

**RESOLUTION 2007-12**

**Revision of the Barton County Sanitary Environmental Code  
and Rescinding Certain Related Resolutions**

**WHEREAS**, the Board of County Commissioners of Barton County, Kansas, has the authority to implement sanctions for the betterment of life in Barton County; and

**WHEREAS**, in order to protect the health and welfare, a sanitary code would provide for adequate and reasonable control over environmental conditions in Barton County, establish standards to eliminate and/or prevent development of environmental conditions that are hazardous to health and safety and promote economical and planned development of land and water resources.

**NOW, THEREFORE, BE IT RESOLVED** by the Board of County Commissioners of Barton County, Kansas, pursuant to K.S.A. 19-3701, et. seq., that the Sanitary Environmental Code be revised for Barton County, Kansas. Such Revised Barton County Sanitary Environmental Code shall be incorporated into this Resolution as "Exhibit A"; and

**BE IT FURTHER RESOLVED** that copies of the Sanitary Environmental Code shall be available for inspection by the public at the Barton County Environmental Management Division; and

**FURTHER**, should this Resolution be in conflict with any previous resolutions of the Board of County Commissioners of Barton County, Kansas, that only the conflicting part of any previous resolutions and not the previous resolutions in total be declared void and ineffective; and

**FURTHER**, that Resolution 1984-24, Resolution Adopting and Incorporating a Sanitary Code for Barton County, adopted December 19, 1984; Resolution 1985-01, A Resolution Amending the Barton County Sanitary Code, adopted May 7, 1985, and Resolution 1993-19, Adoption of Sanitary Code for Barton County, Kansas, adopted September 13, 1993, be rescinded.

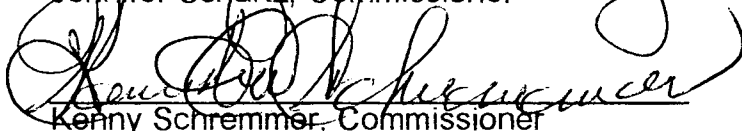
**ADOPTED** this 27<sup>th</sup> day of August, 2007.

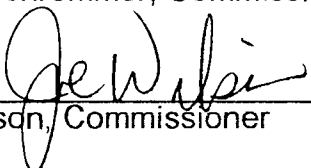
**BOARD OF COUNTY COMMISSIONERS**

  
Rick Scheufler, Chairman

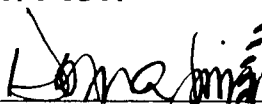
  
Betty Chlumsky, Commissioner

  
Jennifer Schartz, Commissioner

  
Kenny Schremmer, Commissioner

  
Joe Wilson, Commissioner

**ATTEST:**

  
Donna Zimmerman,  
County Clerk



**APPROVED AS TO FORM:**

  
Richard A. Boeckman,  
County Counselor



Kathleen Sebelius, Governor  
Roderick L. Bremby, Secretary

DEPARTMENT OF HEALTH  
AND ENVIRONMENT

[www.kdheks.gov](http://www.kdheks.gov)

Division of Environment

July 23, 2007

Ms. Judy Gorham  
Barton County Environmental Management  
1400 Main Rm 108  
Great Bend, KS 67530

Dear Ms. Gorham:

The proposed Barton County Sanitary Code has been reviewed and approved by the Kansas Department of Health and Environment in accordance with Kansas Statutes Annotated 19-3704. An official copy of the proposed code, as approved by this Agency, is attached for your records.


After the Barton County Sanitary Code has been officially adopted by the Board of County Commissioners, please send one complete copy of the adopted code with appendices and the attached form to the following address:

Kansas Department of Health and Environment  
Bureau of Water - Watershed Management Section  
1000 SW Jackson, Suite 420  
Topeka, Kansas 66612-1367

KDHE recommends you contact the conservation district, extension office, contractors and lending institutions within Barton County informing them of the code adoption/changes to the code.

If you have any questions, please call Doug Schneweis at 785-625-5663.

Sincerely,



Karl Muedener, Director  
Bureau of Water

KM/lmd  
Enclosures

pc- Board of County Commissioners  
Doug Schneweis, LEPP Specialist  
Barton County Code file

BUREAU OF WATER – WATERSHED MANAGEMENT SECTION  
CURTIS STATE OFFICE BUILDING, 1000 SW JACKSON ST., STE. 420, TOPEKA, KS 66612-1367

Voice 785-296-4195 Fax 785-296-5509

<http://www.kdheks.gov/nps/index.html>

The enclosed Barton County Sanitary Code has been officially adopted by the Barton County Board of Commissioners.

---

Signature  
Chairman, Board of County Commissioners

---

Date

Return to:

KDHE-Watershed Management Section  
1000 SW Jackson, Suite 420  
Topeka, KS 66612-1367

**ENVIRONMENTAL AND SANITARY CODE  
BARTON COUNTY, KANSAS**

**TABLE OF CONTENTS**

**Page**

<b>Chapter 1</b>	<b>Administrative Procedures</b>	
Section 1-1.0	Authority and Policy	1
Section 1-2.0	Definitions	1
Section 1-3.0	Administrative Powers and Procedures	2
<b>Chapter 2</b>	<b>On-Site Wastewater Management</b>	
Section 2-1.0	Purpose and Intent	7
Section 2-2.0	Applicability	7
Section 2-3.0	Definitions	7
Section 2-4.0	Prohibited Practices	8
Section 2-5.0	Requirements for Private Wastewater Systems	10
Section 2-6.0	Minimum Standards for Soil Topography and Geology	14
Section 2-7.0	Requirements for Sanitary Privies	14
Section 2-8.0	Sanitary Services	14
Section 2-9.0	Requirements for Subdivision Development	15
Section 2-10.0	Requirements for Wastewater System Contractors	15
Section 2-11.0	Property Transfer Inspections	16
<b>Chapter 3</b>	<b>Non-public Water Supplies</b>	
Section 3-1.0	Purpose and Intent	17
Section 3-2.0	Applicability	17
Section 3-3.0	Definitions	17
Section 3-4.0	Requirements for Non-public Water Supplies	17
Section 3-5.0	Minimum Standards for Groundwater Supplies	18
Section 3-6.0	Requirements for Subdivision Development	19
Section 3-7.0	Property Transfer Inspections	19
Appendix 1	KDHE Bulletin No. 4-2 Minimum Standards for Design Construction of Onsite Wastewater Systems	
Appendix 2	Wastewater System Requirements 2007	
Appendix 3	Lender Evaluation Policy, July 7, 2003	
Appendix 4	Article 30 (K.A.R.28-30)	

**APPROVED**

JUL 23 2007

Kansas Department of  
Health and Environment

**CHAPTER 1  
ADMINISTRATIVE PROCEDURES**

**SECTION 1-1.0**

**AUTHORITY AND POLICY**

- 1-1.1 *Legal Authority.* This code is adopted under authority granted to Barton County Board of Commissioners by K.S.A. 19-3701.
- 1-1.2 *Declaration of Finding and Policy.* The County Commission finds that provisions for adequate and reasonable control over environmental conditions in Barton County are necessary and desirable. An environmental code establishes standards to eliminate and/or prevent development of environmental conditions that are hazardous to health and safety, and promotes economical and planned development of land and water resources of Barton County. For these reasons and objectives, it will be policy of the County Commission to adopt and maintain a sanitary code to provide current regulations of practices that affect health and safety.
- 1-1.3 *Purpose.* The purpose and intent of this chapter is to prescribe administrative procedures to be followed in administering this environmental code or any amendments thereto.
- 1-1.4 *Title.* This code shall be known and referred to as Barton County Environmental Code, Barton County Sanitary Code, or Barton County Environmental and Sanitary Code.
- 1-1.5 *Applicability.* Procedures prescribed in this chapter shall be followed in administering this code and any amendments thereto.
- 1-1.6 *Effective Date.* This code shall become effective \_\_\_\_\_.

**SECTION 1-2.0**

**DEFINITIONS**

The following words, terms, and phrases appear in more than one chapter of this code and thus have general application and usage. Words, terms, and phrases appropriate or applicable to specific chapters within this code may be found in that particular chapter.

- 1-2.1 *Administrative Agency* means the entity authorized to implement the provisions of this code.
  - 1-2.1.1 The administrative agency for Barton County is the Barton County Environmental Management Division.
- 1-2.2 *Administrative Rules* mean those rules and regulations contained in chapter one of this environmental code which prescribe general procedures to be followed in administration of the environmental code adopted by the county.
- 1-2.3 *Authorized Representative* means any person who is designated by the administrative agency to administer this code.

**APPROVED**

JUL 23 2007

1-3.2.5 Standard Fees. The Board of County Commissioners, based upon recommendations from the administrative agency, shall establish a schedule of fees sufficient to recover direct and indirect costs of processing all permits and licenses required by this code, and said fees shall be paid to the administrative agency. The administrative agency shall not process any application for a permit or license until the required fee has been paid.

1-3.3 *Notices, Orders, Appeals.*

1-3.3.1 Notice of Violations. When the administrative agency determines that there has been a violation of any provision of this code, notice of such violation shall be issued to the person responsible. The notice shall:

- (1) be in writing;
- (2) include a statement of why the notice is being issued;
- (3) allow a specified period of time for performance of any work required by the notice; and,
- (4) be properly served upon the owner or agent.

Such notice shall be deemed properly served when a copy thereof has been sent by certified mail to the last known address of the owner or agent.

1-3.3.2 Appeal for Hearing. Any person aggrieved by any written notice or order issued by the administrative agency under provisions of this environmental code may request, and shall be granted, a hearing on the before the Environmental Code Appeals Board. Such person shall file with the administrative agency within ten (10) working days after the date of issuance of the notice or order, a written petition requesting a hearing and setting forth the grounds upon which the request is made. Filing of a request for hearing shall operate as a stay of notice or order.

Upon receipt of such petition, the administrative agency shall:

- (1) confer with the Environmental Code Appeals Board and
- (2) set a time and place for such hearing and

**APPROVED**

JUL 23 2007

Kansas Department of  
Health and Environment

1-3.4 *Records.*

1-3.4.1 Permit Applications. Applications for permits or licenses required by this code shall be filed with and managed by the administrative agency.

1-3.4.2 Official Actions. A written record of all official actions taken on applications for permits and licenses required by this environmental code shall be kept on file by the administrative agency.

1-3.4.3 Proceedings of Hearings. Proceedings of all hearings, including findings and decisions of the appeals board, together with a copy of every notice and order related thereto shall be filed with the administrative agency.

1-3.5 *General Provisions.*

1-3.5.1 Enforcement Procedure. This code is being adopted pursuant to county home-rule power and K.S.A. 19-101d. Violations of this code by any person shall be punishable as a Class B Misdemeanor with penalties for each separate offense by a term of confinement in the Barton County Detention Facility not to exceed six months and/or a fine in an amount not to exceed \$1,000.

Each day the violation occurs shall be deemed a separate violation of this code.

As authorized by K.S.A. 19-101d, the county may request the court enjoin violations of this code.

The County Attorney shall enforce the provision of this code and other environmental codes adopted by the county and is hereby authorized and may file appropriate actions for such enforcement, upon request of the administrative agency. Action of injunction, mandamus, and quo warranto may be utilized for enforcement of these codes and shall be governed by provisions of Kansas Code of Civil Procedure.

1-3.5.2 Disclaimer of Liability. This code and other environmental codes adopted shall not be construed or interpreted as imposing upon the county or its officials or employees:

- (1) any liability or responsibility for damages to any property; or

**APPROVED**

**JUL 23 2007**

**CHAPTER 2  
ONSITE WASTEWATER MANAGEMENT**

**SECTION 2-1.0                   PURPOSE AND INTENT**

Sewage is a potential source of disease and water pollution, and a hazard to the health, safety, and welfare of the public. It is the purpose of this chapter to provide minimum standards for location, design, construction, maintenance and use of on-site wastewater systems, and removal and disposal of materials from such facilities within the legal boundaries of Barton County.

