

# **WASTEWATER TREATMENT AND WATER SYSTEMS** **ORDINANCE NO. 33 FOR MEADE COUNTY**

## **ARTICLE 1. AUTHORITY, PURPOSE AND INTENT**

**SECTION 1.01. AUTHORITY:** The authority for this ordinance is promulgated by the South Dakota Centennial Environmental Protection Act of 1989 as codified in SDCL 7-18-20; and also through the authority given to counties by SDCL 7-8-33 and all existing health and safety statutes granting powers to regulate, investigate, and enforce provisions necessary to protect the welfare of county residents.

**SECTION 1.02. PURPOSE AND INTENT:** The improper design, location, installation, use, and maintenance of on-site wastewater treatment systems adversely affect the public health, safety and welfare. In order to promote the public health and welfare and to protect the waters of the state for public water supplies; propagation of fish, aquatic life and wildlife; recreational purposes; and agricultural, industrial, and other legitimate uses; Meade County provides these minimum standards and criteria for the design, location, installation, use and maintenance of on-site wastewater treatment systems along with the South Dakota Department of Natural Resources Article No. 74. It is the intent of these combined standards to ensure that wastewater entering on-site systems receives adequate treatment. These standards are not intended to cover systems treating industrial waste or other wastewater that may contain hazardous materials.

**SECTION 1.03. DISCLAIMER OF LIABILITY:** The degree of public and environmental protection offered by this ordinance is considered reasonable for regulatory purposes and is based on the best available scientific and engineering considerations. The application of this ordinance shall not create liability on the part of Meade County, or any officer or employee thereof.

### **SECTION 1.04. DEFINITIONS:**

**AWWA STANDARDS:** Standards developed by the American Water Works Association governing the use of materials, construction, and testing of sewer lines.

**ABSORPTION BED:** A subsurface absorption system which consists of excavations wider than 3 feet each containing a bed of clean aggregate and a system of absorption lines through which effluent may seep into the surrounding soils.

**ABSORPTION FIELD:** The soils through which wastewater from an absorption system percolates and is treated by soil bacteria.

**ABSORPTION LINE:** A perforated or open-jointed pipe that is installed in a covered trench or bed for the purpose of distributing wastewater to the surrounding soils.

**ABSORPTION SYSTEM:** A system which utilizes absorption lines in trenches or beds to distribute wastewater to adjacent soils in an absorption field.

**ADEQUATE WASTEWATER TREATMENT:** The treatment of wastewater in a manner which does not cause the pollution of any ground or surface waters nor create a public health or an odor problem.

**AEROBIC WASTEWATER TREATMENT SYSTEM:** A method of wastewater treatment utilizing the principle of oxidation in the biological decomposition of wastewater by either introducing air into the wastewater or allowing surface absorption of air into the wastewater. To be used for properties with soil mottling problems and commercial industrial uses.

**ARTICLE NO. 74:** South Dakota Administrative Rule 74 is administered by the South Dakota Department of Environment and Natural Resources (SDDENR) is the minimum statewide standards for on-site wastewater systems, (septic systems).

**BEDROCK:** "Rock that is solid, fractured, or unconsolidated, and considered to be a portion of a naturally occurring geologic rock formation that underlies the soil or other superficial unconsolidated material."

**BUILDING SEWER:** That part of a wastewater system extending from a building which carries the wastewater to a public or individual wastewater treatment system.

**CESSPOOL:** A covered underground receptacle which receives untreated domestic wastewater and permits the wastewater to seep into the surrounding soils.

**CENTRAL SEWER:** a wastewater disposal and treatment system, including treatment plant, pipes, storage tanks, and all other infrastructure necessary for the collection and treatment of wastewater. Such system must have at least fifteen service connections or regularly serve an average of at least twenty-five individuals.

**CENTRALIZED PRIVATE WATER SYSTEM:** shall be defined as a system serving potable water for 2 to 15 separately platted lots and less than 25 individuals, with no potential for increasing the number of lots. The system shall be constructed by licensed and/or certified contractors and shall meet all applicable state requirements including those outlined in South Dakota Administrative Rule 74:04:09:06 as administered by DENR. . Upon completion of the system, either a letter of certification by the licensed installer(s) or an inspection report from the State Plumbing Inspector shall be submitted to the offices of the Meade County Planning Official. The certification or inspection report must state that the system has been constructed to comply with current codes and standards and such certification will be filed at the offices of the Meade County Equalization and Planning. Such system is intended for medium density subdivisions (as defined in Meade County Ordinance No. 20).

**COMMUNITY WATER SYSTEM:** (CWS) is a system for the provision to the community/public of water for human consumption through pipes or other constructed conveyances. Such system must be designed for at least fifteen (15) service connections or regularly serve an average of at least twenty-five individuals it shall be considered a CWS and must meet the current EPA Safe Drinking Water Act. (May also be referred to as central water system)

**CONVENTIONAL ON-SITE WASTEWATER TREATMENT SYSTEM:** A treatment system composed of a septic tank followed by an absorption system.

**DENR:** South Dakota Department of Environment and Natural Resources

**DISTRIBUTION BOX:** A watertight chamber constructed of plastic or polymer (concrete boxes may be allowed with prior approval), from which wastewater is evenly distributed to the various portions of an absorption system.

**DOMESTIC WASTEWATER OR SEWAGE:** Waste other than industrial wastes derived from premises such as houses, trailer courts, commercial buildings, recreation areas and institutions.

**DOSING CHAMBER:** A tank that stores pretreated wastewater for periodic pressurized discharges to absorption systems.

**EFFLUENT:** The partially or completely treated liquid waste discharge from a wastewater treatment system.

**ENGINEER:** The duly designated engineer acting in behalf of the governing body.

**GRAY WATER:** The wastewater generated by water-using fixtures and appliances which do not discharge garbage or urinary or fecal wastes.

**GRAY WATER SYSTEM:** A commercial type wastewater system designed to recycle or treat wastes from sinks, lavatories, tubs, showers, washers, or other devices which discharge gray water. Residential greywater

**GREASE INTERCEPTOR:** An outdoor unit similar to a septic tank which is used to remove excessive amounts of grease and oils that may interfere with subsequent treatment of wastewater.

