Utility Management Standards as Tools for Optimization of Utility Operations

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Agenda

- Why is utility management important?
- What is available?
- Benefits of the Standards and Guidebooks.
- Examples.
- Promoting use of the standards.

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- *Founded in 1881 by 22 individuals representing water utilities in Illinois, Indiana, Iowa, Kansas, Kentucky, and Tennessee.*
- *Purpose: "for the exchange of information pertaining to the management of water-works, for the mutual advancement of consumers and water companies, and for the purpose of securing economy and uniformity in the operations of water-works."*

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AWWA Strategic Goals

- **Member Engagement & Development**

AWWA will be the association of choice for water utilities, professionals, and organizations

- **Organizational Stewardship**

AWWA will effectively and efficiently use its resources to serve its member and the water community

- **Knowledge Creation & Exchange**

AWWA will be the authoritative resource on water

- **Water Policy & Leadership**

AWWA will be recognized as the valued and credible voice for water

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Water & Wastewater Utility Concerns

- Heightened public health & regulatory requirements
- Tightening budgets
- Needs to reduce cost – do more with less (affordability)
- Manage risks (and communication)
- Increased public scrutiny
- Loss of public trust (Flint effect)
- Stakeholders interest in proven utility efficiency & effectiveness

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Resources to Address Utility Concerns

AWWA Utility Management (G-Series) Standards

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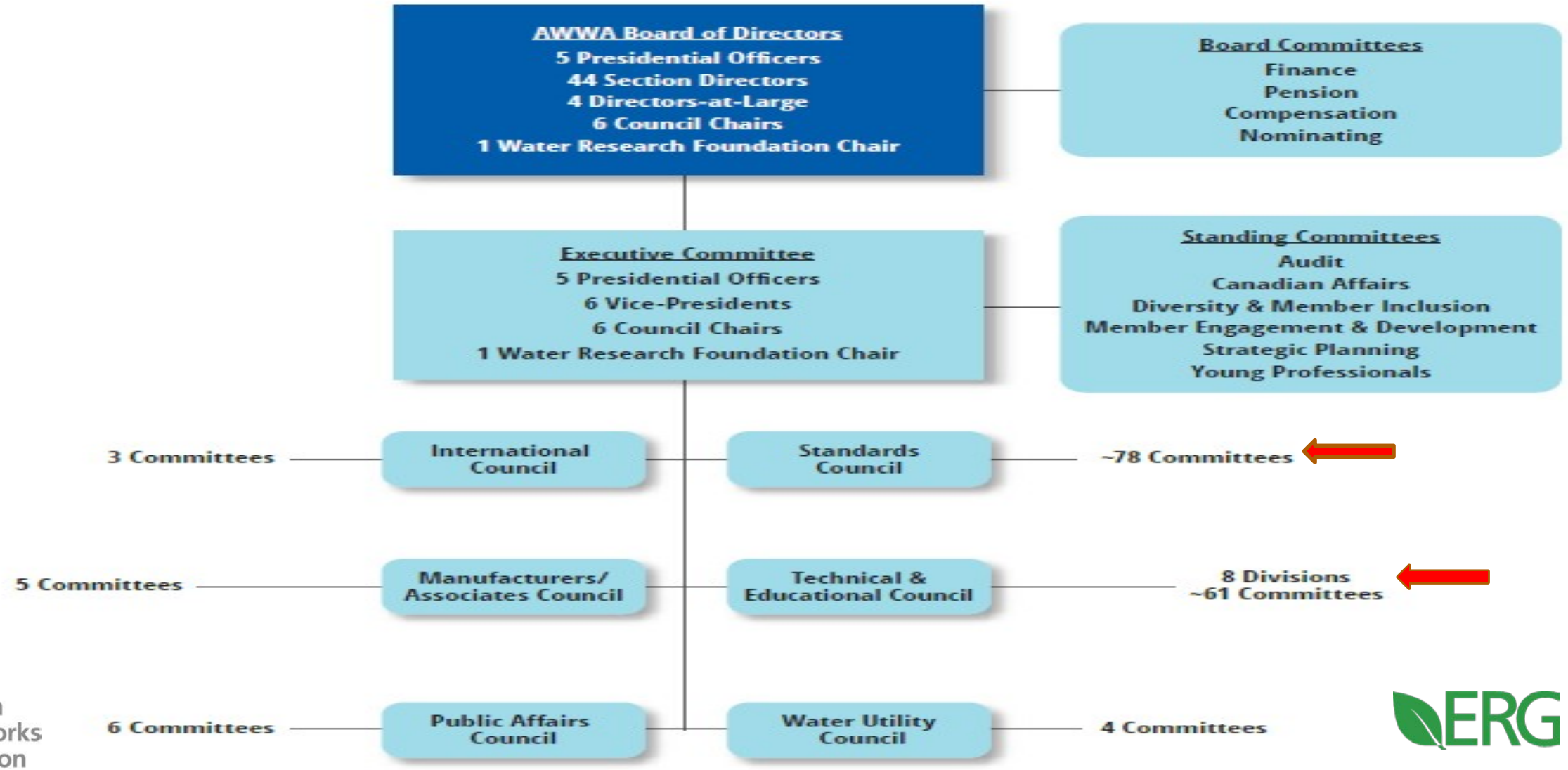
AWWA Governance, Councils & Committees



