



Tribal Drinking Water Operator Certification Program

Office of Water (4606M)
August 2009
EPA 816-B-09-002
www.epa.gov/safewater

100. Objective	2
101. Authority	2
102. Administrative Functions.....	3
103. Definitions.....	3
104. Application for Certification.....	4
105. Examinations.....	5
106. Certificates	6
107. Experience and Education Requirements	8
108. Continuing Education	10
109. Training.....	10
110. Classification of Distribution Systems and Treatment Facilities.....	11
111. Stakeholder Involvement	11

100. Objective

- 100.1 The purpose of the EPA Tribal Drinking Water Operator Certification Program is to increase public health protection through certification for personnel operating public drinking water systems in Indian country.

101. Authority

- 101.1 EPA is the Certifying Authority for the Certification Program. As such, EPA will issue all new and renewal certificates. EPA will also revoke certificates where appropriate.
- 101.2. Although participation in this Certification Program is voluntary, EPA requires a Tribe to have, or agree to obtain within a certain time frame, a certified operator(s) for their public drinking water system(s) in order to secure funds in the Drinking Water Infrastructure Grant Tribal Set-Aside (DWIG TSA) program. Also, Federal drinking water regulations require some system operators to be “qualified.” Participation in the EPA Tribal Drinking Water Operator Certification program meets this requirement. Operators certified through this program will be listed by the Region on their “register” pursuant to the regulations (141.130(c)).
- 101.3 When communicating with EPA regarding the EPA Tribal Drinking Water Operator Certification Program, operators should correspond with EPA Regional Tribal Coordinators specified in outreach materials for this program.
- 101.4 EPA has the authority to establish a Tribal Operator Certification Program through its direct implementation authority set forth in Public Law No. 105-65, 111 Stat.1334, 1374 (1997) and 42 U.S.C. 300j-2(a)(8).

102. Administrative Functions

- 102.1 The administrative functions for this program include the following:
- Processing applications submitted to the Program;
 - Administering examinations; and
 - Maintaining an accurate record of the certification status of all applicants and operators that have been certified by this Program.

103. Definitions

Certification Level: Any one of the possible steps within this water treatment or water distribution Certification Program.

Certified Operator: A qualified operator of a public water system who holds a valid certification from any Certifying Authority approved by EPA.

Certifying Authority: An organization that issues new certificates and renewal certificates, and revokes certificates as appropriate (USEPA).

Community Water System (CWS): a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

Distribution System: Distribution pipelines, appurtenances, and facilities, which carry water for potable use to consumers through a public water supply.

Distribution System Complexity: Conditions or characteristics that exist in a distribution system, such as: pressure zones, booster stations, storage tanks, fire protection, chlorination, non-residential consumer, cross connection potential demand variations, size of pipes, total distance of pipes and/or total geographic area that must be considered when classifying the distribution system.

Indian Country: Indian country means (a) all land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and including rights-of-way running through the reservation, (b) all dependent Indian communities within the borders of the United States, whether within the original or subsequently acquired territory thereof, and whether within or without the limits of a state, and (c) all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.

Non-transient Non-community Water System (NTNCWS): a public water system that is not a community water system and regularly serves at least 25 of the same persons over 6 months per year. Common types of NTNC water systems are those serving schools, day care centers, factories, nursing homes, casinos, and hospitals.

Operator: A person who operates, repairs, maintains, and is directly employed by or is an appointed volunteer for a public drinking water system.

Public Water System: A system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. System includes any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system; and any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system.

Source Water: The source of water that is collected for use in a public drinking water system. Examples include: type (surface water, groundwater, groundwater under the influence of surface water, purchased water); quality (variability); and/or protection (wellhead protection).

Treatment Facility: Any place(s) where a community or non-community water system alters the physical or chemical characteristics of the drinking water.

Treatment Facility (Complexity): Factors that may impact a Treatment Facility's ability to control water quality, consumer safety and/or the safety of the operator.

Validated Examination: An examination that is independently reviewed by subject matter experts to ensure it is based on a job analysis and related to the classification of the system or facility.

104. Application for Certification

104.1 An operator requesting certification must meet the following requirements.

- 104.1.1 Take and pass an examination that demonstrates the applicant has the necessary skills, knowledge, ability, and judgment relevant to and appropriate for the classification of the public drinking water system.
- 104.1.2 Have a high school diploma or a general equivalency diploma (GED) or complete the Operator In Training (OIT) Program as described in Part 107.
- 104.1.3 Have the defined minimum amount of experience and education for each level of certification, or complete the OIT Program. Education and experience requirements for each level of certification are outlined in Part 107.