**HOLDING TANK:** A watertight tank with no outlet for disposal of effluent design to receive human domestic waste and shall be equipped with a high-water alarm positioned to allow at least three (3) days of storage after the alarm is activated. The minimum liquid holding capacity shall be 1,500 gallons, or the wastewater flow generated for a period of seven (7) days, whichever is greater. All other requirements for septic tanks shall be the same. A holding tank is a method "of last resort" for handling domestic waste, to be used mainly when a building site is not suitable for other means of wastewater treatment or permitted when there is temporary use of the property, (i.e. summer cabin, temporary campground etc.). Holding tanks may be used for greywater for residential dwellings.

**INSTALLER:** Any DENR certified person who is directly responsible for the supervision of the alteration, repair, construction, and installation of an individual or small on-site waste water system and has a contractor's license in Meade County.

**LIMITING SOIL CHARACTERISTICS:** Those soil attributes such as seasonal high water table, bedrock, or percolation rates faster than 1 minute per inch or slower than 120 minutes per inch which do not allow for proper soil treatment of effluent.

**LIFETIME MAINTENANCE AGREEMENT:** An agreement for a modified wastewater system that is signed by a qualified individual or company to maintain the system as long as it is in operation and is transferable upon the sale of the property which it is located.

**MOTTLING:** The spots or blotches of contrasting color or shades of color, usually red, brown, orange or gray, interspersed with the dominant background color of the soil. Mottles indicate a zone of alternating chemical activity caused by a seasonally fluctuating water table or saturated soil condition.

**MOUND SYSTEM:** A system where the soil absorption area is built within a mound raised above the ground line to overcome limits imposed by proximity to seasonal high water table or bedrock, or by rapidly or slowly permeable soils.

**ON-SITE WASTEWATER TREATMENT SYSTEM:** A system used to contain or treat wastewater on or near the location where the wastewater is generated, including sewers, septic tanks, absorption fields, mound systems, seepage pits, vault privies, holding tanks, subsurface sand filters, gray water systems, dosing chambers and related equipment.

**PACKAGE TREATMENT PLANTS:** Small or scaled-down versions of municipal wastewater treatment works which are generally assembled and shipped as complete mechanical units by the manufacturer.

**PERCOLATION TEST:** A soil test at the depth of a proposed absorption system to determine the water absorption capability of the soil, the results of which are normally expressed as a rate at which one inch of water is absorbed over an interval of time. There must be a minimum of 3 borings per soil absorption site. **Percolation tests need to be completed by a State Certified Installer.**

**PUBLIC WATER SYSTEM:** (PWS) is a system for the provision to the public of water for human

consumption through pipes or other constructed conveyances. Such system must be designed for fifteen or more service connections (1 per platted lot) or regularly serve an average of at least twenty-five individuals it shall be considered a PWS and must meet the 1996 EPA Safe Drinking Water Act.

**SEPTIC TANK:** A watertight, accessible, covered receptacle which receives domestic waste water from a building or facility sewer, allows solids to settle from the liquid, provides digestion for organic solids, stores digested solids through a period of retention, and allows clarified liquid to discharge to additional treatment works for final treatment and dispersal.

**SEWAGE LAGOON:** A man-made (anthropogenic) body of water in which waste is consumed by bacteria, used most frequently with other waste-treatment processes for residential or commercial applications. Properties with agricultural related activities are exempt.

**SEWER PERMIT:** the instrument to be issued by the Planning Official to permit the construction, fabrication, alteration, improvement, of any wastewater system to insure compliance with adopted codes, procedures and restrictions pertaining to this Subdivision Ordinance and those of South Dakota Department of Environment and Natural Resources or other applicable state laws.

**SHOP:** Shop; per this ordinance would include a garage or pole barn with a bathroom with no more than 1 toilet, 1 sink and 1 shower used for personnel use only with it's own septic system.

**SOIL DESCRIPTION:** Soil profile descriptions shall be written for all borings. The thickness in inches of the different soil horizons observed shall be indicated. Horizons shall be differentiated on the basis of color, texture, soil mottles or bedrock. Depths shall be measured from the ground surface.

**TIME OF SALE INSPECTION:** All sellers of properties with on-site wastewater systems (septic systems), , must have their on-site wastewater system inspected by a South Dakota DENR Certified Wastewater Installer, licensed with Meade County and the tank must be pumped at or within 6 months prior to the time of sale. Properties classified for property tax purposes as agricultural land and which are intended for primarily agricultural use, are exempt from this requirement.

**WASTEWATER SYSTEMS:** Systems designed and built for the purpose of treating and disposing of wastewater.

**Central Wastewater Systems:** (Central Sewer) A wastewater disposal and treatment system, including treatment plant, storage tanks, and other infrastructure necessary for the collection and treatment of wastewater. Such systems shall meet the same testing requirements as surface water discharge system as outlined by DENR.

**On-site Wastewater System:** A system designed to contain, distribute, or treat wastewater on or near the location where the wastewater is generated, including sewers, septic tanks, absorption fields. NODAK systems, seepage pits, vault privies, holding tanks, subsurface sand filters, greywater systems, pumping stations, dosing chambers and related equipment shall be allowed.

**Individual on-site wastewater system:** A system or facility for treating, neutralizing, stabilizing, or dispersing waste from one source. **A minimum requirement of no less than 600 square feet of trench bottom area on all wastewater drainfields or absorption fields and a septic tank size of at least 1,500 gallons.** Under no circumstances shall metal tanks be used. Only a certified wastewater installer, as defined by the Department of Environment and Natural Resources, shall perform the percolation testing and wastewater system installations. All material used must meet or exceed DENR standards. A trace wire to aid in the ease of system location shall be installed on all onsite wastewater systems. Such trace wire must commence from the exit point of the building structure and run concurrent with the length of the system and

end at the point where the lateral is capped or otherwise looped.

**Alternative Wastewater Systems:** These systems must be installed following an engineer designed approval by DENR and the Meade County Planning Board. The engineered plans and percolation results must be submitted to the Meade County Equalization and Planning Department prior to any issuance of a building permit.

