

SCDNR Guidelines for Private Shallow Water Impoundments for Waterfowl

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South Carolina Department of Natural Resources (SCDNR) has developed the Guidelines for Private Shallow Water Impoundments for Waterfowl. This guidance document applies only to non-tidally influenced, shallow (less than 4 ft of water) waterfowl impoundment development.

The SCDNR is the steward of the state's natural resources and is responsible for the protection and management of these resources for the use and enjoyment of the public. SCDNR, in carrying out its protection and management responsibilities, must balance its objectives and actions in order to most appropriately protect and sustain the natural resources of South Carolina.

The construction of private shallow water impoundments for waterfowl provides opportunity for maintaining a stayed tradition in South Carolina's culture of waterfowl hunting and provides additional habitat for waterfowl species that overwinter in South Carolina. However, these benefits may be gained at costs to both natural ecosystem functions and native biological communities. Impoundments can result in substantial changes in stream flow, wetland functions, energy cycles, channel morphology and natural biological communities. To balance the management of South Carolina natural resources with the protection of natural ecosystems, SCDNR has developed these guidelines for suitable waterfowl impoundment construction and management for the purpose of productive waterfowl impoundments.

In order to fulfill the goals of this guidance, applications for waterfowl impoundments should contain sufficient information to allow determinations relative to these criteria. They must contain a plan that addresses the elements listed below.

I. Siting

a. Uplands

- i. Site the impoundment solely in uplands. If this occurs, no permitting is required from the U.S. Army Corps of Engineers (USACE); however, other state and local permits may be required.
- ii. If powerline, telephone or gas lines or the associated right-of-way are located within the impoundment location, a letter of permission or easement access may be required from the appropriate utility company.

b. Waters

- i. Impoundments should not be constructed in navigable waters and/or adjacent wetlands. Impoundments should not be constructed on a perennial stream; however, on a case by case basis these impoundments will be evaluated on a perennial stream if the proposed impoundment site is situated between an impoundment upstream and downstream.
- ii. Impoundments should not be constructed in a stream that does not have an existing impoundment between the site and the nearest downstream navigable water, as defined by the South Carolina Department of Health and Environmental Control per S.C. Code of Laws §49-1-10 and Code of Regulations 19-450.2.C.
- iii. Impoundments should not be constructed on trout waters. Trout waters are defined in the S.C. Code of Regulations 61-69.
- iv. Proposed impoundments sited in streams which do have an existing impoundment downstream of the proposed impoundment site and the nearest downstream navigable water will be evaluated.
- v. Proposed impoundments sited on intermittent streams and/or adjacent wetlands will be evaluated.
- vi. Proposed impoundments should be built on sites where water sources (the watershed rainfall runoff, spring fed inflow, etc.) are enough to maintain the water level within the impoundment to provide shallow water, making foraging possible for wintering waterfowl.

- vii. If powerline, telephone or gas lines (or the associated right-of-way) are located within the impoundment location, a letter of permission or easement access may be required from the appropriate utility company.
- c. Sensitive Resources
 - i. Impoundments should not be constructed if their construction will negatively impact a state or federal threatened or endangered species or waters designated as Outstanding Resource Waters (ORW) by the SC Department of Health and Environmental Control under Regulation 61-69.
- d. Soils
 - i. Soils should have low permeability thereby allowing for proper water level maintenance.
 - ii. Check the soils of the proposed site by contacting a professional pond construction company that can conduct site evaluations and soil analysis. The proposed impoundment site should have soils that have low permeability and good compaction such as a clay, silty clay or sandy clay content to be able to hold water. During construction be careful not to excavate below the restrictive clay layer. This can be determined with a bore sample. Provide information on soil types as a part of the impoundment proposal plan.
- e. Hazards
 - i. Identify any hazards on the proposed impoundment site that may affect the project such as powerlines, roadways, location of adjacent landowner homes, etc. on a map.

