IDAPA 58 – DEPARTMENT OF ENVIRONMENTAL QUALITY

Drinking Water Protection and Finance Division

58.01.08 – Idaho Rules for Public Drinking Water Systems

To whom does this rule apply?
This rule applies to public drinking water systems as defined in IDAPA 58.01.08.003. The rule applies to public water system owners, operators, design engineers and consultants.

What is the purpose of this rule?
The purpose of this rule is to control and regulate the design, construction, operation, maintenance, and quality control of public drinking water systems to provide a degree of assurance that such systems are protected from contamination and maintained free from contaminants which may injure the health of the consumer.

What is the legal authority for the agency to promulgate this rule?
This rule implements the following statutes passed by the Idaho Legislature:

- Chapter 1, Title 39, Idaho Code – Health and Safety: Environmental Quality

Who do I contact for more information on this rule?

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000. LEGAL AUTHORITY.
Chapter 1, Title 39, Idaho Code. (7-1-24)

001. SCOPE.
40 CFR 141.3 is incorporated by reference. The purpose of these rules is to control and regulate the design, construction, operation, maintenance, and quality control of public drinking water systems to provide a degree of assurance that such systems are protected from contamination and maintained free from contaminants which may injure the health of the consumer. (7-1-24)

002. INCORPORATION BY REFERENCE AND AVAILABILITY OF REFERENCED MATERIALS.

01. Incorporation by Reference. (7-1-24)

a. 40 CFR Part 141, revised as of July 1, 2023 (excluding annual monitoring provisions in 40 CFR 141.854(a)(4),(d),(e),(f) and (h), and the Aircraft Drinking Water Rule in Subpart X); and 40 CFR Part 143, revised as of July 1, 2023. (7-1-24)

b. American Water Works Association (AWWA) Standards, effective December 2022, available for a fee from AWWA, https://www.awwa.org/Publications/Standards/Standards-List or available to be viewed through the Department's state office. (7-1-24)

02. Availability of Specific Referenced Material. Copies of specific documents referenced within these rules are available at the following locations: (7-1-24)

a. Recommended Standards for Water Works – Policies for the Review and Approval of Plans and Specifications for Public Water Supplies: a report of the Water Supply Committee of the Great Lakes -- Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, most current edition, https://www.health.state.mn.us/communities/environment/water/tenstates/standards.html. (7-1-24)

b. Manual of Individual and Non-Public Water Supply Systems (EPA 570/9-91-004), published by the U.S. Environmental Protection Agency, https://nepis.epa.gov. (7-1-24)

c. NSF/ANSI Standard 53-2020, Drinking Water Treatment Units -- Health Effects, available from the National Sanitation Foundation, https://www.techstreet.com/nsf/ (or) https://www.techstreet.com/nsf/standards/nsf-ansi-53-2020?product_id=2212861. (7-1-24)

d. NSF/ANSI Standard 55-2020, Ultraviolet Microbiological Water Treatment Systems, available from the National Sanitation Foundation, https://www.techstreet.com/nsf/ (or) https://www.techstreet.com/nsf/standards/nsf-ansi-55-2020?product_id=2229644. (7-1-24)

e. NSF/ANSI Standard 58-2020, Reverse Osmosis Drinking Water Treatment Systems, available from the National Sanitation Foundation, https://www.techstreet.com/nsf/ (or) https://www.techstreet.com/nsf/standards/nsf-ansi-58-2020?product_id=2206515. (7-1-24)

f. NSF/ANSI/CAN Standard 60-2021, Drinking Water Treatment Chemicals -- Health Effects, available from the National Sanitation Foundation, https://www.techstreet.com/nsf/ (or) https://www.techstreet.com/nsf/standards/nsf-ansi-can-60-2021?product_id=2239369. (7-1-24)

g. ANSI/NSF Standard 61-2021, Drinking Water System Components -- Health Effects, available from the National Sanitation Foundation, https://www.techstreet.com/nsf/ (or) https://www.techstreet.com/nsf/standards/nsf-ansi-can-61-2021?product_id=2240016. (7-1-24)

h. Manual of Cross-Connection Control, Current Edition, Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California, https://www.uscfoundationstore.com/Manual-of-Cross-Connection-Control-Tenth-Edition-P44.aspx. (7-1-24)

i. Manual of design for Slow Sand Filtration (1991), published by AWWA Research Foundation https://www.directtextbook.com/isbn/0898675510. (7-1-24)

j. Slow Sand Filtration (1991), published by the American Society of Civil Engineers American Society of Civil Engineers, https://www.amazon.com/Slow-Sand-Filtration-Gary-Logsdon/dp/0872628477. (7-1-24)

k. Slow Sand Filtration and Diatomaceous Earth Filtration for Small Water Systems, DOH Pub #331-204 (4/03), Washington State Department of Health, Division of Environmental Health, Office of Drinking Water, https://www.scribd.com/document/163696548/331-204-pdf. (7-1-24)

l. Recommended Operations and Optimization Goals, Slow Sand Filtration, DOH Pub #331-601 (6/21), Washington State Department of Health, Division of Environmental Health, Office of Drinking Water, https://www.doh.wa.gov/Portals/1/Documents/Pubs/331-601.pdf. (7-1-24)

m. Water System Design Manual, DOH Pub #331-123 (Rev. 6-20), Washington State Department of Health, Division of Environmental Health, Office of Drinking Water, https://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/WaterSystemDesignandPlanning/SystemDesign. (7-1-24)

n. Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources (March 1991 Edition), U.S. Environmental Protection Agency, http://water.epa.gov/lawsregs/rulesregs/sdwa/swtr/upload/guidsws.pdf. (7-1-24)

o. Standard Methods for the Examination of Water and Wastewater, a joint publication of the American Public Health Association, the Water Environment Federation, and the American Water Works Association, www.standardmethods.org. (7-1-24)

p. "Idaho Standards for Public Works Construction," Local Highway Technical Assistance Council, https://lhtac.org/resources/ispwc. (7-1-24)

q. Memorandum of Understanding between the Idaho Department of Environmental Quality and the Idaho Division of Building Safety Plumbing Bureau, Idaho Department of Environmental Quality, 1410 North Hilton, Boise, Idaho 83706, www.deq.idaho.gov. (7-1-24)

r. Implementation Guidance for the Long Term 2 Enhanced Surface Water Treatment Rule, Idaho Department of Environmental Quality, https://www2.deq.idaho.gov/admin/LEIA/api/document/download/6040. (7-1-24)

s. Implementation Guidance for the Stage 2 Disinfectants and Disinfection Byproducts Rule, Idaho Department of Environmental Quality, https://www2.deq.idaho.gov/admin/LEIA/api/document/download/4790. (7-1-24)

t. Implementation Guidance for the Drinking Water Program-Ground Water Rule, Idaho Department of Environmental Quality, https://www2.deq.idaho.gov/admin/LEIA/api/document/download/4778. (7-1-24)

u. AWWA Recommended Practice for Backflow Prevention and Cross-Connection Control (M14), current edition available from the AWWA, https://engage.awwa.org/PersonifyEbusiness/Store/Product-Details/productId/46494412. (7-1-24)

v. Membrane Filtration Guidance Manual (EPA 815-R-06-009) published by the U.S. Environmental Protection Agency, https://sswm.info/sites/default/files/reference_attachments/EPA%202005%20Membrane%20Filtration%20Guidance%20Manual.pdf. (7-1-24)

w. Ultraviolet Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface water Treatment Rule (EPA 815-R-06-007) published by the U.S. Environmental Protection Agency, https://www.epa.gov/dwreginfo/long-term-2-enhanced-surface-water-treatment-rule-documents. (7-1-24)

x. Improving Clearwell Design for CT Compliance, Report #90756, available from the Water Research Foundation, https://www.waterrf.org/research/projects/improving-clearwell-design-ct-compliance. (7-1-24)

y. Surface Water Treatment Rule Compliance Guidance, dated January 10, 1996, Idaho Department of Environmental Quality, https://www.deq.idaho.gov/public-information/laws-guidance-and-orders/guidance/. (7-1-24)

z. Uniform Plumbing Code, available through the Idaho Division of Building Safety, 1090 E. Watertower St., Meridian, Idaho 83642; and at the Division of Building Safety, http://dbs.idaho.gov. (7-1-24)

aa. Optimizing Water Treatment Plant Performance Using the Composite Correction Program (EPA/625/6-91/027) published by the U.S. Environmental Protection Agency, https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=NRMRL&direntryid=23902. (7-1-24)

03. Precedence. In the event of conflict or inconsistency between the language in these rules and that found in any document incorporated by reference, these rules prevail. (7-1-24)

003. DEFINITIONS.

The definitions set forth in 40 CFR 141.2 are incorporated by reference, The terms "board," "director," "department," and "person" have the meaning provided in Section 39-103, Idaho Code. The term "watersheds" has the meaning provided in Section 39-3602, Idaho Code. The terms "distribution system," "license," "responsible charge," and "responsible charge operator" have the meaning provided in Section 54-2403, Idaho Code. The term "public utility" has the meaning provided in Section 61-129, Idaho Code. The term "pesticide" has the meaning provided in Section 22-3401, Idaho Code. (7-1-24)

01. Aquifer. A geological formation of permeable saturated material, such as rock, sand, gravel, etc., capable of yielding an economic quantity of water to wells and springs. (7-1-24)

02. Backflow. The reverse from normal flow direction in a plumbing system or water system caused by back pressure or back siphonage. (7-1-24)

03. Capacity. The capabilities required of a public drinking water system (PWS) in order to achieve and maintain compliance with these rules and the requirements of the federal Safe Drinking Water Act (SDWA). It is divided into three (3) main elements: (7-1-24)

a. Technical capacity means the PWS has the physical infrastructure to consistently meet drinking water quality standards and treatment requirements and is able to meet the requirements of routine and emergency operations. It further means the ability of PWS personnel to adequately operate and maintain the PWS and to otherwise implement technical knowledge. Training of operator(s) is required, as appropriate, for the system size and complexity. (7-1-24)

b. Financial capacity means the financial resources of the PWS, including an appropriate budget; rate structure; cash reserves sufficient for current operation and maintenance, future needs and emergency situations; and adequate fiscal controls. (7-1-24)

c. Managerial capacity means that the management structure of the PWS embodies the aspects of system operations, including, but not limited to; (7-1-24)

i. Short and long range planning; (7-1-24)

ii. Personnel management; (7-1-24)

iii. Fiduciary responsibility; (7-1-24)

iv. Emergency response; (7-1-24)

v. Customer responsiveness; (7-1-24)

vi. Source water protection; (7-1-24)

vii. Administrative functions such as billing and consumer awareness; and (7-1-24)

viii. Ability to meet the intent of the federal SDWA. (7-1-24)

04. Components of Finished Water Storage. Storage is available to serve the system if the storage structure or facility is elevated sufficiently or is equipped with sufficient booster pumping capability to pressurize the system. Components of finished water storage are further defined as: (7-1-24)

a. Dead Storage is storage that is either not available for use in the system or can provide only substandard flows and pressures. (7-1-24)

b. Effective storage is all storage other than dead storage and is made up of the additive components described in Paragraphs c. through f. of this Subsection. (7-1-24)

c. Operational storage supplies water when, under normal conditions, the sources are off. This component is the larger of; (7-1-24)

i. The volume required to prevent excess pump cycling and ensure that the following volume components are full and ready for use when needed; or (7-1-24)

ii. The volume needed to compensate for the sensitivity of the water level sensors. (7-1-24)

d. Equalization Storage is storage of finished water in sufficient quantity to compensate for the difference between a water system's maximum pumping capacity and peak hour demand. (7-1-24)

e. Fire Suppression Storage is the water needed to support fire flow in those systems that provide it. (7-1-24)

f. Standby storage provides a measure of reliability or safety factor if sources fail or when unusual conditions impose higher than anticipated demands. Normally used for emergency operation, if standby power is not provided, to provide water for eight (8) hours of operation at average day demand. (7-1-24)

05. Composite Correction Program (CCP). A systematic approach to identifying opportunities for improving the performance of water treatment and implementing changes that will capitalize on these opportunities. The CCP consists of two (2) elements: (7-1-24)

a. Comprehensive Performance Evaluation (CPE). As defined in 40 CFR 141.2. (7-1-24)

b. Comprehensive Technical Assistance (CTA) is the implementation phase that is carried out if the CPE results indicate improved performance potential. During the CTA phase, the PWS must identify and systematically address plant-specific factors. The CTA consists of follow-up to the CPE results, implementation of process control priority setting techniques, and maintaining long term involvement to systematically train staff and administrators. (7-1-24)

06. Confining Layer. A nearly impermeable subsurface stratum which is located adjacent to one (1) or more aquifers and does not yield a significant quantity of water to a well. (7-1-24)

07. Consumer. Any person served by a PWS. (7-1-24)

08. Consumer Confidence Report (CCR). An annual report that community water systems must deliver to their customers. The reports must contain information on the quality of the water delivered by the PWS and characterize the risks (if any) from exposure to contaminants detected in the drinking water in an accurate and understandable manner. (7-1-24)

09. Cross Connection. An actual or potential connection or piping arrangement between a drinking water system and another source that could introduce contamination into the potable water system through backflow, backsiphoning, or backpressure. (7-1-24)

10. Dead End Main. A distribution main of any diameter and length that does not loop back into the distribution system. (7-1-24)

11. Direct Integrity Test (DIT). A physical test applied to a microfiltration or ultrafiltration membrane unit in order to identify integrity breaches. (7-1-24)

12. Drinking Water System. All mains, pipes, and structures through which water is obtained and distributed, including wells and well structures, intakes and cribs, pumping stations, treatment plants, reservoirs, storage tanks and appurtenances, collectively or severally, actually used or intended for use for the purpose of furnishing water for drinking or general domestic use. (7-1-24)

13. Effective Contact Time. For the purpose of these rules, effective contact time means the time in minutes that it takes for water to move from the point of completely mixed chemical application to the point where residual concentration is measured. It is the "T" in contact time (CT) calculations and is either "demonstrated" or "calculated." It is the contact time sufficient to achieve the inactivation of target pathogens under the expected range of raw water pH and temperature variation and must be demonstrated through tracer studies or other evaluations or calculations acceptable to the Department. "Improving Clearwell Design for CT Compliance," referenced in Subsection 002.02, contains information that may be used as guidance for these calculations. (7-1-24)

14. Equivalent Dwelling Unit (EDU). A unit of measure that standardizes all land use types (housing, retail, office, etc.) to the level of demand created by a single-family detached housing unit within a water system. The demand for one (1) equivalent dwelling unit is equivalent to the amount of water provided to the average single-family detached housing unit within a water system. For example, a business designed to use three (3) times as much water as an average single-family detached housing unit will have a demand of three (3) equivalent dwelling units. (7-1-24)

15. Exemption. A temporary deferment of compliance with a maximum contaminant level or treatment technique requirement which may be granted only if the PWS demonstrates to the satisfaction of the Department that the PWS cannot comply due to compelling factors and the deferment does not cause an unreasonable risk to public health. (7-1-24)

16. Facility Plan. The facility plan for a PWS describes the overall system, including sources of water, treatment processes and facilities, pumping stations and distribution piping, finished water storage, and waste disposal. It is a comprehensive planning document for infrastructure and includes a plan for the future of the system/facility, including upgrades and additions. It is usually updated on a regular basis due to anticipated or unanticipated growth patterns, regulatory requirements, or other infrastructure needs. A facility plan is sometimes referred to as a master plan or facilities planning study. In general, a facility plan is an overall system-wide plan as opposed to a project specific plan. (7-1-24)

17. Filtrate. As the term relates to microfiltration and ultrafiltration, the product water or the portion of the feed stream that has passed through the membrane. (7-1-24)

18. Finished Water Storage Structures or Facilities. Finished water storage structures or facilities are defined as: (7-1-24)

a. Above-ground storage structure or facility is a finished water storage structure or facility with a bottom elevation above normal ground surface. (7-1-24)

b. Ground-level storage structure or facility is a finished water storage structure or facility with a bottom elevation at normal ground surface. (7-1-24)

c. Partially buried storage structure or facility is a finished water storage structure or facility with a bottom elevation below normal ground surface and any portion of the structure or facility above normal ground surface. (7-1-24)

d. Below-ground storage structure or facility is a finished water storage structure or facility with a bottom elevation and top elevation below normal ground surface. (7-1-24)

19. Fire Flow Capacity. The water system capacity, in addition to maximum day demand, that is available for fire fighting purposes within the water system or distribution system pressure zone. Adequacy of the

water system fire flow capacity is determined by the local fire authority or through a hydraulic analysis performed by a licensed professional engineer to establish required fire flows in accordance with the International Fire Code as adopted by the State Fire Marshal. (7-1-24)

20. Fire Suppression Storage. The water needed to support fire flow in those systems that provide it. See also the definition of Components of Finished Water Storage in these rules. (7-1-24)

21. Fixture Protection. The practice of installing backflow prevention assemblies or devices to isolate one (1) or more cross connections within a customer's facility. (7-1-24)

22. Flux. The throughput of a pressure-driven membrane filtration process expressed as flow per unit of membrane area, usually in gallons per square foot per day or liters per hour per square meter. (7-1-24)

23. Health Hazard. Any condition, operation, or practice in a PWS which creates, or has the potential to create, an acute or immediate danger to the consumer's health. (7-1-24)

24. Indirect Integrity Monitoring. Monitoring some aspect of filtrate water quality that is indicative of the removal of particulate matter. (7-1-24)

25. Inorganic. Generally refers to compounds that do not contain carbon and hydrogen. (7-1-24)

26. Internal or In-Plant Isolation. The practice of installing backflow prevention assemblies to protect an area within a water customer's structure, facility, or premises from contaminating another part of the structure, facility, or premises. (7-1-24)

27. Like-Kind Replacement. Repair or replacement of a system component that is identical in capacity, exhibits equivalent design, operational, and material parameters, and does not result in an increase in system capacity or alter existing methods or processes. (7-1-24)

28. Log. Logarithm to the base ten (10). In the context of these rules, it is used in the determination of removal or inactivation efficiencies. It is expressed as the logarithm to the base ten (10) or "log" of the concentration of the feed or raw water minus the log of the concentration in the filtrate or product water. For example, if the incoming feed or raw water concentration is one hundred (100), and the outgoing filtrate or product water concentration is ten (10), a 10-fold reduction was attained; or 1-log removal. 1-log removal also equates to ninety percent (90%) removal, as ninety (90) of the original feed concentration counts had been removed, leaving ten (10) in the filtrate. Similarly, 2-log equates to ninety-nine percent (99%) removal. (7-1-24)

29. Log Removal Value (LRV). LRV is a measure of filtration removal efficiency for a target organism, particulate, or surrogate expressed as Logarithm to the base ten (10). (7-1-24)

30. Material Deviation. A change from the design plans that significantly alters the type or location of system components. (7-1-24)

31. Material Modification. Modifications of an existing PWS that increase system capacity or alter the methods or processes employed. Increasing system capacity occurs by adding a new water source to a PWS, increasing the pumping and hydraulic capacity of the PWS, increasing potable water demand, or increasing the number of service connections. Altering methods or processes employed occurs by adding new, or altering existing, system components to satisfy increasing potable water demand, or changing engineering design intent of potable water delivery or treatment. Maintenance as outlined in the approved operation and maintenance manual, or maintenance that does not meet the criteria of a material modification described in this definition, is not a material modification. Like-kind replacement is not considered a material modification. (7-1-24)

32. Maximum Pumping Capacity. The pumping capacity with the largest source or pump out of service. (7-1-24)

33. Membrane Unit. A group of treatment systems or membrane modules that usually share common control and valving so that the group can be isolated for testing or cleaning. (7-1-24)

34. Microfiltration (MF). A low-pressure membrane filtration process with pore diameter normally in the range of 0.1 to 0.5 µm. (7-1-24)

35. Module. As the term relates to membrane filtration, it is the smallest component of a membrane unit in which a specific membrane surface area is housed. The component is typically equipped with a feedwater inlet, a filtrate outlet, and concentrate or backwash outlet structure. (7-1-24)

36. Nanofiltration (NF). A membrane filtration process that removes dissolved constituents from water. Nanofiltration is similar to reverse osmosis but allows a higher percentage of certain ions to pass through the membrane. These systems typically operate under higher pressure than microfiltration and ultrafiltration. (7-1-24)

37. New System. Any water system that meets, for the first time, the definition of a PWS, which includes systems that are entirely new construction or previously unregulated systems that increased either the population served or connections. (7-1-24)

38. Non-Potable Fluids or Gases. Any fluids or gases that do not meet the definition of potable water (7-1-24)

39. Non-Potable Mains. Pipelines that collect, deliver, or otherwise convey non-potable fluids. (7-1-24)

40. Non-Potable Services or Lines. Pipelines that collect, deliver, or otherwise convey non-potable fluids to or from a non-potable main. These pipelines connect individual facilities to the non-potable main. This term also refers to pipelines that convey non-potable fluids from a pressurized irrigation system, reclaimed wastewater system, and other non-potable systems to individual consumers. (7-1-24)

41. Operating Shift. Any period of time during which a licensed operator must be present, or available, for proper operation or oversight of the PWS. (7-1-24)

42. Operational Storage. Operational storage supplies water when, under normal conditions, the sources are off. This component is the larger of the volume required to prevent excess pump cycling and ensure that the following volume components are full and ready for use when needed or the volume needed to compensate for the sensitivity of the water level sensors. See also the definition of Components of Finished Water Storage in these rules. (7-1-24)

43. Operation and Maintenance Manual. A comprehensive document that provides procedures for the operations and maintenance of the PWS. The manual typically covers three main subjects: a water system specific operations plan (see definition of Operations Plan); maintenance information and checklists; and manufacturer's product information (including trouble shooting information, a parts list and parts order form, special tools, spare parts list, etc.). An operation and maintenance manual may cover every aspect of the water system or any part of the water system, including but not limited to the following: treatment, pump stations, storage reservoirs, distribution system, pressure reducing valve stations, etc. (7-1-24)

44. Operations Plan. The operations plan is part of an operation and maintenance manual. Depending on which facilities of the PWS are being addressed, the operations plan may cover many types of information including but not limited to the following: daily, weekly, monthly, and yearly operating instructions; information specific to a particular type of treatment; location of valves and other key distribution system features; pertinent telephone and address contact information including the responsible charge PWS operator and PWS owner; operator safety procedures; alarm system; emergency procedures; trouble-shooting advice; water quality testing; depressurization events; customer service; and response to customer complaints. (7-1-24)

45. Owner/Purveyor of Water/Supplier of Water. The person, company, corporation, association, or other organizational entity which holds legal title to the PWS, who provides, or intends to provide, drinking water to the customers, and who is ultimately responsible for the PWS operation. (7-1-24)

46. Plant Design Capacity. The maximum design flow through treatment units. The minimum plant

design capacity may be equal to peak hour demand but may also be equal to the maximum day demand if equalization storage is provided. (7-1-24)

47. Plant. A physical facility where drinking water is treated or processed. (7-1-24)

48. Point of Use (POU) Treatment System. A collection of POU treatment devices. (7-1-24)

49. Potable Mains. Pipelines that deliver potable water to multiple service connections. (7-1-24)

50. Potable Services. Pipelines that convey potable water from a service connection to the potable water main to individual consumers. (7-1-24)

51. Potable Water. Water for human consumption. Also referred to as Water for Human Consumption or Drinking Water. (7-1-24)

52. Preliminary Engineering Report (PER). A report that addresses specific portions of the PWS or facility for which material modifications are being designed. Material modifications may include, but are not limited to, significant changes to existing processes or facilities, PWS expansion, addition of treatment, or installation of other processes and facilities. This report addresses specific purpose and scope, design requirements, alternative solutions, costs, operation and maintenance requirements, and other requirements as described in Section 503. Preliminary engineering reports are generally project specific as opposed to an overall system-wide plan, such as a facility plan. (7-1-24)

53. Premises Isolation or Containment. The practice of separating the customer's structure, facility, or premises from the purveyor's PWS by means of a backflow prevention assembly installed on the service line before any distribution takes place. (7-1-24)

54. Protected Water Source. For the purposes of the Revised Total Coliform Rule (40 CFR Part 141, Subpart Y), a protected water source is a groundwater well that is not susceptible to contamination on the basis of well construction, hydrologic data, or contamination history. (7-1-24)

55. Public Notice. The notification to PWS consumers of information pertaining to that PWS including information regarding water quality or compliance status of the PWS. (7-1-24)

56. Public Drinking Water System (PWS). A system for the provision to the public of water for human consumption through pipes or, after August 5, 1998, other constructed conveyances, if such system has at least fifteen (15) service connections, regardless of the number of water sources or configuration of the distribution system, or regularly serves an average of at least twenty-five (25) individuals daily at least sixty (60) days out of the year. Such term includes: any collection, treatment, storage, and distribution facilities under the 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 which are used primarily in connection with such system. Such term does not include any "special irrigation district." A public water system is either a "community water system" or a "non-community water system" as further defined as: (7-1-24)

a. Community water system. A PWS which serves at least fifteen (15) service connections used by year-round residents or regularly serves at least twenty-five (25) year-round residents. (7-1-24)

b. Non-community water system. A PWS that is not a community water system. A non-community water system is either a transient non-community water system or a non-transient non-community water system. (7-1-24)

c. Non-transient non-community water system. A PWS that is not a community water system and that regularly serves at least twenty-five (25) of the same persons over six (6) months per year. (7-1-24)

d. Transient non-community water system. A non-community water system which does not regularly serve at least twenty-five (25) of the same persons over six (6) months per year. (7-1-24)

57. Public Water System (PWS)/Water System/System. Means "public drinking water system." (7-1-24)

58. Pump House. A structure containing important water system components, such as a well, hydro-pneumatic tank, booster pump, pump controls, flow meter, well discharge line, or a treatment unit. Pump houses are often called well houses in common usage, even though in modern construction these structures may not contain either a well or a pump. These terms are used interchangeably in national standards and trade publications. (7-1-24)

59. Qualified Licensed Professional Engineer (QLPE). A professional engineer licensed by the state of Idaho; qualified by education or experience in the specific technical fields involved in these rules; and retained or employed by a city, county, quasi-municipal corporation, or regulated public utility for the purposes of plan and specification review. (7-1-24)

60. Quasi-Municipal Corporation. A public entity, other than community government, created or authorized by the legislature to aid the state in, or to take charge of, some public or state work for the general welfare. For the purpose of these rules, this term refers to drinking water districts. (7-1-24)

61. Raw Water. Raw water is any groundwater, spring water, or surface water utilized as source water prior to treatment for the purpose of producing potable water. (7-1-24)

62. Redundancy. The installation of duplicate components or backup systems that are designed to maintain minimum pressure and capacity of the PWS if any component fails or is otherwise out of service for maintenance or repair. (7-1-24)

63. Reverse Osmosis (RO). A membrane filtration process that removes dissolved constituents from water. Reverse osmosis is similar to nanofiltration but allows a lower percentage of certain ions to pass through the membrane. These systems typically operate under higher pressure than microfiltration and ultrafiltration. (7-1-24)

64. Resolution. As the term relates to membrane treatment, it is the size of the smallest integrity breach that contributes to a response from a direct integrity test when testing low pressure membranes. (7-1-24)

65. Reviewing Authority. For those projects requiring preconstruction approval by the Department, the Department is the reviewing authority. For those projects allowing for preconstruction approval by others, pursuant to Subsection 504.03.b., the qualified Idaho licensed professional engineer (QLPE) is also the reviewing authority. (7-1-24)

66. Sampling Point. The location in a PWS from which a sample is drawn. (7-1-24)

67. Sensitivity. As the term relates to membrane treatment, it is the maximum log removal value (LRV) for a specific resolution that can be reliably verified by the direct integrity test associated with a given low pressure membrane filtration system. (7-1-24)

68. Service Connection. Each structure, facility, or premises which is connected to a PWS water source, and which is or may be used for domestic purposes. (7-1-24)

69. Sewage. Water-carried human wastes from residences, buildings, and industrial establishments and other places, together with groundwater infiltration and surface water as may be present. (7-1-24)

70. Significant Deficiency. Any defect in a PWS's design, operation, maintenance, or administration, as well as any failure or malfunction of any system component, that the Department or its agent determines to cause, or have potential to cause, the introduction of contamination into the water delivered to consumers. (7-1-24)

71. Simple Water Main Extension. New or replacement water main(s) that require plan and specification review by a qualified licensed professional engineer (QLPE) or by the Department per these rules and that is connected to existing water main facilities and does not require the addition of system components designed to control quantity or pressure, including, but not limited to, booster stations, new sources, pressure reducing valve stations, or reservoirs; and continues to provide the pressure and quantity requirements of Subsection 552.01.

(7-1-24)

72. **Spring**. A source of water which flows from a laterally percolating water table's intersection with the surface or from a geological fault that allows the flow of water from an artesian aquifer. (7-1-24)

73. **Standby Storage**. Standby storage provides a measure of reliability or safety factor if sources fail or when unusual conditions impose higher than anticipated demands. See also the definition of Components of Finished Water Storage in these rules. (7-1-24)

74. **Substantially Modified**. The Department considers a PWS to be substantially modified when, as the result of one (1) or more material modifications to the PWS, there is a combined increase of twenty-five percent (25%)in any one or combination of the following: the population served or number of service connections, the total length of transmission and distribution water mains, the total source capacity, or the peak or average water demand for the PWS. Material modifications completed after May 8, 2009, are the only modifications counted towards the twenty-five (25%) increase. Like-kind replacement of components will not be counted toward a combined increase of twenty-five percent (25%) calculation. Removal of existing system components will not be used to reduce the combined increase of twenty-five percent (25%) calculation. (7-1-24)

75. **Substitute Responsible Charge Operator**. An operator of a PWS who holds a valid license at a class equal to or greater than the drinking water system classification, designated by the PWS owner to replace and to perform the duties of the responsible charge operator when the responsible charge operator is not available or accessible. (7-1-24)

76. **Surface Water System**. A PWS which is supplied by one (1) or more surface water sources or groundwater sources under the direct influence of surface water. Also called subpart H systems in applicable sections of 40 CFR Part 141. (7-1-24)

77. **Treatment Facility**. Any place(s) where a PWS alters the physical or chemical characteristics of the drinking water. Chlorination may be considered as a function of a distribution system. (7-1-24)

78. **Turbidity**. Measure of the interference of light passage through water, or visual depth restriction from the presence of suspended matter such as clay, silt, nonliving organic particulates, plankton, and other microscopic organisms. Operationally, turbidity measurements are expressions of certain light-scattering and absorbing properties of a water sample. Turbidity is measured by the nephelometric method. (7-1-24)

79. **Ultrafiltration (UF)**. A low pressure membrane filtration process with pore diameter normally in the range of five thousandths to one tenth micrometer (0.005 to 0.1 μm). (7-1-24)

80. **UV Transmittance (UVT)**. A measure of the fraction of incident light transmitted through a material (e.g., water sample or quartz). The UVT is usually reported for a wavelength of two hundred fifty-four (254) nm and a path length of one (1) cm. It is often represented as a percentage. (7-1-24)

81. **Unregulated Contaminant**. Any substance that may affect the quality of water but for which a maximum contaminant level or treatment technique has not been established. (7-1-24)

82. **Use Assessment**. For the purpose of obtaining a waiver from certain monitoring requirements, a use assessment is an evaluation as to whether synthetic organic contaminants are being or have been used, manufactured, transported, stored, or disposed of in the watershed for surface water or the zone of influence for groundwater. (7-1-24)

83. **Variance**. A temporary deferment of compliance with a maximum contaminant level or treatment technique requirement which may be granted only when the PWS demonstrates to the satisfaction of the Department that the raw water characteristics prevent compliance with the MCL or requirement after installation of the best available technology or treatment technique and the determent does not cause an unreasonable risk to public health. (7-1-24)

84. **Volatile Organic Chemicals (VOCs)**. VOCs are lightweight organic compounds that vaporize or

evaporate easily. (7-1-24)

85. Vulnerability Assessment. Related to monitoring waiver decisions, a determination of the risk of future contamination of a public drinking water supply. (7-1-24)

86. Waiver. (7-1-24)

a. Except for Sections 500 through 552, "waiver" means the Department approval of a temporary reduction in sampling requirements for a particular contaminant. (7-1-24)

b. For purposes of Sections 500 through 552, "waiver" means the dismissal or modification of any requirement of compliance. (7-1-24)

c. For the purposes of Section 010, "waiver" means the deferral of a fee assessment for a PWS. (7-1-24)

87. Wastewater. Combination of liquid or water and pollutants from activities and processes occurring in dwellings, commercial buildings, industrial plants, institutions and other establishments, together with any groundwater, surface water, and storm water that may be present; liquid or water that is chemically, biologically, physically or rationally identifiable as containing blackwater, gray water or commercial or industrial pollutants; and sewage. (7-1-24)

88. Water Demand. The volume of water requested by PWS users to satisfy their needs. Water demand can be further categorized as: (7-1-24)

a. Average day demand is the volume of water used by a PWS on an average day based on a one (1) year period. (7-1-24)

b. Maximum day demand is the average rate of consumption for the twenty-four (24) hour period in which total consumption is the largest for the design year. (7-1-24)

c. Peak hour demand is the highest hourly flow, excluding fire flow, that a PWS or distribution system pressure zone is likely to experience in the design year. (7-1-24)

89. Water Main. A pipe within a PWS which is under the control of the PWS operator and conveys water to two (2) or more service connections or conveys water to a fire hydrant. The collection of water mains within a given water supply is called the distribution system. (7-1-24)

004. WAIVERS, VARIANCES, AND EXEMPTIONS.

40 CFR 141.4 is incorporated by reference. (7-1-24)

01. Monitoring Waivers. 40 CFR 141.23(b) 141.23(c), 141.24(f), 141.24(h) are incorporated by reference. (7-1-24)

a. Waivers from sampling requirements in Subsections 100.03, 100.04, 200.01, and 503.03.e.v. may be available to all PWSs for all contaminants except nitrate, nitrite, and disinfection byproducts and are based upon a vulnerability assessment, use assessment, the analytical results of previous sampling, or some combination of vulnerability assessment, use assessment, and analytical results. (7-1-24)

b. If a PWS elects to request a waiver from monitoring, it must do so in writing at least sixty (60) days prior to the required monitoring deadline date. (7-1-24)

c. Waiver determinations are to be made by the Department on a contaminant specific basis and must be in writing. (7-1-24)

d. PWSs which do not receive waivers must sample at the required, monitoring frequencies (7-1-24)

02. Facility, Design Standard, and Operating Criteria Waivers. The Department may waive any requirement of Sections 500 through 552 that is not explicitly imposed by Idaho Statute, if it can be shown to the Department's satisfaction that the requirement is not necessary for the protection of public health, protection from contamination, and satisfactory operation and maintenance of a PWS. (7-1-24)

03. Variances. (7-1-24)

a. A general variance may be granted by the Department if a PWS owner submits a written request and demonstrates to the satisfaction of the Department that the minimum requirements of 42 USC Section 1415(a) (SDWA) are met. (7-1-24)

b. A small system variance for a maximum contaminant level or treatment technique may be granted by the Department if a PWS owner submits a written request and demonstrates to the satisfaction of the Department that the minimum requirements of 42 USC Section 1415(e) (SDWA) are met. (7-1-24)

04. Exemptions. An exemption may be granted by the Department if a PWS owner submits a written request and demonstrates to the satisfaction of the Department that the minimum requirements of 42 USC Section 1416(a) (SDWA) are met. (7-1-24)

05. Conditions. A waiver, exemption, or variance may be granted upon any conditions that the Department, determines are appropriate and in accordance with these rules. Failure by the PWS owner to comply with any condition voids the waiver, variance, or exemption. (7-1-24)

06 Public Hearing. The Department will provide public notice and an opportunity for public hearing in the area served by the PWS before any exemption or variance under Section 005 is granted by the Department. At the conclusion of the hearing, the Department will record the findings and issue a decision approving, denying, modifying, or conditioning the request. (7-1-24)

005. DISAPPROVAL DESIGNATION.
The Department may assign a disapproved designation to a PWS when: (7-1-24)

01. Defects. There are design or construction defects, significant deficiencies, or health hazards; or (7-1-24)

02. Operating Procedures. Operating procedures constitute a health hazard; (7-1-24)

03. Quality. Violations of chemical, microbiological, or radiological maximum contaminant levels or action levels of these rules; (7-1-24)

04. Monitoring. Violations of monitoring requirements as specified in these rules; (7-1-24)

05. Unapproved Source. An unapproved source of drinking water is used or the PWS is interconnected with a disapproved water system; or (7-1-24)

06. Non-Payment of Annual Fee Assessment. The annual drinking water system fee assessment is not paid as set forth in Section 010. (7-1-24)

006. HEALTH HAZARDS.

01. Prohibited. No PWS will: (7-1-24)

a. Constitute a health hazard. (7-1-24)

b. Create a condition which prevents, or may prevent, the detection of a health hazard. (7-1-24)

02. Schedule. Health hazard and condition which prevent, or may prevent, the detection of a health hazard must be mitigated as required, and terminated within a time schedule established, by the Department.