**Commercial Use Modified Wastewater System:** Modified wastewater systems include the installation of an Individual Wastewater Treatment System (**Aerobic Treatment Units, ATU's, such as AdvanTex, Aqua Safe, Jet, Presby, or similar technology.**) along with a septic tank and absorption bed adequate enough to meet the design flows and approved by the South Dakota DENR and Meade County Equalization and Planning. **Lifetime maintenance agreement must accompany the installation of all Modified Wastewater Systems.**

**Shop on-site wastewater system:** For a separate shop on-site wastewater system only, as described in this ordinance that has a private bathroom containing 1 toilet, 1 sink and 1 shower used for personnel use, the South Dakota DENR minimum requirements may be applied including a minimum septic tank size of 1,000 gallons with at least a minimum sized absorption bed sized according to South Dakota DENR Article No. 74 rules.

## **ARTICLE 2. GENERAL PROVISIONS**

**SECTION 2.01. PERMIT REQUIRED:** No on-site wastewater treatment system or any other system for the treatment or disposal of human excreta shall be installed, constructed, changed within the unincorporated area of Meade County without a permit issued by Meade County Planning Official in conformance with this ordinance.

- a) State Approval - Where approval is also required by the State Department of Environment and Natural Resources for all commercial and industrial applications and for all mound and any experimental wastewater treatment systems in accordance with South Dakota DENR Article No. 74 Administrative Rule.
- b) All on-site wastewater systems installed within Meade County's jurisdiction will follow South Dakota DENR Article No. 74 Administrative Rule at minimum plus additional requirements of this ordinance.

### **SECTION 2.02. INSPECTIONS REQUIRED AND RIGHT OF ENTRY:**

**1. Inspections** - The installer of an on-site wastewater treatment system shall ensure that all below ground components are inspected by the Equalization and Planning Department Inspector prior to backfilling. Inspection of the installation, equipment, and operation of an on-site wastewater treatment system may be made at any time by the inspector.

**2. Right of Entry** - Whenever necessary for the purposes of inspection or to enforce any of the provisions of this ordinance, or whenever a Planning Official has reasonable cause to believe that there exists upon any premises a violation of this ordinance or any other county ordinance dealing with the protection of state waters, the abatement of nuisances or the regulation of solid waste, the Planning Official may enter such premises at all reasonable times to inspect the same, provided that if such premises be occupied, the official shall first present proper credentials at a reasonable time, as is necessary to the permittee; then the Planning Official is empowered to issue the permit conditional upon state approval.

- a) **Permit Applications** - The installer of a wastewater system or their representative shall complete an application within the Equalization and Planning Department in order to determine compliance of the proposed system with the provisions of this ordinance. All

appropriate plans and specifications shall be submitted with the application and shall become a part of the permit. The signature of the installer or the property owner shall be required on the application to verify the accuracy of the information and that the system will be installed in accordance with the permit. The Planning Official shall have the authority to require that a staff inspector review the soil boring hole and the percolation test holes prior to the issuance of a permit if deemed necessary.

- b) **Fees:** The application shall become a valid permit upon the signature of the Planning Official and the payment by the applicant of a fee payable to the Meade County as determined and set forth by the Meade County Commission by resolution for:
- Installation of a holding tank only
  - Extension of existing drainfield
  - New or replacement system
  - Engineered system

The fee for any permit obtained after construction or repair of a system has commenced shall be double the normal fee unless previous arrangements have been made with the Equalization and Planning Department.

3. **Septic System Plan required** - before a permit will be issued: The Septic System Plan shall contain the following information, which is to be submitted to the County Planning Official:

- a. Location and capacity of all septic tanks proposed.
- b. Soil types for each percolation test hole.
- c. Completion of a eight (8) foot soil boring describing the soil continuously throughout the soil boring.
- d. Location of percolation test holes and results of percolation tests.
- e. Location of absorption field and minimum length of absorption trenches, seepage bed or mound system (if applicable).
- f. Direction of ground slope.

**3. Expiration Date** - Every on-site wastewater treatment system permit issued under the provisions of this ordinance shall expire by limitation and become null and void if the construction authorized by such permit is not completed within 12 months from the date of the permit. After that time a new permit will be required before the construction of any wastewater treatment system can be commenced.

**4. On-site inspections** are required of all On-Site Wastewater and sewer systems installed in Meade County. On-site Inspections will be required after the system is installed and prior to any backfilling of the septic tank, holding tank, vaulted privy and the absorption system. Additional Inspections may be required as deemed necessary by Meade County Planning Official at an additional cost equal to the septic permit fee.

**5. Distribution Boxes** are required for all standard absorption trench systems, (drain fields), to provide an even distribution throughout the drainfield. The distribution box will be installed per South Dakota DENR Article No. 74:53.

**6. Time of Sale Inspections:** All sellers of properties with on-site wastewater systems (septic systems), must have their on-site wastewater system inspected including pumping of the tank. An inspection is required within 6 months before or when the property is sold or there is a change of use of a facility. Inspections must be made by a South Dakota Certified Wastewater Installer that is also licensed with Meade County. A written inspection report must be completed by the inspector and a copy must be filed with the Equalization & Planning Department. Deficiencies found with the on-site wastewater systems must be repaired by the seller. Properties classified for property tax purposes as agricultural land and which are intended for primarily agricultural

use, are exempt from this requirement.

**7. Standard Absorption Trenches** and Absorption Beds must be covered with Geotextile or landscape fabric; untreated building paper will not be accepted in Meade County.

**8. All spliced or repaired wire connections** in the tracer wire system shall be made using a Wing Nut Wire Connector (for two to four number fourteen wires and made waterproof using an approved buried service wire closure, gel closure or equal.

**SECTION 2.03. ON-SITE SYSTEMS PROHIBITED WHEN PUBLIC SYSTEMS AVAILABLE**

No person may construct, install, or operate an on-site wastewater treatment system where a public wastewater system is available. A public system is considered available to premises under the following circumstances:

1. The structure or wastewater system is located within the jurisdictional boundaries of a sanitary district,
2. The sewerage collection system of the public system exists within 400 feet of the building, and
3. The sanitary district or municipality requests to provide service to the premises.
4. Section 5.01 also applies.