**SECTION 2-2.0                   APPLICABILITY**

Provisions of this chapter shall apply to all unincorporated areas located in Barton County.

**SECTION 2-3.0                   DEFINITIONS**

- 2-3.1           *Alternative Onsite Wastewater Treatment System* means any system that relies on pumps, aerators, and / or other electrical and mechanical components to enhance treatment of wastewater prior to discharge to the soil absorption field or other treatment unit. Examples of alternative treatment systems include but are not limited to pumping stations which pump wastewater to a treatment unit such as septic tank, lagoon or other device, sand or other media filters, aerated tanks, mounds, rock plant filter (wetland treatment) which receive gravity or pressurized flow followed by soil absorption, including drip irrigation; or any other system determined to be alternative by the Barton County Environmental Management Division.
  
- 2-3.2           *Alternative to Soil Absorption Field* means a mound, drip irrigation system and rock plant filter system. A rock plant filter system shall be designed, constructed, installed and maintained according to KSU Bulletin MF-2340 Rock-Plant Filter Design and Construction for Home Wastewater Systems published June, 1998 by the Kansas Extension Service and KSU Bulletin MF-2337 Rock-Plant Filter Operation, Maintenance and Repair published June, 1998 by the Kansas Extension Service; are hereby adopted by reference and as amended.
  
- 2-3.3           *Beneficial Use* means conservation use of water for any of the following purposes: agricultural water supply; aquatic life; domestic water supply; groundwater recharge; industrial water supply; and recreation.
  
- 2-3.4           *Conventional Onsite Wastewater Treatment System* means wastewater flows by gravity through a standard septic tank (one or two compartment) followed by conventional soil absorption such as at-grade and shallow in ground, chambers, rock and pipe, gravel less pipe, with or without effluent filter. A properly designed non-overflowing wastewater lagoon which may include the use of a septic tank prior to the lagoon as determined by the Administrative Agency.

**APPROVED**

JUL 23 2007



2-4.2 Use of Non-approved Private Wastewater Systems. No person shall use or cause to be used any private wastewater system or sanitary privy constructed after adoption of this environmental code until it has been inspected and determined to comply with the provisions of this code by the administrative agency or:

- (a) has been enjoined as a public health nuisance by a court of competent jurisdiction; or
- (b) fails to comply with the provisions of this environmental code, and written notice thereof has been given by the administrative agency; or
- (c) discharge wastes onto the surface of the ground, or waters of the State as defined in K.S.A. 65-161(a), or
- (d) causes potential breeding grounds or habitat of rats, mice, snakes, mosquitoes or other vermin, rodents, insects or other disease vectors, produces offensive odors or any condition that is prejudicial to health and comfort.

A private wastewater system in use before adoption of this code may be required to comply with provisions of this code, with due consideration to existing lot size and conditions.

2-4.3 *Use of Wastewater Systems Within 400 Feet of a Public Sewer.* No private wastewater system shall be constructed within 400 feet of an existing public sewer, unless the administrative agency finds that connection to such a sewer is not feasible and that a private wastewater system, meeting the requirements of this code, can be constructed on that property.

2-4.4 *Location of Private Wastewater Systems Below Full \ Flood Pool.* No portion of a private wastewater system shall be located below the flood pool elevation of any reservoir or full pool elevation of any pond, lake, stream or water supply reservoir.

2-4.5 *Location of Private Wastewater Systems within a 100 Year Flood Plain.* A modified existing private wastewater system located within a 100 year flood plain, as established by Federal Emergency Management Agency, shall be equipped with a backflow device suitable for wastewater systems, located between the structure and septic tank. New private wastewater systems shall not be constructed within a 100-year flood plain.

2-4.6 *Location of a Private Wastewater System Within 50 Feet of a Non-public Water Supply Well.* No portion of a private wastewater system shall be located less than 50 feet from a non-public water supply well or a water line from a water well. No sanitary sewer line, regardless of construction, shall be located less than 10 feet from a non-public water supply well or a water line from a private water well.

APPROVED

JUL 23 2007

Kansas Department of  
Health and Environment

2-5.6 *Variance.* The administrative agency shall have authority to grant exceptions when reliable information is provided which justifies the exception and effectively achieves the purpose and intent of this code.

2-5.7 *Wastewater Lagoons and Septic Tank and Lateral Field Requirements.* The following sections are intended to provide guidance for construction of private wastewater systems. The provisions of section (a) and (b)(1) through (14) are intended to provide general guidance. More specific requirements are contained in section (c).

(a) references approved by State of Kansas, such as Bulletin No. 4-2, Minimum Standards For Design And Construction Of Onsite Wastewater Systems, March, 1997, KDHE, Division of Environment; (Appendix 1, Bulletin No. 4-2) or as amended.

(b) (1) Site Requirements – Lateral Fields. Locations for the lateral fields must meet the following conditions:

(a) Four feet or more of soil depth above solid rock formation.

(b) Ground water elevation six feet or more below the ground surface.

(c) Private wastewater systems which are dependent upon soil absorption for disposal of wastewater shall meet minimum percolation standards.

(d) Provisions in the above sections shall not prohibit soil modification to enhance percolation or other advanced systems that employ similar technology.

(2) Alternative Wastewater Systems. An alternative wastewater system may be allowed by the administrative agency if soil percolation tests of the original soil indicate a soil porosity at saturation of one inch absorption or greater within a time period of sixty minutes (1 hour).

(a) The owner shall be responsible for the operation and maintenance of an alternative treatment system.

(3) Minimum Absorption Area Required. Lateral fields are required to have a minimum of 700 square feet of lateral absorption area, except as otherwise provided herein.

(4) Minimum Septic Tank Capacity:

1 bedroom dwelling – 1000 gallon tank

2 bedroom dwelling – 1000 gallon tank

3 bedroom dwelling – 1000 gallon tank

4 bedroom dwelling – 1250 gallon tank

- 11 -

**APPROVED**

JUL 23 2007

Kansas Department of  
Health and Environment

- (10) Sewer Pipe Sizes:
    - (a) Four (4) inch diameter minimum.
    - (b) No longer than twenty (20) feet joints.
  - (11) Clean-outs. A minimum of one sewer clean-out from the dwelling to the septic tank shall be provided. One clean-out access shall be provided every 100 feet.
  - (12) Trenches:
    - (a) Minimum width of eighteen (18) inches.
    - (b) Maximum width of three (3) feet.
    - (c) Maximum depth of three (3) feet, unless approved by the administrative agency.
    - (d) Separation between trenches a minimum of six (6) feet, unless approved by the administrative agency.
  - (13) Gravel – Crushed rock, egg rock or crushed brick one (1) to three (3) inches in size or greater shall be used. It shall be clean and free of debris. Limestone or sandstone will not be used.
  - (14) Lateral Lines – Lateral lines shall be run level as much as possible, with pipe sloped no greater than one-eighth (1/8) inch per foot. When necessary on sloping ground, lateral lines shall be stepped.
- (C) Barton County Environmental Management Division Wastewater Requirements 2007; which is attached here to as (Appendix 2, Wastewater System Requirements, 2007) is incorporated by reference as though fully set forth in this section. (Appendix 2, Wastewater System Requirements, 2007), or any superseding document which provides more specific direction for certain private wastewater system applications. This document may be revised from time to time by the Environmental Management Division. Such revisions shall not require adoption of an amending resolution by the County Commissioners.

**APPROVED**

**JUL 23 2007**

- (c) Any Licensed Septage Hauler found violating any provisions of this code will be subject to revocation of his or her license.

2-8.2 *Contracting with Non-licensed Persons Prohibited.* No person responsible for operating a private wastewater system or sanitary privy shall contract with any person for sanitary service unless that second person holds a valid license.

2-8.3 *Minimum Standards for Sanitary Service Equipment.* All equipment used for rendering of sanitary service shall be of watertight construction and maintained in good working condition. This ensures that all materials removed from private wastewater disposal systems or privies will be transported to an approved point of disposal without spillage of the waste.

## **SECTION 2-9.0 REQUIREMENTS FOR SUBDIVISION DEVELOPMENT**

After adoption of this code no person shall develop any subdivision until the plans and specifications for wastewater management for such subdivision have been approved by the administrative agency.

## **SECTION 2-10.0 REQUIREMENTS FOR WASTEWATER SYSTEM CONTRACTORS**

No person shall install or offer to install a private wastewater system on any property other than his own unless that person holds a valid license from the administrative agency. To receive a license:

- (1) Contractors wishing to work in Barton County must pass an examination. Multiple employees of a contractor may be licensed. Only the primary owner or manager of the business is required to pass the test. However, if only the primary owner or manager of the business is the only individual who obtains a license, then he or she must be present and on the job-site during the installation of the wastewater system.
- (2) The examination will test the Contractor's knowledge of the Barton County Environmental Code, KDHE Bulletin No. 4-2 (Appendix 1, Bulletin No. 4-2), and the current Barton County Environmental Management Division Wastewater Requirements, a document which outlines specific private wastewater requirement for Barton County; (Appendix 2, Wastewater Requirements).
- (3) Licenses are valid from January 1<sup>st</sup> through December 31<sup>st</sup> of each year and must be renewed annually after January 1<sup>st</sup> of each year.
- (4) The test is a "take-home test" with a minimum passing score requirement of 85 percent. All contractors passing the test will be placed on a list that is sorted alphabetically.
- (5) In the event that the Contractor receives less than an 85 percent score the Contractors will be provided the opportunity to re-test at the Barton County Environmental Management Division office in the Courthouse upon reasonable notice. The re-test will not be open book.

**APPROVED**

JUL 23 2007

**CHAPTER 3  
WATER SUPPLIES**

**SECTION 3-1.0                    PURPOSE AND INTENT**

Provisions of this chapter are for the purpose of regulating and controlling the development, maintenance, use and abandonment of all water supplies other than Public Water Supplies and irrigated areas larger than two acres in Barton County, Kansas, in order that public health will be protected and contamination and pollution of water resources of the county will be prevented.

**SECTION 3-2.0                    APPLICABILITY**

Provisions of this chapter shall apply to all unincorporated areas located in Barton County, Kansas.

**SECTION 3-3.0                    DEFINITIONS**

- 3-3.1            *Domestic Water Supply* means the use of water by any persons or family unit or household for household purposes, or for the watering of livestock, poultry, farm and domestic animals used in operating a farm, or for the irrigation of lands not exceeding a total of two acres in area for the growing of gardens, orchards and lawns.
- 3-3.2            *Non-Public Water Supply* means all water supplies not meeting the definition of Public Water Supply. A non-public water supply includes a water supply with fewer than nine service connections serving a user population of fewer than twenty-five individuals.
- 3-3.3            *Private Water Supply* means a water supply that is not defined as a semi-public or public water supply.
- 3-3.4            *Public Water Supply* means a system that has at least ten service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year (K.S.A. 65-162a). Public water supplies are not subject to the water supply requirements of this code.

**SECTION 3-4.0                    REQUIREMENTS FOR NON-PUBLIC WATER SUPPLIES**

- 3-4.1            *Permit.* No person shall develop, use, sell, or lease any non-public water supply until a permit has been obtained from the administrative agency.
- 3-4.2            *Approved plans.* No permit to develop a non-public water supply subject to regulations of this code shall be issued until the application and plans have been approved by the administrative agency. References approved by State Department, such as K.A.R. 28-30 (Appendix 4, Article 30) or any superseding document, shall be used as a guide by the administrative agency in reviewing and approving plans for non-public water supply systems.
- 3-4.3            *Non-public Water Supplies Which Serve Two to Nine Service Connections.* All non-public water supplies which serve two to nine service connections shall:

**APPROVED**

JUL 23 2007

- (1)            Mechanically disinfect water delivered to the connections; and

3-5.4 *Cross-Connection.* No connection or arrangement shall be made between a potable water supply system and any equipment or device, through which it may be possible for used, unclean, polluted, and contaminated water or other substances, to enter into any part of such potable water system under any condition.

