

**DOMINION VIRGINIA POWER / NORTH CAROLINA
POWER
WATERFOWL MANAGEMENT AREA PLAN
LICENSE ARTICLE 419
Roanoke Rapids and Gaston
FERC Project Number 2009**

Revision 1, October, 2007

**DOMINION GENERATION
ROANOKE RAPIDS AND GASTON PROJECT
FERC NO. 2009
WATERFOWL MANAGEMENT AREA PLAN**

1. INTRODUCTION

1.1 Project Description

The Roanoke Rapids and Gaston Project is located on the Roanoke River in Virginia and North Carolina downstream of the U.S. Army Corps of Engineers (USACE) Kerr Dam. Kerr, Gaston, and Roanoke Rapids form a continuous chain of reservoirs used for flood control and power generation along the middle portion of the Roanoke River basin.

1.1.1 Gaston Development

The Gaston development is located approximately 34 miles downstream from the John H. Kerr dam and reservoir at river mile (RM) 145.5. The development's principal, existing features consist of: (1) a concrete and earthen dam measuring 3,600 feet in length, with a maximum height of about 105 feet; (2) a concrete ogee-type spillway, measuring 550 feet in length, with 11 steel radial gates measuring 40 feet wide by 38 feet high; (3) a 34-mile long impoundment, with a total storage volume of 450,000 acre-feet (AF; 20,000 AF useable storage) and surface area of 20,300 acres at a normal water surface elevation of 200 feet mean sea level (msl); (4) intakes integral with the powerhouse, with trashracks having a clear bar spacing of 8½ inches; (5) a submerged rockfill and concrete weir with a total length of about 1,010 feet, located upstream of the intake and surrounding the intake on three sides; (6) a 294-foot-long concrete and masonry powerhouse, and an adjacent 80-foot-long service bay and 45-foot-long uploading bay; (7) three vertical shaft, fixed blade turbines and one vertical shaft Kaplan turbine, having a total installed capacity of 225 MW (225 MW dependable) and a maximum hydraulic capacity of 44,000 cubic feet per second (cfs); (8) four 14.4-kilovolt (kV) generators connected to two 230-kV transformers; and (9) appurtenant facilities

The Gaston development was constructed between 1960 and 1962, with commercial operation beginning in February 1963. The development produces an average of 336,362,000 MWh annually. The Gaston development occupies all of the about 252 acres of federal land administered by the USACE.

1.1.2 Roanoke Rapids Development

The Roanoke Rapids development is located 42 miles downstream from the Kerr dam (7.5 miles downstream from the Gaston development) at RM 135. The development's principal, existing features consist of: (1) a concrete gravity dam, measuring 3,050 feet

long (includes powerhouse) and a maximum of 72 feet high; (2) a concrete ogee-type spillway, measuring 1,133 feet in length and having 24 spillway bays, with 24 steel radial gates measuring 38 feet wide by 23 feet high,, one 25-foot-wide skimmer bay, and a 48-foot-wide non-overflow section; (3) an 8-mile long impoundment, with a total storage volume of 77,140 AF (20,640 AF useable storage) and surface area of 4,600 acres at a normal water surface elevation of 132 feet msl; (4) intakes integral with the powerhouse, with trashracks having a clear bar spacing of 6 inches; (5) a submerged rockfill weir, located upstream of the intake and surrounding the intake on three sides; (6) a 224-foot-long concrete and masonry powerhouse and an adjacent 182-foot-long service bay; (7) four Kaplan turbines (three fixed-blade propeller and one variable-pitch blade), having a total installed capacity of 104 MW (99 MW dependable) and a maximum hydraulic capacity of 20,000 cfs; (8) a 7,800-foot-long by 80-foot-wide tailrace channel, with variable depth (33 to 50 feet) and a normal water surface elevation of 55 feet msl; (9) four 14.4-kV generators connected to two 110-kV transformers; and (10) appurtenant facilities.

The Roanoke Rapids development was constructed between 1953 and 1955, with commercial operation beginning in September 1955. The development produces an average of 336,408 MWh annually. The Roanoke Rapids development does not occupy any federal lands.

1.2 Project Operation

The Roanoke Rapids and Gaston Project is operated in close coordination with the John H. Kerr Project. The Kerr Project is operated for flood control and power production. Generation of power is accomplished within the limits prescribed for flood control and minimum river flow regulation. The Kerr Project is operated in accordance with a reservoir guide curve and accompanying guidelines. Generally, whenever the reservoir is below the level of the guide curve, the power station is operated to meet the minimum power declaration per the Southeastern Power Administration (SEPA) contracts, which varies monthly. Water stored in the power pool and above the guide curve is generally released as timely as is practical to provide additional capacity for the control of floods.

During a typical week, the energy declaration for Kerr (weekly declaration) is usually proportioned and scheduled to meet load following system requirements during the 5 working days (Monday through Friday). Generation from Kerr is normally not scheduled during the weekend days (Saturday and Sunday).