**SECTION 2.04. TYPES OF WASTEWATER TREATMENT:** An individual or on-site wastewater treatment system may use any of the following types of treatment:

1. A conventional system of a septic tank and an absorption system.
2. An aerobic treatment unit utilizing an aeration and sedimentation process along with an absorption system or similar advanced treatment system.
3. A septic tank with a mound-type absorption/transpiration system.
4. A holding tank, only to be used when no other wastewater system will work, to be determined by Meade County Planning Official.
5. A septic tank and gray water system.

All wastewater must pass through a primary treatment such as a septic tank, sedimentation tank, or aeration system prior to discharge to an absorption system.

**SECTION 2.05 Commercial Use Modified Wastewater System:** Modified wastewater systems include the installation of an Individual Wastewater Treatment System (Aerobic Treatment Units, ATU's, like Aqua Safe, or other advanced treatment systems like AdvanTex, Presby etc.) along with a septic tank and absorption bed adequate enough to meet the design flows and approved by the South Dakota DENR and Meade County Equalization and Planning. Lifetime maintenance agreement must accompany the installation of all Commercial Use Modified Wastewater Systems and a copy of said agreement must be submitted to Meade County Equalization and Planning Department before the system is finally approved by Meade County. All new commercial and industrial facilities, (unless they have a one to two bathrooms only), must have a Modified Wastewater System installed including apartment buildings, condos, townhouses with greater than 4 (four) units, restaurants, C-store gas stations, mechanics shops or any other commercial or industrial facility. Restaurants or food distribution facilities and mechanic shops are required to have oil and grease trap.

**SECTION 2.06. DRAINAGE NOT TO ENTER WASTEWATER SYSTEMS:** Drainage and runoff from footings, roofs, and ground-water sump pumps shall not be allowed to enter an on-site wastewater treatment system. Absorption systems shall be located and designed so that surface runoff from drainage ways will not flow into or over the system.

A. Drainage from a Garage Floor Drain shall not enter a wastewater absorption area: Any drainage from a floor drain in a garage or an accessory building shall not be discharged into any wastewater treatment system that leads to an absorption field or seepage pit. All such floor drains must either be approved and connected to a central sewer system, or drained into a holding tank and the contents pumped for proper disposal at a wastewater treatment plant.

Any floor drain that discharges into a central sewer system or a holding tank shall also be connected to a plumbing vent. The vent stack pipe shall be a minimum diameter of 1.25 inches and shall extend through the roof flashing and terminate vertically not less than 6 inches above the roof nor less than one foot from any vertical surface. Further, each vent pipe shall terminate not less than ten feet from, or at least three feet above, any openable window, door, opening, air intake, or vent shaft.

**SECTION 2.07. GRAY WATER SYSTEMS:** A commercial type gray water system shall be designed in accordance with the following criteria:

1. Design of the system for individual residences shall be based on a minimum gray water flow of 25 gallons per person per day. Three days retention time shall be provided in each gray water tank. For other facilities, the design flow shall be specified on a case by case basis by a Planning Official. An electronic Alarm System must also be installed in accordance with South Dakota DENR rules and regulations.

2. Gray water tanks shall conform to the requirements or the South Dakota DENR for septic tanks.

3. Effluent from gray water systems may be recycled for toilet use, conveyed to absorption fields, mounds, or seepage pits, or for irrigation of lawns and areas not intended for food production. Percolation tests and site evaluations shall be conducted and the minimum size of the absorption area shall be in accordance with Section 3.06.

4. Residential dwelling may separate grey water to a holding tank. Grey water may be used to irrigate lawns during non-winter months (no frost).

5. All grey water and holding tanks must have an electronic alarm system.

**SECTION 2.19 PLUMBING AND WELL CONSTRUCTION CODES:** The design and location of, and the materials for use in building sewers and on-site systems shall comply with all applicable portions of both the South Dakota State Plumbing Code (ARSD 20:54) and the Well Construction Standard (ARSD 74:02:04).

**SECTION 2.20 ILLEGAL WASTEWATER DISCHARGES AND SURFACING WASTEWATER**

1. There shall be no pumping of wastewater from the septic tank to the surface including discharging wastewater across the property, into ditches or any water feature etc.
2. Wastewater that surfaces from a drainfield or absorption bed requires the wastewater system to be immediately repaired or replaced. Repeated wastewater surfacing is not permitted.

## **ARTICLE 3. SITE EVALUATION AND REQUIREMENTS**

**SECTION 3.01. EVALUATION FACTORS:** All proposed sites for on-site sewage treatment systems shall be evaluated as to:

1. Depth to the seasonal high water table, bedrock, or other limiting soil characteristics.
2. Soil description, texture, color and percolation rate.
3. Ground slope. (Ground slope greater than 20% will need embankment excavation and other requirements per the International Private Sewage Disposal Code).
4. Existence of lowlands, streams, lakes or rock outcrops.
5. All legal setbacks from buildings, property lines, water supply wells and lines, or utility lines.

**SECTION 3.02. SEPARATION FROM LIMITING SOIL CHARACTERISTICS:** There shall be at least four feet of soil between the bottom of an absorption bed or trench, seepage pit bottom, the lowest construction joint on a septic tank or any other component of a subsurface absorption system and a limiting soil characteristic such as a seasonal high water table, ground water, bedrock formation, or soil layer with a percolation rate faster than or equal to 5 or slower than 60 minutes per inch. The presence of a seasonal high water table shall be determined by either the presence of saturated conditions, the presence of 10 percent or more of mottling in the soil profile, or soil colors with a chroma of 2 or less whichever is higher in the profile. When this separation cannot be maintained with a conventional system, an alternative system such as an unconventional system or a mound system is required.

**SECTION 3.03. SOIL CONDITIONS:** The soil textures and profile shall be evaluated by making at least one boring or excavation to a depth at least four feet deeper than the bottom of the planned system or until bedrock or the seasonal high water table is encountered, whichever is less. The soil profile characteristics (colors and textures) and the test hole location must be noted on the permit application forms. Absorption systems shall not be constructed in soils rated as having severe or very severe limitations for septic systems by the Soil Conservation Service, U.S. Department of Agriculture, unless that limitation is not present as shown and confirmed by the field investigation.