### **SECTION 3-6.0                    REQUIREMENTS FOR SUBDIVISION DEVELOPMENT**

After adoption of this code no person shall develop any subdivision until the plans and specifications for water supply provision and/or protection have been approved by the administrative agency.

### **SECTION 3-7.0                    PROPERTY TRANSFER INSPECTIONS**

Provisions of this code do not address requirements for property transfer inspections in Barton County. The Administrative Agency does offer the service to persons with a private water supply, septic tank, sanitary privy or subsurface absorption field or cistern subject to the regulations of this code. A policy has been adopted for conducting these inspections which is based on an inspection of existing facilities and a comparison to new construction standards. That policy is set forth as (Appendix 3, Lender Evaluation Policy, July 7, 2003), or any superseding document; which is incorporated by reference as though fully set forth in this section. There is a fee established for this service. This policy document may be revised from time to time by the Environmental Management Division. Such revisions shall not require adoption of an amending resolution by the County Commissioners.

**APPROVED**

*JUL 23 2007*

State of Kansas  
Department of Health  
and Environment

*Bulletin 4-2, March 1997*

APPENDIX 1

MINIMUM STANDARDS  
FOR DESIGN AND  
CONSTRUCTION OF ONSITE  
WASTEWATER SYSTEMS



Bureau of Water—Nonpoint Source Section  
Forbes Field, Bldg. 283  
Topeka KS 66620  
(785) 296-4195

In Cooperation with  
K-State Research and Extension

## Introduction

Kansas Administrative Regulations (K.A.R. 28-5-6 to 9) authorize the Kansas Department of Health and Environment (KDHE) to establish minimum standards for septic tank-lateral fields. KDHE bulletin 4-2: *Minimum Standards for Design and Construction of Onsite Wastewater Systems* fulfills that purpose. The minimum standards presented in this document are intended to ensure domestic wastewater is managed so that:

- Quality of surface and groundwater is protected for drinking water, recreation, aquatic life support, irrigation, and industrial uses.
- A breeding place or habitat will not be created for insects, rodents, and other vectors that may later contact food, people, pets, or drinking water.
- Wastewater will not be exposed on the ground surface where it can be contacted by children and/or pets, creating a significant health hazard.
- State and federal laws and local regulations governing water pollution or wastewater disposal will be met.
- Nuisance conditions or obnoxious odors and unsightliness will be avoided.

Bulletin 4-2 is not intended to provide an in-depth discussion of the rationale for these standards. For more information, see the *Environmental Health Handbook* and resources identified therein as well as other references in Appendix B (page 16). Most county health departments have a copy of this handbook, or copies are available at cost from Kansas State University, Extension Biological and Agricultural Engineering (see Appendix B).

Local governments have the authority to adopt minimum requirements (codes) for onsite wastewater management systems, to approve individual plans, to issue permits for construction, to issue permits for operation, and to grant variances. County sanitary (environmental) codes specify local design and permitting requirements. Compliance with these requirements helps prevent illness caused by environmental contamination and protects surface and groundwater.

**Some local requirements, such as those in wellhead protection or sensitive groundwater areas, may be more stringent than those established in Bulletin 4-2. Often, these stricter requirements provide greater protection of public health and the environment, especially where water resources are vulnerable to contamination.**

Sanitary codes are adopted and administered by local government usually through county health departments. The local administering authority should always be contacted before any time or money is invested in system design, plans, installation, or repairs.

If there is no local code, landowners are required to comply with Kansas Administrative Regulations (K.A.R.) 28-5-6 to 9 and minimum standards in this bulletin. If no assistance is available from the health department or other local authority, contact your county Extension Office or KDHE, Bureau of Water, phone (785) 296-4195, or the nearest KDHE District Office (see inside back cover).

K.A.R. 28-5-6 stipulates that all domestic wastewater shall be discharged to an approved sewage collection system or an approved lagoon, septic system, or alternative system. Domestic wastewater means all waterborne wastes produced at family dwellings in connection with ordinary living including kitchen, toilet, laundry, shower, and bath tub wastewater. It also includes similar type wastewater, produced at businesses, churches, industrial, and commercial facilities or establishments.

Wastewater from a home shall be discharged to a properly designed and maintained septic tank-soil absorption field or wastewater pond, an approved alternative treatment and disposal system, or a permitted sewage treatment plant. Seepage pits, cesspools, and dry wells (rat holes) are not permitted. This bulletin provides information on conventional soil absorption fields, wastewater ponds, and alternatives that may be considered when conventional absorption fields or ponds are not suitable.

Bulletin 4-2 covers five basic elements of proper septic tank-lateral field system design:

1. wastewater flow,
2. soil and site evaluation,
3. septic tank standards, for design, construction and installation,
4. lateral field design and construction, and
5. system maintenance.

This bulletin also addresses basic principles for wastewater ponds.

This bulletin is intended to provide information on treatment of domestic wastewater. Domestic wastewater excludes surface runoff from roof, paved areas, or other surfaces; subsurface drainage from springs, foundation drains, and sump pump; or cooling water. Industrial or commercial wastewater (from shops, manufacturing, car washes, etc.) is not permitted to be discharged to an onsite soil absorption system, so it shall not be mixed with domestic wastewater.

By following the standards established in Bulletin 4-2 and your county's sanitary code, you actively contribute to protecting the environment and quality of life for your family, your neighbors, your community, and other Kansans. Your contribution is appreciated!



severe restrictions for conventional septic tank–soil absorption systems and other options may be preferred or required.

A site and soil evaluation should be completed in order to locate the area to be used for the absorption field, to verify the soil characteristics, and to size the system. Areas with slopes steeper than about 20 percent will cause considerable difficulty during construction and are not recommended for lateral field installations. Rock outcroppings warn of shallow soils and may suggest the probable direction of groundwater flow. The range of values for each of several properties that cause the soil to be placed in slight, moderate, and severe limitation rating for soil absorption systems is shown on Table 1.

The wastewater system area should be chosen prior to any construction on a site and should be an integral part of the homesite design and development. A soil profile analysis is highly recommended to ensure suitability of the area and to establish the loading rate so that adequate space is available for the absorption field and its replacement.

To perform a soil profile analysis, an excavator is usually used to open a pit, which exposes the soil profile. The soil evaluation, performed by a trained and qualified person<sup>4</sup>, includes examining the soil profile, determining the soil texture, structure, color, consistency, measuring soil depth, and looking for evidence of a high or perched water table or other restrictions. The soil profile should be analyzed to a depth of at least 4 feet below the bottom of the absorption area or at least 6 feet below the surface.

Because OSHA regulations require shoring for trenches deeper than 5 feet for some soils, it is recommended that the pit be constructed so a person is not required to go deeper. Soil below 5 feet can be examined from cuttings, observation from a distance, and by shovel or auger without entering a deeper pit.

At least three pits should be dug surrounding the area to establish the range of soil characteristics that are present on the site, and to determine the best location for the absorption field. Sanitarians, usually through local health or environmental departments, or environmental health specialists, are available to assist in the site and soil

TABLE 2—Design Septic Tank Effluent Loading Rates for Various Soil Textures and Structures

Group	Soil Characteristics	Wastewater Loading		
		(in/day)	(cm/day)	(gpd/ft <sup>2</sup> )
I.	Gravelly coarse sand and coarser.	Not Recommended for conventional soil absorption system <sup>5</sup>		
II.	Coarse sands (not cemented).	1.8	4.6	1.1
III.	Medium sand with single grain structure and loose to friable consistence (not cemented).	1.5	3.7	0.9
IV.	Other sands and loamy sands with single grain or weak structure (not extremely firm or cemented consistence). Sandy loams, loams and silt loams with moderate or strong structure (except platy and loose to friable consistence).	1	2.5	0.6
V.	Sandy loams, silt loams and loams with weak structure (not of extremely firm or cemented consistence). Sandy clay loams, clay loams and silty clay loams with moderate to strong structure (not of platy, of firm, or of cemented consistence).	0.7	1.7	0.4
VI.	Sandy clay loams, clay loams and silty clay loams with weak structure (not massive, not of firm, or of cemented consistence.) Some sandy clays, clays and silty clays with moderate and strong structure (not platy, not of firm, or of cemented consistence).	0.4	1	0.25
VII.	Other soils of high clay content with weak or massive structure, extremely firm or cemented consistence or platy, clay pan, fragipan, and caliche soils.	Not Recommended for conventional soil absorption system <sup>6</sup>		

NOTE: The above descriptions are estimates and assume that the soil does not have large amounts of swelling clays. Soils with platy structure, massive, compacted or high density should be used with extreme caution or avoided.

<sup>4</sup>A trained and qualified person would include a soil scientist, such as one working for NRCS, environmental health specialist, sanitarian, or other person who has received appropriate soil training and through experience is competent.

<sup>5</sup>Soil is too coarse for conventional soil absorption designs, use pressure distribution dosing or other alternative system to prevent too rapid infiltration.

<sup>6</sup>Soils with these conditions may be acceptable for wastewater stabilization ponds or possibly other alternative systems. (See Table 6).

method for determining the suitability of the soil to accept and treat wastewater and establish the design loading.

Some local sanitary codes require the perc test and other codes require both a perc test and a soil profile evaluation. "Perc" is short for percolation and has become the preferred term for this test to evaluate soil suitability to accept wastewater. Percolation means water movement through a soil. Since the driving force is gravity, most of the movement will be downward. The perc test really measures an infiltration rate for water into a wet but unsaturated soil at the depth of expected system placement. The procedure for doing a perc test is described in Appendix A (page 14). Once the perc rate is known, refer to Table 4 to determine the loading rate and absorption field area, or use another method specified by the local sanitary code.

Separation of the soil absorption field from buildings, structures, and boundaries is essential to maintain system

performance, to permit repairs, to maintain required separation from wells, and to reduce undesirable effects of underground wastewater flow and dispersion. The structures and boundaries to consider include easements, buildings, property lines, utilities, wells, and components of the wastewater disposal system. Minimum required and recommended separation distances for private wastewater systems are given in Table 5.

Many soils, especially in eastern Kansas, have properties that restrict their suitability for soil absorption fields. When limiting properties occur in the soil profile, a variation of conventional laterals, wastewater ponds or alternative treatment systems may be used to compensate for the limiting condition. Variations and alternatives that may be considered are summarized in Table 6. When possible, sites with these restrictive conditions should be avoided due to higher cost, larger land area, and greater maintenance requirements for the alternative systems.

