

Submit To: CHIEF ENGINEER  
Division of Water Resources  
Kansas Department of Agriculture  
109 SW 9<sup>th</sup> Street, Second Floor  
Topeka, Kansas 66612-1283  
[www.ksda.gov/dwr](http://www.ksda.gov/dwr)

KANSAS DEPARTMENT OF AGRICULTURE  
DIVISION OF WATER RESOURCES

**NOTICE OF COMPLETION OF  
DIVERSION WORKS and/or  
REPORT OF FLOWMETER  
INSTALLATION**

**For Office Use Only:**  
Code FIS  
Fee \$ \_\_\_\_\_  
TR # \_\_\_\_\_  
Rcpt Date \_\_\_\_\_  
Check # \_\_\_\_\_

**Section 1. Action requiring this form is:** (See supplemental instructions on form DWR 1-203.14)

New application approval and permit to proceed (Fee must be attached. \$400 fee required for all uses made of water, except for sediment control use and groundwater pit for industrial use a \$200 fee is required by K.S.A. 82a-714(d)) **Make check payable to the Kansas Department of Agriculture**

- Change in point of diversion (no fee).       Change in place of use of water (no fee).  
 Change in use made of water (no fee).       A replacement/repair of previous flowmeter (no fee).  
 Term permit (no fee).       Other (e.g., special order of the Chief Engineer).

I, the holder of a permit issued by the Chief Engineer of the Division of Water Resources pursuant to the file(s) referenced in section 2, hereby certify that the information on sections 1-5 of this form is correct to the best of my knowledge.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_ I.D. No.: \_\_\_\_\_  
(mo / day / year) Social Security or Taxpayer

K.A.R. 5-1-1(y), defines diversion works as "all well(s), pump(s), power unit(s), power source(s), dam(s) and all other devices necessary to bring water under control for delivery to a distribution system by which the water will be distributed to the proposed use and any other equipment required . . . such as a check valve, water level measurement tube, meter or other measuring device."

If you have completed your diversion works as described above and completed the requirements as set forth in your Approval of Application, please complete this form. **If you are unable to meet the requirements stated on your approval, you must submit a request for extension of time** (form DWR 1-203.15). K.S.A. 82a-714(e) puts a \$100 fee on an extension of time to complete the diversion works. **Failure to notify the Chief Engineer of the completion of the diversion works within the time allotted can result in dismissal of the referenced file(s) and loss of priority date.**

If the subject file(s) authorizes multiple new points of diversion (PDs), you may photocopy this form (both sides) and submit one form for each new PD authorized. **An instruction sheet with sample entries is available as form DWR 1-203.14.**

**Section 2 - Location of the Point of Diversion**

The location of the point of diversion should be described as actually installed. The description should include the Section, Township, and Range, the 10-acre tract description (¼ ¼ ¼) and the footage from the SE corner of the section.

1. File No(s): \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ [If assisted by DWR: P/D ID \_\_\_\_\_ By: \_\_\_\_\_]

2. The date the diversion works were completed: \_\_\_\_\_, 20\_\_\_\_.

3. The diversion works are located in the \_\_\_\_\_ Quarter of the \_\_\_\_\_ Quarter of the \_\_\_\_\_ Quarter of (also described as \_\_\_\_\_ feet North and \_\_\_\_\_ feet West of the southeast corner of ... ), Section \_\_\_\_\_, Township \_\_\_\_\_ South, Range \_\_\_\_\_ East / West, in \_\_\_\_\_ County, Kansas.

If this is a change in point of diversion (PD), how was the PD being replaced identified? \_\_\_\_\_

4.  Yes  No Is a check valve installed? (Check valve is required when chemigating.)  
5.  Yes  No If the source of supply is groundwater, is the water level measurement tube installed?  
6.  Yes  No If the source of supply is a surface water reservoir, is a stage-measuring device installed?

**Section 3 PRINT CLEARLY**

Printed Name: \_\_\_\_\_

Address: \_\_\_\_\_

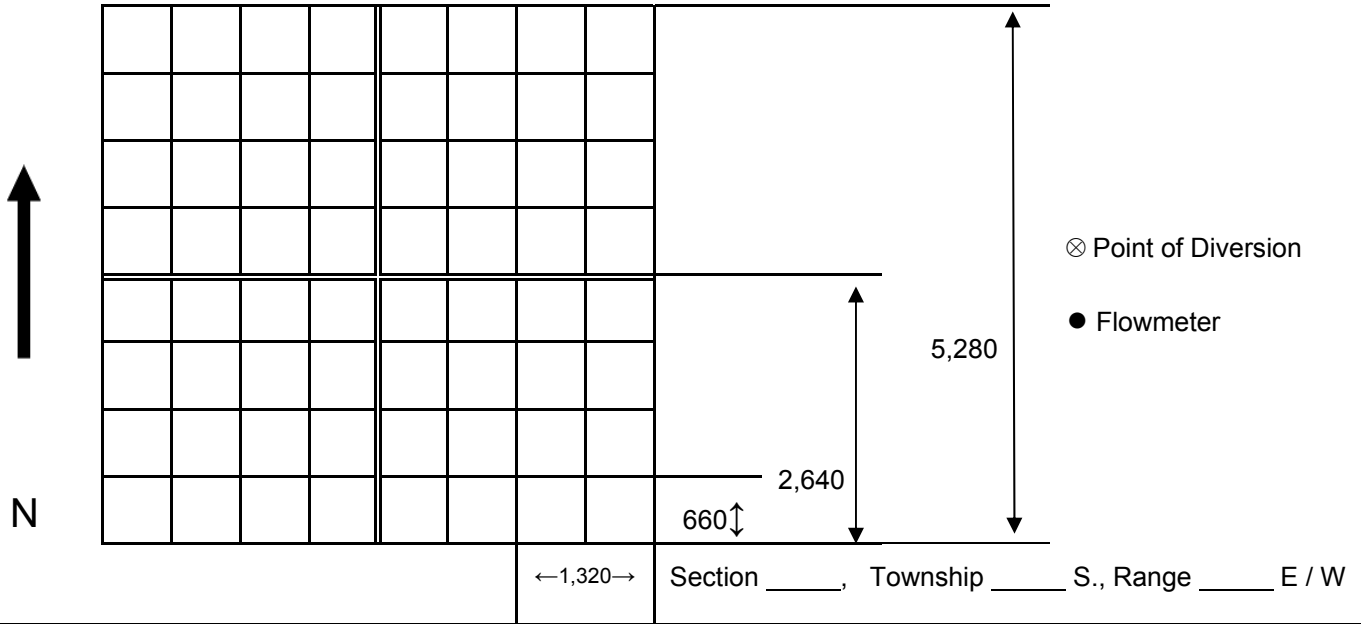
City, ST Zip: \_\_\_\_\_

Telephone: \_\_\_\_\_

FO GMD

**Section 4 - Point of Diversion/Flowmeter Location Map**

The plat below represents a one-mile square. Please indicate the location of the point of diversion and the location of the flowmeter installation. Write in section number(s) as appropriate.



**Section 5 - Flowmeter information** File No(s): \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

7. Manufacturer of Flowmeter: \_\_\_\_\_ Date Flowmeter Installed: \_\_\_\_\_  
(mo / day / year)
8. Model Number: \_\_\_\_\_ (Obtain from seller or invoice)
9. Flowmeter Type:  Propeller  Turbine  SLV  Multi-jet  Positive Displacement  
 Electromagnetic  Vortex  Ultrasonic  Paddlewheel Other: \_\_\_\_\_
10. Flowmeter Serial Number: \_\_\_\_\_
11. Flowmeter Units:  Gallons  Acre-Feet  Acre-Inches Other: \_\_\_\_\_
12. Flowmeter Size:  2"  4"  6"  8"  10"  12" Other: \_\_\_\_\_
13. Multiplier Factor:  1000  100  10  1  0.1  0.01  0.001 Other: \_\_\_\_\_  
*(Multiplier factor is normally indicated on flowmeter readout – possibly by printed zeros)*
14. Flowmeter totalizer reading when installed: \_\_\_\_\_

If the flowmeter is hidden, or not within 100 ft of the point of diversion being metered, please describe its location, draw a diagram above and explain details on diagram:  Flowmeter is at pivot

15. The flowmeter is located in the \_\_\_\_\_ Quarter of the \_\_\_\_\_ Quarter of the \_\_\_\_\_ Quarter  
*[or describe from section lines: \_\_\_\_\_ feet (North or South) and \_\_\_\_\_ feet (East or West)]*  
 in Section \_\_\_\_\_, Township \_\_\_\_\_ S., Range \_\_\_\_\_ (East / West).

16.  Yes  No Is flowmeter installed on a portable pump?
17.  Yes  No Are straightening vanes installed? (Required for any approval dated after Sept. 22, 2000)
18.  Yes  No Does flowmeter serve more than one point of diversion? (If yes, show on diagram above.)
19.  Yes  No Is this a replacement flowmeter? If yes, identify the previous flowmeter:  
 Make: \_\_\_\_\_, Model: \_\_\_\_\_, Serial no.: \_\_\_\_\_  
 Totalizer reading at replacement time: \_\_\_\_\_ Date flowmeter removed: \_\_\_\_\_  
(mo / day / year)

If you have further questions on how to fill out this form, please contact the field office in your area:

**Topeka**  
 Bldg 282, Forbes Field  
 PO Box 19323  
 Topeka, KS 66619-0323  
 (785) 862-6300

**Stafford**  
 300 South Main St.  
 Stafford, KS 67578  
 (620) 234-5311

**Stockton**  
 820 South Walnut  
 PO Box 192  
 Stockton, KS 67669  
 (785) 425-6787

**Garden City**  
 2508 Johns Street  
 Garden City, KS 67846  
 (620) 276-2901

**Instructions for completing the Notice of Completion of Diversion Works form**  
**Please complete form using your information, this is for example purposes only**

The "Notice of Completion of Diversion Works" form, DWR 1-203.11, is a required step in the process of developing a water right. By completing this form the applicant is saying that all the diversion works are in place, ready to divert and measure water, and ready to be inspected by the Division of Water Resources (DWR). In section 1, describe the action that necessitates this notice. K.S.A. 82a-714(d) requires that the notice of completion for an Approval of Application and Permit to Proceed be accompanied by a \$400 Field Inspection Fee for all uses made of water, except for sediment control use and groundwater pit for industrial use a \$200 fee is required. None of the other actions require a fee. **Make check payable to the Kansas Department of Agriculture.**

All sections of this form need to be completed regardless of action. The signature in section 1 allows the applicant to certify that all the information provided on the form is correct. Sign and date the form before mailing it to: Kansas Department of Agriculture, Division of Water Resources, 109 SW 9<sup>th</sup> St., 2<sup>nd</sup> floor, Topeka, Kansas 66612-1283.

**Section 2 - Location of the Point of Diversion**

The location of the point of diversion should be described as actually installed. The description should include the Section, Township, and Range, the 10-acre tract description (¼ ¼ ¼) and the footage from the SE corner of the section.

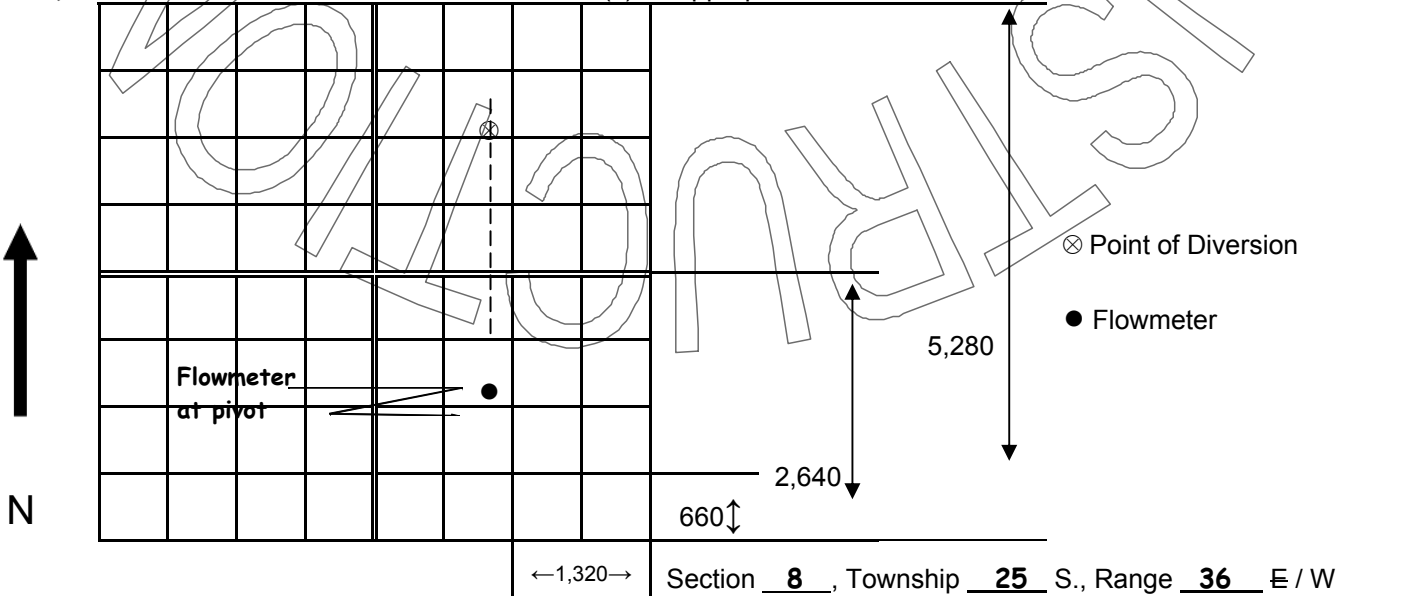
1. File No(s): 55,555, \_\_\_\_\_, \_\_\_\_\_ [If assisted by DWR: P/D ID \_\_\_\_\_ By: \_\_\_\_\_]
2. The date the diversion works were completed: January 1, 20 09. (completed means able to divert water.)
3. The diversion works are located in the SE Quarter of the NW Quarter of the NE Quarter of (also described as 4100 feet North and 1540 feet West of the southeast corner of \_\_\_\_\_), Section 8, Township 25 South, Range 36 East / West, in Your County County, Kansas. (Location of the groundwater or surface water pump or surface water gravity diversion where actually placed. Describe using the Section, Township, and Range, the 10-acre tract description (¼ ¼ ¼) and the distance, in feet, North and West from the southeast section corner. During DWR's inspection, field staff will use GPS equipment to find and verify locations.)