**SECTION 3.04. SOIL TEXTURES:** Soil texture refers to the relative proportions of the various soil grain size groups in a mass of soil. Specifically, it refers to the proportions of sand, clay and silt. These sized groups of particles are referred to as soil separates and are described in Table 3-A.

Table 3-A

Size Range (in mm)
Very Coarse Sand 2.00 - 1.00
Coarse Sand 1.00 - 0.50
Sands Medium Sand 0.50 - 0.25
Fine Sand 0.25 - 0.10
Very Fine Sand 0.10 - 0.05
Silts 0.05 - 0.002
Clays < 0.002

**SECTION 3.05. PERCOLATION TEST REQUIRED:** The installer of an on-site wastewater treatment system shall ensure that a percolation test is conducted in accordance with South Dakota DENR Article No. 74 Administrative Rule. Perc Tests shall be recorded on Meade County's perc test form.

Perc. Rate Soil Sq. Ft. per in m.p.i. Estimated based on soil type

1 to 5.9 Sand or Gravel  
6 to 15.9 Sandy Loam  
16 to 30.9 Loam  
31 to 45.9 Silt Loam  
46 to 55.9 Clay Loam  
56 to 60+ Clay

**SECTION 3.06 GROUND SLOPE:** The average percentage and direction of ground slope on the site shall be recorded on the Meade County Percolation Test Forms.

NOTE: Clean sand can easily be determined by using the fruit jar test. Place exactly 2 inches of sand in the bottom of a quart jar and fill the jar 3/4 full of water. Place the cover on the jar and shake the contents vigorously. Allow the jar to stand for about an hour and observe if there is a layer of silt or clay on the top of the sand layers. If the layer of silt or clay particles is wider than 1/8 inch thick, the sand is likely not suitable for use in mound construction.

**SECTION 3.09. RESTRICT TRAFFIC ON ABSORPTION AREA:** All traffic shall be kept at a minimum on or over any absorption area before, during and after construction in order to avoid soil compaction. Absorption beds or areas must never be installed or must never exist under any impermeable surface.

**SECTION 3.10. INSTALLATION DURING ADVERSE WEATHER CONDITIONS:** On-Site Wastewater Systems shall not be installed during any rain event to prevent unwanted compaction in the absorption trench without the approval of a Meade County Planning Official.

**SECTION 3.11. ABSORPTION TRENCH SMEARING:** Where trench smear exists during the excavation of any absorption trench, the sides of the absorption trench shall be scarified or raked with a garden rake prior to the installation of any stone or pipe, including the bottom of the absorption trench.

**SECTION 3.12. TRACER WIRE SYSTEM REQUIRED:** In order to aid in the location of below ground wastewater system components, all new or replacement septic systems shall have a tracer wire system installed. All tracer wire shall be No. 12 solid single strand type TW or THHN, or approved equivalent. The tracer wire shall be accessible at the tank clean out and shall extend along the sewer line from the house to the tank, around the septic tank access hole, and from the tank through all system trenches or around the perimeter of any infiltration bed. The tracer wire in all trenches shall be placed above the landscape fabric which is installed above the pipe(s).

In order to prevent corrosion all buried ends of tracer wires and all wire splices shall be sealed with an approved direct bury splice kit or gel type connector.

All tracer wire installation, including all splices, shall be inspected by the Meade County prior to backfilling. The contractor is responsible for ensuring that the tracer wire system has conductivity.

**SECTION 3.13. LANDSCAPE FABRIC REQUIRED:** On all absorption trenches, landscape fabric must be placed above the pipe(s) (and if applicable installed stone) before the trench can be backfilled. (Note: The tracer wire must be installed above the landscape fabric).

**SECTION 3.14. ADDITIONAL REQUIREMENTS:** 90 degree elbows will not be allowed on any On-Site Wastewater Systems within the unincorporated boundaries of Meade County, only sweeping 90 degree bends or 45 degree bends will be permitted if a 90 degree bend is required.

## **ARTICLE 4. SYSTEM MAINTENANCE**

**SECTION 4.01. PUMPING SEPTIC TANKS:** The owner of a septic tank or the owner's agent should regularly inspect and measure the accumulations of sludge and scum in the tank (Figure

8-1). This recommended inspection should be performed at least once every three years. The tank shall be pumped whenever the top of the sludge layer is less than 12 inches below the bottom of the outlet baffle or whenever the bottom of the scum layer is less than three inches above the bottom of the outlet baffle. When a garbage disposal is used, the septic tank may need to be pumped at least once per year.

**SECTION 4.02. PROHIBITED SUBSTANCES:** Substances not commonly used for household cleaning, including but not limited to solvents, pesticides, flammables, photo finishing chemicals, or dry cleaning chemicals, must not be discharged into the system.

## **ARTICLE 5. CENTRAL SEWER SYSTEMS**

**SECTION 5.01. SEWERS** Sanitary sewers shall be installed in each subdivision of 30 lots or more where a public sanitary sewer is within 400 feet of the subdivision, except where restricted by the Sanitation District or limited by topography or easement. Subdivisions less than 30 lots need to connect to public sanitary sewer if it is within 400 feet of the subdivision, except again where restricted by the Sanitation District, limited by topography, easement or the capacity of the receiving central sewer system.