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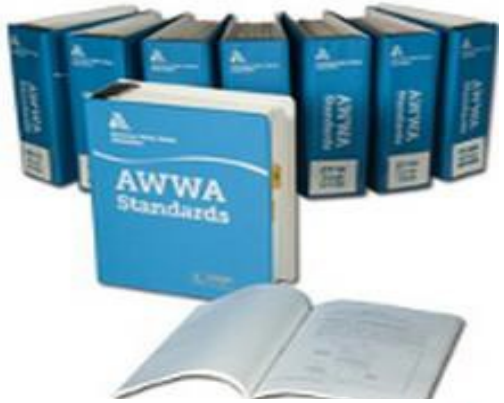
AWWA Standards

AWWA Standards *are documents that serve as a basis for the manufacture and contract specifications for the purchase and use of water works products and services. There are over 170 AWWA standards to date, all ANSI approved.*

In addition, **AWWA Manuals** (overseen by various Councils) *contain useful information, best practices, and recommendations to assist operations personnel. There are 16 published manuals from the Standards Council to date, 50+ in total.*



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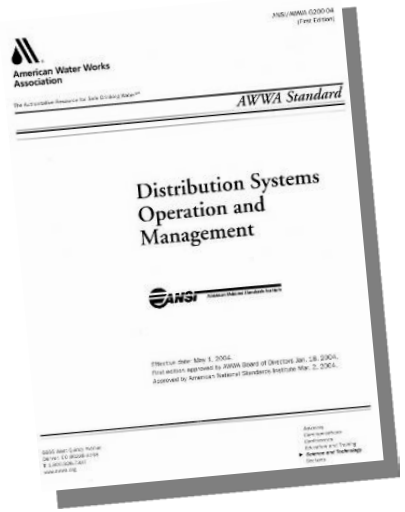
Utility Management (G-Series) Standards

- Standards developed by AWWA volunteers
  - Operators, consultants, regulators.
- Encourages continuous improvement.
- Provides a framework for self-evaluation, counsel, and assistance to utilities.
- ANSI (American National Standards Institute) approved.



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Utility Management (G-Series) Standards

- G100 Water Treatment Plant Operation & Management
- G200 Distribution System Operation & Management
- G300 Source Water Protection
- G400 Utility Management System

Self assessment Operational Guides available.

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Utility Management (G-Series) Standards

- G410 - Business Practices
- G420 - Communications & Customer Relations
- G430 - Security Practices
- G440 - Emergency Preparedness Practices
- G480 - Water Conservation Program
- G481 - Reclaimed Water Programs
- G485 – Direct Potable Reuse Program
- G510 - Wastewater Treatment Plant Operation
- G520 - Wastewater Collection Systems

Standards are complete but no Operational Guide.