If this is a change in point of diversion (PD), how was the PD being replaced identified? 4100'N & 1560'W  
 (Location of the point of diversion being changed in terms of Feet N & W of SE corner or ¼ ¼ ¼ of section \_\_\_\_\_)

4.  Yes  No Is a check valve installed? (Check valve is required when chemigating.)  
 (K.A.R. 5-3-5(c) says a check valve is required if any foreign substance is to be introduced into the diverted water. Big Bend Groundwater Management District No. 5 requires a check valve for any regulated use of water in their district.)
5.  Yes  No If the source of supply is groundwater, is the water level measurement tube installed?  
 (A water level measurement tube is required for any well with a capacity of 100 gallons per minute or more drilled after July 1, 1980.)
6.  Yes  No If the source of supply is a surface water reservoir, is a stage-measuring device installed?

**Section 4 - Point of Diversion/Flowmeter Location Map**

The plat below represents a one-mile square. Please indicate the location of the point of diversion and the location of the flowmeter installation. Write in section number(s) as appropriate.



**Section 5 - Flowmeter information**

7. Manufacturer of Flowmeter: McCrometer Date Flowmeter Installed: 01/01/09  
(mo / day / year)

8. Model Number: MD 300 (Obtain from seller or invoice)  
(Typically, the model name or number of the flowmeter is only available from the provider of the flowmeter and will not be found on the flowmeter itself. The model name or number should also be written on the purchase invoice. This name/number is important because not every model from a manufacturer may be on DWR's certified flowmeter listing.)

9. Flowmeter Type:  Propeller  Turbine  SLV  Multi-jet  Positive Displacement  
 Electromagnetic  Vortex  Ultrasonic  Paddlewheel Other: \_\_\_\_\_  
(Check only one type of flowmeter. The provider of the flowmeter being reported should be able to identify the type of flowmeter for you.)

10. Flowmeter Serial Number: ##-#-####  
(Flowmeters that meet the Chief Engineer's specifications will have the serial number indicated on the sensor unit. The number may be found on the register face, register lid, an attached tag, or other appurtenance of the flowmeter. Typically, numbers cast into the body of the flowmeter are not model or serial numbers.)

11. Flowmeter Units:  Gallons  Acre-Feet  Acre-Inches Other: \_\_\_\_\_  
(The units for reporting water use in Kansas are acre-feet, acre-inches, or gallons. Flowmeters that report in units other than these are not acceptable.)

12. Flowmeter Size:  2"  4"  6"  8"  10"  12" Other: \_\_\_\_\_  
(Report the nominal size of the pipe the flowmeter is mounted in or will attach to. Mark only one box. The flowmeter may be capable of more than one size but mark the size on which it is being used.)

13. Multiplier Factor  1000  100  10  1  0.1  0.01  0.001 Other: \_\_\_\_\_  
(Multiplier factor is normally indicated on flowmeter readout – possibly by printed zeros)  
(A multiplier factor is used to reduce or extend the range of the totalizer dials/digits. A flowmeter measuring in gallons may have 3 zeros marked on the right of the totalizer dial indicating a multiplier factor of 1,000 so that each unit change of the right hand moving digit of the totalizer represents 1,000 gallons. Likewise, a flowmeter measuring in acre-feet may have written across the register face "Acre-feet x .001" and the multiplier factor would be 0.001.)

14. Flowmeter totalizer reading when installed: 000003000 gallons

If the flowmeter is hidden, or not within 100 ft of the point of diversion being metered, please describe its location, draw a diagram above and explain details on diagram:  Flowmeter is at pivot

15. The flowmeter is located in the Center Quarter of the \_\_\_\_\_ Quarter of the SE Quarter  
[or describe from nearest section lines: 1320 feet (North or South) and 1320 feet (East or West)]  
in Section 8, Township 25 S., Range 36 (East/West).  
(Sometimes, the best place to locate a flowmeter is not at the point of diversion. If the flowmeter is not readily obvious when standing near the point of diversion or is more than 100 feet from the point of diversion, please indicate where and how it can be found.)

16.  Yes  No Is flowmeter installed on a portable pump?  
(When the flowmeter is installed as part of a portable pump, it may serve multiple points of diversion. A copy of the Notice of Completion of Diversion Works form should be submitted for each point of diversion permitted. The flowmeter information (section 5) may be the same on each form in this case.)

17.  Yes  No Are straightening vanes installed? (Required for any approval dated after Sept. 22, 2000)  
(Spiraling flow in the pipe is detrimental to the accuracy of the flowmeter. Any approval dated after September 22, 2000, must have straightening vanes installed upstream of the flowmeter.)

18.  Yes  No Does flowmeter serve more than one point of diversion? (If yes, show on diagram above.)  
(If the flowmeter is allowed on the permit to serve more than one point of diversion, then all the pertinent diversion points and the connecting pipe should be indicated on the plat in section 4. This will help the DWR field staff in verifying that the flowmeter does indeed measure the intended diversions.)

19.  Yes  No Is this a replacement flowmeter? If yes, identify the previous flowmeter:  
Make: McCrometer, Model: MD 300, Serial No.: ##-#-####  
Totalizer reading at replacement time: 987654000 gallons Date flowmeter removed: 11/30/08  
(mo / day / year)

**Kansas Water Flowmeter Regulations  
(Excerpted from Kansas Administrative Regulations, Article 5)**

**K.A.R. 5-1-1. Definitions.** As used in these regulations and the Kansas water appropriation act, and by the division of water resources in the administration of the Kansas water appropriation act, unless the context clearly requires otherwise, the following words and phrases shall have the meanings ascribed to them in this regulation.

(z) "Diversion" means the act of bringing water under control by means of a well, pump, dam, or other device for delivery and distribution for the proposed use.

(aa) "Diversion works" means any well, pump, power unit, power source, dam, and any other devices necessary to bring water under control for delivery to a distribution system by which the water will be distributed to the proposed use and any other equipment required as a condition of the permit, including a check valve, water level measurement tube, meter, or other measuring device.

(bb) "Division" means the division of water resources of the Kansas department of agriculture.

(gg) "Flow-straightening vanes" means vanes, or other device installed at the upstream throat of a measuring chamber for the purpose of aligning all velocity components of flow parallel with the flow in the measuring chamber at the water flowmeter sensor location.

(nn) "In compliance" means that a water flowmeter does not meet any of the criteria of K.A.R. 5-1-9 for being out of compliance.

(ss) "Measuring chamber" means a cylindrical chamber in which a water flowmeter is installed that is calibrated to match the measuring element of the water flowmeter and the nominal size of the pipe in which it is installed.

(uu) "Nonvolatile memory" means the ability of a water flowmeter to retain the values stored in the mechanical or electronic memory if all power, including backup battery power, is removed.

(vv) "Normal operating range" means the range of flow rates for which the water flowmeter will meet the accuracy requirements of K.A.R. 5-1-4 (a), as certified by the water flowmeter manufacturer.

(aaa) "Point of diversion" means the point at which water is diverted or withdrawn from a source of water supply.

(ooo) "Register" means an integral or remote device that displays the quantity of water passing the water flowmeter sensor and is part of the water flowmeter.

(bbbb) "Straight pipe" means a straight length of pipe free of all internal obstructions, including size changes, valves, cooling coils, injection ports, sand or foreign material, and any other condition that would cause a disturbance of the internal velocity profile in the pipe. Internal obstructions shall not include properly designed, constructed, and installed straightening vanes and inspection ports.

(hhhh) "Totalizer" means the mechanical or electronic portion of the register that displays the total quantity of water that has passed the water flowmeter sensor.

(nnnn) "Water flowmeter" means the combination of a flow-sensing device, measuring chamber, integral or remote display device or register, and any connecting parts required to make a working assemblage to measure, record, and allow determination of flow rate and total quantity of water flowing past the water flowmeter sensor.

**K.A.R. 5-1-4. Water flowmeter specifications.** (a) Each water flowmeter required by the chief engineer, or required pursuant to a regulation adopted by the chief engineer, on or after the effective date of this regulation shall meet the following minimum requirements:

(1)(A) The water flowmeter has been certified by the manufacturer to register neither less than 98 percent nor more than 102 percent of the actual volume of water passing the water flowmeter when installed according to the manufacturer's instructions. This requirement shall be met throughout the water flowmeter's normal operating range without further adjustment or calibration.

(B) The manufacturer has certified to the chief engineer that it has an effective quality assurance program, including wet testing a random sample of production line water flowmeters with water flowmeter test equipment. The minimum number of samples to be tested shall be determined using a confidence interval of 90 percent, an expected compliance of 95 percent, and an acceptable error of two percent. The minimum number of samples of each model that shall be tested shall be calculated by multiplying 1,300 times the annual production of that model of water flowmeter divided by Q. Q equals four times the annual production of that water flowmeter plus 1,300.

(C) The manufacturer has certified that the water flowmeter test equipment described in paragraph (a)(1)(B) has been tested annually and found accurate by standards traceable to the national institute of standards and technology (NIST). Documentation of the testing required in paragraphs (a)(1)(A) and (B) shall be maintained by the manufacturer for a period of at least five years and shall be made available to the chief engineer upon request during normal business hours.

(2) The water flowmeter shall be designed and constructed so that it will meet the following criteria:

(A) Maintain the accuracy required by the chief engineer in paragraph (a)(1)(A) through (C) and K.A.R. 5-1-9(a)(1);

(B) be protected by the following:

(i) A seal installed by the manufacturer or an authorized representative of the manufacturer; or

(ii) a way that makes it impossible to alter the totalizer reading without breaking the seal or obtaining the authorization of the manufacturer, an authorized representative of the manufacturer, or the chief engineer;

(C) clearly indicate the direction of water flow;

(D) clearly indicate the serial number of the water flowmeter;

(E) have a weatherproof register that is sealed from all water sources;

(F) have a register that is readable at all times, whether the system is operating or not;

(G) be able to be sealed by an authorized representative of the chief engineer to prevent unauthorized manipulation of, tampering with, or removal of the water flowmeter;

(H) be equipped with a manufacturer-approved measuring chamber through which all water flows. Except for positive displacement water flowmeters, full-bore electromagnetic water flowmeters, and multijet water flowmeters, flow-straightening vanes shall be installed at the upstream throat of the water flowmeter chamber. The flow-straightening vanes shall meet either of the following criteria:

(i) Be designed and installed by the manufacturer, or an authorized representative of the manufacturer; or

(ii) consist of at least three vanes that are longer, when placed parallel to the length of the pipe, than the inside diameter of the pipe, are equally spaced radially on the inner periphery of the pipe, and are wider in diametrical distance than one-fourth of the inside diameter of the pipe;

(I) be equipped with an inspection port if the straightening vanes are not designed, constructed, and installed by the manufacturer or an authorized representative of the manufacturer. The port shall be of sufficient size and placement to allow determination of the following:

(i) The proper installation of the flow-straightening vanes; and

(ii) the inside diameter of the pipe in which the water flowmeter sensor is installed;

(J) remain operable without need for recalibration to maintain accuracy throughout the operating life of the water flowmeter; and

(K) have a totalizer that meets the following criteria:

(i) Is continuously updated to read directly only in acre-feet, acre-inches, or gallons;

(ii) has sufficient capacity, without cycling past zero more than once each year, to record the quantity of water diverted in any one calendar year;

(iii) reads in units small enough to discriminate the annual water use to within the nearest 0.1 percent of the total annual permitted quantity of water;

(iv) has a dial or counter that can be timed with a stopwatch over not more than a 10-minute period to accurately determine the rate of flow under normal operating conditions; and

(v) has a nonvolatile memory.

(3) Each water flowmeter that is required to be installed by the chief engineer, or that was required to be installed as a condition of either an approval of application or an order of the chief engineer, or pursuant to a regulation adopted by the chief engineer before the effective date of this regulation, shall meet the following minimum specifications:

(A) Each water flowmeter shall be of the proper size, pressure rating, and style, and shall have a normal operating range sufficient to accurately measure the water flow passing the water flowmeter under normal operating conditions.

(B) Each water flowmeter shall meet the accuracy requirements of K.A.R. 5-1-9(a)(1). If the water flowmeter does not meet the accuracy requirements of K.A.R. 5-1-9(a)(1), then the water flowmeter shall meet either of the following criteria:

(i) Be repaired so that it meets the accuracy requirements of K.A.R. 5-1-9(a)(1); or

(ii) be replaced with a water flowmeter meeting all of the requirements of K.A.R. 5-1-4 and installed in a manner that meets the requirements of K.A.R. 5-1-6.