**TABLE 6—General Alternative Option Guide for Moderate or Severe Limiting Soil Conditions**

I.	<p>Shallow Permanent, Perched or Seasonal Groundwater</p> <ul style="list-style-type: none"> <li>• Subsurface drainage system at least 50 feet from the soil absorption area to lower the water table—suitable for moderate or more permeable soil conditions. This alternative creates drainage that must be discharged away from the area</li> <li>• Variation of conventional lateral trench               <ul style="list-style-type: none"> <li>- Shallow in-ground trench—suitable for groundwater at 4¾ feet or deeper</li> <li>- At-grade lateral system—suitable for groundwater at 4 feet or deeper</li> </ul> </li> <li>• Enhanced wastewater treatment<sup>11</sup> by rock-plant filter<sup>12</sup>, sand filter<sup>13</sup>, or aerated tank<sup>14</sup> or other equivalent system<sup>15</sup> followed by shallow soil absorption or wastewater pond</li> <li>• Wisconsin (engineered) mound—suitable for groundwater or other restriction at 1 foot or deeper</li> <li>• Rock-plant filter<sup>12</sup>—suitable for ground water at 1 foot or deeper followed by soil absorption</li> </ul>
II.	<p>Shallow Bedrock</p> <ul style="list-style-type: none"> <li>• Wastewater pond—suitable for sites with bedrock at any depth when overexcavated and at least 1½ feet of compacted clay lining is installed</li> <li>• Variation of conventional lateral trench               <ul style="list-style-type: none"> <li>- Shallow in-ground trench system— suitable for bedrock at 4¾ feet or deeper</li> <li>- At-grade lateral system—suitable for bedrock at 4 feet or deeper</li> </ul> </li> <li>• Enhanced wastewater treatment<sup>11</sup> options (see I above) followed by shallow soil absorption</li> <li>• Wisconsin (engineered) mound—suitable for bedrock at 1 foot or deeper</li> </ul>
III.	<p>Rapid Perc Rate (&lt; 5 mpi) or very permeable soil (&gt; 20 in/hr)</p> <ul style="list-style-type: none"> <li>• Pressurized distribution dosing system to uniformly distribute wastewater throughout the absorption field</li> <li>• One foot lining using loam soil to bottom and sides of the trench to limit water absorption rate</li> </ul>
IV.	<p>Slow Perc Rate (60 to 120 mpi) or "slow" soil permeability (0.2-0.6 in/hr)</p> <ul style="list-style-type: none"> <li>• Dual shallow lateral systems in permeable surface soils (each with 60% to 80% of conventional lateral area) with a diversion valve and alternating use of systems</li> <li>• Wastewater pond provided sufficient site area is available to meet all setback requirements</li> <li>• Wisconsin (engineered) mound—suitable for nearly level sites with more permeable surface soil</li> <li>• Enhanced wastewater treatment<sup>11</sup> options (see I above) followed by shallow soil absorption into permeable surface soil</li> </ul>
V.	<p>Very Slow Perc Rate Soil (&gt; 120 mpi), "very slow" soil permeability (&lt; 0.2 in/hr)</p> <ul style="list-style-type: none"> <li>• Wastewater pond—suitable for sites with enough site area to meet all setback requirements</li> <li>• Wisconsin (engineered) mound—suitable for level sites with permeable surface soil</li> <li>• Enhanced wastewater treatment<sup>11</sup> options (see I above) followed by shallow soil absorption into permeable surface soil</li> </ul>

<sup>11</sup>Enhanced treatment is higher quality than septic tank effluent and may be equivalent to secondary treatment in wastewater treatment terminology, or in some cases even higher quality, comparable to advanced wastewater treatment

<sup>12</sup>Rock-plant filter provides a higher level of treatment than septic tanks. Due to higher quality effluent, the soil absorption field size may be smaller than for a conventional absorption field system.

<sup>13</sup>Sand filters provide a very high level of treatment. Due to this high quality effluent, the soil absorption field may be smaller than that required for a conventional absorption field.

<sup>14</sup>Aerobic tanks have poor operating records so an operating/maintenance agreement with a reliable supplier is strongly recommended to ensure system performance.

<sup>15</sup>Promising technology is underdevelopment that may meet enhanced treatment requirements.

# Septic Tank Design/Construction Specifications<sup>19</sup>

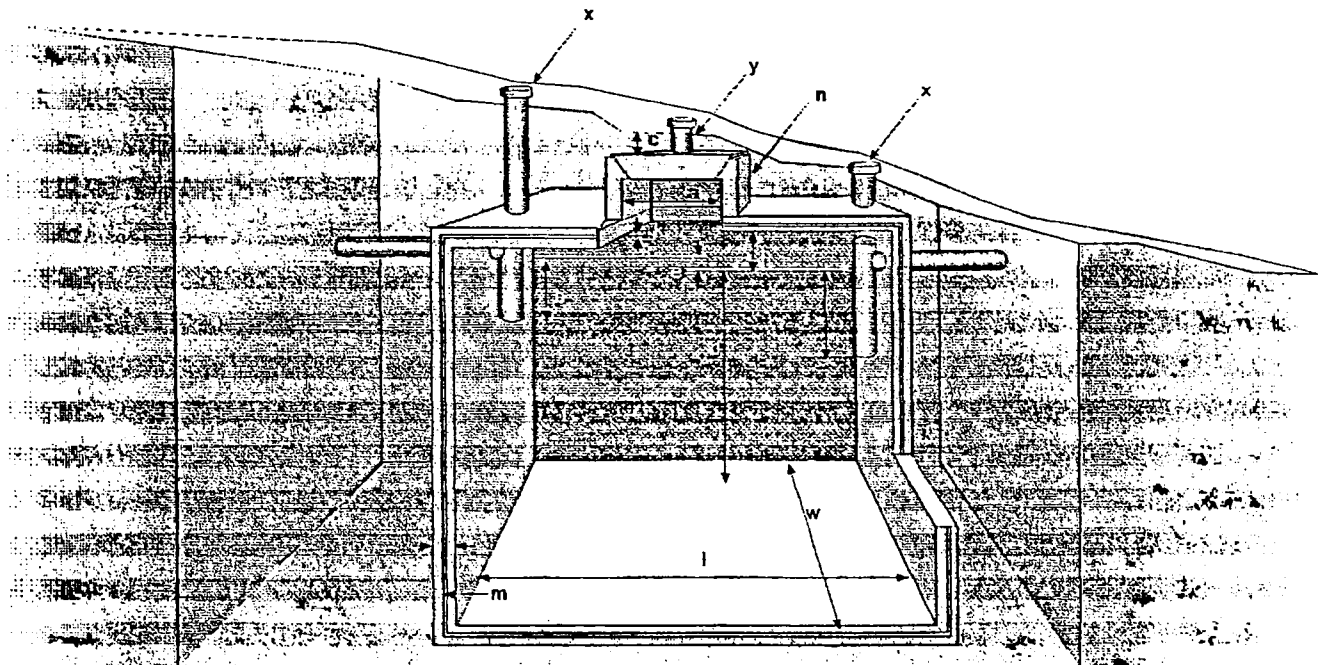
## General Requirements

Figure 2 shows the dimensions included in this section for a typical precast concrete septic tank. The following factors are required of all septic tanks regardless of the construction material:

- A. The septic tank including all extensions to the surface shall be watertight to prevent leakage into or out of the tank. It shall be structurally sound and made of materials resistant to corrosion from soil and acids produced from septic tank gasses. Because of corrosion, steel tanks are not acceptable.
- B. The tank liquid depth (distance from outlet invert to bottom of tank) shall be at least 3 feet but shall not exceed 6½ feet. The effective inside length of tanks shall not be less than 1.5 nor greater than four times the effective inside width.

- C. The minimum septic tank capacity is two times the daily wastewater flow using 150 gallons per bedroom or 1,000 gallons, whichever is larger. See Table 7 for minimum tank sizes. Tanks sized at three times daily flow are recommended and shall be required when garbage disposals are used.
- D. The top of all tanks shall be designed and constructed to support a minimum uniform load of 400 pounds per square foot plus 2,500 pound axle load. When buried more than 2 feet deep, the tank, especially the top, shall support an additional 100 pounds per square foot for each foot of soil or portion thereof in excess of 2 feet.
- E. If the tank is placed in an area subject to any vehicular traffic it shall be certified to meet H-20 highway loading by a Kansas licensed structural engineer.
- F. Space above the liquid line is required for that portion of the scum that floats above the liquid. For vertical sidewall tanks, the distance between the top of the tank and the outlet invert should be at least 15 percent of the liquid depth with a minimum

Figure 2—Design Details for a Precast Concrete Septic Tank



Name	Measurement	Min.	Max.	Name	Measurement	Min.	Max.
a. access manhole	smallest dimension	20"	—	h. open space	outlet invert to top	7"	0.15 × d
b. inlet baffle	penetration	8"	0.2 × d	k. space	gap	1"	—
c. cover <sup>20</sup>	surface to manhole	surface	12"	l. tank length	inside of walls	6'	4 × w
d. liquid depth	outlet to tank bottom	3'	6½'	m. reinforcement	per engineering design		as needed
e. difference	inlet to outlet inverts	3"	4"	n. extension riser	length <sup>20</sup> to ≤ 1' from surface grade		
f. outlet baffle	outlet to bottom	0.35 × d.	—	w. tankwidth	inside of walls	4'	
g. thickness	wall	2½"	—	x. inspection riser	inside diameter	6"	
				y. location riser	inside diameter	1½"	

<sup>19</sup>Where locally available products cannot presently meet these requirements, manufacturers will have until July 1, 2002 to comply.

<sup>20</sup>If tank is deeper than 12" add extension riser as shown so top of riser is no more than 12" from surface

surface from the top of the tank and the first 10 feet exiting the tank shall be schedule 40 pipe or heavier.

- P. Septic tanks shall be designed for at least a 20-year life. They shall be designed and constructed to withstand extremes in loads resulting from adverse conditions without excessive deflection, deforming, creep, cracking or breaking. Change in shape shall be limited to 5 percent. Loads shall be based on 62.4 pounds per cubic foot for water and water saturated soil. Top loads for design shall be in uniform 400 pounds per square foot plus 2,500 pound axle point load. Design shall be based on a 2 foot placement depth to top of the tank. If the tank will be placed deeper than 2 feet or subject to vehicular traffic over the tank, a design by Kansas licensed structural engineer shall be done for the specific conditions.

### Special Considerations for Concrete Tanks

The anaerobic environment of a septic tank produces gases that combine with moisture to produce acids. Concrete above the liquid level is subject to corrosion and deterioration from these acids. This corrosion is best resisted by high quality concrete mix. Concrete septic tanks shall meet the following requirements in addition to those above:

- A. The concrete design mix shall be for a compressive strength of at least 4,000 pounds per square inch at 28 day cure. The water-cement ratio shall not exceed 0.45.
- B. Baffles or other interior concrete units shall not be used for precast or poured in place concrete septic tanks unless they are cast or built into the tank wall at the time the tank is constructed.
- C. Air entrainment additives shall be added to 5 percent volume. Other chemical admixtures are encouraged to reduce water content, improve cement placement in forms and wet handling of incompletely cured concrete.
- D. Concrete tanks and lids shall receive proper care during the hydration (hardening) period by: 1) monitoring and controlling temperature of the concrete and gradients (i.e. maintain 50 to 90 degrees Fahrenheit for conventional cure and up to 140 degrees Fahrenheit under low pressure steam cure.) 2) monitoring and controlling humidity to prevent adverse moisture loss from fresh concrete (i.e. prevent or replenish loss of essential moisture during the early relatively rapid stage of hydration.)
- E. Reinforcing steel shall be placed as designed by a Kansas licensed structural engineer to ensure floor, wall, and top do not crack from moisture, frost, soil load, water loads, axle loads, or other stresses. Loads as specified above shall be used for the design condition. Reinforcing steel shall be covered by a minimum of 1 inch of concrete and shall be placed within  $\pm \frac{1}{4}$  inch.

- F. Pouring the floor and walls of the septic tank at the same time (monolithic pour) is the preferred construction procedure. Very large tanks are often cast in 2 pieces and assembled in the field. All tanks shall meet the same structural strength standard as specified earlier. Two piece tanks shall have permanently sealed structurally sound joints and shall be water tested after assembly. A Kansas Licensed structural engineer shall determine if the tank meets the strength specification.
- G. In areas of high sulfate water (greater than 250 mg/L) more acid producing gases are likely and additional corrosion resistance is appropriate. Recommended measures include ASTM C150 Type II cement (moderate sulfate resisting), ASTM C150 Type V cement (highly sulfate resisting), or coating interior concrete surfaces above the water line. Coatings that provide additional protection of the concrete include asphalt, coal tar, or epoxy. The product used should be acid resistant and provide a moisture barrier coating for the concrete. The product must not bleed into the water and thus risk groundwater contamination.
- H. Manufacturers are strongly urged to follow guidelines and meet standards of American Concrete Institute, National Precast Concrete Association, and American Society for Testing and Materials. Manufacturers should identify and advertise their products that meet applicable standards.