1. Subdivisions or developments in Meade County intended for multiple housing units, public buildings, commercial enterprises, or industrial construction shall have an approved plan for a central waste disposal system, with a recommended approval from the Planning Board and approval of the Commission. All plans for central disposal systems are the responsibility of the developer and/or subdivider and will conform to the requirements of the Planning Board and/or the Commission, and in general comply with all Federal, and State regulations. The owner's engineer for all central waste disposal systems must furnish a detailed operation manual. The Planning Board may consider requests for variance.
  - a. All central sewer systems to include: lagoons, Nodak systems, advanced treatment systems or other approved disposal systems for high density housing, commercial, industrial or public areas shall be fenced with six (6) foot chain-link fencing with climb guard.
  - b. All central wastewater discharge shall meet or exceed the requirements set forth by the South Dakota Dept of Environment and Natural Resources and those imposed by Meade County as described in Section ARSD 74:52, and must be design by and the installation must be supervised by a Professional Engineer.
  - c. The central wastewater system must be bonded up to 1-½ times of its original cost for a period not to exceed 3 years. Such bond is held to ensure that system meets the minimum requirements and is of sufficient size to handle the demand. The bond or irrevocable letter of credit must be approved by a Meade County Planning Official and must be addressed to Meade County, to be held by Meade County until the project is completed and accepted by Meade County. Cost breakdowns are required to be submitted with the bond or irrevocable letter of credit.
  - d. Meade County Planning Board has the ultimate determination of whether a proposed central wastewater system conforms with local engineering issues including, but not limited to, local topography and watershed issues.

## **ARTICLE 6. WATER SYSTEMS**

**SECTION 6.01 DESIGN STANDARDS FOR CENTRALIZED WATER SYSTEMS** serving less than 15 lots or 25 individuals:

**1. Well production:** shall be capable of producing 5 gallons per minute (GPM) or more per residential or building unit. (as certified by S.D. licensed well driller)

**2. Pump capacity:** shall be capable of producing no less than 5 GPM per residential or building unit. If the pump and well capacity is less than 5 gallons per minute (gpm), the developer shall provide a water storage system in accordance with this ordinance with a properly designed booster pump and pressure tank.

**3. Pressure system:** shall include a pressure tank switches operating at a minimum pressure of 30 pounds per square inch (PSI) up to a maximum pressure of 80 PSI. Pressure tank or tanks shall be sized to provide a cycle time of no less than one minute.

**4. Distribution piping for a Community Well (Centralized Water System):**

- a. Four lots or less shall have a minimum watermain piping size of 2" diameter.
- b. Five lots to twelve lots shall have a minimum piping size of 4" diameter.
- c. Greater than 12 lots shall have a minimum watermain piping size of 6" diameter and greater depending on the design criteria for the water system piping.
- d. All dead end watermain piping must have a minimum of a 2" flushing hydrant on the end of the line.
- e. All service lines shall be 1" diameter or larger.

**5. Water Storage:** In instances where the well is not capable of producing the required GPM as outlined, water storage shall be required:

- a. Storage requirements shall be calculated at 400 gallons per household per day with a minimum of 3-day storage. (400 gal. X 3 days).
- c. If the water storage is elevated as gravity fed system, the elevations must be of such as to meet the minimum and maximum PSI as outlined above. However, in no circumstances shall the water pressure be less than 20 PSI under normal operating conditions. All distribution piping shall be 6" or larger. Service lines shall be 1" or larger. Provisions to handle excess pressure with pressure reducing valves, and minimum pressure may be compensated by use of individual booster pumps.
- d. If booster pumps are used in conjunction with a storage facility, it will not negate other provisions outlined above.

**6. Storage for fire prevention without a Public Water Supply System:**

- a. Medium Density, Low Density, Rural and Commercial Subdivisions (as described in Meade County Ordinance No. 20) that have a community well that pumps less than 100 gallons per minute must provide a cistern(s) with a float control switches to turn the well pump on at the low water level, which must be placed 2.0' (feet) above the bottom of the cistern and to turn off the pump at 1.0' below the top of the cistern. A dry hydrant then must be placed to supply water to local fire department fire fighting vehicles for fires within the subdivision. See Section 6.01-6g. (All types of High Density and Modified High Density Subdivisions, described in Meade County Ordinance No. 20, must have a water

system and fire hydrants with the pressure and flow capacity to meet fire fighting demands per NFPA, National Fire Protection Association).

(b) Fire fighting cisterns and dry hydrants must be placed next to the community well for quicker recovery of the supply water.

(c) Backflow Preventer must be installed to prevent water being stored in the cistern from flowing back into the drinking water supply system.

(d) Dry Hydrants will have a vertical lift no greater than 14 feet. The hose connection must be positioned 2 feet above the ground surface so it is accessible year-round by fire fighting equipment, even in snow conditions. The size of the hose connection will be a 4 -1/2 inch male connection, 6 threads per inch, right hand thread or per the local fire department. The dry hydrant must be aluminum with a aluminum cap. The vertical length of pipe must extend down to a depth below frost line but no deeper than 12 feet below the ground surface. The intake line for the dry hydrant must be secured 2 feet up off the bottom to avoid clogging with mud and constructed in a manner not to create a vortex. The intake must be covered with a screen to keep debris out of the pipe.

(e) Access to the dry hydrant must have a minimum width of 12 feet and a maximum grade of 4 percent. One sign of a minimum of 4 sq/ft will be placed next to the dry hydrant stating "Use for Fire Protection Only", "This is not a potable water source".

(f) An impact barrier constructed of partially buried 6" (inch) steel posts filled with concrete must be placed 24" to 30" (inches) in front of the dry hydrant to prevent a vehicle from destroying the dry hydrant in a traveled area. One steel post painted red that will extend 3' above the dry hydrant must be placed so the dry hydrant can be spotted in snow covered conditions.

(g) Subdivision fire fighting cistern and dry hydrant system requirements are as follows:

1) Subdivisions of 6 lots to 15 lots, a 10,000 gallon storage tank or greater and dry hydrant system.

2) Subdivisions of 16 lots to 45 lots, a 20,000 gallon storage tank or greater and dry hydrant systems.

3) Subdivisions with greater than 45 lots will require an additional 10,000 gallon storage tank or greater and dry hydrant system for every 15 lots or fraction thereof.

4) Lot splits within an existing subdivision will be applied to the requirements above and will be counted as an additional lot(s) to the subdivision. It will be the responsibility of the property owner creating the lot split to comply with these requirements.

(h) Dry hydrants may be placed in a natural body of water such as a creek, pond or lake in lieu of a cistern as long as all permits and/or approvals are obtained from the South Dakota DENR and any applicable local, state or federal agency, and copies of the permits or approval are submitted to Meade County Planning Official. Also, the dry hydrant must be easily accessible to fire fighting vehicles; all other applicable rules of this section shall be applied.