(b) A water flowmeter installed in the diversion works or a distribution system for a water right authorized for municipal use shall not be subject to the requirements of paragraph (a)(2)(B) if an accurate record of water use can be determined by readings from at least one alternate water flowmeter in the same diversion works or distribution system. (Authorized by K.S.A. 82a-706a;

implementing K.S.A. 82a-706a and K.S.A. 82a-706c; effective Sept. 22, 2000; amended Oct. 24, 2003; amended May 21, 2010.)

**K.A.R. 5-1-5. Variances from water flowmeter specifications.** (a) A variance from the chief engineer's water flowmeter specifications may be granted by the chief engineer if the water right owner furnishes detailed specifications of a proposed water flowmeter and demonstrates to the chief engineer all the following:

(1) A water flowmeter meeting the specifications of K.A.R. 5-1-4 will not satisfactorily serve the water user's needs.

(2) The proposed water flowmeter will meet the accuracy requirements of K.A.R. 5-1-4(a) and (b).

(3) The proposed water flowmeter will provide a reliable and accurate water use record for that point of diversion.

(b) Variances shall be granted only on a site-by-site, case-by-case basis. No general variances shall be granted for any brand or model of water flowmeter, except as set forth in subsection (c).

(c) A limited variance shall be granted by the chief engineer for a period of up to three years to allow that specific brand and model of a water flowmeter to be tested in the field and to serve as a water flowmeter required by the chief engineer if all of the following conditions are met:

(1) The manufacturer demonstrates to the chief engineer that a particular model and brand of water flowmeter utilizes new technology, does not meet one or more of the requirements of K.A.R. 5-1-4, and is likely to be as reliable, or more reliable, than water flowmeters currently meeting all of the requirements of K.A.R. 5-1-4.

(2) The manufacturer agrees to install not more than 50, nor less than 10, water flowmeters to test the new technology.

(3) The manufacturer agrees to collect data for at least one year that is sufficient to allow the chief engineer to determine whether that brand and model of water flowmeter meets the reliability and accuracy specifications of K.A.R. 5-1-4. (Authorized by K.S.A. 82a-706a; implementing K.S.A. 82a-706c; effective Sept. 22, 2000.)

**K.A.R. 5-1-6. Water flowmeter installation specifications.** (a) Each water flowmeter required by the chief engineer to be installed or required pursuant to a regulation adopted by the chief engineer, on or after the effective date of these regulations shall meet the following minimum water flowmeter installation specifications:

(1) Each water flowmeter shall be installed in a manner that meets the following criteria:

(A) Meets or exceeds the instructions of the manufacturer; and

(B) except for a multijet and a positive displacement water flowmeter, is installed so that there are at least five pipe diameters of straight pipe upstream and at least two pipe diameters of straight pipe downstream of the sensor portion of the water flowmeter, regardless of the manufacturer's installation specifications.

(2) Each water flowmeter shall be sized and installed so that full pipe flow will be maintained through the water flowmeter and so that water velocity in the measuring chamber will be within the normal operating range of the water flowmeter at all times while water is being diverted.

(3) If a water flowmeter is located downstream of a water storage device, there shall be at least seven diameters of straight pipe upstream of the water storage device where a water flowmeter may be installed for a field test by the chief engineer.

(4) Each water flowmeter shall be installed at a location at which the flowmeter measures all water diverted from the source of supply and does not measure water or other discharge, including tailwater and sewage effluent.

(b) Each water flowmeter that is required by the chief engineer to be installed, or that was required to be installed as a condition of either an approval of application or an order of the chief engineer, or pursuant to a regulation adopted by the chief engineer, before the effective date of these regulations, shall meet the following minimum installation specifications:

(1) Each water flowmeter shall be installed in a manner that meets or exceeds the instructions of the manufacturer and, except for a multijet and a positive displacement water flowmeter, shall be installed so that there are at least five pipe diameters of straight pipe upstream and at least two pipe diameters of straight pipe downstream of the sensor portion of the water flowmeter, regardless of the manufacturer's installation specifications.

(2) Each water flowmeter shall be sized and installed so that full pipe flow will be maintained through the water flowmeter and so that water velocity in the measuring chamber will be within the normal operating range of the water flowmeter at all times while the water is being diverted.

(3) Each water flowmeter shall be installed at a location at which the flowmeter measures all water diverted from the source of supply and does not measure water or other discharge, including tailwater and sewage effluent. (Authorized by K.S.A. 82a-706a; implementing K.S.A. 82a-706a and K.S.A. 82a-706c; effective Sept. 22, 2000; amended Oct. 24, 2003.)

**K.A.R. 5-1-7. Requirement to install a water flowmeter or other suitable watermeasuring device.** (a) All nondomestic, nontemporary wells and pump sites operated under the authority of an approval of application issued on or after the effective date of this regulation shall be equipped with a water flowmeter that meets or exceeds the specifications of the chief engineer effective at the time the application is approved by the chief engineer.

(b)(1) All nondomestic, nontemporary gravity diversions of water, including irrigation ditches, operating under the authority of an approval of application issued on or after the effective date of this regulation shall be equipped with a continuous recording gauge, or other suitable water-measuring device located at or near the headgate. Before installation, the water right owner shall submit plans and specifications for the proposed gauge, or other suitable watermeasuring device, to the chief engineer and shall receive approval in writing from the chief engineer before installing the gauge or other suitable water-measuring device.

(2) The gauge or other suitable water-measuring device shall meet the following criteria:

(A) Register not less than 94% and not more than 106% of the actual volume of water passing the device under normal operating conditions when compared to a field test made by, or approved by, the chief engineer;

(B) be installed in accordance with the installation requirements of the chief engineer; and

(C) be maintained in a satisfactory operating condition any time water can reasonably be expected to be diverted.

(c) An approval of a nondomestic application for change in place of use, the point of diversion, or the use made of the water, or any combination of these, shall require the owner of the water right to install a water flowmeter on all points of diversion authorized by the water right or approval of application, unless any of the following conditions is met:

(1) The applicant demonstrates to the chief engineer that the application to change the place of use meets the requirements of K.A.R. 5-5-11(e).

(2) The applicant demonstrates to the chief engineer both of the following:

(A) Installation of a water flowmeter meeting these specifications is not physically feasible.

(B) The applicant agrees to implement a reasonable, objective alternative of measuring the quantity of water diverted that is acceptable to the chief engineer.

(3) The water is being diverted from multiple points of diversion authorized by one water right that does not limit the maximum annual quantity and maximum rate of diversion by point of diversion, and all of the water flows to a common point where a water flowmeter meeting the requirements of K.A.R. 5-1-4 and K.A.R. 5-1-6 measures all of the water pumped from all of the points of diversion authorized by that water right.

(4) An application for change in point of diversion only is filed to change the point of diversion of only one well, when more than one well is authorized by the approval of application or water right that authorizes the well for which a change in point of diversion is sought. In this case, only the well that is being relocated shall be required to have a water flowmeter.

(5) The water is being diverted from multiple points of diversion, and all of the following conditions are met:

(A) All points of diversion deliver water to only one distribution system.

(B) Each point of diversion can reasonably be expected to operate simultaneously and for the same total amount of time each calendar year.

(C) Each individual point of diversion has a tested diversion rate of less than 400 gallons per minute.

(D) A water flowmeter is installed that will measure 100 percent of the water pumped from all points of diversion.

(E) If the flow rate has not been tested within the last five years by the chief engineer or a person approved by the chief engineer, the owner shall have each point of diversion tested by a person approved by the chief engineer pursuant to K.A.R. 5-1-11. If the chief engineer becomes aware of information that the tested rates could no longer be correct, the chief engineer, or someone approved by the chief engineer pursuant to K.A.R. 5-1-11, may retest the rate of diversion produced by each point of diversion and those flow rates shall subsequently be used to determine the quantity diverted by each point of diversion.

(F) The owner has signed a consent agreement with the chief engineer that includes the following:

(i) A determination of the percentage of flow that will be attributed to each point of diversion if future administration becomes necessary; and

(ii) an agreement that the chief engineer may require a water flowmeter for each point of diversion if the chief engineer determines there are issues concerning impairment, violations of the conditions of the permit or water right, or a violation of the Kansas water appropriation act and its regulations.

(G) All uses of water are authorized by either a vested water right or a water right that has been certified pursuant to K.S.A. 82a-714, and amendments thereto.

(d) Except as set forth in subsection (c), if an approval of an application for change requires the installation of a water flowmeter, the requirement to install a water flowmeter shall also be placed on all other water rights and approvals authorizing diversion of water from the same point of diversion.

(e) If any water right or approval of application has a condition requiring development, adoption, and implementation of a water conservation plan pursuant to K.S.A. 82a-733 and amendments thereto, a water flowmeter or suitable water-measuring device shall be installed on each authorized point of diversion in compliance with these regulations.

(f) The owner of a water right, including a domestic water right, or an approval of application shall also be required by the chief engineer to install a water flowmeter or other suitable water-measurement device that meets the requirements of these regulations on each authorized point of diversion if it is necessary for the chief engineer to effectively administer water rights to prevent impairment, to protect minimum desirable stream flows, to conserve water, or to otherwise carry out the duties of the chief engineer as set forth in the Kansas water appropriation act, K.S.A. 82a-701 et seq., and amendments thereto.

(g) Except as set forth in subsection (c), if a water flowmeter is required by the chief engineer, each point of diversion authorized by the approval of application or water right shall be required to have a separate meter. (Authorized by K.S.A. 82a-706a; implementing K.S.A. 82a-706c; effective Sept. 22, 2000; amended Oct. 31, 2008.)

**K.A.R. 5-1-8. Water flowmeter maintenance.** If a water right owner is required by the chief engineer to install a water flowmeter, the water right owner shall maintain the water flowmeter in compliance, as defined by K.A.R. 5-1-1, whenever diversion of water can reasonably be expected to occur. If at any time the required water flowmeter fails to function properly, the owner shall promptly initiate action to repair or replace the meter, or to correct any problems with the installation. (Authorized by K.S.A. 82a-706a; implementing K.S.A. 82a-706c; effective Sept. 22, 2000.)

**K.A.R. 5-1-9. Criteria to determine when a water flowmeter is out of compliance.** (a) A water flowmeter shall be considered to be out of compliance if any of the following criteria is met:

(1) The water flowmeter registers less than 94 percent or more than 106 percent of the actual volume of water passing the water flowmeter. If necessary, this determination may be made by a field test conducted by, or approved by, the chief engineer.

(2) The seal placed on the totalizer by the manufacturer or the manufacturer's authorized representative has been broken, or the totalizer value has been reset or altered without the authorization of the manufacturer, an authorized representative of the manufacturer, or the chief engineer.

(3) A seal placed on the water flowmeter or totalizer by the chief engineer has been broken.

(4) The water flowmeter register is not visible or is unreadable for any reason.

(5) There is not full pipe flow through the water flowmeter.

- (6) Flow-straightening vanes have not been properly designed, manufactured, and installed.
- (7) The water flowmeter is not calibrated for the nominal size of the pipe in which the flowmeter is installed.
- (8) The water flowmeter is not installed in accordance with the manufacturer's installation specifications. However, five diameters of straight pipe above the water flowmeter sensor and two diameters below the water flowmeter sensor shall be the minimum spacing, regardless of the manufacturer's installation specifications.
- (9) A water flowmeter is installed at a location at which the flowmeter does not measure all of the water diverted from the source of supply.
- (b) A water flowmeter installed in the diversion works or a distribution system for a water right authorized for municipal use shall not be subject to the requirements of paragraphs (a)(2) and (3) if an accurate record of water use can be determined by readings from at least one alternate water flowmeter in the same diversion works or distribution system. (Authorized by K.S.A. 82a-706a; implementing K.S.A. 82a-706a and K.S.A. 82a-706c; effective Sept. 22, 2000; amended Oct. 24, 2003; amended May 21, 2010.)

**K.A.R. 5-1-10. Duties of water right owner when a water flowmeter is out of compliance.** (a) A water right owner, or the water right owner's authorized designee, shall promptly notify the chief engineer if any water flowmeter required by the chief engineer is out of compliance.

(b) Within 30 days after the date on which the out-of-compliance water flowmeter has been repaired or replaced, the water right owner or the water right owner's authorized designee shall notify the chief engineer in writing of the following information:

- (1) The date the water flowmeter became out of compliance;
  - (2) the water flowmeter reading at the time the water flowmeter became out of compliance;
  - (3) if the water flowmeter was replaced, the following information:
    - (A) The brand, model, size, and serial number of the new water flowmeter;
    - (B) the units in which the new water flowmeter reads;
    - (C) the reading of the new water flowmeter at the time of installation; and
    - (D) the location of the new water flowmeter on the diversion works or delivery system;
  - (4) if the water flowmeter was repaired, the water flowmeter reading immediately before the repair and the reading of the water flowmeter at the time it was reinstalled or the repair was completed on site;
  - (5) the date the repair or replacement was completed; and
  - (6) the amount of water diverted while the water flowmeter was out of compliance.
- (c) If the water right owner does not maintain a record of diversions of water that is sufficient to reasonably estimate the quantity of water diverted while the water flowmeter was out of compliance, it shall be assumed, for the sole purposes of enforcement of the terms, conditions, and limitations of

the approval of application or water right, and priority administration of water rights among water users, that the diversion works were operated continuously at the tested rate of diversion during the entire period the water flowmeter was out of compliance. If the rate of diversion has not been tested by the chief engineer, then it shall be assumed that the diversion works were operated continuously at the authorized rate of diversion during the entire time the water flowmeter was out of compliance. The assumption set forth in this subsection shall not apply to the determination of the annual quantity of water diverted for the purpose of perfecting a water right.