### Special Considerations for Fiberglass, Fiberglass Reinforced Polyester, and Polyethylene Tanks

- A. All tanks shall be sold and delivered by the manufacturer completely assembled.
- B. Tanks shall be structurally sound and support external forces as specified above when empty and internal forces when full. Tanks shall not deform or creep resulting in deflection more than 5 percent in shape as a result of loads imposed.
- C. Tanks and all below grade fittings and connections shall be water tight.

### Septic Tank Placement Specifications

- A. During the process of placing the septic tank, avoid causing compaction in the absorption field by not entering the absorption field area.
- B. Where natural soil is not suitable tanks shall be placed on a bed of at least 4 inches of sand, pea gravel, or crushed granular noncorrosive material for proper leveling and bearing. Material shall be no larger than 2 inches in diameter and bed depth shall be at least four times the largest material diameter.

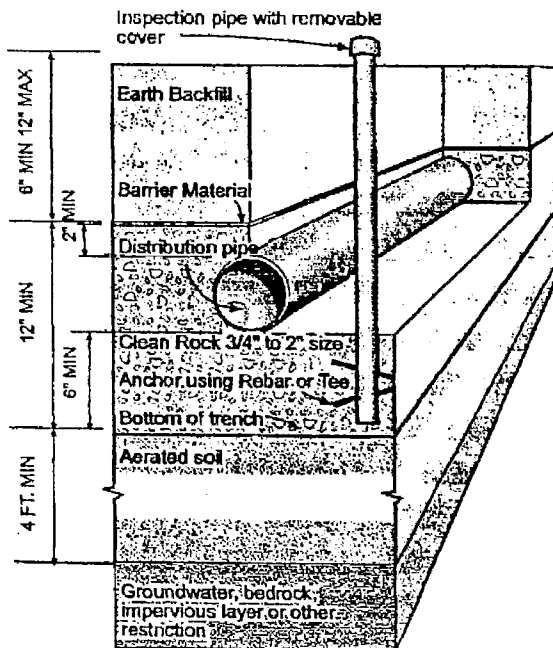
The site and soil evaluation previously discussed in that section is essential for good design. The loading rate is determined from the soil profile using Table 2 or from the perc rate using Table 4 or by using another method as specified in the local code. The soil absorption area is obtained by dividing the wastewater flow in gallons per day (gpd) by the loading rate (gpd per square foot (ft<sup>2</sup>)).

The maximum gravity lateral run shall not exceed 100 feet and preferably should be less than 60 feet. If a lateral is supplied from the center, the total length shall not exceed 200 feet (100 feet to each side) and a maximum of 120 feet is preferred. Lateral systems on level sites with all laterals on the same elevation shall be connected at each end with a level manifold or connector pipes as shown in Figure 3 so there are no dead ends.

Table 8—Trench Separation Distances

Trench Width (inches)	Recommended Minimum Distance Between Trench Centerline (feet)
18-24	8.0
24-30	8.5
30-36	9.0

Figure 5—Standard Lateral Trench Design



**Loading rate example**

The following example illustrates how to choose and use the loading rate for design:

- four-bedroom home
- Harney soil, Light silty clay loam with medium subangular blocky structure at 17 to 40 inches
- greater than 6 feet to restrictions of rock or perched water table
- perc rate 40 minutes per inch
- trench width 3 feet
- undisturbed soil width between trenches is 6 feet

**Wastewater flow**

Size of house (number of bedrooms) × flow rate (gpd) per bedroom = total daily wastewater production  
 4 bedrooms × 150 gpd/bedroom = 600 gpd

**Loading rate**

From soil evaluation, Table 2 = 0.4 gpd/ft<sup>2</sup> and from perc test using Table 4 = 0.5 gpd/ft<sup>2</sup>

Use the smaller of these or 0.4 gpd/ft<sup>2</sup> for design.

**Absorption Area**

Wastewater flow ÷ Loading rate = absorption area

$$\frac{600 \text{ gpd}}{0.4 \text{ gpd/ft}^2} = \frac{600 \text{ ft}^2}{0.4} = 1,500 \text{ ft}^2$$

**Trench Length**

Absorption area ÷ trench width = length of trench

$$\frac{1,500 \text{ ft}^2}{3 \text{ feet}} = 500 \text{ lineal feet of trench length}$$

**Field Area**

Only the bottom area of the trench is considered in determining absorption area. The absorption trench width should be 18 to 36 inches, preferably 24 inches. For 3 feet wide trenches as in this example, the total lateral length needed is 500 feet. If trenches are 2 feet wide, the total lateral trench length is 750 feet. Assuming that a 3 feet wide trench will be used and 100 feet is the length of each trench, 5 trenches, 100 feet long will be needed for 1,500 ft<sup>2</sup> total trench bottom. To calculate the total area necessary for the field, include the minimum 6 feet of undisturbed soil between trenches. For this example the total width is (5 × 3 ft) + (4 × 6 ft) = 15 ft + 24 ft = 39 feet. The total field area is 39 × 100 or 3,900 ft<sup>2</sup>. An area equal to this same size should be reserved for future expansion and/or replacement.

For sites that slope more than about 1 percent, a level lateral system installed without shaping the surface often requires more than a half foot difference in soil cover from one side of the area to the other. On slopes greater than 1½ percent there is enough slope to use a step down (or serial) distribution. This results in the top lateral

When suitable rock or gravel is not locally available, is expensive, or access to the site is restricted, gravelless chambers are good choices for laterals. They have the advantage of more liquid storage capacity, reducing the effect of high flows or loadings on weekends or holidays. Chamber systems are lightweight making installation easier at sites with restricted heavy equipment access. Chambers also may be recovered for reuse in the future. Before using chambers, consult the local authority to identify requirements.

Chunks of recycled tires are a suitable substitute for rock. Ninety percent of the pieces should be 1/2 to 4 inches in size with no fines. Wire strands shall not extend more than 1/2 inch from the pieces.

The porous media shall be covered with a filter fabric (at least 3 ounce nylon or 5 ounce polypropylene) before backfilling to prevent soil from sifting through the media. Traditional untreated building paper or 3-inch layer of straw are inferior second choices or are not recommended. Filter fabric is required when tire pieces are used as the porous media. Materials relatively impervious to air and moisture are not permitted.

## Field Construction Specifications

Protection of the absorption field area begins before any activity on the site. The site and soil evaluation identifies the best lateral field area and reserve area. Heavy equipment, such as loaded trucks, should be kept away from the absorption field by marking the site. The weight of such equipment can permanently alter soil characteristics due to compaction. Excessive equipment or foot traffic can compact even relatively dry soils.

Construction of septic tank-lateral field systems when the soil is too wet causes compaction and smearing of the soil structure, greatly reducing the water absorption and treatment efficiency of the system. A good test for this is to work the soil into a ball and roll between the hands. If it can be rolled out into a soil wire 1/4 inch in diameter or smaller without falling apart, it is too wet and construction should not proceed.

Before beginning construction, contours should be determined and level lateral locations should be marked by flags or stakes on the contour. Trenches shall not be excavated deeper than the design depth or wider than the design width. Following excavation, the trench sides and bottom shall be raked to remove any smearing and graded to assure a bottom with no more than 1 inch difference in elevation along the entire lateral length or the complete field for a level system. The lateral pipe and rock cover shall not vary more than 1 inch in elevation along the lateral length using a surveyor level or laser.

The trench bottom should then be immediately covered with at least 6 inches of rock or the chamber. Distribution pipes are carefully placed on the rock,

and leveled with perforations at 4 o'clock and 8 o'clock positions. Rock is placed around and over the pipe to a cover depth of at least 2 inches.

After rock and pipe have been placed in the trench the filter fabric or other barrier shall be placed to protect from soil movement into the rock. Finally, earth backfill shall be carefully placed to fill the trench cavity. The backfill shall be mounded above the trench about 20 percent of the soil fill height to allow for settling. If a variation in the trench depth is used, topsoil also must be placed between laterals as well as over the lateral to level the site.

## Maintaining Onsite Wastewater Systems

The homeowner's responsibility for onsite wastewater treatment and disposal does not end when the backfill is placed over the trench lines and wastewater introduced. Maintenance of the system is a critical factor to ensure long life and continued effectiveness of the system. Minimum annual maintenance criteria include:

- check the sludge and scum in the tank to determine pumping requirements; tanks need to be pumped regularly depending on wastewater flow and tank size, (often 3 to 5 years),
- check the baffles or tees to ensure they are intact, secure, and in good condition,
- check the septic tank and soil absorption area monthly for indications of leaks or failure,
- check observation ports in each lateral to ensure effluent is reaching all parts of the system,
- check effluent filter and clean as needed.

Refer to K-State Research and Extension bulletins listed at the end of this document for additional information. A file containing records of repairs, pumping, site plan of the system, annual checklist, and other pertinent information should be maintained for easy reference and for information when ownership changes.

## Wastewater Stabilization Ponds

Wastewater ponds, sometimes called lagoons, are a viable sewage treatment method and should be considered for individual household wastewater where soil conditions have severe limitations for conventional lateral absorption field systems. Single family wastewater ponds should not be considered if septic tank-lateral field systems are feasible as determined by local requirements or recommendations contained in this bulletin. Wastewater ponds are especially applicable on sites with very restrictive permeability, high clay subsoil, (i.e. slow perc rates) or shallow bedrock where adequate area is available.

A wastewater pond is a small pond with a maximum 5-foot operational water depth, which receives domestic wastewater. Size, as in a soil absorption field, is deter-

## Procedure

1. **Identify Proposed Site of Absorption Field**—The site preferably should be located downslope from the septic tank. If effluent will not flow by gravity, an effluent pump may be used to move effluent to a suitable absorption field. For new homesites, the proposed area reserved for future use should also be checked for suitability.
2. **Number and Location of Tests**—Locate a minimum of four to six holes uniformly over the proposed absorption field site. If the site is sloping, it is especially important to have test holes at all elevations to be used so that any differences in soil will be evaluated.
3. **Type of Test Hole**—Dig or bore each hole to the depth of the proposed trench (usually 18 to 24 inches) and with a consistent diameter (8 inches is recommended). All test holes shall be the same size to help ensure consistency in results.
4. **Prepare the Test Hole**—Scratch the sides and bottom of the hole to eliminate any smeared or compacted soil surfaces and remove loose material from the hole. Place 2 inches of washed gravel in the bottom of the hole. The gravel can be contained in a mesh bag for easy removal and reuse at other sites. This gravel protects the bottom of the hole from erosion, scouring, and sediment as water is introduced.
5. **Wet Hole to Allow for Soil Swelling**—Saturation means that the voids between the soil particles are filled with water. This happens fairly quickly for soil immediately surrounding the portion submerged in water. Swelling is caused by intrusion of water into the clay particles and can take many hours and possibly days when the soil is quite dry.
  - A. Carefully add 12 to 14 inches of water. Using a hose will prevent soil washing down from the sides of the hole.
  - B. Maintain the water level for at least 24 hours to allow for swelling to occur. In most cases it will be necessary to add water periodically from a reservoir. A float supplied by a hose from a reservoir simplifies the procedure.
  - C. If the soil appears to be sandy or initially very dry, plan to check the condition of the hole wetting after 12 hours or overnight. If there is no water left in the hole and the reservoir is dry, refill the reservoir and holes. After the full 24 hours have passed since soaking was initiated, begin measuring as described in #6.
6. **Perc Measurement**
  - A. Remove the apparatus used to add water to the hole.
  - B. Place the batter board across the top of each hole and secure with weights, spikes or attach

to stakes. Be sure that the centerline mark is centered over the hole and each board is numbered.