(i) Hydrant connections may be placed on large aboveground storage tanks use to service a subdivision if backflow preventer and correct connection fittings are placed for the local fire departments in lieu of a cistern system, as long as the capacities meet or exceed the requirements of this ordinance.

## **7. Other Requirements:**

- a. Well and water distribution systems must be certified by a properly licensed individual active in this field of work.
- b. A detailed water system capacity plan will be filed with the Planning Official showing the ability to achieve and maintain compliance with applicable drinking water standard with capacity
- c. Technical, the physical and operational ability to meet current SDDENR standards.
- d. Managerial guidelines indicating the ability to maintain compliance.
- e. Financial, the ability to acquire and manage sufficient financial resources to allow the system to achieve and maintain SDDENR compliance.
- f. A detailed operations manual must be furnished by the owner's engineer for all community water systems to include design and operation requirements.
- g. All service lines and water mains shall be entrenched to maintain a depth of six- (6) feet buried.
- h. Curb stops and metal curb boxes shall be placed at each lot service line.
- i. Fire hydrants shall be placed at no more than five hundred (500) foot intervals in high-density subdivisions (definition of subdivisions described in Meade County Ordinance No. 20) and where water supply and pressure requirements are met, (250 gpm @ 100 psi).
- j. All required fire hydrants in all appropriate subdivision densities shall be accessibly located and reviewed by the appropriate fire departments and subject to the approval of the Meade County Planning Official.
- k. New or repaired potable water systems shall be disinfected prior to use according to the South Dakota State Plumbing Code.
- l. Water storage capacities will comply with the National Board of Fire Underwriters or the American Insurance Association, and water sources will comply with all requirements or the South Dakota Department of Environment and Natural Resources.

## **8. Fire Hydrants, valves and flushing hydrants:**

- a. All fire hydrants, if required, in subdivisions shall be accessibly located. The fire district in which the proposed subdivision is to be located shall be notified by the developer as to the location and specifications of all hydrants within the subdivision. Such plans are subject to fire department review and subject to the approval of the Meade County Planning Official. Fire hydrants shall be supplied by not less than a 6-inch diameter water main.
- b. A gate valve shall be provided on each branch line to fire hydrant assemblies and shall be located within 18 inches of the hydrant branch tee. When a hydrant is located on the opposite side of the street from the water main, or in an easement beyond the standard right-of-way of the street or water main, a second valve shall be installed within 3 feet of the hydrant boot or base.
- c. The minimum fire flow for fire hydrants shall be in accordance with the local fire department and per NFPA, (National Fire Protection Association)
- e. Materials:  
All fire hydrants shall be dry barrel type conforming to AWWA C502, be

listed by Underwriters Laboratory, Inc. and have Factory Mutual Research approval. All hose and steamer connections shall include caps attached to the body with a 2/0 minimum twist link, non-kinking, heavy duty machine chain. All caps shall be greased with the manufacturer's specified lubricant and only be hand tight. Caps shall include threaded connections conforming to National Standard Threads. Hydrants shall include a mechanical joint shoe, 1-1/2" pentagon operating nut, painted bronze to bronze seating, shall include a ground breakaway flange and rod coupling and drain in boot to drain barrel when hydrant seat valve is closed.

- f. The hydrant bonnet shall be designed with a sealed oil and grease reservoir with O- ring seals and a Teflon thrust bearing. Operating nut shall open left or counterclockwise and be so marked.
- g. Fire hydrants shall be factory coated as follows: (1) barrel and pipe shall have one coat primer gray oil-based and two coats red epoxy enamel (unless directed differently by the local fire department); (2) caps shall have one coat primer gray oil-based and two coats red epoxy enamel (unless directed differently by the local fire department); and (3) bonnets and caps shall have one coat primer gray oil-based paint only.
- h. Location of Flushing Hydrants: Flushing Hydrants shall be installed at the end of all dead-end water lines.
- i. Installation: Installation of fire hydrants.
  - 1. All fire hydrants shall be installed plumb with permanent surrounding grade at the "bury line" cast on the hydrant; grade shall not be "dug out" or mounded around the hydrant to satisfy this requirement. Fire hydrants which have been installed must be tagged "OUT OF SERVICE" until such time as the water main to which connected is disinfected and connected to the active water system. Oil or grease reservoirs in the hydrant bonnet shall be refilled after installation and adjustment.
- k. A hydrant drainage test shall be successfully performed by the Contractor on each fire hydrant installed as specified by AWWA Manual M-17.

## **SECTION 6.02 WATER MAIN TRACER WIRE AND CAUTION/WARNING TAPE**

### **1. Tracer Wire and Caution/Warning Tape**

(a) Tracer wire shall be installed on all non-ductile iron water mains, hydrant laterals and water services except where such water service pipe is of copper material. The wire shall be installed in such a manner as to be able to properly trace all water mains, hydrant laterals and water services without loss or deterioration of signal or without the transmitted signal migrating off the tracer wire.

(b) Tracing wire shall be number 14 gauge (AWG), single or seven strands, insulated copper wire with insulation specifically manufactured for direct burial applications.

(c) All tracer wire welds onto existing cast or ductile iron pipe shall be completely sealed with the use of a mastic type sealer specifically manufactured for underground use. The mastic shall be applied in a thick coat a minimum of ¼ inch thick and shall be protected from contamination by the backfill material with the use of a plastic membrane. As an alternative,

(d) All spliced or repaired wire connections in the tracer wire system shall be made using a Wing Nut Wire Connector (for two to four number ten wires), or approved equivalent, and made waterproof using an approved buried service wire closure. The buried service wire closure shall be Frame Gel Closure or equivalent.

(e) Approximately 2.0' (feet) above the utility, warning/caution tape stating "buried utility" or similar, must be placed to prevent future accidental construction damage and unnecessary interruption of services.

## **2. Spliced Connections**

(a) Spliced connections between the main line tracer wire and branch connection tracer wire shall only be allowed at watermain tees, crosses or at copper water services or where a water service is replaced with a non iron or non copper material. The water service tracer wire shall be a single tracer wire properly spliced to the main line tracer wire.

