

**COMMONWEALTH OF KENTUCKY**

**BEFORE THE PUBLIC SERVICE COMMISSION**

**In the Matter of:**

**ELECTRONIC APPLICATION OF GRAYSON )  
COUNTY WATER DISTRICT FOR A )  
DEVIATION FROM METER TESTING ) CASE NO. 2019-00115  
REQUIREMENTS OF 807 KAR 5:066, )  
SECTION 16(1) )**

**RESPONSE OF**

**GRAYSON COUNTY WATER DISTRICT**

**TO**

**COMMISSION STAFF'S SECOND REQUEST FOR INFORMATION**

**DATED AUGUST 13, 2019**

**FILED: August 30, 2019**

**COMMONWEALTH OF KENTUCKY**

**BEFORE THE PUBLIC SERVICE COMMISSION**

**In the Matter of:**

**ELECTRONIC APPLICATION OF GRAYSON )  
COUNTY WATER DISTRICT FOR A )  
DEVIATION FROM METER TESTING ) CASE NO. 2019-00115  
REQUIREMENTS OF 807 KAR 5:066, )  
SECTION 16(1) )**

**CERTIFICATION OF RESPONSE TO  
COMMISSION STAFF'S SECOND REQUEST FOR INFORMATION**

This is to certify that I have supervised the preparation of Grayson County Water District's Response to the Commission Staff's Second Request for Information. The response submitted on behalf of Grayson County Water District is true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.



\_\_\_\_\_  
Kevin Shaw, Manager  
Grayson County Water District

**GRAYSON COUNTY WATER DISTRICT**

**CASE NO. 2019-00115**

**Response to Commission Staff's Second Request for Information**

**Question No. 1**

**Responding Witness: Kevin Shaw**

- Q-1. Refer to "Attachment to Question 2(b)" produced in response to Commission Staff's First Request for Information (Staff's First Request), Item 2(b).
- a. Provide the AWWA New Meter Accuracy standards to which Grayson District's meters are warranted for five years from the date of shipment or the registration of 750,000 gallons, whichever comes first.
  - b. Provide the AWWA Repaired Meter Accuracy standards to which Grayson District's meters are warranted for fifteen years from the date of shipment or the registration of 2,500,000 gallons, whichever comes first.
- A-1.
- a. See attached the AWWA Standard C700 referenced in the Badger warranty provided in the Attachment to Question 2(b). The AWWA Standard C700 is considered confidential and is being filed under seal pursuant to a Petition for Confidential Protection.
  - b. See attached the Addendum to the AWWA M6 Manual, Table 5-3, referenced in the Badger warranty provided in the Attachment to Question 2(b). The Addendum to the AWWA M6 Manual is considered confidential and is being filed under seal pursuant to a Petition for Confidential Protection.

The attachment in response to Question 1(a)  
is confidential in its entirety.

The attachment in response to Question 1(b)  
is confidential in its entirety.

**GRAYSON COUNTY WATER DISTRICT**

**CASE NO. 2019-00115**

**Response to Commission Staff's Second Request for Information**

**Question No. 2**

**Responding Witness: Kevin Shaw**

- Q-2. Refer to Grayson District's response to Staff's First Request, Item 2(d), in which Grayson District provided the test results for "all of the 2005 meters that were removed from service and tested in 2018."
- a. Confirm that the test results provided in response to Staff's First Request, item 2(d), include all 5/8- x 3/4-inch Badger meters installed in 2005 that remained in service through 2018, and if Grayson District is unable to confirm, explain why.
  - b. Identify the number of 5/8- x 3/4-inch Badger meters installed in 2005 that were taken out of service before 2018.
  - c. Briefly explain how the meter tests for which the results were reported in response to Staff's First Request, Item 2(d), were conducted.
  - d. If the Commission were to approve Grayson District's deviation requested in the application, state whether Grayson District would continue to test all meters when they are taken out of service, and if so, would Grayson District also conduct sample testing of those meters in their fifteenth year of service.
- A-2.
- a. The test results provided in the supplemental response to Staff's First Request, Item 2(d) include all 5/8- x 3/4-inch Badger meters installed in 2005 that remained in service through 2018.
  - b. Grayson District does not believe any 5/8- x 3/4-inch Badger meters installed in 2005 were removed prior to 2018.
  - c. The meter tests were performed by a Commission-certified technician using Grayson District's Commission-certified meter test bench after the meters installed in 2005 were removed.
  - d. If the Commission were to approve Grayson District's deviation as requested in the application, Grayson District would continue to sample test all meters in their fifteenth year of service. Grayson District has not yet determined whether it would test all meters when they are taken out of service, but would do so if required by the Commission.

