of s. NR 812.17.

(b) **Drive-shoes.** When a well casing pipe is driven, a drive-shoe shall be welded or threaded to the bottom of the well casing pipe according to s. NR 812.12 (5). Couplings may not be used for drive-shoes. When the upper enlarged drillhole extends 20 feet or more into bedrock and the annular space is cement grouted before the lower drillhole is constructed, the use of a drive-shoe is optional.

(c) **Gravel packs.** Gravel packs shall meet the requirements of s. NR 812.16.

(d) **Screens.** Screens shall meet the requirements of s. NR 812.13 (1) (e). Lead bottom seals are prohibited. Brass screens may not have a lead content of more than 8%.

(e) **Packers.** Packers shall comply with s. NR 812.13 (1) (e) 4. Lead packers are prohibited.

(f) **Centering guides.** Centering guides or drive shoes used as centering guides shall be installed in well casing pipe in bedrock wells as specified in s. NR 812.14 (1) (f).

(g) **Drilling aids.** Only approved drilling aids may be used in well construction and reconstruction. Approval of drilling aids is based on, but not limited to toxicity, groundwater contamination potential and expected effectiveness of the materials. A list of approved drilling aids is available from the department upon request.

History: Cr. Register, January, 1991, No. 421, eff. 2-1-91; corrections made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1994, No. 465.

NR 812.12 General drilled type well construction requirements. (1) Every well shall be planned and constructed so that it:

(a) Will be adapted to the geologic and groundwater conditions of the proposed well site to ensure full utilization of every natural protection against contamination of the water bearing formation or formations and to exclude possible sources of contamination.

(b) Should produce bacteriologically safe water.

Note: In some areas of Wisconsin the useable aquifer is contaminated throughout its entire vertical extent. In such areas, it may not be possible to obtain bacteriologically safe water.

(c) Will provide an adequate and contaminant free water supply, where the natural geologic and groundwater conditions allow.

(d) Will conserve groundwater.

(e) Will allow reconstruction, when necessary.

(2) The construction of drilled wells shall comply with:

(a) The general and specific requirements outlined in ss. NR 812.13 to 812.16;

(b) The well casing pipe requirements of s. NR 812.17; and

(c) The requirements of Table I or II for low capacity potable wells, except school or wastewater treatment plant wells, but including noncommunity wells and nonpotable wells, or

(d) The requirements of Tables III and IV for potable high capacity, wastewater treatment plant and school wells.

Note: The requirements of Tables I-IV are based on the geologic formation encountered at or near the ground surface, the geologic formation in which the well terminates, the type of drilling method used, the depth to which the upper enlarged drillhole extends into bedrock, for bedrock wells, and the static water level for unconsolidated formation wells. For specific requirements relating to percussion method drilling and rotary method drilling, see ss. NR 812.13 and 812.14, respectively.