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ANSI/AWWA C671-16
(First Edition)

American Water Works Association
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AWWA Standard

Online Turbidimeter Operation and Maintenance

Effective date: Sept. 1, 2016.
This first edition approved by AWWA Board of Directors Jan. 16, 2016.
Approved by American National Standards Institute Oct. 6, 2015.

American Water Works Association STANDARD Since 1881

Approved American National Standard ANSI

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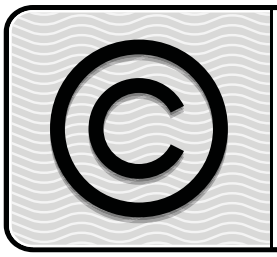

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Committee Personnel

The AWWA Standards Committee on Online Monitoring, which reviewed and approved this standard, had the following personnel at the time of approval:

Darryl Green, *Chair*

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* Liaison, nonvoting.
† Nonvoting informational.

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Contents

All AWWA standards follow the general format indicated subsequently. Some variations from this format may be found in a particular standard.

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C671.*

I. Introduction.

I.A. *Background.* This standard describes online turbidimeter operation and maintenance for online turbidimeters used in the treatment and monitoring of municipal water supplies or in the treatment of municipal wastewater effluent or reuse applications.

I.B. *History.* Over the past decade, significant advancements in turbidity measurement have been observed. Although today's instruments meet the same basic requirements of nephelometers, improvements in advanced electronics, ratio algorithms, techniques to eliminate stray light interference, and software have produced modern measurement technologies that are far more accurate and stable. In addition, the new designs may have a greater dynamic range, can be used to measure samples with more complex matrices, and may help minimize the effects of typical interferences.

The selection of the best turbidity instrument design will be dependent on the specific water quality. Sample composition and process requirements typically dictate the type of technology to be used. Water samples with high levels of dissolved color or absorbance may require a long wavelength (in the range of 803 nm to 890 nm) or ratio measurement. Low-turbidity water may require a more sensitive instrument. For membrane filtration monitoring and granular media filter effluent monitoring, instruments that both comply with regulatory monitoring requirements and have the highest accuracy at low-turbidity levels should be used; for example, a laser nephelometer.

The AWWA Standards Council approved the formation of a committee to create a standard for online instrument operation and maintenance during its March 2006 meeting. A chair for the new Online Monitoring Committee was selected in August 2006, and the committee held its first meeting at the Water Quality and Technology Conference in Denver, Colo., in November 2006.

This is the first edition of ANSI/AWWA Standard C671. It was approved by the AWWA Board of Directors on Jan. 16, 2016.

I.C. *Acceptance.* In May 1985, the US Environmental Protection Agency (USEPA) entered into a cooperative agreement with a consortium led by NSF

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International (NSF*) to develop voluntary third-party consensus standards and a certification program for direct and indirect drinking water additives. Other members of the original consortium included the Water Research Foundation (formerly AwwaRF) and the Conference of State Health and Environmental Managers (COSHEM). The American Water Works Association (AWWA) and the Association of State Drinking Water Administrators (ASDWA) joined later.

In the United States, authority to regulate products for use in, or in contact with, drinking water rests with individual states.† Local agencies may choose to impose requirements more stringent than those required by the state. To evaluate the health effects of products and drinking water additives from such products, state and local agencies may use various references, including

1. An advisory program formerly administered by USEPA, Office of Drinking Water, discontinued on Apr. 7, 1990.
2. Specific policies of the state or local agency.
3. Two standards developed under the direction of NSF: NSF/ANSI 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI 61, Drinking Water System Components—Health Effects.
4. Other references, including AWWA standards, *Food Chemicals Codex*, *Water Chemicals Codex*,‡ and other standards considered appropriate by the state or local agency.

Various certification organizations may be involved in certifying products in accordance with NSF/ANSI 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdictions. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Annex A, "Toxicology Review and Evaluation Procedures," to NSF/ANSI 61 does not stipulate a maximum allowable level (MAL) of a contaminant for substances not regulated by a USEPA final maximum contaminant level (MCL). The MALs of an unspecified list of "unregulated contaminants" are based on toxicity testing guidelines (noncarcinogens) and risk characterization methodology (carcinogens). Use of Annex A procedures may not always be identical, depending on the certifier.

* NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105.

† Persons outside the United States should contact the appropriate authority having jurisdiction.

‡ Both publications available from National Academy of Sciences, 500 Fifth Street, NW, Washington, DC 20001.

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ANSI/AWWA C671 does not address additives requirements. Users of this standard should consult the appropriate state, provincial, or local agency having jurisdiction in order to

1. Determine additives requirements, including applicable standards.
2. Determine the status of certifications by parties offering to certify products for contact with, or treatment of, drinking water.
3. Determine current information on product certification.

II. Special Issues.

II.A. *Information on the Application of This Standard.* The online turbidimeter chosen for a particular application highly depends on the water characteristics at the point of sampling and the purpose for measuring turbidity (such as regulatory compliance, process control, or other reasons). The initial selection and purchasing of an online turbidimeter are beyond the scope of this standard. However, to successfully operate and maintain online turbidiments, it is important to determine that the water characteristics are within the range of water temperature, pH, and other parameters for which the analyzer is designed to operate. In addition, when process water streams contain solids exceeding a turbidimeter's specifications, other instruments such as total suspended solids instruments or those that measure percent transmittance should be considered.

III. Use of This Standard. It is the responsibility of the user of an AWWA standard to determine that the products described in that standard are suitable for use in the particular application being considered.

III.A. *Purchaser Options and Alternatives.* The following items should be provided by the purchaser:

1. Standard used—that is, ANSI/AWWA C671, Online Turbidimeter Operation and Maintenance, of latest revision.
2. Whether compliance with NSF/ANSI 60, Drinking Water Treatment Chemicals—Health Effects, is required.

III.B. *Modification to Standard.* Any modification of the provisions, definitions, or terminology in this standard must be provided by the purchaser.

IV. Major Revisions. This is the first edition of this standard.

V. Comments. If you have any comments or questions about this standard, please call AWWA Engineering and Technical Services at 303.794.7711, FAX at 303.795.7603, write to the department at 6666 West Quincy Avenue, Denver, CO 80235-3098, or email at standards@awwa.org.

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AWWA Standard

Online Turbidimeter Operation and Maintenance

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes online turbidimeter operation and maintenance (O&M) for online turbidimeters used in the treatment and monitoring of potable water, reclaimed water, or wastewater effluent.

Sec. 1.2 Purpose

The purpose of this standard is to provide the minimum requirements for operation and maintenance of online turbidimeters.

Sec. 1.3 Application

This standard can be referenced in documents for purchasing online turbidimeters, can be used as a guide for verifying the accuracy and precision of online turbidimeters, or can assist utilities in establishing online turbidimeter O&M procedures. The user should ensure the environmental conditions of the application match the manufacturer-specified conditions and requirements for the analyzer. The stipulations of this standard apply when this document has been referenced and then only to online turbidimeters used in the treatment and monitoring of potable water, reclaimed water, or wastewater effluent.

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