- 104.1.4 Be an employee or an appointed volunteer of a public drinking water system in Indian country.
- 104.2 Required documentation showing the applicant meets the minimum certification, education and experience criteria must accompany the application.
- 104.3 Evaluation and Verification of Applicant Qualifications
 - 104.3.1. EPA will make final determinations of exam eligibility.
 - 104.3.2. Evaluation of experience will include reports of supervisors or other agencies having appropriate responsibilities for water utility system oversight.
- 104.4. EPA will notify the applicant of exam eligibility status. Any appeals regarding exam eligibility status will be handled by EPA Regional Tribal Coordinators.

105. Examinations

- 105.1 Certification examinations are prepared for use in determining skill, knowledge, ability, and judgment of the applicants.
- 105.2 All examination questions shall be validated.
- 105.3 Sequential examinations are required; that is, an applicant for a Level 2 certification must have taken and passed the Level 1 examination; an applicant for a Level 3 certification must have taken and passed the Level 2 examination; and, an applicant for the Level 4 certification must have taken and passed the Level 3 examination.
- 105.4 Operators who have been approved for examination have six months from the date of eligibility approval to schedule the exam.
- 105.5 Any applicant taking the examination is required to provide adequate identification prior to receiving the examination packet. Before leaving the testing session the applicant must return all examinations and related materials.
- 105.6 In order to receive a certificate, the applicant must achieve a minimum examination passing score of 70%.
- 105.7 Applicants will receive a score report at the completion of the exam. Applicants who pass the exam will receive their certificate by mail.

- 105.8 Applicants who did not pass may retake the exam within six months of the original test date, but no sooner than 30 days after the original test date. Applicants who do not pass the retake exam must submit a new application form.
- 105.9 Examinations are not available for review. EPA will provide applicants the opportunity to appeal his/her exam score. All appeals must be in writing and must be made within 30 days of the date of the examination.
- 105.10 Accommodations will be made for applicants that require special accommodation due to a disability that may impair ability to take the examination. Applicants must submit a Request for Accommodation Form with the application and provide documentation of the need for a special accommodation. A letter from a physician or a medical specialist knowledgeable of your disability must accompany the completed application. Contact the EPA Regional Tribal Coordinator to request a copy of the Request for Accommodation Form.

106. Certificates

106.1. *Issuance*

- 106.1.1. Certificates will be issued independently for water treatment and water distribution.
- 106.1.2. Upon satisfactory fulfillment of all certification requirements, the EPA will provide the applicant a certificate by designating the applicant's competency.
- 106.1.3. The certificate will state the certified operator's name, certification level, date of issue, expiration date, and the official certificate number.
- 106.1.4. Subject to 106.1.5 and 106.1.6, Certificates will be issued for a three-year period.
- 106.1.5. Certificates will be valid only so long as the holder uses reasonable care, judgment, and application of knowledge in the performance of duties.
- 106.1.6. No certificate will be valid if obtained or renewed through fraud, deceit, or the submission of inaccurate qualification data.
- 106.1.7. No grandfathered or temporary certificates will be issued.

106.2. Expiration and Renewal

- 106.2.1 All certificates must be renewed before expiration.
- 106.2.2 To renew a certificate, the certified operator must have been actively working in the area of certification and completed at least 30 continuing education hours during the previous three-year period.
- 106.2.3 EPA may send a notice of renewal to the operator prior to the expiration date of the certificate.
- 106.2.4 Renewal applications must be returned and accompanied by documentation for continuing education hours.
- 106.2.5 Lapsed certificates may be reinstated within 30 days of the date of expiration. After 30 days, the operator will no longer be certified.
- 106.2.6. If a certified operator terminates current employment or is no longer an appointed volunteer in a public drinking water system in Indian country, the certification will remain valid for 180 days, or until the expiration date on the certificate, whichever is longer.
- 106.2.7. If renewal of a certificate is denied, the operator may appeal the decision by making a written request to appeal to the EPA within 90 days after the EPA has issued the decision for renewal.

106.3. Revocation

- 106.3.1. EPA will revoke the certificate of a certified operator if it is found that the certified operator has:
 - Practiced fraud or deception;
 - Performed in a grossly negligent, incompetent manner;
 - Has committed misconduct in the performance of duties as an operator of a public water system; and/or
 - Demonstrated disregard for the health and safety of the public
 - Been convicted of a violation of any Federal law relating to water quality; including, but not limited to, the Safe Drinking Water Act.
- 106.3.2. EPA will provide a certificate holder with an opportunity to appeal the revocation of a certificate. A written request to appeal must be made to the EPA within 30 days after the EPA has issued the decision.

106.3.3. Upon receipt of any appeal, EPA will convene a special meeting at a date mutually agreeable to all parties. The requestor will present his/her appeal to the EPA, either personally or in written form. EPA will consider the appeal and reach a determination.