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G-Series Standards Under Development

- Biosolids Handling and Management
- Wastewater Pretreatment
- Stormwater Programs Operation

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G-Series Standards and Effective Utility Management (EUM)

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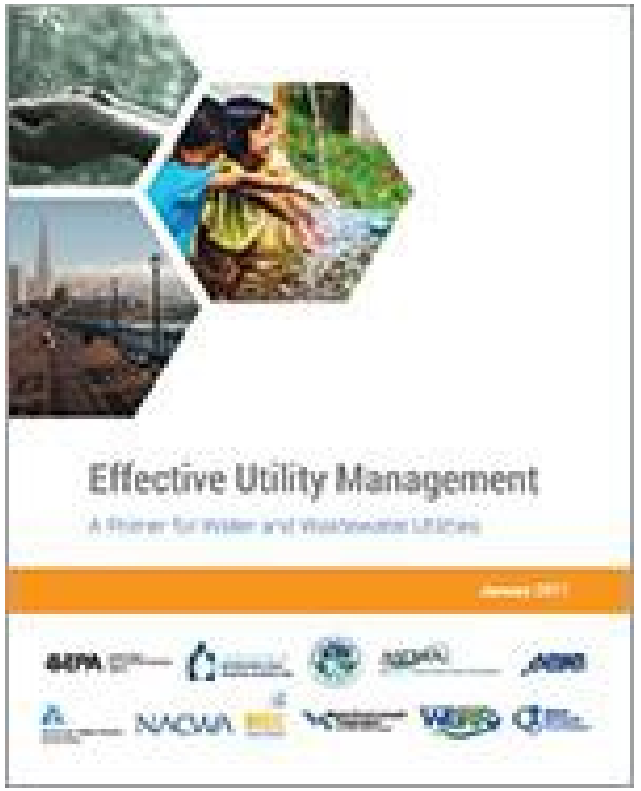
Effective Utility Management



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G-Series Standards & EUM

Title	Standard	Guidebook	EUM Attribute(s)
Water Treatment Plant Operation and Management	Yes	Yes	PQ, OO
Distribution System Operation and Management	Yes	Yes	PQ, OO
Source Water Management and Protection	Yes	Yes	WA
Utility Management System	Yes	Yes	All Attributes
Business Practices for Operations and Management	Yes		IS, FV
Communications and Customer Relations Program	Yes		CS, SU, SS
Security Practices for Operations and Management	Yes		OR
Emergency Preparedness Practices	Yes		OR
Water Conservation Program Operation and Management	Yes		SU
Reclaimed Water Program Operation and Management	Yes		PQ, SU
Direct Potable Reuse Program Operations and Management	Yes		PQ, SU, WA
Wastewater Treatment Plant Operations and Management	Yes		PQ, OO
Wastewater Collection System Operations and Management	In progress		PQ, OO
Biosolids Handling and Management	In progress		PQ, OO
Wastewater Pretreatment Program Management	In progress		OO,SS

PQ Product Quality
CS Customer Satisfaction
ED Employee and Leadership Evaluation
OO Operational Optimization
FV Financial Viability
SU Community Sustainability
OR Operational Resiliency
WA Water Resource Adequacy
SS Stakeholder Understanding and Support
IS Infrastructure Stability

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Operational Guide to G-Series Standards

Operational Guide for the first four G-Series Standards *have been developed to support the implementation of the standards.*

The Utility Quality Management Committee – *under the Management & Leadership Division of the Technical & Educational Council is working to promote the use of the G-series standards.*

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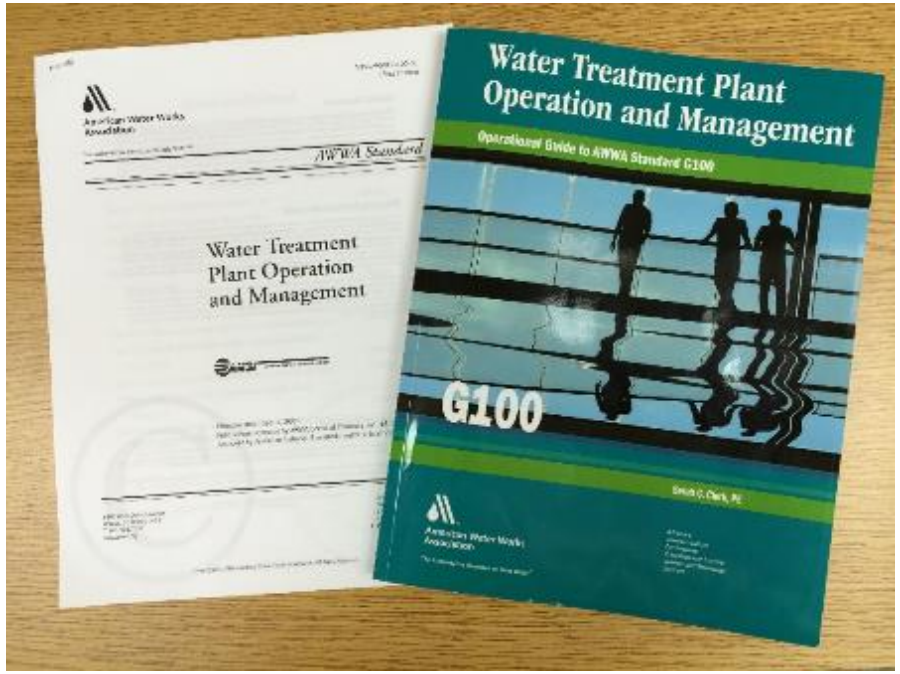
AWWA G100 Standard & Operational Guide