(d) If the water right owner is required by the chief engineer to repair or replace an inoperable water flowmeter, it shall be the duty of the water right owner to ensure that the repaired or replaced water flowmeter is in compliance with K.A.R. 5-1-4 and K.A.R. 5-1-6. (Authorized by K.S.A. 82a-706a; implementing K.S.A. 82a-706c; effective Sept. 22, 2000.)

K.A.R. 5-1-11. Water flowmeter testing by a nonagency person. If a water right owner desires to have a water flowmeter flow rate test done by a nonagency person for any reason, a person may be approved by the chief engineer to perform a water flowmeter flow rate test if the person demonstrates to the chief engineer both of the following:

- (a) The person has the training, skills, and experience necessary to properly conduct the test.
- (b) The person has the appropriate water flowmeter to do the test, and the water flowmeter has been tested for accuracy with water flowmeter test equipment that has been found to be accurate using standards traceable to the national institute of standards and technology (NIST). The equipment shall have been tested and found to be accurate within 12 months of performing the water flowmeter test. (Authorized by K.S.A. 82a-706a; implementing K.S.A. 82a-706c; effective Sept. 22, 2000.)

**K.A.R. 5-1-12. List of water flowmeters certified by the manufacturer to meet the specifications of the chief engineer.** (a) A list of all makes and models of water flowmeters that have been certified by the water flowmeter manufacturer to meet the specifications of the chief engineer shall be maintained by the chief engineer. This list shall be made available by the chief engineer to the public upon request.

(b) A water flowmeter shall be placed on the list only if the manufacturer has submitted to the chief engineer all of the following information for each water flowmeter model:

- (1) The water flowmeter manufacturer's name, address, contact person's name, and telephone number;
- (2) the water flowmeter model name or number;
- (3) proof that a random sample of water flowmeters of each model has been tested in accordance with the requirements of K.A.R. 5-1-4(a);
- (4) the last date that the water flowmeter test equipment was tested and found to be accurate by standards traceable to the national institute of standards and technology (NIST);
- (5) verification that the water flowmeter is designed and constructed so that accuracy will be maintained over the life of the water flowmeter;
- (6) verification that the water flowmeter serial number and direction of flow are clearly indicated on the water flowmeter;
- (7) verification that the register is weatherproof and sealed from all water sources;

- (8) verification that the totalizer will read only in acre-feet, acre-inches, or gallons;
  - (9) the number of active digits in the totalizer;
  - (10) verification that the memory is nonvolatile;
  - (11) verification that the totalizer cannot be reset without breaking the manufacturer's seal or obtaining the authorization of the manufacturer, an authorized representative of the manufacturer, or the chief engineer;
  - (12) verification that the water flowmeter and register are constructed in such a manner that they can be sealed by the chief engineer;
  - (13) a description of the measuring chamber provided for each water flowmeter model;
  - (14) specifications of the flow-straightening vanes installed in the measuring chamber;
  - (15) the spacing recommendations for each water flowmeter model in terms of pipe diameters of straight pipe required upstream and downstream of the water flowmeter sensor; and
  - (16) the normal operating range of the water flowmeter.
- (c) A brand or model of a water flowmeter shall be removed from the list of water flowmeters specified in subsection (a) of this regulation if it has been demonstrated to the chief engineer that the brand or model of water flowmeter does not reliably and consistently meet the accuracy standards of K.A.R. 5-1-9(a). (Authorized by K.S.A. 82a-706a; implementing K.S.A. 82a-706a and K.S.A. 82a-706c; effective Sept. 22, 2000; amended Oct. 24, 2003.)

**KANSAS DEPARTMENT OF AGRICULTURE  
DIVISION OF WATER RESOURCES  
TOPEKA, KANSAS**

**SPECIFICATIONS FOR  
WATER LEVEL MEASUREMENT TUBE  
NOVEMBER 5, 1999**

**I. GENERAL**

The Kansas Water Appropriation Act, K.S.A. 82a-706c, provides the Chief Engineer, Division of Water Resources, Kansas Department of Agriculture (Chief Engineer), with the authority to require any water user to install meters, gauges or other measuring devices, which he or she, or his or her agents may read at anytime, and to require any user to report the reading of such meters, gauges, or measuring devices at reasonable intervals.

The purpose of these specifications is to define methods of measurement and applications which are acceptable to the Chief Engineer. Other good workable methods may be acceptable to the Chief Engineer; however, any proposed methods which differ from those indicated herein shall first be submitted for review and approval by the Chief Engineer before construction begins.

**II. APPLICATION OF METHODS**

The methods of providing a water level measurement tube are:

1. Water level measurement tube adjacent to the production well casing.
2. Separate observation well within 25 feet of the production well.
3. Air line tube inside the production well casing.
4. Electronic water level measurement sensor.
5. Other site-specific methods authorized by the Chief Engineer.

These methods are described in section III. Depending on the type of application, some methods are not allowed.

**A. Public Water Supply (PWS)Wells**

All public water supply wells, which provide groundwater to the public for human consumption, where the delivery system 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, shall not use the method of placing a water level measurement tube adjacent to the well casing. All other methods listed above are acceptable.

**B. All Wells Penetrating Aquifers Having Total Dissolved Solid (TDS) Levels in Excess of 1,000 Milligrams per liter (Mg/L).**

All wells penetrating the Mississippian, Arbuckle, and any other formations that contain water with TDS levels in excess of 1,000 Mg/L, shall only use an air line tube inside the well casing or other site-specific methods authorized by the Chief Engineer.

**C. All Non-PWS Wells Penetrating Aquifers Having Total Dissolved Solid (TDS) Levels Less than 1,000 Mg/L.**

All non-public water supply wells completed in aquifers containing water of useable quality, including those to be used for industrial and irrigation purposes, may use any of the methods described above.

**III. METHODS OF MEASUREMENT**

**A. Water Level Measurement Tube Adjacent to the Well Casing. (Diagram A)**

A water level measurement tube adjacent to a well casing shall have a minimum nominal diameter of one inch and shall be installed in the annular space outside the well casing. If thermoplastic pipe is used, it shall be Standard Dimension Ratio (SDR) 21 or better. The tube shall extend from a minimum of 12 inches above the ground surface to the bottom of the well casing, unless written approval is received from the Chief Engineer for a different length tube. The installed tube must be capable of passing a 3/8-inch steel tape down to the depth of the production well.

The bottom end of the tube shall be closed with a cap of like material. A vented cap of like material shall be installed at the top of the tube to prevent foreign material from entering the tube.

Unless otherwise specified by the Chief Engineer, the bottom 10 feet of tube shall be either well screen or perforated pipe. In the event that a well is developed in more than one aquifer, special guidelines for the installation of the water level measurement tube shall be obtained from the Chief Engineer.

All material referred to above shall be selected and installed in accordance with Section IV of these specifications dealing with ACCEPTABLE MATERIALS AND INSTALLATION TECHNIQUES.

The tube need not be welded or attached to the well casing, but proper care must be exercised during installation to prevent damage to the tube. In deep wells, pipe guides may be welded below each joint of well casing and aligned to form a straight vertical support for the tube.

B. Separate Observation Well Near Production Well (Diagram B)

An observation well shall be constructed within 25 feet of the production well with a minimum nominal casing inside diameter of two inches to allow water samples to be obtained. This observation well shall be installed and screened at the same depth and producing zone of the aquifer as the adjacent production well, using the construction regulations described in K.A.R. 28-30-6.

The bottom end of the observation well casing shall be closed with a cap of like material. A vented, removable cap of like material shall be installed at the top of the observation well casing to prevent foreign material from entering the observation well.

If thermoplastic water well casing is selected, it must be SDR 21, or better.

Unless otherwise specified by the Chief Engineer, the bottom 10 feet of pipe shall be either well screen or perforated pipe. In the event that a well is developed in more than one aquifer, special guidelines for the installation of observation well shall be obtained from the Chief Engineer prior to construction of the observation well.

C. Air Line Tube Inside Well Casing (Diagram C)

The air line method measures depth to water by determining the air pressure required to push water out of a submerged tube of known length. The air line tube shall be constructed of corrosion-resistant materials and pass through the pump base inside the well casing in a manner that will provide for a watertight seal between the pipe and the pump base. The lower end of the tube shall terminate with an open end at least 5 feet above the pump intake to avoid turbulence, but always below the lowest possible pumping level. The upper end of the tube shall be fitted with suitable connections for an air gauge, valve and air pump. The actual installed length of air line shall be indicated on a metal plate in the immediate vicinity of the air line, often on the dial of the gauge. The pump installer shall take particular care to insure that: (1) A metal plate is installed on, or in the immediate vicinity of, the production well which indicates current actual installed length from the center of the gage to the bottom of the air line. Any changes in the length of the air line shall be so indicated on the metal plate. (2) The air line shall be installed in such a manner that it will be operable at all times.

D. Electronic Water Level Measurement Sensor.

An electronic measurement sensor may be installed in the well to monitor the water level in the well. The sensor must be a solid state pressure transducer housed in a fully submersible, protective housing connected to a readout device on the ground surface through a waterproof cable. The readout device shall be calibrated to read depth to water in feet below the land surface.

The transducer shall be pressure and temperature rated for the conditions under which it will be installed and shall be accurate to within plus or minus one percent.

The water level sensor shall be installed by attaching it to a bracket outside of the casing at the level of the lowest perforation in the well. The waterproof connecting cable may be strapped to the casing at selected intervals or installed in a conduit along the outside of the casing. As an alternative, the sensor may be lowered into the well inside the casing by means of the cable and secured at the surface. In either case, the depth of the sensor below the surface must be recorded and clearly shown at the location of the readout device hook-up. A single readout device may be used for more than one well if it can be easily calibrated for each well.

**IV. ACCEPTABLE MATERIALS AND INSTALLATION TECHNIQUES FOR WATER LEVEL MEASUREMENT TUBES AND OBSERVATION WELLS**

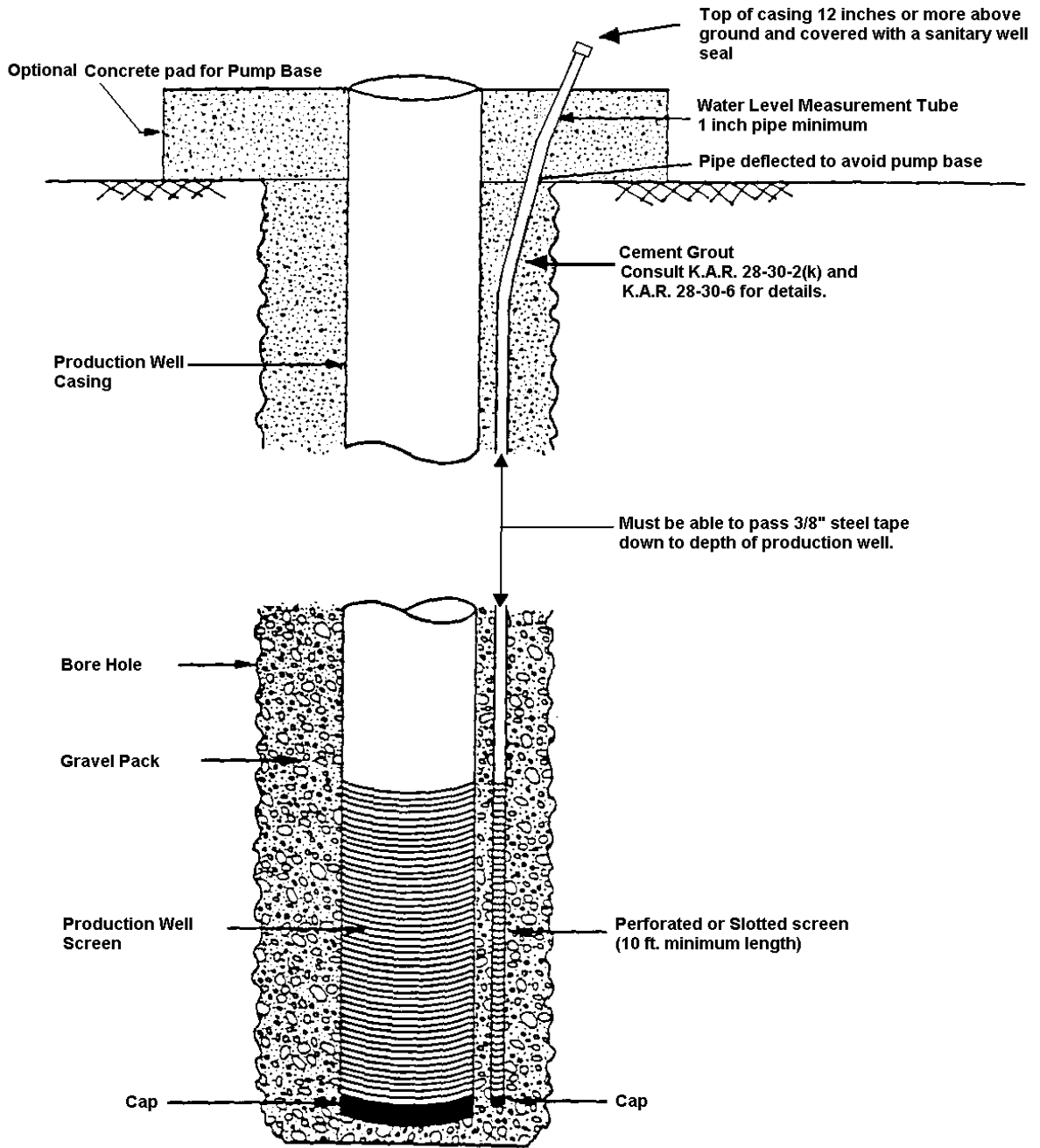
- A. All thermoplastic pipe and connectors used to construct a water level measurement tube shall be of sufficient strength and durability to perform adequately for the life of the production well.
- B. All steel pipe and connectors used to construct a water level measurement tube shall be of sufficient strength and durability to perform adequately for the life of the production well.
- C. Well screen - The slot size of well screen shall be carefully selected to effectively allow the entry of water and to prevent the entry of sand from the aquifer. Where plastic pipe is used, the well screen shall be fabricated from SDR 21 or better. The maximum screen slot width shall not exceed 1/8 inch, nor shall there be more than six inches vertical distance between slots, unless otherwise authorized by the Chief Engineer.
- D. All pipe ends shall be reamed to full pipe size to avoid snagging of tapes or other measurement devices. PVC pipe shall be assembled in accordance with the manufacturer's instructions. Wrought iron or wrought steel pipe shall be assembled by tightening into threaded malleable iron couplings taking care to cover all threads with a protective coat during assembly.
- E. Observation well development - The observation well shall be developed by the driller to ensure the observation well is hydraulically connected to all the source aquifers of the production well.
- F. The observation well shall be marked for easy visibility. The observation well casing shall extend at least one foot above land surface and be covered with a sanitary well seal.
- G. If necessary, a protective barrier shall be constructed to protect the observation well from damage. The opening to the measurement tube or observation well shall be covered by a sanitary well seal.
- H. The following guidelines are provided regarding depth limitations for thermoplastic type casing installations.