(7-1-24)

007. FEE SCHEDULE FOR PUBLIC DRINKING WATER SYSTEMS.
All owners of PWSs must pay an annual drinking water system fee. The fee will be assessed as provided in this section. The Department may waive the requirements of this section at its discretion. (7-1-24)

01. Effective Date. Annual fees will be paid for each fee year. Fee years begin on October 1 of each calendar year. (7-1-24)

02. Fee Schedule. (7-1-24)

a. Owners of community and non-transient non-community PWSs must pay an annual fee according to the following fee schedule:

Number of Connections	Fee
1 to 20	$100
21 to 184	$5 per connection, not to exceed a total of $735 per PWS
185 to 3,663	$4 per connection, not to exceed a total of $10,988 per PWS
3,664 or more	$3 per connection

(7-1-24)

b. The annual fee for transient PWSs is twenty-five dollars ($25). (7-1-24)

c. New PWSs formed after October 1 will not pay a fee until the following October. (7-1-24)

03. Fee Assessment. (7-1-24)

a. An annual fee assessment will be generated for each community and non-transient non-community PWS using the number of connections the Department has on record. (7-1-24)

b. Community and non-transient non-community PWSs will be notified each year of the official number of connections listed in SDWIS. PWSs will have at least one (1) month to notify the Department if the number of connections provided are not in agreement with the PWS's records. (7-1-24)

04. Billing. An annual fee statement will be mailed or delivered electronically to all PWS owners on record with the Department by September 1 of each year and will include acceptable payment methods. (7-1-24)

05. Payment. (7-1-24)

a. Annual fee payment will be due on October 1, unless it is a Saturday, a Sunday, or a legal holiday, in which event the payment will be due on the successive business day. (7-1-24)

b. If a PWS consists of two hundred fifty (250) connections or more, the PWS may request to divide its annual fee payment into equal monthly or quarterly installments by submitting a request to the Department. (7-1-24)

i. The Department will notify PWSs of approval or denial of a requested monthly or quarterly installment plan within ten (10) business days of receiving the request. (7-1-24)

ii. If a PWS has been approved to pay monthly installments then each installment will be due by the first day of each month, unless it is a Saturday, a Sunday, or a legal holiday, in which event the installment will be due on the successive business day. (7-1-24)

iii. If a PWS has been approved to pay quarterly installments then each installment will be due by the first day of the month of each quarter (October 1, January 1, April 1, and July 1), unless it is a Saturday, a Sunday, or a legal holiday, in which event the installment will be due on the successive business day. (7-1-24)

06. Delinquent Unpaid Fees. A PWS owner will be delinquent in payment if its annual fee assessment has not been received by November 1; or if having opted to pay monthly or quarterly installments, its monthly or quarterly installment has not been received by the last day of the month in which the monthly or quarterly payment is due. (7-1-24)

07. Suspension of Services and Disapproval Designation. (7-1-24)

a. For any PWS owner delinquent in payment of fee assessed under Subsections 010.02, in excess of ninety (90) days, technical assistance provided by the Department may be suspended except for review and processing of: (7-1-24)

i. Monitoring waivers; (7-1-24)

ii. Engineering reports; and (7-1-24)

iii. Plans and specifications for design and construction as set forth in Sections 500 through 552. (7-1-24)

b. For any PWS owner delinquent in payment of fee assessed under Subsections 010.02, in excess of one hundred and eighty (180) days, the Department may disapprove the PWS pursuant to Subsection 007.06 and may suspend all technical assistance provided including review and processing of: (7-1-24)

i. Engineering reports; (7-1-24)

ii. Plans and specifications for design and construction as set forth in Sections 500 through 552; or (7-1-24)

iii. Monitoring waivers (7-1-24)

08. Reinstatement of Suspended Services and Approval Status. For any PWS owner for which suspension of technical assistance, disapproval, or both has occurred, reinstatement of technical assistance, approval, or both, will occur upon payment of delinquent annual fee assessments. (7-1-24)

09. Responsibility to Comply. Subsection 010.07 in no way relieves any PWS from its obligation to comply with these rules. (7-1-24)

008. CONTINUITY OF SERVICE.

01. Transfer of Ownership. No owner may transfer PWS ownership without providing written notice to the Department and all customers. Notification must include a schedule for transferring responsibilities and identification of the new owner. (7-1-24)

02. Maintenance of Standards. The current PWS owner transferring ownership must ensure that all these rules are met during transfer and will ensure that water rights, operation and maintenance manuals, and all other pertinent rights and documentation are transferred to the new owner. (7-1-24)

009. ADMINISTRATIVE PROVISIONS.

Persons may be entitled to appeal agency actions authorized under these rules pursuant to IDAPA 58.01.23, "Contested Case Rules and Rules for Protection and Disclosure of Records." (7-1-24)

010. CONFIDENTIALITY OF RECORDS.

Information obtained by the Department under these rules is subject to public disclosure pursuant to the provisions of Chapter 1, Title 74, Idaho Code. Information submitted under a trade secret claim may be entitled to confidential

treatment by the Department as provided in Section 74-107 and IDAPA 58.01.23, "Contested Case Rules and Rules for Protection and Disclosure of Records." (7-1-24)

011. -- 049. (RESERVED)

050. MAXIMUM CONTAMINANT LEVELS AND MAXIMUM RESIDUAL DISINFECTANT LEVELS.

01. Maximum Contaminant Levels for Inorganic Contaminants.40 CFR 141.11 and 141.62 are incorporated by reference. (7-1-24)

02. Maximum Contaminant Levels for Organic Contaminants. 40 CFR 141.61 is incorporated by reference. (7-1-24)

03. Maximum Contaminant Levels for Turbidity. 40 CFR 141.13 is incorporated by reference. (7-1-24)

04. Maximum Contaminant Levels for Radionuclides. 40 CFR 141.66 is incorporated by reference. (7-1-24)

05. Maximum Contaminant Levels for Microbiological Contaminants. 40 CFR 141.63 is incorporated by reference. (7-1-24)

06. Maximum Contaminant Levels for Disinfection Byproducts. 40 CFR 141.64 is incorporated by reference. (7-1-24)

07. Maximum Residual Disinfectant Levels. 40 CFR 141.65 is incorporated by reference. (7-1-24)

051. -- 099. (RESERVED)

100. MONITORING AND ANALYTICAL REQUIREMENTS.
40 CFR Part 141, Subpart C, is incorporated by reference. (7-1-24)

01. Total Coliform Sampling and Analytical Requirements. The Total Coliform Rule, 40 CFR 141.21, is incorporated by reference. The Revised Total Coliform Rule, 40 CFR Part 141, Subpart Y, is incorporated by reference, excluding the annual monitoring provisions in 40 CFR 141.854 (a)(4), (d), (e), (f) and (h). (7-1-24)

02. Turbidity Sampling and Analytical Requirements. 40 CFR 141.22 is incorporated by reference. (7-1-24)

03. Inorganic Chemical Sampling and Analytical Requirements. 40 CFR 141.23 is incorporated by reference. (7-1-24)

04. Organic Chemicals, Sampling and Analytical Requirements. 40 CFR 141.24 is incorporated by reference. (7-1-24)

05. Analytical Methods for Radioactivity. 40 CFR 141.25 is incorporated by reference. (7-1-24)

06. Monitoring Frequency and Compliance Requirements for Radioactivity in Community Water Systems. 40CFR 141.26 is incorporated by reference. (7-1-24)

07. Alternate Analytical Techniques. 40 CFR 141.27 is incorporated by reference. (7-1-24)

08. Approved Laboratories. 40 CFR 141.28 and 141.852(b) are incorporated by reference. All analyses conducted pursuant to these rules, except those listed below, must be performed in laboratories certified or granted reciprocity by the Idaho Department of Health and Welfare, Bureau of Laboratories, as provided in IDAPA 16.02.13, "Rules Governing Certification of Idaho Water Quality Laboratories." The following analyses may be performed by any person acceptable to the Department: (7-1-24)

a. pH; (7-1-24)

b. Turbidity (Nephelometric method only); (7-1-24)

c. Daily analysis for fluoride; (7-1-24)

d. Temperature; (7-1-24)

e. Disinfectant residuals, except ozone, will be analyzed using the Indigo Method or an acceptable automated method pursuant to Subsection 300.05.d.; (7-1-24)

f. Alkalinity; (7-1-24)

g. Calcium; (7-1-24)

h. Conductivity; (7-1-24)

i. Silica; and (7-1-24)

j. Orthophosphate. (7-1-24)

09. Monitoring of Consecutive Water Systems. 40 CFR 141.29 is incorporated by reference. (7-1-24)

10. Disinfection Residuals, Disinfection Byproducts, and Disinfection Byproduct Precursors. 40 CFR Part 141, Subpart L, is incorporated by reference. (7-1-24)

11. Monitoring. The department may alter the monitoring requirements specified in these rules if the department determines that such alteration is necessary to adequately assess the level of contamination. (7-1-24)

12. Special Monitoring for Sodium. 40 CFR 141.41 is incorporated by reference. (7-1-24)

13. Special Monitoring for Corrosivity Characteristics. 40 CFR 141.42 is incorporated by reference. (7-1-24)

101. -- 149. (RESERVED)

150. REPORTING, PUBLIC NOTIFICATION, RECORDKEEPING.

01. Reporting Requirements. 40 CFR 141.31 is incorporated by reference. (7-1-24)

02. Public Notification of Drinking Water Violations. 40 CFR Part 141, Subpart Q is incorporated by reference. (7-1-24)

03. Record Maintenance. 40 CFR 141.33 is incorporated by reference. (7-1-24)

04. Reporting for Unregulated Contaminant Monitoring Results. 40 CFR 141.35 is incorporated by reference. (7-1-24)

05. Reporting and Record Keeping Requirements for the Interim Enhanced Surface Water Treatment Rule. 40 CFR 141.175 is incorporated by reference. (7-1-24)

06. Reporting and Record Keeping Requirements for the Disinfectants and Disinfectant Byproducts Rule. 40 CFR 141.134 is incorporated by reference. (7-1-24)

07. Reporting and Record Keeping Requirements for the Revised Total Coliform Rule. 40 CFR

141.861 is incorporated by reference. (7-1-24)

08. Public Notification. The Department may require the owner of a PWS that has been disapproved to notify the public. The manner, content, and timing of this notification will be determined by the Department. This is in addition to any provisions set forth in Section 150 that may also apply. (7-1-24)

09. Public Notification for Low System Pressure. (7-1-24)

a. During unplanned or emergency situations, when water pressure within the system is known to have fallen below twenty (20) psi, the water supplier must notify the Department, provide public notice to the affected customers within twenty-four (24) hours, and disinfect or flush the system as appropriate. When sampling and corrective procedures have been conducted and after determination by the Department that the water is safe, the water supplier may re-notify the affected customers that the water is safe for consumption. The water supplier must notify the affected customers if the water is not safe for consumption. (7-1-24)

b. During planned maintenance or repair situations, when water pressure within the system is expected to fall below twenty (20) psi, the water supplier must provide public notice to the affected customers prior to the planned maintenance or repair activity and notify customers that the water is safe for consumption. (7-1-24)

151. CONSUMER CONFIDENCE REPORTS. 40 CFR Part 141, Subpart O is incorporated by reference. (7-1-24)

152. -- 249. (RESERVED)

250. MAXIMUM CONTAMINANT LEVEL GOALS AND MAXIMUM RESIDUAL DISINFECTION LEVEL GOALS.

01. Maximum Contaminant Level Goals for Organic Contaminants. 40 CFR 141.50 is incorporated by reference. (7-1-24)

02. Maximum Contaminant Level Goals for Inorganic Contaminants. 40 CFR 141.51 is incorporated by reference. (7-1-24)

03. Maximum Contaminant Level Goals for Microbiological Contaminants. 40 CFR 141.52 is incorporated by reference. (7-1-24)

04. Maximum Contaminant Level Goals for Disinfection Byproducts. 40 CFR 141.53 is incorporated by reference. (7-1-24)

05. Maximum Residual Disinfectant Level Goals for Disinfectants. 40 CFR 141.54 is incorporated by reference. (7-1-24)

06. Maximum Contaminant Level Goals for Radionuclides. 40 CFR 141.55 is incorporated by reference. (7-1-24)

251. -- 299. (RESERVED)

300. FILTRATION AND DISINFECTION.

01. General Requirements. 40 CFR 141.70 is incorporated by reference. (7-1-24)

02. Filtration. 40 CFR 141.73 is incorporated by reference. (7-1-24)

a. The Department will establish filtration removal credit on a system-by-system basis. Unless otherwise allowed the Department, the maximum log removal credit allowed for filtration is as follows:

Maximum Log Removal			
Filtration Type	**Giardia lamblia**	**Viruses**	**Cryptosporidium**
Conventional	2.5	2.0	2.5
Direct	2.0	1.0	2.0
Slow sand	2.0	2.0	2.0
Diatomaceous earth	2.0	1.0	2.0
Microfiltration	3.0	0.5	3.0
Ultrafiltration	3.5	2.0	3.5
Nanofiltration	4.0	3.0	4.0
Reverse Osmosis	4.0	3.0	4.0
Alternate technology	2.0	0	2.0

(7-1-24)

b. Filtration removal credit will be granted for filtration treatment provided the PWS is: (7-1-24)

i. Operated in accordance with the Operations Plan specified in Subsection 552.03.a.; and (7-1-24)

ii. The PWS is in compliance with the turbidity performance criteria specified under 40 CFR 141.73; and (7-1-24)

iii. Coagulant chemicals must be added and coagulation and flocculation unit process must be used at all times during which conventional and direct filtration treatment plants are in operation; and (7-1-24)

iv. Slow sand filters are operated at rates not to exceed one-tenth (0.1) gallons per minute per square foot or as approved by the Department; and (7-1-24)

v. Diatomaceous earth filters are operated at a rate not to exceed one point five (1.5) gallons per minute per square foot. (7-1-24)

03. Criteria for Avoiding Filtration. 40 CFR 141.71 is incorporated by reference. (7-1-24)

04. Disinfection. 40 CFR 141.72 is incorporated by reference. (7-1-24)

a. Surface water sources or groundwater sources directly influenced by surface water must maintain a minimum of at least two-tenths (0.2) mg/l disinfectant residual in the treated water at peak hour demand before delivery to the first customer. (7-1-24)

b. The Department may allow a PWS to utilize automatic shut-off of water to the distribution system whenever total disinfectant residual is less than two-tenths (0.2) mg/l rather than provide redundant disinfection components and auxiliary power as required in 40 CFR 141.72(a)(2). An automatic water shut-off may be used if the PWS demonstrates to the satisfaction of the Department that, at all times, a minimum of twenty (20) psi pressure and adequate fire flow can be maintained in the distribution system when water delivery is shut-off to the distribution system and, at all times, minimum Giardia lamblia and virus inactivation removal rates can be achieved prior to the first customer. (7-1-24)

c. Each PWS which is required to provide filtration must provide disinfection treatment such that filtration plus disinfection provide at least 3-Log or ninety-nine and nine tenths percent (99.9%) inactivation/removal of Giardia lamblia cysts and at least 4-Log or ninety-nine and ninety-nine hundredths percent (99.99%) inactivation/

removal of viruses as specified in 40 CFR 141.72 and Section 300, and at least 2-Log or ninety-nine percent (99%) removal of Cryptosporidium as required by 40 CFR Part 141, Subpart P or Subpart T. However, in all cases the disinfection portion of the treatment train must be designed to provide not less than five tenths (0.5) log Giardia lamblia inactivation, irrespective of the Giardia lamblia removal credit awarded to the filtration portion of the treatment train. (7-1-24)

05. Analytical and Monitoring Requirements. 40 CFR 141.74 is incorporated by reference. (7-1-24)

a. Total inactivation ratio calculations: 40 CFR 141.74(b)(4)(i) and (ii) are incorporated by reference. (7-1-24)

b. Log removal credit for disinfection must be determined by multiplying the total inactivation ratio by three (3). (7-1-24)

c. Unfiltered Subpart H systems. 40 CFR 141.857(c) is incorporated by reference. (7-1-24)

d. Unfiltered PWSs must monitor as required in 40 CFR 141.74(b) upon notification by the Department that filtration treatment must be installed. (7-1-24)

e. During the period prior to filtration treatment installation, the Department may, at its discretion, reduce the turbidity monitoring frequency for any non-community system which demonstrates to the satisfaction of the Department: (7-1-24)

i. A free chlorine residual of two-tenths (0.2) part per million is maintained throughout the distribution system; (7-1-24)

ii. The water source is well protected; (7-1-24)

iii. E. coli MCL is not exceeded or a Level 1 or Level 2 Assessment has not been triggered in accordance with 40 CFR 141.859; and (7-1-24)

iv. No significant health risk is present. (7-1-24)

06. Reporting and Recordkeeping Requirements. 40 CFR 141.75 is incorporated by reference. (7-1-24)

a. As provided in 40 CFR 141.75(a) and Section 300, the Department may establish interim reporting requirements for PWSs notified by the Department or U.S. Environmental Protection Agency that filtration treatment must be installed as specified in 40 CFR 141.75(a) and as referred to in Subsection 300.06. Until filtration treatment is installed, PWSs required to install filtration treatment must report as follows: (7-1-24)

i. The purveyor will immediately report to the Department via telephone or other equally rapid means, but no later than the end of the next business day, the following information: (7-1-24)

(1) The occurrence of a waterborne disease outbreak potentially attributable to that PWS; (7-1-24)

(2) Any turbidity measurement which exceeds five (5) NTU; and (7-1-24)

(3) Any result indicating that the disinfectant residual concentration entering the distribution system is below two-tenths (0.2) mg/l free chlorine. (7-1-24)

ii. The purveyor will report to the Department within ten (10) days after the end of each month the PWS serves water to the public the following monitoring information using a Department-approved form: (7-1-24)

(1) Turbidity monitoring information; and (7-1-24)

(2) Disinfectant residual concentrations entering the distribution system. (7-1-24)

iii. Personnel qualified under Subsection 300.01 will complete and sign the monthly report forms submitted to the Department as required in Subsection 300.06. (7-1-24)

b. In addition to the reporting requirements in 40 CFR 141.75(b) pertaining to PWSs with filtration treatment, each PWS which provides filtration treatment must report the level of Giardia lamblia and virus inactivation/removal achieved each day by filtration and disinfection. (7-1-24)

07. Recycle Provisions. 40 CFR 141.76 is incorporated by reference. (7-1-24)

a. The Department will evaluate recycling records kept by PWSs pursuant to 40 CFR 141.76 during sanitary surveys, comprehensive performance evaluations, or other inspections. (7-1-24)

b. The Department may require a PWS to modify recycling practices if it can be shown that these practices adversely affect the ability of the PWS to meet surface water treatment requirements. (7-1-24)

301. ENHANCED FILTRATION AND DISINFECTION - SYSTEMS SERVING TEN THOUSAND OR MORE PEOPLE.
This Section incorporates, 40 CFR Part 141, Subpart P, known as the Interim Enhanced Surface Water Treatment Rule. (7-1-24)

01. General Requirements. 40 CFR 141.170 is incorporated by reference. (7-1-24)

02. Criteria for Avoiding Filtration. 40 CFR 141.171 is incorporated by reference. (7-1-24)

03. Disinfection Profiling and Benchmarking. 40 CFR 141.172 is incorporated by reference. (7-1-24)

04. Filtration. 40 CFR 141.173 is incorporated by reference. (7-1-24)

05. Filtration Sampling Requirements. 40 CFR 141.174 is incorporated by reference. (7-1-24)

302. SANITARY SURVEYS.
The Department conduct a sanitary survey of all PWSs. Sanitary surveys will include, but are not limited to, the following elements: source; treatment; distribution system; finished water storage; pump, pump facilities, and controls; monitoring and reporting and data verification; PWS management and operation; and operator compliance with state requirements. For those PWSs using groundwater, 40 CFR Part 141, Subpart S, is incorporated by reference. (7-1-24)

01. Frequency. For non-community PWSs, a sanitary survey must be conducted every five (5) years. For community PWSs, a sanitary survey will be conducted every three (3) years, except as provided below. (7-1-24)

a. Community systems using surface water or groundwater under the direct influence of surface water that have been determined to have outstanding performance, according to criteria established by the Department, may have a sanitary survey conducted every five (5) years. (7-1-24)

b. Community systems using groundwater may have a sanitary survey conducted every five (5) years if the PWS provides at least a four (4)-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log inactivation and removal) before or at the first customer for all of its groundwater sources. (7-1-24)

c. Community systems using groundwater may have a sanitary survey conducted every five (5) years if they have an outstanding performance record, as determined by the Department and documented in previous sanitary surveys, and have no history of Revised Total Coliform Rule MCL or monitoring violations under Subsection 100.01 since the last sanitary survey. (7-1-24)

02. Report. The Department will provided a report describing the results of the sanitary survey to the

PWS. As part of the sanitary survey report or as an independent action, the Department will provide written notice to the PWS describing any significant deficiency within thirty (30) days after the Department identifies the significant deficiency. The notice may specify corrective actions and deadlines for completion of corrective actions. (7-1-24)

03. Significant Deficiencies. For each of the eight (8) elements of a sanitary survey of a groundwater system, the Department will consider the following deficiencies significant in all cases for the purposes of the notice required in Subsection 303.02. Decisions about the significance of other deficiencies identified during the sanitary survey will be at the Department's discretion, as indicated in the Department's sanitary survey protocol. (7-1-24)

a. Source: Lack of or improper sanitary well cap as specified in Subsection 511.06.b. (7-1-24)

b. Treatment: (7-1-24)

i. Chemical addition lacks emergency shut-off as specified in Subsection 531.02.b.ii. (7-1-24)

ii. Chemical addition is not flow proportioned where the rate of flow or chemical demand is not reasonably constant, as specified in Subsection 531.02.b.ii. (7-1-24)

c. Distribution system: A minimum system pressure of twenty (20) psi is not maintained throughout the distribution system as specified in Subsection 552.01.b. (7-1-24)

d. Finished water storage: Roof leaking, as specified in Subsections 544.09 and 544.09.c. (7-1-24)

e. Pumps, pump facilities, and controls: A pump house must be protected from contamination and unauthorized entry, as specified in Subsection 541.01. (7-1-24)

f. Monitoring, reporting, and data verification: Repeated failure to collect the required number and type of Revised Total Coliform Rule samples during the most recent two (2) year period, as specified in Subsection 100.01. (7-1-24)

g. PWS management and operation: History of frequent depressurization in the distribution system in violation of Subsection 552.01. (7-1-24)

h. Operator compliance with state licensing requirements: The PWS does not have a properly licensed responsible charge operator as required in Subsection 554.02. (7-1-24)

04. Response Required. After notification from the Department of significant deficiencies, the owner of a PWS must respond in writing, describing how and on what schedule the PWS will address all significant deficiencies, not later than forty-five (45) days for PWSs using surface water or groundwater under the direct influence of surface water or thirty (30) days for PWSs only using groundwater. (7-1-24)

05. Consultation with the Department. PWS owners must consult with the Department prior to taking specific corrective actions in response to significant deficiencies identified during a sanitary survey, unless such corrective actions are specified in detail by the Department in its written notification under Subsection 302.02. (7-1-24)

06. Violation. Failure to address significant deficiencies identified in a sanitary survey is a violation of these rules. (7-1-24)

303. (RESERVED)

304. COMPOSITE CORRECTION PROGRAM (CCP).

40 CFR 141.563 is incorporated by reference. In accordance with 40 CFR 142.16(g)(1), the Department has authority to require the owner of a PWC to conduct a composite correction program, as defined in Section 003, for the purpose of identifying and correcting deficiencies in water treatment and distribution. Composite Correction Programs consist of a Comprehensive Performance Evaluation (CPE) and Comprehensive Technical Assistance (CTA). (7-1-24)

01. Comprehensive Performance Evaluation (CPE). The CPE is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance. It must emphasize approaches that can be implemented without significant capital improvements. The CPE assesses plant performance-based capabilities and associated administrative and operation and management practices. (7-1-24)

02. Comprehensive Technical Assistance (CTA). The CTA consists of follow-up to the CPE results, implementation of process control priority setting techniques, and long-term involvement to systematically train staff and administrators. (7-1-24)

305. COLIFORM TREATMENT TECHNIQUE TRIGGERS AND ASSESSMENT REQUIREMENTS FOR PROTECTION AGAINST POTENTIAL FECAL CONTAMINATION.
40 CFR 141.859, excluding 40 CFR 141.859(a)(2)(iii), is incorporated by reference. (7-1-24)

01. Requirements For Assessments. 40 CFR 141.859(b) is incorporated by reference. (7-1-24)

a. Level 1 and 2 assessments must be conducted consistent with any Department directives that tailor specific assessment elements with respect to the size and type of the PWS and the size, type, and characteristics of the distribution system. (7-1-24)

b. Level 1 Assessment. 40 CFR 141.859(b)(3) is incorporated by reference. (7-1-24)

c. Level 2 Assessment. 40 CFR 141.859(b)(4) is incorporated by reference. (7-1-24)

i. The Department will schedule and conduct Level 2 assessments for an E.coli treatment technique trigger in unless the Department approves another party to conduct the assessment as outlined in Subsection 305.02. (7-1-24)

ii. A second or any additional triggered Level 2 Assessment within a rolling twelve-month period must be conducted by a Department approved third party even if the PWS owner has staff or management approved under Subsection 305.02. (7-1-24)

02. Approved Parties for Level 2 Assessments. The PWS may conduct a Level 2 assessment if the PWS has staff or management with the certification or qualifications outlined in this Subsection or if the PWS hires parties that meet the qualifications in this Subsection. The following parties are approved by the Department to conduct Level 2 assessments: (7-1-24)

a. The Department or persons contracted with the Department who are trained to conduct sanitary surveys; (7-1-24)

b. Currently licensed operators in good standing that are licensed through the Idaho Division of Occupational and Professional Licenses with a drinking water classification of Distribution I through IV or Treatment I through IV and that are licensed at least to the classification level of the PWS requiring the Level 2 assessment; or (7-1-24)

c. Licensed professional engineers licensed by the state of Idaho and qualified by education and experience in the specific technical fields involved in these rules. (7-1-24)

306. -- 309. (RESERVED)

310. ENHANCED FILTRATION AND DISINFECTION - SYSTEMS SERVING FEWER THAN TEN THOUSAND PEOPLE.
40 CFR 141, Subpart T, is incorporated by reference. (7-1-24)

311. ENHANCED TREATMENT FOR CRYPTOSPORIDIUM -- LONG TERM 2 ENHANCED SURFACE WATER TREATMENT RULE.
40 CFR Part 141, Subpart W, is incorporated by reference. (7-1-24)

01. Cryptosporidium Treatment Credit for Approved Watershed Control Program. The Department will award 0.5 (zero point five) logs cryptosporidium removal credit to systems that have a Department approved Watershed Control Program. Requirements for a watershed control program are set forth in 40 CFR 141, Subpart W. Guidance on how to develop a watershed control program and obtain Department approval is provided in "Implementation Guidance for the Long Term 2 Enhanced Surface Water Treatment Rule," as referenced in Section 002. (7-1-24)

02. Assessment of Significant Changes in the Watershed. As part of the sanitary survey process set forth in Section 302, the Department, or an agent approved by the Department, will assess significant changes in the watershed of a surface water system that occurred since the PWS conducted source water monitoring. If changes in the watershed have the potential to significantly increase contamination of the source water with cryptosporidium, the Department will consult with the PWS owner on follow-up actions that may be required under 40 CFR 141, Subpart W, including, but not limited to, source water monitoring or additional treatment requirements. "Implementation Guidance for the Long Term 2 Enhanced Surface Water Treatment Rule," as referenced in Section 002, provides a description of factors that will be considered by the Department when making an assessment of changes in the watershed. These factors include, but are not limited to the following: (7-1-24)

a. New IPDES permits or changes in existing IPDES permits that involve increased loading of contaminants. (7-1-24)

b. Changes in land use patterns. (7-1-24)

c. Changes in agricultural cropping, chemical application, or irrigation practices. (7-1-24)

d. Changes in other non-point discharge source activities (such as grazing, manure application, commercial or residential development). (7-1-24)

e. Stream or riverbed modifications. (7-1-24)

f. IPDES permit violations at wastewater treatment plants or confined animal feedlot operations. (7-1-24)

g. Dramatic natural events such as floods, forest fires, earthquakes, and landslides that may transport or expose contaminants. (7-1-24)

h. Prolonged drought conditions that may warrant special preparatory measures to minimize impacts from waste accumulations that are washed into source waters when precipitation returns. (7-1-24)

i. Accidental or illegal waste discharges and spills. (7-1-24)

312. -- 319. (RESERVED)

320. DISINFECTANT RESIDUALS, DISINFECTION BYPRODUCTS, AND DISINFECTION BYPRODUCT PRECURSORS.
This Section incorporates 40 CFR Part 141, Subpart L, of the National Primary Drinking Water Regulations, known as the Disinfectants and Disinfection Byproducts Rule. (7-1-24)

01. General Requirements. 40 CFR 141.130 is incorporated by reference. (7-1-24)

02. Analytical Requirements. 40 CFR 141.131 is incorporated by reference. DPD colorimetric test kits may be used to measure residual disinfectant concentrations for chlorine, chloramines, and chlorine dioxide. (7-1-24)

03. Monitoring Requirements. 40 CFR 141.132 is incorporated by reference. (7-1-24)

04. Compliance Requirements. 40 CFR 141.133 is incorporated by reference. (7-1-24)

05. Treatment Techniques for Control of Disinfection Byproduct (DBP) Precursors. 40 CFR 141.135 is incorporated by reference. (7-1-24)

321. INITIAL DISTRIBUTION SYSTEM EVALUATIONS.
40 CFR Part 141, Subpart U, is incorporated by reference. "Implementation Guidance for the Stage 2 Disinfectants and Disinfection Byproducts Rule," as referenced in Section 002, provides assistance to PWS owners and operators in understanding and achieving compliance with the requirements of 40 CFR 141, Subpart U. (7-1-24)

322. STAGE 2 DISINFECTION BYPRODUCTS REQUIREMENTS.
40 CFR Part 141, Subpart V, is incorporated by reference. "Implementation Guidance for the Stage 2 Disinfectants and Disinfection Byproducts Rule," as referenced in Section 002, provides assistance to public water system owners and operators in understanding and achieving compliance with the requirements of 40 CFR Part 141, Subpart V. (7-1-24)

323. GROUND WATER RULE.
40 CFR 141, Subpart S is incorporated by reference. "Implementation Guidance for the Drinking Water Program – Ground Water Rule," as referenced in Section 002, provides assistance to PWS owners and operators in understanding and achieving compliance with the requirements of 40 CFR 141, Subpart S. (7-1-24)

01. Discontinuation of Treatment. PWSs that wish to discontinue four (4)-log virus treatment at a groundwater source must meet the following criteria. Groundwater sources on which treatment has been discontinued will be subject to the triggered source water monitoring requirements of 40 CFR 141, Subpart S. (7-1-24)

a. Demonstration that any known source of contamination has been removed. (7-1-24)

b. Demonstration that structural deficiencies of the well have been rehabilitated and no longer exist. (7-1-24)

c. Provide evidence that the well is drawing from a protected or confined aquifer. (7-1-24)

d. Submit results of one (1) year of monthly monitoring for a fecal indicator organism during which no positive results occurred. (7-1-24)

02. Chlorine Purging Prior to Triggered Source Sampling. 40 CFR 141.402(e) requires that groundwater source samples be collected at a location prior to any treatment. Pursuant to this requirement PWSs that add chlorine to a source, either in the well bore or near enough to the wellhead that chlorinated water may backflow into the well, must ensure that all chlorine residual has been purged prior to taking a triggered source water sample. This must be accomplished by measuring chlorine residual in the source water until a reading of zero is obtained and be recorded in the space provided for chlorine residual on the sample submittal form. (7-1-24)

324. -- 349. (RESERVED)

350. CONTROL OF LEAD AND COPPER.
40 CFR 141 Subpart I is incorporated by reference. (7-1-24)

351. -- 399. (RESERVED)

400. SECONDARY MCLS.
40 CFR 143, Subpart A, is incorporated by reference. (7-1-24)

401. -- 449. (RESERVED)

450. USE OF NON-CENTRALIZED TREATMENT DEVICES.

01. Criteria and Procedures for Public Water Systems Using Point of Entry Devices. 40 CFR 141.100 is incorporated by reference. (7-1-24)

02. Point of Use (POU) Treatment Devices. (7-1-24)

a. A PWS owner may use point of use (POU) treatment to comply with certain maximum contaminant levels (MCL) or treatment techniques when the following conditions are met: (7-1-24)

i. A program for long-term operation, maintenance, and monitoring of the POU treatment system is approved by the Department, pursuant to Subsection 450.02.c. (7-1-24)

ii. The PWS owner or a vendor of POU treatment devices under contract with the PWS must own, control, and maintain the POU treatment system to ensure proper operation and maintenance and compliance with the MCL or treatment technique. (7-1-24)

iii. Each POU treatment device is equipped with a mechanical warning mechanism to ensure customers are automatically notified of operational problems. (7-1-24)

iv. Each POU treatment device must be certified by an accredited American National Standards Institute (ANSI) certification body to meet applicable ANSI/National Sanitation Foundation (NSF) Standards. (7-1-24)

v. POU treatment devices will not be used to comply with an MCL or treatment technique requirement for a microbial contaminant or an indicator of a microbial contaminant. Community PWSs may not use POU treatment devices to comply with a nitrate or nitrite MCL. (7-1-24)

b. The Department will waive the plan and specification requirements of Section 504 relating to material modifications for the following systems only to the extent that the material modification is limited to the installation or use of a POU treatment device(s): (7-1-24)

i. Community PWSs serving two hundred (200) or fewer service connections. (7-1-24)

ii. Non-transient non-community PWSs; (7-1-24)

iii. Transient non-community PWSs; or (7-1-24)

iv. Community PWSs serving more than two hundred (200) service connections if approved by the Department through the waiver process outlined in Subsection 005.02. (7-1-24)

c. Prior to installation, the PWS owner must submit the following documentation for approval to the Department. (7-1-24)

i. Water system information: (7-1-24)

(1) PWS name and identification number; (7-1-24)

(2) Total number of service connections; (7-1-24)

(3) Demonstration that all POU treatment devices are owned, controlled, and maintained by the PWS owner or by a vendor of POU treatment devices under contract with the PWS owner; (7-1-24)

(4) Documentation that a customer at each service connection has agreed to installation and use of a POU treatment device and has granted access for installation, maintenance, and sampling; (7-1-24)

(5) A statement of recognition that failure to maintain compliance with the MCL, or the failure to operate and maintain compliance with a POU treatment system as approved by the Department, may necessitate installation of centralized treatment; and (7-1-24)

(6) Documentation that the PWS is current with certified operator requirements pursuant to Section 554. (7-1-24)

ii. POU device information: (7-1-24)

(1) Type of POU treatment device; (7-1-24)

(2) Manufacturer, model number, and manufacturer's specifications; (7-1-24)

(3) Contaminant to be treated and documentation that the POU is certified and is of sufficient design and capacity for removal of the contaminant; (7-1-24)

(4) Documentation that the PWS's water chemistry is compatible with the POU; (7-1-24)

(5) Type and function of the mechanical warning (performance indicator); (7-1-24)

(6) Certification verification for ANSI/NSF; (7-1-24)

(7) Documentation describing how other drinking water dispensing units, such as hot water dispensers and refrigerators, soda machines, water fountains, and other similar units will be provided with treated water and how the water will be transported to that unit with non-reactive piping or tubing. Non-transient non-community and transient non-community PWSs must demonstrate that the POU treatment devices are located in areas adequate to protect public health and in sufficient quantity to serve the system's users; (7-1-24)

(8) Installer qualifications; and (7-1-24)

(9) Proposed date for completing installation(s). (7-1-24)

iii. POU operation, maintenance, and sampling plan that includes documentation on how the PWS owner will: (7-1-24)

(1) Address any non-compliance with Subsection 450.02.c.i.(4); (7-1-24)

(2) Ensure real estate disclosures for the POU treatment systems; (7-1-24)

(3) Deliver ongoing education and outreach to customers, including renters, regarding POU treatment and health effects of the contaminant(s) of concern; (7-1-24)

(4) Address and perform on-going maintenance activities, including frequency of treatment media replacements and treatment device replacements, periodic verification that the mechanical warning device is functional, schedule of planned maintenance activities, a plan to address unscheduled maintenance problems, and a plan and method of waste disposal; and (7-1-24)

(5) Collect samples from the location of all service connections and demonstrating that all POU treatment devices will be sampled for compliance with the treated contaminant(s) during every compliance period or other frequency designated by the Department. (7-1-24)

d. Within thirty (30) days of installing the approved POU treatment system, the PWS owner must: (7-1-24)

i. Notify the Department in writing that the POU treatment system was installed as approved by the Department. (7-1-24)

ii. Submit samples from each POU treatment device to a certified laboratory for the contaminant(s) being treated to demonstrate initial compliance with the MCL. (7-1-24)

e. The PWS owner or operator must maintain records for a POU treatment system. Records must be submitted to the Department at a frequency and in a format specified by the Department. Records to maintain include: (7-1-24)

i. Requirements of Subsection 450.02.c.; (7-1-24)

ii. All sampling performed on the POU treatment devices; (7-1-24)

iii. Maintenance logs and schedules; (7-1-24)

iv. Log of installed units; and (7-1-24)

v. Contracts, lease agreements, or other legal documents with vendors and consumers. (7-1-24)

03. Use of Bottled Water. 40 CFR 141.101 is incorporated by reference. (7-1-24)

451. TREATMENT TECHNIQUES.
40 CFR 141, Subpart K, is incorporated by reference. (7-1-24)

452. -- 499. (RESERVED)

500. DEMONSTRATION OF TECHNICAL, FINANCIAL, AND MANAGERIAL CAPACITY OF PUBLIC DRINKING WATER SYSTEMS.
No person may proceed, or cause to proceed, with construction of a new community or non-transient, non-community PWS until they have demonstrated to the Department that the PWS will have adequate technical, financial, and managerial capacity, as defined in Section 003. Existing community or non-transient, non-community PWSs incapable of demonstrating technical, financial, or managerial capacity as identified through operational problems, may be required to submit technical, financial, and managerial documentation to the Department for review and approval. With the exception of water sources, demonstration of capacity must be submitted to the Department prior to or concurrent with the submittal of plans and specifications, as required in Section 39-118, Idaho Code, and Subsection 504.03. Plans and specifications for water sources may be submitted to the Department prior to demonstration of capacity for the PWS. The Department will issue its approval of the new PWS capacity demonstration in writing. (7-1-24)

01. Technical Capacity. Demonstration of technical capacity must include the following: (7-1-24)

a. The PWS meets the relevant design, construction, and operating requirements of these rules; (7-1-24)

b. The PWS has an adequate and consistent source of water; (7-1-24)

c. A plan is in place to protect the water source and deal with emergencies; (7-1-24)

d. A plan exists for replacement or improvement of infrastructure as necessary; and (7-1-24)

e. The PWS has trained personnel with an understanding of the technical and operational characteristics of the PWS. (7-1-24)

02. Financial Capacity. Demonstration of financial capacity must include the following: (7-1-24)

a. Documentation that organizational and financial arrangements are adequate to construct and operate the PWS in accordance with these rules. This information can be provided by submitting estimated construction, operation, and maintenance costs, letters of credit, or other access to financial capital through public or private sources and, if available, a certified financial statement; (7-1-24)

b. Demonstration of revenue sufficiency, that includes but is not limited to billing and collection procedures; a proposed rate structure which demonstrates the availability of operating funds, revenues for depreciation and reserves, and the ability to accrue a capital replacement fund. A preliminary operating budget must be provided; and (7-1-24)

c. Adequate fiscal controls must be demonstrated. (7-1-24)

03. Managerial Capacity. Demonstration of managerial capacity, the must include the following: (7-1-24)

a. Clear documentation of legal ownership and any plans that may exist for transfer of that ownership upon completion of construction or after a period of operation; (7-1-24)

b. The name, address, and telephone number of the person who will be accountable for ensuring that the PWS is in compliance with these rules; (7-1-24)

c. The name, address, and telephone number of the responsible charge operator; (7-1-24)

d. A description of the manner in which the PWS will be managed. Information such as by-laws, restrictive covenants, articles of incorporation, or procedures and policy manuals which describe the management organizational structure must be provided; (7-1-24)

e. A recommendation of staff qualifications, including training, experience, certification or licensing, and continuing education; (7-1-24)

f. An explanation of how the PWS will establish and maintain effective communications and relationships between the PWS management, its customers, professional service providers, and any applicable regulatory agencies; and (7-1-24)

g. Evidence of planning for future growth, equipment repair and maintenance, and long term replacement of system components. (7-1-24)

04. Submittal. The PWS owner may request guidance on how to prepare a capacity document submittal from the Department, the guidance is available on the Department website at http://www.deq.idaho.gov. (7-1-24)

05. Expanding Systems. A PWS which comes into existence as a result of growth in population or number of service connections within a previously unregulated system will be considered a new PWS under these rules and is subject to all design, construction, and operating requirements herein. (7-1-24)

06. Consolidation. In demonstrating new PWS capacity, the owner of the proposed new PWS must investigate the feasibility of obtaining water service from an established PWS. If such service is available, but the owner elects to proceed with an independent PWS, the owner must explain why this choice is in the public interest in terms of environmental protection, affordability to water users, and protection of public health. (7-1-24)

07. Exclusion. New PWSs which are public utilities as defined in Sections 61-104 (Corporation), 61-124 (Water System), 61-125 (Water Corporation), and 61-129 (Public Utility), Idaho Code, must meet the regulatory requirements of the Idaho Public Utilities Commission (IPUC) in Chapter 1, Title 61, Idaho Code, Public Utilities Law, and IDAPA 31.01.01, "Rules of Procedure of the Idaho Public Utilities Commission." Such water systems will not be required to meet any requirements of this Section which are in conflict with the provisions and requirements of the IPUC. (7-1-24)

501. GENERAL DESIGN REQUIREMENTS FOR PUBLIC DRINKING WATER SYSTEMS.

Unless otherwise specified by the Department, the design of new PWSs, or modifications to existing PWSs must conform to the facility and design standards set forth in 40 CFR 141.5, and Sections 500 through 552. The following general design requirements apply as applicable for the type of PWS and the treatment or other processes employed. (7-1-24)

01. Materials Used in Construction. Products that are used to construct PWSs and have water contact surfaces must conform to applicable AWWA standards and be certified by an accredited ANSI certification body to meet applicable ANSI/NSF standards, where products meeting such AWWA and ANSI/NSF standards exist, and must conform to 40 CFR 143 Subpart B. In the absence of such products, products meeting applicable product

standards and acceptable to the Department may be selected. Corrosion control must be taken into account during all aspects of PWS design. (7-1-24)

02. Additives Used in Operation. No chemical or other substance will be added to drinking water, nor will any process be utilized to treat drinking water, unless approved by the Department. All chemicals must conform to applicable AWWA standards and be certified by an accredited ANSI certification body to meet ANSI/NSF Standard 60, referenced in Subsection 002.02. (7-1-24)

03. Design Basis. The PWS, including the water source and treatment facilities, must be designed to provide either peak hour demand of the PWS or maximum day demand plus equalization storage at the design year. (7-1-24)