G100 describes the critical requirements for a treatment plant.

- Compliance with regulations.
- Operational management practices.
- Facility maintenance.
- Water Quality Management.

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G100 Operational Guide

SECTION	CHECKLIST QUESTION	YES/NO	REMARKS & EVIDENCE	PERCENT COMPLETE
4.2.7.7 *Equipment and instrumentation calibration*	all equipment and instruments, which includes frequency of calibration as recommended by the manufacturer or regulatory agency? Does the calibration process follow recommended and authorized industry protocol? Is the chemical feed equipment being calibrated and physical inventories being taken on a monthly basis? *Review procedures and records.*			
4.2.8 *Environmental impact management*	Does the utility dechlorinate water to be disposed of into natural waters? *Review procedures and records for this operation.*			

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G100 Reality Check

Checklist Question	Yes/No	Discussion/Comments	Documentation/Examples	Percent Complete
4.1 - Compliance with Regulatory Requirements				
Does the plant meet all Federal, State and Local regulations?	Y		Compliance File	
4.2.1 - Business Practices				
Mission Statement/Goals	N	For sissys		
4.2.1.1 - Budget and Financial Management				
Annual Financial Planning	Y	Annual Budget	Top Secret	
Quarterly Financial Expenses	Y	If requested	Joe & Jim got it	
Capital Improvement Planning	Y	We are always making improvements. I am sure there is a plan somewhere.		
Energy Management Program	Y		Monthly Energy Report	
4.2.2 - Treatment Plant Production Limits				
Plant Production Limits	Y	Duh?	Plant Design	

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Utility Perspective - Benefits

- Washington County Water Conservancy District, UT
  - Developed improved procedures for chemical use, power consumption, lab practices, and water quality goals
  - Saved 15K on energy costs
  - Decreased filter backwash water use by 25%

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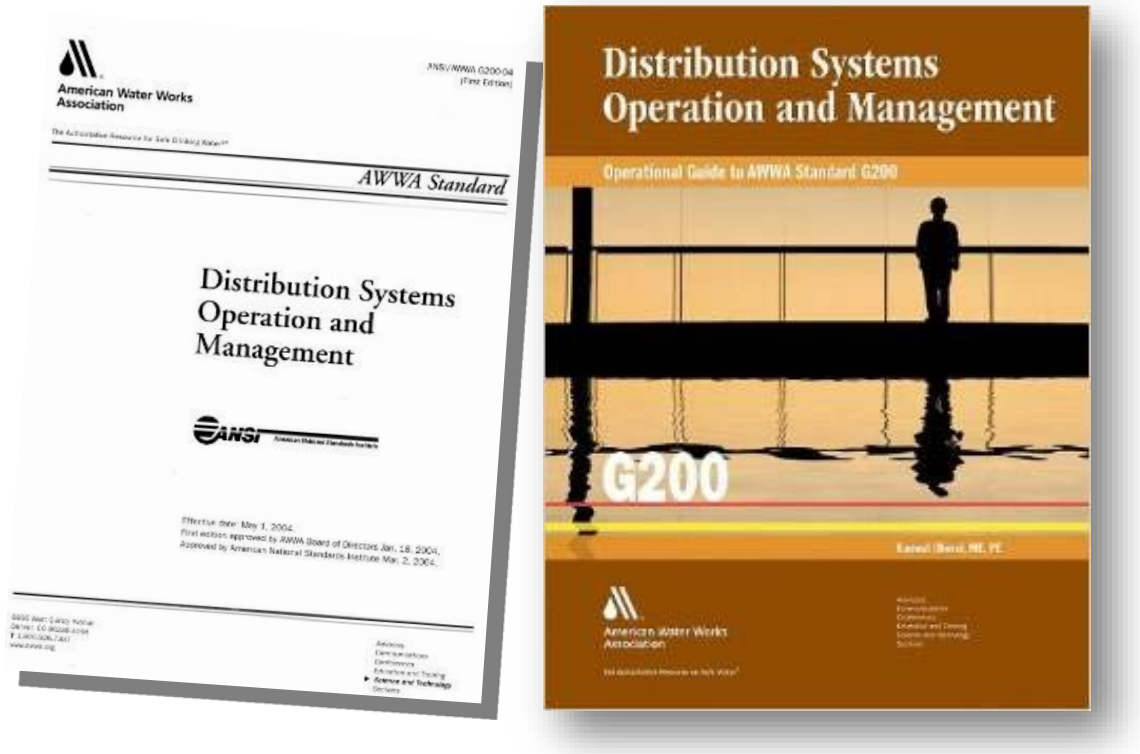
AWWA G200 Standard & Guidebook



