Department of Environmental Quality – Environmental Reviews and Certification

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 5. DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL REVIEWS AND CERTIFICATION

ARTICLE 5. MINIMUM DESIGN CRITERIA

R18-5-501. Siting Requirements

To the extent practicable, a new public water system or an extension to an existing public water system shall be geographically located to avoid a site which is:

1. Subject to a significant risk from earthquakes, floods, fires, or other disasters which could cause a breakdown of the public water system or portion thereof; or
2. Within the flood plain of a 100-year flood, except for intake structures and properly protected wells.

R18-5-502. Minimum Design Criteria

A. A public water system shall be designed using good engineering practices. A public water system which is designed in a manner consistent with the criteria contained in Engineering Bulletin No. 10, "Guidelines for the Construction of Water Systems," issued by the Arizona Department of Health Services, May 1978 (and no future editions), which is incorporated herein by reference and on file with the Office of the Secretary of State, shall be considered to have been designed using good engineering practices. Other system designs shall be approved if the applicant can demonstrate that the system will function properly and may be operated reliably in compliance with this Chapter. Minimum design criteria which are not subject to modification are listed in this Section.

B. A potable water distribution system shall be designed to maintain and shall maintain a pressure of at least 20 pounds per square inch at ground level at all points in the distribution system under all conditions of flow.

C. Water and sewer mains shall be separated in order to protect public water systems from possible contamination. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. Separation requirements are as follows:

1. A water main shall not be placed:
   a. Within 6 feet, horizontal distance, and below 2 feet, vertical distance, above the top of a sewer main unless extra protection is provided. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided. Alternate extra protection shall consist of encasing both the water and sewer mains in at least 6 inches of concrete for at least 10 feet beyond the area covered by this subsection (C)(1)(a).
   b. Within 2 feet horizontally and 2 feet below the sewer main.
2. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be 6 feet, measured from the center of the manhole.
3. The minimum separation between force mains or pressure sewers and water mains shall be 2 feet vertically and 6 feet horizontally under all conditions. Where a sewer force main crosses above or less than 6 feet below a water line, the sewer main shall be encased in at least 6 inches of concrete or constructed using mechanical joint ductile iron pipe for 10 feet on either side of the water main.
4. The separation requirements do not apply to building, plumbing, or individual house service connections.
5. Sewer mains (gravity, pressure, and force) shall be kept a minimum of 50 feet from wells unless the following conditions are met:
   a. Water main pipe, pressure tested in place to 50 psi without excessive leakage, is used for gravity sewers at distances greater than 20 feet from water wells; or
   b. Water main pipe, pressure tested in place to 150 psi without excessive leakage, is used for pressure sewers and force mains at distances greater than 20 feet from water wells. "Excessive leakage" means any amount of leakage which is greater than that permitted under the AWWA Standard applicable to the particular pipe material or valve type.
6. Requests for authorization to use alternate construction techniques, materials, and joints shall be reviewed by the Department, and such requests may be approved on a case-by-case basis.

D. A public water system shall not construct or add to its system a well which is located:

1. Within 50 feet from existing sewers unless the sewer main has been constructed in accordance with subsection (C)(5)(a) or (b) of this Section;
2. Within 100 feet of any existing septic tank or subsurface disposal system;
3. Within 100 feet of a discharge or activity which is required to obtain an Individual Aquifer Protection Permit, pursuant to A.R.S. §§ 49-241(A) through 49-251;
4. Within 100 feet of an underground storage tank as defined in A.R.S. § 49-1001; or
5. Within 100 feet of hazardous waste facilities operated by large quantity generators and treatment, storage, and disposal facilities regulated under the Arizona Hazardous Waste Management Act, A.R.S. § 49-921 et seq.

R18-5-503. Storage Requirements

A. The minimum storage capacity for a CWS or a noncommunity water system that serves a residential population or a school shall be equal to the average daily demand during the peak month of the year. Storage capacity may be based on existing consumption and phased as the water system expands.

B. The minimum storage capacity for a multiple-well system for a CWS or a noncommunity water system that serves a residential population or a school may be reduced by the amount of the total daily production capacity minus the production from the largest producing well.

R18-5-504. Prohibition on the Use of Lead Pipe, Solder, and Flux

Construction materials used in a public water system, including residential and non-residential facilities connected to the public water system, shall be lead-free as defined at R18-4-101. This Section shall not apply to leaded joints necessary for the repair of cast iron pipes.

R18-5-505. Approval to Construct

A. The Department shall only approve an addition or a water main extension to a public water system that is in compliance with this Chapter or is making satisfactory progress towards compliance under a schedule approved by the Department. The Department shall approve a properly designed modification that can be expected to return a public water system to compliance.