04. Design of Treatment Facilities. Design of treatment facilities must address: (7-1-24)

a. Functional aspects of facility layout and provisions for future facility expansion; (7-1-24)

b. Provision for expansion of waste treatment and disposal facilities (see Section 540); (7-1-24)

c. Roads constructed to provide year-round access by vehicles and equipment needed for repair and maintenance; (7-1-24)

d. Site grading and drainage; and (7-1-24)

e. Chemical feed or injection systems must be designed to ensure complete mixing through rapid mix devices or other measures unless otherwise approved by the Department. (7-1-24)

f. Unless otherwise approved by the Department or as specified in other sections of these rules, to ensure that minimum quality, quantity, and pressure requirements are continuously met during maintenance, breakdowns, structural failures, emergencies, or other periods when components must be out of service, water system treatment, filtration, and disinfection components for all new or substantially modified community or non-transient, non-community PWSs must be designed with redundancy or other acceptable methods, such that plant design capacity can be maintained with any component out of service. Raw water intake structures are excluded from the general redundancy requirement but must be designed to ensure that plant design capacity will be maintained. (7-1-24)

05. Design of Buildings. The design of buildings that are a part PWSs must provide for: (7-1-24)

a. Adequate ventilation, lighting, heating, and air conditioning; (7-1-24)

b. Adequate drainage; (7-1-24)

c. Dehumidification equipment, if necessary; (7-1-24)

d. Accessibility of equipment for operation, servicing, and removal; (7-1-24)

e. Flexibility and convenience of operation and safety of operators; and (7-1-24)

f. Separate room(s) for chemical storage and feed equipment that may be required based on type of chemicals and associated hazards. (7-1-24)

06. Electrical. Main switch gear electrical controls must be located above grade, in areas not subject to flooding. All electrical work must conform to the requirements of the National Electrical Code or to relevant state/local codes. The National Electrical Code is available from the National Fire Protection Association, 1 Batterymarch Park, Quincy, Massachusetts 02169-7471, (617)770-3000, http://www.nfpa.org. (7-1-24)

07. Reliability and Emergency Operation. New community PWSs are required to have sufficient dedicated on-site standby power, with automatic switch-over capability, or standby storage so that water may be

treated and supplied to pressurize the entire distribution system during power outages. During a power outage, the PWS must be able to meet the operating pressure requirements of Subsection 552.01.b. for a minimum of eight (8) hours at average day demand plus fire flow where provided. A minimum of eight (8) hours of fuel storage must be located on site unless an equivalent plan is authorized by the Department. Standby power provided in a PWS may be coordinated with the standby power that is provided in the wastewater collection and treatment system. (7-1-24)

a. The Department may require the installation of standby power or storage facilities in existing PWSs if the frequency and duration of power outages a PWS experiences constitute a health hazard. (7-1-24)

b. Existing community PWSs that are substantially modified must meet the requirements of Subsection 501.07. in those portions of the PWS affected by the modifications. (7-1-24)

c. New sources and booster pumps intended to increase PWS capacity must be provided with standby power or equivalent unless, during a power outage, the PWS or distribution system pressure zone can already meet the minimum operating capacity and pressure requirements in Subsection 501.07 for a minimum of eight (8) hours at average day demand plus fire flow where provided for each pressure zone. (7-1-24)

d. For both new and existing PWSs, the Department may reduce the requirements of Subsection 501.07 if the PWS can demonstrate the capacity to adequately protect public health during a power outage. Any decision by the Department will be based on, but not limited to, the following considerations: (7-1-24)

i. An adequate emergency response and operation plan and the capacity to implement that plan. (7-1-24)

ii. The adequacy of the PWS's cross connection control program and the capacity to protect public health in the event of a system wide depressurization. (7-1-24)

iii. Demonstration of historical and projected reliability of the electrical power supplied to the PWS. (7-1-24)

iv. A strategy for providing information to the public during power outages, including instructions to stop irrigation, boil water, etc., until notified otherwise. (7-1-24)

v. The level of reliability acceptable to consumers. This can be accomplished with either a vote of the majority of consumers for privately owned and operated PWSs or a decision by the governing body for publicly governed PWSs. (7-1-24)

vi. Other considerations that may be pertinent, including connections to other PWSs, agreements to provide water in emergency situations, and the availability of dedicated portable auxiliary power. (7-1-24)

08. On-Site Analysis and Testing Capabilities. Each PWS must have equipment and facilities for routine testing necessary to ensure proper operation. Equipment selection must be based on the characteristics of the raw water source and the complexity of the treatment process involved. (7-1-24)

09. Sample Taps. Sample taps must be provided so that water samples can be obtained from each water source and from appropriate locations in each unit operation of treatment, and from the finished water. Taps must be consistent with sampling needs and shall not be of the petcock type. Taps owned by the PWS and used for obtaining samples for bacteriological analysis must be of the smooth-nosed type without interior or exterior threads, will not be of the mixing type, and will not have a screen, aerator, or other such appurtenance. (7-1-24)

10. Facility Potable Water Supply. The facility water supply service line and the plant finished water sample tap must be supplied from a source of finished water at a point where all chemicals have been thoroughly mixed, and the required disinfectant contact time, if applicable, has been achieved. There may be no cross connections between the facility water supply service line and any piping, troughs, tanks, or other treatment units containing wastewater, treatment chemicals, raw or partially treated water. (7-1-24)

11. Meters. All water supplies must have an acceptable means of measuring the flow from each

source, the wash water, the recycled water, any blended water of different quality, and the finished water. (7-1-24)

12. Operation and Maintenance Manual. A new or updated operation and maintenance manual that addresses all PWS facilities must be submitted to the Department for review and approval prior to start-up of the new or materially modified PWS unless the same system components are already covered in an existing operation and maintenance manual. For existing PWSs with continual operational problems as determined by the Department, the Department may require that an operation and maintenance manual be submitted to the Department for review and approval. The operator will ensure that the PWS is operated in accordance with the approved operation and maintenance manual. (7-1-24)

13. Start-Up Training. Provisions must be made for operator instruction at the start-up of a new plant or pumping station. (7-1-24)

14. Safety. Consideration must be given to the protection of maintenance personnel and visitors from typical and foreseeable hazards in accordance with the engineering standards of care. The design must comply with all applicable safety codes and regulations that may include the Uniform Building Code, International Fire Code, National Fire Protection Association Standards, and state and federal OSHA standards. Items to be considered include, but are not limited to, noise arresters, noise protection, confined space entry, protective equipment and clothing, gas masks, safety showers and eye washes, handrails and guards, warning signs, smoke detectors, toxic gas detectors and fire extinguishers. (7-1-24)

15. Security. Appropriate design measures to help ensure the security of PWS facilities must be incorporated. Such measures, at a minimum, will include means to lock all exterior doorways, windows, gates and other entrances to source, treatment, pumping stations, and water storage facilities. (7-1-24)

16. Other Regulations. Consideration must be given to the design requirements of other federal, state, and local regulatory agencies for items such as safety requirements, special designs for the handicapped, plumbing and electrical codes, and construction in the flood plain. (7-1-24)

17. Groundwater Source Redundancy. New community PWSs served by groundwater must have a minimum of two (2) sources if they are intended to serve more than twenty-five (25) connections or equivalent dwelling units (EDUs). Under normal operating conditions, with any source out of service, the remaining source(s) must be capable of providing either the peak hour demand of the PWS or a minimum of the maximum day demand plus equalization storage. See Subsection 501.18 for general design and redundancy requirements concerning fire flow capacity. (7-1-24)

18. Redundant Fire Flow Capacity. (7-1-24)

a. PWSs that provide fire flow must be designed to provide maximum day demand plus fire flow. Fire flow requirements and system adequacy will be determined by the local fire authority or by a hydraulic analysis by a licensed professional engineer to establish required fire flows in accordance with the International Fire Code as adopted by the State Fire Marshal. Pumping systems supporting fire flow capacity must be designed so that maximum day demand plus fire flow may be provided with any pump out of service. (7-1-24)

b. The requirement for redundant pumping capacity specified in Subsection 501.18.a. may be reduced to the extent that fire suppression storage is provided in sufficient quantity to meet some or all of fire flow demands. Where fire suppression storage is not provided, the requirement for fire flow pumping redundancy may be reduced or eliminated if the following conditions are met: (7-1-24)

i. The local fire authority justifies that the fire flow capacity of the PWS is acceptable and is compatible with the water demand of existing and planned fire-fighting equipment and fire-fighting practices in the area served by the PWS. (7-1-24)

ii. In a manner appropriate to the PWS type and situation, notification is provided to customers that describes the design of the PWS's fire-fighting capability and explains how it differs from the requirements of Subsection 501.18.a. (7-1-24)

19. Pilot Studies. Unless otherwise approved by the Department, pilot studies are required for treatment processes other than chlorine disinfection or point of use installations. Pilot studies may be performed in the field using the proposed source water or in conjunction with bench scale testing in the lab using the proposed source water. The PWS must obtain the Department's approval of a pilot study plan before the pilot study is implemented. A pilot study will be conducted for a period that is determined by the design engineer and approved by the Department. A final pilot study report with results must be submitted to the Department for review and approval. Upon completion of the pilot study, final approval of equipment and treatment processes is subject to the applicable requirements of Sections 500 through 552. (7-1-24)

a. A pilot study plan must include the following and any other items required by the Department: (7-1-24)

i. General information about the project including the existing system, the reason for conducting the pilot study, and anticipated results of a successful pilot study. (7-1-24)

ii. A brief description of alternative processes that may be used if the proposed process is shown to be ineffective from the study. (7-1-24)

iii. Discussion of how the pilot study will be conducted, the time frame of the study, source water quality, how source water may be altered to mimic various source water quality conditions, and the water quality parameters that are monitored and evaluated to determine if the treatment process was effective. (7-1-24)

b. The pilot study report must include the following and any other items required by the Department: (7-1-24)

i. Introduction and Background. (7-1-24)

ii. A discussion of the overall pilot study progress, including any issues or problems and a general discussion of results of the study and what the results indicate. This discussion will determine parameters necessary for full scale implementation. (7-1-24)

iii. Conclusions and recommendation to proceed with the treatment process if the results of the study proved successful. (7-1-24)

c. Additional specific pilot study requirements in Sections 500 through 552 must be included in pilot study plans and reports. (7-1-24)

d. Pilot study plans and pilot study reports submitted to the Department must bear the imprint of an Idaho licensed professional engineer's seal that is both signed and dated by the engineer. (7-1-24)

502. FACILITY PLANS.

See the definition of Facility Plan in Section 003. (7-1-24)

01. Facility Plans Required. The owner of all new PWSs, and existing PWSs undergoing material modification, are required to have a current facility plan that addresses all applicable issues specifically required in Sections 500 through 552. Facility plans must address the entire potential service area of the project. Facility plans may not be required for simple water main extension projects as detailed in Subsections 502.01.a. and 502.01.b. (7-1-24)

a. A facility plan is not required if the Department is provided documentation supporting the ability of the purveyor to provide service for the simple water main extension without adding system components designed to control quantity or pressure to the PWS and while continuing to provide the pressure and quantity requirements of Subsection 552.01. Documentation may be in the form of: (7-1-24)

i. Hydraulic modeling; (7-1-24)

ii. Usage data and flow calculations; (7-1-24)

iii. Declining balance reports that demonstrate the PWS has the capacity to supply the service area of the system served by the extension; or (7-1-24)

iv. Other documentation acceptable to the Department. (7-1-24)

b. A Department-approved facility plan is not required to be in place prior to the Qualified Licensed Professional Engineer (QLPE) approving a simple water main extension pursuant to Subsection 504.03.b., provided that the service area of the system served by the extension is in compliance with the facility and design standards in Sections 500 through 552. If the Department has not approved a facility plan for the PWS which includes the proposed simple water main extension, then the PWS purveyor or the QLPE must provide with the transmittal letter documentation supporting the ability of the purveyor to provide service for the simple water main extension without adding system components designed to control quantity or pressure to the PWS and while continuing to provide the pressure and quantity requirements of Subsection 552.01. The purveyor must provide this documentation to the QLPE as necessary. Documentation may be in the form of: (7-1-24)

i. Hydraulic modeling; (7-1-24)

ii. Usage data and flow calculations; (7-1-24)

iii. Declining balance reports that demonstrate the PWS has the capacity to supply the service area of the system served by the extension; or (7-1-24)

iv. Other documentation acceptable to the Department. (7-1-24)

02. Submittal to the Department. When required, facility plans must be submitted to the Department for review and approval prior to the submission of plans and specifications for a project related to the facility plan unless otherwise approved by the Department. (7-1-24)

03. Engineer's Seal Required. Facility plans submitted to the Department must bear the imprint of an Idaho licensed professional engineer's seal that is both signed and dated by the engineer. (7-1-24)

04. Facility Plan Contents. The facility plan must include basic information, criteria and assumptions, hydraulic capacity, treatment capacity, standby power, redundancy, fire flows, project financing, operation and maintenance considerations, alternative solutions with preliminary layouts, and cost estimates as applicable. The facility plan is intended to address system wide growth, to identify system deficiencies, and to lay out a plan for system upgrades and expansion. If specific items listed in Subsections 502.04.a.i. through 502.04.a.viii. or Subsections 502.04.b.i. through 502.04.b.vii. are not applicable to a particular facility plan, then the submitting engineer must state this in the facility plan and state the reason why the requirement is not applicable. (7-1-24)

a. The minimum requirements for a facility plan for a new PWS are listed in Subsections 502.04.a.i. through 502.04.a.viii but it must include: (7-1-24)

i. A general description and location of the PWS. (7-1-24)

ii. The estimated design population of the PWS including the number of connections and the number of EDUs proposed. (7-1-24)

iii. Adequacy, quality, and availability of sources of water for potable use and a description of the non-potable irrigation system. (7-1-24)

iv. Identify and describe any anticipated treatment. (7-1-24)

v. Design data covering water quantity for domestic, irrigation, fire fighting, commercial, or industrial water uses, including peak hour, maximum day, and average day demands. (7-1-24)

vi. Include the size and location of any anticipated storage structures. (7-1-24)

vii. Pressure ranges for all flow conditions prescribed by these rules. (7-1-24)

viii. Describe the wastewater collection system and wastewater treatment works, with reference to their relationship to existing or proposed water works structures which may affect the operation of the water supply system, or which may affect the quality of the supply. (7-1-24)

b. The minimum requirements for a facility plan for an existing PWS must include Subsections 502.04.b.i. through 502.04.b.vii. as well as Subsections 502.04.a.i. through 502.04.a.viii. (7-1-24)

i. A computerized hydraulic model of the distribution system based on flow demand and pressure requirements is required unless otherwise approved by the Department; any hydraulic model of an existing distribution system must be properly calibrated. The type or sophistication of hydraulic model will be dependent on the type of PWS. (7-1-24)

ii. Identify and evaluate problems related to the PWS. (7-1-24)

iii. Describe financing methods. (7-1-24)

iv. Set forth anticipated charges for users. (7-1-24)

v. Review organizational and staffing requirements. (7-1-24)

vi. Offer a project(s) recommendation for client consideration. (7-1-24)

vii. Outline official actions and procedures to implement the project. (7-1-24)

c. Public Water System Facility Plan funded by the State Revolving Fund. If the project is funded by the state revolving fund or a state grant, the facility plan must meet the requirements of Subsections 502.04.a. and 502.04.b., and other requirements that may also apply. See IDAPA 58.01.12, "Rules for Administration of Wastewater and Drinking Water Loan Funds," and IDAPA 58.01.22, "Rules for Administration of Planning Grants for Drinking Water and Wastewater Facilities." (7-1-24)

d. A checklist, which can be used as guidance, can be found on the Department website at http://www.deq.idaho.gov. The guidance document is for Department grant and loan projects, but may be used in part or in whole as a guide to assist in the development of any facility plan. (7-1-24)

503. PRELIMINARY ENGINEERING REPORTS.

See the definition of Preliminary Engineering Report (PER) in Section 003. PERs are required for all new PWSs or material modifications to existing PWSs that require plan and specification review and approval pursuant to Subsection 504.03. The PER must be in conformance with the approved facility plan or must describe any modifications to the facility plan.PERs must be completed for all major PWS projects including, but not limited to, source, pump station, pressure control, storage, and treatment projects. PERs are not required for simple water main extensions that are approved in accordance with Subsections 502.01.a. or 502.01.b. (7-1-24)

01. Submittal to Reviewing Authority. PERs must be submitted to the Department for review and approval prior to the submission of plans and specifications. The Department may allow well construction plans and specifications to be submitted concurrently with a PER for these projects. (7-1-24)

02. Seal Required. PERs submitted to the Department must bear the imprint of an Idaho licensed professional engineer's seal that is both signed and dated by the engineer. The Department will accept the seal and signature of an Idaho licensed professional geologist for well source, spring source, or infiltration gallery site reports, and for well construction. (7-1-24)

03. PER Contents. The PER must include sufficient detail to demonstrate that the proposed project meets applicable criteria. The items included in Subsections 503.03.a. through 503.03.e., and all applicable issues and items specifically required in Sections 500 through 552, must be addressed in detail or justification must be provided

for any proposed deviations where specifically allowed. As required, a PER must also identify and evaluate drinking water related problems, assemble basic information, present criteria and assumptions, examine alternative solutions with preliminary layouts and cost estimates, offer a conclusion with a proposed project, and outline official actions and procedures to implement the project. If specific items in Subsections 503.03.a. through 503.03.e. are not applicable to a particular design, then the designer must state this in the PER and state the reason why it is not applicable. Items adequately addressed in the facility plan under which the project is being designed may be addressed by reference for purposes of the PER. (7-1-24)

a. All PERs must include items in Subsection 503.03.a. and the applicable items from Subsections 503.03.b. through 503.03.e. (7-1-24)

i. The general information must include, but is not limited to: (7-1-24)

(1) A detailed description of the proposed project; (7-1-24)

(2) A general description of the location of the project and justification of the site selection; (7-1-24)

(3) A general discussion of adequacy of local roadways and availability of power or other utilities; (7-1-24)

(4) A general discussion of surrounding land use, including any potential sources of contamination; and (7-1-24)

(5) A general discussion of planned security features such as fencing, lighting, alarm systems, etc. (7-1-24)

ii. The PER must discuss or reference items provided in the Department-approved facility plan. These items include, but are not limited to: (7-1-24)

(1) A general description of the existing PWS and how the project fits into the overall system and facility plan; (7-1-24)

(2) The estimated PWS size based on number of persons, number of connections, or number of EDUs served or impacted by the project; (7-1-24)

(3) Design data for domestic, irrigation, fire fighting, commercial and industrial water uses, including peak hour, maximum day, and average day demands; (7-1-24)

(4) How the project will affect various storage requirements. See definition of Components of Finished Water Storage in Section 003; (7-1-24)

(5) Pressure ranges for all flow conditions prescribed by these rules; (7-1-24)

(6) A computer model of the hydraulics of the distribution system based on flow demands and pressure requirements is required unless otherwise approved by the Department; any hydraulic model of an existing distribution system must be properly calibrated. The type and sophistication of hydraulic model will be dependent on the type of PWS; (7-1-24)

(7) A general discussion of the adequacy, quality and availability of source of water. A PWS that is to be served by a separate non-potable irrigation system must provide documentation to demonstrate the actual availability of water in sufficient quantity to ensure that the irrigation system will not compete with or in any way diminish the source of water for the potable water system; (7-1-24)

(8) Describe the wastewater collection system and wastewater treatment works, with special reference to their relationship to existing or proposed water works structures which may affect the operation of the water supply system, or which may affect the quality of the supply; (7-1-24)

(9) Assesses and characterize all anticipated treatment waste discharges generated by the project and any activities that may impact the water supply. The location of each waste handling area or discharge point must be shown on a scale map; (7-1-24)

(10) Provide brief discussion of financing options investigated or planned; and (7-1-24)

(11) Discuss mechanisms for protection of the PWS from flooding. (7-1-24)

iii. Include a summary of applicable codes and standards that apply to the proposed project. (7-1-24)

iv. Provide, as applicable, estimated construction costs for public works projects or projects funded through public monies. (7-1-24)

v. Include the proposed construction schedule. (7-1-24)

vi. Identify sources of contamination and describe how the drinking water sources will be protected. (7-1-24)

vii. Generally discuss soil, groundwater conditions, and potential building foundation problems, including a description of: (7-1-24)

(1) The character of the soil through which water mains are to be laid; (7-1-24)

(2) Characteristics of the soil, water table, and geological substrate that may affect the design and construction of the foundations of proposed structures; and (7-1-24)

(3) The approximate elevation of groundwater in relation to subsurface structures. (7-1-24)

b. In addition to items listed in Subsection 503.03.a., a PER for source water construction projects using wells or springs must include all items listed in Subsection 503.03.b., applicable items in Sections 510 through 514, and Sections 500 to 552 are to be evaluated for their relevance to the project. (7-1-24)

i. Include geological data and existing well logs. (7-1-24)

ii. Describe the anticipated drilling method and well construction. (7-1-24)

iii. Anticipated potability and water quality including monitoring results required for new sources by these rules. (7-1-24)

iv. Provide the appropriate documentation for the water rights for the drinking water source. (7-1-24)

v. Dimensions of the well lot and location of source. Include geographical coordinates of the source location. (7-1-24)

vi. For all new groundwater sources, including but not limited to wells, springs, and infiltration galleries, PWSs must supply information as required by the Department for the Department to determine if these sources are under the direct influence of surface water. The determination of direct influence may be based on site-specific measurements of water quality, documentation of well construction characteristics and geology with field evaluation, a combination of water quality and documentation, or other information required by the Department. (7-1-24)

vii. Provide a site evaluation report as required by Section 510 for wells and 514 for springs. (7-1-24)

c. In addition to items listed in Subsection 503.03.a., PERs for well and pump house construction projects must include all items listed in Subsection 503.03.c., applicable items in Sections 511, 541, 547, and Sections 500 to 552 are to be evaluated for their relevance to the project. (7-1-24)

i. Include information on the anticipated construction and well house equipment such as heating, ventilation, interior lighting, and drain(s). (7-1-24)

ii. Provide a brief description of the means for measuring the water level in the well. (7-1-24)

iii. Include information on the proposed or planned pump, including the pump curve. (7-1-24)

iv. Describe the equipment and controls for the well and pump house. This includes but is not limited to system control and data acquisition, variable frequency drive, and other manual or automated controls within the well house. (7-1-24)

v. Piping and appurtenances including but not limited to sample taps, discharge piping, flow meters, check valves, and pressure gauges. Describe the receiving system for the pump to waste volume of water including an evaluation of the capacity of the receiving system and, if applicable, provide documentation that the system owner will accept the estimated volume of water and any limitations the owner places upon that acceptance. (7-1-24)

vi. Describe the well vent if applicable. (7-1-24)

vii. Describe the anticipated casing and well cap type and materials. (7-1-24)

viii. Describe the anticipated pitless adapter for the well. (7-1-24)

ix. Describe the soil and groundwater conditions that may affect the design and construction of proposed structure(s). (7-1-24)

d. In addition to items listed in Subsection 503.03.a., PERs for reservoir and storage construction projects must include all items listed in Subsection 503.03.d., applicable items in Sections 544, and Sections 500 to 552 are to be evaluated for their relevance to the project. (7-1-24)

i. Describe the required storage capacity and the related components of finished water storage. (7-1-24)

ii. Describe the anticipated overflow system for the water storage project and where the overflow will discharge. (7-1-24)

iii. Describe the venting system used for the water storage project if applicable. (7-1-24)

iv. Describe the construction materials used for the storage project. (7-1-24)

v. Describe the protection of storage facility features from freezing especially riser pipes, overflows, and vents. (7-1-24)

vi. Describe any site work or grading that may be necessary. (7-1-24)

vii. Provide a discussion on methods to prevent corrosion such as coatings, cathodic protection, corrosion resistant materials, and encasement. (7-1-24)

viii. Describe the methods to be used to disinfect the storage facility and the testing to check for proper disinfection. (7-1-24)

e. Surface water and groundwater under the direct influence of surface water (GWUDI) treatment construction projects. In addition to items listed in Subsection 503.03.a., PERs for surface water treatment and GWUDI construction projects must include all items listed in Sections 503.03.e., applicable items in Sections 515 through 540, and Sections 500 to 552 are to be evaluated for their relevance to the project. (7-1-24)

i. Describe the intake structures that will be used. (7-1-24)

ii. If applicable, describe the proposed off-stream raw water storage. (7-1-24)

iii. Describe the treatment methods and potential alternatives including the removal of pathogens, disinfection, enhanced disinfection, water quality monitoring, and redundancy provisions. (7-1-24)

iv. Characterize the various wastes from the water treatment processes and, if applicable, their volumes, constituents, and proposed treatment and disposal. If discharging to a sanitary sewage system, verify that the system is capable of handling the flow to the treatment works and that the treatment works is capable and willing to accept the additional loading. (7-1-24)

v. Provide applicable raw water monitoring results as required by these rules including anticipated turbidity ranges, microbiological, physical, chemical, radiological, and other parameters as determined by the Department. (7-1-24)

vi. An assessment of the degree of hazard to the supply by agricultural, industrial, recreational, and residential activities in the watershed, and by accidental spillage of materials that may be toxic, harmful or detrimental to treatment processes. (7-1-24)

vii. Assess all waste discharges and activities that may impact the water supply. The location of each waste discharge must be shown on a scale map. (7-1-24)

viii. Provide any available records and data regarding hydrological and historical stream flow. (7-1-24)

ix. A copy of the appropriate permit(s) or application(s) from the Idaho Department of Water Resources regarding authorization to appropriate public waters of the state of Idaho in sufficient quantity to meet the design requirements of the PWS. (7-1-24)

x. Anticipated turbidity range. (7-1-24)

xi. Assessment of the degree of control the PWS will be able to exercise over the watershed. (7-1-24)

xii. Projected future uses of impoundments or reservoirs within the watershed. (7-1-24)

xiii. Submit source water sample data over a sufficient period of time to assess the microbiological, physical, chemical and radiological characteristics of the water. (7-1-24)

xiv. Provide consideration of currents, wind and ice conditions, and the effect of confluent streams. (7-1-24)

504. REVIEW OF PLANS AND SPECIFICATIONS.
The Department will apply the facility and design standards set forth in these rules, Subsections 500 through 548, in the review of plans and specifications for PWS facilities. If design issues are not addressed by the facility and design standards set out in these rules, then guidance documents, some of which are listed in Subsection 002.02, must be used as guidance in the design and review of plans and specifications for public drinking water facilities. See also Section 013. (7-1-24)

01. Ownership. The PWS owner must provide documentation of the ownership and responsibility for operating the proposed PWS to the Department prior to or concurrent with the submittal of plans and specifications as required in Subsection 504.03. The documentation must show organization and financial arrangements adequate to assure construction, operation and maintenance of the PWS according to these rules. Documentation also includes the name of the PWS, the name, address, and phone number of the supplier of water, the PWS size, and the name, address, and phone number of the PWS operator. This information may be presented in a will serve letter as required in Subsection 504.02. (7-1-24)

02. Will Serve Letter. If the proposed project is to be connected to an existing PWS, a letter from the purveyor must be submitted to the Department stating that the purveyor will be able to provide services to the proposed project and that purveyor has reviewed and accepted the proposed construction plans and specifications that

are subject to Department review and approval. The Department may require documentation supporting the ability of the purveyor to provide service to the new system without diminishing quality of service to existing customers, as described in Subsection 502.01.a and 502.01.b. This letter must be submitted prior to or concurrent with the submittal of plans and specifications as required in Subsection 504.03. (7-1-24)

03. Plans and Specifications Required. (7-1-24)

a. Prior to construction of new PWSs or material modifications of existing PWSs, the owner must submit plans and specifications to the Department for review and approval. Construction must commence as soon as practical after approval, and if construction is not completed within twelve (12) months of the Department's final approval, an extension or re-approval must be obtained from the Department. The Department may require re-submittal of all or part of the plans and specifications prior to issuing an extension or re-approving the plans and specifications. (7-1-24)

b. Plans and specifications for simple water main extensions do not require pre-construction approval by the Department when such extensions will be owned and operated by a city, county, quasi-municipal corporation or regulated public utility, provided that such plans and specifications are reviewed and approved by a QLPE who was not involved in the preparation of the plans and specifications being reviewed to verify compliance with the requirements of these rules prior to initiation of construction. Any plans and specifications approved pursuant to Subsection 504.03.b. must be transmitted to the Department at the time construction is authorized and will be marked or stamped as "Approved for Construction." Along with the plans and specifications, the transmittal must include the items listed in Subsections 504.03.b.i. through 504.03.b.vii. The plans and specifications must bear the imprint of an Idaho licensed professional engineer's seal that is both signed and dated by the engineer, and the approval or transmittal letter must be sealed, signed, and dated by the QLPE that is approving the plans and specifications. (7-1-24)

i. A statement that the author of the transmittal letter is the QLPE representing the city, county, quasi-municipal corporation or regulated public entity. (7-1-24)

ii. A statement that the extension project complies with the current facility plan or PER, or a statement that the PWS has adequate capacity. Please see Subsection 502.01.b. for further information. (7-1-24)

iii. A statement from the city, county, quasi-municipal corporation or regulated public entity or its authorized agent that the PWS purveyor will serve the project. (7-1-24)

iv. A statement from the city, county, quasi-municipal corporation or regulated public entity or its authorized agent that the PWS purveyor will own and operate the project after construction is complete. (7-1-24)

v. A statement by the QLPE that the plans and specifications are approved for construction. (7-1-24)

vi. A statement by the QLPE that the plans and specifications comply with the facility standards within these rules. (7-1-24)

vii. A statement recommending whether sanitary restrictions can be released or will remain in force. (7-1-24)

c. Subsections 504.03.c.i. through 504.03.c.vi. outline the projects which QLPEs may approve and which QLPEs may not approve. (7-1-24)

i. A QLPE may approve plans and specifications for simple water main extensions that are able to connect to an existing PWS owned by a city, county, quasi-municipal corporation, or regulated public utility at the time the extension is approved for construction by the QLPE. (7-1-24)

ii. A QLPE may approve plans for simple water main extensions which will connect to an existing PWS, but are unable to connect to the PWS at the time the extension is approved for construction by the QLPE, provided sanitary restrictions remain in force for the proposed extension. (7-1-24)

iii. A QLPE may not approve plans and specifications which include mechanical systems such as booster stations. (7-1-24)

iv. A QLPE may not approve plans and specifications for projects which the QLPE was the design engineer or otherwise involved in the design. (7-1-24)

v. A QLPE employed by a city, county, quasi-municipal corporation, or regulated public utility may approve a design that was prepared by a subordinate engineer or an engineer from a separate design group within the city, county, quasi-municipal corporation, or regulated public utility. (7-1-24)

vi. A QLPE who is not employed by a city, county, quasi-municipal corporation, or regulated public utility, but is retained by a city, county, quasi-municipal corporation, or regulated public utility for the purpose of plan and specification review may not approve projects designed by the company with which the QLPE is employed. (7-1-24)

d. At the discretion of the city, county, quasi-municipal corporation or regulated public utility, the plans addressed by Subsection 504.03.b. may be referred to the Department for review and approval prior to initiation of construction. (7-1-24)

04. Review Criteria. The Department will review plans and specifications to determine compliance with these rules and engineering standards of care. If the plans and specifications comply with these rules and engineering standards of care, the Department will not substitute its judgment for that of the owner's design engineer concerning the manner of compliance with the rule. (7-1-24)

05. Review Schedule. The Department will review plans and specifications in accordance with timelines set forth in Section 39-118, Idaho Code. (7-1-24)

06. Engineer's Seal Required. Plans and specifications submitted to the Department must bear the imprint of an Idaho licensed professional engineer's seal; except that the Department will accept the seal of an Idaho licensed professional geologist on the following: (7-1-24)

a. Well source, spring source, or infiltration gallery site evaluation reports, as specified in Subsections 510 and 514. (7-1-24)

b. Plans and specifications for well construction and results of field inspection and testing, as specified in Section 510. (7-1-24)

07. Contents of Plans and Specifications. Plans and specifications must, where pertinent, provide the following: (7-1-24)

a. General layout, including: (7-1-24)

i. Suitable title. (7-1-24)

ii. Name of municipality or other entity or person responsible for the water supply. (7-1-24)

iii. Area or institution to be served. (7-1-24)

iv. Scale of drawings. (7-1-24)

v. North arrow. (7-1-24)

vi. Datum used. (7-1-24)

vii. General boundaries of municipality or area to be served. (7-1-24)

viii. Date, name, and address of the designing engineer. (7-1-24)

ix. Legible prints suitable for reproduction. (7-1-24)

x. Location and size of existing water mains, if applicable. (7-1-24)

xi. For PWSs undergoing material modification, location and nature of existing water works structures and appurtenances affecting the proposed improvements. (7-1-24)

b. Detailed plans, including: (7-1-24)

i. Stream crossings, providing profiles with elevations of the stream bed and the estimated normal and extreme high and, where appropriate, low water levels. (7-1-24)

ii. Location and size of the property to be used for the development with respect to known references such as roads, streams, section lines, or streets. (7-1-24)

iii. Topography and arrangement of present or planned wells or structures. (7-1-24)

iv. Elevations of the one hundred (100) year flood level in relation to the floor of structures, upper termination of protective casings, and grade surrounding facilities. (7-1-24)

v. Details of well construction, including diameter and depth of drill holes, casing and liner diameters and depths, grouting depths, elevations, and designation of geological formations, water levels and other data as specified in Section 510. (7-1-24)

vi. Location of all known existing and potential sources of pollution within five hundred (500) feet of water sources or underground treated storage facilities. (7-1-24)

vii. Size, length, and materials of proposed water mains. (7-1-24)

viii. Location of existing or proposed streets; water sources, ponds, lakes, and drains; storm sanitary, combined and house sewers; septic tanks, disposal fields and cesspools. (7-1-24)

ix. Schematic flow diagrams and hydraulic profiles showing the flow through various plant units. (7-1-24)

x. Piping in sufficient detail to show flow through the plant including waste lines. (7-1-24)

xi. Locations of all chemical storage areas, chemical feeding equipment, and points of chemical application. (7-1-24)

xii. All appurtenances, specific structures, equipment, water treatment plant waste disposal units and points of discharge having any relationship to the plans for water mains or water works structures. (7-1-24)

xiii. Locations of sanitary or other facilities, such as lavatories, showers, toilets, and lockers, when applicable or required by the Department. (7-1-24)

xiv. Locations, dimensions, and elevations of all proposed plant facilities. (7-1-24)

xv. Locations of all sampling taps owned by the PWS. (7-1-24)

xvi. Adequate description of any significant features not otherwise covered by the specifications that may impact public safety or welfare. (7-1-24)

c. Complete, detailed technical specifications must be supplied for the proposed project, including: (7-1-24)

i. A program for keeping existing water works facilities in operation during construction of additional facilities so as to minimize interruption of service. (7-1-24)

ii. Laboratory facilities and equipment. (7-1-24)

iii. Description of chemical feeding equipment. (7-1-24)

iv. Procedures for flushing, disinfection and testing, as needed, prior to placing the project in service. All wells, pipes, tanks, and equipment which can convey or store potable water must be disinfected in accordance with AWWA Standards, incorporated into these rules at Subsection 002.01. Plans or specifications must outline the procedure and include the disinfectant dosage, contact time, and method of testing the results of this procedure. (7-1-24)

v. Materials or proprietary equipment for sanitary or other facilities, including any necessary backflow or back-siphonage protection. (7-1-24)

d. Complete design criteria, as set forth in these rules. (7-1-24)

e. The Department may require additional information which is not part of the construction drawings, including, but not limited to, head loss calculations, proprietary technical data, and copies of contracts. (7-1-24)

08. Notification of Material Deviations. As set forth in Subsection 504.03, during construction or modification, the Department must be notified of any material deviation from the approved plans. The reviewing authority's prior written approval is required before any material deviation is allowed. (7-1-24)

09. Record Plans and Specifications Required. (7-1-24)

a. Must be submitted to the Department by the design engineer as specified in Section 39-118(3), Idaho Code. (7-1-24)

b. Record plans and specifications, or a statement submitted in lieu of record plans and specifications, must bear the imprint of an Idaho licensed professional engineer's seal that is both signed and dated by the engineer. (7-1-24)

c. The Department will accept the seal and signature of an Idaho licensed professional geologist on record plans and specifications, or a statement bearing the seal and signature of an Idaho licensed professional geologist in lieu of record plans and specifications, for record plans and specifications for well construction and results of field inspection and testing, as specified in Section 510. (7-1-24)

10. Exception. The Department may waive the plan and specification approval required of any facility or category of facilities when doing so will have no significant impact on public health or the environment. (7-1-24)

11. Department Approval On-Site During Construction. It is the responsibility of the owner to maintain one (1) copy of the approved plans and specifications and the approval letter from the reviewing authority on-site during construction at all times. (7-1-24)

12. Construction. Except as provided in Subsection 504.03.b., no construction will commence until all of the necessary approvals have been received from the Department. The owner must provide for the inspection of the construction of a PWS facility by an Idaho licensed professional engineer to the extent required to confirm material compliance with the approved plans and to produce accurate record documents as required by Subsection 504.09. (7-1-24)

505. -- 509. (RESERVED)

510. SITING AND CONSTRUCTION OF WELLS.
Written approval by the Department is required before water from any new or reconstructed well may be served to the public. Any supplier of water for a PWS served by one (1) or more wells must ensure that the following requirements

are met: (7-1-24)

01. Site Approval. Prior to drilling, the site of a PWS well must be approved in writing by the Department. A well site evaluation report must be submitted prior to or concurrent with the PER for the well. The well site evaluation must take into account the proposed size, depth, and location of the well. The evaluation may include, but is not limited to the following types of information: (7-1-24)

a. An evaluation of the quality of anticipated groundwater. (7-1-24)

b. Identification of the known aquifers and the extent of each aquifer, based on the stratigraphy, sedimentation, and geologic structure beneath the proposed well site. (7-1-24)

c. An estimate of hydrologic and geologic properties of each aquifer and confining layers. (7-1-24)

d. Prediction of the sources of water to be extracted by the well and the drawdown of existing wells, springs, and surface water bodies that may be caused by pumping the proposed well. This prediction may be based on analytical or numerical models as determined by the Idaho Department of Water Resources permitting process. (7-1-24)

e. Demonstration of the extent of the capture zone of the well, based on the well's design discharge and on aquifer geology, using estimates of hydraulic conductivity and storativity. (7-1-24)

f. Description of potential sources of contamination including, but not limited to, sewers and sewage treatment/disposal facilities, highways, railroads, landfills, outcroppings of consolidated water-bearing formations, chemical facilities, waste disposal wells, and agricultural uses within five hundred (500) feet of the well site.(7-1-24)

02. Location. In vulnerable settings, the Department may require engineering or hydrologic analysis to determine if the required setback distance is adequate to prevent contamination. Each well must be staked by the design engineer or licensed professional geologist prior to drilling and meet the following minimum distances:

Minimum Distances from a Public Water System Well	
Frost free hydrant	5 feet
Property line	50 feet
Gravity wastewater line	50 feet
Any potential source of contamination	50 feet
Pressure wastewater line	100 feet
Class A Municipal Reclaimed Wastewater Pressure distribution line	50 feet
Individual home septic tank	100 feet
Individual home disposal field	100 feet
Individual home seepage pit	100 feet
Privies	100 feet
Livestock	50 feet
Drainfield - standard subsurface disposal module	100 feet
Absorption module - large soil absorption system	150 - 300 feet, see IDAPA 58.01.03

Minimum Distances from a Public Water System Well	
Canals, streams, ditches, lakes, ponds and tanks used to store non-potable substances	50 feet
Storm water facilities disposing storm water originating off the well lot	50 feet
Municipal or industrial wastewater treatment plant	500 feet
Reclamation and reuse of municipal and industrial wastewater sites	See IDAPA 58.01.17
Biosolids application site	1,000 feet

(7-1-24)

03. Construction Standards. In addition to meeting the requirements of these rules, all wells must be constructed in accordance with IDAPA 37.03.09, "Well Construction Standards Rules," and related rules and laws administered by the Idaho Department of Water Resources. All wells must comply with the drilling permit requirements of Section 42-235, Idaho Code. (7-1-24)

a. Casing for steel pipe must meet the following requirements:

STEEL PIPE					
	DIAMETER (inches)		THICKNESS (inches)	WEIGHT PER FOOT (pounds)	
SIZE	External	Internal		Plain Ends (calculated)	With Threads and Couplings (nominal)
6 (id)	6.625	6.065	0.280	18.97	19.18
8	8.625	7.981	0.322	28.55	29.35
10	10.750	10.020	0.365	40.48	41.85
12	12.750	12.000	0.375	49.56	51.15
14 (od)	14.000	13.250	0.375	54.57	57.00
16	16.000	15.250	0.375	62.58	
18	18.000	17.250	0.375	70.59	
20	20.000	19.250	0.500	78.60	
22	22.000	21.000	0.500	114.81	
24	24.000	23.000	0.500	125.49	
26	26.000	25.000	0.500	136.17	
28	28.000	27.000	0.500	146.85	
30	30.000	29.000	0.500	157.53	
32	32.000	31.000	0.500	168.21	
34	34.000	33.000	0.500	178.89	

STEEL PIPE					
	DIAMETER (inches)		THICKNESS (inches)	WEIGHT PER FOOT (pounds)	
SIZE	External	Internal		Plain Ends (calculated)	With Threads and Couplings (nominal)
36	36.000	35.000	0.500	189.57	

* id = inside diameter
* od = outside diameter (7-1-24)

b. The use of plastic well casing for PWS wells may be considered on a case-by-case basis. Plastic casing must meet or exceed ASTM Standard F480, current edition, and ANSI/NSF Standard 61. Plastic casing must also meet the following requirements: (7-1-24)

i. Have a minimum wall thickness equivalent to standard dimension ratio 21. However, diameters of 8 inches or greater or deep wells may require greater thickness to meet collapse strength requirements; (7-1-24)

ii. Must not be used at sites where permeation by hydrocarbons or degradation may occur; (7-1-24)

iii. Must be assembled using coupling or solvent welded joints. All coupling and solvents must meet ANSI/NSF Standard 14, ASTM F480, or similar requirements; and (7-1-24)

iv. Must not be driven. (7-1-24)

c. PWS wells must have no less than fifty-eight (58) feet of annular seal of not less than one and one-half (1 ½) inches thickness as measured from land surface to the bottom of the seal unless: (7-1-24)

i. It can be demonstrated to the Department's satisfaction that there is a confining layer at lesser depth that is capable of preventing unwanted water from reaching the intake zone of the well; or (7-1-24)

ii. The best and most practical aquifer at a particular site is less than fifty-eight (58) feet deep; or; (7-1-24)

iii. The Department specifies a different annular seal depth based on local hydrologic conditions. (7-1-24)

d. Specifications must include allowable tolerances for plumbness and alignment in accordance with AWWA Standards, incorporated by reference into these rules at Subsection 002.01, or as otherwise approved by the Department. If the well fails to meet these requirements, it may be accepted by the Department if it does not interfere with the installation or operation of the pump or uniform placement of grout. (7-1-24)

e. Geological data must be collected at each pronounced change in formation and shall be recorded in the driller's log. Supplemental data includes, but is not limited to, accurate geographical location such as latitude and longitude or GIS coordinates, and other information on accurate records of drillhole diameters and depths, assembled order of size and length of casing, screens and liners, grouting depths, formations penetrated, and water levels. (7-1-24)

f. The owner of each well must retain all records pertaining to each well until the well has been properly abandoned. (7-1-24)

g. Wells with intake screens must: (7-1-24)

i. Be constructed of materials resistant to damage by chemical action of groundwater or cleaning operations. (7-1-24)

ii. Have openings based on sieve analysis of formation, of gravel pack materials, or both. (7-1-24)

iii. Have sufficient length and diameter to provide adequate specific capacity and aperture entrance velocity not to exceed point one (0.1) feet per second, or as otherwise approved by the Department. (7-1-24)

iv. Be installed so that the pumping water level remains above the screen under all operating conditions, or otherwise approved by the Department. Where a bottom plate or sump is utilized, it must be of the same material as the screen, or as otherwise approved by the Department. Where a washdown assembly, tailpipe or sump is used below the screen, it may be made of a different material than the screen. (7-1-24)

h. Permanent well casing must be surrounded by a minimum of one and one-half (1 ½) inches of grout to the depth required by Subsection 510.03.b., or by the Rules of the Idaho Department of Water Resources, whichever is greater. All casing identified in plans and specifications as temporary casing must be removed prior to well completion. (7-1-24)

i. Neat cement grout consisting of cement that conforms to AWWA Standard A-100, and water, with not more than six (6) gallons of water per ninety-four (94) pounds of cement, must be used for one and one-half (1 ½) inch annular space. Additives may be used to increase fluidity and are subject to approval by the Department and the Idaho Department of Water Resources on a case-by-case basis. (7-1-24)

ii. Bentonite grout must have a solids content not less than twenty-five (25) percent by weight when mixed with water and be specifically manufactured for use in sealing of well casing. Bentonite grout shall not contain weighting agents to increase solids content. Bentonite grout must not be used above the water table. All bentonite grout must be installed by positive displacement from the bottom up through a tremmie or float shoe. (7-1-24)

iii. Where a dry annular space is to be sealed, a minimum of two (2) inches on all sides of the casing will be required to place bentonite to depths not greater than one hundred (100) feet, using #8 mesh granular bentonite. All dry pour granular bentonite must be tagged at appropriate intervals to verify placement. If a bridge occurs, a tremmie pipe must be washed or jetted through the bridge to allow for pumping of grout. Bentonite chips must be of sufficient size to accommodate proper placement for the existing subsurface conditions. (7-1-24)

iv. Dry granular bentonite used in wells where a dry annular space is to be sealed with depths greater than one hundred (100) feet will require an annulus of at least three (3) inches on all sides of the casing, or as approved by the Department and the Idaho Department of Water Resources. If a bridge occurs, a tremmie pipe must be washed or jetted through the bridge to allow for pumping of grout. Bentonite chips must be of sufficient size to accommodate proper placement for the existing subsurface conditions. (7-1-24)

v. All chip bentonite seals installed through water must only be used in annular spaces of at least four (4) inches on all sides of the casing. If a bridge occurs, a tremmie pipe must be washed or jetted through the bridge to allow for pumping of grout. Bentonite chips must be of sufficient size to accommodate proper placement for the existing subsurface conditions. Chip bentonite seals installed through water must be: (7-1-24)

(1) Installed in accordance with manufacturer's specifications; or (7-1-24)

(2) Installed by pouring chips over a one-quarter (1/4) inch mesh screen for three-eighths (3/8) inch chips to remove fines to prevent bridging at the water table; or (7-1-24)

(3) Installed using coated pellets to retard hydration if approved by the Department and the Idaho Department of Water Resources. (7-1-24)

vi. Concrete may be approved on a case-by-case basis by the Department and the Idaho Department of Water Resources. Upon such approval, the approved method must use a six (6) sack minus one-half (1/2) inch Portland cement concrete and must be installed by positive displacement from the bottom up through a tremmie pipe.

(7-1-24)

04. Disinfection. All tools, bits, pipe, and other materials to be inserted in the borehole must be cleaned and disinfected in accordance with the Well Construction Standards and permitting requirements of the Idaho Department of Water Resources. This applies to new well construction and repair of existing wells. (7-1-24)

05. Well Completion Report. Upon completion of a well, and prior to its use as a drinking water source, the following information and data must be submitted by the PWS to the Department. The well completion report must be submitted to the Department prior to or concurrent with the submittal of the preliminary engineering report for well house construction/modification. The well completion report must bear the imprint of an Idaho licensed professional engineer's or an Idaho licensed professional geologist's seal that is both signed and dated by the engineer or geologist: (7-1-24)

a. A copy of all well logs; (7-1-24)

b. Results of test pumping, as specified in Subsection 510.06; (7-1-24)

c. As constructed plans showing at least the following: (7-1-24)

i. Annular seal, including depth and sealant material used and method of application; (7-1-24)

ii. Casing perforations, results of sieve analysis used in designing screens installed in sand or gravel aquifers, gravel packs; and (7-1-24)

iii. Recommended pump location. (7-1-24)

d. Other information as may be specified by the Department. (7-1-24)

e. Sampling results for iron, manganese, corrosivity, and other secondary contaminants specified by the Department. Other monitoring requirements are specified in Subsections 510.05.e.i. through 510.05.e.iii. (7-1-24)

i. Community systems must submit results of analysis for total coliform, inorganic chemical contaminants, organic chemicals, and radionuclide contaminants set forth in Subsections 050.01, 050.02, 050.05, 100.01, 100.03, 100.04, 100.05, and 100.06, unless analysis is waived pursuant to Subsection 100.07. (7-1-24)

ii. Non-transient Non-community systems must submit results of analysis for total coliform and inorganic and organic chemical contaminants listed in Subsections 050.01, 050.02, 100.01, 100.03, 100.04, unless analysis is waived pursuant to Subsection 100.07. (7-1-24)

iii. Transient Non-community systems must submit results of a total coliform, nitrite, and nitrate analysis listed in Subsections 050.01, 100.01 and 100.03. (7-1-24)

06. Test Pumping. Upon completion of a groundwater source, test pumping must be conducted in accordance with the following procedures to meet the specified requirements: (7-1-24)

a. The well must be test pumped at the desired yield (design capacity) of the well for at least twenty-four (24) consecutive hours after the drawdown trend has stabilized, as determined by the supervising engineer or geologist. Alternatively, the well may be pumped at a rate of one hundred fifty percent (150%) of the desired yield for at least six (6) continuous hours after the drawdown trend has stabilized, as determined by the supervising engineer or geologist. The field pumping equipment must be capable of maintaining a constant rate of discharge during the test. Discharge water must be piped an adequate distance to prevent recharge of the well during the test. If the well fails the test protocol, design of the PWS must be re-evaluated and submitted to the Department for approval. (7-1-24)

b. Upon completion of well development, the well must be tested for sand production. Fifteen (15) minutes after the start of the test pumping (at or above the design production rate), the sand content of a new well may not be more than five (5) parts per million. Sand production must be measured by a centrifugal sand sampler or other means acceptable to the Department. If sand production exceeds five (5) ppm, the well must be screened gravel

packed, or re-developed. (7-1-24)

c. The following data must be provided: (7-1-24)

i. Static water level and stabilized drawdown; (7-1-24)

ii. Well yield in gpm and duration of the pump test, including a discussion of any discrepancy between the desired yield and the yield observed during the test; (7-1-24)

iii. Water level in the well recorded at regular intervals during pumping; (7-1-24)

iv. Profile of water level recovery from the pumping level projected to the original static water level. (7-1-24)

v. Depth at which the test pump was positioned in the well; (7-1-24)

vi. Test pump capacity and head characteristics; (7-1-24)

vii. Sand production data. (7-1-24)

viii. Results of analysis based on the drawdown and recovery test pertaining to aquifer properties, long term yield, and boundary conditions affecting drawdown. (7-1-24)

d. The Department may allow the use of other pump test protocols that are generally accepted by engineering firms with specialized experience in well construction, by the well drilling industry, or as described in national standards (such as ANSI/AWWA A100), as long as the minimum data specified in Subsection 510.06.c. are provided. The Department welcomes more extensive data about the well, such as step-drawdown evaluations used in determining well capacity for test pumping purposes, zone of influence calculations, and any other information that may be of use in source protection activities or in routine PWS operations. (7-1-24)

e. Where aquifer yield, sustainability, or water quality are questionable, the Department, at its discretion, may require additional site-specific investigations that include test well construction, long-term pumping tests, or other means to demonstrate that the aquifer yield is sufficient to meet the long-term water requirements of the project. (7-1-24)

07. Conversion of Non-Public Water System Wells for Public Water System Use. Any existing well constructed for use other than as a PWS source may be considered for use as a PWS source on a case-by-case basis. The owner of such a well must demonstrate to the Department's satisfaction that the well site conforms to the requirements of Subsections 510.01, 510.02, and Section 512, the well is constructed in a manner that is protective of public health, and that both the quantity and quality of water produced by the well meet PWS standards set forth in these rules. (7-1-24)

08. Monitoring Wells. If monitoring (observation) wells are used and are intended to remain in service after completion of the water supply well, the observation wells must be constructed in accordance with the requirements for permanent wells and be protected at the upper terminal to preclude entrance of foreign materials in accordance with the "Well Construction Standard Rules," IDAPA 37.03.09. (7-1-24)

09. Well Abandonment. Well decommissioning (abandonment) must be performed in accordance with Department of Water Resources requirements set forth in IDAPA 37.03.09, "Well Construction Standard Rules. (7-1-24)

511. WELL PUMPS, DISCHARGE PIPING, AND APPURTENANCES.

01. Sample Tap Required. A sample tap suitable for collecting bacteriological samples must be provided as required by Subsection 501.09 on the discharge piping from every well at a point where pressure is maintained but prior to any treatment. In addition, threaded hose bib taps may also be used for collecting samples, other than bacteriological samples, if equipped with an appropriate backflow prevention device as may be necessary

to protect the PWS from contamination. (7-1-24)

02. Discharge Piping. The discharge line must be equipped with the necessary valves and appurtenances to allow a well to be pumped to waste at the scour velocity of the well column via an approved air gap of no less than two (2) pipe diameters, unless otherwise approved by the Department, through an approved non-corrodible screen or equivalent at a location prior to the first service connection, and must meet the following requirements: (7-1-24)

a. Be designed to minimize friction loss. (7-1-24)

b. Have control valves and appurtenances located above the pump house floor when an above-ground discharge is provided. (7-1-24)

c. Be protected against contamination. (7-1-24)

d. Vertical turbine pumps must be equipped with an air release-vacuum relief valve, or equivalent, located upstream from the check valve, with exhaust/relief piping terminating in a down-turned position at least eighteen (18) inches above the floor and covered with a twenty-four (24) mesh corrosion resistant screen. (7-1-24)

e. Have all exposed piping, valves and appurtenances protected against physical damage and freezing. (7-1-24)

f. Be properly anchored to prevent movement, and protected against surge or water hammer. (7-1-24)

g. The pump to waste discharge piping must be valved to ensure that other PWS components that may be negatively affected by the quality of the discharged water are not pressurized by the water that is being pumped to waste. (7-1-24)

h. Where two (2) or more wells are connected to a common well house, the discharge piping must be designed to ensure that each well can be pumped to waste independently without affecting the ability of the other well or wells to pressurize the PWS. (7-1-24)

03. Pressure Gauge Required. A pressure gauge must be provided on discharge piping. (7-1-24)

04. Flow Meter and Check Valve. Unless otherwise approved by the Department, an instantaneous and totalizing flow meter equipped with nonvolatile memory must be installed on the discharge line of each well in accordance with the manufacturer's specifications. Meters installed on PWSs with variable frequency drives must be capable of accurately reading the full range of flow rates. An accessible check valve, which is not located in the pump column, must be installed in the discharge line of each well between the pump and the shut-off valve. Additional check valves must be located in the pump column as necessary. (7-1-24)

05. Well Vent. All wells must be vented, unless it can be demonstrated that the drawdown under maximum pumping conditions will not exceed ten (10) feet. (7-1-24)

a. For wells not in a pump house, the open end of the vent must be screened with a twenty-four (24) mesh or similar non-corrodible screen and terminated downward at least eighteen (18) inches above the final ground surface. (7-1-24)

b. If the well is in a pump house, the open end of the vent must be screened with a twenty-four (24) mesh or similar non-corrodible screen and must terminate downward at least twelve (12) inches above the pump house floor. (7-1-24)

c. Artesian wells equipped with pumps may need venting or an air valve as determined by the Department. (7-1-24)

06. Casings and Sanitary Well Caps. The following requirements apply to well casings and sanitary caps: (7-1-24)

a. Casings must extend at least eighteen (18) inches above the final ground surface. If the well is located within a pump house, casings must extend least twelve (12) inches above the pump house floor. For a well located in an area subject to flooding, the Department may require an extension of the casing above the one hundred (100) year or highest known flood level, whichever is higher. (7-1-24)

b. Wells must be cased and provided with an approved cap in such a manner that contamination cannot enter the well. (7-1-24)

c. For community PWSs, a permanent means for measuring water level within the casing must be provided. For other PWSs, a temporary means to measure water levels may be made available. All equipment required for conducting water level measurements must be purchased and made available to the PWS operator at the time the well is put into service. Where pneumatic or electronic water level measuring equipment is used, it must be made using corrosion resistant materials attached firmly to the drop pipe or pump column and in such a manner as to prevent entrance of foreign materials. (7-1-24)

07. Well Houses. For regulatory purposes, a well house is considered a pump house as defined in Section 003. Well houses must meet the requirements for pump houses as set forth in Section 541. All above ground discharge piping must be contained in a well house or otherwise protected from freezing. (7-1-24)

08. Pitless Adapters and Units. (7-1-24)

a. Marked approved by the National Sanitation Foundation or Pitless Adapter Division of the Water Systems Council. (7-1-24)

b. Designed, constructed and installed to be watertight including the cap, cover, casing extension and other attachments. (7-1-24)

c. Field tested for leaks before being put into service. The procedure outlined in "Manual of Individual and Non-Public Water Supply Systems," referenced in Subsection 002.02, or other procedure approved by the Department Must be followed. (7-1-24)

d. If the discharge line is two (2) inches or smaller, be provided with a swing joint outside the pitless adapter unit to reduce strain, deformation, and possible leakage of the pitless seal caused by settling soils in the trench. The orientation of swing joints must be such that any settling that occurs will tighten the threads. The hole in the casing must be cut with a saw rather than a torch with an opening large enough to allow seating of gaskets. (7-1-24)

e. Provided with a contamination-proof entrance connection for electrical cable. (7-1-24)

f. Pitless adapters: (7-1-24)

i. Threaded adapters must be installed by drilling a hole not more than one quarter (1/4) inch larger than the outer diameter of the pitless shank. No torch-cut holes will be accepted. The orientation of swing joints must be such that any settling that occurs will tighten the threads. (7-1-24)

ii. The only field welding permitted will be that needed to connect a pitless adapter to the casing. (7-1-24)

g. Pitless units must be: (7-1-24)

i. Shop-fabricated from the point of connection with the well casing to the unit cap or cover. (7-1-24)

ii. Constructed of materials and weight at least equivalent to and compatible with the well casing. (7-1-24)

iii. Threaded or welded to the well casing. Threaded units must be installed by drilling a hole not more

than one quarter (¼) inch larger than the outer diameter of the pitless shank. No torch-cut holes will be accepted. If the connection to the casing is by field weld, the shop-assembled unit must be designed specifically for field welding to the casing. (7-1-24)

iv. Terminate at least eighteen (18) inches above final ground elevation. For a well located in an area subject to flooding, the Department may require an extension of the casing above the one hundred (100) year or highest known flood level, whichever is higher. (7-1-24)

v. Provided with access to disinfect the well. (7-1-24)

vi. Field connected to the lateral discharge from the pitless unit of threaded, flanged, or mechanical joint connection. (7-1-24)

h. After installation of a pitless adapter or unit, the disturbed well seal must be repaired or replaced to meet original seal specifications unless otherwise approved by the Department. The engineering proposal must ensure that the material surrounding the final seal is moisture controlled and compacted such that it equals or exceeds the characteristics of the native soil prior to being disturbed. (7-1-24)

09. Wells Not Allowed in Pits. Wells must not be located in pits. Exceptions to this requirement will be granted by the Department if the well was constructed prior to November 5, 1964, and the installation is constructed or reconstructed in accordance with the requirements of the Department to provide watertight construction of pit walls and floors, floor drains and acceptable pit covers. (7-1-24)

10. Discharge Pumps. Discharge pumps are subject to the following requirements: (7-1-24)

a. Line shaft pumps must: (7-1-24)

i. Have the casing firmly connected to the pump structure or have the casing inserted into a recess extending at least one-half (1/2) inch into the pump base. (7-1-24)

ii. Have the pump foundation and base designed to prevent water from coming into contact with the joint. (7-1-24)

iii. Use lubricants that meet ANSI/NSF Standard 61. (7-1-24)

b. Submersible pumps: (7-1-24)

i. The top of the casing must be effectively sealed against the entrance of water under all conditions of vibration or movement of conductors or cables. (7-1-24)

ii. The electrical cable must be firmly attached to the drop pipe at twenty-one (21) foot intervals or less, or at each coupling or joint. (7-1-24)

512. WELL LOT.

A well lot must be provided for wells constructed after November 1, 1977. The well lot must be owned in fee simple by the supplier of water or controlled by lease or easement with a term of not less than the useful life of the well and be large enough to provide a minimum distance of fifty (50) feet between the well and the nearest property line. (7-1-24)

01. Use of Chemicals. No pesticides, herbicides, or fertilizers may be applied to a well lot without prior approval from the Department. (7-1-24)

02. Storage of Hazardous Materials. No pesticides, herbicides, fertilizers, portable containers of petroleum products, or other materials known to be toxic or hazardous may be stored on a well lot, except that: (7-1-24)

a. An internal combustion engine to drive either a generator for emergency standby power or a pump

to provide fire flows, and an associated fuel tank, may be placed on the well lot. (7-1-24)

b. A propane or natural gas powered generator is preferable to reduce risk of fuel spillage. (7-1-24)

c. If a diesel or gasoline-fueled engine is used, the fuel tank and connecting piping must be approved by the Underwriter's Laboratory, Inc., double-walled, meet the requirements of the local fire jurisdiction, and include both spill prevention and overfill protection features. The tank must be above ground and may be contained within the structural base of the generator unit. A spill containment structure must surround all fuel tanks and be sized to contain at least one hundred ten percent (110%) of the fuel tank volume. The Department may require additional containment capacity in settings where accumulation of snow, ice, or rain water may be expected to diminish the usable capacity of the structure. A licensed PWS operator must be present during filling of the tank following a period of usage, or during periodic extraction and replacement of outdated fuel. (7-1-24)

d. If the internal combustion engine is located within the pump house, the floor of the pump house must be constructed so as to contain all petroleum drips and spills so that they will not be able to reach the floor drain(s). Engine exhaust must be directly discharged outside the pump house. (7-1-24)

03. Parking Lots and Vehicle Storage. Public parking or vehicle storage is not allowed on the well lot, except that operation/maintenance vehicles may be temporarily parked on the well lot during the normal course of business. (7-1-24)

513. NUMBER OF GROUNDWATER SOURCES REQUIRED – EXISTING SYSTEMS.

Existing community PWSs served by groundwater and intending to serve more than twenty-five (25) connections or equivalent dwelling units are subject to the following requirements for the number of groundwater sources required. (7-1-24)

01. Existing System with All Sources Constructed Prior to July 1, 1985. A community PWS served by groundwater and with all existing sources constructed prior to July 1, 1985 will be required to comply with Subsection 501.17 upon substantially modifying the PWS after July 2002. (7-1-24)

02. Existing System with Any Sources Constructed After July 1, 1985. A community PWS served by groundwater with any sources constructed after July 1, 1985 is required to comply with Subsection 501.17 when a material modification is made to the PWS after May 8, 2009, which triggers the PWS to be classified as substantially modified. (7-1-24)

514. SPRING SOURCES.

Written approval by the Department is required before water from any new or reconstructed spring source may be served to the public. For new spring sources, the Department will require a site evaluation report containing applicable required information listed in Subsection 510.01. This information includes, but is not limited to, the following: an evaluation of the potability and quality of anticipated spring water; an estimate of hydrologic and geologic properties of the aquifer; and a description of potential sources of contamination within five hundred (500) feet of the spring. Any supplier of water for a PWS served by one (1) or more springs must ensure that the following requirements are met: (7-1-24)

01. Protection of the Spring. Springs must be housed in a permanent structure and protected from contamination including the entry of surface water, animals, and dust. (7-1-24)

02. Spring Box or Combined Spring Box/Finished Water Storage Design. To facilitate efficient design and review of spring box or combined spring box/finished water storage designs, these site-specific designs must be coordinated in advance with the Department. Specific issues to be addressed are: (7-1-24)

a. The inlet must be screened as determined by the Department and located above the floor of the collection chamber. (7-1-24)

b. Unless otherwise approved by the Department, the spring box or combined spring box/finished water storage tank must meet the applicable design requirements of Section 544 - Facility and Design Standards: General Design of Finished Water Storage. (7-1-24)

03. Sample Tap. A sample tap suitable for collecting bacteriological samples must be provided as required by Subsection 501.09.In addition, threaded hose bib taps may also be used for collecting samples, other than bacteriological samples, if equipped with an appropriate backflow prevention device as may be necessary to protect the PWS from contamination. (7-1-24)

04. Flow Measurement. A flow meter or other flow measuring device must be provided. (7-1-24)

05. Protected Area. The entire area within a one hundred (100) foot radius of the spring box and collection piping must be owned by the supplier of water or controlled by a long term lease, secured to prevent trespass or livestock and void of buildings, dwellings and any potential sources of contamination. Surface water must be diverted from this area. (7-1-24)

515. SURFACE SOURCES AND GROUNDWATER SOURCES UNDER THE DIRECT INFLUENCE OF SURFACE WATER.

Written approval by the Department is required before water from any new surface source or groundwater source that is under the direct influence of surface water may be served to the public. Infiltration collection lines or galleries are considered groundwater under the direct influence of surface water unless demonstrated otherwise. Infiltration galleries that are not directly influenced by surface water must meet the requirements of Section 514. The area around infiltration lines must be under the control of the water purveyor for a distance acceptable to the Department. (7-1-24)

01. Intake Structures. Design of intake structures must provide for: (7-1-24)

a. Withdrawal of water from more than one (1) level if quality varies with depth. (7-1-24)

b. Separate facilities for release of less desirable water held in storage. (7-1-24)

c. Where frazil ice may be a problem, holding the velocity of flow into the intake structure to a minimum, generally not to exceed point five (0.5) feet per second. Frazil ice is made up of randomly distributed ice crystals that are formed in flowing water that has cooled below thirty-two (32) degrees Fahrenheit and is prevented from forming into ice sheets by the movement of the water. (7-1-24)

d. Inspection manholes every one thousand (1000) feet for pipe sizes large enough to permit visual inspection. (7-1-24)

e. Cleaning the intake line as needed. (7-1-24)

f. Adequate protection against rupture by dragging anchors, ice, or other hazards. (7-1-24)

g. Ports located above the bottom of the stream, lake or impoundment, but at sufficient depth to be kept submerged at low water levels. (7-1-24)

h. Where shore wells are not provided, a diversion device capable of keeping large quantities of fish or debris from entering an intake structure. (7-1-24)

i. If necessary, provisions must be made in the intake structure to control the influx of nuisance aquatic organisms. Specific control methods must be approved by the Department. (7-1-24)

j. When buried surface water collectors are used, sufficient intake opening area must be provided to minimize inlet head loss. Particular attention must be given to the selection of backfill material in relation to the collector pipe slot size and gradation of the native material over the collector system. (7-1-24)

02. Raw Water Pumps. Raw water pumping wells must: (7-1-24)

a. Have motors and electrical controls located above grade (except for submersible pumps) and protected from flooding as required by the Department. (7-1-24)

b. Be accessible and designed to prevent flotation. (7-1-24)

c. Be equipped with removable or traveling screens before the pump suction well. (7-1-24)

d. Provide for introduction of chlorine or other chemicals in the raw water transmission main if necessary for quality control. (7-1-24)

e. Where practical, have intake valves and provisions for back flushing or cleaning by a mechanical device and testing for leaks. (7-1-24)

f. Have provisions for withstanding surges where necessary. (7-1-24)

03. Off-stream Raw Water Storage. An off-stream raw water storage reservoir is a facility into which water is pumped during periods of good quality and high stream flow for future release to treatment facilities. These off-stream raw water storage reservoirs must be constructed to assure that: (7-1-24)

a. Water quality is protected by controlling runoff into the reservoir. (7-1-24)

b. Dikes are structurally sound and protected against wave action and erosion. (7-1-24)

c. Intake structures and devices meet requirements of Subsection 515.01. (7-1-24)

d. Point of influent flow is separated from the point of withdrawal. (7-1-24)

e. Separate pipes are provided for influent to and effluent from the reservoir. (7-1-24)

04. Reservoirs. Impoundments and reservoirs must provide, where applicable: (7-1-24)

a. Removal of brush and trees to high water elevation. (7-1-24)

b. Protection from floods during construction. (7-1-24)

c. Wells which will be inundated by the reservoir must be abandoned in accordance with requirements of the Idaho Department of Water Resources. See Rules of the Idaho Department of Water Resources referenced in Subsection 002.02. (7-1-24)

516. -- 517. (RESERVED)

518. ADDITIONAL DESIGN CRITERIA FOR SURFACE SOURCES.
Performance criteria for surface water treatment facilities are set forth in Sections 300, 301, and 310. Surface water treatment systems must comply with applicable general design requirements in Section 503. In addition, the following design requirements apply specifically to surface water treatment facilities: (7-1-24)

01. Engineering Design Requirements. The PWS must ensure that filtration and disinfection facilities for surface water or groundwater under the direct influence of surface water are designed, constructed and operated in accordance with all applicable engineering practices designated by the Department. The design of the water treatment plant must consider the worst raw water quality conditions that are likely to occur during the life of the facility. (7-1-24)

02. Removal of Pathogens. Filtration facilities (excluding disinfection) must be designed, constructed and operated to achieve at least two (2) log removal of Giardia lamblia cysts, two (2) log removal of Cryptosporidium oocysts, and one (1) log removal of viruses, except as allowed under Subsection 518.09.b. (7-1-24)

03. Disinfection. Disinfection facilities must be designed, constructed and operated so as to achieve at least point five zero (0.50) log inactivation of Giardia lamblia cysts; and (7-1-24)

a. Two (2) log inactivation of viruses if using conventional and slow sand filtration technology; or (7-1-24)

b. Three (3) log inactivation of viruses if using direct and diatomaceous earth filtration technology; or (7-1-24)

c. Four (4) log inactivation of viruses if using alternate filtration technology. (7-1-24)

d. Four (4) log inactivation of viruses if filtration treatment is not used. (7-1-24)

04. Enhanced Disinfection. Higher levels of disinfection than specified under Subsection 518.03 may be required by the Department to provide adequate protection against Giardia lamblia and viruses. (7-1-24)

05. Filter to Waste. For plants constructed after December 31, 1992, each filter unit must be capable of filter to waste. For plants constructed prior to December 31, 1992, each filter unit must be capable of filter to waste unless the PWS demonstrates through continuous turbidity monitoring or other means acceptable to the Department that water quality is not adversely affected following filter backwashing, cleaning or media replacement. (7-1-24)

06. Continuous Turbidity Monitoring. For conventional, direct, membrane, and diatomaceous earth filtration technology, equipment must be provided to continuously measure the turbidity of each filter unit. (7-1-24)

07. Continuous Monitoring of Disinfectant. Equipment must be provided and operated for continuous measurement of disinfectant residual prior to entry to the distribution system, unless the PWS serves fewer than three thousand three hundred (3,300) people. (7-1-24)

08. Continuous Operation Required. Diatomaceous earth filtration facilities must include an alternate power source with automatic startup and alarm, or be designed in a manner to ensure continuous operation. (7-1-24)

09. Acceptable Technology. The purveyor must select a filtration technology acceptable to the Department. (7-1-24)

a. Conventional, direct, slow sand, diatomaceous earth, and membrane filtration technologies are generally acceptable to the Department on a case-by-case basis. (7-1-24)

b. Alternate filtration technologies may be acceptable if the purveyor demonstrates all of the following to the satisfaction of the Department: (7-1-24)

i. That the filtration technology: (7-1-24)

(1) Is certified and listed by the National Sanitation Foundation (NSF) under Standard 53, Drinking Water Treatment Units - Health Effects, as achieving the NSF criteria for cyst reduction; or (7-1-24)

(2) Removes at least ninety-nine percent (99%) (two (2) logs) of Cryptosporidium oocysts or surrogate particles and removes or inactivates at least ninety-nine percent (99%) (two (2) logs) of Giardia lamblia cysts or Giardia lamblia cyst surrogate particles in a challenge study acceptable to the Department. (7-1-24)

ii. Based on field studies or other means acceptable to the Department, it must be demonstrated that the filtration technology has the following capabilities: (7-1-24)

(1) In combination with disinfection treatment, consistently achieves at least ninety-nine percent (99%) (two (2) logs) removal of Cryptosporidium oocysts or surrogate particles and at least ninety-nine and nine tenths percent (99.9%) (three (3) logs) removal or inactivation of Giardia lamblia cysts and ninety-nine and ninety-nine hundredths percent (99.99%) (four (4) logs) removal or inactivation of viruses; and (7-1-24)

(2) Meets the turbidity performance requirements of 40 CFR 141.73 (b). (7-1-24)

10. Pilot Studies. The PWS must conduct pilot studies in accordance with the following requirements and in accordance with Subsection 501.19 for all proposed filtration facilities and structural modifications to existing filtration facilities, unless the Department modifies the requirements in writing: (7-1-24)

a. The PWS must obtain the Department's approval of the pilot study plan before the pilot filter is constructed and before the pilot study is undertaken. (7-1-24)

b. The design and operation of the pilot study must be overseen by an Idaho licensed professional engineer. (7-1-24)

c. The PWS's pilot study plan must identify at a minimum: (7-1-24)

i. The objectives of the pilot study; (7-1-24)

ii. Pilot filter design; (7-1-24)

iii. Water quality and operational parameters to monitor; (7-1-24)

iv. Amount of data to collect; and (7-1-24)

v. Qualifications of the pilot plant operator. (7-1-24)

d. The PWS must ensure that the pilot study is: (7-1-24)

i. Conducted to simulate conditions of the proposed full-scale design; (7-1-24)

ii. Conducted for at least twelve (12) consecutive months or for a shorter period upon approval by the Department; (7-1-24)

iii. Conducted to evaluate the reliability of the treatment system to achieve applicable water quality treatment criteria specified for filtration systems in 40 CFR 141.72 and 40 CFR 141.73; and (7-1-24)

iv. Designed and operated in accordance with good engineering practices documented in references acceptable to the Department. (7-1-24)

11. Redundant Disinfection. Surface water systems constructed after July 1, 1985, are required to install redundant disinfection components or maintain a backup unit on site as required to maintain constant application of disinfectant whenever water is being delivered to the distribution system. (7-1-24)

519. SURFACE WATER TREATMENT; MICROSCREENING.

A microscreen may be used to reduce nuisance organisms and organic loadings. It may not be used in place of filtration or coagulation in the preparation of water for filtration. (7-1-24)

01. Design Considerations. The following must be taken into account during design: (7-1-24)

a. Nature of the suspended matter to be removed. (7-1-24)

b. Corrosiveness of the water. (7-1-24)

c. Effect of chlorination, when required as pre-treatment. (7-1-24)

d. Duplication of units for continuous operation during equipment maintenance. (7-1-24)

e. Automated backflushing operation when used in conjunction with microfiltration treatment. (7-1-24)

02. Design Requirements. Design must provide the following: (7-1-24)

a. A durable, corrosion-resistant screen. (7-1-24)

b. A by-pass arrangement. (7-1-24)

c. Protection against back-siphonage when potable water is used for washing. (7-1-24)

d. Proper disposal of water used to wash the microscreen. (7-1-24)

520. SURFACE WATER TREATMENT: CLARIFICATION PROCESSES.
Treatment facilities designed to include clarification for processing surface water must meet the following requirements: (7-1-24)

01. Two Units Required. A minimum of two (2) units each must be provided for flocculation, sedimentation, and solids removal such that plant design capacity can be maintained with any component out of service for maintenance or repairs. Drains and pumps must be sized to allow dewatering in a reasonable period of time. (7-1-24)

02. Parallel or Serial Operation. The units must be capable of being operated either in series or parallel where softening is performed. (7-1-24)

03. Manual Start-Up. The units must be started manually following shutdown. (7-1-24)

04. Pre-Treatment. Waters exhibiting high turbidity may require pretreatment, usually sedimentation with or without the addition of coagulation chemicals. When presedimentation is provided, the following requirements must be met: (7-1-24)

a. Incoming water must be dispersed across the full width of the line of travel as quickly as possible. Short circuiting must be prevented. (7-1-24)

b. Provisions for bypassing pre-sedimentation basins must be included. (7-1-24)

c. The need for redundant pretreatment components must be evaluated according to the type and necessity of the pretreatment. (7-1-24)

05. Rapid Mix. Unless otherwise approved by the Department, a rapid mix device or chamber is required prior to flocculation, clarification, sedimentation, and settler units. The need for redundant rapid mix components must be evaluated. Rapid mix is the rapid dispersion of chemicals throughout the water to be treated, usually by violent agitation. The engineer must submit the design basis for the velocity gradient (G value) selected, considering the chemicals to be added and water temperature, color and other related water quality parameters. Basins or mixing chambers must be equipped with devices capable of providing adequate mixing for all treatment flow rates. (7-1-24)

06. Flocculation. Flocculation is the gathering together of fine particles in water by gentle mixing after the addition of coagulant chemicals to form larger particles and must include: (7-1-24)

a. Basin inlet and outlet design must minimize short-circuiting and destruction of floc. A drain, pumps, or a combination of both drain and pumps must be provided to accomplish dewatering and sludge removal. (7-1-24)

b. The flow-through velocity must not be less than one-half (0.5) nor greater than one and one-half (1.5) feet per minute with a detention time for floc formation of at least thirty (30) minutes unless otherwise approved by the Department. (7-1-24)

c. Agitators must be driven by variable speed drives. (7-1-24)

d. Flocculation and sedimentation basins must be as close together as possible. The velocity of

flocculated water through pipes or conduits to settling basins must be not less than one-half (0.5) nor greater than one and one-half (1.5) feet per second. Allowances must be made to minimize turbulence at bends and changes in direction. (7-1-24)

07. Small Systems May Use Baffling. Baffling may be used to provide for flocculation in small treatment plants upon approval by the Department. (7-1-24)

08. Sedimentation Units. The following criteria apply to conventional sedimentation units: (7-1-24)

a. A minimum of two (2) hours of settling time must be provided following flocculation unless adequate settling in less time can be demonstrated. (7-1-24)

b. Inlets must be designed to distribute the water equally and at uniform velocities. (7-1-24)

c. Outlet weirs or submerged orifices must maintain velocities suitable for settling in the basin and minimize short-circuiting. Outlet weirs must be designed so that the rate of flow over the outlet weirs or through the submerged orifices will not exceed twenty-thousand (20,000) gallons per day per foot of the outlet launder. The entrance velocity through the submerged orifices must not exceed one-half (0.5) feet per second. (7-1-24)

d. The velocity through settling basins must not exceed one-half (0.5) feet per minute. The basins must be designed to minimize short-circuiting. Fixed or adjustable baffles must be provided as necessary to achieve the maximum potential for clarification. (7-1-24)

e. When an overflow weir or pipe is provided the overflow must discharge by gravity with a free fall at a location where the discharge will be noted. (7-1-24)

f. Adequate sludge collection equipment that ensures proper basin coverage must be provided and basins must be provided with a means for dewatering. (7-1-24)

g. Flushing lines or hydrants must be provided and must be equipped with backflow prevention devices acceptable under Section 543. (7-1-24)

h. Sludge removal design must provide that sludge pipes are not less than three (3) inches in diameter and arranged so as to facilitate cleaning. Entrance to sludge withdrawal piping must be designed to prevent clogging. Provision must be made for the operator to observe and sample sludge being withdrawn from the unit. (7-1-24)

i. Sludge must be disposed of in accordance with applicable regulations, as set forth in Section 540. (7-1-24)

09. Solids Contact Clarifiers. Solids contact clarifiers are generally acceptable for combined softening and clarification where water characteristics, especially temperature, do not fluctuate rapidly, flow rates are uniform and operation is continuous. A minimum of two (2) units are required for surface water treatment as required in Subsection 520.01. (7-1-24)

a. Chemicals must be applied at such points and by such means as to ensure satisfactory mixing of the chemicals with the water. (7-1-24)

b. Unless otherwise approved by the Department, a rapid mix device or chamber ahead of the solids contact clarifier is required to assure proper mixing of the chemicals applied. Mixing devices employed must be constructed so as to provide good mixing of the raw water with previously formed sludge particles and prevent deposition of solids in the mixing zone. (7-1-24)

c. Flocculation equipment must be adjustable as to speed, pitch, or a combination of speed and pitch and must provide for coagulation in a separate chamber or baffled zone within the unit. (7-1-24)

d. Sludge removal design must provide that sludge pipes are not less than three (3) inches in diameter and arranged so as to facilitate cleaning. Entrance to sludge withdrawal piping must be designed to prevent clogging.