G200 describes the critical requirements for a distribution system.

- Water Quality maintenance
- Distribution system management
- Facility operation and maintenance

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G200 Operational Guide

A. Does the utility have an implemented and documented program for the internal corrosion and deposition monitoring and control in the distribution system?
B. Does the utility utilize treatment technology to ensure the internal corrosion and deposition are effectively controlled and maintained in the distribution system?
C. Does the utility effectively monitor and measure the water quality parameters such as pH, alkalinity, conductivity, phosphate, silicate, calcium, metals, and measure the calcium carbonate precipitation potential (CCPP) or the Langelier Saturation Index (LSI) or other parameters on a regular basis to ensure that internal corrosion and deposition in the distribution system is effectively controlled?

G-200 Standard Audit List

AAA CHECKLIST QUESTION (AWWA STANDARD G-200)	REMARKS & EVIDENCE	Percent Complete
4.1 Water Quality 4.1.1 Compliance with regulatory requirements Has the utility identified and documented its legal and other requirements? *Verify that documentation exists and is available to those who need it.* Does the utility comply with all identified legal and other requirements? *Verify examples of compliance, which may include reports routinely submitted to the local regulatory agency.* *If any special regulatory orders or treatment technology orders are in progress, verify compliance as per the special regulatory orders or instructions.*		
4.1.2 Monitoring and Control 4.1.2.1 Sampling Sites Does the utility have a routine sampling plan that is representative of the entire distribution system? *Review the plan and verify that it is representative of the system.* Is the plan reviewed at least annually to incorporate the changes in the distribution system that may affect water quality? *Verify procedures are in place to ensure annual sampling plan review.*		
4.1.2 Monitoring and Control 4.1.2.2 Sample Sites Does the utility have a minimum numbers of sampling sites to meet or exceed regulatory requirements? *Compare the sampling sites for the utility with applicable regulations.* Are some sites located where the longest detention time is expected, dead end locations, areas of low circulation, water storage facilities, and where water quality problems have occurred in the past? *Interview associate(s) responsible for sample site*		

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Utility Perspective - Benefits

- Montrose, CO
  - Implemented new valve exercising program
  - Identified and eliminated water losses of 2.6 MGD

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Charleston, SC Water Systems Journey

- Water Distribution Department conducted a self-audit/gap analysis
  - Current practices vs. what the standard recommends
- "Needs Summary"
  - Identified 14 areas for improvement
  - Ranged from minor to major gaps
- Implementation Plan
  - Identified key players
  - Initiated monthly "G200 Leaders Meeting"
  - Addressed gaps according to the implementation plan