II. Construction

To provide the information necessary to submit a pond construction permit under the General Permit, it is recommended, but not required, that a professional pond construction company be consulted for the submission of the following information, along with pond design:

- a. For the purposes of the General Permit, impoundments should be constructed between 1 to 10 acres¹ and built an adequate size not to exceed what the watershed can contribute, unless a reliable spring is available. An adequate water source is generally considered as having the capacity to flood approximately 50% of the impoundment over a 1-2-week period, continue at a pace to complete flooding within 3-4 weeks, and maintain water levels with some consistency throughout winter¹.
- b. A shallow-water waterfowl impoundment should have an impoundment depth between 0.5 and 4 feet, with additional depth allowed for construction of interior borrow canals if necessary.
- c. Vegetation may be used to stabilize the dike. Seeding of native or annual grasses is encouraged. Dense sod-forming grasses should be seeded as dike stabilization. Dikes should be kept free of woody vegetation. To prevent erosion, establish vegetation (grasses such as rye, wheat or millet) on the impoundment banks and spoil piles immediately after the completion of any grading work for the impoundment until permanent grasses are able to be planted or established.
- d. Inflow volume must approximate outflow volume on impoundments constructed on streams. The proposed project plans must demonstrate that the downstream flow will not be adversely affected by the proposed impoundment. Documentation will include clear and concise drawings such as a plan view and cross section depicting the use of a water control structure that allows for continuous flow of a stream while maintaining water levels inside the impoundment such as a low flow device, flashboard riser system, or other method to prevent adverse impacts to the flow and circulation of flow downstream during months where water is impounded in winter (i.e., November – February). Further, the

¹ The impoundment size is total acreage of the impoundment. This is not in reference to total amount of impact related to waters under the jurisdiction of the USACE authorities provided in the Clean Water Act 404 program or Section 10 in the Rivers and Harbors Act.

applicant must submit documentation that during a normal rainfall year, the tributary to be impounded has adequate flows to support an impoundment of the size proposed without impacting downstream flows. This documentation may vary depending upon available flows within the tributary to be impounded. The documentation must be commensurate with the size of the proposed impoundment and the environment surrounding the proposed impoundment. For example, small impoundments on tributaries with higher volume or perennial flows may require less documentation. Impoundments on low volume or less than perennial tributaries may require inflow calculations and projected outflow calculations that account for average seepage losses and evaporation. The selected low flow device must be specified and depicted in the permitted plans.

- e. All trees, roots, stumps and large rocks must be removed from the dam/dike/embankment site to prevent potential dam failures. The decay or organic materials left in the dam will create passages allowing water to seep and large rocks may prevent proper compaction. The dike must be maintained free of woody vegetation including trees and shrubs, such as buttonbush.
- f. The dike/dam/embankment should be constructed with a slope of 4:1 or greater to allow for safe operation of equipment (ATVs, tractors, mowers) and reduced preference as burrowing sites for aquatic mammals (beaver and muskrat). The top width of the dam should be a minimum of 4 ft with a maximum of 10 ft to allow for operation of various maintenance machinery.
- g. A water control structure or primary spillway should be included to allow controlled release of water to maintain the desired depth of the impoundment. Examples of water control structures include: a flashboard riser, full-round riser, or screw-gate valve. The water control structure and primary spillway must be specified and depicted in the plans. The spillway should be on one end of the embankment and should be built to the elevation of the impoundments maximum desired water level. The width of the spillway channel is determined by the discharge or size of the watershed and size of the impoundment. A professional pond construction consultant should be able to assist with this determination.
- h. Topsoil excavated during construction should be retained separately, so that it can be spread on the field bed of the finished impoundment. Subsoils are poor substrates for plant growth and, if left adjacent to the impoundment, will likely erode and re-enter the impoundment resulting in turbidity and poor water quality. Excavated material accumulated during construction should be moved away from the impoundment to an upland area.
- i. The site should be adequately sized to accomplish the project purpose and should facilitate a low ratio of dike fill to impoundment size (e.g., 1:50, not 1:5).
- j. Soil material for dike construction should be non-contaminated and come from an appropriate upland source. Material should be clean earthen fill suitable for maintaining a steep slope.
- k. Dike height should be limited to a design that allows a maximum of one foot of free board above the desired managed water level.
- l. Dikes should be located to minimize impacts to mature trees and should take advantage of existing high ground such as roads, river berms, railroad tracks, old dikes and/or other disturbance corridors.
- m. Water control structures (flash board risers) should be flush with the lowest elevation of the impoundment (the base level of the streambed when present) to allow for unimpeded passage of aquatic organisms and complete drawdown and maintain any natural flow during the non-flooded seasons (i.e., March – October).
- n. Where appropriate, project design should include emergency spillways to prevent dike failure due to heavy rain or other flooding events.