Provision must be made for the operator to observe and sample sludge being withdrawn from the unit. (7-1-24)

e. Blow-off outlets and drains must terminate and discharge at places acceptable to the Department in regard to control of potential cross connections. Cross connection control must be included for the potable water lines used to backflush sludge lines. (7-1-24)

f. The detention time must be established on the basis of the raw water characteristics and other local conditions that affect the operation of the unit. The Department may request data to support decisions made with respect to detention times. (7-1-24)

g. Controls for sludge withdrawal which minimize water losses must be provided. (7-1-24)

h. Unless otherwise approved by the Department, weirs must be adjustable and at least equivalent in length to the perimeter of the tank. Weir loading must not exceed ten (10) gallons per minute per foot of weir length for units used as clarifiers or twenty (20) gallons per minute per foot of weir length for units used for softening. Where orifices are used, the loading rates per foot of launder rates must be equivalent to weir loadings. Either must produce uniform rising rates over the entire area of the tank. (7-1-24)

i. Upflow rates must not exceed one (1) gallon per minute per square foot of area at the sludge separation line for units used as clarifiers or one and three-quarters (1.75) gallons per minute per foot of area at the slurry separation line for units used as softeners. The Department may consider higher rates if supporting data is provided. (7-1-24)

10. Settler Units. Settler units consisting of variously shaped tubes or plates installed in multiple layers and at an angle to the flow may be used for sedimentation following flocculation. (7-1-24)

a. Inlets and outlets must be designed to maintain velocities suitable for settling in the basin and to minimize short-circuiting. Plate units must be designed to minimize unequal distribution across the units. (7-1-24)

b. Drain piping from the settler units must be sized to facilitate a quick flush of the settler units and to prevent flooding other portions of the plant. (7-1-24)

c. Although most units will be located within a plant, outdoor installations must provide sufficient freeboard above the top of settlers to prevent freezing in the units. (7-1-24)

d. Water must be applied to tube settlers at a maximum rate of two (2) gallons per minute per square foot of cross-sectional area for tube settlers, unless higher rates are justified through pilot plant or in-plant demonstration studies in accordance with Subsection 501.19. (7-1-24)

e. Water must be applied to plate settlers at a maximum plate loading rate of one-half (0.5) gallons per minute per square foot, based on eighty (80) percent of the projected horizontal plate area. (7-1-24)

f. Flushing lines must be provided to facilitate maintenance and must be properly protected against backflow or back siphonage. (7-1-24)

11. High Rate Clarification. High rate clarification processes may be approved upon demonstrating satisfactory performance under on-site pilot in accordance with Subsection 501.19 or documentation of full scale plant operation with similar raw water quality conditions. Reductions in detention times or increases in weir loading rates must be justified. Examples of such processes include dissolved air flotation, ballasted flocculation, contact flocculation/clarification, and helical upflow. (7-1-24)

521. SURFACE WATER TREATMENT: RAPID RATE GRAVITY FILTERS.

01. Pretreatment. The use of rapid rate gravity filters requires pretreatment in the form of coagulation, flocculation, and sedimentation. (7-1-24)

02. Rate of Filtration. The filter rate must be proposed and justified by the design engineer in the

Department approved PER. (7-1-24)

03. Number of Units. A minimum of two (2) units for redundancy must be provided for filtration such that plant design capacity can be maintained with any component out of service for maintenance or repairs. Where declining rate filtration is provided, the variable aspect of filtration rates, and the number of filters must be considered when determining the design capacity for the filters. (7-1-24)

04. Structure and Hydraulics. The filter structure must be designed to provide for: (7-1-24)

a. There may be no protrusion of the vertical filter walls into the filter media. (7-1-24)

b. Cover by superstructure with sufficient headroom to permit normal inspection and operation. (7-1-24)

c. Minimum depth of filter box of eight and one-half (8.5) feet. (7-1-24)

d. Minimum water depth over the surface of the filter media of three (3) feet. (7-1-24)

e. Trapped effluent to prevent backflow of air to the bottom of the filters. (7-1-24)

f. Prevention of floor drainage to the filter with a minimum four (4) inch curb around the filters. (7-1-24)

g. Prevention of flooding by providing overflow. (7-1-24)

h. Maximum velocity of treated water entering the filters of two (2) feet per second. (7-1-24)

i. Cleanouts and straight alignment for influent pipes or conduits where solids loading is heavy, or following lime-soda softening. (7-1-24)

j. Washwater drain capacity to carry maximum flow. (7-1-24)

k. Walkways around filters to be not less than twenty-four (24) inches wide and equipped with safety handrails or walls. (7-1-24)

l. Construction so as to prevent cross connections and common walls between potable water and non-potable fluids. (7-1-24)

05. Wash Water Troughs. Washwater troughs must be constructed to have: (7-1-24)

a. The bottom elevation above the maximum level of expanded media during washing. (7-1-24)

b. A two (2) inch freeboard at the maximum rate of wash. (7-1-24)

c. The top edge level and all at the same elevation. (7-1-24)

d. Spacing so that each trough serves the same number of square feet of filter area. (7-1-24)

e. Maximum horizontal travel of suspended particles to reach the trough not to exceed three (3) feet. (7-1-24)

06. Filter Material. The media must be clean silica sand or other natural or synthetic media free from detrimental chemical or bacterial contaminants, approved by the Department, and having the following characteristics: (7-1-24)

a. A total depth of not less than twenty-four (24) inches and generally not more than thirty (30) inches. (7-1-24)

b. An effective size range of the smallest material no greater than forty-five hundredths (0.45) of a millimeter to fifty-five hundredths (0.55) of a millimeter. (7-1-24)

c. A uniformity coefficient of the smallest material not greater than one and sixty-five hundredths (1.65). (7-1-24)

d. A minimum of twelve (12) inches of media with an effective size range no greater than forty-five hundredths (0.45) of a millimeter to fifty-five hundredths (0.55) of a millimeter and a specific gravity greater than other filtering materials within the filter. (7-1-24)

e. Types of filter media are as follows: (7-1-24)

i. Clean, crushed anthracite or a combination of anthracite and other media may be considered on the basis of experimental data specific to the project. The anthracite must have the following characteristics: (7-1-24)

(1) Effective size of forty-five hundredths (0.45) of a millimeter to fifty-five hundredths (0.55) of a millimeter with uniformity coefficient not greater than sixty-five hundredths (1.65) when used alone. (7-1-24)

(2) Effective size of eight tenths (0.8) of a millimeter to one and two-tenths (1.2) millimeters with a uniformity coefficient not greater than one and eighty-five hundredths (1.85) when used as a cap. (7-1-24)

(3) Effective size for anthracite used as a single media on potable groundwater for iron and manganese removal only must be a maximum of eight tenths (0.8) of a millimeter (effective sizes greater than this may be approved based upon onsite pilot plant studies or other demonstration acceptable to the Department). See Subsection 501.19 for general information on conducting pilot studies. (7-1-24)

ii. Sand media must have the following characteristics: (7-1-24)

(1) Effective size of forty-five hundredths (0.45) of a millimeter to fifty-five hundredths (0.55) of a millimeter. (7-1-24)

(2) Uniformity coefficient of not greater than one and sixty-five hundredths (1.65). (7-1-24)

(3) Larger size sand media may be allowed by the Department where full-scale tests have demonstrated that treatment goals can be met under all conditions. (7-1-24)

iii. Granular activated carbon (GAC) as a single media may be considered for filtration only after pilot or full-scale testing and with prior approval of the Department in accordance with Subsection 501.19. The design must include the following: (7-1-24)

(1) The media must meet the basic specifications for filter media as given in Subsections 521.06.a. through d., except that larger size media may be allowed where full scale tests have demonstrated that treatment goals can be met under all conditions. (7-1-24)

(2) There must be a means for periodic treatment of filter material for control of bacterial and other growth. (7-1-24)

(3) Provisions must be made for frequent replacement or regeneration. (7-1-24)

iv. Other media will be considered based on experimental data and operating experience. (7-1-24)

v. A three (3) inch layer of torpedo sand must be used as a supporting media for filter sand where supporting gravel is used, and must have an effective size of eight-tenths (0.8) millimeters to two (2.0) millimeters, and a uniformity coefficient not greater than one and seven-tenths (1.7). (7-1-24)

vi. Gravel, when used as the supporting media, must consist of cleaned and washed, hard, durable,

rounded silica particles and must not include flat or elongated particles. The coarsest gravel must be two and one-half (2.5) inches in size when the gravel rests directly on a lateral system and must extend above the top of the perforated laterals. Not less than four (4) layers of gravel must be provided in accordance with the size and depth distribution specified in the table below. Reduction of gravel depths and other size gradations may be considered upon justification to the Department when proprietary filter bottoms are specified.

Size of Gravel	Depth
2 ½ to 1 ½ inches	5 to 8 inches
1 ½ to ¾ inches	3 to 5 inches
¾ to ½ inches	3 to 5 inches
½ to 3/16 inches	2 to 3 inches
3/16 to 3/32 inches	2 to 3 inches

(7-1-24)

07. Filter Bottoms and Strainer Systems. Departure from the standards set out in Subsection 521.07 may be acceptable for high rate filters and for proprietary bottoms. Porous plate bottoms must not be used where iron or manganese may clog them or with waters softened by lime. The design of manifold-type collection systems must: (7-1-24)

a. Minimize loss of head in the manifold and laterals. (7-1-24)

b. Ensure even distribution of wash water and even rate of filtration over the entire area of the filter. (7-1-24)

c. Provide the ratio of the area of the final openings of the strainer systems to the area of the filter at about three-thousandths (0.003), (7-1-24)

d. Provide the total cross-sectional area of the laterals at twice the total area of the final openings. (7-1-24)

e. Provide the cross-sectional area of the manifold at one and one-half (1.5) to two (2) times the total area of the laterals. (7-1-24)

f. Lateral perforations without strainers must be directed downward. (7-1-24)

08. Surface or Subsurface Wash. Surface or subsurface wash facilities are required except for filters used exclusively for iron or manganese removal, and may be accomplished by a system of fixed nozzles or a revolving-type apparatus. All devices must be designed with: (7-1-24)

a. Provision for water pressures of at least forty-five (45) pounds per square inch. (7-1-24)

b. A properly installed vacuum breaker or other approved device to prevent back siphonage if connected to the treated water system. (7-1-24)

c. Rate of flow of two (2.0) gallons per minute per square foot of filter area with fixed nozzles or one-half (0.5) gallon per minute per square foot with revolving arms. (7-1-24)

d. Air wash can be considered based on experimental data and operating experiences. (7-1-24)

09. Air Scouring. Air scouring can be considered in place of surface wash provided the following conditions are met: (7-1-24)

a. Air flow for air scouring the filter must be three (3) to five (5) standard cubic feet per minute square foot of filter area when the air is introduced in the underdrain; a lower air rate must be used when the air scour distribution system is placed above the underdrains. (7-1-24)

b. A method for avoiding excessive loss of the filter media during backwashing must be provided. (7-1-24)

c. Air scouring must be followed by a fluidization wash sufficient to restratify the media. (7-1-24)

d. Air must be free from contamination. (7-1-24)

e. Air scour distribution systems must be placed below the media and supporting bed interface with the following exception: if placed at the interface the air scour nozzles must be designed to prevent media from clogging the nozzles or entering the air distribution system. (7-1-24)

f. Piping for the air distribution system must not be flexible hose which will collapse when not under air pressure and must not be a relatively soft material which may erode at the orifice opening with the passage of air at high velocity. (7-1-24)

g. Air delivery piping must not pass down through the filter media nor may there be any arrangement in the filter design which allows short circuiting between the applied unfiltered water and the filtered water. (7-1-24)

h. The backwash water delivery system must be capable of fifteen (15) gallons per minute per square foot of filter surface area (37 m/hr); however, when air scour is provided the backwash water rate must be variable and not exceed eight (8) gallons per minute per square foot (20 m/hr) unless operating experience shows that a higher rate is necessary to remove scoured particles from filter media surfaces. (7-1-24)

i. The filter underdrains must be designed to accommodate air scour piping when the piping is installed in the underdrain. (7-1-24)

10. Filter Appurtenances. The following must be provided for every filter: (7-1-24)

a. Influent and effluent sampling taps. (7-1-24)

b. A gauge capable of indicating loss of head. (7-1-24)

c. A meter indicating rate-of flow. A modified rate controller which limits the rate of filtration to a maximum rate may be used. However, equipment that simply maintains a constant water level on the filters is not acceptable, unless the rate of flow onto the filter is properly controlled. A pump or a flow meter in each filter effluent line may be used as the limiting device for the rate of filtration only if approved by the Department on a site-specific basis. (7-1-24)

11. Backwash. Provisions must be made for washing filters as follows: (7-1-24)

a. A minimum backwash rate such that a fifty (50) percent expansion of the filter bed is achieved. (7-1-24)

b. Filtered water provided at the required rate by wash water tanks, a wash water pump, from the high service main, or a combination of these. (7-1-24)

c. Wash water pumps in duplicate unless an alternate means of obtaining wash water is available. (7-1-24)

d. Not less than fifteen (15) minutes wash of one filter at the design rate of wash. (7-1-24)

e. A wash water regulator or valve on the main wash water line to obtain the desired rate of filter wash with the wash water valves on the individual filters open wide. (7-1-24)

f. A rate-of-flow indicator, preferably with a totalizer, on the main wash water line, located so that it can be easily read by the operator during the washing process. (7-1-24)

g. Design to prevent rapid changes in backwash water flow. Backwash must be operator initiated. Automated systems must be operator adjustable. (7-1-24)

12. Roof Drainage. Roof drains must not discharge into the filters or basins and conduits preceding the filters. (7-1-24)

522. SURFACE WATER TREATMENT: FILTRATION USING DIATOMACEOUS EARTH.
The use of these filters may be considered for application to surface waters with low turbidity and low bacterial contamination, and may be used for iron removal for groundwaters providing the removal is effective and the water is of satisfactory sanitary quality before treatment. (7-1-24)

01. Conditions of Use. Diatomaceous earth filters are expressly excluded from consideration for the following conditions: (7-1-24)

a. Bacteria removal; (7-1-24)

b. Color removal; (7-1-24)

c. Turbidity removal where either the gross quantity of turbidity is high or the turbidity exhibits poor filterability characteristics; or (7-1-24)

d. Filtration of waters with high algae counts. (7-1-24)

02. Treated Water Storage. Treated water storage capacity in excess of normal requirements must be provided to allow operation of the filters at a uniform rate during all conditions of PWS demand at or below the approved filtration rate, and guarantee continuity of service during adverse raw water conditions without by-passing the system. (7-1-24)

03. Number of Units. A minimum of two (2) units for redundancy must be provided for filtration such that plant design capacity can be maintained with any component out of service for maintenance or repairs. (7-1-24)

04. Precoat. A uniform precoat must be applied hydraulically to each septum by introducing a slurry to the tank influent line and employing a filter-to-waste recirculation system. (7-1-24)

05. Body Feed. A body feed system to apply additional amounts of diatomaceous earth slurry during the filter run is required to avoid short filter runs or excessive head losses. (7-1-24)

a. The rate of body feed is dependent on raw water quality and characteristics and must be determined in the pilot plant study in accordance with Subsection 501.19. (7-1-24)

b. Continuous mixing of the body feed slurry is required. (7-1-24)

06. Filtration Requirements. (7-1-24)

a. Rate of filtration must be controlled by a positive means. (7-1-24)

b. Head loss must not exceed thirty (30) psi for pressure diatomaceous earth filters, or a vacuum of fifteen (15) inches of mercury for a vacuum system. (7-1-24)

c. A recirculation or holding pump must be employed to maintain differential pressure across the filter when the unit is not in operation in order to prevent the filter cake from dropping off the filter elements. A minimum recirculation rate of one-tenth (0.1) gallon per minute per square foot of filter area must be provided. (7-1-24)

d. The septum or filter elements must be structurally capable of withstanding maximum pressure and velocity variations during filtration and backwash cycles, and must be spaced such that no less than one (1) inch is provided between elements or between any element and a wall. (7-1-24)

e. The filter influent must be designed to prevent scour of the diatomaceous earth from the filter element. (7-1-24)

07. Backwash. A satisfactory method to thoroughly remove and dispose of spent filter cake must be provided. (7-1-24)

08. Appurtenances. The following must be provided for every filter: (7-1-24)

a. Sampling taps for raw and filtered water. (7-1-24)

b. Loss of head or differential pressure gauge. (7-1-24)

c. Rate-of-flow indicator. (7-1-24)

d. A throttling valve used to reduce rates below normal during adverse raw water conditions. (7-1-24)

e. Evaluation of the need for body feed, recirculation, and any other pumps. (7-1-24)

f. Provisions for filtering to waste with appropriate measures for backflow prevention. (7-1-24)

09. Monitoring. A continuous monitoring turbidimeter with recorder is required on each filter effluent for plants treating surface water. (7-1-24)

523. SURFACE WATER TREATMENT: SLOW SAND FILTRATION.

The use of slow sand filters requires prior engineering studies to demonstrate the adequacy and suitability of this method of filtration for the specific water supply. Slow Sand Filtration and Diatomaceous Earth Filtration for Small Water Systems, Manual of Design for Slow Sand Filtration, Slow Sand Filtration, and Recommended Operations and Optimization Goals, Slow Sand Filtration referenced in Subsection 002.02, may be used as guidance in design and operation of slow sand filtration facilities. (7-1-24)

01. Quality of Raw Water. Slow rate gravity filtration must be limited to waters having maximum turbidities of ten (10) nephelometric units and maximum color of fifteen (15) units; such turbidity must not be attributable to colloidal clay. Raw water quality data must include examinations for algae. For source water having variable turbidity, the potential use of a roughing filter or other pretreatment technology must be evaluated. The Department may allow the use of a pretreatment technology on raw waters that exceed the normal limits for turbidity and color, if it can demonstrated to the Department's satisfaction that pretreatment will enable slow sand filtration to properly operate and comply with these Rules. (7-1-24)

02. Number of Units. A minimum of two (2) units for redundancy must be provided for filtration such that plant design capacity can be maintained with any component out of service for maintenance or repairs. The Department may allow a single bed filter if it can be demonstrated to the Department's satisfaction that an alternative water source is available such that the PWS can provide plant design capacity with the filter taken out of service for maintenance and repairs. (7-1-24)

03. Structural Details and Hydraulics. Slow rate gravity filters must be designed to provide a cover, unless otherwise approved by the Department, headroom to permit normal movement by operating personnel for scraping and sand removal operations, adequate access hatches and access ports for handling of sand and for ventilation, filtration to waste, an overflow at the maximum filter water level, and protection from freezing. A permanent means of determining sand depth must be provided. (7-1-24)

04. Underdrains. Each filter unit must be equipped with a main drain and an adequate number of lateral underdrains to collect the filtered water. The underdrains must be so spaced that the maximum velocity of the

water flow in the underdrain will not exceed three-fourths (0.75) feet per second. The maximum spacing of laterals is three (3) feet if pipe laterals are used. (7-1-24)

05. Filter Material. The following requirements apply: (7-1-24)

a. A minimum depth of thirty (30) inches of filter sand must be placed on graded gravel layers. (7-1-24)

b. The effective size must be between fifteen hundredths (0.15) of a millimeter and thirty-five hundredths (0.35) of a millimeter. Larger sizes may be considered by the Department based on the results of a pilot study in accordance with Subsection 501.19. (7-1-24)

c. The uniformity coefficient must not exceed three point zero (3.0). (7-1-24)

d. The sand must be cleaned and washed free from foreign matter. (7-1-24)

e. The sand must be rebedded to the original minimum depth of thirty (30) inches when scraping has reduced the bed depth to no less than twenty-four (24) inches. Where sand is to be reused in order to provide biological seeding and shortening of the ripening process, rebedding must utilize a "throw over" technique whereby new sand is placed on the support gravel and existing sand is replaced on top of the new sand. The maximum filtration rate must not exceed zero point one (0.1) gallon per minute per square foot for each individual bed. (7-1-24)

06. Filter Sand Support. (7-1-24)

a. A three (3)-inch layer of sand must be used as a supporting media for filter sand. The supporting sand must have an effective size of zero point eight (0.8) millimeters to two point zero (2.0) millimeters and a uniformity coefficient not greater than one point seven (1.7). (7-1-24)

b. Gravel must consist of cleaned and washed, hard, durable, rounded rock particles and may not include flat or elongated particles. The coarsest gravel must be two and one-half (2.5) inches in size when the gravel rests directly on a lateral system and must extend above the top of the perforated laterals. Not less than four (4) layers of gravel may be provided in accordance with the size and depth distribution specified in the table below. Reduction of gravel depths and other size gradations may be considered upon justification to the Department.

Size of Gravel	Depth
2 1/2 to 1 1/2 inches	5 to 8 inches
1 1/2 to 3/4 inches	3 to 5 inches
3/4 to 1/2 inches	3 to 5 inches
1/2 to 3/16 inches	2 to 3 inches
3/16 to 3/32 inches	2 to 3 inches

(7-1-24)

07. Depth of Water Over Filter Beds. The design must provide a depth of at least three (3) to six (6) feet of water over the sand. Influent water must not scour the sand surface. (7-1-24)

08. Control Appurtenances. Each filter must be equipped with a loss of head gauge, an orifice, Venturi meter, or other suitable means of discharge measurement installed on each filter to control the rate of filtration, and an effluent pipe designed to maintain the water level above the top of the filter sand. The effluent piping must not be directly interconnected with the other filter beds. A sample tap must be provided for each filter bed. (7-1-24)

09. Ripening. Slow sand filters must be filtered-to-waste until they are biologically mature before being put into service following construction, scraping, re-sanding, or reopening after extended shutdown. The period of filter-to-waste must be as follows: (7-1-24)

a. Filters must be filtered-to-waste after scraping or cleaning until the effluent turbidity falls consistently below the pre-cleaning level, unless otherwise approved by the Department. (7-1-24)

b. Filters must be filtered-to-waste following construction, re-sanding, or extended shutdown based on project specific protocols approved by the Department and incorporated into a Department approved operation and maintenance manual. These protocols may be based on factors from standard literature such as those listed in Subsection 002.02 but typically include factors such as minimum filter-to-waste time periods, bacteriological testing, and effluent turbidity. Sampling results from the filter-to-waste period must be provided to the Department for review and the Department must provide authorization prior to restarting service to the public. (7-1-24)

10. Supernatant Drain Required. Filter beds must be equipped with a supernatant drain to allow for quick removal of water standing over sand that has become impermeable because it requires scraping or rebedding. (7-1-24)

11. Filter Bed Control and Minimum Rate of Flow. Each filter bed must be controlled separately and filters must be operated at a constant filtration rate with any changes made gradually. The minimum rate of filtration must be at least two hundredths (0.02) gallons per minute per square foot. (7-1-24)

524. SURFACE WATER TREATMENT: DIRECT FILTRATION.

Direct filtration, as used herein, refers to the filtration of a surface water following chemical coagulation and possibly flocculation but without prior settling. The nature of the treatment process will depend upon the raw water quality. A full scale direct filtration plant must not be constructed without prior pilot studies which are acceptable to the Department. In-plant demonstration studies are required where conventional treatment plants are converted to direct filtration. Where direct filtration is proposed, an engineering report must be submitted prior to conducting pilot plant or in-plant demonstration studies in accordance with Subsection 501.19. (7-1-24)

01. Filtration Requirements. (7-1-24)

a. Filters must be rapid rate gravity filters with dual or mixed media. The final filter design must be based on the pilot plant or in-plant demonstration studies, and all portions of Section 518 apply. Pressure filters or single media sand filters will not be used. (7-1-24)

b. A continuous recording turbidimeter must be installed on each filter effluent line and on the composite filter effluent line. (7-1-24)

c. Additional continuous monitoring equipment such as particle counting or streaming current metering to assist in control of coagulant dose may be required by the Department. (7-1-24)

02. Siting Requirements. The plant design and land ownership surrounding the plant must allow for modifications of the plant. (7-1-24)

03. Redundancy. A minimum of two (2) units must be provided for filtration such that plant capacity can be maintained with any component out of service for maintenance or repairs. (7-1-24)

525. LOW PRESSURE MEMBRANE FILTRATION.

Low pressure filtration, as used herein, refers to microfiltration or ultrafiltration processes. Low pressure membrane systems can provide greater than 3-log removal of Giardia lamblia and Cryptosporidium, and ultrafiltration systems can also provide up to 2-log virus removal. The Department will determine maximum available removal credits for the specific membrane under consideration. The actual log removal credit that a low pressure membrane filtration system will receive is the lower of the values determined by the following: the removal efficiency demonstrated during challenge testing, or the maximum log removal that can be verified by direct integrity testing required during the course of normal operation. Membrane systems must contain sufficient design to allow for offline direct integrity testing of all units or modules at the required interval while retaining the capability to supply maximum day demand

to the PWS. Membrane systems must have at least two (2) units unless it can be demonstrated to the satisfaction of the Department that a secondary source or treatment component can supply the required minimum plant design capacity. (7-1-24)

01. Membrane Selection and Design Considerations. (7-1-24)

a. Challenge testing involves seeding feed water with an organism or particulate and measuring the log reduction of the organism or particulate between the feed and filtrate. It is a one-time product-specific test event performed by an approved third party designed to demonstrate the removal ability of the membrane. Challenge testing must be conducted by the third party entity in general conformance with the USEPA Membrane Filtration Guidance Manual referenced in Subsection 002.02 (Membrane Filtration Guidance Manual). The challenge test report is to be submitted to the Department along with the PER for the project. The Department may accept another state's challenge test report approval. (7-1-24)

b. A review of historical source water data must be conducted to determine the degree of pretreatment needed if any, the feasibility of membrane filtration, and an estimated cost of the system. At a minimum, the following parameters are to be investigated: Seasonal temperature and turbidity profiles, total organic loading, occurrence of algae, microbial activity, iron, manganese, and hardness levels, and any other inorganic or physical parameters determined to be necessary by the Department. The data will be used to determine anticipated fouling and scaling, backwash and cleaning cycles and regimens, acceptable trans-membrane pressure differentials, and design flux, especially during lowest anticipated water temperature. (7-1-24)

c. A pilot study must be conducted for a period that is determined by the design engineer and approved by the Department. The duration will include the season of lowest water temperatures and the season including the highest anticipated turbidity, algal bloom, TOC, and iron/manganese event or otherwise cover four seasons of source water quality conditions. The Department may approve a shorter duration proof pilot to verify design criteria that affect the reliable production capacity of the membrane system. The Department may approve the use of a full scale pilot study where the full scale facility will act as the pilot study. The Department may also waive the pilot study requirement. Proof pilot studies, full scale pilot studies, and the waiving of the pilot study requirement will only be approved in circumstances where source water conditions and fouling characteristics are already well understood. Such source waters include but are not limited to groundwater under the influence of surface water, waters with existing membrane plants, waters where sufficient pilot test data has already been generated, and extensively used or tested membrane products where production or test data on similar waters is available (i.e., same lake, reservoir, or same reach for stream sources). In addition to the requirements in Subsection 501.19, the pilot study must include: (7-1-24)

i. A means to identify the best membrane to use for the anticipated water quality; (7-1-24)

ii. Analysis of any need for pretreatment; (7-1-24)

iii. Range of anticipated flux rates; (7-1-24)

iv. Operating and transmembrane pressure; (7-1-24)

v. Fouling and scaling potential; (7-1-24)

vi. Backwash and recovery cleaning, cleaning processes, and intervals; (7-1-24)

vii. Efficiency and process mass balance; (7-1-24)

viii. Waste stream volume, characterization, and disposal method; (7-1-24)

ix. Turbidity; and (7-1-24)

x. Integrity testing results and procedures. (7-1-24)

02. Monitoring and Compliance Requirements for Membranes. PWSs that use low pressure

membrane filtration must comply with the following requirements. (7-1-24)

a. Initial Start-Up. (7-1-24)

i. Notify the Department at least one (1) week in advance of the planned start-up date. (7-1-24)

ii. The design engineer will oversee start-up procedures. (7-1-24)

iii. All monitoring equipment will be calibrated prior to start-up. (7-1-24)

iv. The system must pass direct integrity testing prior to going on-line and producing water for distribution. (7-1-24)

v. A method for the disposal of start-up water needs to be approved by the Department prior to start-up. (7-1-24)

b. Direct Integrity Testing. (7-1-24)

i. Testing must be conducted on each membrane skid in service at least daily for the first year of operation. (7-1-24)

ii. The test method used must have a resolution of three (3) µm or less for Cryptosporidium and Giardia lamblia removal credit. (7-1-24)

iii. The test method used must have sensitivity sufficient to verify the ability of the membrane filtration system to remove the constituent at a level commensurate with the credit awarded by the Department. (7-1-24)

(1) Formulae for sensitivity calculation for pressure-based tests are available in the Membrane Filtration Guidance Manual referenced in Subsection 002.02. The volumetric concentration factor used in the calculation may be either calculated or determined experimentally. (7-1-24)

(2) Formulae for sensitivity calculation for marker-based tests are available in the Membrane Filtration Guidance Manual referenced in Subsection 002.02. (7-1-24)

iv. A control limit must be established within the sensitivity limits of the direct integrity test that is indicative of an integral membrane unit capable of achieving the log removal credit awarded by the Department. (7-1-24)

(1) If the direct integrity test results exceed the control limit for any membrane unit, that unit must be removed from service. (7-1-24)

(2) Any unit taken out of service for exceeding a direct integrity test control limit cannot be returned to service until repairs are confirmed by subsequent direct integrity test results that are within the control limit. (7-1-24)

v. Direct integrity testing must be conducted on each membrane unit at a frequency of at least once per day that the unit is in operation. The Department may extend testing frequency up to a duration of once per week after one (1) year of daily testing showing a less than five percent (5%) testing failure rate for the previous year. During weekly testing, if at any time the system fails more than two (2) direct integrity tests within a three (3) month period, the system must return to daily testing. (7-1-24)

c. Indirect Integrity Monitoring. (7-1-24)

i. Testing must be conducted on each membrane unit in service. (7-1-24)

ii. Continuous indirect integrity monitoring must be conducted using turbidity monitoring unless the Department approves an alternative method. (7-1-24)

iii. Continuous indirect integrity monitoring must be conducted at a frequency of at least one (1) reading every fifteen (15) minutes. The Department may allow a time delay in reporting compliance turbidity measurements if it can be demonstrated that elevated turbidity readings above fifteen hundredths (0.15) NTU immediately following direct integrity testing or maintenance are the result of factors related to entrained air or membrane wettability and are not related to membrane integrity. (7-1-24)

iv. If the continuous indirect integrity monitoring results exceed the specified control limit for any membrane unit for a period greater than fifteen (15) minutes (i.e., two (2) consecutive readings at fifteen (15) minute intervals), direct integrity testing must be immediately conducted on that unit. (7-1-24)

(1) The control limit for turbidity monitoring is fifteen hundredths (0.15) NTU. (7-1-24)

(2) Control limits for Department approved alternative methods will be established by the Department. (7-1-24)

d. A project specific operation and maintenance manual must be provided as required in Subsection 501.12. See definition of Operation and Maintenance Manual in Section 003 for the typical contents of an operation and maintenance manual and the included operations plan. The operations plan in the operation and maintenance manual for membrane systems must include, but is not limited to the following information: (7-1-24)

i. Filtration: (7-1-24)

(1) Control of feed flow to the membrane system; (7-1-24)

(2) Measurement of inlet/outlet pressures and filtrate flows; (7-1-24)

(3) Measurement of transmembrane pressure changes during filter run; and (7-1-24)

(4) Feed flow control in response to temperature changes. (7-1-24)

ii. Membrane backwashing: (7-1-24)

(1) Programming automated frequency; (7-1-24)

(2) Proper backwash venting and disposal; see Section 540; (7-1-24)

(3) Appropriate backwash rate; and (7-1-24)

(4) Monitoring during return of filter to service. (7-1-24)

iii. Chemical cleaning: (7-1-24)

(1) Selection of proper chemical washing sequence; (7-1-24)

(2) Proper procedures for dilution of chemicals; (7-1-24)

(3) Monitoring of pH through chemical cleaning cycle; (7-1-24)

(4) Rinsing of membrane system following chemical clean; and (7-1-24)

(5) Return of filter to service. (7-1-24)

iv. Chemical feeders (in the case that chemical pretreatment is applied): (7-1-24)

(1) Calibration check; (7-1-24)

(2) Settings and adjustments (how they are made); and (7-1-24)

(3) Dilution of chemicals and polymers (proper procedures). (7-1-24)

v. Monitoring and observing operation: (7-1-24)

(1) Observation of feed water or pretreated water turbidity; (7-1-24)

(2) Observation of trans-membrane pressure increase between backwashes; (7-1-24)

(3) Filtered water turbidity; (7-1-24)

(4) Procedures to follow if turbidity breakthrough occurs. (7-1-24)

vi. Troubleshooting: (7-1-24)

(1) No raw water (feed water) flow to plant; (7-1-24)

(2) Can't control rate of flow of water through equipment; (7-1-24)

(3) Valving configuration for direct flow and cross-flow operation modes; (7-1-24)

(4) Poor raw water quality (raw water quality falls outside the performance range of the equipment); (7-1-24)

(5) Poor filtrate quality; (7-1-24)

(6) Failed membrane integrity test; (7-1-24)

(7) Low pump feed pressure; (7-1-24)

(8) Automatic operation (if provided) not functioning; (7-1-24)

(9) Filtered water turbidity too high; (7-1-24)

(10) Head loss builds up excessively rapidly; (7-1-24)

(11) Reduced flux; (7-1-24)

(12) Machine will not start and "Power On" indicator off; (7-1-24)

(13) Machine will not start and "Power On" indicator on; (7-1-24)

(14) Pump cavitation; (7-1-24)

(15) Valve stuck or won't operate; and (7-1-24)

(16) No electric power. (7-1-24)

e. The sensitivity, resolution, and frequency of the direct integrity test proposed for use with the full-scale facility must be reported to the Department prior to initial operation. The following must be reported to the Department on a monthly basis: (7-1-24)

i. Any direct integrity test results exceeding the control limit, as well as the corrective action taken in response, must be reported to the Department within ten (10) days of the end of the monthly monitoring cycle on a Department reporting form. The form is available at www.deq.idaho.gov; (7-1-24)

ii. Any continuous indirect integrity monitoring results triggering direct integrity testing, as well as any corrective action taken in response, must be reported to the Department within ten (10) days of the end of the monthly monitoring cycle on a Department reporting form. The form is available at www.deq.idaho.gov; (7-1-24)

iii. Any additional information considered necessary by the Department on a case-specific basis to verify proper operation and maintenance of the membrane filtration process; and (7-1-24)

iv. All direct integrity test results and continuous indirect integrity monitoring results must be retained for a minimum of three (3) years. (7-1-24)

526. -- 528. (RESERVED)

529. REQUIRED DISINFECTION OF DRINKING WATER, ULTRAVIOLET LIGHT.

01. General. (7-1-24)

a. Ultraviolet (UV) light technology is a primary disinfectant typically used for Cryptosporidium, Giardia lamblia, and virus inactivation of both surface water and groundwater supplies. Reactor performance in terms of inactivation of any particular organism is a function of the delivered dose which is determined by validation testing. PWSs that are required to maintain a disinfectant residual in the distribution system must supplement UV disinfection with a chemical disinfectant. (7-1-24)

b. UV disinfection credit will be awarded for filtered PWSs and unfiltered PWSs if the unfiltered PWS meets the requirements in 40 CFR 141.71. PWSs will receive Cryptosporidium, Giardia lamblia, and virus treatment credits by achieving the corresponding UV dose values for the appropriate target pathogen and log reduction shown in Subsection 529.03, calculated to take into account the validation factor and reduction equivalent dose. The target pathogen and the target log inactivation is used to identify the corresponding required UV dose. (7-1-24)

c. For PWSs using UV light to meet microbial treatment requirements, at least ninety-five percent (95%) of the water delivered to the public every month must be treated by UV reactors operating within validated conditions for the required UV dose. (7-1-24)

d. When reviewing proposed UV disinfection projects, the Department will use the USEPA UV Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule referenced in Subsection 002.02 (UV Disinfection Guidance Manual) for guidance. (7-1-24)

02. Pilot Studies and Validation. (7-1-24)

a. The Department may allow on-site pilot studies on a case-by-case basis in accordance with Subsection 501.19. Pilot studies are usually used to determine how much fouling occurs on site, to evaluate UV system reliability (e.g. UV sensors, UV transmittance (UVT) monitors, ballast reliability) and to provide operators experience running a UV system. They may also be used to assess lamp aging or impacts of power quality. (7-1-24)

b. Validation testing determines the operating conditions and monitoring algorithms that the UV system will use to define how much UV dose is being delivered by the reactor during operation. The validated dose as determined through validation testing is compared to the required dose in the UV Dose Table (Subsection 529.03) to determine inactivation credit. The validated dose is calculated by dividing the determined reduction equivalent dose by a validation factor to account for biases and experimental uncertainty. UV light treatment reactors must be validated by a third party entity approved by the Department. At a minimum, validation testing must account for the following: UV absorbance of the water; lamp fouling and aging; measurement uncertainty of on-line UV sensors; UV dose distributions arising from the velocity profiles through the reactor; failure of UV lamps and other critical system components; inlet and outlet piping configuration of the UV reactor; lamp and UV sensor locations; and other parameters required by the Department. The Department may allow alternative test microbes such as MS2 phage where the UV dose response better matches that of Cryptosporidium and Giardia lamblia to provide more accurate and efficient UV dose monitoring. Additional guidance is available in the UV Disinfection Guidance Manual, referenced in Subsection 002.02, or another validation standard as approved by the Department. (7-1-24)

c. Validation testing must be conducted on full scale testing of a reactor that conforms uniformly to the UV reactors used by the PWS and inactivation of a test microorganism whose dose response characteristics have been quantified with a low pressure mercury vapor lamp. (7-1-24)

d. Validation testing must determine and establish validated operating conditions under which the reactor delivers the required UV dose in Subsection 529.03. Validated operating conditions include: (7-1-24)

i. Flow rate; (7-1-24)

ii. UV Intensity as measured by a UV sensor; (7-1-24)

iii. UV lamp operating status. (7-1-24)

e. The Department may approve an alternative approach to validation testing. (7-1-24)

03. UV Dose Table. The treatment credits listed in the dose table are based on UV light at a wavelength of two hundred fifty-four (254) nm as produced by a low pressure mercury vapor lamp. To receive treatment credit for other lamp types, the PWS must demonstrate an equivalent germicidal dose through validation testing.

