Permit No.: 21516  
Expiration Date: December 30, 2025  
Annual Reports Due: Final report by May 15 of each year  
Semi-annual Reports Due: By July 31 of each year

PERMIT TO INCIDENTALLY TAKE ENDANGERED/THREATENED SPECIES

I. AUTHORIZATION

Virginia Electric and Power Company, D.B.A. Dominion Virginia Power (Dominion), is hereby authorized to incidentally take endangered Atlantic sturgeon belonging to the Chesapeake Bay Distinct Population Segment (DPS) as specified below while conducting facility operations and required sampling per section 316(b) of the Clean Water Act (CWA). These activities will occur at or near 500 Coxendale Rd, Chester, Chesterfield County, Virginia in the manner specified in the Permit Holder's April 10, 2017, application and supporting documents, and as revised October 16, 2019, subject to the provisions of Section 10(a)(1)(B) of the Endangered Species Act of 1973 (ESA) (16 U.S.C. §§ 1531-1543), the National Marine Fisheries Service (NMFS) regulations governing listed species permits (50 CFR Parts 222 and 223), and the conditions hereinafter set forth.

II. ABSTRACT

Dominion submitted an incidental take permit (ITP) application and Habitat Conservation Plan (Conservation Plan) to us on April 10, 2017, for take of Atlantic sturgeon belonging to the Chesapeake Bay DPS that was anticipated to occur during the otherwise lawful operation of Chesterfield Power Station (CPS). We prepared a draft Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), and published notice in the Federal Register announcing the availability of the EA, the ITP application and Conservation Plan for public comment (82 FR 37849; August 14, 2017). We received 37 comments during the public comment period. Most of the comments requested that we deny the permit to Dominion to protect sturgeon or not issue the permit until Dominion had submitted a better plan for minimizing and mitigating the impacts of the taking. Southern Environmental Law Center (SELC), on behalf of the James Riverkeeper Association, provided a report from a sturgeon expert questioning several aspects of the ITP application, including the take estimates and Atlantic sturgeon spawning success in the James River. Dominion provided comments in support of its application. Dominion revised their ITP application and Conservation Plan and submitted those to us on October 16, 2019, in response to the comments received as well as in response to new information regarding dispersal of Atlantic sturgeon in the James River, the risk of impingement for adult Atlantic sturgeon at CPS, and the operation of the generating units at CPS. All other parts of the ITP application and Conservation Plan that Dominion submitted to
us on April 10, 2017, were incorporated by reference. We considered this application complete and published notice in the Federal Register of the revised application and HCP, and the availability of the draft revised EA for public comment (85 FR 36563; June 17, 2020). The comment period ended on July 17, 2020. We received comments from Dominion and from the SELC, on behalf of the James Riverkeeper Association.

Chesterfield Power Station (the facility), is a coal-fired electric power generating facility located in Chesterfield, Virginia, along the upper tidal portion of the James River, Virginia (river mile 82; river kilometer 132). The power-generating units at CPS utilize a once-through cooling water system that withdraws water from the James River through cooling water intake structures (CWISs). Dominion’s 2017 ITP application stated that there were six power-generating units. Each unit required cooling water for power generation, and all operated as base-load. Since then, two of the power-generating units have been retired, and two others are now operating as cycling, which means that the generating units are operated at varying load levels that are in response to changes in system load requirements rather than running continuously to produce electricity at a constant rate.

The operation of the CWIS is the primary aspect of the facility operations under consideration for this ITP due to the potential impacts to ESA-listed Atlantic sturgeon. Dominion conducted entrainment sampling at CPS in September-October 2005 and 2015. Two Atlantic sturgeon yolk-sac larvae were collected in October 2015 and were the first known take of Atlantic sturgeon larvae at CPS. In addition, an adult-sized Atlantic sturgeon was impinged at CPS also in October 2015. Thus, Dominion determined it was necessary to apply for an ITP in accordance with the requirements under Section 10(a)(1)(B) of the ESA for the take of ESA-listed Atlantic sturgeon (Chesapeake Bay DPS) due to the continued operation of the CWIS and completion of entrainment sampling required as per CWA section 316(b).