<u>Plastic Pipe</u>	<u>Depth Limitation</u>
<u>Rating</u>	<u>Feet</u>
SDR 21	150
SDR 17	350
SCH 40	500

Schedule 40 steel casing or better must be used for that portion of the casing installed at depths in excess of 500 feet.

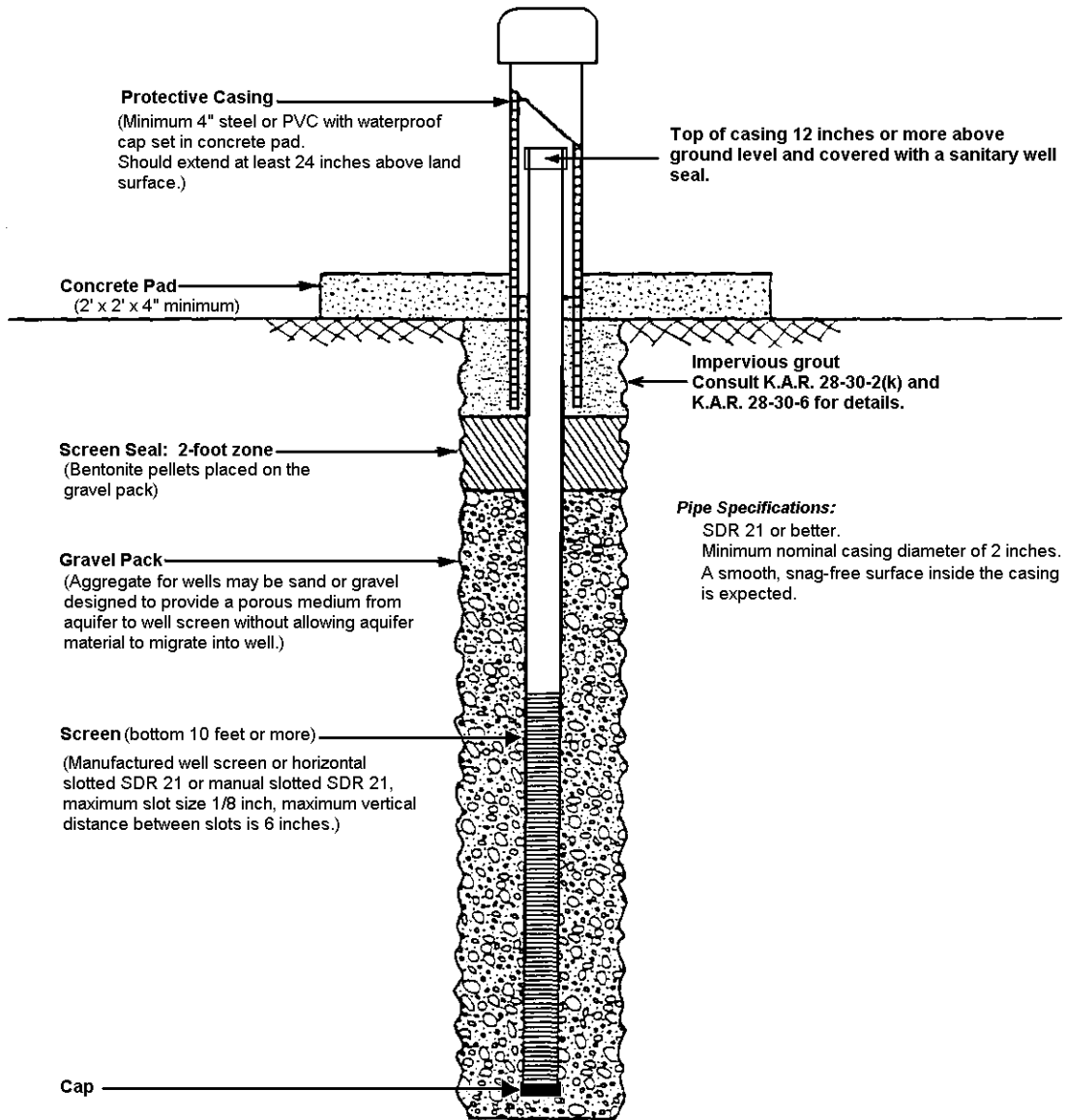
- V. **THIS SUPERCEDES THE SPECIFICATIONS FOR WATER LEVEL MEASUREMENT TUBES ADOPTED BY THE CHIEF ENGINEER, DATED SEPTEMBER 17, 1986.**

Adopted at Topeka, Kansas, this 5<sup>th</sup> day of November, 1999.



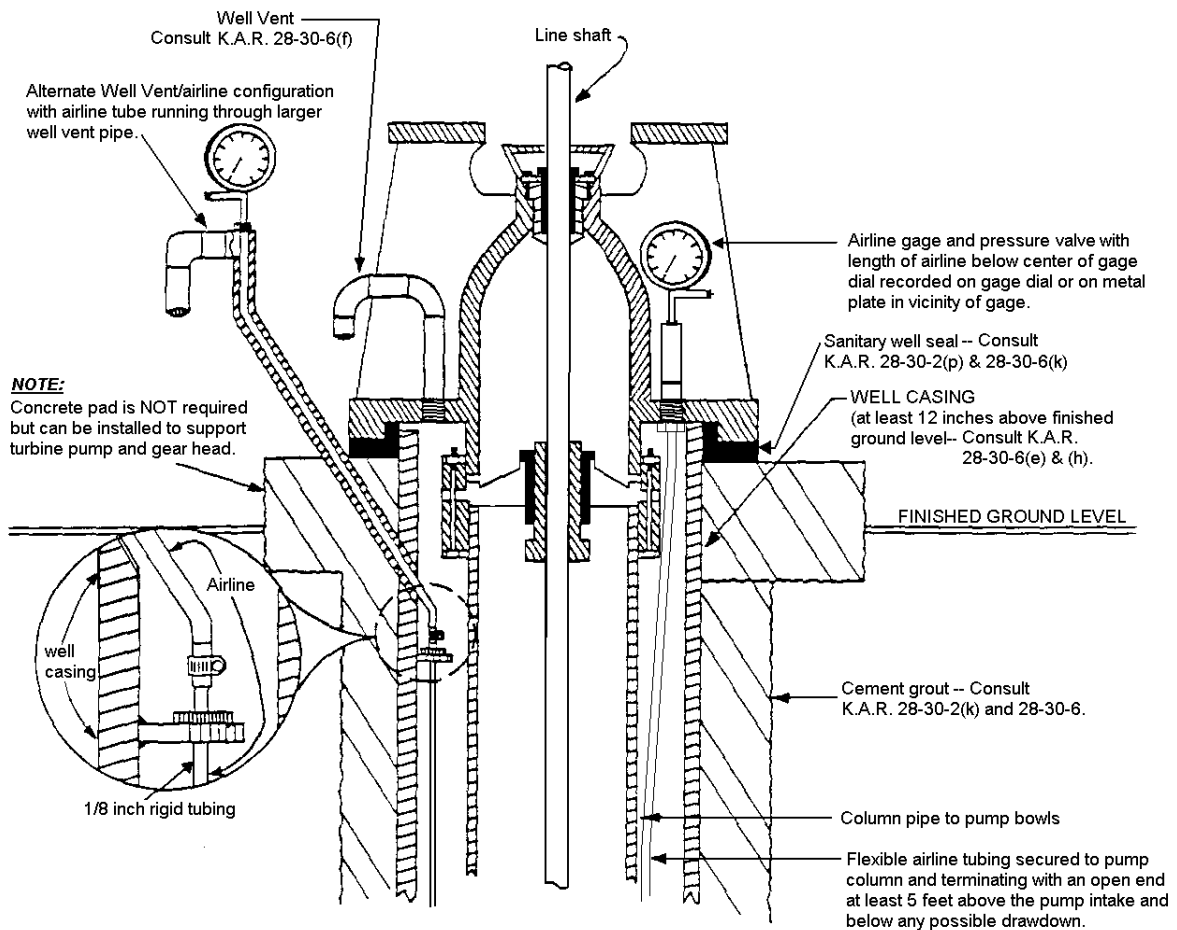
**Water Level Measurement Tube Installed Adjacent to the Well Casing  
(This method not approved for use with Public Water Supply Wells)**

**DIAGRAM "A"**



Separate Observation Well Design

Diagram "B"



Airline tube installed inside a public water supply well.

DIAGRAM "C"



**KANSAS DEPARTMENT OF AGRICULTURE**  
Dale A. Rodman, Secretary of Agriculture

**DIVISION OF WATER RESOURCES**  
David W. Barfield, Chief Engineer

**KANSAS DEPARTMENT OF AGRICULTURE  
DIVISION OF WATER RESOURCES  
TOPEKA, KANSAS**

**CHECK VALVE SPECIFICATIONS  
MARCH 14, 2003**

General:

(1) An acceptable check valve shall be one that is automatic, quick closing, and seals tightly to prevent the back flow of water and the substances mixed with water into the source of water supply.

(2) A check valve shall include the following four components:

- (a) a low pressure drain;
- (b) a vacuum relief device;
- (c) an inspection port; and
- (d) the check valve itself.

The check valve may consist of four individual components or a manufactured unit that includes all four of the required components.

(3) Each check valve shall meet the following standards:

- (a) All components shall be constructed of sturdy corrosion-resistant materials or coated with corrosion-resistant materials. The body of the unit shall be internally resistant to water of the quality being diverted, the foreign substances being introduced, and the external environment. All moving parts shall be constructed to operate without binding, distortion or misalignment.
- (b) The check valve shall contain a suitable, automatic, quick-closing, tight-closing mechanism that closes at the moment water ceases to flow away from the diversion works. The mechanism shall, by a mechanical force greater than the weight of the flapper, provide drip-tight closure against reverse flow. The closing force shall be positive and obvious to hand inspection. This requirement shall not be satisfied by hydraulic back pressure.

(c) A vacuum relief device, functioning as an air vent, shall be installed between the diversion works and the flapper in a position that prevents the entry of insects, animals, flood water or other foreign substances into the vacuum relief device and subsequently the water supply source.

(d) An automatic low pressure drain shall be installed between the check valve flapper element and the diversion works, and directly beneath the inspection port at the bottom of the horizontal pipe. The installation shall be made so that any fluid which seeps past the flapper element towards the diversion works will drain out through the automatic low pressure drain. The automatic low pressure drain inlet shall not extend inward past the interior pipe wall without the inclusion of an internal dam or other mechanism to force seepage into the drain. The inlet opening of the drain shall be at least three fourths of an inch in diameter and the outside discharge point shall be at least two inches above grade. Any discharge from the drain shall be directed away from the water supply by the natural slope, a pipe, or a trench.

(e) An inspection port shall be located between the check valve and the water supply diversion works in a manner that allows easy access and full visual and hand access to all components of the check valve and assembly components. The inspection port shall have an orifice or a viewing port of at least four inches in diameter. For installations with diversion works too small to install a four inch diameter inspection port, the check valve and the other required components shall be mounted with quick-connect fittings, flange fittings, dresser couplings, or other fittings designed to allow easy removal and access.

(f) Systems utilizing a double check valve or reduced-pressure-zone back flow assembly shall be required to adhere, as a minimum, to a standard equivalent to the manufacturer's standards or recommendations for a method of inspection, testing schedule, and rebuilding schedule.

(4) The check valve and all required components shall be maintained in a satisfactory operating condition that prevents backflow into the source of water supply any time a foreign substance could reasonably be expected to be introduced into the water system.