UV Dose Table (millijoules per square centimeter)			
Log	**Cryptosporidium**	**Giardia lamblia**	**Virus**
0.5	1.6	1.5	39
1.0	2.5	2.1	58
1.5	3.9	3.0	79
2.0	5.8	5.2	100
2.5	8.5	7.7	121
3.0	12	11	143
3.5	15	15	163
4.0	22	22	186

(7-1-24)

04. Reactor Design. Inlet and outlet conditions must ensure that UV dose delivery at the plant is equal to or exceeds that utilized during validation. At a minimum, design criteria need to address target pathogen(s), required log inactivation and UV dose, flow rate, UVT, and lamp aging and fouling factors. UVT and flow rate are to be selected to account for seasonal changes in UVT. Lamp aging and fouling factors must be supported by documentation or pilot study data. Recommended approaches of the UV Disinfection Guidance Manual, referenced in Subsection 002.02, are to be used in meeting this requirement. (7-1-24)

a. The reactor systems must be designed to monitor and record parameters to verify the operation within the validated operating conditions approved by the Department. The PWS must be equipped with facilities to monitor and record UV intensity as measured by a UV sensor, flow rate, lamp status, UVT, and other parameters designated by the Department. (7-1-24)

b. The ultraviolet treatment device must be designed to provide a UV light dose equal to or greater than that specified in the UV Dose Table for the required log reduction. The UV Disinfection Guidance Manual, referenced in Subsection 002.02, must be utilized in evaluating the appropriate dose required for the target microbe. The reactor will need to deliver the target dose while operating within the validated operating conditions for that particular unit. (7-1-24)

c. The ultraviolet treatment assemblies must be designed to allow for cleaning and replacement of the lamp, lamp sleeves, and sensor window or lens. (7-1-24)

d. All ultraviolet treatment device designs must evaluate lamp fouling and aging issues and manufacturer's recommendations regarding fouling, aging, and replacement will be discussed in the Operation and Maintenance Manual. (7-1-24)

e. For in-situ cleaning of the lamp sleeve, the design must protect the potable water from cleaning solutions. (7-1-24)

f. When off-line chemical cleaning systems are used, the UV enclosure must be removed from service, drained, flushed with an NSF/ANSI Standard 60 certified solution, drained, and rinsed before being placed back in service. (7-1-24)

g. On-line systems that use wipers or brushes may use chemical solutions provided they are NSF/ANSI Standard 60 certified. (7-1-24)

h. An automatic shutdown valve must be installed in the water supply line from the ultraviolet treatment device such that if power is not provided to the reactor or valve, the valve will be in the closed position. (7-1-24)

i. The design of the inlet and outlet piping configuration and the locations of expansions, bends, tees and valves will assure that the UV dose delivery is equal to or greater than the required UV dose. Approach length prior to each reactor included in the credited dose calculations, downstream length following each reactor, and locations of any cleaning device/mechanism must be based on validation testing. (7-1-24)

j. For parallel trains, the flow to each reactor must be equally distributed and metered or otherwise account for uneven flows in the design to ensure that the required UV dose is delivered to each train under varying flow conditions. (7-1-24)

k. Valves must be provided to allow isolating and removing from service each UV reactor. (7-1-24)

l. Reactors will be provided with air relief and pressure control valves per manufacturer requirements. (7-1-24)

m. UVT analyzers must be provided if UVT is part of the dose monitoring strategy. It is recommended that UVT be monitored on a regular basis for all PWSs to assess UVT variability. (7-1-24)

n. A single train with a standby reactor or a sufficient number of parallel ultraviolet treatment devices must be installed to ensure that adequate disinfection is provided when one unit is out of service. The Department may approve an alternate method that provides adequate disinfection such as standby chlorination. Any PWS that produces water on an irregular schedule may provide documentation for the Department's review and approval that a single reactor is an acceptable design by demonstrating there is adequate time for maintenance and cleaning during operation shutdowns. (7-1-24)

o. No bypass of the ultraviolet treatment process may be installed unless an alternate method of providing adequate disinfection is provided. (7-1-24)

05. Controls. (7-1-24)

a. A delay mechanism must be installed to provide sufficient lamp warm-up prior to allowing water to flow from the ultraviolet treatment unit. (7-1-24)

b. An automatic shutdown must be designed to activate the shutdown valve in cases where the ultraviolet light dose falls below the approved design dose or outside of the validated specifications. (7-1-24)

06. Reliability. The PWS must be capable of producing the plant design capacity at all times. (7-1-24)

a. Unless otherwise approved by the Department and in accordance with Subsection 529.04.n., a minimum of two (2) reactors is required to maintain disinfection when one unit is taken out of service. Each reactor must be sized to deliver the required UV dose under the operating conditions of flow and UVT that occur at the plant. The conditions must fall within the validated range of the reactor as determined during validation testing. (7-1-24)

b. The quality and reliability of the power supply must be analyzed and back-up power supplies will be discussed in the contingency plan. (7-1-24)

c. If UVT is above the validated range of UVT, the UV dose monitoring algorithm must default to the maximum of the validated range. If UVT is below the validated range, the UV system operation must be recorded as outside of the validated operating conditions. When UVT falls outside of ranges identified in the validated operating conditions, the contingency plan will be enacted if UVT is part of the dose monitoring strategy. (7-1-24)

d. A contingency plan for total UV disinfection failure, loss of power, or in the event that water quality changes produce water quality unsuitable for UV disinfection must be described in the PER. (7-1-24)

07. Monitoring. PWSs using UV light must monitor for the parameters necessary to demonstrate operation within the validated conditions of the required UV dose. PWS owners must check the calibration of UV sensors and online UVT monitors and recalibrate in accordance with a protocol approved by the Department. At a minimum, the following parameters must be monitored: (7-1-24)

a. If the flow rate is below the validated range, then the UV dose monitoring algorithm must default to the validated range. If the flow rate is above the validated range, then the UV system operation will be recorded as outside of the validated operating conditions; (7-1-24)

b. UV intensity as measured by UV sensors; (7-1-24)

c. UVT if UVT is part of the dose monitoring strategy; and (7-1-24)

d. Lamp status. (7-1-24)

08. Alarms. The settings or predetermined set points for the alarms must be specified in the PER. The report must also specify the alarms that will activate the contingency plan response. At a minimum, the following alarms are required: (7-1-24)

a. Low UV intensity; (7-1-24)

b. High turbidity if required by the Department; (7-1-24)

c. Low UVT; (7-1-24)

d. Low UV dose; (7-1-24)

e. Lamp failure; (7-1-24)

f. UVT monitor failure; (7-1-24)

g. UV sensor failure; (7-1-24)

h. Low water level; and (7-1-24)

i. High flow rate. (7-1-24)

09. Initial Startup. The following items must be tested and verified before UV disinfected water is distributed: (7-1-24)

a. Electrical components; (7-1-24)

b. Water level; (7-1-24)

c. Flow split between reactor trains if applicable; (7-1-24)

d. Controls and alarms; and (7-1-24)

e. Instrument calibration. (7-1-24)

10. Operation and Maintenance Manual. A project specific operation and maintenance manual must be provided as required in Subsection 501.12. See definition of Operation and Maintenance Manual in Section 003 for the typical contents of an operation and maintenance manual and the included operations plan. The operations plan in the operation and maintenance manual must include, but is not limited to, the following information: (7-1-24)

a. Lamp replacement intervals may be based on the degree of lamp aging as indicated by the UV sensors; (7-1-24)

b. Lamp fouling analysis and cleaning procedures; (7-1-24)

c. Lamp replacement; and (7-1-24)

d. Lamp breakage. (7-1-24)

530. DISINFECTION OF DRINKING WATER, DISINFECTING AGENTS.

PWS owners may accomplish with gas and liquid chlorine, calcium or sodium hypochlorites, chlorine dioxide, ozone, or ultraviolet light. Other disinfecting agents will be considered, providing reliable application equipment is available and testing procedures for a residual are recognized in "Standard Methods for the Examination of Water and Wastewater," referenced in Subsection 002.02, or an equivalent means of measuring effectiveness exists. The required amount of primary disinfection needed will be specified by the Department. Consideration must be given to the formation of disinfection by-products (DBP) when selecting the disinfectant. See Section 531, Design Standards for Chemical Application. For PWSs using only groundwater and that voluntarily chlorinate, see Subsection 552.04. (7-1-24)

01. Chlorination. (7-1-24)

a. In addition to the requirements of Section 531, chlorination equipment must meet the following requirements: (7-1-24)

i. Solution-feed gas chlorinators or hypochlorite feeders of the positive displacement type must be provided. (7-1-24)

ii. Standby or backup equipment of sufficient capacity will be available to replace the largest unit. Spare parts will be on hand to replace parts subject to wear and breakage. (7-1-24)

iii. Automatic proportioning chlorinators are required where the rate of flow or chlorine demand is not reasonably constant. (7-1-24)

iv. Each eductor (submerged jet pump) must be selected for the point of application with particular attention given to the quantity of chlorine to be added, the maximum injector waterflow, the total discharge back pressure, the injector operating pressure, and the size of the chlorine solution line. (7-1-24)

v. The chlorine solution injector/diffuser must be compatible with the point of application to provide a rapid and thorough mix with all the water being treated. (7-1-24)

vi. Automatic switch-over of chlorination treatment units will be provided, where necessary, to assure continuous disinfection. (7-1-24)

b. Effective contact time and point of application requirements are as follows: (7-1-24)

i. Effective contact time sufficient to achieve the inactivation of target pathogens under the expected range of raw water pH and temperature variation must be demonstrated through tracer studies or other evaluations or calculations acceptable to the Department. Improving Clearwell Design for CT Compliance, referenced in Section 002.02, contains information that may be used as guidance for these calculations. Additional baffling can be added to new or existing basins to minimize short circuiting and increase contact time. (7-1-24)

ii. At least two (2) contactors must be provided which are each capable of providing the required effective contact time at one-half (1/2) of the plant design capacity. Alternatively, a single contactor that can provide effective contact time at plant design capacity may be designed with separate sections and bypass piping to allow sections to be cleaned or maintained individually during low flow conditions. Any PWS that produces water on an irregular schedule may provide documentation for the Department's review and approval that a single contactor is an acceptable design by demonstrating there is adequate time for maintenance and cleaning during operation shutdowns. (7-1-24)

iii. At plants treating surface water, except slow sand filtration systems: Unless otherwise approved by the Department, in addition to the injection point prior to the disinfection contact tank, injection points, including all appurtenant chemical feed piping, must also be provided for applying the disinfectant to the raw water, settled water, and water entering the distribution system. (7-1-24)

iv. For pipeline contactors, provision must be made to drain accumulated sediment from the bottom of the contactor if the discharge from the contactor is not located at the bottom. (7-1-24)

c. Chlorine residual test equipment recognized in the "Standard Methods for the Examination of Water and Wastewater," referenced in Subsection 002.02, must be provided for use by the operator. All surface water treatment plants that serve a population greater that three thousand three hundred (3,300) must have equipment to measure chlorine residuals continuously entering the distribution system. A sample tap must be provided to measure chlorine residual and will be located at a point after receiving the required contact time and at or prior to the first service connection. (7-1-24)

d. Chlorinator piping requirements: (7-1-24)

i. The chlorinator water supply piping must be designed to prevent contamination of the treated water supply by sources of questionable quality. At all facilities treating surface water, pre- and post-chlorination systems must be independent to prevent possible siphoning of partially treated water into the clear well. The water supply to each eductor must have a separate shut-off valve. No master shut-off valve will be allowed. (7-1-24)

ii. The pipes carrying elemental liquid or dry gaseous chlorine under pressure must be Schedule 80 seamless steel tubing or other materials recommended by the Chlorine Institute (never use PVC). Rubber, PVC, polyethylene, or other materials recommended by the Chlorine Institute must be used for chlorine solution piping and fittings. Nylon products are not acceptable for any part of the chlorine solution piping system. (7-1-24)

02. Disinfection with Ozone. PWSs that are required to maintain a disinfectant residual in the distribution system must supplement ozone disinfection with a chemical disinfectant. (7-1-24)

a. The following are requirements for feed gas preparation: (7-1-24)

i. Feed gas can be air, oxygen enriched air, or high purity oxygen. Sources of high purity oxygen include purchased liquid oxygen conforming with AWWA Standard B-304; on site generation using cryogenic air separation; or temperature, pressure or vacuum swing (adsorptive separation) technology. In all cases, the design engineer must ensure that the maximum dew point of -76°F (-60°C) will not be exceeded at any time. (7-1-24)

ii. Air compression: (7-1-24)

(1) Air compressors will be of the liquid-ring or rotary lobe, oil-less, positive displacement type for smaller systems or dry rotary screw compressors for larger systems. (7-1-24)

(2) The air compressors will have the capacity to simultaneously provide for maximum ozone demand, provide the air flow required for purging the desiccant dryers (where required) and allow for standby capacity. (7-1-24)

(3) Air feed for the compressor will be drawn from a point protected from rain, condensation, mist, fog and contaminated air sources to minimize moisture and hydrocarbon content of the air supply. (7-1-24)

(4) A compressed air after-cooler, entrainment separator, or a combination of the two (2) with automatic drain will be provided prior to the dryers to reduce the water vapor. (7-1-24)

(5) A back-up air compressor must be provided so that ozone generation is not interrupted in the event of a break-down. (7-1-24)

iii. Air drying: (7-1-24)

(1) Dry, dust-free and oil-free feed gas must be provided to the ozone generator. Dry gas is essential to prevent formation of nitric acid, to increase the efficiency of ozone generation and to prevent damage to the generator dielectrics. Sufficient drying to a maximum dew point of -76°F (-60°C) must be provided at the end of the drying cycle. (7-1-24)

(2) Drying for high pressure systems may be accomplished using heatless desiccant dryers only. For low pressure systems, a refrigeration air dryer in series with heat-reactivated desiccant dryers will be used. (7-1-24)

(3) A refrigeration dryer capable of reducing inlet air temperature to 40°F (4°C) will be provided for low pressure air preparation systems. The dryer can be of the compressed refrigerant type or chilled water type. (7-1-24)

(4) For heat-reactivated desiccant dryers, the unit must contain two (2) desiccant filled towers complete with pressure relief valves, two (2) four-way valves and a heater. In addition, external type dryers must have a cooler unit and blowers. The size of the unit will be such that the specified dew point will be achieved during a minimum adsorption cycle time of sixteen (16) hours while operating at the maximum expected moisture loading conditions. (7-1-24)

(5) Multiple air dryers will be provided so that the ozone generation is not interrupted in the event of dryer breakdown. (7-1-24)

(6) Each dryer will be capable of venting “dry” gas to the atmosphere, prior to the ozone generator, to allow start-up when other dryers are “on-line.” (7-1-24)

iv. Air filters: (7-1-24)

(1) Air filters will be provided on the suction side of the air compressors, between the air compressors and the dryers and between the dryers and the ozone generators. (7-1-24)

(2) The filter before the desiccant dryers will be of the coalescing type and be capable of removing aerosol and particulates larger than 0.3 microns in diameter. The filter after the desiccant dryer will be of the particulate type and be capable of removing all particulates greater than 0.1 microns in diameter, or smaller if specified by the generator manufacturer. (7-1-24)

v. Piping in the air preparation system can be common grade steel, seamless copper, stainless steel or galvanized steel. The piping must be designed to withstand the maximum pressures in the air preparation system. (7-1-24)

b. The following requirements apply to the ozone generator: (7-1-24)

i. Capacity. (7-1-24)

(1) The production rating of the ozone generators must be stated in pounds per day and kWhr per pound at a maximum cooling water temperature and maximum ozone concentration. (7-1-24)

(2) The design will ensure that the minimum concentration of ozone in the generator exit gas will not be less than one (1) percent (by weight). (7-1-24)

(3) Generators will be sized to have sufficient reserve capacity so that the PWS does not operate at peak capacity for extended periods of time resulting in premature breakdown of the dielectrics. (7-1-24)

(4) The production rate of ozone generators will decrease as the temperature of the coolant increases. If there is to be a variation in the supply temperature of the coolant throughout the year, then pertinent data will be used to determine production changes due to the temperature change of the supplied coolant. The design will ensure that the generators can produce the required ozone at maximum coolant temperature. (7-1-24)

(5) Appropriate ozone generator backup equipment must be provided. (7-1-24)

ii. The generators can be low, medium or high frequency type. Specifications will require that the transformers, electronic circuitry and other electrical hardware be proven, high quality components designed for ozone service. (7-1-24)

iii. Adequate cooling must be provided. The cooling water must be properly treated to minimize corrosion, scaling and microbiological fouling of the water side of the tubes. Where cooling water is treated, cross connection control must be provided to prevent contamination of the potable water supply. (7-1-24)

iv. To prevent corrosion, the ozone generator shell and tubes must be constructed of Type 316L stainless steel. (7-1-24)

c. The following requirements apply to ozone contactors: (7-1-24)

i. Bubble diffusers. (7-1-24)

(1) Where disinfection is the primary application, a minimum of two (2) contact chambers, each equipped with baffles to prevent short circuiting and induce countercurrent flow, will be provided. Ozone must be applied using porous-tube or dome diffusers. (7-1-24)

(2) The minimum contact time will be ten (10) minutes. A shorter contact time (CT) may be approved by the Department if justified by appropriate design and "CT" considerations. (7-1-24)

(3) Where taste and odor control is of concern, multiple application points and contactors will be considered. (7-1-24)

(4) Contactors will be separate closed vessels that have no common walls with adjacent rooms. The contactor must be kept under negative pressure and sufficient ozone monitors will be provided to protect worker safety. (7-1-24)

(5) Contact vessels can be made of reinforced concrete, stainless steel, fiberglass or other material which will be stable in the presence of residual ozone and ozone in the gas phase above the water level. If contact vessels are made of reinforced concrete, all reinforcement bars must be covered with a minimum of one and one-half (1.5) inches of concrete. (7-1-24)

(6) Where necessary, a system is to be provided between the contactor and the off-gas destruct unit to remove froth from the air and return the other to the contactor or other location acceptable to the Department. If foaming is expected to be excessive, then a potable water spray system must be placed in the contactor head space.

(7-1-24)

(7) All openings into the contactor for pipe connections, hatchways, etc. must be properly sealed using welds or ozone resistant gaskets such as Teflon or Hypalon. (7-1-24)

(8) Multiple sampling ports must be provided to enable sampling of each compartment's effluent water and to confirm "CT" calculations. (7-1-24)

(9) A pressure/vacuum relief valve must be provided in the contactor and piped to a location where there will be no damage to the destruction unit. (7-1-24)

(10) The depth of water in bubble diffuser contactors must be a minimum of eighteen (18) feet. The contactor must also have a minimum of three (3) feet of freeboard to allow for foaming. (7-1-24)

(11) All contactors will have provisions for cleaning, maintenance and drainage of the contactor. Each contactor compartment must also be equipped with an access hatchway. (7-1-24)

(12) Aeration diffusers must be fully serviceable by either cleaning or replacement. (7-1-24)

ii. Other contactors, such as the venturi or aspirating turbine mixer contactor, may be approved by the Department provided adequate ozone transfer is achieved and the required contact times and residuals can be met and verified. (7-1-24)

d. The following requirements apply to ozone destruction units: (7-1-24)

i. A system for treating the final off-gas from each contactor must be provided in order to meet safety and air quality standards. Acceptable systems include thermal destruction and thermal/catalytic destruction units. (7-1-24)

ii. The maximum allowable ozone concentration in the discharge is 0.1 ppm (by volume). (7-1-24)

iii. At least two (2) units will be provided which are each capable of handling the entire gas flow. (7-1-24)

iv. Exhaust blowers must be provided in order to draw off-gas from the contactor into the destruct unit. (7-1-24)

v. Catalysts must be protected from froth, moisture and other impurities which may harm the catalyst. (7-1-24)

vi. The catalyst and heating elements will be located where they can easily be reached for maintenance. (7-1-24)

e. Only low carbon 304L and 316L stainless steels may be used for ozone service with 316L preferred. (7-1-24)

f. The following requirements apply to joints and connections: (7-1-24)

i. Connections on piping used for ozone service are to be welded where possible. (7-1-24)

ii. Connections with meters, valves or other equipment are to be made with flanged joints with ozone resistant gaskets, such as Teflon or Hypalon. Screwed fittings may not be used because of their tendency to leak. (7-1-24)

iii. A positive closing plug or butterfly valve plus a leak-proof check valve must be provided in the piping between the generator and the contactor to prevent moisture reaching the generator. (7-1-24)

g. The following instrumentation must be provided: (7-1-24)

i. Pressure gauges at the discharge from the air compressor, at the inlet to the refrigeration dryers, at the inlet and outlet of the desiccant dryers, at the inlet to the ozone generators and contactors, and at the inlet to the ozone destruction unit. (7-1-24)

ii. A trip which shuts down the generator when the wattage exceeds a certain preset level. (7-1-24)

iii. Dew point monitors for measuring the moisture of the feed gas from the desiccant dryers. Where there is potential for moisture entering the ozone generator from downstream of the unit or where moisture accumulation can occur in the generator during shutdown, post-generator dew point monitors must be used. (7-1-24)

iv. Air flow meters for measuring air flow from the desiccant dryers to each of the other ozone generators, air flow to each contactor, and purge air flow to the desiccant dryers. (7-1-24)

v. Temperature gauges for the inlet and outlet of the ozone cooling water and the inlet and outlet of the ozone generator feed gas and, if necessary, for the inlet and outlet of the ozone power supply cooling water. (7-1-24)

vi. Water flow meters to monitor the flow of cooling water to the ozone generators and, if necessary, to the ozone power supply. (7-1-24)

vii. Ozone monitors to measure zone concentration in both the feed-gas and off-gas from the contactor and in the off-gas from the destruct unit. For disinfection systems, monitors for monitoring ozone residuals in the water. The number and location of ozone residual monitors must be such that the amount of time that the water is in contact with the ozone residual can be determined. (7-1-24)

viii. A minimum of one ambient ozone monitor installed in the vicinity of the contactor and a minimum of one installed in the vicinity of the generator. Ozone monitors must be installed in any areas where ozone gas may accumulate. (7-1-24)

h. Safety requirements are as follows: (7-1-24)

i. The maximum allowable ozone concentration in the air to which workers may be exposed must not exceed one-tenth part per million (0.1 ppm) by volume. (7-1-24)

ii. Noise levels resulting from the operating equipment of the ozonation system must be controlled to within acceptable limits by special room construction and equipment isolation. (7-1-24)

iii. PWS owners must provide emergency exhaust fans in the rooms containing the ozone generators to remove ozone gas if leakage occurs. (7-1-24)

iv. PWS owners must post a sign indicating “No smoking, oxygen in use” at all entrances to the treatment plant. In addition, no flammable or combustible materials may be stored within the oxygen generator areas. (7-1-24)

03. Disinfection with Chlorine Dioxide. Chlorine dioxide may be considered as a primary and residual disinfectant, a pre-oxidant to control tastes and odors, to oxidize iron and manganese, and to control hydrogen sulfide and phenolic compounds. When choosing chlorine dioxide, consideration must be given to formation of the regulated by-products, chlorite and chlorate. (7-1-24)

a. Chlorine dioxide generation equipment must be factory assembled pre-engineered units with a minimum efficiency of ninety-five (95) percent. The excess free chlorine may not exceed three (3) percent of the theoretical stoichiometric concentration required. (7-1-24)

b. Other design requirements include: (7-1-24)

i. The design must comply with all applicable portions of Subsections 530.01.a. through 530.01.d. (7-1-24)

ii. The maximum residual disinfectant level allowed is zero point eight (0.8) milligrams per liter (mg/l), even for short term exposures. (7-1-24)

iii. Notification of a change in disinfection practices and the schedule for the changes must be made known to the public; particularly to hospitals, kidney dialysis facilities and fish breeders, as chlorine dioxide and its by-products may have effects similar to chloramines. (7-1-24)

04. Other Disinfecting Agents. Proposals for use of disinfecting agents other than those listed must be submitted to the Department for approval in the preliminary engineering report required under Section 503. (7-1-24)

531. DESIGN STANDARDS FOR CHEMICAL APPLICATION.

01. General Equipment Design. General equipment design must be such that: (7-1-24)

a. Feeders will be able to supply, at all times, the necessary amounts of chemicals at an accurate rate, throughout the range of feed. (7-1-24)

b. Chemical-contact materials and surfaces are resistant to the aggressiveness of the chemical solution. (7-1-24)

c. Corrosive chemicals are introduced in such a manner as to minimize potential for corrosion. (7-1-24)

d. Chemicals that are incompatible are not stored or handled together. At facilities where more than one (1) chemical is stored or handled, tanks and pipelines must be clearly labeled to identify the chemical they contain. (7-1-24)

e. All chemicals are conducted from the feeder to the point of application in separate conduits. (7-1-24)

f. Chemical feeders are as near as practical to the feed point. (7-1-24)

g. Chemical feeders and pumps must operate at no lower than twenty percent (20%) of the feed range unless two fully independent adjustment mechanisms such as pump pulse rate and stroke length are fitted, then the pump must operate at no lower than ten percent (10%) of the rated maximum. (7-1-24)

h. Spare parts must be on hand for parts of feeders that are subject to frequent wear and damage. (7-1-24)

i. Redundant chemical feeders with automatic switchover must be provided when necessary to ensure adequate treatment. If the water treatment system includes at least two (2) process trains of equipment so that the plant design capacity can be maintained with any component out of service, redundant chemical feeders are not required on each process train. (7-1-24)

02. Facility Design. (7-1-24)

a. Where chemical feed is necessary for the protection of the supply, such as disinfection, coagulation or other essential processes, a minimum of two feeders must be provided and a separate feeder will be used for each chemical applied. (7-1-24)

b. Chemical application control systems must meet the following requirements: (7-1-24)

i. Feeders may be manually or automatically controlled, with automatic controls being designed so as to allow override by manual controls. (7-1-24)

ii. Chemical feeders will be energized by a flow sensing device so that injection of the chemicals will not continue when the flow of water stops. (7-1-24)

iii. Automatic proportioning chemical feeders are required where the rate of flow is not reasonably constant. (7-1-24)

iv. A means to measure water flow must be provided in order to determine chemical feed rates. (7-1-24)

v. Provisions will be made for measuring the quantities of chemicals used. (7-1-24)

vi. Weighing scales will be provided for weighing cylinders at all plants utilizing chlorine gas, fluoride solution feed. (7-1-24)

vii. Weighing scales must be capable of providing reasonable precision in relation to average daily dose. (7-1-24)

viii. Where conditions warrant, for example with rapidly fluctuating intake turbidity, coagulant and coagulant aid addition may be made according to turbidity, streaming current or other sensed parameter. (7-1-24)

c. Dry chemical feeders will measure chemicals volumetrically or gravimetrically, provide adequate solution water and agitation of the chemical in the solution pot, and completely enclose chemicals to prevent emission of dust to the operating room. (7-1-24)

d. Positive displacement type solution feed pumps must be capable of operating at the required maximum head conditions found at the point of injection. (7-1-24)

e. Liquid chemical feeders must be such that chemical solutions cannot be siphoned or overfed into the water supply, by assuring discharge at a point of positive pressure, or providing vacuum relief, or providing a suitable air gap, or providing other suitable means or combinations as necessary. (7-1-24)

f. Cross connection control must be provided to assure that the following requirements are satisfied. (7-1-24)

i. The service water lines discharging to solution tanks must be properly protected from backflow. (7-1-24)

ii. No direct connection exists between any sewer and a drain or overflow from the feeder, solution chamber or tank by providing that all drains terminate at least six (6) inches or two pipe diameters, whichever is greater, above the overflow rim of a receiving sump, conduit or waste receptacle. (7-1-24)

g. Chemical feed equipment must be readily accessible for servicing, repair, and observation of operation. (7-1-24)

h. In-plant water supply for chemical mixing must be: (7-1-24)

i. Ample in quantity and adequate in pressure. (7-1-24)

ii. Provided with means for measurement when preparing specific solution concentrations by dilution. (7-1-24)

iii. Properly treated for hardness, when necessary. (7-1-24)

iv. Properly protected against backflow. (7-1-24)

v. Obtained from a location sufficiently downstream of any chemical feed point to assure adequate

mixing. (7-1-24)

i. Chemical storage facilities must satisfy the following requirements: (7-1-24)

i. Storage tanks and pipelines for liquid chemicals must be specified for use with individual chemicals and not used for different chemicals. Off-loading areas must be clearly labeled to prevent accidental cross-contamination. (7-1-24)

ii. Chemicals will be stored in covered or unopened shipping containers, unless the chemical is transferred into an approved storage unit. (7-1-24)

j. Bulk liquid storage tanks must comply with the following requirements: (7-1-24)

i. A means which is consistent with the nature of the chemical stored will be provided in a liquid storage tank to maintain a uniform strength of solution. Continuous agitation will be provided to maintain slurries in suspension. (7-1-24)

ii. Means will be provided to measure the liquid level in the tank. (7-1-24)

iii. Bulk liquid storage tanks will be kept covered. Bulk liquid storage tanks with access openings will have such openings curbed and fitted with overhanging covers. (7-1-24)

iv. Subsurface locations for bulk liquid storage tanks will be free from sources of possible contamination, and assure positive drainage for groundwaters, accumulated water, chemical spills and overflows. (7-1-24)

v. Bulk liquid storage tanks will be vented, but may not vent through vents common with other chemicals or day tanks. Acid storage tanks must be vented to the outside atmosphere, but not through vents in common with other chemicals or day tanks. (7-1-24)

vi. Each bulk liquid storage tank will be provided with a valved drain, protected against backflow and cross-connections. (7-1-24)

vii. Bulk liquid storage tanks will have an overflow, when provided, that is turned downward with the end screened with a twenty-four (24) mesh or similar non-corrodible screen, have a free fall discharge, and be located where noticeable. (7-1-24)

viii. Where chemical feed is necessary for the protection of the supply, a means to assure continuity of chemical supply while servicing a bulk liquid storage tank will be provided. (7-1-24)

ix. Bulk liquid storage tanks will be provided with secondary containment so that chemicals from equipment failure, spillage, or accidental drainage will not enter the water in conduits, treatment, or storage basins. A common receiving basin may be provided for each group of compatible chemicals. The bulk liquid storage tank basin or the common receiving basin will provide a secondary containment volume sufficient to hold one hundred ten percent (110%) of the volume of the largest storage tank. Piping will be designed to minimize or contain chemical spills in the event of pipe ruptures. (7-1-24)

k. Day tanks will be provided where bulk storage of liquid chemical is provided. However, upon approval by the Department, chemicals may be fed directly from shipping containers no larger than fifty-five (55) gallons. For the purposes of Section 531, day tanks are defined as liquid chemical tanks holding no more than a thirty (30) hour chemical supply. (7-1-24)

i. Day tanks are subject to the requirements in Subsections 531.02.j.i. through 531.02.j.vii. except shipping containers do not require overflow pipe and drains. (7-1-24)

ii. Where feasible, secondary containment will be provided so that chemicals from equipment failure, spillage, or accidental drainage of day tanks will be fully contained. A common receiving basin may be provided for

each group of compatible chemicals. The common receiving basin will provide a secondary containment volume sufficient to hold the volume of the largest storage tank. If secondary containment is not feasible, day tanks will be located and protective curbings provided so that chemicals from equipment failure, spillage, or accidental drainage of day tanks will not enter the water in conduits, treatment, or storage basins. Secondary containment is not required for a day tank if an Idaho licensed professional engineer demonstrates to the Department that the chemical concentration and volume, if spilled, will not be a safety hazard to employees, will not be hazardous to the public health, and will not harm the environment. (7-1-24)

iii. Day tanks and the tank refilling line entry points will be clearly labeled with the name of the chemical contained. (7-1-24)

iv. Filling of day tanks may not be automated unless otherwise approved by the Department. (7-1-24)

l. Provisions must be made for measuring quantities of chemicals used to prepare feed solutions. (7-1-24)

m. Vents from feeders, storage facilities and equipment exhaust must discharge to the outside atmosphere above grade and remote from air intakes. (7-1-24)

03. Chemicals. Chemical shipping containers must be fully labeled to include chemical name, purity and concentration, supplier name and address, and evidence of ANSI/NSF certification where applicable. (7-1-24)

04. Safety Requirements for Chemical Facilities. (7-1-24)

a. The following requirements apply to chlorine gas feed and storage rooms: (7-1-24)

i. Each storage room will be enclosed and separated from other operating areas. They will be constructed in such a manner that all openings between the chlorine room and the remainder of the plant are sealed, and provided with doors equipped with panic hardware, assuring ready means of exit and opening outward only to the building exterior. (7-1-24)

ii. Each room will be provided with a shatter resistant inspection window installed in an interior wall. (7-1-24)

iii. Each room will have a ventilating fan with a capacity which provides one (1) complete air change per minute when the room is occupied. Where this is not appropriate due to the size of the room, a lesser rate may be allowed by the Department on a site specific basis. (7-1-24)

iv. The ventilating fan will take suction near the floor as far as practical from the door and air inlet, with the point of discharge located as far away as possible from doors, air inlets to any rooms or structures, or occupied areas. Air inlets will be through louvers near the ceiling. (7-1-24)

v. Louvers for chlorine room air intake and exhaust will facilitate airtight closure. (7-1-24)

vi. Separate switches for the fan and lights will be located outside of the chlorine room and at the inspection window. Outside switches will be protected from vandalism. A signal light indicating fan operation will be provided at each entrance when the fan can be controlled from more than one (1) point. (7-1-24)

vii. Vents from feeders and storage will discharge to the outside atmosphere, above grade. (7-1-24)

viii. Where provided, floor drains will discharge to the outside of the building and will not be connected to any internal drainage systems or external drainage systems unless the external drainage systems drain to an approved discharge point. (7-1-24)

ix. Chlorinator rooms will be heated to sixty degrees Fahrenheit (60°F) and be protected from excessive heat. Cylinders and gas lines will be protected from temperatures above that of the feed equipment. (7-1-24)

x. Pressurized chlorine feed lines may not carry chlorine gas beyond the chlorinator room. (7-1-24)

xi. Critical isolation valves will be conspicuously marked and access kept unobstructed. (7-1-24)

xii. All chlorine rooms, buildings, and areas will be posted with a prominent danger sign warning of the presence of chlorine. (7-1-24)

xiii. Full and empty cylinders of chlorine gas will be isolated from operating areas and stored in definitely assigned places away from elevators, stairs, or gangways. They will be restrained in position to prevent being knocked over or damaged by passing or falling objects. In addition, they will be stored in rooms separate from ammonia storage, out of direct sunlight, and at least twenty (20) feet from highly combustible materials. Cylinders may not be kept in unventilated enclosures such as lockers and cupboards. (7-1-24)

b. Where acids and caustics are used, they must be kept in closed corrosion-resistant shipping containers or storage units. Acids and caustics may not be handled in open vessels, but will be pumped in undiluted form from original containers through suitable hose to the point of treatment or to a covered day tank. (7-1-24)

c. Proposals for the storage and use of sodium chlorite must be approved by the Department prior to the preparation of final plans and specifications. Provisions must be made for proper storage and handling of sodium chlorite to eliminate any danger of fire or explosion associated with its oxidizing nature. (7-1-24)

i. Chlorite (sodium chlorite) will be stored by itself in a separate room. It must be stored away from organic materials. The storage structure will be constructed of noncombustible materials. If the storage structure must be located in an area where a fire may occur, water must be available to keep the sodium chlorite area cool enough to prevent heat-induced explosive decomposition of the chlorite. (7-1-24)

ii. Care will be taken to prevent spillage. An emergency plan of operation will be available for the clean up of any spillage. Storage drums will be thoroughly flushed prior to recycling or disposal. (7-1-24)

d. Where ammonium hydroxide is used, an exhaust fan must be installed to withdraw air from high points in the room and makeup air must be allowed to enter at a low point. The feed pump, regulators, and lines must be fitted with pressure relief vents discharging outside the building away from any air intake and with water purge lines leading back to the headspace of the bulk storage tank. (7-1-24)

e. Where anhydrous ammonia is used, the storage and feed systems (including heaters where required) must be enclosed and separated from other work areas and constructed of corrosion resistant materials. (7-1-24)

i. Pressurized ammonia feed lines will be restricted to the ammonia room. (7-1-24)

ii. An emergency air exhaust system, as described in Subsection 531.04.a., but with an elevated intake, must be provided in the ammonia storage room. (7-1-24)

iii. Leak detection systems must be fitted in all areas through which ammonia is piped. (7-1-24)

iv. Special vacuum breaker/regulator provisions must be made to avoid potentially violent results of backflow of water into cylinders or storage tanks. (7-1-24)

v. Consideration must be given to the provision of an emergency gas scrubber capable of absorbing the entire contents of the largest ammonia storage unit whenever there is a risk to the public as a result of potential ammonia leaks. (7-1-24)

05. Operator Safety. The Idaho General Safety and Health Standards, referenced in Subsection 002.02, may be used as guidance in designing facilities to ensure the safety of operators. Facilities must meet applicable regulations from the Occupational Health and Safety Administration. (7-1-24)

06. Design Requirements for Specific Applications. In addition to Subsection 531.01 through 531.03, the following design requirements apply for the specific applications within Subsection 531.06 of this rule. (7-1-24)

a. Positive displacement feeders will be provided for sodium chlorite used for chlorine dioxide generation. Tubing for conveying sodium chlorite or chlorine dioxide solutions must be Type 1 PVC, polyethylene or materials recommended by the manufacturer. Chemical feeders may be installed in chlorine rooms if sufficient space is provided. Otherwise, facilities meeting the requirements of chlorine rooms will be provided. Feed lines will be installed in a manner to prevent formation of gas pockets and will terminate at a point of positive pressure. Check valves will be provided to prevent the backflow of chlorine into the sodium chlorite line. (7-1-24)

b. Hypochlorite facilities must meet the following requirements: (7-1-24)

i. Hypochlorite will be stored in the original shipping containers or in hypochlorite compatible containers. Storage containers or tanks will be sited out of the sunlight in a cool and ventilated area. (7-1-24)

ii. Stored hypochlorite will be pumped undiluted to the point of addition. Where dilution is unavoidable, deionized or softened water will be used unless otherwise approved by the Department. (7-1-24)

iii. Storage areas, tanks, and pipe work will be designed to avoid the possibility of uncontrolled discharges and a sufficient amount of appropriately selected spill absorbent will be stored on-site. (7-1-24)

iv. Hypochlorite feeders will be positive displacement pumps with compatible materials for wetted surfaces. (7-1-24)

v. To avoid air locking in smaller installations, small diameter suction lines will be used with foot valves and degassing pump heads. In larger installations flooded suction will be used with pipe work arranged to ease escape of gas bubbles. Calibration tubes or mass flow monitors which allow for direct physical checking of actual feed rates will be fitted. (7-1-24)

vi. Injectors will be made removable for regular cleaning where hard water is to be treated. (7-1-24)

c. When ammonium sulfate is used, the tank and dosing equipment contact surfaces must be made of corrosion resistant non-metallic materials. Provision will be made for removal of the agitator after dissolving the solid. The tank will be fitted with a lid and vented outdoors. Injection of the solution will take place in the center of treated water flow at a location where there is high velocity movement. (7-1-24)

d. When aqua ammonia (ammonium hydroxide) is used, the feed pumps and storage will be enclosed and separated from other operating areas. The aqua ammonia room will be equipped as required for chlorinator rooms with the following changes: (7-1-24)

i. A corrosion resistant, closed, unpressurized tank will be used for bulk storage, vented through an inert liquid trap to a high point outside and an incompatible connector, or lockout provisions will be made to prevent accidental addition of other chemicals to the storage tank. (7-1-24)

ii. The storage tank will be designed to avoid conditions where temperature increases cause the ammonia vapor pressure over the aqua ammonia to exceed atmospheric pressure. This capability can be provided by cooling/refrigeration or diluting or mixing the contents with water without opening the system. (7-1-24)

iii. The aqua ammonia will be conveyed direct from storage to the treated water stream injector without the use of a carrier water stream unless the carrier stream is softened. (7-1-24)

iv. The point of delivery to the main water stream will be placed in a region of turbulent water flow. (7-1-24)

v. Provisions will be made for easy access for removal of calcium scale deposits from the injector. (7-1-24)

532. DESIGN STANDARDS FOR SOFTENING.
The softening process selected must be based upon the mineral qualities of the raw water and the desired finished water quality in conjunction with requirements for disposal of sludge or brine waste (see Section 540), cost of plant, cost of chemicals, and plant location. Applicability of the process chosen must be demonstrated. (7-1-24)

01. Lime or Lime-Soda Process. Rapid mix, flocculation, and sedimentation processes must meet the requirements of Section 520. In addition the following requirements must be met: (7-1-24)

a. When split treatment is used, an accurate means of measuring and splitting the flow must be provided. (7-1-24)

b. Rapid mix basins must provide not more than thirty (30) seconds detention time with adequate velocity gradients to keep the lime particles dispersed. (7-1-24)

c. Equipment for stabilization of water softened by the lime or lime-soda process is required, see Section 537. (7-1-24)

d. Mechanical sludge removal equipment will be provided in the sedimentation basin. (7-1-24)

e. Provisions must be included for proper disposal of softening sludges; see Section 540. (7-1-24)

f. The plant processes must be manually started following shut-down. (7-1-24)