B. A person shall not start to construct a new public water system, modify an existing facility, including an extension to an existing public water system, or make an alteration that will affect the treatment, capacity, water quality, flow, distribution, or operational performance of a public water system before receiving an Approval to Construct from the Department. Designing or consulting engineers may confer with the Department before proceeding with detailed designs of complex or innovative facilities. The following provisions shall apply:

1. An application for Approval to Construct, including the following documents and data, shall be submitted to the Department:
   a. Detailed construction plans of the site and work to be done, presented in legible form and of sufficient scale, to establish construction requirements to facilitate effective review;
   b. Complete specifications to supplement the plans;
   c. A design report that describes the proposed construction and basis of design, provides design data and other pertinent information that defines the work to be done, and establishes the adequacy of the design to meet the system demand;
   d. Analyses of a proposed new source of water that include:
      i. Microbiological; physical; radiochemical; inorganic, organic, and volatile organic chemicals; and
      ii. Microscopic particulates if the source meets the criteria of R18-4-301.01(A); and
   e. Other pertinent data required to evaluate the application for Approval to Construct.
2. All plans, specifications, and design reports submitted for a public water system shall be prepared by, or under the supervision of, a professional engineer registered in Arizona and have the seal and signature of the engineer affixed to them, except that an engineer not registered in Arizona may design a water treatment plant or additions, modifications, revisions, or extensions, which include extensions to potable water distribution systems, if the total cost of the construction does not exceed $12,500 for material, equipment, and labor, as verified by a cost estimate submitted with plan documents.
3. An existing public water system shall be exempt from the plan review requirements of this Article if the public water system is in compliance with this Chapter or is making satisfactory progress towards compliance under a schedule approved by the Department if the applicable structural revision, addition, extension, or modification:
   a. Has a project cost of $12,500 or less; or
   b. Is made to a water line that:
      i. Is not for a subdivision requiring plat approval by a city, town, or county;
      ii. Has a project cost of more than $12,500 but less than $50,000; and
      iii. Has a design that is sealed and signed by a professional engineer registered in Arizona and the construction of which is reviewed for conformance with the design by a professional engineer registered in Arizona.
4. Upon completion of a project exempt from the plan review requirements of this Article pursuant to subsection (B)(3), the public water system shall submit a notice of compliance which contains:
   a. A fair market value cost estimate for the project,
   b. The name of the design engineer and the review engineer, and
   c. The project completion date and the total construction time.

C. The Department shall act upon a complete Approval to Construct application submitted for approval within 30 days after its receipt.

D. The Department shall issue an Approval to Construct only when the following conditions have been met:

1. Plans and specifications submitted to the Department demonstrate that the proposed public water system reasonably can be expected to comply with this Chapter, including the MCLs in Article 2; and
2. The water system is in compliance with this Chapter or reasonably can be expected to return to compliance with this Chapter as a result of the proposed construction.

E. An Approval to Construct becomes void if an extension of time is not granted by the Department within 90 days after the passage of one of the following:

1. Construction does not begin within one year after the date the Approval to Construct is issued, or
2. There is a halt in construction of more than one year, or
3. Construction is not completed within three years after the date construction begins.

R18-5-506. Compliance with Approved Plans

All construction shall conform to approved plans and specifications. In order to make a change in an approved design that will affect water quality, capacity, flow, sanitary features, or performance, a public water system shall submit revised plans and specifications to the Department for review, together with a written statement regarding the reasons for the change. The public water system shall not proceed

with the construction affected by the design change without written approval from the Department. Revisions not affecting water quality, capacity, flow, sanitary features, or performance may be permitted during construction without further approval if record drawings documenting these changes, prepared by a professional engineer registered in Arizona, are submitted to the Department under R18-5-508.

R18-5-507. Approval of Construction

A. A person shall not operate a newly constructed facility until an Approval of Construction is issued by the Department.

B. The Department shall not issue an Approval of Construction on a newly constructed public water system, an extension to an existing public water system, or any alteration of an existing public water system that affects its treatment, capacity, water quality, flow, distribution, or operational performance unless the following requirements have been met:

1. A professional engineer registered in Arizona or a person under the direct supervision of a professional engineer registered in Arizona, has completed a final inspection and submitted a Certificate of Completion on a form approved by the Department to which the seal and signature of the professional engineer registered in Arizona have been affixed;
2. The construction conforms to approved plans and specifications, as indicated in the Certificate of Completion, and all changes have been documented by the submission of record drawings under R18-5-508;
3. An operations and maintenance manual has been submitted and approved by the Department if construction includes a new water treatment facility; and
4. An operator, who is certified by the Department at a grade appropriate for each facility, is employed to operate each water treatment plant and the potable water distribution system.

C. The Department may conduct the final inspection required in subsection (B)(1), at a public water system's request, if both of the following notification requirements are met:

1. The public water system notifies the Department at least seven days before beginning construction on a public water system installation, change, or addition that is authorized by an Approval to Construct; and
2. The public water system notifies the Department of completion of construction at least 10 working days before the expected completion date.

R18-5-508. Record Drawings

A. A professional engineer registered in Arizona shall clearly and accurately record or mark, on a complete set of working project drawings, each deviation from the original plan and the dimensions of the deviation. The set of marked drawings becomes the record drawings, reflecting the project as actually built.

B. The professional engineer registered in Arizona shall sign, date, and place the engineer's seal on each sheet of the record drawings and submit them to the Department upon completion of the project. The record drawings shall be accompanied by an Engineer's Certificate of Completion, signed by the professional engineer registered in Arizona, and submitted on a form approved by the Department for any project inspected under R18-5-507(B).

C. Quality control testing results and calculations, including pressure and microbiological testing, and disinfectant residual records, shall be submitted with the Engineer's Certificate of Completion together with field notes and the name of the individual witnessing the tests.

R18-5-509. Modification to Existing Treatment Process

Before a public water system may make a modification to its existing treatment process, the public water system shall submit and obtain the Department's approval for a detailed plan that explains the proposed modifications and the safeguards that the public water system will implement to ensure that the quality of the water served by the system will not be adversely affected by the modification. The public water system shall comply with the provisions in the approved plans.