1.2.1 Gaston Power Station

During normal operation, Dominion operates the Gaston development in a load following mode, in close coordination with the USACE's operation of the Kerr Project. The Gaston development typically operates with less than 1 foot fluctuation in its

power pool (between elevations 199 and 200 feet msl). During the weekends, the Gaston station generally does not operate.

Gaston Units 1, 2, and 3 have fixed-pitch turbine blades and are only operated at the maximum load point of 56 MW (at a flow of about 11,000 cfs each). Gaston Unit 4 has variable pitch (Kaplan) turbine blades, which allow efficient operation over a load range from 25 MW (at 5,000 cfs) to 56 MW (at 11,000 cfs). There is no continuous minimum flow requirement for the Gaston development, as it discharges directly into Roanoke Rapids Lake. The Gaston dam has a submerged weir constructed just upstream of the intake forebays. This construction feature causes the hydropower turbines to take suction from the upper portion and most oxygenated portion of the Lake Gaston reservoir.

1.2.2 Roanoke Rapids Power Station

The Roanoke Rapids development is normally operated in a peaking (or load following) mode from Monday through Friday. Because of differences in the hydraulic capacity and storage volume (reservoir size) between the Gaston and Roanoke Rapids developments, the normal pool elevation of Roanoke Rapids Lake fluctuates more than that at Gaston, typically 3 feet during day-to-day operations and sometimes as much as 5 feet between elevations 127 and 132 feet msl.

Dominion operates Roanoke Rapids in a “run of Kerr” mode from March 1 through June 15 (exception of five peaking days in March as allowed by License Article 409). The run of Kerr mode was implemented to enhance spawning habitat for anadromous fish. During this time frame Dominion does not load follow at Roanoke Rapids.

Like the Gaston dam, Roanoke Rapids has a submerged weir constructed just upstream of the intake forebays. This construction feature causes the hydropower turbines to take suction from the upper portion and most oxygenated portion of the Roanoke Rapids reservoir.

Dominion operates at least one unit at Roanoke Rapids to maintain the required minimum flow. During the weekends when Gaston is not normally operated, the Roanoke Rapids Lake storage capacity is used to maintain the required minimum flow.

1.3 FERC License Article 419 Plan

Within 3 years of the issuance date of this license, the licensee shall file, for Commission approval, a plan to construct a water control structure(s) adjacent to Lake Gaston to provide waterfowl habitat. The plan shall be developed after consultation with the Virginia Department of Game and Inland Fisheries (VDGIF), the U.S. Fish and Wildlife Service (USFWS), the U.S. Army Corps of Engineers (USACE), and Ducks Unlimited (DU).

The waterfowl management area plan shall include, but not be limited to: (1) a description of the funding to be provided by other parties; (2) any feasibility study that forms the basis for the waterfowl management area; (3) a map that clearly identifies the location of the waterfowl management area in relation to Lake Gaston; (4) the estimated size (in acres) of the waterfowl management area; (5) design drawing(s) of the water control structure(s); (6) a description of the licensee's estimated cost to construct the water control structure(s); and (7) the entity responsible for the operation and maintenance of the waterfowl management area.

The licensee shall include, with the plan, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and Ducks Unlimited, and specific descriptions of how the agencies' and Ducks Unlimited's comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies and Ducks Unlimited to comment and make recommendations prior to filing the plan with the Commission. In reporting the results of the consultation with the Commission, the licensee shall document its compliance with the consultation process and provide either the agreement reached or documentation of any dispute, including the positions taken by the parties.

The licensee's obligation under this article shall be limited to \$100,000. The Commission reserves the right to require changes to the plan. No land-disturbing or land-clearing activities shall begin until the Commission notifies the licensee that the plan is approved. Upon Commission approval the licensee shall implement the plan, including any changes required by the Commission. Any structure(s) built in accordance with this plan shall be shown on the as-built drawings filed pursuant to Article 301 of this license.

2.0 PLAN DEVELOPMENT

2.1 Background

Discussions occurred during the project relicensing that centered around improving habitat for migrating waterfowl. Agency, stakeholders and Dominion representatives determined that Dominion's rescheduling could improve migrating waterfowl habitat by seasonally flooding and draining wetlands at the time of relicensing that held and released water based off of the coordinated operation of the USACE's Kerr Dam and the Project's Gaston Reservoir. Fluctuation of the water level in the wetlands area weekly, and at times even daily was not conducive to promote growth of forage that would attract migrating waterfowl.

In the settlement agreement, Dominion agreed with stakeholders to develop a tract of land in the north west area of the project in cooperation with the USFWS, VDGIF, and Ducks Unlimited. The stakeholders (1) would cooperatively develop plans for building and operating the management area, (2) would cooperatively raise funds to build the

management area and (3) once the management area was developed that the VDGIF would actively manage (operate) the site.