106.4. EPA will recognize certification from EPA approved certification providers under this program and certification provided by any approved State program for purposes of meeting the Drinking Water Infrastructure Grant Tribal Set Aside requirement for a certified operator. The EPA Tribal Drinking Water Operator Certification Program will extend reciprocity to any operators already certified by a State with an approved operator certification program and on a case by case basis to operators already certified by other EPA approved providers pre-dating this program.

107. Experience and Education Requirements

107.1. Experience and education requirements are the same for water distribution certification and water treatment certification. The same experience and education can be used to meet the requirements for both the water distribution and water treatment certification.

107.2. The education and experience requirements for operators are:

107.2.1 Operator In Training (OIT)

- An operator who does not meet the education and/or experience criteria may apply for OIT certification and must take and pass an exam at the appropriate certification level. This option is only available for VSWS and Class I levels.
- Operators who hold an OIT certification must complete a basic operator course and fulfill the renewal continuing education requirements to receive full certification at the time of renewal after three years. Examples of basic operator courses include:
 - Water Treatment Plant Operation, Level 1, offered by Sacramento State;
 - Small Water System Operations and Maintenance, offered by Sacramento State;
 - Operator Basics, offered by Montana University Water System Program on-line or on CD-ROM;
 - General Module and Water Distribution - Level One, offered by the Inter-Tribal Council of Arizona;
 - Other training courses pre-approved by EPA.
- Operators that have completed the OIT program are eligible for higher certification levels when they complete the experience and renewal hours for each level.

107.2.2. Very Small Water System

- Work Experience: six months of operations experience.
- Education: High school diploma or GED.
- Water Training Requirements: Five (5) hours of approved Continuing Education Hours in topics relevant or specific to water utility operations.

107.2.3 Level 1

- Work Experience: One (1) year of acceptable operating experience as defined in these guidelines. (Education cannot be substituted for experience.)
- Education: High school diploma or GED.
- Water Training Requirements: Ten (10) hours of approved Continuing Education Hours in topics relevant or specific to water utility operations.

107.2.4. Level 2

- Work Experience: Two (2) years of acceptable operating experience.
- Education: High school diploma, GED, or completion of OIT.
- Water Training Requirements: Thirty (30) approved Continuing Education Hours in topics relevant or specific to water utility operations.

107.2.5. Level 3

- Work Experience: Five (5) years of acceptable operating experience.
- Education: High school diploma, GED, or completion of OIT; and 1 year of post high school education or the equivalent in approved training as defined in Part 108.
- Water Training Requirements: Fifty (50) approved Continuing Education Hours in topics relevant or specific to water utility operations.

107.2.6. Level 4

- Work Experience: Six (6) years of acceptable operating experience, of which at least 1½ years must have occurred after obtaining a Level 3 Certificate.
- Education: High school diploma or GED and 2 years of post high school education or the equivalent in approved training as defined in Part 108.
- Water Training Requirements: Eighty (80) approved Continuing Education Hours in topics specific or relevant to water utility operations.

- 107.3 Experience and education qualifications are based on the years of experience that the applicant has completed in association with the duties of the Certification Level for which the application is made.
- 107.4 Experience is defined as work performed in the operation, maintenance, monitoring, analysis, or management of water production, treatment, storage, distribution, laboratory facilities, or other positions in the water utility field.
- 107.5 Continuing Education Hours (CEH) used for fulfilling examination requirements may not be reused for a higher certification level (e.g., 30 CEH used to qualify for level 2 cannot be counted towards 50 CEH to qualify for level 3). However, CEH taken for renewal can be used to qualify for the next level. CEH also can be used to meet both distribution and treatment certification requirements.

108. Continuing Education

- 108.1 Continuing Education Hours (CEH) must be either acceptable as college transfer or directly related to the field of water treatment or water distribution. For education gained in programs such as short schools, correspondence courses, trade schools, community colleges, formalized workshops, seminars, etc., credit will be allowed in accordance with the following schedule at the discretion of the Certification Administrator.

1 Continuing Education Unit (CEU)	=	10 Continuing Education Hours
1 Semester Hour	=	10 Continuing Education Hours
30 Semester Hours (1 year of college)	=	300 Continuing Education Hours

109. Training

- 109.1 Continuing Education Hours must be acquired from the subject areas listed in Appendix 1 and must be conducted by a recognized provider such as EPA, American Water Works Association (AWWA), Rural Community Assistance Corporation (RCAC), Rural Water Association (RWA), New Mexico Environmental Finance Center (NMEFC), etc. Contact hours for renewal may not all be in the same subject area and operators are encouraged to seek training from a variety of providers.
- 109.2 A list of training opportunities is available at <http://www.epa.gov/safewater/tribal/training.html>
- 109.3 It is the responsibility of the operator to obtain documentation of contact hours.

