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Monday, September 29, 2025

## TOWN OF BERTHOUD IRRIGATION PLAN GUIDELINES

### Section 1: General Principles

These guidelines provide residents and businesses with direction to conserve water, reduce overall consumption, minimize peak summer water demand, and eliminate outdoor water waste. These guidelines apply to all new development, redevelopment and renovation projects containing a landscaping component.

#### A. PERFORMANCE CRITERIA

##### *Water Conservation and Sustainability*

1. All irrigation design, installation, and maintenance shall prioritize water conservation. This shall be accomplished by utilizing Water, Wastewater & Stormwater management practices found in Berthoud's 2021 Comprehensive Plan, Berthoud's Municipal Code, the Landscape Design Guidelines, Engineering Specifications and Standards, and other applicable plans.

##### *Water Efficiency*

1. Irrigation systems shall be designed and maintained to achieve a distribution uniformity of 75% or greater.
2. Water shall not be applied to impervious surfaces, and runoff from landscapes shall not occur. This will prevent damage to streets, sidewalks, or utility infrastructure.

##### *Benefits*

1. New or renovated landscaping, irrigation design, installation, and maintenance (excluding work done by residential homeowners on their own properties) shall be performed by professionals who meet established qualifications.
2. The project shall preserve Berthoud's natural resources and promote an enhanced level of design, installation, and maintenance that fits the nature and character of the Town.

### Section 2: Irrigation Design Requirements

This section identifies criteria for irrigation service connections, control, methods, equipment, and system efficiency.

#### A. GENERAL DESIGN CONSIDERATIONS

1. Landscaped area size and permanent irrigation system installation.
  - a. Irrigated areas between 500 and 5,000 square feet shall be served by a combined service line from the building.
  - b. Irrigated areas exceeding 5,000 square feet shall require a dedicated irrigation service line, separate from domestic water service. This requirement does not apply to single-family lots.
  - c. No irrigation is allowed in landscaped areas less than three (3) feet in width.
  - d. Drip and subsurface irrigation systems are permitted in areas between 3 and 10 feet in width. (Note for caution – watch installation of irrigation in the area between the back of curb to the sidewalk as this is an area commonly used for temporary signs and these signs can puncture the subsurface irrigation pipe.)
2. All irrigation systems shall implement hydrozoning, including grouping similar water needs into single irrigation zones.
3. Native grass areas shall be irrigated for establishment purposes.
  - a. All temporary irrigation components including but not limited to mainlines, laterals, valves, wire and heads that are installed **above** ground must be removed immediately after adequate germination & establishment is complete, as determined by the Town and Town's representative.



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- b. All temporary irrigation components including but not limited to mainlines, laterals, valves, wire and heads that are installed **below** ground must have physical disconnect immediately after adequate germination & establishment is complete, as determined by the Town and Town's representative.

## B. WATER SERVICE LINE

1. The irrigation connection/system must be designed and installed to meet, at a minimum, any water windows or restrictions for operation such as day of the week and hours of the day.
2. A dedicated irrigation water service connection/utility and an installed water meter/meter transceiver unit (MXU) is required for all non-residential irrigated common areas (green spaces, parks, landscapes, etc.)
3. No overhead irrigation watering shall be permitted between the hours of 10:00 a.m. to 6:00 p.m.
  - a. Micro-irrigation (hand watering, soaker hoses, drip irrigation) may be done at any time
  - b. Irrigation of newly laid sod/seeded lawns may be done at any time.
4. During all fire alarms, the use of hose and all outlets is forbidden.
5. In case of water shortage or scarcity, the Town Trustees may restrict the use of water for irrigation or sprinkling purposes.
6. Maximum water velocity in service lines and meters shall not exceed 7.5 feet per second.
7. Irrigation service connections shall not interconnect downstream of the meter and irrigation mainlines cannot intersect with other service connections.

## C. IRRIGATION SYSTEM CONTROL

1. WI-FI or cell phone enabled smart irrigation controllers are required for all installations and controllers labeled by the United States Environmental Protection Agency's WaterSense Program are recommended for use.
2. Controllers must have battery backup or non-volatile memory to account for power outages.
3. If a flow meter is proposed, the controller shall be able to control abnormal irrigation flows through the flow sensor.

## D. IRRIGATION SYSTEM DESIGN

1. Shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.
  - a. To reduce runoff and maximize spray/rotary/rotor effectiveness, maximum application rate is 1.25 inches per hour.
  - b. Overspray and runoff restrictions may be modified if the landscape area is adjacent to permeable surfacing and no runoff occurs or if the adjacent non-permeable surfaces drain entirely to landscaping.
2. Testable Backflow Assembly devices (backflow preventer) are required to protect the potable water supply from contamination.
  - a. Double Check Valve (DCVA), Reduced Pressure (RP) and Pressure Vacuum Breaker (PVB) devices are approved, testable backflow assemblies.
  - b. Single check valves are not allowed and not considered sufficient backflow protection.
3. Master valves are required and must be installed in standard rectangular irrigation valve boxes.
4. Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) are required.
  - a. Valves must be as close as possible to the water supply connection to minimize water loss in case of an emergency (such as a main line break) or routine repair.
5. Flow sensors:
  - a. Required on non-residential service connections.
  - b. Must be installed in standard rectangular irrigation valve boxes.
6. Rain Sensors:
  - a. Required on all irrigation systems.