(5) Variances shall be granted only if a low-pressure drain and vacuum relief device cannot be physically placed in the system.



KANSAS DEPARTMENT OF AGRICULTURE  
Dale A. Rodman, Secretary of Agriculture

DIVISION OF WATER RESOURCES  
David W. Barfield, Chief Engineer

## PARTIAL LISTING OF APPROVED CHECK VALVES

This is **NOT** an endorsement of these products, nor is it a complete listing of all check valves that meet the Division of Water Resources' specifications effective October, 1991. It is intended as a courtesy to those wanting examples of approved check valves. If you are uncertain that the check valve you wish to use complies with Division specifications you may contact the Technical Services Section of the Division of Water Resources at 109 SW Ninth Street, Topeka, Kansas 66612-1283, (785) 296-3717. You may be asked to provide product specification information beyond the necessary manufacturer name, model number and associated water application-file number.

<u>Manufacturer</u>	<u>Model Number(s)</u>	<u>Nominal Size (Inches)</u>	<u>Inspection Port, Vacuum Relief, Low Pressure Drain</u>	<u>Comments</u>
Agri-Inject Yuma, CO 80759		6, 8, 10	Y	Ames body
Ames Co. Woodland, CA 95695	A113-25X (x = 0, 1, 2, 3, 4, 5) Silver Bullet	3, 4, 5, 6, 8, 10, 12 6, 8, 10	Y Y	Ames body
Ames Tinsa Mexico		8	Y	
Berkeley Pumps Grand Island, NE 68801	B07688, B06532 B06210, B03684 S29337	2.5, 3, 4, 5, 6	N	
Boice Crane Ind. Gothenburg, NE 69138	E	8	Y	
Clemons Sales Corp. Boise, ID 83705		6, 8, 10 6, 8, 10	Y Y	Galvanized Epoxy
Clow Valve Div. Overland Park, KS 66223	5340 5345	2, 2.5, 3, 4, 6, 8, 10, 12 14, 16, 18, 20, 24	N N	Iowa-Spring & Lever Iowa-Weight & Lever
	5381 5382	4 x 6, 4 x 8, 6 x 8	N N	Eddy-Spring & Lever Eddy-Weight & Lever
	5386 5387	4, 6, 8, 10, 12	N N	Eddy-Spring & Lever Eddy-Weight & Lever

## Partial Listing of Approved Check Valves (Continued)

<b>Fresno Valves &amp; Casting, Inc.</b> <b>Lubbock, TX 79403</b>	<b>36xx000*</b> (xx = 04, 06, 08, 10)	<b>4, 6, 8, 10</b>	<b>N</b>	<b>Ames body</b>
	<b>CT130Cxx</b> (xx = 03, 04, 05, etc.)	<b>3, 4, 5, 6, 8, 10, 12</b>	<b>Y</b>	<b>Ames body</b>
	<b>848</b>	<b>2, 2.5, 3, 4, 5, 6, 8, 10, 12</b>	<b>N</b>	<b>Wafer Style</b>
<b>Interstate Irr.</b> <b>Yuma, CO 80759</b>		<b>6, 8, 10</b>	<b>Y</b>	<b>Ames body</b>
<b>Irr. Eng. &amp; Supply</b> <b>Monte Vista, CO 81144</b>		<b>6, 8, 10, 12</b>	<b>Y</b>	<b>Clemons body</b>
<b>Kroy Industries</b>		<b>6, 8, 10</b>	<b>Y</b>	<b>Pierce body</b>
<b>Lake Company</b> <b>Bakerfield, CA 93303</b>	<b>712134, 712156, 712158, 712151, 712454, 712456, 712458, 712450</b>	<b>4, ,6, 8, 10</b>	<b>Y</b>	<b>Ames body</b>
<b>Midwest Irrigation</b> <b>Henderson, NE 68371</b>	<b>CH1000A, CH1000B CH1000C, CH1000D</b>	<b>6, 8</b>	<b>Y</b>	<b>Midwest body</b>
	<b>CH1000A</b>	<b>6, 8, 10</b>	<b>Y</b>	<b>Pierce body</b>
<b>Netafim</b> <b>Aurora, IL 60504</b>		<b>3 to 6</b>	<b>N</b>	
<b>Northern Pump</b>	<b>NCCVFF, NCCVFC NCCVTC, NCCVPE NCCVPC</b>	<b>3, 4, 6, 8, 10</b>	<b>Y</b>	<b>Ames body</b>
<b>Pierce Corp.</b> <b>Eugene, OR 97440</b>	<b>480-008-00xx</b> (xx = 04, 06, 08, 10)	<b>4, 6, 8, 10</b>	<b>Y</b>	<b>Pierce body</b>
<b>Reinke Mfg. Co.</b> <b>Deshler, NE 68340</b>	<b>CV8, CV8PE</b>	<b>6, 8, 10 **</b>	<b>Y</b>	<b>Blue River body</b>
<b>T-L Irrigation Co.</b> <b>Hastings, NE 68371</b>	<b>IV6xxxx(xxxx = 295-303)</b>	<b>6, 8, 10</b>	<b>Y</b>	<b>Ames body</b>
<b>Valmont Irr. Pro.</b> <b>Valley, NE 68064</b>	<b>1KOcxxxx</b> (xxxx=1819, 2017, 2018)	<b>6, 8, 10</b>	<b>Y</b>	<b>Ames body</b>
<b>Waterman Ind. ***</b> <b>Garden City, KS 67846</b>	<b>CPC-30 CPC-30B PC-150, PC-150E CPC-150</b>	<b>4, 6, 8, 10 4, 6, 8, 10 4, 6, 8, 10, 12 4, 6, 8, 10, 12</b>	<b>Y Y N Y</b>	<b>  Wafer Style Wafer Style</b>

# Partial Listing of Approved Check Valves (Continued)

## DOUBLE CHECKVALVE ASSEMBLIES

<u>Manufacturer</u>	<u>Model Number(s)</u>	<u>Nominal Size (Inches)</u>	<u>Comments</u>
Ames Co.	2000ss	3/4, 1, 1.5, 2, 2.5, 3	
Buckner Fresno, CA 93722	2410x (x = 0, 1, 2, etc.)	3/4, 1, 1.25, 1.5, 2	
Cla-Val Co. Prairie Village, KS	Clayton D Clayton D-2		
Febco Fresno, CA 93747	805Y-BV 805Y	3/4, 1, 1.5, 2 2.5, 3, 4, 6, 8, 10	
Rainbird Glendora, CA 91740	DC-QT-xxx (xxx = size: 75) DCA-xxx-R (xxx = size: 250)	3/4, 1, 1.5, 2 2.5, 3, 4, 6, 8, 10	Watts - 007 Series Watts - 709 Series
Watts Regulator		3/4, 1, 1.5, 2 3/4, 1, 1.5, 2, 2.5, 3, 4, 6, 8, 10	007 Series 709 Series
Wilkins Regulator	550 950	3/4, 1, 1.25, 1.5, 2, 2.5 3/4, 1, 1.25, 1.5, 2	

## REDUCED PRESSURE ZONE BACKFLOW PREVENTERS

<u>Manufacturer</u>	<u>Model Number(s)</u>	<u>Nominal Size (Inches)</u>	<u>Comments</u>
Ames Co.	4000ss	3/4, 1, 1.5, 2, 2.5, 3	
Buckner Fresno, CA 93722	2400x (x = 0, 1, etc.)	3/4, 1, 1.25, 1.5, 2	2400 Series
Febco Fresno, CA 93747	825YA 825YD	3/4, 1, 1.5, 2 2.5, 3, 4, 6, 8, 10	
Rainbird Glendora, CA 91740	RP-QT-xxx (xxx = size: 75) RPA-xxx-R (xxx = size: 250)	3/4, 1, 1.25, 1.5, 2 2.5, 3, 4, 6, 8, 10	Watts - 009 Series Watts - 909 Series
Watts Regulator Olathe, KS 66062		3/4, 1, 1.25, 1.5, 2 3/4, 1, 1.25, 1.5, 2, 2.5, 3, 4, 6, 8, 10	009 Series 909 Series
Wilkins Regulator	575 975	3/4, 1, 1.25, 1.5, 2, 2.5, 3, 4, 6 3/4, 1, 1.25, 1.5, 2	

\* Checkvalves manufactured prior to 1982-83 do not have a spring, but these valves can be retrofitted with a spring that meets the specifications for chemigation.

\*\* These valves use an 8 inch body for all models; they reduce the ends for 6 inch applications and enlarge the ends for 10 inch.

\*\*\* Waterman Industries PC-30, PC-30E and PC-31 models do not meet specifications unless retrofitted with a special spring. Valve bodies cast before 1970 cannot be retrofitted while those manufactured between 1970 and 1988 have an inadequate closure spring.

**NOTE:** All valves must meet specifications when inspected by the Kansas Department of Agriculture regardless of this list.

## INFORMATION ABOUT DIVISION OF WATER RESOURCES HEARINGS

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The chief engineer or his authorized representative has issued a **summary order** approving or rejecting an application for a new permit to appropriate water or an application to change an existing permit or water right. The summary order notifies parties of their legal rights in this matter and contains information about the legal basis for the action. This information has been prepared to assist you with questions you might have about the hearing that can be held upon the request of the applicant or other interested person.

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### Effective Date of the Permit, Change Approval or Dismissal

The order that has been issued is a "permit" authorizing a new appropriation of water, a "change approval" authorizing a change in a permit or water right or a "dismissal order" rejecting an application for a permit or change approval. The permit, change approval or dismissal order does not become effective if the applicant or an interested person requests a hearing within 15 days after it was issued (plus 3 days if the order was mailed). According to the Division of Water Resources' regulations, K.A.R. 5-14-3(c), anyone with an interest in the outcome, including the applicant, can request a hearing to present additional facts for consideration before a final decision is made. The request for a hearing must be made in writing.

### Hearing Officer

If the chief engineer has received a timely request for a hearing he will designate a hearing officer. The hearing officer can be the chief engineer or someone who has the authority to conduct the proceedings on his behalf. The hearing officer will hold a hearing under the provisions of the Kansas Administrative Procedure Act (KAPA), K.S.A. 77-501, *et seq.* These hearings are similar to court trials, but they are less formal. The purpose of the hearing is to give the parties a reasonable opportunity to be heard.

### Parties

The parties to the hearing will include the applicant, the person or persons who have requested the hearing and the Division of Water Resources. The hearing officer may allow other persons to intervene as parties if they file the appropriate petition at least three days before the hearing is scheduled to begin.

### Representation by Counsel

The parties are not required to be represented by an attorney, but may be represented at their own expense. The Division of Water Resources will be represented by an attorney. Attorneys for other parties must file a written appearance with the hearing officer. Appearances and any other written notices required to be filed with the hearing officer must reference the case number, permit application number or water right number and are to be sent to: Hearing Officer, Kansas Department of Agriculture, Division of Water Resources, 109 SW 9<sup>th</sup> Street, 2<sup>nd</sup> Floor, Topeka, Kansas 66612, Fax: (785) 296-1176.

### Pre-Hearing Conference

The hearing officer might hold a pre-hearing conference if it appears there is a dispute about the facts or a question about who should be parties to the hearing. If you are a party you will receive notice before the pre-hearing conference, and you will be allowed to participate by telephone if you wish. If you are unable to attend the pre-hearing conference you should notify the hearing officer, in writing, stating the reason you are unable to attend. The attorney representing the Division of Water Resources, (785) 296-4623, can assist you if you become aware that you will be unable to attend.

At the pre-hearing conference the person or persons who have requested the hearing (if they are not the applicant) might be asked to identify their interest in this matter and might be asked questions to determine how their interests might be adequately represented. If you own a water right or permit to appropriate water that you believe will be adversely affected by the contested decision, please be prepared to identify the number assigned to the water right. You will find that number on the Certificate of Appropriation or Permit to Proceed and on any correspondence you have received from the Division of Water Resources.

(over)

### Communication with the Hearing Officer

Parties to the hearing may not communicate with the hearing officer about any issue to be resolved in the hearing unless all of the parties have an opportunity to participate. These types of communications are referred to as “ex parte.” If the hearing officer receives an ex parte communication he must notify the parties and make a record of the communication and his response. Parties may speak to the attorney representing the Division of Water Resources, but he or she cannot give them legal advice.

### Notice of Hearing

The hearing officer will issue a written notice to the parties at least 10 days prior to the hearing. The notice will state the date, time and place where the hearing will be held. Usually the parties will be given an opportunity to appear by telephone conference. If you are unable to attend on the appointed date you should notify the hearing officer, in writing, stating the reason you are unable to attend. The attorney representing the Division of Water Resources, (785) 296-4623, can assist you if you become aware you will be unable to attend.

### Written Filings

The parties are not required to file written pleadings, briefs, or motions with the hearing officer. However, if you do make written filings you must serve a copy on all of the other parties. If you are represented by an attorney, your attorney will be expected to file a written appearance with the hearing officer prior to appearing in this matter on your behalf.

### Hearing Procedure

The hearing usually will be held at the Division of Water Resources in Topeka. Anyone may attend the hearing. The chief engineer or his representative will act as the hearing officer or judge. The parties, including the applicant, will be given an opportunity to present their arguments and evidence and to cross-examine other parties' witnesses. The hearing officer will determine the order in which the parties will present their cases. The hearing will begin at the appointed time and will continue until all parties have been given the opportunity to be heard. The hearing will be conducted in an orderly fashion. All testimony of parties and witnesses will be given under oath or affirmation.

