South Carolina Department of Health and Environmental Control

Water Management Strategies Across Pee Dee Basin

Bureau of Water

Planning Framework Guiding Principle

- **Guiding Principle #4: River Basin Plans should utilize effective supply and demand side strategies**
  - Water conservation should be an integral component of water resource management – first approach for extending or augmenting available supplies
  - RBPs should consider water-demand management strategies and water-supply strategies and promote the efficient use of existing water supplies
  - RBPs should utilize sound science and recommend suitable but cost-effective management strategies which use new, proven technologies, procedures, and practices to enable more efficient use of water and maximize water availability
  - Management strategies should be flexible and should be responsive to trial, monitoring, and feedback
  - RBPs should consider conjunctive use and both surface and groundwater resource management

Requirements for New Surface Water Withdrawers

- R. 61-119 requires a description of how applicable industry standards on the efficient use of water have been considered in determining quantity of water being requested
- Requires a draft of proposed contingency plan addressing operations during time when flow of surface water is less than or equal to minimum instream flow plus any flow necessary to protect downstream users

Elements of a Best Management Plan for Groundwater Users

- R. 61-113 requires a best management plan for water use
  - water conservation is designed to protect water quality and reduce water consumption
- Strategies for BMPs have been suggested for some of the major sectors: golf courses, water suppliers, agricultural irrigators, and industrial users

Elements of a Best Management Plan

- Golf Course Irrigation BMP
  - Reasonable and appropriate conservation techniques, application processes, and alternative sources of water should be considered
    - Soil type and monitoring soil moisture levels
    - Weekly precipitation monitoring
    - Low-water demand landscaping
    - Prevention of excessive water use by spot watering dry areas, drip irrigation, or watering at night/early morning
  - Provide reasonable and appropriate documentation that the water use is necessary (irrigated acreage, water use/acre, etc.)
  - Maintenance schedule to preserve integrity of water irrigation system such as routine inspections and upgrading of equipment

Elements of a Best Management Plan

- Water Supply BMP
  - Reasonable and appropriate conservation techniques, application processes, and alternative sources of water should be considered
    - Assessment of water supply alternatives (conservation, reuse, etc.)
    - Cross connection control program
    - Water loss modeling program
    - Water utility rate structures that promote water conservation
    - Water conservation notices using bill stuffers to customers
  - Provide reasonable and appropriate documentation that the water use is necessary based on population served, anticipated growth, and annual water use statistics
  - Maintenance schedule to preserve integrity of water conveyance system such as routine inspections, a metering program based on AWWA practices, and upgrading of equipment

Elements of a Best Management Plan

- Agricultural Irrigation BMP
  - Reasonable and appropriate conservation techniques, application processes, and alternative sources of water should be considered
    - Soil type and monitoring soil moisture levels
    - Prevention of excessive water use by spot watering dry areas, drip irrigation, or watering at night/early morning
    - Utilize micro-irrigation wherever possible (drip emitters, soaker hoses, etc.)
  - Provide reasonable and appropriate documentation that the water use is necessary for the needs
    - Irrigated acreage with water use/acre
    - Major crops, growing season, and water use needed
  - Maintenance schedule to preserve integrity of water irrigation system such as routine inspections and upgrading of equipment

Elements of a Best Management Plan

- Industrial BMP
  - Reasonable and appropriate conservation techniques, application processes, and alternative sources of water should be considered
    - Establish programs to improve long-term efficiency of water use
    - Clean products, equipment, facility only when necessary
    - Reuse water when possible
    - Irrigate only when necessary or not at all
  - Provide reasonable and appropriate documentation that proposed use is necessary to the needs of the user
    - Industry type
    - Anticipated growth and annual water use statistics
  - Maintenance schedule to preserve integrity of water conveyance system such as routine inspections, meter installation, replacement, and calibration, and upgrading of equipment

Example BMP Strategies: Groundwater

- Golf courses
  - Wetting agents to reduce water use
  - Regular inspections, maintenance, and use of highly efficient equipment
  - Spot watering dry areas and irrigating at night, in the morning, or as needed
  - Alternate sources of water and water reuse
  - Checking soil moisture
  - Low-water demand landscaping
- Water Suppliers
  - Regular inspections, maintenance, and use of highly efficient equipment
  - Alternate sources of water
  - Pumping at night, in the morning, or as needed
  - Surcharging water users who use excessive water
  - Leak detection and water audit programs
  - Reduction in use across drought phases

Example BMP Strategies: Groundwater

- Agricultural Irrigators
  - Installation of soil moisture sensors
  - Irrigating crops at night to prevent water loss from evaporation
  - Drip irrigation
  - Grass ditch buffers to prevent runoff
  - Installation of low-pressure nozzles
  - No irrigation during times of high rainfall
- Industrial Users
  - Recycling of groundwater for wastewater treatment
  - Recycling of cooling water
  - Pumped groundwater captured in stormwater retention ponds
  - Wastewater discharge rates monitoring
  - Production water usage eliminated during shut down periods

Example OCP Strategies: Surface Water

- Golf courses
  - Reduce water use as needed during progressive drought phases, staggering irrigation of ornamental and turfgrass landscapes, and eliminating wash down of hard surfaces and buildings
  - Using more drought tolerant grasses across the greens and fairways
  - Educating superintendent and other staff on water issues
  - Water audits and upgraded equipment
- Industrial Users
  - Reuse of water onsite for process water
  - Conjunctive use of groundwater and tie in with public supply
  - Routine maintenance schedules
  - Communicate to employees and educate them on water conservation
  - Verify optimization of onsite processes using water

Example OCP Strategies: Surface Water

- Agricultural Irrigators – not required to have a BMP strategy or OCP, many use the same strategies as for groundwater (drip irrigation, only pumping when needed, etc.)
- Water Suppliers
  - Reduction in use across drought phases, from voluntary restrictions in moderate drought to some mandatory reductions in severe and extreme drought
  - Imposing fees to those that violate the restrictions in place during droughts phases
  - Cooperative agreements with alternative water supply sources
  - Imposing drought surcharges on customers
  - Newsletters informing customers regarding water conservation
  - Public education and outreach programs
  - Conjunctive use of groundwater

Links to Relevant Documents

- BMP Example Document
  - Elements of a BMP

Questions?

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