**GRAYSON COUNTY WATER DISTRICT**

**CASE NO. 2019-00115**

**Response to Commission Staff's Second Request for Information**

**Question No. 3**

**Responding Witness: Kevin Shaw & Legal Counsel**

- Q-3. Refer to Table A-1 in Grayson District's Sample Meter Testing Plan attached to the application. Provide the definition for "AOL" as used in the phrase "[f]or specified QOL values falling within these ranges."
- A-3. Grayson District believes this reference in the ANSI Standard should be to "AQL," not "AOL." Other portions of the ANSI Standard do not refer to "AOL." Section A4.1 references that in Table A-1 "[w]hen a range of AQL values is specified, it shall be treated as if it were equal to the value of AQL for which sampling plans are furnished and which is included within the AQL range."

**GRAYSON COUNTY WATER DISTRICT**

**CASE NO. 2019-00115**

**Response to Commission Staff's Second Request for Information**

**Question No. 4**

**Responding Witness: Kevin Shaw & Legal Counsel**

- Q-4. Refer to the definition of AQL in the American National Standard Institute ANSI/ASQ Z1.9-2003 (R2013) (hereinafter the ANSI Standard) at section A2 and A4. Explain whether AQL, as used in the ANSI Standard, represents the percent of the lot that may permissibly not meet the specification being tested or the extent to which samples tested may fall outside the specification limit(s) without failing.
- A-4. The AQL is defined in the ANSI Standard as the quality level that is the worst tolerable product average. Thus, the AQL represents the percent of the lot that may permissibly not meet the specification being tested.

**GRAYSON COUNTY WATER DISTRICT**

**CASE NO. 2019-00115**

**Response to Commission Staff's Second Request for Information**

**Question No. 5**

**Responding Witness: Kevin Shaw & Legal Counsel**

Q-5. Refer to Grayson District's Sample Meter Testing Plan attached to the application

- A-5.
- a. Confirm that Grayson District's Sample Meter Testing Plan proposes to use the procedures of Section B, Part 1, to test the meters at low flow, and if Grayson District is unable to confirm, explain why.
  - b. Confirm that Grayson District's Sample Meter Testing Plan proposes to use the procedures of Section B, Part 2, to test the meters at high and medium flow, and if Grayson District is unable to confirm, explain why.
  - c. Identify those portions of the procedures of Section B, Part 1, that Grayson District will not follow, if any, when sample testing meters at low flow.
  - d. Identify those portions of the procedures of Section B, Part 2, that Grayson District will not follow, if any, when sample testing meters at high and medium flow.

- A-5.
- a. Grayson District confirms that its Plan proposes to use the procedures of Section B, Part 1, to test the meters at low flow rates. Example B-2 in the ANSI Standard demonstrates this calculation.
  - b. Grayson District confirms that its Plan proposes to use the procedures of Section B, Part 2, to test the meters at high and medium flow rates. Example B-3 in the ANSI Standard demonstrates this calculation.
  - c. Grayson District will follow all portions of the procedures in Section B, Part 1 when sample testing meters at low flow rates. As explained in Section B1, Form 1 and Form 2 are equivalent forms. Grayson District chose to use Form 2, so it will not follow the procedures for Form 1.
  - d. Grayson District will follow all portions of the procedures in Section B, Part 2 when sample testing meters at low flow rates. Grayson District is using the same AQL value for both the upper and lower specification limit, so it will not follow the procedures for different AQL values for upper and lower specification limits described in Section B12.2.

**GRAYSON COUNTY WATER DISTRICT**

**CASE NO. 2019-00115**

**Response to Commission Staff's Second Request for Information**

**Question No. 6**

**Responding Witness: Kevin Shaw & Legal Counsel**

- Q-6. Identify the speciation limit that Grayson District will test when testing its meters at low flow.
- A-6. Grayson District assumes that this question requests the specification limit. Grayson District will use a lower specification limit of 90 when testing meters at low flow rates.

**GRAYSON COUNTY WATER DISTRICT**

**CASE NO. 2019-00115**

**Response to Commission Staff's Second Request for Information**

**Question No. 7**

**Responding Witness: Kevin Shaw & Legal Counsel**

Q-7. Refer to the ANSI Standard at A4.3 in which it states that “[i]n the case of a double specification limit, either an AQL value is specified for the total percent nonconforming outside of both upper and lower specification limits, or two AQL values are specified, one for the upper limit and another for the lower limit.

- a. Confirm that Grayson District intends to use a single AQL value for the total percent nonconforming when testing meters at high and medium flow.
- b. Confirm that the ANSI Standard would not indicate the extent to which many of meters are registering over the upper limits set out in 807 KAR 5:066. If a single AQL is used to measure a double specification limit, and if Grayson District is unable to confirm, explain why.

A-7.