- 109.4 Operators should verify in advance with the EPA Regional Tribal Coordinator if a specific training course will count towards required renewal contact hours.
- 109.5 All in-house or in-plant training which is intended to meet any part of the credit hour requirements must be approved in writing by the EPA Regional Tribal Coordinator prior to the training. Criteria for approval include:
- Submittal of an instructor resume;
 - Submittal of an outline of the subjects to be covered along with the time allocated to each area; and
 - A list of the instructor's objectives documenting the essential points of the instruction ("need to know" information) and the methods used to illustrate these points.

110. Classification of Distribution Systems and Treatment Facilities

- 110.1. In order to determine the appropriate level of certification for a water system operator, EPA will classify all water systems in Indian country.
- 110.2. Water distribution systems shall be classified according to the classification system as defined in Appendix 2.
- 110.3. Water treatment facilities shall be classified according to the point classification system as defined in Appendix 3.

111. Stakeholder Involvement

- 111.1 EPA will provide ongoing stakeholder involvement in the Certification Program.
- 111.2 Representatives from all Tribes are invited to give input on the Certification Program at any time.
- 111.3 EPA will initiate review of the Certification Program as appropriate based upon comments received.

Appendix 1: Continuing Education Hour Topic List

Appendix 2: Water Distribution Systems Point Rating System

Appendix 3: Water Treatment Plant Point Rating System

Appendix 1: Continuing Education Hour Topic List

WATER TREATMENT CONTINUING EDUCATION TOPICS	
Continuing Education Topics	Water Approved (Yes/No)
General	
Basic Computers	Yes
Basic Electricity for Operators	Yes
Basic Hydraulics	Yes
Geographic Info Systems (GIS)	No
Math for Operators	Yes
Water Chemistry	Yes
Water Microbiology	Yes
Safety	
Backhoe Operator	No
Chlorine Safety	Yes
Confined Space	Yes
Electrical Hazards	Yes
Excavations, Trenching/Shoring/ Competent Person	No
Hazard Communication/Right-to-Know	Yes
Lab Safety	Yes
Lockout/Tagout	Yes
Personal Protective Equipment / Respiratory Protection	Yes
Safe Handling of Materials	Yes
Spill Response	Yes
Traffic Control/Work Zone Safety	No
Water & Blood-borne Pathogens	Yes
O & M Equipment	
Aeration Equipment	Yes
Belt Filter presses	Yes
Blowers and Compressors	Yes
Booster Pumping Stations	Yes
Centrifuges	Yes
Chemical Storage/Feed Systems	Yes
Cross Connection/Backflow Prevention Equipment	Yes
Electrical controls/SCADA	Yes
Flow Monitoring & Level Sensing Equipment	Yes

Continuing Education Topics	Water Approved (Yes/No)
Generators/Switchgear	Yes
Hydraulic and Pneumatic Equipment	Yes
Instrumentation	Yes
Leak Detection	No
Cathodic Protection	No
Mechanical Process Equipment	Yes
Mixers	Yes
Motor Control Centers	Yes
Motors/Engines/Drives	Yes
Pipe, Valves, Fittings	Yes
Programmable Logic Controllers	Yes
Pumping/Lift Stations	Yes
Pumps	Yes
Stand-by/Aux/Support Equip	Yes
Variable Freq Drives	Yes
Water Treatment Process/ Quality Control	
Adsorption Processes	Yes
Aeration	Yes
Algae Control	Yes
Aquifer Storage & Recovery	Yes
Arsenic Removal	Yes
Bacteriological Sampling Procedures	Yes
Basic Knowledge of Groundwater Treatment	Yes
Basic Knowledge of Water Treatment	Yes
Cation Exchange Softening	Yes
Chemical Precipitation Softening	Yes
Chemical Storage & Handling	Yes
Chemical Treatment	Yes
Coagulation & Flocculation	Yes
Corrosion Control	Yes
Cross-Connection/ Backflow	Yes
Disinfecting Water Storage Vessels	Yes
Drinking Water Disinfection	Yes
Drinking Water Standards & Rules	Yes
Filtration	Yes
Flow Measurement: Open Channel & Pipe	Yes
Fluoridation	Yes
Groundwater Basics/Aquifers	Yes
Intake Structures	Yes
Iron & Manganese Removal	Yes