### Record of Hearing

The hearing will be recorded, usually by tape recorder, at the Division of Water Resources' expense. If you want a written transcript, you must make arrangements with the Division of Water Resources and you may be charged for transcription and copying. If a court reporter is present, you must make arrangements to obtain transcripts from the reporter at your own expense.

### Default

If you are a party and you do not attend the pre-hearing conference or other preliminary conference or if you do not attend the hearing, the hearing officer may issue a default order and conduct any further proceedings without your participation. Issues that affect you can be determined in your absence unless the hearing officer has excused your absence in advance. In the event an emergency prevents you from attending you should call the Kansas Department of Agriculture, Legal Division, (785) 296-4623, as soon as you are able.

### Decision and Appeals

After the hearing, the hearing officer will issue an **initial order** based on the facts. All parties will receive a copy of the **initial order**. The **initial order** does not become final if you or any other party files a petition for review with the Secretary of Agriculture within 15 days after the order is issued. K.S.A. 77-526(b). You must file a timely petition for review by the Secretary before you can obtain a review by the court.

### Persons with Disabilities

The Kansas Department of Agriculture will make reasonable accommodations for persons with disabilities who need notices provided in an alternative accessible format and will provide reasonable accommodations at the hearing site for persons with disabilities. Please let the Department know the nature of the accommodation needed as soon as possible to allow adequate time for arrangements to be made. If you require an accommodation at the hearing site, please contact Leslie Garner at (785) 296-4623 or [lgarner@kda.state.ks.us](mailto:lgarner@kda.state.ks.us) at least one week before the date the hearing is scheduled.

If you have questions about the hearing process contact the Kansas Department of Agriculture, Legal Division, (785) 296-4623. If you need legal advice, please contact your attorney. For assistance locating an attorney you can contact the Kansas Bar Association's Lawyer Referral Service at 1-800-928-3111.

**K.S.A. 82a-703a. Minimum streamflows; duties of chief engineer.** Whenever the legislature enacts legislation establishing a minimum desirable streamflow for any watercourse in this state, the chief engineer shall withhold from appropriation that amount of water deemed necessary to establish and maintain for the identified watercourse the desired minimum streamflow.

**K.S.A. 82a-703b. Minimum streamflows; conditions of appropriation right.** (a) In addition to any other limitation or condition prescribed by law or rule and regulation of the chief engineer, it shall be an express condition of each and every appropriation right, except for use of water for domestic purposes, applied for after April 12, 1984, that such right shall be subject to any minimum desirable streamflow requirements identified and established pursuant to law on or before July 1, 1990, for the source of water supply to which such right applies.

(b) All vested rights, water appropriation rights and applications for permits to appropriate water having a priority date on or before April 12, 1984, shall not be subject to any minimum desirable streamflow requirements established pursuant to law.

**K.S.A. 82a-703c. Minimum streamflows established.** In accordance with the provisions of K.S.A. 82a-703a, and amendments thereto, the legislature hereby establishes the following minimum desirable streamflows:

**Table -- MINIMUM DESIRABLE STREAMFLOWS (cfs)**

Watercourse	Month												
	J	F	M	A(a)	M(a)	J(A)	J	A	S	O	N	D	
Marais des Cygnes													
Ottawa	15	15	15	15(40)	20(50)	25(30)	25	25	20	15	15	15	
LaCygne	20	20	20	20(50)	20(150)	25(150)	25	25	20	20	20	20	
Neosho													
Americus	5	5	5	5(20)	5(30)	5(30)	5	5	5	5	5	5	
Iola	40	40	40	40(60)	40(200)	40(200)	40	40	40	40	40	40	
Parsons	50	50	50	50(100)	50(300)	50(300)	50	50	50	50	50	50	
Cottonwood													
Florence	10	10	10	10(30)	10(60)	10(60)	10	10	10	10	10	10	
Plymouth	20	20	20	20(60)	20(150)	20(150)	20	20	20	20	20	20	
Little Arkansas													
Alta Mills	5	5	5	5	5	5	5	5	5	5	5	5	
Valley Center	20	20	20	20	20	20	20	20	20	20	20	20	
Arkansas River													
Kinsley (b)	2	2	3	3	5	5	3	1	1	1	2	2	
Great Bend (b)	3	3	3	3	10	10	5	3	2	2	2	3	
Hutchinson	80	80	100	100	100	100	80	80	60	60	60	80	
Rattlesnake Creek													
Macksville (b)	5	5	10	10	10	10	5	1	1	1	5	5	
Zenith	15	15	15	15	15	15	5	3	3	3	10	15	
North Fork Ninescah													
Above Cheney	40	50	50	50	40	30	10	5	5	10	40	40	
South Fork Ninescah													
Pratt	10	10	10	8	8	8	8	5	5	5	10	10	
Murdock	80	90	90	90	90	50	30	30	30	50	80	80	
Ninescah													
Peck	100	100	100	100	100	70	30	30	30	50	100	100	
Saline													
Russell	5	5	15	15	15	12	2	2	2	3	5	5	
Smoky Hill													
Ellsworth (c)	20	20	25	30	35	45	35	15	15	15	20	20	
Medicine Lodge													
Kiowa	50	55	60	60	40	30	6	1	1	4	40	50	
Chikaskia													
Corbin	30	45	50	45	40	30	16	5	5	8	30	30	
Big Blue													
Marysville	100	100	125	150	150(d)	150(d)	80	90	65	80	80	80	
Little Blue													
Barnes	100	100	125	150	150(d)	150(d)	75	80	60	60	80	80	
Republican													
Concordia (e)	100	125	150	150	150	150	150	150	80	65	80	100	
Clay Center	125	150	200	250	250	250	200	200	100	90	100	125	
Mill Creek													
Paxico	8	8	8	25	30	35	10	5	5	2	5	8	
Delaware													
Muscotah	10	10	20	20	20	20	5	3	3	2	10	10	
Walnut River													
Winfield	30	35	40	65	100	100	30	25	20	20	20	30	
Whitewater River													
Towanda	10	15	15	20	25	25	10	5	5	5	6	10	
Spring River Baxter													
Springs (f)	175	200	250	300	450	350	200	160	120	120	150	175	
Chapman Creek													
Chapman	10	15	15	15	15	15	10	10	10	10	10	10	
Solomon River													
Niles	40	50	60	60	90	90	30	50	40	40	40	40	

- (a) Spawning flows to be managed if reservoirs in flood pool; otherwise use lower flows.
- (b) Subject to subsequent assessment of lagged effects of extensive groundwater appropriations in regional aquifer.
- (c) Subject to subsequent assessment of lagged effects of upstream depletions.
- (d) Subject to the stateline flows contained in the Blue River Compact.
- (e) Subject to subsequent assessment of Harlan County reservoir operations, development of compact stateline flows and lagged effects of upstream depletions.
- (f) *Flows measured at Quapeh, Oklahoma; may need review if a new station is established.*

## **NOTICE**

**To: Stockwatering and Industrial Use Permit Holders**

**Subject: Water Protection Fee (K.S.A. 82a-954)**

**K.S.A. 82a-954 enacted by the 1989 Kansas Legislature imposes a water protection fee on water appropriated for stockwatering and water appropriated for industrial use. "Stockwatering" means the use of water for the watering of cattle and other uses of water directly related to the operation of a feedlot with the capacity to confine 1,000 head or more of cattle. Any other livestock operation or dairy is applicable if a minimum of 15 acre-feet of water is authorized. Stockwatering use shall not include the irrigation of feed grains or other crops. "Industrial use" means the use of water in connection with the manufacture, production, transport or storage of products, or the use of water in connection with providing commercial services, including water used in connection with steam electric power plants, secondary and tertiary oil recovery, air conditioning, heat pumps, and, except for hydraulic dredging, all other uses of water associated with the removal of aggregate for commercial purposes including the evaporation caused by exposing the groundwater table or increasing the surface area of a stream, lake, pit or quarry by excavation or dredging.**

**The rate of three cents per 1,000 gallons of water used will be imposed for any water appropriated for industrial use or stockwatering use. The fees are imposed on the owner of the permit as issued under the Kansas Water Appropriation Act.**

**The Kansas Department of Revenue is the agency responsible for collecting the water protection fees. Our role, as the Division of Water Resources, Kansas Department of Agriculture, is to provide the Kansas Department of Revenue with records which show the quantity of water that has been put to use as authorized by your water right. The quantity of water reported to the Department of Revenue by the Division of Water Resources will be based on the quantity of water you report used each year to the Division of Water Resources. If you have not reported the quantity of water used to the Division of Water Resources by March 1 of each calendar year, the total quantity of water authorized by your water right will be submitted to the Department of Revenue for calculating the water protection fee.**

**Stockwater permit holders are also required to report the number of head of livestock watered. This information should be submitted to the Division of Water Resources on your annual water use report no later than March 1 of each calendar year.**

**Should you have any questions regarding this water protection fee, please write the Kansas Department of Revenue, Business Tax Bureau, 3rd Floor Docking State Office Building, Topeka, Kansas 66625-0001, or call (913) 296-2461.**

## CERTIFIED WATER FLOWMETERS



(Implementing Kansas Administrative Regulation 5-1-12)

**August 8, 2011**

The following water flowmeters have been certified by their manufacturers to be in compliance with the Kansas specifications for water flowmeters as defined in Kansas Administrative Regulation (K.A.R.) 5-1-4. These flowmeters are acceptable for use where the Chief Engineer has required a water flowmeter pursuant to K.A.R. 5-1-7. In addition, if the Chief Engineer has required a water flowmeter, the flowmeter must be installed to conform with specifications in K.A.R. 5-1-6 and maintained in compliance (see K.A.R. 5-1-8 and 5-1-9).

Note: Certification of a water flowmeter model does not indicate endorsement by the Chief Engineer, the Division of Water Resources, or the Department of Agriculture.

<b>Badger Meter, Inc.</b>		
Model Number	Type and Size	DWR Requirements
160	Turbine 1½"	
200	Turbine 2"	
450	Turbine 3"	
1000	Turbine 4"	
2000	Turbine 6"	
3500	Turbine 8"	
5500	Turbine 10"	
6200	Turbine 12"	
6600	Turbine 16"	
10000	Turbine 20"	
Recordall 170	Positive Displacement 2"	w/wire seal per drawing S-907

<b>Elster\AMCO\ABB\Kent Water Metering Systems</b>		
Model Number	Type and Size	DWR Requirements
Watermaster FEV111, FEV121, FEV181, FEV191	Full-Bore Electromagnetic 1½" to 12"	Read only MID switch set to "on"
Watermaster FEF121, FEF181	Full-Bore Electromagnetic 10" to 84"	Read only MID switch set to "on"
T-3000	Turbine 1½" to 8"	
T-4000	Turbine 1½" to 12"	
TS-4000	Turbine 1½" to 12"	
H-3000	Turbine 3"	
HT-4000	Turbine 3"	
C-3000	Compound 2", 3", 6", 8"	
C-4000	Compound 2" to 4"	
C-700	Positive displacement 5/8" to 2"	
M-700	Multijet 5/8" to 2"	
MFE w/MRE4 register	Full Bore Electromagnetic ½" to 24"	vendor provided cover bolt w/ hole
MFF w/MFE4 register	Full Bore Electromagnetic 28" to 84"	vendor provided cover bolt w/ hole
Aquamaster Electronic Water Meter	Full Bore Electromagnetic 5/8" to 24"	
evoQ4	Full Bore Electromagnetic 2" to 12"	

<b>Emerson\Dieterich Standard\Rosemount</b>		
Model Number	Type and Size	DWR Requirements
Probar, PBR+25S HAMSO MP4C0 2 A 1 A M T1 QD1	Differential Pressure Insertion tubes, 4" to 42"	Totalizer by M&D Controls, Flowtube w/ Straightening Vanes
Probar, PNF+10S HVMS0 FAS 2 A 1 A M T1 QD1	Differential Pressure Insertion tubes, ½" to 2"	Totalizer by M&D Controls, Flowtube w/ Straightening Vanes
ES Pro, PSR+26S MM4C0 2 2 MD4C0 QD1 QD2 QS1 T1	Differential Pressure Insertion tubes, 4 to 42"	Totalizer by M&D Controls, Flowtube w/ Straightening Vanes
8700 Series w/8712 remote register	Full Bore Electromagnetic .5" to 36"	equipped w/ Integral Tamperproof Kit, part# 08721-0547-0001
8700 Series w/8732 C integral register	Full Bore Electromagnetic .5" to 36"	T-1 non-volatile config only and equipped w/ Integral Tamperproof Kit, part# 08721-0547-0001
8700 Series w/8732 E integral transmitter	Full Bore Electromagnetic .5" to 36"	equipped w/ Integral Tamperproof Kit, part# 08721-0547-0001

<b>Endress + Hauser, Inc.</b>		
Model Number	Type and Size	DWR Requirements
Proline Promag 50W	Full Bore Electromagnetic 1" to 78"	
Proline Promag 50P	Full Bore Electromagnetic ½" to 24"	
Proline Promag 50H	Full Bore Electromagnetic 1/12" to 4"	