02. Cation Exchange Process. (7-1-24)

a. Pre-treatment is required when the content of iron, manganese, or a combination of the two, is one milligram per liter (1 mg/L) or more. (7-1-24)

b. The units may be of pressure or gravity type, of either an upflow or downflow design. Automatic regeneration based on volume of water softened will be used unless manual regeneration is justified and is approved by the Department. A manual override will be provided on all automatic controls. (7-1-24)

c. Rate-of-flow controllers or the equivalent will be used to control the hydraulic loading of cation exchange units. (7-1-24)

d. The bottoms, strainer systems and support for the exchange resin will conform to the criteria provided for rapid rate gravity filters in Section 521. (7-1-24)

e. Backwash, rinse and air relief discharge pipes will be installed in such a manner as to prevent any possibility of back-siphonage. (7-1-24)

f. A bypass must be provided around softening units to produce a blended water of desirable hardness. Totalizing meters must be installed on the bypass line and on each softener unit. The bypass line must have a shutoff valve. (7-1-24)

g. When the applied water contains a chlorine residual, the cation exchange resin must be a type that is not damaged by residual chlorine. (7-1-24)

h. Smooth-nose sampling taps must be provided for the collection of representative samples. The taps will be located to provide for sampling of the softener influent, effluent, blended water, and on the brine tank discharge piping. The sampling taps for the blended water will be at least twenty (20) feet downstream from the point of blending. Petcocks are not acceptable as sampling taps. (7-1-24)

i. Brine and salt storage tanks must meet the following requirements: (7-1-24)

i. Salt dissolving or brine tanks and wet salt storage tanks must be covered and must be corrosion-

resistant. (7-1-24)

ii. The make-up water inlet must be protected from back-siphonage. (7-1-24)

iii. Wet salt storage basins must be equipped with manholes or hatchways for access and for direct dumping of salt from truck or rail car. Openings must be provided with raised curbs and watertight covers having overlapping edges similar to those required for finished water reservoirs. (7-1-24)

iv. Overflows, where provided, must be protected with twenty-four (24) mesh or similar non-corrodible screens, and must terminate with either a turned downed bend having a proper free fall discharge or a self-closing flap valve. (7-1-24)

v. The salt will be supported on graduated layers of gravel placed over a brine collection system. (7-1-24)

vi. Alternative designs which are conducive to frequent cleaning of the wet salt storage tank may be considered. (7-1-24)

vii. An eductor may be used to transfer brine from the brine tank to the softeners. If a pump is used, a brine measuring tank or means of metering will be provided to obtain the proper dilution. (7-1-24)

j. Suitable disposal must be provided for brine waste; see Section 540. Where the volume of spent brine must be reduced, consideration may be given to using a part of the spent liquid concentrate for a subsequent regeneration. (7-1-24)

k. Pipes and contact materials must be resistant to the aggressiveness of salt. Plastic and red brass are acceptable piping materials. Steel and concrete must be coated with a non-leaching protective coating which is compatible with salt and brine. (7-1-24)

l. Bagged salt and dry bulk salt storage will be enclosed and separated from other operating areas in order to prevent damage to equipment. (7-1-24)

533. DESIGN STANDARDS FOR TASTE AND ODOR CONTROL.

Provision must be made for the control of taste and odor. Chemicals must be added sufficiently ahead of other treatment processes to assure adequate contact time for an effective and economical use of the chemicals. Where severe taste and odor problems are encountered, in-plant studies, pilot plant studies, or both in-plant and pilot plant studies may be required in accordance with Subsection 501.19. (7-1-24)

01. Chlorination. When using chlorination as a method of taste and odor control adequate contact time must be provided to complete the chemical reactions involved. (7-1-24)

02. Chlorine Dioxide. Provisions must be made for proper storing and handling of the sodium chlorite, so as to eliminate any danger of explosion. (7-1-24)

03. Powdered Activated Carbon. (7-1-24)

a. The PWS owner can add carbon as a pre-mixed slurry or by means of a dry-feed machine as long as the carbon is properly wetted. (7-1-24)

b. Continuous agitation or resuspension equipment is necessary to keep the carbon from depositing in the slurry storage tank. (7-1-24)

c. The PWS owner must provide for adequate dust control. (7-1-24)

d. The PWS owner must handle powdered activated carbon as a potentially combustible material. (7-1-24)

04. Granular Activated Carbon. Replacement of anthracite with GAC may be considered as a control measure for geosmin and methylisoborneol (MIB) taste and odors from algae blooms in surface water applications. Demonstration studies are required by the Department. (7-1-24)

05. Copper Sulfate and Other Copper Compounds. Continuous or periodic treatment of surface water with copper compounds to kill algae or other growths must be controlled to prevent copper in excess of one point zero (1.0) milligrams per liter as copper in the plant effluent or distribution system. Care must be taken to assure an even distribution of the chemical within the treatment area. (7-1-24)

06. Potassium Permanganate. Application of potassium permanganate may be considered, providing the treatment will be designed so that the products of the reaction are not visible in the finished water. (7-1-24)

07. Ozone. Ozonation may be used as a means of taste and odor control. Adequate contact time must be provided to complete the chemical reactions involved. (7-1-24)

08. Other Methods. Other methods of taste and odor control may be made only after pilot plant tests and approval of the Department. (7-1-24)

534. AERATION PROCESSES.

PWS owners that install aeration treatment are subject to IDAPA 58.01.01, "Rules for the Control of Air Pollution in Idaho." The PWS owner or the design engineer must contact one of the Department's regional offices for information on obtaining a permit or an exemption for the emissions resulting from the aeration process. General information may be found on the Department website http://www.deq.idaho.gov. (7-1-24)

01. Natural Draft Aeration. Design must provide: (7-1-24)

a. Perforations in the distribution pan three sixteenths to one-half (3/16 – ½) inches in diameter, spaced one to three (1-3) inches on centers to maintain a six (6) inch water depth. (7-1-24)

b. Distribution of water uniformly over the top tray. (7-1-24)

c. Discharge through a series of three (3) or more trays with separation of trays not less than twelve (12) inches. (7-1-24)

d. Loading at a rate of one to five (1-5) gallons per minute for each square foot of total tray area. (7-1-24)

e. Trays with slotted, heavy wire (1/2 inch openings) mesh or perforated bottoms. (7-1-24)

f. Construction of durable material resistant to aggressiveness of the water and dissolved gases. (7-1-24)

g. Protection from insects by twenty-four (24) mesh or similar non-corrodible screen. (7-1-24)

02. Forced or Induced Draft Aeration. Design must provide: (7-1-24)

a. Include a blower with a weatherproof motor in a tight housing and screened enclosure. (7-1-24)

b. Ensure adequate counter current of air through the enclosed aerator column. (7-1-24)

c. Exhaust air directly to the outside atmosphere. (7-1-24)

d. Include a down-turned and twenty-four (24) mesh or similar non-corrodible screened air outlet and inlet. (7-1-24)

e. Be such that air introduced in the column will be as free from obnoxious fumes, dust, and dirt as possible. (7-1-24)

f. Be such that sections of the aerator can be easily reached or removed for maintenance of the interior or installed in a separate aerator room. (7-1-24)

g. Provide loading at a rate of one to five (1-5) gallons per minute for each square foot of total tray area. (7-1-24)

h. Ensure that the water outlet is adequately sealed to prevent unwarranted loss of air. (7-1-24)

i. Discharge through a series of five (5) or more trays with separation of trays not less than six (6) inches or as approved by the Department. (7-1-24)

j. Provide distribution of water uniformly over the top tray. (7-1-24)

k. Be of durable material resistant to the aggressiveness of the water and dissolved gases. (7-1-24)

03. Spray Aeration. Design must provide: (7-1-24)

a. A hydraulic head of between five (5) and twenty-five (25) feet. (7-1-24)

b. Nozzles, with the size, number, and spacing of the nozzles being dependent on the flowrate, space, and the amount of head available. (7-1-24)

c. Nozzle diameters in the range of one (1) to one and one-half (1.5) inches to minimize clogging. (7-1-24)

d. An enclosed basin to contain the spray. Any openings for ventilation must be protected with a twenty-four (24) mesh or similar non-corrodible screen. (7-1-24)

04. Pressure Aeration. Pressure aeration may be used for oxidation purposes only if the pilot plant study indicates the method is applicable; it is not acceptable for removal of dissolved gases. Filters following pressure aeration must have adequate exhaust devices for release of air. Pressure aeration devices must be designed to give thorough mixing of compressed air with water being treated and provide twenty-four (24) mesh or similar non-corrodible screened and filtered air, free of obnoxious fumes, dust, dirt and other contaminants. (7-1-24)

05. Packed Tower Aeration. Packed tower aeration may be used for the removal of volatile organic chemicals, trihalomethanes, carbon dioxide, and radon. Final design must be based on the results of pilot studies and be approved by the Department. (7-1-24)

a. Process design criteria. (7-1-24)

i. Justification for the design parameters selected (i.e., height and diameter of unit, air to water ratio, packing depth, surface loading rate, etc.) must be provided to the Department for review. The pilot study must evaluate a variety of loading rates and air to water ratios at the peak contaminant concentration. Special consideration will be given to removal efficiencies when multiple contaminations occur. Where there is considerable past performance data on the contaminant to be treated and there is a concentration level similar to previous projects, the Department may approve the process design based on use of appropriate calculations without a pilot study. (7-1-24)

ii. The tower must be designed to reduce contaminants to below the maximum contaminant level and to the lowest practical level. (7-1-24)

iii. The type and size of the packing used in the full scale unit must be the same as that used in the pilot study. (7-1-24)

iv. The maximum air to water ratio for which credit will be given is 80:1. (7-1-24)

v. The design must consider potential fouling problems from calcium carbonate and iron precipitation

and from bacterial growth. It may be necessary to provide pretreatment. Disinfection capability will be provided prior to and after packed tower aeration. (7-1-24)

vi. The effects of temperature must be considered. (7-1-24)

vii. Redundant packed tower aeration capacity at the design flowrate will be provided. (7-1-24)

b. The tower may be constructed of stainless steel, concrete, aluminum, fiberglass or plastic. Uncoated carbon steel is not allowed. Towers constructed of light-weight materials must be provided with adequate support to prevent damage from wind. Packing materials must be resistant to the aggressiveness of the water, dissolved gases and cleaning materials and must be suitable for contact with potable water. (7-1-24)

c. Water flow system. (7-1-24)

i. Water must be distributed uniformly at the top of the tower using spray nozzles or orifice-type distributor trays that prevent short circuiting. (7-1-24)

ii. A mist eliminator must be provided above the water distributor system. (7-1-24)

iii. A side wiper redistribution ring must be provided at least every ten (10) feet in order to prevent water channeling along the tower wall and short circuiting. (7-1-24)

iv. Sample taps must be provided in the influent and effluent piping. The sample taps must satisfy the requirements of Subsection 501.09. (7-1-24)

v. The effluent sump, if provided, must have easy access for cleaning purposes and be equipped with a drain valve. The drain may not be connected directly to any storm or sanitary sewer. (7-1-24)

vi. The design must prevent freezing of the influent riser and effluent piping when the unit is not operating. (7-1-24)

vii. The water flow to each tower must be metered. (7-1-24)

viii. An overflow line must be provided which discharges twelve (12) to fourteen (14) inches above a splash pad or drainage inlet. Proper drainage must be provided to prevent flooding of the area. (7-1-24)

ix. Means must be provided to prevent flooding of the air blower. (7-1-24)

d. Air flow system. (7-1-24)

i. The air inlet to the blower and the tower discharge vent must be down-turned and protected with a non-corrodible twenty-four (24) mesh screen to prevent contamination from extraneous matter. (7-1-24)

ii. The air inlet must be in a protected location. (7-1-24)

iii. An air flow meter must be provided on the influent air line or an alternative method to determine the air flow will be provided. (7-1-24)

iv. A positive air flow sensing device and a pressure gauge must be installed on the air influent line. The positive air flow sensing device must be a part of an automatic control system which will turn off the influent water if positive air flow is not detected. The pressure gauge will serve as an indicator of fouling buildup. (7-1-24)

v. A backup motor for the air blower must be readily available. (7-1-24)

e. Other features that must be provided: (7-1-24)

i. A sufficient number of access ports with a minimum diameter of twenty-four (24) inches to

facilitate inspection, media replacement, media cleaning and maintenance of the interior. (7-1-24)

ii. A method of cleaning the packing material when iron, manganese, or calcium carbonate fouling may occur. (7-1-24)

iii. Tower effluent collection and pumping wells constructed to clearwell standards. (7-1-24)

iv. Provisions for extending the tower height without major reconstruction. (7-1-24)

v. No bypass may be provided unless specifically approved by the Department. (7-1-24)

vi. Disinfection and adequate contact time after the water has passed through the tower and prior to the distribution system. (7-1-24)

vii. Adequate packing support to allow free flow of water and to prevent deformation with deep packing heights. (7-1-24)

viii. Operation of the blower and disinfectant feeder equipment during power failures. (7-1-24)

ix. Adequate foundation to support the tower and lateral support to prevent overturning due to wind loading. (7-1-24)

x. Fencing and locking gate to prevent vandalism. (7-1-24)

xi. An access ladder with safety cage for inspection of the aerator including the exhaust port and de-mister. (7-1-24)

xii. Electrical interconnection between blower, disinfectant feeder and supply pump. (7-1-24)

06. Other Methods of Aeration. Other methods of aeration may be used if applicable to the treatment needs. Such methods include but are not restricted to spraying, diffused air, cascades and mechanical aeration. The treatment processes are subject to the approval of the Department. (7-1-24)

07. Protection of Aerators. All aerators except those discharging to lime softening or clarification plants must be protected from contamination by birds, insects, wind borne debris, rainfall and water draining off the exterior of the aerator. (7-1-24)

08. Disinfection. Groundwater supplies exposed to the atmosphere by aeration must receive disinfection as described in Section 530 as the minimum additional treatment. (7-1-24)

535. DESIGN STANDARDS FOR IRON AND MANGANESE CONTROL SYSTEMS.

Iron and manganese control, as used herein, refers solely to treatment processes designed specifically for this purpose. The treatment process used will depend upon the character of the raw water. The selection of one (1) or more treatment processes must meet specific local conditions as determined by engineering investigations, including chemical analyses of representative samples of water to be treated, and receive the approval of the Department. The Department may require a pilot plant study in order to gather all information pertinent to the design in accordance with Subsection 501.19. (7-1-24)

01. Removal by Oxidation, Detention and Filtration. (7-1-24)

a. Oxidation may be by aeration or by chemical oxidation with chlorine, potassium permanganate, ozone or chlorine dioxide. (7-1-24)

b. Detention time: (7-1-24)

i. A minimum detention time of thirty (30) minutes must be provided following aeration to ensure that the oxidation reactions are as complete as possible. This minimum detention may be omitted only where a pilot

plant study indicates no need for detention. The detention basin may be designed as a holding tank without provisions for sludge collection but with sufficient baffling to prevent short circuiting. (7-1-24)

ii. Sedimentation basins must be provided when treating water with high iron or manganese content, or where chemical coagulation is used to reduce the load on the filters. Provisions for sludge removal must be made. (7-1-24)

c. Rapid rate pressure filters are normally used for iron and manganese removal. Pressure filters may not be used in the filtration of surface or other polluted waters or following lime-soda softening. (7-1-24)

i. The rate of filtration may not exceed three (3) gallons per minute per square foot of filter area except where in-plant testing as approved by the Department has demonstrated satisfactory results at higher rates. (7-1-24)

ii. The filters must be designed to provide for: (7-1-24)

(1) Loss of head gauges on the inlet and outlet pipes of each battery of filters. (7-1-24)

(2) An easily readable meter or flow indicator on each battery of filters. (7-1-24)

(3) Filtration and backwashing of each filter individually with an arrangement of piping as simple as possible to accomplish these purposes. (7-1-24)

(4) Minimum side wall shell height of five (5) feet. A corresponding reduction in side wall height is acceptable where proprietary bottoms permit reduction of the gravel depth. (7-1-24)

(5) The top of the wash water collectors to be at least eighteen (18) inches above the surface of the media, (7-1-24)

(6) The underdrain system to efficiently collect the filtered water and to uniformly distribute the backwash water at a rate not less than fifteen (15) gallons per minute per square foot of filter area. (7-1-24)

(7) Backwash flow indicators and controls that are easily readable while operating the control valves. (7-1-24)

(8) An air release valve on the highest point of each filter. (7-1-24)

(9) An accessible manhole to facilitate inspection and repairs for filters thirty-six (36) inches or more in diameter. Sufficient handholds will be provided for filters less than thirty-six (36) inches in diameter. (7-1-24)

(10) A means to observe the wastewater during backwashing and construction to prevent cross connection. (7-1-24)

02. Removal by Manganese Coated Media Filtration. This process consists of a continuous or batch feed of potassium permanganate to the influent of a manganese coated media filter. (7-1-24)

a. Other oxidizing agents or processes such as chlorination or aeration may be used prior to the permanganate feed to reduce the cost of the chemical. (7-1-24)

b. An anthracite media cap of at least six (6) inches or more as required by the Department must be provided over manganese coated media. (7-1-24)

c. Normal filtration rate must be three (3) gallons per minute per square foot. (7-1-24)

d. Normal wash rate will be eight (8) to ten (10) gallons per minute per square foot with manganese greensand and fifteen (15) to twenty (20) gallons per minute with manganese coated media. (7-1-24)

e. Sample taps must be provided prior to application of permanganate, immediately ahead of filtration, at points between the anthracite media, and at the filter effluent. The sample taps must satisfy the requirements of Subsection 501.09. (7-1-24)

03. Removal by Ion Exchange. This process is not acceptable where either the raw water or wash water contains dissolved oxygen or other oxidants. (7-1-24)

04. Biological Removal. Biofiltration to remove manganese, iron, or a combination of manganese and iron requires on-site piloting testing to establish effectiveness. The final filter design must be based on the on-site pilot plant studies. (7-1-24)

05. Sequestration by Polyphosphates. This process may not be used when iron, manganese or a combination thereof exceeds one point zero (1.0) mg/l. The total phosphate applied must not exceed ten (10) mg/l as PO_4. Where phosphate treatment is used, satisfactory chlorine residuals must be maintained in the distribution system. Possible adverse affects on corrosion must be addressed when phosphate addition is proposed for iron sequestering. (7-1-24)

a. Stock phosphate solution must be kept covered and disinfected by carrying approximately ten (10) mg/l free chlorine residual unless it is demonstrated to the satisfaction of the Department that the phosphate solution is not able to support bacterial growth and the phosphate solution is being fed from the covered shipping container or an approved disinfected tank. Phosphate solutions having a pH of two point zero (2.0) or less may also be exempted from this requirement by the Department. (7-1-24)

b. Polyphosphates may not be applied ahead of iron and manganese removal treatment. The point of application must be prior to any aeration, oxidation or disinfection if no iron or manganese removal treatment is provided. (7-1-24)

06. Sequestration by Sodium Silicates. Sodium silicate sequestration of iron and manganese is allowed only for groundwater supplies prior to air contact. On-site pilot studies are required to determine the suitability of sodium silicate for the particular water and the minimum feed needed. Rapid oxidation of the metal ions such as by chlorine or chlorine dioxide must accompany or closely precede the sodium silicate addition. (7-1-24)

a. Sodium silicate addition is applicable to waters containing up to two (2) mg/l of iron, manganese or combination thereof. (7-1-24)

b. Chlorine residuals must be maintained throughout the distribution system to prevent biological breakdown of the sequestered iron. (7-1-24)

c. The amount of silicate added must be limited to twenty (20) mg/l as SiO_2, but the amount of added and naturally occurring silicate may not exceed sixty (60) mg/l as SiO_2. (7-1-24)

d. Sodium silicate must not be applied ahead of iron or manganese removal treatment. (7-1-24)

07. Sampling Taps. Smooth-nosed sampling taps must be provided for control purposes. Taps will be located on each raw water source, each treatment unit influent and each treatment unit effluent. The sample taps must satisfy the requirements of Subsection 501.09. (7-1-24)

536. DESIGN STANDARDS FOR FLUORIDATION.

01. Chemical Feed Equipment and Methods. In addition to the requirements in Section 531, fluoride feed equipment must meet the following requirements: (7-1-24)

a. Scales, loss-of-weight recorders or liquid level indicators, as appropriate, accurate to within five (5) percent of the average daily change in reading will be provided for chemical feeds. (7-1-24)

b. The accuracy of chemical feeders used for fluoridation will be plus or minus five (5) percent of the intended dose. (7-1-24)

c. Unsealed storage units for fluorosilicic acid will be vented to the atmosphere at a point outside any building. (7-1-24)

d. Fluoride compound may not be added before lime-soda softening or ion exchange softening. (7-1-24)

e. The point of application of fluorosilicic acid, if into a horizontal pipe, will be in the lower half of the pipe. (7-1-24)

f. A fluoride solution will be applied by a positive displacement pump having a stroke rate not less than twenty (20) strokes per minute, and at a feed rate not less than twenty (20) percent of the rated capacity of the feed pump. (7-1-24)

g. A spring opposed diaphragm type anti-siphon device will be provided for all fluoride feed lines and dilution water lines. (7-1-24)

h. Except for constant flow systems, a device to measure the flow of water to be treated is required. (7-1-24)

i. The dilution water pipe will terminate at least two (2) pipe diameters above the solution tank. (7-1-24)

j. Water used for sodium fluoride dissolution will be softened if hardness exceeds seventy-five (75) mg/l as calcium carbonate. (7-1-24)

k. Fluoride solutions will be injected at a point of continuous positive pressure or a suitable air gap provided. (7-1-24)

l. The electrical outlet used for the fluoride feed pump will be interconnected with the well or service pump. (7-1-24)

m. Consideration will be given to providing a separate room for fluorosilicic acid storage and feed. (7-1-24)

02. Secondary Controls. Secondary control systems for fluoride chemical feed devices must be provided as a means of reducing the possibility for overfeed; these may include flow or pressure switches or other devices. (7-1-24)

03. Dust Control. Provision must be made for the transfer of dry fluoride compounds from shipping containers to storage bins or hoppers in such a way as to minimize the quantity of fluoride dust which may enter the room in which the equipment is installed. The enclosure must be provided with an exhaust fan and dust filter which places the hopper under a negative pressure. Air exhausted from fluoride handling equipment must discharge through a dust filter to the outside atmosphere of the building. (7-1-24)

537. DESIGN STANDARDS FOR STABILIZATION.

Water that is unstable due either to natural causes or to subsequent treatment must be stabilized. The expected treated water quality will be evaluated to determine what, if any, treatment is necessary. (7-1-24)

01. Carbon Dioxide Addition. (7-1-24)

a. Recarbonation basin design must provide the following: (7-1-24)

i. A total detention time of twenty (20) minutes. (7-1-24)

ii. A mixing compartment having a detention time of at least three (3) minutes. (7-1-24)

iii. A reaction compartment. (7-1-24)

iv. The mixing and reaction compartments will have a depth sufficient to provide a diffuser submergence of not less than seven and one-half (7.5) feet and no greater than the manufacturer's recommendation. (7-1-24)

b. Where liquid carbon dioxide is used, adequate precautions must be taken to prevent carbon dioxide from entering the plant from the recarbonation process. (7-1-24)

c. Recarbonation tanks must be located outside or be sealed and vented to the outside with adequate seals and adequate purge flow of air to ensure workers safety. (7-1-24)

d. Provisions must be made for draining the recarbonation basin and removing sludge. (7-1-24)

02. Phosphates. The feeding of phosphates may be used for sequestering calcium, for corrosion control, and in conjunction with alkali feed following ion exchange softening. (7-1-24)

a. Stock phosphate solution must be kept covered and disinfected by carrying approximately ten (10) mg/l free chlorine residual unless the phosphate is not able to support bacterial growth and the phosphate is being fed from the covered shipping container. Phosphate solutions having a pH of two point zero (2.0) or less are exempted from this requirement. (7-1-24)

b. Satisfactory chlorine residuals must be maintained in the distribution system when phosphates are used. (7-1-24)

03. Split Treatment. Raw water may be blended with lime-softened water to partially stabilize the water prior to secondary clarification and filtration. Treatment plants designed to utilize split treatment must also contain facilities for further stabilization by other methods. (7-1-24)

04. Water Unstable Due to Biochemical Action in Distribution System. Unstable water resulting from the bacterial decomposition of organic matter in water (especially in dead end mains), the biochemical action within tubercles, and the reduction of sulfates to sulfides must be prevented by the maintenance of a free or combined chlorine residual throughout the distribution system. (7-1-24)

538. – 539. (RESERVED)

540. DESIGN STANDARDS FOR TREATMENT AND DISPOSAL OF TREATMENT PLANT WASTE RESIDUALS.

PWS owners must provide proper disposal of water treatment plant waste such as sanitary, laboratory, clarification sludge, softening sludge, iron sludge, filter backwash water, and liquid concentrates. In locating waste disposal facilities, due consideration must be given to preventing potential contamination of the water supply. (7-1-24)

01. Sanitary Waste. The sanitary waste from water treatment plants, pumping stations, and other waterworks installations must receive treatment. Waste from these facilities must be discharged directly to a sanitary sewer system, when available and feasible, or to an adequate on-site waste treatment facility approved under the provisions of IDAPA 58.01.03, "Individual/Subsurface Sewage Disposal Rules." (7-1-24)

02. Liquid Concentrates. (7-1-24)

a. Waste from ion exchange plants, demineralization plants, reverse osmosis, on-site chlorine generators, red water filters, or other plants which produce liquid concentrates may be disposed of by the following methods: (7-1-24)

i. Liquid concentrates that contain radionuclides must be further treated to remove the radioactive constituents as sludge. See Subsection 540.03.e. for disposal requirements for sludge that contains radionuclides. The residual liquids from which radionuclides have been removed may be disposed of in accordance with Subsections 540.02.a.ii. through 540.02.a.iv. (7-1-24)

ii. Controlled discharge to a stream or other receiving water body if a surface water discharge permit has been issued by the applicable permitting authority and limits and conditions of discharge permit can be reasonably met. (7-1-24)

iii. Liquid concentrates may be discharged to a sanitary sewer, if available and feasible. Acceptance of such waste must be approved by the sewer authority. (7-1-24)

iv. Subsurface disposal, land application, or total containment lagoons may be considered for liquid concentrate when in compliance with IDAPA 58.01.16, "Wastewater Rules." Untreated liquid concentrates may not be permitted for subsurface or land application unless otherwise approved by the Department and in accordance with IDAPA 58.01.03, "Individual/Subsurface Sewage Disposal Rules" for subsurface disposal or IDAPA 58.01.17, "Recycled Water Rules" for land application. (7-1-24)

b. If the nature of the liquid concentrate causes it to be ineligible for permitted discharge as described in Subsection 540.02.a., further onsite treatment of the liquid concentrate may be required in order to produce sludge and liquid waste that will meet the permit criteria for one (1) or more of the disposal options. (7-1-24)

c. If sand filters are used to treat the waste filter wash water, red water, from iron and manganese removal plants, they must have the following features: (7-1-24)

i. Total filter area sufficient to adequately dewater applied solids. Unless the filter is small enough to be cleaned and returned to service in one (1) day, two (2) or more cells are required. (7-1-24)

ii. Sufficient capacity to contain, above the level of the sand, the entire volume of wash water produced by washing all of the production filters in the plant, unless the production filters are washed on a rotating schedule and the flow through the production filters is regulated by true rate of flow controllers. Sufficient volume will be provided to dispose of the wash water involved. (7-1-24)

iii. Provisions for covering the filters during winter months where freezing is a problem. (7-1-24)

03. Sludge Waste. Sludge is the solid waste resulting from coagulation, precipitation, or passive settling of liquid concentrates. Depending on composition, liquids remaining after sludge removal may be disposed of by methods described in Subsection 540.02, recycled through the treatment plant, or may be pure enough to be unregulated. The following methods of treatment and disposal apply to sludge: (7-1-24)

a. Precipitative Softening Sludge. (7-1-24)

i. At least two (2) temporary storage lagoons must be provided in order to give flexibility in operation. Provisions must be made for convenient cleaning. An acceptable means of final sludge disposal must be provided. (7-1-24)

ii. Liquid or dewatered precipitative softening sludge may be applied to farm land if heavy metals or other contaminants do not exceed the requirements of IDAPA 58.01.02, "Water Quality Standards." (7-1-24)

iii. Dewatered precipitative softening sludge may be disposed of in a sanitary landfill in accordance with the requirements of IDAPA 58.01.06, "Solid Waste Management Rules." Acceptance of such waste is at the discretion of the landfill authority. (7-1-24)

b. Alum or Ferric Sludge. (7-1-24)

i. Temporary storage lagoons must contain at least two (2) compartments to facilitate independent filling and dewatering operations. Mechanical concentration may be considered. If mechanical dewatering is used, it must be preceded by sludge concentration and chemical pre-treatment. A pilot plant study is required before the design of a mechanical dewatering installation in accordance with Subsection 501.19. (7-1-24)

ii. Alum or ferric sludge may be discharged to a sanitary sewer if available and feasible. Acceptance

of such waste must be approved by the sewer authority. (7-1-24)

iii. Dewatered alum or ferric sludge may be disposed of in a sanitary landfill in accordance with the requirements of IDAPA 58.01.06, "Solid Waste Management Rules." Acceptance of such waste is at the discretion of the landfill authority. (7-1-24)

iv. Alum or ferric sludge may be disposed of by land application if the permitting requirements of IDAPA 58.01.02, "Water Quality Standards," and IDAPA 58.01.17, "Recycled Water Rules," are met. (7-1-24)

v. Water removed from alum or ferric sludge may be disposed of in the same manner as liquid concentrates, as described in Subsection 540.02. (7-1-24)

c. Filter Backwash Sludge. (7-1-24)

i. Recycling is permitted if the backwash waters are returned to the head of the treatment plant or another entry point if supported by engineering studies. Backwash water will be held for a sufficient time prior to recycling to allow solids to settle out. (7-1-24)

ii. Dewatered sludge from backwash water clarification processes may be disposed of in a sanitary landfill in accordance with the requirements of IDAPA 58.01.06, "Solid Waste Management Rules." Acceptance of such waste must be approved by the landfill authority. (7-1-24)

d. Waste residuals containing radioactive substances, including, but not limited to granular activated carbon used for radon removal or ion-exchange regeneration waste from uranium removal, must be disposed of in accordance with IDAPA 58.01.10, "Rules Regulating the Disposal of Radioactive Materials Not Regulated Under The Atomic Energy Act of 1954, As Amended." (7-1-24)

i. The buildup of radioactive materials such as uranium or radon and its decay products must be considered and adequate shielding and safeguards will be provided for operators and visitors. (7-1-24)

ii. Waste residuals containing naturally occurring radioactive materials that have been concentrated by human activities must be disposed of in an approved hazardous waste landfill (Class D), in accordance with the IDAPA 58.01.10, "Rules Regulating the Disposal of Radioactive Materials not Regulated Under the Atomic Energy Act of 1954, as Amended," and IDAPA 58.01.06, "Solid Waste Management Rules." (7-1-24)

iii. Waste residuals containing greater than point zero five (.05) percent by weight of uranium are subject to licensing and disposal under the regulations of the U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, TX 76011, Phone 817-860-8299. (7-1-24)

e. Solid waste residuals containing arsenic at a concentration less than five (5) mg/l may be disposed of at a sanitary landfill if permitted under IDAPA 58.01.06, "Solid Waste Management Rules." Solid waste containing arsenic at a concentration greater than five (5) mg/l must be disposed of at an approved hazardous waste landfill. Liquid wastes generated by arsenic treatment processes are subject to the handling and disposal requirements for liquid concentrates, as discussed under Subsection 540.02. (7-1-24)

04. Spent Media. Exhausted ion exchange media, adsorption media, disposable filters, and other components of treatment processes that contain concentrated contaminants must be disposed of in accordance with IDAPA 58.01.06, "Solid Waste Management Rules," or IDAPA 58.01.10, "Rules Regulating the Disposal of Radioactive Materials not Regulated Under the Atomic Energy Act of 1954, as Amended." (7-1-24)

541. PUMPING FACILITIES.

Pumping facilities must be designed to maintain the sanitary quality of pumped water. (7-1-24)

01. Pump Houses. Unless otherwise approved by the Department, pump house components must be located above-grade. The following requirements apply to pump houses as defined in Section 003 unless it can be shown that some or all of these requirements are not needed to protect the combination of system components in a given structure: (7-1-24)

a. Pump houses must be readily accessible for operation, maintenance, and repair at all times and under all weather conditions unless permitted to be out of service for a period of inaccessibility. (7-1-24)

b. Pump houses must be protected from flooding and must be adequately drained. The ground surface will be graded so as to lead surface drainage away from the pump house. Unless otherwise approved by the Department, the floor surface will be at least six (6) inches above the final ground surface and pump house components will be located at least six (6) inches above the floor surface. (7-1-24)

c. Pump houses must be of durable construction, fire and weather resistant, and with outward-opening doors. All underground structures must be waterproofed. (7-1-24)

d. Provisions must be made for adequate heating for the comfort of the operator and the safe and efficient operation of the equipment. In pump houses not occupied by personnel, only enough heat need be provided to prevent freezing of equipment or treatment processes. (7-1-24)

e. Ventilation must conform to existing local and state codes. Adequate ventilation will be provided for all pumping stations for operator comfort and dissipation of excess heat and moisture from the equipment. In all cases, measures must be taken to minimize corrosion of metallic and electrical components. (7-1-24)

f. Pump houses must be provided with a locking door or access to prohibit unauthorized entrance and must be protected to prevent vandalism and entrance by animals. Plans and specifications for pump houses must provide enough detail to enable the Department to determine that the facility is secure, safe, accessible, and that it conforms to electrical and plumbing codes. (7-1-24)

g. Pump houses must be kept clean and in good repair and may not be used to store toxic or hazardous materials other than those materials required for treatment processes. (7-1-24)

h. A suitable outlet must be provided for drainage from pump glands without discharging onto the floor. (7-1-24)

i. Floor drains may not be connected to sewers, storm drains, chlorination room drains, or any other source of contamination unless otherwise approved by the Department. Gas chlorination room drains may not be connected to any other drainage system and must terminate in a properly located below ground sump. Sumps for pump house floor drains may not be closer than thirty (30) feet from any well. (7-1-24)

j. Adequate space must be provided for the installation of potential additional units and for the safe and efficient servicing of all equipment. (7-1-24)

k. Suction basins must be watertight, have floors sloped to permit removal of water and settled solids, be covered or otherwise protected against contamination, and have two (2) pumping compartments or other means to allow the suction basin to be taken out of service for inspection maintenance or repair. (7-1-24)

l. Pump houses must be designed to allow efficient equipment servicing. Crane ways, hoist beams, eye bolts, or other adequate facilities for servicing or removal of pumps, motors or other heavy equipment will be provided. Openings in floors, roofs or wherever else must be provided as needed for removal of heavy or bulky equipment. (7-1-24)

m. All remote controlled stations must be electrically operated and controlled and have signaling apparatus of proven performance. Signaling apparatus must report automatically when the station is out of service. (7-1-24)

n. Any threaded hose bib installed in the pump house must be equipped with an appropriate backflow prevention device. (7-1-24)

02. Pumping Units. At least two (2) pumping units must be provided for raw water and surface source pumps. Pumps using seals containing mercury may not be used in PWS facilities. With any pump out of service, the

remaining pump or pumps must be capable of providing the peak hour demand of the PWS or a minimum of the maximum day demand plus equalization storage. See Subsection 501.18 for general design requirements concerning fire flow capacity and Subsection 501.07 regarding reliability and emergency operation. The pumping units must meet the following requirements: (7-1-24)

a. The pumps have ample capacity to supply the maximum demand against the required pressure without dangerous overloading. (7-1-24)

b. The pumps are driven by prime movers able to meet the maximum horsepower condition of the pumps. (7-1-24)

c. The pumps are provided with readily available spare parts and tools. (7-1-24)

d. The pumps are to be served by control equipment that has proper heater and overload protection for air temperature encountered. (7-1-24)

e. Suction lift is avoided if possible. When suction lift is used, it must be within the limits allowed by the manufacturer of the pumps, and provision will be made for priming the pumps. (7-1-24)

f. Prime water must not be of lesser sanitary quality than that of the water being pumped. Means will be provided to prevent either backpressure or back-siphonage backflow. When an air-operated ejector is used, the twenty-four (24) mesh or similar non-corrodible screened intake will draw clean air from a point at least ten (10) feet above the ground or other source of possible contamination, unless the air is filtered by an apparatus approved by the Department. Vacuum priming may be used. (7-1-24)

03. Appurtenances. The following appurtenances must be provided for all water pumps. Additional requirements specific to well pumps are provided in Section 511. (7-1-24)

a. Pumps must be protected against freezing and valved to permit satisfactory operation, maintenance, and repair of the equipment. If foot valves are necessary, they must have a net valve area of at least two and one-half (2.5) times the area of the suction pipe and be screened. Each pump must have an accessible check valve on the discharge side between the pump and the shut-off valve or a combination valve that performs both control valve and check valve functions. Surge relief measures must be designed to minimize hydraulic transients. (7-1-24)

b. Piping must be designed with watertight joints, friction losses minimized, protection against surge or water hammer, suitable restraints, and not be subject to contamination. (7-1-24)

c. Each pump must have an individual suction line or manifolded suction lines such that they will ensure similar hydraulic and operating conditions. (7-1-24)

d. Each pump station must have a standard pressure gauge on its discharge line and suction line. (7-1-24)

e. Water seals may not be supplied with water of a lesser sanitary quality than that of the water being pumped. Where pumps are sealed with potable water and are pumping water of lesser sanitary quality, the seal must: (7-1-24)

i. Be provided with either an approved reduced pressure principle backflow preventer or a break tank open to atmospheric pressure, (7-1-24)

ii. Where a break tank is provided, have an air gap of at least six (6) inches or two (2) pipe diameters, whichever is greater, between the feeder line and the flood rim of the tank. (7-1-24)

f. Pumps, their prime movers, and accessories must be controlled in such a manner that they will operate at rated capacity without dangerous overload. Where two (2) or more pumps are installed, provision must be made for alternation. Provision must be made to prevent energizing the motor in the event of a backspin cycle. Equipment will be provided or other arrangements made to prevent surge pressures from activating controls which

switch on pumps or activate other equipment outside the normal design cycle of operation. (7-1-24)

04. Booster Pumps. In addition to other applicable requirements in Section 541, booster pumps must comply with the following: (7-1-24)

a. In-line booster pumps must maintain an operating pressure that is consistent with the requirements specified in Subsection 552.01, and be supplied with an automatic cutoff when intake pressure is less than or equal to five (5) psi. (7-1-24)

b. Booster pumps with a suction line directly connected to any storage reservoirs must be protected by an automatic cutoff to prevent pump damage and avoid excessive reservoir drawdown. (7-1-24)

c. Each booster pumping station must contain not less than two (2) pumps with capacities such that peak hour demand, or a minimum of the maximum day demand plus equalization storage, can be satisfied with any pump out of service. See Subsection 501.18 for general design requirements concerning fire flow capacity. (7-1-24)

542. DISTRIBUTION SYSTEM.

01. Protection from Contamination. The distribution system must be protected from contamination and be designed to prevent contamination by steam condensate or cooling water from engine jackets or other heat exchange devices. (7-1-24)

02. Installation of Water Mains. Division 400 of "Idaho Standards for Public Works Construction," referenced in Subsection 002.02, may be used as guidance for installation of water mains. In addition, the following provisions apply: (7-1-24)

a. Installed pipe must be pressure tested and leakage tested in accordance with the applicable AWWA Standards, incorporated by reference into these rules at Subsection 002.01. (7-1-24)

b. New, cleaned, and repaired water mains must be disinfected in accordance with AWWA Standard C651, incorporated by reference into these rules at Subsection 002.01. The specifications must include detailed procedures for the adequate flushing, disinfection, and microbiological testing of all water mains. (7-1-24)

c. In areas where aggressive soil conditions are suspected or known to exist, analyses must be performed to determine the actual aggressiveness of the soil. If soils are found to be aggressive, action must be taken to protect metallic joint restraints and the water main, such as encasement in polyethylene, provision of cathodic protection, or use of corrosion resistant materials. (7-1-24)

d. The Department must approve any interconnection between potable water sources, taking into account differences in water quality between the two systems. (7-1-24)

e. A continuous and uniform bedding must be provided in the trench for all buried pipe. Backfill material must be tamped in layers around the pipe and to a sufficient height above the pipe to adequately support and protect the pipe. Stones found in the trench must be removed for a depth of at least six (6) inches below the bottom of the pipe. (7-1-24)

f. Water mains must be covered with sufficient earth or other insulation to prevent freezing. (7-1-24)

g. All tees, bends, plugs and hydrants must be provided with reaction blocking, tie rods or joints designed to prevent movement. (7-1-24)

03. Pressure Relief Valves. All pumps connected directly to the distribution system must be designed in conjunction with a water pressure relief valve of type, size, and material approved by the Department unless the Department approves another method that will prevent excessive pressure development. (7-1-24)

04. Flow Meter Required. Unless otherwise approved by the Department, all source pumps and booster pumps connected directly to the distribution system must have an instantaneous and totalizing flow meter,

equipped with nonvolatile memory, installed in accordance with manufacturer's specifications. (7-1-24)

05. Pipe and Jointing Materials. Pipe and jointing materials comply with the standards set forth in Subsection 501.01. Pipe must be manufactured of materials resistant internally and externally to corrosion and not imparting tastes, odors, color, or any contaminant into the PWS. Where distribution systems are installed in areas of groundwater contaminated by organic compounds: (7-1-24)

a. Pipe and joint materials which do not allow permeation of the organic compounds must be used; and (7-1-24)

b. Non-permeable materials must be used for all portions of the PWS including pipe, joint materials, hydrant leads, and service connections. (7-1-24)

06. Size of Water Mains. When fire hydrants are provided, they may not be connected to water mains smaller than six (6) inches in diameter, and fire hydrants may not be installed unless fire flow volumes are available. If fire flow is not provided, water mains will be no less than three (3) inches in diameter. Any departure from these minimum standards must be supported by hydraulic analysis and detailed projections of water use. (7-1-24)

07. Separation of Potable, Non-Potable, and Raw Water Pipelines. The requirements for the protection of potable pipelines from contamination by non-potable pipelines are described in Subsections 542.07.a. through 542.07.d. For the purposes of Subsection 542.07, the term "pipeline" applies to both mains and services. The Department will use the Memorandum of Understanding with the Plumbing Bureau as guidance in determining the relative responsibilities for reviewing service lines. The conditions of Subsections 542.07.a. through 542.07.d. apply to all potable services constructed or reconstructed after April 15, 2007 and where the Department or the QLPE is the reviewing authority. Raw water pipelines must be protected from contamination from non-potable pipelines, and must not contaminate potable pipelines. They must meet equivalent separation distances shown below from either potable or non-potable pipelines. (7-1-24)

a. Alternative separation distances may be considered for Subsections 542.07.b through 542.07.c. on a case-by-case basis when considering constructability, public health risk, environmental risk, and cost. The design engineer must submit data to the Department for review and approval showing that the proposed installation will be protective of public health and the environment. (7-1-24)

b. Parallel installation requirements. (7-1-24)

i. Potable mains in relation to non-potable mains. (7-1-24)

(1) Greater than ten (10) feet separation: no additional requirements. (7-1-24)

(2) Ten (10) feet to six (6) feet separation: separate trenches, with the bottom of the potable main above the top of the non-potable main, and non-potable main constructed with potable water class pipe. (7-1-24)

(3) Non-potable mains are prohibited from being located in the same trench as potable mains. (7-1-24)

ii. Potable services in relation to non-potable pipelines and non-potable services in relation to potable pipelines. (7-1-24)

(1) Greater than six (6) feet separation: no additional requirements. (7-1-24)

(2) Potable services are prohibited from being located in the same trench as non-potable pipelines. (7-1-24)

c. Requirements for potable water pipelines crossing non-potable pipelines. Crossings must be perpendicular, unless otherwise approved by the Department. (7-1-24)

i. If there is eighteen (18) inches or more vertical separation with the potable water pipeline above the non-potable pipeline, then the potable pipeline joints must be as far as possible from the non-potable water pipeline.