Jar Testing	Yes
Continuing Education Topics	Water Approved (Yes/No)
Membrane Processes: Filtration Modes	Yes
Metering	Yes
Nitrate Removal	Yes
Oxidation	Yes
Pesticide & Herbicide Reduction	Yes
Plant & Distribution Storage	Yes
Point of Use/Point of Entry Devices	No
Process Optimization & Upgrade	Yes
Residuals Disposal	Yes
Sampling & Lab Analysis	Yes
Sedimentation/Clarification	Yes
Surface Water Treatment	Yes
Taste & Odor Control	Yes
Water Source Treatment & Characteristics	Yes
Well Maintenance & Rehab	Yes
Well Operation (yield, drawdown)	Yes
Zebra Mussel Control	Yes
Distribution Process/ Quality Control	
Aquifer Storage & Recovery	Yes
Chlorination	Yes
Corrosion Control	Yes
Cross-Connection/ Backflow	Yes
Dechlorination	Yes
Distribution Systems	Yes
Drinking Water Standards	Yes
Fire Flow Testing	No
Flushing, Pigging, and Swabbing	No
Groundwater Basics/Aquifers	Yes
Hydrants, Valves, Exercising Programs	No
Leak Detection/Water Audits	No
Mapping, Locating, Tracer Wire	No
Metering	Yes
New Main & Repair Disinfection	No
Sampling & Lab Analysis	Yes
Service Line & Curb Box Maintenance	No
Service Line Thawing	No
Storage	Yes
Trenchless Construction: Pipe Bursting	No
Water Source Characteristics	Yes

Well Maintenance Rehabilitation	Yes
Well Operation (yield, drawdown)	Yes
Continuing Education Topics	Water Approved (Yes/No)
Wellhead/Source Water Protection	Yes
Administration/ Management	
Capacity, Management, Operation & Maintenance for Separate Systems	Yes
Compliance	Yes
Construction Inspection/ Documentation/ Design Build	No
Community/Public Relations/Complaint Response	Yes
Design Manual Development	No
Emergency Response Planning & Security Training	Yes
Energy Efficiency/ Energy Conservation at W/WW Facilities	Yes
Federal & State Financing Programs	Yes
Finance, Budget, Rate Setting	Yes
Health and Safety Program Implementation	Yes
Legal Issues for W/WW Utilities	Yes
Records and Reports: Monitoring/Reporting/Records Management	Yes
Planning/Organization/Project Management	Yes
Plant Optimization: Contin Process Improve/Sustainability/Asset Management/Statistical Process Control Techniques	Yes
Private Property Issues/Service Laterals	No
Problem Solving/Troubleshooting/Decision Making	Yes
Regs (CWA/SDWA, State & Local such as Operator Certification Requirements), NPDES Permit Requirements	Yes
Right-of-Way Management/Maintenance	No
Risk Management	Yes
Sanitary Surveys/plant/system inspections	Yes
Sewer Use Ordinances and Moratoriums	No
SSO/CSO Reduction/Elimination (Sanitary Sewer Overflow/ Combined Sewer Overflow)	No
Supervision and Personnel Management / Communication Skills	Yes
Surface Water/Groundwater/Watershed Protection	Yes
Training/Teaching Skills	No

Water Conservation	Yes
--------------------	-----

WATER DISTRIBUTION CONTINUING EDUCATION TOPICS	
Continuing Education Topics	Distribution Approved (Yes/No)
General	
Basic Computers	Yes
Basic Electricity for Operators	Yes
Basic Hydraulics	Yes
Geographic Info Systems (GIS)	Yes
Math for Operators	Yes
Water Chemistry	Yes
Water Microbiology	Yes
Safety	
Backhoe Operator	Yes
Chlorine Safety	Yes
Confined Space	Yes
Electrical Hazards	Yes
Excavations, Trenching/Shoring/ Competent Person	Yes
Hazard Communication/Right-to-Know	Yes
Lab Safety	No
Lockout/Tagout	Yes
Personal Protective Equipment / Respiratory Protection	Yes
Safe Handling of Materials	Yes
Spill Response	No
Traffic Control/Work Zone Safety	Yes
Water & Blood-borne Pathogens	Yes
O & M Equipment	
Aeration Equipment	No
Belt Filter presses	No
Blowers and Compressors	Yes
Booster Pumping Stations	Yes
Centrifuges	No
Chemical Storage/Feed Systems	Yes
Cross Connection/Backflow Prevention Equipment	Yes
Electrical controls/SCADA	Yes
Flow Monitoring & Level Sensing Equipment	Yes