2.2 Consultation

Initial Consultation

This plan was developed in consultation with the USFWS, VDGIF and Ducks Unlimited. Initial consultations began by phone and Ducks Unlimited provided the initial drawings. USFWS obtained wetlands and related permits from the USACE and is providing co-funding for construction. VDGIF affirmed their desire to manage the area. Copies of the Habitat Restoration and water Quality Improvement Agreement and related wetlands documentation are included as Appendix 1 to this plan.

A copy of the final draft plan was sent to stakeholders on April 3, 2006 asking for comments by May 4, 2006. The only comment received was from Ducks Unlimited. The comments and response is included as Appendix 2 to the plan. Both comments are incorporated in the plan.

Revision 1 Consultation

In late 2006 VDGIF informed Dominion that resources were no longer available to operate and maintain the Waterfowl Management Area. Dominion made plans to manage the site beginning in the spring of 2007. As a result of the change in management, Dominion submitted Revision 1 to the Plan to the stakeholders on August 14, 2007 requesting comments by September 15, 2007. The only comment received was from VDGIF stating that VDGIF had no additional comments.

3.0 PLAN

3.1 Purpose

The Waterfowl Management Area Plan is required by the Federal Energy Regulatory Commission (Commission) in the License issued to Dominion on March 31, 2004 and revised License order issued on March 4, 2005. The plan as required by the License is in agreement with the Comprehensive Settlement Agreement (Settlement) Article LK 3 filed by Dominion with the Commission in July of 2003. The general goal of License Article 419 and the Settlement is to ensure the development of an area of wetlands is managed in such a way that habitat for migrating waterfowl is improved in an approximately 114 acre area in the northwest section of Lake Gaston. The secondary goal is the site will provide outdoors recreation for waterfowl hunters during hunting season and nature observation for the remainder of the year.

3.2 Funding

The license states that it is "the licensee's obligation under this license article shall be limited to \$100,000." The US Fish and Wildlife Service (USFWS) obtained funding

through a cost share agreement for developing and improving wetlands. Dominion will be responsible for operation and maintenance of the facility.

3.3 Feasibility Study

There was no formal feasibility study performed. However, biologists from USFWS, VDGIF and Dominion along with representatives from Ducks unlimited visited the site proposed by Dominion. The site was determined to be within the project boundary. Sketches, plans and drawings were circulated among representatives of the three and enhancements and edits made until there was agreement of the form and operation of the structure. The USFWS applied to and was granted the appropriate permits for improving the wetlands in the proposed waterfowl management area. Details of the feasibility study performed by the USFWS are attached as Appendix 1.

3.4 Location

Two maps are included as part of the plan. Figure 1 *Waterfowl Management Area Location* is a map of Lake Gaston indicating the project location. Figure 2 *Waterfowl Management Area Detail Map* is a map of the management area indicating the affected area and location of the water control structure.

3.5 Management Area Size

The management area is detailed in Figure 2. Approximate area of the area that will be flooded and drained is 114.8. This figure also will be used in the site survey to ensure the existing berm is improved for placement of material to ensure continuity of the berm.

3.6 Design Drawings

The one design drawing is attached as Figure 3. The drawing gives details for the steel piling cofferdam.

3.7 Construction

Construction was performed by Ducks Unlimited and the USFWS under the supervision of Dominion. Dominion will ensure that all federal, state and local permitting requirements were met. Site erosion and sedimentation control was addressed in accordance to the Mecklenburg Virginia county construction requirements. Construction activities were limited to improving road access to the area where the sheet piling will be placed. Sheet piling was driven to refusal, cut and capped as shown on Figure 3.

A wetland permit (Nationwide Permit 27 - NW 27) was acquired by the USFWS (see Appendix 1).

3.7 Cost of Construction

Preliminary cost estimates indicate the water control structure was approximately \$150,000. Existing roads and temporary access easements provided site access construction. Recreational access is by water.

3.8 Operation of the Site

Operation of the site will be limited pumping water into and pumping water out of the water structure. The pumping operation will be operated by the Dominion. Dominion will pump on a schedule determined by its staff biologists to provide habitat during the migratory season and growth of forage during the non-migratory times of the year. The site will be pumped down enough to expose the flats and allow germination of naturally occurring grasses and cover to germinate. Generally, the site will be pumped down in the early May to early June timeframe. Water will be pumped into the site in the late fall (mid October to mid November timeframe) if Dominion biologists determine that natural rainfall and inflow to the Waterfowl Management Area has not provided sufficient flooding. The flooding target is to have 80 - 90% of the mud flats submerged.

3.9 Historic Properties Management Plan (HPMP)

Attached, as Appendix 3 is a historic resources review performed by the US Fish and Wildlife Service. The review was submitted to the Virginia State Historic Preservation Office on April 10, 2006.

3.10 Schedule

The construction of the original proposed plan structures were completed in August of 2006. No revisions are being made to the structure as a result of this plan revision and therefore will not require any changes to project drawings.