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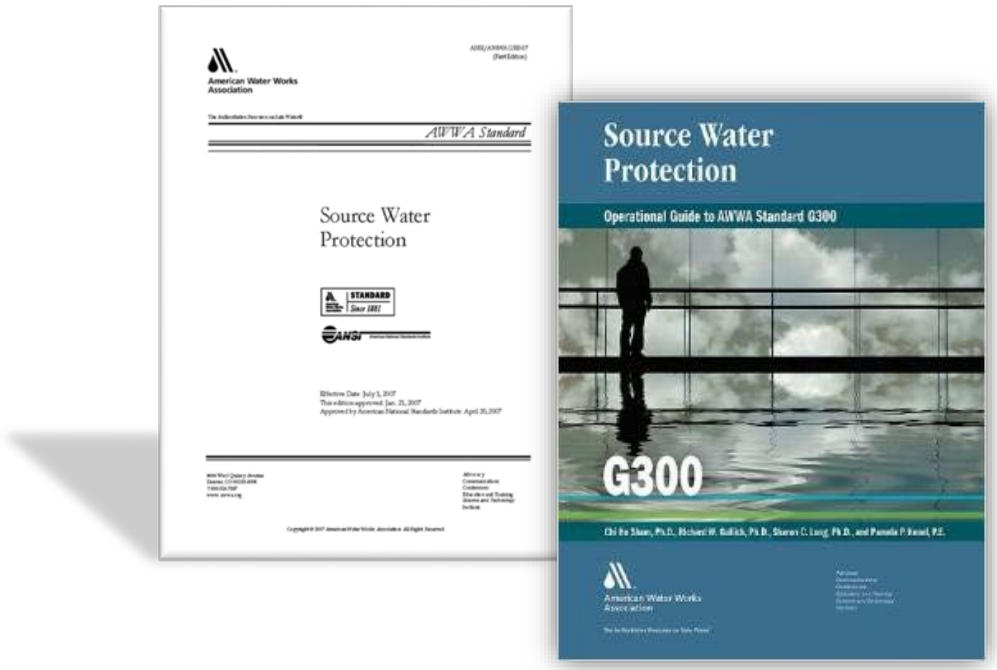
AWWA G300 Standard & Guidebook



G300 identifies 6 primary elements for a source water protection program.

- Vision.
- Source water characterization.
- Source water protection goals.
- Action plan.
- Implementing action plan.
- Periodic evaluation & revision of program.

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AWWA G300 Standard

The minimum requirements for a source water program include six primary elements:

1. Source water protection program vision
2. Source water characterization
3. Source water protection goals
4. Source water protection action plan
5. Implementation of the action plan
6. Periodic evaluation and revision of program

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Note: Involvement of stakeholders throughout the process

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G-300 Guidebook Vision Questions

1. Is there a utility vision, mission statement, or policy that specifically addresses SWP?
2. Has the vision, mission statement, or policy been adopted by the utility?
3. Is the SWP vision, mission statement, or policy distributed and understood throughout the organization?
4. Does the mission statement recognize that SWP is one of the multiple barriers for drinking water production?
5. Does the policy or utility mission statement include commitment or intention to commit, sufficient resources?
6. Is there a process for regular or periodic review of the SWP vision? (and when was the SWP vision last reviewed?)
7. Is the SWP vision available to the public (in consumer confidence report, annual report, other outreach materials, and/or the utility's website)?

Beaver Water District, Arkansas – Experience with G300

Bob Morgan, Ph.D.

- G300 and the operational guide support organizing data and information on SWP plan into a coherent document.
- The checklists in the operational guide walked BWD through all of the elements of a SWP program. Because of the checklists, BWD thought about items that were previously not considered as part of SWP.
- Having a program that is in accordance with the AWWA standard gives BWD credence with many of the stakeholders that were somewhat reluctant at first.

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AWWA G400 Standard & Operational Guide

G400 defines the minimum requirements for establishing a utility management system that promote continuous improvement.

- Commitment to resources
- Legal, regulatory, and other requirements
- Standard compliance
- Tracking & measuring improvement
- Communication
- Training
- Emergency preparedness

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G400: Utility Management System

- Describes consensus practices for establishing a utility management system for a water or wastewater utility that will promote continuous improvement.
- Created to respond to a widespread need of utility managers to have some consistency in approach and some reliability in knowing what is generally expected of utilities in all areas of utility management.