Generators/Switchgear	Yes
Hydraulic and Pneumatic Equipment	Yes
Continuing Education Topics	Distribution Approved (Yes/No)
Instrumentation	Yes
Leak Detection	Yes
Cathodic Protection	Yes
Mechanical Process Equipment	No
Motor Control Centers	Yes
Motors/Engines/Drives	Yes
Pipe, Valves, Fittings	Yes
Programmable Logic Controllers	Yes
Pumping/Lift Stations	Yes
Pumps	Yes
Stand-by/Aux/Support Equip	Yes
Variable Freq Drives	Yes
Water Treatment Process/ Quality Control	
Adsorption Processes	No
Aeration	No
Algae Control	No
Aquifer Storage & Recovery	No
Arsenic Removal	No
Bacteriological Sampling Procedures	Yes
Basic Knowledge of Groundwater Treatment	Yes
Basic Knowledge of Water Treatment	Yes
Cation Exchange Softening	No
Chemical Precipitation Softening	No
Chemical Storage & Handling	Yes
Chemical Treatment	Yes
Coagulation & Flocculation	No
Corrosion Control	Yes
Cross-Connection/ Backflow	Yes
Disinfecting Water Storage Vessels	Yes
Drinking Water Disinfection	Yes
Drinking Water Standards & Rules	Yes
Filtration	No
Flow Measurement: Open Channel & Pipe	Yes
Fluoridation	No
Groundwater Basics/Aquifers	Yes

Intake Structures	No
Iron & Manganese Removal	No
Jar Testing	No
Membrane Processes: Filtration Modes	No
Continuing Education Topics	Distribution Approved (Yes/No)
Metering	Yes
Nitrate Removal	No
Oxidation	No
Pesticide & Herbicide Reduction	No
Plant & Distribution Storage	Yes
Point of Use/Point of Entry Devices	Yes
Process Optimization & Upgrade	No
Residuals Disposal	No
Sampling & Lab Analysis	Yes
Sedimentation/Clarification	No
Surface Water Treatment	Yes
Taste & Odor Control	Yes
Water Source Treatment & Characteristics	Yes
Well Maintenance & Rehab	Yes
Well Operation (yield, drawdown)	Yes
Zebra Mussel Control	No
Distribution Process/Quality Control	
Aquifer Storage & Recovery	No
Chlorination	Yes
Corrosion Control	Yes
Cross-Connection/ Backflow	Yes
Dechlorination	Yes
Distribution Systems	Yes
Drinking Water Standards	Yes
Fire Flow Testing	Yes
Flushing, Pigging, and Swabbing	Yes
Groundwater Basics/Aquifers	Yes
Hydrants, Valves, Exercising Programs	Yes
Leak Detection/Water Audits	Yes
Mapping, Locating, Tracer Wire	Yes
Metering	Yes
New Main & Repair Disinfection	Yes
Sampling & Lab Analysis	Yes

Service Line & Curb Box Maintenance	Yes
Service Line Thawing	Yes
Storage	Yes
Trenchless Construction: Pipe Bursting	Yes
Water Source Characteristics	Yes
Well Maintenance Rehabilitation	Yes
Continuing Education Topics	Distribution Approved (Yes/No)
Well Operation (yield, drawdown)	Yes
Wellhead/Source Water Protection	Yes
Administration/ Management	
Capacity, Management, Operation & Maintenance for Separate Systems	Yes
Compliance	Yes
Construction Inspection/ Documentation/ Design Build	Yes
Community/Public Relations/Complaint Response	Yes
Design Manual Development	No
Emergency Response Planning & Security Training	Yes
Energy Efficiency/ Energy Conservation at W/WW Facilities	Yes
Federal & State Financing Programs	Yes
Finance, Budget, Rate Setting	Yes
Health and Safety Program Implementation	Yes
Legal Issues for W/WW Utilities	Yes
Records and Reports: Monitoring/Reporting/Records Management	Yes
Planning/Organization/Project Management	Yes
Plant Optimization: Contin Process Improve/Sustainability/Asset Management/Statistical Process Control Techniques	No
Private Property Issues/Service Laterals	Yes
Problem Solving/Troubleshooting/Decision Making	Yes
Regs (CWA/SDWA, State & Local such as Operator Certification Requirements), NPDES Permit Requirements	Yes
Right-of-Way Management/Maintenance	Yes
Risk Management	No
Sanitary Surveys/plant/system inspections	Yes
Sewer Use Ordinances and Moratoriums	No

SSO/CSO Reduction/Elimination (Sanitary Sewer Overflow/ Combined Sewer Overflow)	No
Supervision and Personnel Management/ Communication Skills	Yes
Surface Water/Groundwater/Watershed Protection	Yes
Training/Teaching Skills	No
Water Conservation	Yes

Appendix 2:

Water Distribution Systems Point Rating System

EPA will classify distribution systems according to population served and system characteristics. EPA Regions may increase classification based on other system characteristics.