- C. Align the measuring rule with mark on the board and use the hook gauge or the float and rod to read the level when it just touches the water surface. Record the measurement and time. Fill the hole to about 6 inches over the rock and make the initial measurement.
  - D. Measure at 30-minute intervals (does not have to be exact) recording both level and time. If the water level in the hole drops too rapidly, it will be necessary to reduce the time interval for measurement. The time interval should be short enough that the water level should not drop more than 25 percent of the wetted hole depth.  
Note: If the water drops more than 1 to 2 inches in 30 minutes, it will be necessary to add water to the hole after each reading until it is the same depth as recorded initially. Be sure to record the measurement of the refilled perc hole.
7. **Calculate Perc Rate.** Divide time interval by drop in water level to find the perc rate in minutes per inch (mpi).

Examples:

If the drop is  $\frac{5}{8}$  inches in 25 minutes:

$$\frac{25}{\frac{5}{8}} = 25 \times \frac{8}{5} = 40 \text{ mpi}$$

If the drop is  $1\frac{1}{2}$  inches in 12 minutes:

$$\frac{12}{1\frac{1}{2}} = \frac{12}{\frac{3}{2}} = \frac{12 \times 2}{3} = 8 \text{ mpi}$$

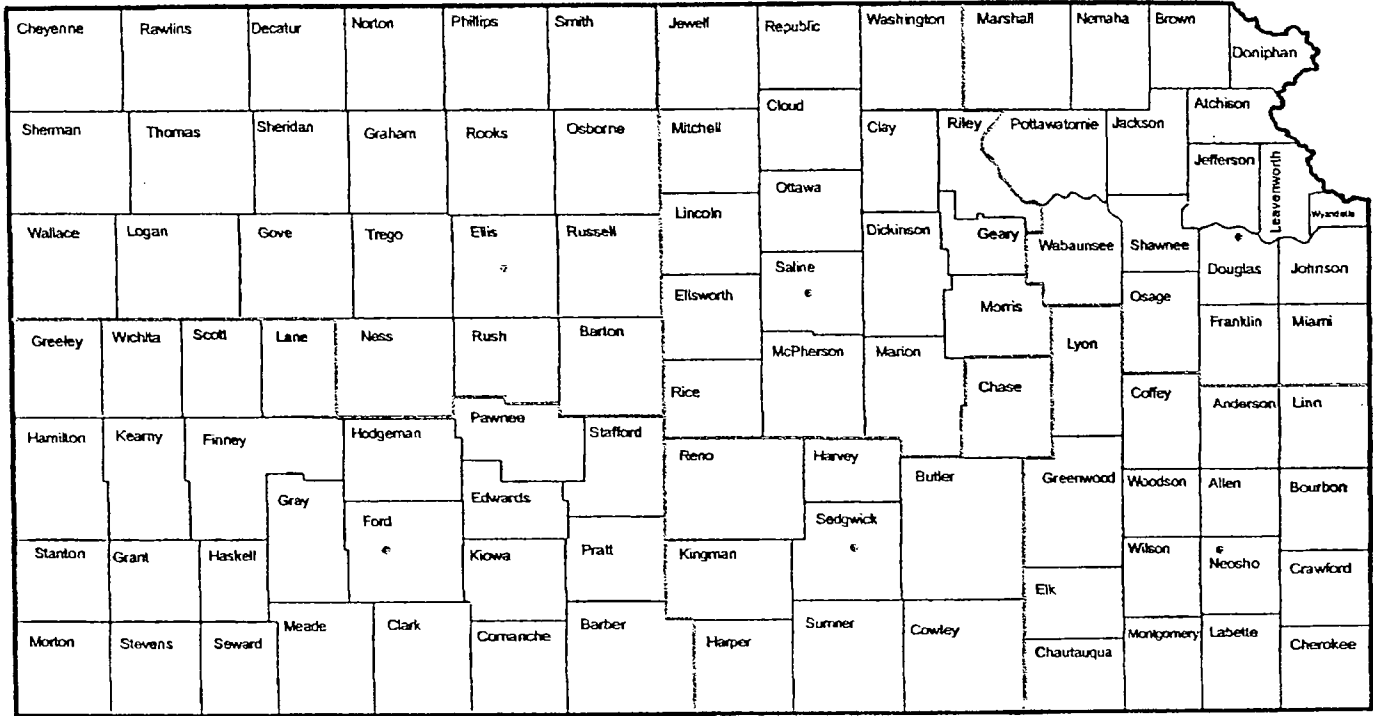
- A. Continue measurements until each of three consecutive calculated rates varies by no more than 10 percent from the average of the three rates. Use the average of three rates as the value for that hole

Example:

Rates of 26.0, 28.0, and 30.5 mpi average 28.2 mpi

- B. Measure and calculate the rate for each hole in the application field. Average the rates for all holes as the value to use for loading rate and bottom area sizing.
8. **Compare with Permeability in the NRCS Soil Survey.** The field measured perc (mpi) should be no smaller than about one third the inverse of the permeability rate shown in the table of physical and chemical properties of soils in the soil survey report. If it is, suspect a problem with the perc test, soil mapping or other cause. A well aggregated, undisturbed soil may have a good perc rate.

## KDHE District Boundries and District Offices



KDHE, Division of Environment, Nonpoint Source Section  
 Forbes Field, Bldg. 283  
 Topeka, Kansas 66620  
 (785) 296-4195

### KDHE District Offices

Kansas Dept Health & Environment  
 Northwest District Office  
 2301 E. 13th Street  
 Hays, KS 67601-2651  
 (785) 625-5663

Kansas Dept Health & Environment  
 North Central District Office  
 2501 Market Place, Suite D  
 Salina, KS 67401  
 (785) 827-9639

Kansas Dept Health & Environment  
 Northeast District Office  
 800 W. 24th Street  
 Lawrence, KS 66046-4417  
 (785) 842-4600

Kansas Dept Health & Environment  
 Southwest District Office  
 302 W. McArtor Road  
 Dodge City, KS 67801-6098  
 (316) 225-0596

Kansas Dept Health & Environment  
 South Central District Office  
 130 S. Market, 6th Floor  
 Wichita, KS 67202-3802  
 (316) 337-6020

Kansas Dept Health & Environment  
 Southeast District Office  
 1500 W. 7th Street  
 Chanute, KS 66720-9701  
 (316) 431-2390



# WASTEWATER SYSTEM REQUIREMENTS 2007

## Distribution Box

- A distribution box is required on every wastewater system installed in Barton County.
- The distribution box can be no less than a seven-hole distribution box. The design must mimic the Tuff-Tite brand, and/or be a Tuff-Tite.
- Stackable risers must be installed on the distribution box if needed to bring the top of the box to grade.
- Speed levelers must be installed in every distribution box.
- Using a speed leveler ensures that all the lateral lines will receive the same amount of effluent. Without the speed levelers, the whole theory of a distribution box is destroyed. Additionally, the risers make the distribution box accessible to the Homeowner; so that they can make sure each lateral line is getting the same amount of effluent. This is why the top of the box needs to be at grade.

## Poly Tanks & Fiberglass Tanks

- There are many different Septic Tank Manufacturers that have been approved for installation in Kansas. I am attaching a copy of the most updated list from KDHE - (10/21/05). You will note, that Fiberglass Tanks have regained approval for use in Kansas.
- All of these tanks have special setting and backfilling requirements. In many cases, the requirement comes from the Manufacturer.
- The Barton County Environmental Manager must be present when any poly and/or fiberglass tank is being set and backfilled in Barton County.

## Lagoons

- Generally most of the lagoons are going to be M-40 lagoons.
- All lagoons must have five feet of operational water depth, and at least two feet of freeboard.
- All lagoons must be built with a dozer and/or an excavator. A backhoe will also be necessary to complete the installation of the sewer pipe, and to establish the proper compaction and installation of the liner. As with all wastewater systems a Licensed Wastewater Installer must be running the dozer, excavator or the backhoe.
- If grade is a problem a lift may be needed and/or a second cell must be built. Every lagoon is different.
- A lagoon requires a 100 ft separation from water wells and a 50 ft separation from property lines
- A minimum liner (bentonite) of 1600 pounds is required on all lagoons; in some cases additional bentonite is necessary if the soil conditions warrant it. Please note that Barton County Environmental Management staff must be on site during the entire process of installing the liner. Additionally, if the wind is blowing... then the liner will not be installed. Yes, this can make it difficult to complete the lagoon due to our typically windy conditions, but the bentonite is a powder and it would be lost to the wind.
- A soil analysis must be conducted on every prospective lagoon site prior to the issuance of a permit. This is so that the amount of bentonite, and/or special construction requirements can be established. The soil analysis pit needs to be dug by a Licensed Wastewater Installer.
- All lagoons must be wheel compacted during the installation of the liner. A tracked machine (such as a dozer) will not be permitted. Only after the liner is satisfactorily installed can the line then be installed to the center of the lagoon. Again, during this phase of the installation the Barton County Environmental Management Division staff must be present, and additional bentonite will be necessary to "patch" the cut in the side of the lagoon.
- From the house to the center of the lagoon must be four inch schedule 40 pipe or heavier.
- The line going to the center of the lagoon will be suspended above the bottom of the lagoon and so therefore must be physically secured in place to keep the line from "floating". See the Barton County Environmental management Division for various options on how to complete this phase.
- A concrete slab at least 2 feet x 2 feet x 4 inches thick must be installed at the center of the lagoon where the end of the line discharges. The line should be above the concrete slab at least 20 inches, however, through trial and error The Barton County Environmental Management Division recommends that the maximum separation distance not exceed 18 inches. The most successful separation distance has been 12 inches. It is necessary to submerge the pipe with water in order to insure that the line does not freeze.
- At least two cleanouts should be used, one just outside the house and a second near the pond where the ground surface is 6 inches above the embankment for access to unplug the line. A cleanout at each change in

- Inspection ports are required at the end of every other row.
- In most cases a distribution box will not be required with a chamber bed; however, contact the Barton County Environmental Manager on each site as each lay-out may be different.
- When installing the header system, there must be an independent line installed for each chamber row.

### **Variances, Consent, Easement**

- A variance can be issued to get close to a building with the lateral field. ONLY if it is not possible to stay 20 feet away, and if the Owner is willing to acknowledge the risks involved.
  - Consent is needed in order to be within 25 ft of the property line. The consent has to be given by the property owner that it is affecting, and it must be notarized.
  - An easement needs to be obtained to put any part of a septic system on another person's property. This should be legally binding.
- 

In Barton County no part of the septic system can be within 50 ft of any domestic well.

The septic system can not be constructed in any right-of-ways, easements, or set backs.

By placing a filter in a septic tank it can add 250 gallons to the septic tank size. Minimum septic tank size is 1000 gallons.

**Please be advised that the Barton County Environmental Management Division reserves the right to change or update this list of requirements as necessary due to ever changing technology as well as changes that come about to State and County Regulations. If you have questions....ASK. We look forward to working with all of you.**



# Barton County

**Barton Invests in Growth**

Judy Goreham, Environmental Manager jgoreham@bartoncounty.org email

## MEMORANDUM

Dated July 7, 2003

TO: Real Estate Community  
Lending Institutions

FROM: Barton County Environmental Management Division

RE: Policy Changes for Lender Evaluations Effective July 7, 2003

---

Please accept this memorandum as a policy change for all Lender Evaluations conducted by the Barton County Environmental Management Division after July 1, 2003.

Per this policy change, a formal request form must be completed on all Lender Evaluations. Please use the updated form as will be provided by the Environmental Management Division.

For all properties without permits on file for septic systems, and/or for all properties where the septic systems are more than ten years old, the tank must be pumped out and an inspection conducted. This inspection must be done from start to finish of the pump-out. We recommend that you have an order put in with a licensed wastewater hauler, asking that they contact the Environmental Management Division to schedule the inspection. This inspection is being done to verify the size, type and condition of the tank, as well as to verify that the lateral field and/or brick pit does not "back-pressure" to the septic tank. If any portion of this inspection does not "pass", upgrades will be required before the report will be approved.