- o. In areas subject to beaver activity, measures such as the installation of beaver pond levelers and/or emergency drainage systems are necessary to maintain control of water levels. In areas of heavy beaver activity, control via trapping is recommended.
- p. Dike construction should occur during dry periods.
- q. Construction access impacts should be limited to the footprint of the dike.
- r. The following best management practices should be followed during construction.
 - i. Prior to the beginning of any construction activities, appropriate erosion control measures, such as silt fences, silt barriers or other suitable devices, will be placed between the construction area and affected waterways (wetlands); and maintained in a functioning capacity until the area is permanently stabilized upon project completion.
 - ii. In areas where silt barriers cannot be effectively employed, mulching, burlap or other suitable materials will be applied and maintained on all disturbed land surfaces to control erosion until the area can be permanently stabilized.
 - iii. All steps necessary will be taken to prevent oil, tar, trash, debris and other pollutants from entering adjacent wetlands and/or waterways.
 - iv. Once initiated, the project will be carried to completion in an expeditious manner in order to minimize the period of disturbance to the environment.
 - v. Upon completion, all disturbed areas will be promptly and permanently stabilized with 70% vegetative cover.
 - vi. Construction activities will avoid to the greatest extent practicable, encroachment into any wetland areas not designated as fill for dike construction.

III. Impoundment Management

- a. Dikes/dam/embankments, spillways, and canals should be routinely checked and managed for signs of faults, leaks, and animal activity (muskrat and beaver), as well as maintained free of woody vegetation to protect the integrity of the structures. The dike/dam/embankment should be maintained in grasses.
- b. The plant community within the impoundment should be managed for the production of annual plants to provide food and cover for waterfowl. Food sources may be provided mechanically (plant and flood) and/or naturally (moist-soil management). Regardless, there should be 50% of the impoundment providing a food source for waterfowl.
- c. Flooding of annual plants should not commence until senescence of annual plants has begun, through natural causes or management actions such as spraying, mowing, or burning that simulate senescence. Impoundments containing oak trees should not commence flooding until trees have entered dormancy. No flooding should be commenced before November 1.
- d. To ensure that foods are available to dabbling ducks, water levels should be managed at a depth of 4-18", not to exceed 36" to maximize availability of food to waterfowl, with consideration given to dabbling duck feeding habits (tipping up, reaching for seed on soil surface) balanced with location of seed (seed still on plant stalk vs. seed fallen to soil surface).
- e. Migratory waterfowl require habitat beyond hunting seasons. Beginning February 1, managers should maintain shallower flood levels (mudflat – 6") to provide habitat for wetland dependent species. When time for complete drawdown, it should be done gradually (taking 10 days or more) to minimize loss of topsoil. Drawdown should not begin before March 1 unless impoundments contain oak trees, in which case drawdown may begin February 15. Water control structures shall remain open March 1 – October 31 to facilitate water, nutrient and/or organism exchanges.
- f. No timbering or significant modification to existing wetland vegetation shall occur within the impoundment, except those modifications specified in a management plan approved by regulatory and review agencies. Any forest manipulation that must occur to construct and establish a waterfowl impoundment must avoid and minimize impacts to wetlands and streams. Construction plans, including avoidance and minimization measures, must be submitted along with a waterfowl management plan to be approved by the regulatory and

review agencies through the permitting process and shall be restricted to those activities that promote habitat for waterfowl.