Conservation Plan

Section 10 of the ESA specifies that no ITP may be issued unless an applicant submits an adequate conservation plan. The Conservation Plan prepared by Dominion describes measures designed to monitor, minimize, and mitigate, to the maximum extent practicable, the incidental take of Chesapeake Bay DPS Atlantic sturgeon. The goals of the Conservation Plan are to avoid and minimize take, and to aid in the conservation of the Chesapeake Bay DPS in the James River by supporting two initiatives: a partnership and contract between Dominion and Virginia Commonwealth University (VCU) to better inform when spawning Atlantic sturgeon are in the vicinity of CPS; and, a pilot study that tests a new approach for identifying and counting Atlantic sturgeon larvae at CPS. In addition to these, Dominion has already implemented changes to the intake guards. As a result, impingement of adult Atlantic sturgeon is expected to have been reduced to zero. The required minimization, mitigation and monitoring measures to avoid or minimize impacts to sturgeon are listed below in section IV Conditions of the Permit. Continued monitoring related to the take of sturgeon will be ongoing and funding provided through the facility’s annual operating budget.
III. INCIDENTAL TAKE AUTHORIZATION

Listed Species Affected: The only species affected is the Chesapeake Bay DPS of Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus) that is listed as endangered.

NMFS authorizes the following lethal incidental takes for the Chesapeake Bay DPS of Atlantic sturgeon:

- **Entrainment:** up to 54,745 larvae over the 5-year duration of the permit based on an average annual take of 10,949 (range 1,820-33,789) larvae per year during normal operation of CPS; and, 1 larvae over the 5-year duration of the permit during sampling to complete CWA section 316(b) sampling;

- **Impingement:** 0 adults as a result of minimization measures that have already been implemented.

Take must be incidental to otherwise lawful activities described in the ITP application and Conservation Plan, and as conditioned herein. Takes may only occur in conjunction with the operation of the CWIS, the completion of sampling for CWA section 316(b) studies as described in the application, and the monitoring requirements of this ITP. Takes above the levels specified herein are not authorized by this ITP. This ITP covers incidental lethal take from the date of issuance through December 30, 2025.

IV. CONDITIONS OF PERMIT

The incidental take of ESA-listed Atlantic sturgeon belonging to the Chesapeake Bay DPS is authorized during activities as described in the application and supporting documents and communications subject to the provisions of the conservation plan and the conditions specified in this permit.

A. **Duration of Permit**

   This permit covers incidental take of sturgeon associated with the Chesterfield Power Station from the date of issuance through December 30, 2025.

B. **Conditions to Monitor, Minimize, and Mitigate Impacts to Listed Species**

   1. **Entrainment Monitoring**

      Dominion will monitor entrainment of fall-spawned Atlantic sturgeon larvae by collecting four 24-hour diel entrainment samples (one every six hours), three times per week during September to October for a total of 96 samples per year. Samples will be collected near-bottom (i.e., approximately 3 feet above the intake bottom) and by pumping water through a 0.5-m diameter
mouth plankton net constructed of 335-µm\(^1\) netting suspended in a buffering tank. The target water volume for each entrainment sample is a total of 100 m\(^3\) (26,417 gallons). Each sample will be comprised of four subsamples with a targeted water volume of 25 m\(^3\) per subsample. The net will be removed from the buffer tank after each subsample collection, immediately replaced with a second net, and the contents will be washed down into a sample container. The second, third, and fourth subsamples will be washed down into the same sample container. Throughout the collection, water flow will be monitored and adjusted as necessary, and will not exceed 250-275 gallons per minute to minimize potential damage to organisms collected in the net.

Dominion will collect entrainment samples on the river side, directly in front of the trash racks at the Unit 6 CWIS. The secondary sample location will be at Unit 4 if Unit 6 is not operating or it is unsafe or infeasible to sample at Unit 6 for other reasons.

Samples will be sorted on site for Atlantic sturgeon larvae and eggs. Although free-floating Atlantic sturgeon eggs are generally considered non-viable, Dominion will also sort for and retain any suspected Atlantic sturgeon eggs. All Atlantic sturgeon eggs and larvae will be appropriately preserved in either RNA\textcopyright later\textsuperscript{®} solution or in 95 percent non-denatured ethanol.

Entrainment monitoring will be conducted for all five years of the permit following issuance of the ITP.

2. **Impingement Monitoring**

Cooling water intake trash racks (and the immediate area upstream) will be inspected visually during daylight hours at least once per each 12-hour shift. In the event a sturgeon is observed impinged on the trash rack, CPS personnel will move the fish off of the rack by use of extension poles if the fish can be reached safely or, as last resort, by use of the trash rake to dislodge the fish. The times of inspections, including those when no sturgeon were sighted, will be recorded.

Trash racks will be cleaned via a mechanical trash rake at least once per 12-hour shift during the sturgeon spawning seasons, as follows. Personnel will look at surface debris beneath the rake, before operating the rake.