For all properties with permits on file for septic systems, and if less than ten years old, the tank will need to be pumped out by a licensed wastewater hauler and a receipt provided to Barton County showing the size, type and condition of the tank. This needs to be done unless documentation is provided showing that the tank was pumped within the last three years. An actual receipt from the wastewater hauler will be necessary. Note, a copy of a check is not a receipt. For these properties, County staff does not need to be present for the pump-out.

Additional requirements will include a visual inspection of all basements and/or crawl spaces to verify the location that the plumbing exits the home. There will also be visual inspections of all cleanouts and risers wherever they are present.

For all properties that have been vacated for "any" amount of time, then in addition to the above requirements, a cautionary statement will be included with the report stating that due to the fact that the property has been vacant, it is advised that caution be shown toward the septic system.

For any property that has "distressed" vegetation in the area of the septic system, a cautionary statement will be included with regard to the septic system. This is not to be confused with actual surfacing sewage. The presence

of “distressed” vegetation is a sign that the septic system is problematic. Surfacing sewage is evidence of a “failed” septic system.

Barton County licensed wastewater haulers are aware of the requirements for having tanks pumped out. They are aware that County staff must be present before they begin a pump-out. They are also aware that the County recommends contact with the haulers to order a pump-out and that they will need to schedule the inspection with this office. The haulers know that receipts of all future pump-outs will be required.

You must communicate to the wastewater hauler if the tank needs an inspection or not. Please call this office at 793-1894, or toll free at 1-877-419-7171, on any property and we will conduct a file search for past permits and tell you immediately if an inspection of the tank is necessary.

The County does recommended that inspections be completed as soon as possible. It will place the seller in a better position if he/she is aware of how their property will rate and what may be involved in the sale.

The current fee schedule, as adopted by the Barton County Commission on July 7, 2003, is:

<b>SERVICE</b>	<b>FEE</b>
Septic System Permit Fee	\$75.00
Water Well Permit Fee	\$45.00
<i>Lender Evaluation Fees</i>	
Full Inspection – Water Well Evaluation, Septic Evaluation, H2O Test through Certified Lab	\$75.00
Full Inspection – Water Well Evaluation, Septic Evaluation, H2O Test through In-House Lab	\$50.00
Partial Inspection – Water Well Evaluation or Septic Evaluation only	\$50.00
Re-visit Inspection	\$25.00
<i>Water Testing Fees</i>	
Chloride (Cl)	\$10.00
Chlorine (Cl <sub>2</sub> )	Free
Coliform Bacteria <sup>1</sup> (Biological)	\$15.00 <sup>1</sup>
Fecal Coliform <sup>2</sup> (Biological)	\$15.00 <sup>2</sup>
Nitrate Nitrogen (NO <sub>3</sub> -N)	\$10.00
Daycare Inspection Fee	\$10.00 plus the cost of a Water Test

Please note, Central Kansas Local Environmental Planning Group records, as relate to properties located in Barton County, will be available through the Environmental Management Division.

Should you have any questions reference County policies or operating procedures, contact Judy Goreham, Environmental Manager, at the Barton County Environmental Management Division, Barton County Courthouse, 1400 Main – Room 108, Great Bend, Kansas, 67530. The office phone number is (620) 793-1894 or toll free – 1-877-419-7171. You may also email questions or comments to [jgoreham@bartoncounty.org](mailto:jgoreham@bartoncounty.org).

## APPENDIX 4

K.A.R. 28-30-2

KANSAS ADMINISTRATIVE REGULATIONS  
AGENCY 28. DEPARTMENT OF HEALTH AND ENVIRONMENT  
ARTICLE 30.--WATER WELL CONTRACTOR'S LICENSE; WATERWELL  
CONSTRUCTION AND ABANDONMENT

Current with rules/regulations filed before January 1, 2001

### 28-30-2 Definitions.

(a) "License" means a document issued by the Kansas department of health and environment to qualified persons making application therefore, authorizing such persons to engage in the business of water well contracting.

(b) "Department" means the Kansas department of health and environment.

(c) "Abandoned water well" means a water well determined by the department to be a well:

(1) whose use has been permanently discontinued;

(2) in which pumping equipment has been permanently removed;

(3) which is either in such a state of disrepair that it cannot be used to supply water, or has the potential for transmitting surface contaminants into the aquifer, or both;

(4) which poses potential health and safety hazards; or

(5) which is in such a condition that it cannot be placed in active or inactive status.

(d) "Water well contractor" or "contractor" means any individual, firm, partnership, association, or corporation who constructs, reconstructs, or treats a water well. The term shall not include:

(1) an individual constructing, reconstructing or treating a water well located on land owned by the individual, when the well is used by the individual for farming, ranching, or agricultural purposes or for domestic purposes at the individual's place of abode; or

(2) an individual who performs labor or services for a licensed water well contractor at the contractor's direction and under the contractor's supervision.

(e) "Aquifer" means an underground formation that contains and is capable of transmitting groundwater.

(f) "Confined aquifer" is an aquifer overlain and underlain by impermeable layers. Groundwater in a confined aquifer is under pressure greater than atmospheric pressure and will rise in a well above the point at which it is first encountered.

(n) "Static water level" means the highest point below or above ground level which the groundwater in the well reaches naturally.

(o) "Annular space" means the space between the well casing and the well bore or the space between two or more strings of well casing.

(p) "Sanitary well seal" is a manufactured seal installed at the top of the well casing which, when installed, creates an airtight and watertight seal to prevent contaminated or polluted water from gaining access to the groundwater supply.

(q) "Treatment" means the stimulation of production of groundwater from a water well, through the use of hydrochloric acid, muriatic acid, sulfamic acid, calcium or sodium hypochlorite, polyphosphates or other chemicals and mechanical means, for the purpose of reducing or removing iron and manganese hydroxide and oxide deposits, calcium and magnesium carbonate deposits and slime deposits associated with iron or manganese bacterial growths which inhibit the movement of groundwater into the well.

(r) "Reconstructed water well" means an existing well that has been deepened or has had the casing replaced, repaired, added to or modified in any way for the purpose of obtaining groundwater.

(s) "Pump pit" means a watertight structure which:

(1) is constructed at least two feet away from the water well and below ground level to prevent freezing of pumped groundwater; and

(2) houses the pump or pressure tank, distribution lines, electrical controls, or other appurtenances.

(t) "Grout tremie pipe" or "grout pipe" means a steel or galvanized steel pipe or similar pipe having equivalent structural soundness that is used to pump grout to a point of selected emplacement during the grouting of a well casing or plugging of an abandoned well or test hole.

(u) "Uncased test hole" means any test hole in which casing has been removed or in which casing has not been installed.

(v) "Drilling rig registration license number" means a number assigned by the department which is affixed to each drilling rig operated by or for a licensed water well contractor.

(w) "Active well" means a water well which is an operating well used to withdraw water, or to monitor or observe groundwater conditions.

(x) "Inactive status" means a water well which is not presently operating but is maintained in such a way that it can be put back in operation with a minimum of effort.

(y) "Heat pump hole" means a hole drilled to install piping for an earth coupled water source heat pump system, also known as a vertical closed loop system.

K.A.R. 28-30-3

KANSAS ADMINISTRATIVE REGULATIONS  
AGENCY 28. DEPARTMENT OF HEALTH AND ENVIRONMENT  
ARTICLE 30.--WATER WELLCONTRACTOR'S LICENSE; WATERWELL  
CONSTRUCTION AND ABANDONMENT

Current with rules/regulations filed before January 1, 2001

28-30-3 Licensing.

(a) Eligibility. To be eligible for a water well contractor's license an applicant shall:

- (1) pass an examination conducted by the department; or
- (2) meet the conditions contained in subsection (c).

(b) Application and fees.

(1) Each application shall be accompanied by an application fee of \$10.00.

(2) Before issuance of a water well contractor's license, each contractor shall pay a license fee of

\$100.00 plus \$25.00 for each drill rig operated by or for the contractor. These fees shall accompany the application and shall be by bank draft, check or money order payable to the Kansas department of health and environment--water well licensure.

(c) Reciprocity.

(1) Upon receipt of an application and payment of the required fees from a nonresident, the secretary may issue a license, providing the nonresident holds a valid license from another state and meets the minimum requirements for licensing as prescribed in > K.S.A. 82a-1207, and any amendments thereto.

(2) If the nonresident applicant is incorporated, evidence shall be submitted to the department of health and environment showing that the applicant meets the registration requirements of the Kansas secretary of state.

(3) Nonresident fees for a license shall be equal to the fee charged a Kansas contractor by the applicant's state of residence but shall not be less than \$100.00. The application fee and drill rig license fee shall be the same as the Kansas resident fees.

(d) License renewal.

(1) Each licensee shall make application for renewal of license and rig registrations before July 1 of each year by filing the proper renewal forms provided by the department and fulfilling the following requirements:

K.A.R. 28-30-4

KANSAS ADMINISTRATIVE REGULATIONS  
AGENCY 28. DEPARTMENT OF HEALTH AND ENVIRONMENT  
ARTICLE 30.--WATER WELL CONTRACTOR'S LICENSE; WATERWELL  
CONSTRUCTION AND ABANDONMENT

Current with rules/regulations filed before January 1, 2001

28-30-4 General operating require-ments.

(a) Water well record.

Within 30 days after construction or reconstruction of a water well, the water well contractor shall submit a report of such work, to the Kansas department of health and environment and to the landowner, on the water well record form, form WWC-5, provided by the department. The contractor shall report to the department and to the landowner on the water well record or attachments made thereto any polluted or other noncompliant conditions which the contractor was able to correct and any conditions which the contractor was unable to correct. The contractor shall report to the department and the landowner the plugging of any abandoned water well. The report shall include the location, landowner's name, method, type of plug material, its placement and amount used to plug the abandoned water well. A landowner who constructs, reconstructs, or plugs a water well, which will be or was, used by the landowner for farming, ranching or agricultural purposes or is located at the landowner's place of abode, shall submit a water well record, on form WWC-5, of such work to the department within 30 days after the construction, reconstruction or plugging of the water well. No fee shall be required from the landowner for the record.

(b) Artificial recharge and return. The construction of artificial recharge wells and freshwater return wells shall comply with all applicable rules and regulations of the department.

(c) Well tests. When a pumping test is run on a well, results of the test shall be reported on the water well record, form WWC-5, or a copy of the contractor's record of the pumping test shall be attached to the water well record.

(d) Water samples. Within 30 days after receipt of the water well record, form WWC-5, the department may request the contractor, or landowner who constructs or reconstructs his or her own water well, to submit a sample of water from the well for chemical analysis. Insofar as is possible, the department will define in advance areas from which well water samples are required. (Authorized by > K.S.A. 82a-1205 and implementing > K.S.A. 82a-1202, > 82a-1205, > 82a-1212, > 82a-1213; effective, E-74-34, July 2, 1974; modified, L. 1975, ch. 481, May 1, 1975; amended May 1, 1980; amended May 1, 1987.)



K.A.R. 28-30-6

KANSAS ADMINISTRATIVE REGULATIONS  
AGENCY 28. DEPARTMENT OF HEALTH AND ENVIRONMENT  
ARTICLE 30.--WATER WELL CONTRACTOR'S LICENSE; WATERWELL  
CONSTRUCTION AND ABANDONMENT

Current with rules/regulations filed before January 1, 2001

28-30-6 Construction regulations for all wells not included under section 28-30-5.

(a) Each water well shall be so located as to minimize the potential for contamination of the delivered or obtained groundwater and to protect groundwater aquifers from pollution and contamination.

(b) Grouting.