**SECTION 6.03 PLUMBING AND WELL CONSTRUCTION CODES:** The design and location of, and the materials for use in building sewers and on-site systems shall comply with all applicable portions of both the South Dakota State Plumbing Code (ARSD 20:54) and the Well Construction Standard (ARSD 74:02:04).

# **ARTICLE 7. VARIANCES**

## **SECTION 7.01. VARIANCE PROCEDURE**

1. The Commission shall hear and decide appeals and requests for variances from the terms of this ordinance. The board shall base its determination on the recommendation of the Planning Board, technical justifications, and has the right to attach such conditions to variances as it deems necessary to further the purposes and objectives of this ordinance. All variances must first go through the Planning Board who will either recommend approval or deny approval to the Commission.

### **A. Conditions**

In granting variances, modifications, and approvals the Commission may require such conditions as will, in its judgment, secure substantially the objectives or the standards or requirements so varied, modified, or approved. In granting any variance, the Commission may prescribe conditions that it deems necessary to, or desirable for the public interest. These conditions may include, without being limited to personal, surety, performance, or maintenance bonds, affidavits, covenants, or other legal instruments.

In making its findings, as required herein, the Commission shall take into account the nature of the proposed use of land and the existing use of land in the vicinity and the probable effect upon living conditions in the vicinity.

That the variance is necessary for the preservation and enjoyment of a substantial property right of the petitioner;

That there are special circumstances or conditions affecting said property such that the strict application of the provisions of this Ordinance would deprive the applicant of the reasonable use of his/her land

B. Application Required

Applications for any such variance shall be submitted in writing by the property owner or developer at the time when the application is filed for consideration by first the Planning Board and then by the Commission stating fully and clearly all facts relied upon by the petitioner and shall be supplemented with maps, plans or other additional data which may aid the Commission in the analysis of the proposed project. The plans for the proposed project shall include such covenants, restrictions other legal provisions necessary to guarantee the full achievement of the proposed plan.

Applications for variance shall be considered by the Commission and will render its decision at the hearing or no later than thirty (30) days after the hearing at which the preliminary package and request for a variance was submitted. All variances must be approved by the Commission.

C. Requirements for granting Variance

A. The Commission shall have the authority to give a Variance, the person claiming the Variance has the burden of showing:

1. That the granting of the Variance will not be contrary to the public interest;
2. That the literal enforcement of the Ordinance will result in unnecessary hardship;
3. That by granting the Variance contrary to the provisions of the Ordinance the spirit of the ordinance will be observed; and
4. That by granting the Variance, justice will be done.

**SECTION 7.02. PENALTIES FOR VIOLATION**

1. The provisions of this ordinance shall be administered and enforced by a County Ordinance Enforcement Officer appointed by the Meade County Commission, who shall have the power to make inspections of signs or billboards or premises necessary to carry out his duties in enforcement of the ordinance.
2. The County Ordinance Enforcement Officer shall have the power to appoint deputies to assist in his duties, such deputies to be approved by the Meade County Commission;
3. The County Ordinance Enforcement Officer, and any deputies appointed, shall have authority to issue an ordinance violation notice (ticket) which shall specify, in addition to other information as discretion of such officer, the following
  - A. the date of violation;
  - B. the nature of violation;
  - C. the amount of penalty or fine associated with the violation;
  - D. the date the individual is required to appear in court unless the designated fine is paid prior thereto; and
  - E. the signature, or noted refusal to sign, of the violator.
4. An ordinance violation notice issued under authority of this ordinance shall be enforced as a civil proceeding before a magistrate court.

**SECTION 7.03. PENALTY FOR VIOLATION OF THIS ORDINANCE:**

Any person that violates any provision of this ordinance may be punished pursuant to SDCL17-18A-2. Each and every day that such violation continues may constitute a separate offense. In addition, any person, firm, or corporation that violates any provision of this ordinance may be subject to civil penalties as set forth in SDCL 34A-2.

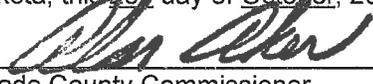
**ARTICLE 8: SEVERABILITY AND SEPARABILITY**

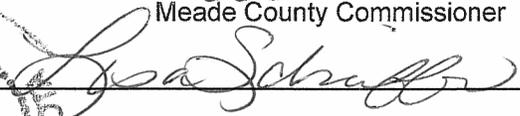
Should any Article, Section, Sub-section or Provision of the Wastewater Treatment and Water Systems Ordinance be declared by a court of competent jurisdiction to be invalid or unconstitutional, such decision shall not affect the validity or constitutionality of this Ordinance as a whole or any part thereof other than the part so declared to be invalid or unconstitutional.

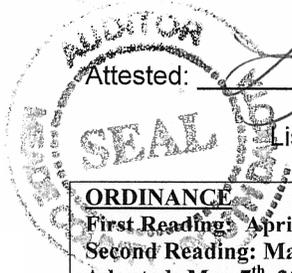
**ARTICLE 9: EFFECTIVE DATE**

Ordinance No. 33 shall take effect and be in force from and after 20 days from the date of completed publication. Adopted this 28<sup>th</sup> day of October, 2015

Dated at Sturgis, South Dakota, this 28<sup>th</sup> day of October, 2015

Chairman Alan Aker:   
Meade County Commissioner

Attested:   
Lisa Schieffer, Meade County Auditor



**ORDINANCE**

First Reading: April 1, 2008  
Second Reading: May 7<sup>th</sup>, 2008  
Adopted: May 7<sup>th</sup>, 2008

**1<sup>ST</sup> REVISION**

First Reading: August 2<sup>nd</sup>, 2011  
Second Reading: September 6<sup>th</sup>, 2011  
Adopted: September 6<sup>th</sup>, 2011

**2<sup>ND</sup> REVISION**

First Reading: September 23<sup>rd</sup>, 2015  
Second Reading: October 28<sup>th</sup>, 2015  
Adopted: October 28<sup>th</sup>, 2015  
Effective Date: December 8<sup>th</sup>, 2015