- a. Grayson District confirms that it intends to use a single AQL value for the total percent nonconforming when testing meters at high and medium flow.
- b. Grayson District disagrees with this assertion. The ANSI Standard does not indicate the extent to which meters are registering over the upper limit or registering under the lower limit. The more a meter strays from the upper limit, the less likely the sample will be accepted. Likewise, the more a meter deviates from the lower limit, the less likely the sample will be accepted. Using different AQL values for the upper and lower limits would place more importance on either the upper or lower limit.

**GRAYSON COUNTY WATER DISTRICT**

**CASE NO. 2019-00115**

**Response to Commission Staff's Second Request for Information**

**Question No. 8**

**Responding Witness: Kevin Shaw & Legal Counsel**

- Q-8. Refer to the ANSI Standard at A8 in which it indicates that the ANSI Standard assumes that the underlying distribution of individual measurements to be normal in shape and states that a person knowledgeable in statistics should be consulted to advise whether the distribution appears suitable for sampling by variables. Explain why Grayson District contends that the underlying distribution of individual measurements of its meters is normal in shape.
- A-8. As Grayson District explained in response to Staff's First Request, Item 6, given the Commission's previous review and acceptance of a very similar statistical sample testing methodology in Case No. 2016-00432, Grayson District did not consult with a statistician in preparing its Plan. The Commission did not inquire about the distribution in Case No. 2016-00432. Additionally, the Commission has previously approved other sample meter testing plans using the ANSI Standard without speculating on the normality of the distribution.<sup>1</sup> Grayson District believes such precedent indicates that the Commission believes that meter test results follow a normal distribution or believes that the ANSI Standard is still an effective method for sample testing meters even if the meter results do not follow a normal distribution.

Table A-2 of the ANSI Standard provides in footnote 1 that "[t]he theory governing inspection by variables depends on the properties of the normal distribution and, therefore, this method of inspection is only applicable when there is *reason to believe* that the frequency distribution is normal." (emphasis added). Thus, the ANSI Standard also suggests that an approximation of the normality of the distribution is appropriate. When a dataset follows a normal distribution, approximately 68% of the measurements falls within one standard deviation of the mean, about 95% of the observations falls within 2 standard deviations of the mean, and about 99.7% of the observations falls within 3 standard deviations of the mean. Grayson District believes its meter testing results approximately follow a normal distribution.

---

<sup>1</sup> See, e.g., *Application of Farmers Rural Electric Cooperative for Adoption of a Sample Meter Testing Program*, Case No. 2013-00186, Order (Ky. PSC Aug. 8, 2014); *Application of Grayson Rural Electric Cooperative for a Deviation from 807 KAR 5:041, Section 15(3)*, Case No. 2009-00103, Order (Ky. PSC Sept. 25, 2009).

**GRAYSON COUNTY WATER DISTRICT**

**CASE NO. 2019-00115**

**Response to Commission Staff's Second Request for Information**

**Question No. 9**

**Responding Witness: Kevin Shaw & Legal Counsel**

- Q-9. Explain why Grayson District is proposing to use the variability unknown, standard deviation method in Section B of the ANSI Standard as opposed to the variability unknown, range method in Section C of the ANSI Standard.
- A-9. Grayson District proposes to use the variability unknown, standard deviation method in Section B of the ANSI Standard instead of the variability unknown, range method in Section C of the ANSI Standard because the Commission has previously approved sample testing plans using this method.

**GRAYSON COUNTY WATER DISTRICT**

**CASE NO. 2019-00115**

**Response to Commission Staff's Second Request for Information**

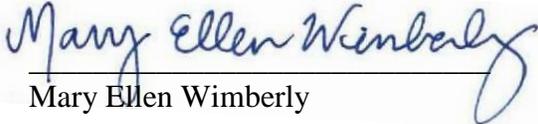
**Question No. 10**

**Responding Witness: Kevin Shaw & Legal Counsel**

- Q-10. Identify the number of complaints Grayson District has received in each of the last five calendar years and so far this year regarding meters over- or underregistering flow, and identify the number of those complaints in which Grayson District has determined that the meters were over- or underregistering flow.
- A-10. Grayson District occasionally receives a customer question regarding the validity of a bill amount and does everything possible to address the customer concerns before the customer requests a meter test. Grayson District last pulled a meter for a customer request in August 2014. The meter tested within the allowed accuracy limits and no adjustment was made. In his time at Grayson District, Kevin Shaw is not aware of a customer-requested meter test that resulted in a correction. The tests tend to result in unnecessary charges to the customer.

## CERTIFICATE OF SERVICE

In accordance with 807 KAR 5:001, Section 8, I certify that Grayson County Water District's August 30, 2019 electronic filing of this Response is a true and accurate copy of the same document being filed in paper medium; that the electronic filing has been transmitted to the Commission on August 30, 2019; that there are currently no parties that the Commission has excused from participation by electronic means in this proceeding; and that one copy in paper medium of this Response will be delivered to the Commission within two business days.

  
Mary Ellen Wimberly