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- b. To be installed on any surface where it will be exposed to unobstructed rainfall, but not in the path of irrigation spray.
7. Overhead Irrigation Specifics
  - a. Overhead irrigation is prohibited in areas less than 10 feet in width/length, and in parking lot peninsulas, islands, or entryways.
  - b. Pop-up spray/rotary head heights shall align with the mature height of the plant material (e.g., 6 inches for turf, 12 inches for native/wildflower areas).
  - c. Pop-up spray/rotary heads must be equipped with internal check valves, internal pressure regulation, and matched precipitation rate spray or rotary nozzles. Variable arc spray nozzles are not allowed.
  - d. Rotors shall be equipped with internal check valves and pressure regulation.
8. Drip Irrigation Specifics
  - a. Trees, shrubs, perennials, and ground cover shall be irrigated with drip irrigation.
  - b. Point source emitters, inline emitters of surface and subsurface drip shall be equipped with internal check valves at each emitter.
  - c. All drip systems must include an operational indicator in each planting area and a flush valve with an operational indicator at every dead end.
    - i. Operational indicators using  $\frac{1}{4}$ -inch tubing (spaghetti tubing) are not allowed.
  - d. Drip emitters shall be installed on stakes and placed above the mulch, around the perimeter of the plant. Lateral lines and tubing shall be concealed.
  - e. Bubblers may be substituted for drip emitters for specific plant material (e.g., trees in native grass areas).
9. Irrigation charts and hydraulic worksheets are required for irrigation plan submittal on construction documents. All irrigation emission devices shall meet the requirements set in the American National Standards Institute (ANSI) standard, ASABE/ICC 802-2014 "Landscape Irrigation Sprinkler and Emitter Standard" authored by the American Society of Agricultural and Biological Engineers and the International Code Council and verified by an independent third-party.

## E. IRRIGATION SYSTEM INSTALLATION AND OPERATION

1. All irrigation system installations shall be consistent with the approved system design.
2. Irrigation Efficiency
  - a. The installed irrigation system shall achieve a 75% distribution uniformity efficiency rating, demonstrated through an independent audit by a Certified Irrigation Auditor or certified by the Irrigation Designer.
  - b. High-efficiency nozzles with an application rate not exceeding 1.25 inches/hour will be used.
  - c. The superintendent or his designee may inspect the premises of any water consumer to examine the condition of all pipes, motors, meters, and water fixtures, or the manner in which the water is used.
  - d. Backflow Assemblies shall be installed by a licensed installer immediately downstream of the water meter and before any other water connections and must be tested prior to the issuance of a Certificate of Occupancy or other Town approval. It is recommended to install one testable backflow assembly that protects all water connections on the property. This approach eliminates the need to track and test multiple devices per connection, reducing the complexity of managing several units at one location. It also lowers the risk of failure from multiple devices and ensures the protection of the entire system.
3. Establishment Irrigation
  - a. Temporary methods, application rates, and monthly/annual water demand totals shall be defined for each plant material type.
4. Permanent Irrigation
  - a. Permanent methods, application rates, and timing shall be defined for each plant material type.
  - b. No permanent irrigation is permitted within street medians or roundabouts unless there are trees, shrubs, ornamental grasses or perennials.



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## Section 3: Irrigation System Testing and Maintenance

1. Annual Backflow Assembly Testing
  - a. The customer/user at any premise(s) must ensure the backflow assembly is tested annually by a certified technician approved by the CDPHE and Town of Berthoud.
2. Routine Inspection
  - a. Frequent certified inspections and tests may be required where the Town of Berthoud Water Utilities deems the water service cross-connection hazard to be great enough.
  - b. These tests shall be at the expense of the water user and shall be performed by a certified technician.
  - c. After testing, backflow assembly test reports must be submitted by the technician to Berthoud Water Utilities for review and approval. The assemblies shall be tagged with a seal clearly displaying the serial number, testing company, and the test date, as performed by the technician.
  - d. Whenever the backflow assembly is found to be defective or fails a test, the assembly must be repaired or replaced, and retested, at the customer/user's expense, within 90 days of discovery. Once the repair or replacement is completed, a passing test report must be submitted by a certified technician. The report should include the serial number, model number, and installation date of the new device, as well as the serial number of the replaced device.
  - e. The Town of Berthoud Water Utilities retains the right to check the installation, operation, and testing of any backflow assembly at any time to assure proper operation.
3. Land Use Categories and Associated Backflow Assembly Testing (or 'Testing') Standards
  - a. Single-Family Residential
    - i. Testing may be performed at any time; there is no annual testing requirement.
  - b. Duplexes
    - i. Currently exempt from annual testing. However, testing may be performed at any time if desired.
  - c. Multi-Family (3 or More Units)
    - i. Annual testing is required for on-site irrigation systems.
  - d. Non-Residential
    - i. Annual testing is required for on-site irrigation systems.