<b>Hersey Meters</b>		
Model Number	Type and Size	DWR Requirements
Horizon	Turbine 1½", 2", 3", 4", 6", 8", 10"	
MVR 30	Vertical turbine ¾" x ½"	
MVR 30A	Vertical turbine ¾"	
MVR 30B	Vertical turbine ¾" x 1"	
MVR 50	Vertical turbine 1"	
MVR 100	Vertical turbine 1½"	
MVR 160	Vertical turbine 2"	
MVR 350	Vertical turbine 3"	
MVR 650	Vertical turbine 4"	
MVR 1300	Vertical turbine 6"	
430IIS	Positive Displacement (5/8")	
442IIS	Positive Displacement (¾")	
452IIS	Positive Displacement (1")	
562IIS	Positive Displacement (1½")	
572IIS	Positive Displacement (2")	

<b>Invensys\Foxboro</b>		
Model Number	Type and Size	DWR Requirements
9100A w/integral or remote mount IMT25 transmitter	Full Bore Electromagnetic 1" to 78"	(ECEP 14356 configuration, sealed by FoxBoro rep)
9200A w/integral or remote mount IMT25 transmitter	Full Bore Electromagnetic 1" to 78"	(ECEP 14356 configuration, sealed by FoxBoro rep)
9300A w/integral or remote mount IMT25 transmitter	Full Bore Electromagnetic 1" to 78"	(ECEP 14356 configuration, sealed by FoxBoro rep)

<b>Krohne, Inc.</b>		
Model Number	Type and Size	DWR Requirements
IFS 4000 KC (Environmag) w/IFC 010K signal converter	Full Bore Electromagnetic 1" to 12"	

<b>Master Meter, Inc.</b>		
Model Number	Type and Size	DWR Requirements
MJ04	MM2, MM2FP	Multi-jet 5/8" x 1/2"
MJ05	MM3	Multi-jet 5/8" x 3/4"
MJ06	MM4	Multi-jet 3/4" to 7 1/2" long
MJ07		Multi-jet 3/4" to 9" long
MJ08		Multi-jet 3/4" x 1"
MJ09	MM5, MM5FP	Multi-jet 1"
MJ10	MM6T	Multi-jet 1 1/2" threaded end
MJ11	MM6F	Multi-jet 1 1/2" flanged end
MJ12	MM7T	Multi-jet 2" threaded end
MJ13	MM7F	Multi-jet 2" flanged end
TM11	1 1/2" MMT	Turbine 1 1/2"
TM13	2" MMT, 2" MMTII	Turbine 2"
TM14	3" MMT	Turbine 3"
TM15	4" MMT	Turbine 4"
TM16	6" MMT	Turbine 6"
TM17	8" MMT	Turbine 8"

<b>McCrometer</b>		
Model Number	Type and Size	DWR Requirements
FC100	Electronic Register for listed propeller meters	All password functions locked. Two cross-drilled cap screws
MF100	Propeller 2" to 12"	with straightening vanes insert
MG100	Propeller 3" to 24"	with straightening vanes insert
ML100	Propeller 6" to 12"	with straightening vanes insert
MS100	Propeller 3" to 24"	with straightening vanes insert
MT100	Propeller 3" to 4"	with straightening vanes insert
MO300 *(See GPM approved flowtube section)	Propeller 4" to 16"	mounted in flowtube with straightening vanes
MD300 *(See GPM approved flowtube section)	Propeller 4" to 16"	mounted in flowtube with straightening vanes
MW500	Propeller 2" to 24"	
MZ500	Propeller 2" to 24"	
QW500	Propeller 2" to 24"	
QZ500	Propeller 2" to 24"	
SW500	Propeller 4" to 36"	
SZ500	Propeller 4" to 36"	
MM800	Propeller 3" to 24"	
MW800	Propeller 3" to 24"	
MG900	Propeller 2" to 24"	

MT900	Propeller 2" to 24"	
MW900	Propeller 2" to 24"	
M1400	Propeller 18" to 36"	Mounted in flowtube with straightening vanes
V2150	Differential Pressure 4" to 18"	V2-KS-Spec
V2300	Differential Pressure 4" to 18"	V2-KS-Spec

**Neptune Technology** \* E-Coder Absolute Encoder. Register is an acceptable register for these models.

Model Number	Type and Size	DWR Requirements
T-10 *	Positive displacement 5/8" to 2"	
T-10 Double Check *	Positive displacement 5/8"	
HP Turbine *	Turbine 1½" to 20"	Install with optional strainer upstream and with minimum 2 special order SB44 bolts
HP Fire Service Turbine *	Turbine 3" to 10"	Install with optional strainer upstream and with minimum 2 special order SB44 bolts
TRU/FLO Compound *	Positive displacement/turbine 2" to 8"	Install with optional strainer upstream and with minimum 2 special order SB44 bolts

**Netafim USA \ ARAD**

Model Number	Type and Size	DWR Requirements
WT	Turbine 2" to 12"	
WMR	Turbine 2"	
WST	Turbine 2" to 8"	

**SeaMetrics**

Model Number	Type and Size	DWR Requirements
AG1000 w/built in register display	Full Bore Electromagnetic 4" to 12"	
AG1100 w/built in register display	Full Bore Electromagnetic 4" to 12"	
AG2000 w/built in register display	Full Bore Electromagnetic 4" to 12"	
AG2100 w/built in register display	Full Bore Electromagnetic 4" to 12"	
WMP104	Full Bore Electromagnetic 1" and 2"	With tamper-evident seal and cross-drilled screws to prevent register from being removed from sensor without evidence. Must have two C lithium batteries.

**Sensus Metering\Invensys\Precision\Rockwell**

Model Number	Type and Size	DWR Requirements
101	Propeller 3" to 36"	
SRH compound	Compound turbine, piston 2" to 6"	
Series W	Turbo 1½" to 16"	
PMX	Multi-jet 5/8" to 2"	
PMM	Multi-jet 5/8" to 2"	
Magnum II Type-C	Turbine 2" to 12"	
Magnum II Type-S	Turbine 1½" to 8"	
Omni T <sup>2</sup>	Turbine 1½", 2", 3", 4", 6", 8", 10"	

Omni C <sup>2</sup>	Turbine 1½", 2", 3", 4", 6", 8", 10"	
Omni F <sup>2</sup>	Turbine 1½", 2", 3", 4", 6", 8", 10"	
accuMag	Full Bore Electromagnetic 3", 4", 6", 8", 10", 12", 14", 16", 18", 20", 24"	Register capabilities locked and wire seal to prevent register from being opened without evidence.
SR	Displacement 5/8" to 2"	Drilled capscrews
SRII	Displacement 5/8" to 1"	Drilled capscrews
SR accuStream (SR-A)	Displacement 5/8" to 1"	Drilled capscrews

### Siemens

Model Number	Type and Size	DWR Requirements
MAG 3100 w/5000CT transmitter	Full Bore Electromagnetic ½" to 78"	Configured in the custody transfer cold water pattern approval (PTB OIML R49) and wire sealed
MAG 3100 w/6000CT transmitter	Full Bore Electromagnetic ½" to 78"	Configured in the custody transfer cold water pattern approval (PTB OIML R49) and wire sealed
MAG 5100 w/5000CT transmitter	Full Bore Electromagnetic 1" to 48"	Configured in the custody transfer cold water pattern approval (PTB OIML R49) and wire sealed
MAG 5100 w/6000CT transmitter	Full Bore Electromagnetic 1" to 48"	Configured in the custody transfer cold water pattern approval (PTB OIML R49) and wire sealed
MAG 8000	Full Bore Electromagnetic 1" to 24"	

### Sparling

Model Number	Type and Size	DWR Requirements
FM 102 w/FT190, FT191 or FT193 totalizer	Propeller 4" to 14"	4" pipe size must have bolt in vanes in tube
FM 103 w/FT190, FT191 or FT193 totalizer	Propeller 4" to 14"	4" pipe size must have bolt in vanes in tube
FM 104 w/FT194 totalizer	Propeller 4" to 14"	4" pipe size must have bolt in vanes in tube
FM 182 w/FT190, FT191 or FT193 totalizer	Propeller 16" to 72"	
FM 183 w/FT190, FT191 or FT 193 totalizer	Propeller 16" to 30"	
FM 184 w/FT194 totalizer	Propeller 16" to 72"	
FM 312 w/FT190, FT191 or FT193 totalizer	Propeller 4" to 14"	4" pipe size must have bolt in vanes in tube
FM 314 w/FT194 totalizer	Propeller 4" to 14"	4" pipe size must have bolt in vanes in tube
Tigermag EP FM 626	Full Bore Electromagnetic 0.1" to 4"	EP models must be ordered with custom password
Tigermag EP FM 627	Full Bore Electromagnetic 1" to 4"	EP models must be ordered with custom password
Tigermag EP FM 656	Full Bore Electromagnetic 0.5" to 72"	EP models must be ordered with custom password
Tigermag EP FM 657	Full Bore Electromagnetic 6" to 48"	EP models must be ordered with custom password

### Water Specialties, Inc.

Model Number	Type and Size	DWR Requirements
LP-31 and LP-31-D	Propeller 4" to 20"	Flowtube & straightening vane insert
LP-32 and LP-32-D	Propeller 6" to 20"	Flowtube & straightening vane insert
LP-03	Propeller 4" to 16"	
LP-04 and LP-04-D	Propeller 4" to 16"	
LP-11	Propeller 4" to 12"	
LP-12 and LP-12-D	Propeller 4" to 16"	
ML-03	Propeller 3" to 48"	
ML-04 and ML-04-D	Propeller 3" to 48"	

ML-07	Propeller 3" to 48"	
ML-08 and ML-08-D	Propeller 3" to 48"	
ML-11	Propeller 3" to 48"	
ML-12 and ML-12-D	Propeller 3" to 48"	
VF-29	Propeller 4" to 20"	
VF-30 and VF-30-D	Propeller 4" to 20"	
UltraMag UM-06	Full Bore Electromagnetic 2" to 48"	
UltraMag UM-08	Full Bore Electromagnetic 2" to 20"	

<b>Yokogawa Corp.</b>		
Model Number	Type and Size	DWR Requirements
Digital Yewflo(DYxx)	Vortex 0.5" to 12"	with straightening vanes
Yewflo YF100, style E	Vortex 0.5" to 12"	with straightening vanes
Admag AE series	Full Bore Electromagnetic 0.1" to 16"	
Admag AM series	Full Bore Electromagnetic 0.1" to 8"	
Admag AXF w/integral or remote AXFA14 or AXF11 converter	Full Bore Electromagnetic 0.1 to 104"	Admag AXF & SE models must be tagged and password protected by vendor
Admag SE w/SE14 converter	Full Bore Electromagnetic 0.5" to 104"	Admag AXF & SE models must be tagged and password protected by vendor

## FLOW TUBE MANUFACTURERS

Manufacturers approved by Great Plains Meter, Inc. (GPM) to construct **aluminum and steel** flow tubes (Measuring Chamber), conforming to GPM Specification 07/02. The following tubes have been approved for **use with McCrometer MD300 and MO300 saddle type propeller meters**. The inside diameter of the tube must match the inside diameter that the propeller meter was calibrated to. A properly located straightening vane insert is a required component of the final meter/tube assembly. The flow tube will be labeled with an identification tag indicating the manufacturer's name, direction of flow and that the tube has been constructed to meet GPM specification 07/02.

### Manufacturing Company

T-L Irrigation  
 Republican Valley Irrigation  
 Ace Irrigation and Manufacturing  
 GLB Meters  
 Central Valley Irrigation, Inc  
 Vitus Service Center  
 Western Irrigation, Inc.  
 Schumacher Irrigation, Inc.  
 Riggs Irrigation, LLC  
 Farm Land Irrigation  
 The Garden City Company  
 ABC Welding and Fabrication

### Location

Hastings, NE  
 Clay Center KS  
 Kearney, NE  
 Hugoton, KS  
 Holdredge, NE  
 Hoxie, KS  
 Garden City, KS  
 Platte Center, NE  
 Sumner, KS  
 Grand Island, NE  
 Garden City, KS (steel tubes only)  
 Aurora, NE

## FLOW TUBE MANUFACTURERS (continued)

Manufacturers approved by Great Plains Meter, Inc. (GPM) to construct **PVC** flow tubes (Measuring Chamber), conforming to GPM Specification 07/02. The following tubes have been approved for **use with McCrometer MD300 and MO300 saddle type propeller meters only in situations where the water being metered would corrode a metal flow tube**. The inside diameter of the tube must match the inside diameter that the propeller meter was calibrated to. A properly located bolt-on straightening vane is a required component of the final meter/tube assembly. The flow tube will be labeled with an identification tag indicating the manufacturer's name, direction of flow and that the tube has been constructed to meet GPM specification 07/02.

### Manufacturing Company

Western Irrigation, Inc.

### Location

Garden City, KS

## Pivot Riser Manufacturers

Manufacturers listed below have met Great Plains Meter, Inc. standards of quality and consistency for the construction of pivot risers. The pivot risers they manufacturer are considered acceptable for use as a GPM approved water flowmeter measurement chamber.

A **standard decal** issued by GPM must be **visibly located and permanently attached** to the pivot riser. The decal shall identify the installed vertical meter's **model and serial number**, the **outside and inside diameter** of the riser pipe, and the **pivot riser manufacturer**.

Only **bolt in style straightening vanes** are acceptable for use in these pivot riser installations and must be installed within five pipe diameters upstream of the water flowmeter sensor.

### Pivot Riser Manufacturing Company

Valmont Industries

Lindsay Manufacturing

Reinke Manufacturing

Pierce Corporation

Universal Irrigation

T-L Irrigation

Olsen Irrigation