Note:

SC Department of Health and Environmental Control (DHEC) Dam Safety Program

<https://scdhec.gov/environment/bureau-water/dams-reservoirs>

Under state law and regulations, before a dam that meets regulatory criteria can be built, altered, repaired, or removed, plans and specifications must be submitted to the DHEC Dams and Reservoirs Safety Program for review. Once that review is complete, work can commence after a written permit is issued by the Department. The Dams and Reservoirs Safety Program reviews permit applications while also conducting safety inspections of regulated dams and providing informational and technical assistance to dam owners and operators in South Carolina to ensure their compliance with state laws and regulations.

The program conducts construction inspections and final inspections on permitted projects to ensure all work is performed in accordance with the approved plans and specifications. Before a regulated dam or reservoir can be placed into operation, written authorization must be granted by the program.

SC Dams and Reservoirs – Tax Credits

<http://www.scdhec.gov/Environment/WaterQuality/DamsReservoirs/TaxCredits/>

Section 12-6-3370 of the 1976 South Carolina Code of Laws provides for a state tax credit for the construction, installation or restoration of water impoundments and water control structures used for certain purposes. That Section of the 1976 Code is printed here:

Section 12-6-3370. Tax credits for construction, installation or restoration of water impoundments and water control structures.

1. A taxpayer may claim a credit for twenty-five percent of all expenditures for the construction, installation, or restoration of impoundments, lakes, other water impoundments, and water control structures designed for the purposes of water storage for irrigation, water supply, sediment control, erosion control or aquaculture and wildlife management, providing these items are not located in or adjacent to and filled primarily by coastal waters of the State.
2. In the case of pass-through entities, the credit is determined at the entity level and is limited to two thousand five hundred dollars. The maximum amount of credit for all taxpayers, including any credit passed through to the taxpayer from a partnership, "S" Corporation, estate, or trust, is also limited to two thousand five hundred dollars.
3. If the credit exceeds the taxpayer's tax liability for the taxable year, the excess amount may be carried forward for credit against income taxes in the next five succeeding taxable years.
4. To qualify for the credit the taxpayer must obtain a construction permit issued by the Department of Health and Environmental Control or proof of exemption from permit requirements issued by the department, the Natural Resources Conservation Service, or a local Soil and Water Conservation District.

To obtain the proof of exemption form referenced in (D) above, the owner must first insure that the dam is less than 25 feet high and will impound less than 50 acre feet of water and does not present a hazard for loss of life in case of failure (for dams of lesser size). Once the owner has determined with certainty that his dam does not meet the size requirements to require a permit, proceed with construction. When

construction is complete, call the DHEC Environmental Quality Control Regional Office of the county in which the dam is located, and ask for the Dam Certificate of Exemption Form. The Regional Office will arrange for someone to meet the owner or his representative at the dam to verify its location, size, and use. That Regional Office representative will issue the Certificate to the owner, and the owner can then use that document to apply for the tax credit when he files his state income tax return on or before the following April 15th. For permitted dams, the permit to construct and certificate of completion should be filed with the state income tax return.

Additional Sources

Natural Resources Conservation Service Conservation Practice Standard. Impoundment. No. 378.

<file:///V:/Other/Impoundment%20Policy%20Planning/Impoundment%20RGP/NRCS%20Impoundment%20Standard%20Practice%20Code%20378.pdf>

Natural Resources Conservation Service. Impoundments: Planning, Design and Construction. Agriculture Handbook No. 590.

<file:///V:/Other/Impoundment%20Policy%20Planning/Impoundment%20RGP/NRCS%20Impoundment%20Standard%20Practice%20Code%20378.pdf>

ⁱ State of Virginia. 1995. Impoundment management for dabbling ducks. IN: WR Whitman, et. Al., ed Waterfowl habitat restoration, enhancement and management in the Atlantic Flyway. Third ed. Environmental Manage. Comm., Atlantic Flyway Council Technical Section, and Delaware Div. Fish and Wildlife. POS Box 1401, Dover, DE pp. D-119 to D-120