System Characteristics	Check all that apply	System Level
Population = 3,300 or less		Level I
Distribution storage		Level I
Hypochlorination		Level I
Population=3,301 to 10,000		Level II
Gaseous and other chlorine disinfectant		Level II
Pressure zones greater than 5		Level II
Recycled water distribution		Level II
System is blending sources to meet MCL		Level II
Population > 10,000		Level III
Distribution system complexity ¹		Level II-IV

¹ Distribution system complexity=Conditions or characteristics that exist in a distribution system, such as: pressure zones, booster stations, storage tanks, fire protection, chlorination, non-residential consumer, cross connection potential demand variations, size of pipes, total distance of pipes and/or total geographic area that must be considered when classifying the distribution system.

Appendix 3:

Water Treatment Plant Point Rating System

Item	Points Possible
Size	
Design flow average day, or peak month's average day, whichever is larger (1 point per 0.5 MGD. Round up.) Design flow: Consider this to be the design capacity of the plant. Examples: 9.2 MGD = 19 points 4.7 MGD = 10 points (20 points maximum allowed)	1 - 20
Water Supply Sources (Rating based on public health significance)	
Seawater/saltwater	0
Groundwater	0
Groundwater under direct influence of surface water (GWI)	8
Surface water	10
<p>Average Raw Water Quality Variation - Applies to all sources (surface and groundwater). Key is the effect on treatment process changes that would be necessary to achieve optimized performance.</p> <ul style="list-style-type: none"> • Little or no variation – no treatment provided except disinfection (0 points) • Minor variation - e.g. "high quality" surface source appropriate for slow sand filtration (1 point) • Moderate variation in chemical feed, dosage changes made: monthly (2 points), weekly (3 points), or daily (4 points) • Variation significant enough to require pronounced and/or very frequent changes (5 points) • Severe variation - source subject to non-point discharges, agricultural/urban storm runoff, flooding (7 points) • Raw water quality subject to agricultural or municipal waste point source discharges (8 points) • Raw water quality subject to industrial waste pollution (10 points) 	0 - 10
Raw water quality is subject to:	
• Taste and/or odor for which treatment process adjustments are routinely made 1	2
• Color > 15 CU (not due to precipitated metals) - <i>see exceptions in Note 1 at end of table 1</i>	3
• Iron or/and manganese > MCL: Fe (2 points), Mn (3 points) (3 points maximum allowed) - <i>see exceptions in Note 1 at end of table 1</i>	2 - 3
• Algal growths for which treatment process adjustments are routinely made 1	3

Chemical Treatment/Addition Processes	
Fluoridation	4
<p>Disinfection/Oxidation (Note: Points are additive to a maximum of 15 points allowed for this category.)</p> <p>CHECK <input checked="" type="checkbox"/> ALL THAT APPLY:</p> <ul style="list-style-type: none"> • Chlorination: 	

<ul style="list-style-type: none"> • Hypochlorites (5 points) <input type="checkbox"/> • If generated on site (add 1 point) <input type="checkbox"/> • Chlorine gas (8 points) <input type="checkbox"/> • Chloramination (10 points) <input type="checkbox"/> • Chlorine dioxide (10 points) <input type="checkbox"/> • Ozonation (10 points) <input type="checkbox"/> • UV Irradiation (2 points) <input type="checkbox"/> • Iodine, Peroxide, or similar (5 points) <input type="checkbox"/> • Potassium permanganate (4 points) <input type="checkbox"/> (If used with greensand filtration do not give 4 points) 	0 - 15
pH adjustment for process control (e.g. pH adjustment aids coagulation)	4
Stability or Corrosion Control (If the same chemical is used for both Corrosion Control and pH adjustment, count points only once)	4
Coagulation/Flocculation & Filter Aid	
Primary coagulant addition	6
Coagulant aid / Flocculant chemical addition (in addition to primary coagulant use)	2
Flocculation	2
Filter aid addition (Non-ionic/anionic polymers)	2
Clarification/Sedimentation	
Sedimentation (plain, tube, plate)	4
Contact adsorption	6
Other clarification processes (air flotation, ballasted clarification, etc.)	6
Upflow clarification ("sludge blanket clarifier") 2	8
Filtration	
Granular media filtration (Surface water/GWI) ≤ 3 gpm/sq ft	10
Granular media filtration (Surface water/GWI) > 3 gpm/sq ft	20
Groundwater filtration	6
Membrane filtration	6-10
<ul style="list-style-type: none"> • For compliance with a primary regulation (10 points) • For compliance with a secondary regulation (6 points) 	
Diatomaceous earth (pre-coat filtration)	10
Cartridge/bag	5
Pre-filtration (staged cartridges, pressure sand w/o coagulation, etc.): add one point per stage to maximum of 3 points	1 - 3
Slow sand	5
Other Treatment Processes	
Aeration	3
Air stripping (including diffused air, packed tower aeration)	5
Ion-exchange/softening	5
Greensand filtration	10
Lime-soda ash softening (includes: chemical addition, mixing/flocculation/clarification/filtration - do not add points for these processes separately)	20
Granular activated carbon filter (do not assign points when included as a bed layer in another filter)	5
Powdered activated carbon	2