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G-400 Guidebook Content

- **Section 1:** Acknowledgements
- **Section 2:** Forward
- **Section 3:** Introduction
- **Section 4:** Requirements
  - 4.1 –Commitment to Resources
  - 4.2 –Legal, Regulatory, and Other Requirements
  - 4.3 –Standard Compliance
  - 4.4 –Tracking and Measuring Improvement
  - 4.5 –Communication
  - 4.6 –Training
  - 4.7 –Emergency Preparedness
- **Section 5:** Verification
  - 5.1 –Documentation
  - 5.2 –Human Resources
- **Section 6:** Glossary of Acronyms
- **Section 7:** References and Resources
- **Section 8:** Audit Checklist
- **Append. A:** Additional Examples

Note: Best places to start

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Implement Utility Quality Management Program and Benefits

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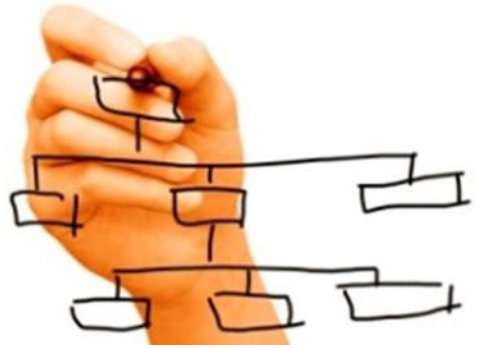
Utility Quality Management Program Overview



- Voluntary effort
- All utilities – All sizes
- “Above and Beyond” regulations
- Outcome-oriented: Water quality, Compliance, Public Health & Environmental Protection, Efficiency Improvement
- Performance can be verified by peer evaluators
- Self-assessment by staff

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Optimization of Utility Operations

- Encourages continuous improvement
- Provides framework for self-evaluation
- Instills customers with confidence and trust
- Conveys confidence between Utility & Regulators
- Provides opportunity for counsel and assistance to other utilities

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Utility Performance Optimization Tool

"Conformance with Utility Management Standards will enhance public confidence while demonstrating continuous improvement efforts"

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Testimonials

"Applying the G-Series voluntary standards to utility operations helps to manage utilities in a way which guarantees peace of mind"

- Assures continuity in performance optimization
- Guarantees development of SOPs
- Institutional knowledge retention
- Tool to maintain safe performance based on good practices – NOT good luck

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Comprehensive Program Based on Utility Management Standards

- Compliance
- Business practices
- Budget & financial
- Plant CIP
- Energy management
- Plant production
- Production capacity
- Plant cleanliness
- Operating permits
- Plant management
- Training program
- Quality assurance
- SOPs
- Chemical QA
- Calibration
- Emergency preparedness
- Security planning
- Customer care

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Keys to Management Success

- Leadership
- Strategic planning
- Knowledge management
- Measurement
- Continual improvement management framework

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Intermountain Section Story

- AWWA Intermountain Section organized its own Utility Quality Management Committee
- “Train the Trainer” sessions conducted on source water, treatment, and distribution standards
- Promotion of all G-series standards and guidebooks, self-assessments, and peer reviews
- 13 utilities completed self assessments and submitted for peer reviews in G100, G200 and G300
- Certificates awarded to utilities for completion of self-assessments and peer reviews

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IMS - New Manager Experience

- We started the audit with the attitude of checking the boxes “yes” – then we decided it was OK to recognize that we have some work to do
- I thought we were doing well – but now I know “how well” we are doing using industry standards
- We now have real goals for improvement
- We have confidence that we are not missing something important
- This has been a real team builder
- And I sleep a lot better at night

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What Would the AWWA Utility Quality Management Committee Like to Do?

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What Would We Like?

- We want to promote Utility Management Standards and Guidebooks in each AWWA Section
- Identify a person or committee in each Section to work with the Utility Quality Management Committee
  - Conduct presentations and workshops
  - Promote self assessments

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Current UQMC Workshop Team

- Eva Nieminski, Utah Division of Drinking Water
- Kan Oberoi, Charleston Water System
- Dave Purkiss, NSF International
- Chi Ho Sham, Eastern Research Group
- Gerard Yates, Central Utah Conservancy District

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Questions?

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It takes less time to do a thing right, than it does to explain why you did it wrong.

Henry Wadsworth Longfellow

THANK YOU FOR YOUR ATTENTION AND HARD WORK TO PROTECT OUR DRINKING WATER

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