(7-1-24)

ii. If there is eighteen (18) inches or more vertical separation with the potable water pipeline below the non-potable pipeline, then the potable pipeline joints must be as far as possible from the non-potable pipeline, and the non-potable pipeline must be supported through the crossing to prevent settling. (7-1-24)

iii. Less than eighteen (18) inches vertical separation: (7-1-24)

(1) Potable pipeline joint must be as far as possible from the non-potable pipeline; and either: (7-1-24)

(a) Non-potable pipeline must be constructed with potable water class pipe for a minimum of ten (10) feet either side of potable pipeline with a single twenty (20) foot section of potable water class pipe centered on the crossing; or (7-1-24)

(b) The non-potable or potable pipeline must be sleeved with potable water class pipe for ten (10) feet either side of crossing. Use of hydraulic cementitious materials such as concrete, controlled density fill, and concrete slurry encasement is not allowed as a substitute for sleeving. (7-1-24)

(2) If potable pipeline is below non-potable pipeline, the non-potable pipeline must also be supported through the crossing to prevent settling. (7-1-24)

d. Non-potable pressure pipelines must not be: (7-1-24)

i. Closer horizontally than ten (10) feet from potable mains. (7-1-24)

ii. Closer vertically than eighteen (18) inches from potable pipelines. (7-1-24)

08. Separation from Subsurface Wastewater Systems and Other Sources of Contamination. A minimum horizontal distance of twenty-five (25) feet must be maintained between any potable water pipe and a septic tank or subsurface wastewater disposal system. Guidance on separation from other potential sources of contamination, such as stormwater facilities, may be found on the Department website http://www.deq.idaho.gov. (7-1-24)

09. Dead End Mains. All dead end water mains must be equipped with a means of flushing at a water velocity of two and one-half (2.5) feet per second. (7-1-24)

a. Dead ends must be minimized by looping whenever practical in order to provide increased reliability of service and reduce head loss. (7-1-24)

b. Flushing must be designed in such a way as to minimize any erosion of unprotected areas and, if applicable, be coordinated with the owner of the receiving system. No water main flushing device may be directly connected to any sewer. (7-1-24)

c. Stub outs for future main connections must meet all requirements for dead end mains listed in Subsection 542.09 as determined by the Department. Flushing devices may be temporary in nature. (7-1-24)

10. Repair of Leaks. Leaking water mains must be repaired or replaced upon discovery and disinfected in accordance with American Water Works Association (AWWA) Standards, incorporated by reference into these rules at Subsection 002.01. (7-1-24)

11. Separation from Structures. Water mains must be separated by at least five (5) feet from buildings, industrial facilities, and other permanent structures. (7-1-24)

12. Shut-Off Valve Required. All new PWSs, and portions of existing systems undergoing material modification of distribution or transmission lines, must include an accessible and lockable shut-off valve at each service connection in the section of distribution or transmission line that is being constructed or modified within the project. Shut-off valves may be installed in a meter vault. (7-1-24)

13. Minimum Pressure at Building Sites. Any PWS constructed or undergoing material modification where topographical relief may affect water pressure at the customers' premises must provide the Department with an analysis which demonstrates that the pressure at each designated building site will be at least forty (40) psi, based on dynamic pressure in the main, as set forth in Subsections 552.01.b.i. and 552.01.b.v., plus a static compensation from the elevation of the main to the elevation of each building site. (7-1-24)

a. If forty (40) psi cannot be provided at each designated building site, the Department may require that reasonable effort be made to provide notification to existing and potential customers of the expected pressure. (7-1-24)

b. The Department will not authorize a service connection at any designated building site where analysis indicates that pressure will be less than twenty (20) psi dynamic pressure (or twenty-six point five (26.5) psi for two (2) story buildings). (7-1-24)

14. Isolation Valves. A sufficient number of valves must be provided on water mains to minimize inconvenience and sanitary hazards during repairs. (7-1-24)

15. Air Valves. At high points in water mains where air can accumulate, provisions must be made to remove the air by means of air release and vacuum relief valves or combination air release/vacuum relief valves. Air release valves, vacuum relief valves, or combination air release/vacuum relief valves may not be required if vacuum relief and air release functions in the pipeline can be adequately handled by approved appurtenances such as fire hydrants. (7-1-24)

a. The open end of an air valve must be extended to at least one (1) foot above grade and provided with a twenty-four (24) mesh or similar non-corrodible screened, downward-facing elbow. When the air vent on an air relief valve cannot be practically installed above ground, the vent may be below grade provided the air vent is extended to the top of the valve vault and provided with a twenty-four (24) mesh or similar non-corrodible screened, downward-facing elbow. In addition, for below ground vents, the valve vault must be rated for appropriate traffic loading in traffic areas and the vault drained to daylight or provided with adequate drainage to prevent flooding of the vault. (7-1-24)

b. Discharge piping from air valves or combination air release/vacuum relief valves may not connect directly to any storm drain, storm sewer, or sanitary sewer. (7-1-24)

16. Backflow Protection. Automatic air relief valves must be equipped with a means of backflow protection. (7-1-24)

17. Surface Water Crossings. For the purposes of Subsection 542.17, surface water is defined as all surface accumulations of water, natural or artificial, public or private, or parts thereof which are wholly or partially within, which flow through or border upon the state. This includes, but is not limited to, rivers, streams, canals, ditches, lakes, and ponds. Surface water crossings, whether over or under water, must be constructed as follows: (7-1-24)

a. Pipe used in above water crossings must be adequately supported and anchored, protected from damage and freezing, and be accessible for repair or replacement. (7-1-24)

b. Pipe used in under water crossings must have a minimum cover of two (2) feet. When crossing a water course that is greater than fifteen (15) feet in width, the following must be provided: (7-1-24)

i. The pipe will be of special construction, having flexible, restrained, or welded water-tight joints; and (7-1-24)

ii. Valves are to be provided at both ends of water crossings so that the section can be isolated for testing or repair; the valves will be easily accessible and not subject to flooding; and (7-1-24)

iii. Permanent taps or other provisions to allow insertion of a small meter to determine leakage and

obtain water samples will be made on each side of the valve closest to the supply source. (7-1-24)

543. CROSS CONNECTION CONTROL.
There must be no connection between the distribution system and any pipes, pumps, hydrants, water loading stations, or tanks whereby unsafe water or other contaminating materials may be discharged or drawn into a PWS. Community PWS owners must meet the cross connection control program requirements in Subsection 552.06. (7-1-24)

01. Testable Assemblies. All double check valve backflow prevention assemblies, reduced pressure principle backflow prevention assemblies, spill resistant vacuum breakers, and pressure vacuum breakers used must pass a performance test conducted by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC Foundation) and be included on the USC Foundation "List of Approved Assemblies" for the application and orientation for which they are installed. (7-1-24)

02. Atmospheric Vacuum Breakers. All atmospheric vacuum breakers used must be marked approved either by the International Association of Plumbing and Mechanical Officials (IAPMO) or by the American Society of Sanitation Engineers (ASSE). (7-1-24)

03. Replacement Parts and Components. All replacement parts and components, including resilient seated shutoff valves, must meet original manufacturer's specifications or otherwise be approved by the USC Foundation as replacement parts or components for use on double check valve backflow prevention assemblies, reduced pressure principle backflow prevention assemblies, pressure vacuum breakers, and spill resistant pressure vacuum breakers. The design, material, or operational characteristics of any assembly must not be altered during maintenance or repair. (7-1-24)

04. Assembly Selection. Appropriate and adequate backflow prevention assembly types for various facilities, fixtures, equipment, and uses of water must be selected from the AWWA Recommended Practice for Backflow Prevention and Cross Connection Control (M14), the USC Foundation Manual of Cross Connection Control, or other sources deemed acceptable by the Department. The selected assembly manufacturer model number must be included on the USC Foundation "List of Approved Assemblies" and must comply with local ordinances. (7-1-24)

544. GENERAL DESIGN OF FINISHED WATER STORAGE.
The materials and designs used for finished water storage structures must provide stability and durability as well as protect the quality of the stored water. Finished water storage structures must be designed to maintain water circulation and prevent water stagnation. Steel structures and facilities such as steel tanks, standpipes, reservoirs, and elevated tanks must be designed and constructed in accordance with applicable AWWA Standards, incorporated by reference into these rules at Subsection 002.01. Other materials of construction are acceptable when properly designed to meet the requirements of Section 544. (7-1-24)

01. Sizing and Isolation Requirements. (7-1-24)

a. Storage facilities must have sufficient capacity, as determined from engineering studies that consider peak flows, fire flow capacity, and analysis of the need for various components of finished storage as defined under the term "Components of Finished Water Storage" in Section 003. The requirement for storage may be reduced when the source and treatment facilities have sufficient capacity with standby power to supply peak demands of the PWS. (7-1-24)

b. All storage structures which provide pressure directly to the distribution system, such as elevated storage structures or ground level storage structures with associated pumping systems, must be designed so they can be isolated and drained for cleaning or maintenance without causing a loss of pressure in the distribution system. (7-1-24)

02. Location. Storage facilities must be located in a manner that protects against contamination, ensures structural stability, protects against flooding, and provides year-round access by vehicles and equipment needed for repair and maintenance. (7-1-24)

a. If the bottom elevation of a storage reservoir must be below normal ground surface, it must be

placed above the seasonal high groundwater table. The top of a partially buried storage structure may not be less than two (2) feet above normal ground surface. (7-1-24)

b. Minimum separation distances from storage facilities must meet the following requirements: (7-1-24)

Minimum Separation Distances From Storage Facilities (feet)				
Feature of Concern	**Storage Facility Type**			
	Below Ground	**Partially Buried**	**Ground Level**	**Above Ground**
Non-Potable Pipelines	50	50		
Non-Potable Pipelines Constructed of Water Class Pipe	20	20		
Standing Water	50	50	50	
Possible Sources of Contamination	50	50	20	20
Nearest Property Line	50	50	20	20
Municipal or Industrial Wastewater Treatment Plant	500	500	500	500
Land Which is Spray Irrigated With Wastewater or Used for Sludge Disposal	500	500	500	500

(7-1-24)

03. Protection from Contamination. All finished water storage structures must have suitable watertight roofs which exclude birds, animals, insects, and excessive dust. The installation of appurtenances, such as antennas, must be done in a manner that ensures no damage to the tank, coatings or water quality, or corrects any damage that occurred. (7-1-24)

04. Protection from Trespassers. Fencing, locks on access manholes, and other necessary precautions must be provided to prevent trespassing, vandalism, and sabotage. (7-1-24)

05. Drains. No drain on a water storage structure may have a direct connection to a sewer or storm drain. The design must allow draining the storage facility for cleaning or maintenance without causing loss of pressure in the distribution system. (7-1-24)

06. Overflow. Overflow pipes of any storage structure or facility must discharge to daylight in a way that will preclude the possibility of backflow to the reservoir and, where practical, be provided with an expanded metal screen installed within the pipe that will exclude rodents and deter vandalism. The overflow pipe must be of sufficient diameter to permit waste of water in excess of the filling rate and be designed to mitigate blockage or freezing (see Subsection 544.11). The overflow must discharge over a drainage inlet structure or a splash plate and, when practical, discharge at an elevation between twelve (12) and twenty-four (24) inches above the receiving surface. (7-1-24)

a. When an internal overflow pipe is used on above-ground tanks, it must be located in the access tube. (7-1-24)

b. The overflow for ground-level, partially buried, or below-ground storage structures or facilities must have a vertical section of pipe at least two (2) pipe diameters in length and be screened with a twenty-four (24) mesh non-corrodible screen installed within the pipe when practical or an expanded metal screen installed within the pipe plus a weighted flapper valve or check unless otherwise approved by the Department. (7-1-24)

07. Access. Finished water storage structures must be designed with reasonably convenient access to the interior for cleaning and maintenance. At least two (2) manholes will be provided above the waterline at each water compartment where space permits, as determined by the Department. One (1) manhole may be allowed on smaller tanks on a case-by-case basis. (7-1-24)

a. The following access requirements apply to above-ground and ground-level storage structures. Each access manhole must be framed a minimum of four (4) inches above the surface of the roof at the opening. The actual height above the surface of the roof must be sufficient to prevent incidental contamination from snow accumulation, storm water runoff or accumulation, irrigation water, or other potential sources of contamination. (7-1-24)

b. The following access requirements apply to, partially buried or below-ground storage structures. Each access manhole must be elevated a minimum of twenty-four (24) inches above the surface of the roof or the ground level, whichever is higher. The actual height above the surface of the roof or the ground level must be sufficient to prevent incidental contamination from snow accumulation, storm water runoff or accumulation, irrigation water, or other potential sources of contamination. (7-1-24)

c. Each manhole must be fitted with a solid water tight cover designed to prevent the entrance of contaminants. Each cover may be hinged only on one (1) side and have a locking device. Unless otherwise approved by the Department based, each cover will have a framed opening with the lid extending down around the frame at least two (2) inches, and the frame will be at least four (4) inches high. (7-1-24)

08. Vents. Finished water storage structures must be vented. The overflow pipe may not be considered a vent. Open construction between the sidewall and roof is not permissible. Vents must: (7-1-24)

a. Prevent the entrance of surface water and rainwater and extend twelve (12) inches above the roof. (7-1-24)

b. Exclude birds and animals. (7-1-24)

c. Exclude insects and dust, as much as this function can be made compatible with effective venting and be designed to mitigate blockage or freezing (see Subsection 544.11). (7-1-24)

d. On ground-level, partially buried, or below-ground structures, open downward with the opening at least twenty-four (24) inches above the roof or the ground level and covered with twenty-four (24) mesh non-corrodible screen or similar non-corrodible screen. The screen is to be installed within the pipe at a location least susceptible to vandalism. (7-1-24)

e. On above-ground tanks and standpipes, open downward, and be fitted with twenty-four (24) mesh or similar non-corrodible screen. (7-1-24)

09. Roof and Sidewall. The roof and sidewalls of all water storage structures must be watertight with no openings except properly constructed vents, manholes, overflows, risers, drains, pump mountings, control ports, or piping for inflow and outflow. Particular attention is to be given to the sealing of roof structures which are not integral to the tank body. (7-1-24)

a. Any pipes running through the roof or sidewall of a metal storage structure must be welded, or properly gasketed. In concrete tanks, these pipes must be connected to standard wall castings which were poured in place during the forming of the concrete. (7-1-24)

b. Openings in the roof of a storage structure designed to accommodate control apparatus or pump

columns must be curbed and sleeved with proper additional shielding to prevent contamination from surface or floor drainage. (7-1-24)

c. The roof of the storage structure must be sloped to facilitate drainage. Downspout pipes may not enter or pass through the reservoir. Parapets, or similar construction which tends to hold water and snow on the roof, will not be approved unless adequate waterproofing and drainage are provided. (7-1-24)

d. Reservoirs with pre-cast concrete roof structures must be made watertight with the use of a waterproof membrane or similar product. (7-1-24)

10. Construction Materials. Materials used in storage facility construction must meet the requirements for water contact surfaces set forth in Subsection 501.01. Porous materials such as wood or concrete block are not acceptable for use in storage construction. (7-1-24)

11. Protection from Freezing. Finished water storage structures and their appurtenances, especially the riser pipes, overflows, and vents, must be designed to prevent freezing. (7-1-24)

12. Internal Catwalk. Every catwalk over finished water in a storage structure must have a solid floor with sealed raised edges, designed to prevent contamination. (7-1-24)

13. Silt Stops. Removable silt stops must be provided to prevent sediment from entering the reservoir discharge pipe. (7-1-24)

14. Grading. The area surrounding a ground-level, partially buried, or below-ground structures must be graded in a manner that will prevent surface water from standing. (7-1-24)

15. Coatings and Cathodic Protection. Proper protection must be given to metal surfaces by paints or other protective coatings, by cathodic protective devices, or by both. (7-1-24)

16. Disinfection. Storage facilities must be disinfected in accordance with AWWA Standard C652, incorporated by reference into these rules at Subsection 002.01. Two (2) or more successive sets of samples, taken at twenty-four (24) hour intervals, must indicate microbiologically satisfactory water before the facility is placed into operation. (7-1-24)

17. Abandonment. All unused subsurface storage tanks must be removed and backfilled, or abandoned by extracting residual fluids and filling the structure with sand or fine gravel. (7-1-24)

545. TREATMENT PLANT STORAGE FACILITIES.

The design standards of Section 544 apply to treatment plant storage. (7-1-24)

01. Filter Wash Water. Filter wash water tanks must be sized, in conjunction with available pump units and finished water storage, to provide the backwash water required by Section 521. Consideration must be given to the backwashing of several filters in rapid succession. (7-1-24)

02. Clearwell. When finished water storage is used to provide disinfectant contact time special attention must be given to tank size and baffling. An overflow and vent must be provided. A minimum of two (2) clearwell compartments must be provided to allow for cleaning or maintenance. Clearwells constructed under filters may be exempt from the requirements set out in Subsection 544.02.d. when the design provides adequate protection from contamination. (7-1-24)

03. Adjacent Storage. Finished or treated water must not be stored or conveyed in a compartment adjacent to untreated or partially treated water when the two (2) compartments are separated by a single wall, unless approved by the Department. (7-1-24)

04. Other Treatment Plant Storage Tanks. Unless otherwise allowed by the Department, other treatment plant storage tanks/basins such as detention basins, backwash reclaim tanks, receiving basins, and pump wet-wells for finished water must be designed as finished water storage structures. In addition, these tanks/basins

must be designed to allow for cleaning or maintenance through temporary tanks, standby pumping capabilities, or other means approved by the Department. (7-1-24)

546. DISTRIBUTION SYSTEM STORAGE FACILITIES.

01. Design. The applicable design standards of Section 544 apply to distribution system storage. (7-1-24)

02. Isolation. Finished water storage structures which provide pressure directly to the distribution system must be designed so they can be isolated from the distribution system and drained for cleaning or maintenance without causing a loss of pressure in the distribution system. This requirement may be met through available temporary tanks, redundant pumping capabilities, or other temporary means approved by the Department. If the finished water storage structure provides fire flow for the PWS, the PWS owner must provide the local fire authority advance notification of cleaning or maintenance events which isolate the structure from the distribution system and reduce available fire flow to less than the minimum required by the local fire authority. (7-1-24)

03. Drain. Drains must discharge to daylight in a way that will preclude the possibility of backflow to the reservoir and, where practical, be provided with an expanded metal screen installed within the pipe that will exclude rodents and deter vandalism. The drain will, when practical, discharge at an elevation between twelve (12) and twenty-four (24) inches above the receiving surface, and discharge over a drainage inlet structure or a splash plate. (7-1-24)

04. Level Controls. Adequate controls must be provided to maintain levels in distribution system storage structures. Level indicating devices must be provided at a central location. (7-1-24)

547. HYDROPNEUMATIC TANK SYSTEMS.

Hydropneumatic tanks may be used to regulate pump cycling and to absorb pressure surges (water hammer). Hydropneumatic tanks may not be used for storage for PWSs serving more than one-hundred-fifty (150) connections unless otherwise approved by the Department. (7-1-24)

01. Design of Hydropneumatic Systems. Tanks must: (7-1-24)

a. Be located above normal ground surface and be completely housed. (7-1-24)

b. Have bypass piping to permit operation of the PWS while the tank is being repaired or painted. Exterior surfaces and accessible interior surfaces are to be provided with protective coatings and shall be maintained in good condition. Supports beneath tanks must be structurally sound. (7-1-24)

c. Be sized to limit pump cycles to not more than six (6) per hour unless a pump manufacturer's warranty specifically supports more frequent cycling. The number of pump cycles may be increased in PWSs with multiple pumps if a means to automatically alternate pumps is provided. The Franklin Electric AIM manual, referenced in Subsection 002.02, Chapter 11 of the Washington State Department of Health Water System Design Manual, referenced in Subsection 002.02, or manufacturer's recommendations may be used as guidance in calculating the size of hydropneumatic tanks. (7-1-24)

d. Conform with the American Society of Mechanical Engineers (ASME) specifications code for unfired pressure vessels when they are of greater than one-hundred twenty (120) gallons volume. Tanks of less than one hundred twenty (120) gallons volume must meet the ASME code or be certified by a nationally recognized testing agency to be capable of withstanding twice the maximum allowable working pressure. (7-1-24)

02. Requirements Specific to Conventional Hydropneumatic Tanks. Conventional tanks are those with a direct air to water interface and require periodic air recharge to compensate for absorption of air into the water. (7-1-24)

a. Each tank must have an access manhole, a drain, and control equipment consisting of a pressure gauge, water sight glass, automatic or manual air blow-off, means for adding air that is filtered or otherwise protected from contamination, and pressure operated start-stop controls for the pumps. If tank size allows, the access manhole

will be at least twenty-four (24) inches in diameter. (7-1-24)

b. The gross volume of tanks in PWSs served by variable speed pumps may be less than that required for PWSs served by constant speed pumps. Design volumes will be approved by the Department on a site-specific basis. (7-1-24)

03. Requirements Specific to Bladder Tanks. Bladder tanks have a membrane that separates air and water inside the tank. (7-1-24)

a. Bladder tanks must be pre-charged with air to a pressure of five (5) psi below the setting at which the pump turns on (the low operating pressure for the PWS). (7-1-24)

b. Each manifold assembly must have a pressure gauge and pressure operated start-stop controls for the pumps. (7-1-24)

c. The procedure for sizing bladder tanks is to determine the number of a selected size of tanks that are needed to provide pump protection. Reduced tank volume in PWSs served by variable speed pumps will be approved by the Department on a site-specific basis. (7-1-24)

548. DISINFECTION OF FACILITIES PRIOR TO USE.
Any supplier of water for a PWS must ensure that new construction or modifications to an existing PWS are flushed and disinfected in accordance with American Water Works Association (AWWA) Standards, incorporated by reference into these rules at Subsection 002.01, prior to being placed into service. (7-1-24)

549. -- 551. (RESERVED)

552. OPERATING CRITERIA FOR PUBLIC WATER SYSTEMS.

01. Quantity and Pressure Requirements. Design requirements regarding pressure analysis are found in Section 542.13. (7-1-24)

a. The minimum capacity of a PWS must be at least eight hundred (800) gallons per day per residence. (7-1-24)

i. The minimum capacity of eight hundred (800) gallons per day is the design maximum day demand rate exclusive of irrigation and fire flow requirements. (7-1-24)

ii. The minimum capacity of eight hundred (800) gallons per day is only acceptable if the PWS has equalization storage of finished water in sufficient quantity to compensate for the difference between a PWS's maximum pumping capacity and peak hour demand. (7-1-24)

iii. The design capacity of a PWS for material modifications may be less than eight hundred (800) gallons per day if the PWS owner provides information that demonstrates to the Department's satisfaction the maximum day demand for the PWS, exclusive of irrigation and fire flows, is less than eight hundred (800) gallons per day per residence. (7-1-24)

b. All PWS owners must meet the following pressure requirements: (7-1-24)

i. Be capable of providing sufficient water during maximum day demand conditions, including fire flow where provided, to maintain a minimum pressure of twenty (20) psi throughout the distribution system, at ground level, as measured at the service connection or along the property line adjacent to the consumer's premises. (7-1-24)

ii. If an initial investigation by the water supplier fails to discover the causes of inadequate or excessive pressure, the Department may require the water supplier to conduct a local pressure monitoring study to diagnose and correct pressure problems. Compliance with these requirements by PWSs that do not have a meter vault or other point of access at the service connection or along the property line adjacent to the consumer's premises

where pressure in the distribution system can be reliably measured must be determined by measurements within the consumer's premises, or at another representative location acceptable to the Department. (7-1-24)

iii. Copies of pressure monitoring study reports required under Subsection 552.01.b.iii. detailing study results and any resulting corrective actions planned or performed by the PWS owner must be submitted to the Department in accordance with these rules. (7-1-24)

iv. The following PWSs or service areas of PWSs must maintain a minimum pressure of forty (40) psi throughout the distribution system, during peak hour demand conditions, excluding fire flow, measured at the service connection or along the property line adjacent to the consumer's premises. (7-1-24)

(1) Any PWS constructed or substantially modified after July 1, 1985. (7-1-24)

(2) Any new service areas. (7-1-24)

(3) Any PWS that is undergoing material modification where it is feasible to meet the pressure requirements as part of the material modification. (7-1-24)

v. Any newly constructed PWSs, or portions of existing systems that are materially modified after July 1, 2024, must keep static pressure within the distribution system below eighty (80) psi. Pressures above eighty (80) psi must be controlled by pressure reducing valve stations installed in the distribution main. In areas where failure of installed pressure reducing valve stations result in extremely high pressure, pressure relief valves may be required. The Department may approve the use of pressure reducing devices at individual service connections on a case-by-case basis, if it can be demonstrated that higher pressures in portions of the distribution system are required for efficient PWS operation. If PWS modification will cause pressure to routinely exceed eighty (80) psi, or if a check valve or an individual pressure reducing device is added to the service line, the PWS owner must notify affected customers. Notification may include reasons for the elevated pressure, problems or damage that elevated pressure can inflict on appliances or plumbing systems, and suggested procedures or mitigation efforts affected property owners may initiate to minimize problems or damage. (7-1-24)

vi. The Department may allow the installation of booster pump systems at individual service connections on a case-by-case basis. However, such an installation may only occur with the full knowledge and agreement of the PWS owner, including assurance by the PWS that the individual booster pump will cause no adverse effects on PWS operation. (7-1-24)

vii. For elevated storage tanks, pressure calculations during peak hour demand are based on the lowest water level after both operational storage and equalization storage have been exhausted. Pressure calculations during fire flow demands are based on the lowest water level after operational storage, equalization storage, and fire suppression storage have been exhausted. (7-1-24)

viii. For hydropneumatic tanks, pressure calculations are based on the lowest pressure of the pressure cycle and this requirement must be noted in the operation and maintenance manual. (7-1-24)

c. Any PWS designed to provide fire flows must ensure that such flows are compatible with the water demand of existing and planned fire-fighting equipment and fire fighting practices in the area served by the PWS. (7-1-24)

d. Irrigation Flows. (7-1-24)

i. Any PWS constructed after November 1, 1977, must be capable of providing water for uncontrolled, simultaneous foreseeable irrigation demand, which includes all acreage that the PWS is designed to irrigate. (7-1-24)

(1) The Department must concur with assumptions regarding the acreage to be irrigated. In general, an assumption that no outside watering will occur is considered unsound and is unlikely to be approved. (7-1-24)

(2) An assumption of minimal outside watering, as in recreational subdivisions, may be acceptable if

design flows are adequate for maintenance of "green zones" for protection against wildland fire. (7-1-24)

ii. The Department may modify the requirement of Subsection 552.01.d.i. if: (7-1-24)

(1) A separate irrigation system is provided; or (7-1-24)

(2) The supplier of water can regulate the rate of irrigation through its police powers, and the PWS is designed to accommodate a regulated rate of irrigation flow. The Department may require the PWS to submit a legal opinion addressing the enforceability of such police powers. (7-1-24)

iii. If a separate non-potable irrigation system is provided for the consumers, all mains, hydrants and appurtenances must be easily identified as non-potable. The Department must concur with a plan to ensure that each new potable water service is not cross-connected with the irrigation system. (7-1-24)

02. Groundwater. (7-1-24)

a. PWSs supplied by groundwater, must treat water within the PWS by disinfection if the groundwater source is not protected from contamination. (7-1-24)

b. The Department may require disinfection for any existing PWS supplied by groundwater if the PWS has repeated E.coli MCL exceedances, and if the PWS does not appear adequately protected from contamination. Adequate protection will be determined based upon at least the following factors: (7-1-24)

i. Location of possible sources of contamination; (7-1-24)

ii. Size of the well lot; (7-1-24)

iii. Depth of the source of water; (7-1-24)

iv. Bacteriological quality of the aquifer; (7-1-24)

v. Geological characteristics of the area; and (7-1-24)

vi. Adequacy of development of the source. (7-1-24)

03. Operating Criteria. The operating criteria for PWSs that provide filtration are as follows: (7-1-24)

a. A project specific operation and maintenance manual must be provided as required in Subsection 501.12. See definition of Operation and Maintenance Manual in Section 003 for the typical contents of an operation and maintenance manual and the included operations plan. For the operations plan in the operation and maintenance manual, additional guidance for several types of filtration systems can be found in the Department's SWTR Compliance Guidance referenced in Subsection 002.02. (7-1-24)

b. The PWS must conduct monitoring specified by the Department before serving water to the public in order to protect the health of consumers served by the PWS. (7-1-24)

c. New treatment facilities must be operated in accordance with Subsection 552.03.a., and the PWS must conduct monitoring specified by the Department for a trial period specified by the Department before serving water to the public in order to protect the health of consumers served by the PWS. (7-1-24)

04. Disinfection. PWSs that regularly disinfect their water using chlorine are subject to the provisions of Section 320. PWSs using surface water or groundwater under the direct influence of surface water, are subject to the disinfection requirements of Sections 300 and 518. PWSs using chlorine, ozone, chlorine dioxide, or other disinfecting agents for the purposes of disinfection must meet the facility and design standards of Sections 530 and 531. PWSs using ultraviolet light for the purposes of disinfection must meet the facility and design standards of Section 529. (7-1-24)

a. PWSs using only ground water that add a disinfectant for the purpose of disinfection, as defined in Section 003, are subject to the following requirements: (7-1-24)

i. The PWS must demonstrate that it is routinely achieving four (4) logs (ninety-nine point ninety-nine percent) (99.99%)) inactivation/removal of viruses. The required effective contact time must be approved by the Department. This condition must be attainable even when the design capacity coincides with anticipated maximum disinfectant demands. (7-1-24)

ii. A detectable disinfectant residual must be maintained throughout the distribution system. PWSs disinfecting through ultraviolet light will need to maintain a supplemental disinfectant capable of maintaining a detectable disinfectant residual. (7-1-24)

iii. Analysis for disinfectant residual must be conducted at a location at or prior to the first service connection at least daily and records of these analyses are to be kept by the supplier of water for at least one (1) year. A report of all daily chlorine residual measurements for each calendar month must be submitted to the Department no later than the tenth day of the following month. The frequency of measuring disinfectant residuals must be sufficient to detect variations in demand or changes in water flow. (7-1-24)

iv. The Department may, in its discretion, require a treatment rate higher than that specified in Subsection 552.04.a.i. (7-1-24)

b. PWSs using only groundwater that add disinfectant for the purpose of maintaining a disinfectant residual in the distribution system, when the source(s) is not at risk of microbial contamination, are subject to analysis for disinfectant residual made at a frequency that is sufficient to detect variations in demand or changes in water flow. (7-1-24)

c. PWSs using only groundwater that add chlorine for other purposes, such as oxidation of metals or taste and odor control, when the source(s) is known to be free of microbial contamination, must ensure that chlorine residual entering the distribution system after treatment is less than four (4.0) mg/L. The requirements in Subsection 552.04.b.ii. also apply if the PWS maintains a chlorine residual in the distribution system. (7-1-24)

05. Fluoridation. (7-1-24)

a. Commercial sodium fluoride, sodium silico fluoride and hydrofluosilicic acid which conform to the applicable American Water Works Association (AWWA) Standards, incorporated by reference into these rules at Subsection 002.01, are acceptable. Use of other chemicals must be specifically approved by the Department. (7-1-24)

b. Fluoride compounds are to be stored in covered or unopened shipping containers. (7-1-24)

c. Provisions must be made to minimize the quantity of fluoride dust. Empty bags, drums, or barrels are to be disposed of in a manner that will minimize exposure to fluoride dusts. (7-1-24)

d. Daily records of flow and amounts of fluoride added must be kept. An analysis for fluoride in finished water must be made at least weekly. Records of these analyses are to be kept by the supplier of water for five (5) years. (7-1-24)

06. Cross Connection Control Program - Community Water Systems. The water purveyor is responsible through its cross connection control program to take reasonable and prudent measures to protect the PWS against contamination and pollution from cross connections through premises isolation, internal or in-plant isolation, fixture protection, or some combination of premises isolation, internal isolation, and fixture protection. Pursuant to Section 543, all suppliers of water for community PWSs must implement a cross connection control program to prevent the entrance to the PWS of materials known to be toxic or hazardous. The water purveyor is responsible to enforce the PWS's cross connection control program. The program will at a minimum include: (7-1-24)

a. An inspection program to locate cross connections and determine required suitable protection. For

new connections, PWS owners must verify suitable protection was installed prior to providing water service. (7-1-24)

b. Required installation and operation of adequate backflow prevention assemblies. Appropriate and adequate backflow prevention assembly types for various facilities, fixtures, equipment, and uses of water must be selected from the Uniform Plumbing Code, the AWWA Recommended Practice for Backflow Prevention and Cross Connection Control (M14), the USC Foundation Manual of Cross Connection Control, or other sources deemed acceptable by the Department. The assemblies must meet the requirements of Section 543 and comply with local ordinances. (7-1-24)

c. Annual inspections and testing of all installed backflow prevention assemblies by a tester licensed by a licensing authority recognized by the Department. Testing must be done in accordance with the test procedures published by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research. See the USC Foundation Manual of Cross-Connection Control referenced in Subsection 002.02. (7-1-24)

d. Discontinuance of service to any structure, facility, or premises where suitable backflow protection has not been provided for a cross connection. (7-1-24)

e. Assemblies that cannot pass annual tests or those found to be defective are to be repaired, replaced, or isolated within ten (10) business days. If the failed assembly cannot be repaired, replaced, or isolated within ten (10) business days, water service to the failed assembly must be discontinued. (7-1-24)

07. Cross Connection Control - Non-Community Water Systems. All suppliers of water for non-community water systems must ensure that cross connections do not exist or are isolated from the potable water system by an approved backflow prevention assembly. Backflow prevention assemblies must be inspected and tested annually for functionality by an Idaho licensed tester, as specified in Subsections 552.06.c. and 552.06.e. (7-1-24)

08. Start-up Procedures For Seasonal Systems Subject To Subsections 100.01.a., c., and d. (7-1-24)

a. All seasonal PWS owners must demonstrate completion of a Department approved start-up procedure, including start-up sampling, prior to serving water to the public. The PWS owner must submit information on a Department provided or approved form that includes a statement certifying that the PWS owner or operator followed proper start-up procedures. The form must be submitted to the Department within 30 (thirty) days following the PWS's start-up date. Start-up sampling must include total coliform samples submitted to a certified laboratory demonstrating the absence of total coliform within thirty (30) days prior to serving water to the public. (7-1-24)

b. The Department may exempt any seasonal PWS from Subsection 552.08.a. if the entire distribution system remains pressurized during the entire period that the PWS is not operating, except that the PWSs that monitor less frequently than monthly must still monitor during the vulnerable period designated by the Department. The Department may exempt a seasonal PWS from Subsection 552.08.a. if the owner or operator of the PWS meets all of the following conditions: (7-1-24)

i. Requests an exemption in writing to the Department for approval; (7-1-24)

ii. Demonstrates a clean compliance history as defined in Section 003 for a minimum of five (5) years; (7-1-24)

iii. Has no uncorrected significant deficiencies from the most recent sanitary survey; and (7-1-24)

iv. Total coliform samples submitted to a certified laboratory within 30 (thirty) days prior to serving water to the public demonstrate the absence of total coliform. (7-1-24)

553. CLASSIFICATION OF WATER SYSTEMS.

01. System Classification Required. The Department will classify community, non-transient non-community, and surface water PWSs based on indicators of potential health risks. (7-1-24)

02. Classification Criteria. PWSs are classified under a system that uses the following criteria: (7-1-24)

a. Complexity, size, and type of source water for treatment facilities. (7-1-24)

b. Complexity and size of distribution systems. (7-1-24)

c. Other criteria deemed necessary to completely classify PWSs. (7-1-24)

d. The Department will develop guidelines for applying the criteria set forth in Section 553. (7-1-24)

03. Classification Review. The Department will review PWS classifications on a minimum five (5) year frequency. (7-1-24)

554. LICENSED OPERATOR REQUIREMENTS.

01. Licensed Operator Required. Owners of all community, non-transient non-community, and surface water or groundwater sources directly influenced by surface water must place the direct supervision of their PWS under the responsible charge of a properly licensed operator at all times. When the responsible operator is not available, the PWS owner must designate a substitute responsible operator. (7-1-24)

02. Responsible Charge Operator License Requirement. An operator in responsible charge of a PWS must hold a valid Idaho license equal to or greater than the classification of the PWS where the responsible charge operator is in charge as defined in Section 003. (7-1-24)

03. Water Operator License Requirement. All operating personnel at PWSs subject to these requirements making process control/ system integrity decisions about water quality or quantity that can affect public health must hold a valid Idaho license. (7-1-24)

04. Water Operator License Upgrade Allowance. A twelve (12) month period will be provided to meet increased drinking water distribution system operator licensure requirements when a higher licensure level is required based on a population increase if the following requirements are met: (7-1-24)

a. The licensure increase is triggered solely by a population increase; and (7-1-24)

b. The responsible charge operator of the PWS at the time the distribution licensure requirement increases remains the responsible charge operator throughout the twelve (12) month time frame. (7-1-24)

555. -- 559. (RESERVED)

560. CONTRACTING FOR SERVICES.
PWS owners who contract with persons to provide responsible charge operators and substitute responsible charge operators need to submit proof of such contract to the Department prior to the contracted person performing any services at the PWS. (7-1-24)

561. -- 562. (RESERVED)

563. ADVISORY GROUP.
Ongoing stakeholder involvement will be provided through the existing drinking water advisory committee at the Department. (7-1-24)

564. -- 999. (RESERVED)