Blending sources with significantly different water quality • To achieve MCL compliance (4 points) • For aesthetic reasons (2 points)	2-4
Reservoir management employing chemical addition	2
Electrodialysis	15
Other: Certification authority may assign 2 to 15 additional points for processes not listed elsewhere in this document. (Specify:)	2 - 15
Residuals Disposal	
• Discharge to surface, sewer, or equivalent (0 points) · On-site disposal, land application (1 point) · Discharge to lagoon/drying bed, with no recovery/recycling – e.g. downstream outfall (1 point) · Backwash recovery/recycling: discharge to basin or lagoon and then to source (2 points) · Backwash recovery/recycling: discharge to basin or lagoon and then to plant intake (3 points)	0 - 3
Facility Characteristics	
Instrumentation - Use of SCADA or similar instrumentation systems to provide data, with: • Monitoring/alarm only, no process operation - plant has no automated shutdown capability (0 points) • Limited process operation - e.g. remote shutdown capability (1 point) • Moderate process operation - alarms and shutdown, plus partial remote operation of plant (2 points) • Extensive or total process operation - alarms and shutdown, full remote operation of plant possible (4 points)	0 - 4

Raw water quality is subject to:

- Taste and/or odor for which treatment process adjustments are routinely made (2 points):
1) T&O issue has been identified in a pre-design report, etc., 2) a process has been installed to address, and 3) operational control adjustments are made at least seasonally. Do not give points for T&O when there is no specific additional impact on operation. E.g. if a system is already pre-chlorinating for disinfection, give no points for T&O.
- Color > 15 CU (not due to precipitated metals) (3 points) **with following exceptions.**
Color will be considered elevated and points assigned when levels exceed 75 Color Units (CU) for conventional filtration, 40 CU for direct filtration, or 15 CU for all other technologies, except reverse osmosis (no points given for color for reverse osmosis).
- Iron and/or manganese > MCL: Fe (2 points), Mn (3 points) (3 points maximum allowed) **with following exceptions.** Iron and manganese levels will be considered elevated and points assigned if they are greater than the MCL, except for applications of manganese greensand filters. For applications of manganese greensand filters, iron and manganese levels will be considered elevated when their combined level exceeds 1.0 mg/L (3 points allowed).
- Algal growths for which treatment process adjustments are routinely made (3 points): Raw water will be considered subject to algae growths when treatment processes are specifically adjusted due to the presence of high levels of algae on at least a weekly basis for at least two months each year.

² **Upflow clarification** ("sludge blanket clarifier") – 8 points – Also known as sludge blanket clarification. Includes such proprietary units as Super-Pulsator. These units include processes for flocculation and sedimentation. Important note: these are not the same as adsorption clarifiers.

Water Treatment Definitions

Definitions reprinted from "Master Glossary of Water and Wastewater Terms," [http://www.owp.csus.edu/glossary/glossary.php], with permission from Office of Water Programs, California State University, Sacramento.

Adsorption

The gathering of a gas, liquid, or dissolved substance on the surface or interface zone of another material.

Aeration

The process of adding air to water. Air can be added to water by passing air through water or passing water through air.

Air stripping

A treatment process used to remove dissolved gases and volatile substances from water. Large volumes of air are bubbled through the water being treated to remove (strip out) the dissolved gases and volatile substances.

Chloramination

The application of chlorine and ammonia to water to form chloramines for the purpose of disinfection.

Diatomaceous earth

A fine, siliceous (made of silica) "earth" composed mainly of the skeletal remains of diatoms.

Direct filtration

A method of treating water which consists of the addition of coagulant chemicals, flash mixing, coagulation, minimal flocculation, and filtration. The flocculation facilities may be omitted, but the physical-chemical reactions will occur to some extent. The sedimentation process is omitted.

Electrodialysis

The selective separation of dissolved solids on the basis of electrical charge, by diffusion through a semipermeable membrane across which an electrical potential is imposed.

Reverse osmosis

The application of pressure to a concentrated solution which causes the passage of a liquid from the concentrated solution to a weaker solution across a semipermeable membrane. The membrane allows the passage of the water (solvent) but not the dissolved solids (solutes).

SCADA system

The Supervisory Control And Data Acquisition system is a computer-monitored alarm, response, control and data acquisition system used by drinking water facilities to monitor their operations

Stabilization

Processes that convert organic materials to a form that resists change. Organic material is stabilized by bacteria which convert the material to gases and other relatively inert substances. Stabilized organic material generally will not give off obnoxious odors.