(1) Constructed or reconstructed wells shall be sealed by grouting the annular space between the casing and the well bore from ground level to a minimum of 20 feet or to a minimum of five feet into the first clay or shale layer if one is present, whichever is greater. If a pitless well adapter or unit is being installed, the grouting shall start below the point at which the pitless well adapter or unit attaches to the well casing and shall continue a minimum of 20 feet below this point, or to a minimum of five feet into the first clay or shale layer, whichever is greater.

(2) To facilitate grouting, the grouted interval of the well bore shall be drilled to a minimum diameter at least three inches greater than the maximum outside diameter of the well casing. If a pitless well adapter or unit is being installed on the well's casing, the well bore shall be a minimum diameter of at least three inches greater than the outside maximum diameter of the well casing through the grouted interval below the point where the pitless well adapter or unit attaches to the well casing.

(c) If groundwater is encountered at a depth less than the minimum grouting requirement, the grouting requirement may be modified to meet local conditions if approved by the department.

(d) Waters from two or more separate aquifers shall be separated from each other in the bore hole by sealing the bore hole between the aquifers with grout.

(e) The well casing shall terminate not less than one foot above the finished ground surface. No casing shall be cut off below the ground surface except to install a pitless well adapter unit, which shall extend at least 12 inches above the ground surface. No opening shall be made through the well casing except for the installation of a pitless well adapter designed and fabricated to prevent soil, subsurface and surface water from entering the well.

(f) Well vents shall be used and shall terminate not less than one foot above the ground surface and shall be screened with brass, bronze, copper screen or other screen materials

(r) Pump mounting.

(1) All pumps installed directly over the well casing shall be so installed that an airtight and watertight seal is made between the top of the well casing and the gear or pump head, pump foundation or pump stand.

(2) When the pump is not mounted directly over the well casing and the pump column pipe or pump suction pipe emerges from the top of the well casing, a sanitary well seal shall be installed between the pump column pipe or pump suction pipe and the well casing. An airtight and watertight seal shall be provided for the cable conduit when submersible pumps are used.

(s) Construction of sand point or well point water wells. Sand point or well point water wells shall be constructed by drilling or boring a pilot hole to a minimum depth of three feet below ground surface. The pilot hole shall be a minimum of three inches greater in diameter than the drive pipe or blank casing if the casing method is used. Sand point wells shall only be completed by using the casing method or the drive pipe method as described in paragraphs (1) and (2) below or other methods as described in paragraph (3) below. Sand point wells constructed prior to the effective date of this regulation shall not be required to meet these requirements. All sand point wells that are replaced, constructed, reconstructed or plugged after the effective date of this regulation shall meet these regulations.

(1) Casing method. Approved, durable, watertight well casing shall be set from a minimum of three feet below the ground surface to at least one foot above the ground surface. The casing shall be sealed between the casing and the pilot hole with approved grouting material from the bottom of the casing to ground surface. The drive pipe shall be considered the pump drop pipe. For underground discharge completions, a "T" joint shall be used. The drive pipe shall be capped with a solid cap at the "T" joint when the casing method is used. An approved sanitary well seal and a well vent shall be installed on the top of the well casing in accordance with K.A.R. 28-30-6 (f) and (k).

(2) Drive pipe method. Sand point wells may be installed without a casing for above ground discharge completions only. In such completions, the drive pipe shall terminate at least one foot above finished ground level. The annular space between the drive pipe and the pilot hole shall be sealed with approved grouting material from the bottom of the pilot hole to ground surface. The top of the drive pipe shall be sealed airtight and watertight with a solid cap of the same material as the drive pipe. A well vent shall not be required for the drive pipe method.

(3) Other methods. Other methods may be specifically approved by the department on a case-by-case basis by using the appeal procedure included in > K.A.R. 28-30-9.

(4) Abandonment of sand point wells. Upon abandonment of a sand point well, the contractor or landowner shall either pull the drive pipe or leave it in place. If the drive pipe is left in place, the sand point well shall be plugged from the bottom of the well to three feet below the ground surface with approved grouting material. The drive pipe well shall be cut off three feet below the ground surface and the remaining three foot deep hole shall be backfilled with surface soil. If the drive pipe is completely pulled, the remaining hole shall be plugged with approved grouting material from the bottom of the remaining hole to three feet below the ground surface. The hole shall be backfilled with surface soil from 3 feet to ground surface.

K.A.R. 28-30-7

KANSAS ADMINISTRATIVE REGULATIONS  
AGENCY 28. DEPARTMENT OF HEALTH AND ENVIRONMENT  
ARTICLE 30.--WATER WELL CONTRACTOR'S LICENSE; WATERWELL  
CONSTRUCTION AND ABANDONMENT

Current with rules/regulations filed before January 1, 2001

28-30-7 Plugging of abandoned wells, cased and uncased test holes.

(a) All water wells abandoned by the landowner on or after July 1, 1979, and all water wells that were abandoned prior to July 1, 1979 which pose a threat to groundwater supplies, shall be plugged or caused to be plugged by the landowner. In all cases, the landowner shall perform the following as minimum requirements for plugging abandoned wells.

(1) The casing shall be cut off three feet below ground surface and removed.

(2) All wells shall be plugged from bottom to top using volumes of material equaling at least the inside volume of the well.

(3) Plugging top of well:

(A) For cased wells a grout plug shall be placed from six to three feet below ground surface.

(B) For dug wells, the lining material shall be removed to at least five feet below ground surface, and then sealed at five feet with a minimum of six inches of concrete or other materials approved by the department. Compacted surface silts and clays shall be placed over the concrete seal to ground surface.

(4) Any groundwater displaced upward inside the well casing during the plugging operation shall be removed before additional plugging materials are added.

(5) >From three feet below ground level to ground level, the plugged well shall be covered over with compacted surface silts or clays.

(6) Compacted clays or grout shall be used to plug all wells from the static water level to six feet below surface.

(7) All sand and gravel used in plugging abandoned domestic or public water supply wells shall be chlorinated prior to placement into a well.

(b) Abandoned wells formerly producing groundwater from an unconfined aquifer shall be plugged in accordance with the foregoing and in addition shall have washed sand, and gravel or other material approved by the department placed from the bottom of the well to the static water level.

intended is responsible for plugging the abandoned hole using the following applicable method, within three calendar days after the termination of testing or other operations.

(A) The entire hole shall be plugged with an approved grouting material from bottom of the hole, up to within three feet of the ground surface, using a grout tremie pipe or similar method.

(B) >From three feet below ground surface to ground surface the plugged hole shall be covered over with compacted surface silts or clays.

(C) For bore holes of 25 feet or less, drill cuttings from the original hole may be used to plug the hole in lieu of grouting material, provided that an aquifer is not penetrated or the bore hole is not drilled in an area determined by the department to be a contaminated area.

(3) Plugging of heat pump holes drilled for closed loop heat pump systems. The entire hole shall be plugged with an approved grouting material from bottom of the hole, to the bottom of the horizontal trench, using a grout tremie pipe or similar method approved by the department.

(e) Abandoned oil field water supply wells. A water well drilled at an oil or gas drilling site to supply water for drilling activities shall be considered an abandoned well immediately after the termination of the oil or gas drilling operations. The company in charge of the drilling of the oil or gas well shall be responsible for plugging the abandoned water well, in accordance with K.A.R. 28- 30-7(a), (b), and (c), within 30 calendar days after the termination of oil or gas drilling operations. Responsibility for the water well may be conveyed back to the landowner in lieu of abandoning and plugging the well but the well must conform to the requirements for active or inactive status. The transfer must be made through a legal document, approved by the department, advising the landowner of the landowner's responsibilities and obligations to properly maintain the well, including the proper plugging of the well when it is abandoned and no longer needed for water production activities. If a transfer is to be made, the oil or gas drilling company shall provide the department with a copy of the transfer document within 30 calendar days after the termination of oil or gas drilling operations. Within 30 calendar days of the effective date of the transfer of the well the landowner shall notify the department of the intended use and whether the well is in active status or inactive status in accordance with K.A.R. 28-30-7(f).

(f) Inactive status. Landowners may obtain the department's written approval to maintain wells in an inactive status rather than being plugged if the landowner can present evidence to the department as to the condition of the well and as to the landowner's intentions to use the well in the future. As evidence of intentions, the owner shall be responsible for properly maintaining the well in such a way that:

(1) The well and the annular space between the hole and the casing shall have no defects that will permit the entrance of surface water or vertical movement of subsurface water into the well;

(2) the well is clearly marked and is not a safety hazard;

(3) the top of the well is securely capped in a watertight manner and is adequately maintained in such a manner as to prevent easy entry by other than the landowner;

K.A.R. 28-30-8

KANSAS ADMINISTRATIVE REGULATIONS  
AGENCY 28. DEPARTMENT OF HEALTH AND ENVIRONMENT  
ARTICLE 30.--WATER WELL CONTRACTOR'S LICENSE; WATERWELL  
CONSTRUCTION AND ABANDONMENT

Current with rules/regulations filed before January 1, 2001

28-30-8 Pollution sources.

Well locations shall be approved by municipal and county governments with respect to distances from pollution sources and compliance with local regulations. The following minimum standard shall be observed.

(a) The horizontal distances between the well and the potential source of pollution or contamination such as sewer lines, pressure sewer lines, septic tanks, lateral fields, pit privy, seepage pits, fuel or fertilizer storage, pesticide storage, feed lots or barn yards shall be 50 feet or more as determined by the department.

(b) Proper drainage in the vicinity of the well shall be provided so as to prevent the accumulation and ponding of surface water within 50 feet of the well. The well shall not be located in a ravine or any other drainage area where surface water may flow into the well.

(c) When sewer lines are constructed of cast iron, plastic or other equally tight materials, the separation distance shall be 10 feet or more as determined by the department.

(d) All wells shall be 25 feet or more from the nearest property line, allowing public right-of-ways to be counted; however, a well used only for irrigation or cooling purposes may be located closer than 25 feet to an adjoining property where:

(1) such adjoining property is served by a sanitary sewer and does not contain a septic tank system, disposal well or other source of contamination or pollution; and

(2) the property to be provided with the proposed well is served by both a sanitary sewer and a public water supply.

(Authorized by and implementing > K.S.A. 82a-1202, > 82a-1205; effective, E74-34, July 2, 1974; modified, L. 1975, ch. 481, May 1, 1975; amended May 1, 1980; amended May 1, 1987.)

K.A.R. 28-30-10

KANSAS ADMINISTRATIVE REGULATIONS  
AGENCY 28. DEPARTMENT OF HEALTH AND ENVIRONMENT  
ARTICLE 30.--WATER WELL CONTRACTOR'S LICENSE; WATER WELL  
CONSTRUCTION AND ABANDONMENT

Current with rules/regulations filed before January 1, 2001

28-30-10 Water well disinfection for wells constructed or reconstructed for human consumption or food processing.

(a) Gravel for gravel-packed wells shall be disinfected by immersing the gravel in a chlorine solution containing not less than 200 milligrams per liter, mg/l, of available chlorine before it is placed in the wells annular space.

(b) Constructed or reconstructed wells shall be disinfected by adding sufficient hypochlorite solution to them to produce a concentration of not less than 100 mg/l of available chlorine when mixed with the water in the well.

(c) The pump, casing, screen and pump column shall be washed down with a 200 mg/l available chlorine solution.

(d) All persons constructing, reconstructing or treating a water well and removing the pump or pump column, replacing a pump, or otherwise performing an activity which has potential for contaminating or polluting the groundwater supply shall be responsible for adequate disinfection of the well, well system and appurtenances thereto.

(Authorized by and implementing K.S.A. 82a-1202, > 82a-1205; effective, E-74-34, July 2, 1974; modified, L. 1975, ch. 481, May 1, 1975; amended May 1, 1980; amended May 1, 1987.)