Equipment such as nets, baskets, and a tank would be available for sturgeon removal and handling. Once raking begins, if a sturgeon is observed, it will be recovered from the trash rake as soon as it is accessible by a net or other

\(^1\) Dominion’s revised ITP application mentions both 335 micrometer netting and 500 micrometer netting. Email correspondence with staff on December 19, 2019, confirmed that the netting will be 335 micrometers.
equipment and can be safely removed per Dominion’s sturgeon handling procedures.

Cleaning will include the full length of the trash rack (i.e., down to the bottom of each intake bay). Personnel cleaning the racks will inspect all debris that is deposited in the debris trough to ensure that no sturgeon are present within the debris.

**Sturgeon Handling Plan**

Impingement of Atlantic sturgeon is not expected to occur and this permit does not provide any authorization for take of Atlantic sturgeon by impingement. In an abundance of caution, this permit incorporates a handling plan to minimize harm in the unlikely event that a sturgeon is impinged. The handling and return of any adult Atlantic Sturgeon to the James River will be conducted in accordance with the following handling procedures. All procedures will be incorporated into the CPS Equipment Inspection Guidelines. In all cases, priority will be given to sturgeon survival over data collection.

a. The Operator that identifies the sturgeon will immediately notify the Control Room that will in turn notify the station Environmental Compliance Coordinator (ECC). The ECC will then immediately notify Dominion Environmental Biology.

b. In the event a sturgeon is brought to the intake deck, operators will don personal protective equipment (i.e., hard hat, safety glasses, protective gloves, safety shoes) for working on the intake deck prior to handling the fish or assisting those handling the fish.

c. Live sturgeon will be placed into a tub with continuously supplied aerated ambient river water while it contains the fish.

d. Live and dead sturgeon will be measured for fork length (FL), photographed on the dorsal, ventral, and each lateral side, and any additional photos as necessary to document injuries or abnormalities.

e. Sturgeon will be visually inspected for external tags or markings and checked for a Passive Integrated Transponder (PIT) tag.

f. After data collection, live sturgeon greater than 100 cm FL will be moved to the screen wash debris/fish return for immediate release to the James River while sturgeon 100 cm or less FL will be transported in a 150 cm cradle-style net/stretcher to a holding tank at ground level containing fresh, aerated river water for transport to the Dutch Gap boat ramp located approximately 0.6 km downstream of the intakes where the sturgeon will be released at the boat ramp away from the presence of boat traffic. It is noted, however, that adult sturgeon are the only life stage that would occur at CPS and could be impinged (e.g., in the unlikely event that the minimization measures fail), and these would typically exceed 100 cm FL.
g. After data collection, **dead** sturgeon will be transported by crane or cradle-style net to ground level, and transported by vehicle to an onsite container. If requested by NMFS, the fish will be iced and held for release to a party authorized by the NMFS for sturgeon salvage.

h. If the specimen is not requested by NMFS, the sturgeon carcass will be spray-painted orange and placed along the riverbank, above the high-water line in a secluded area away from populated or public places. The location of the fish will be included in the incident report.

*Training*

Dominion will provide operators at CPS with training on sturgeon identification and handling and will also provide sturgeon alerts and post signs with pictures of Atlantic Sturgeon during spawning season or if any sturgeon are observed at the station in order to heighten awareness. Training will include measurement of fork length and identification of gross sturgeon morphometric features such as subterminal mouth, heterocercal tail, and the presence of scutes. Visual aids (posters) will be displayed at strategic locations at CPS.

The verification of sturgeon identity will occur at distance if the sturgeon is impinged on the trash rack, or within the trash trough if brought to the intake deck during normal trash rack cleaning operations. Due to emphasis on return of live sturgeon to the river, the operators will not obtain measurement metrics (e.g., mouth width to interorbital distance ratio) excepting fork length.

3. **Mitigation and Minimization Measures**

*Mitigation*

The impacts of taking sturgeon larvae by entrainment will be mitigated through the implementation and results from two studies.

a. For the study, “Sturgeon Movement Research,” Dominion will partner with Virginia Commonwealth University (VCU) allowing Dominion to have access to real-time data for VCU’s acoustically-tagged Atlantic sturgeon that are making their way upriver to spawn. The information will be used by Dominion to inform them when the spawning window occurs so that Dominion can better anticipate when sturgeon larvae are likely to be in the James River within the vicinity of CPS. Dominion will also contract with VCU to deploy and maintain receivers to detect acoustically-tagged sturgeon downriver of CPS where receivers do not currently exist. The new information will be used by Dominion to inform the movement of spawning condition adult sturgeon near CPS (e.g., when spawning condition adults move upstream of CPS, how far upstream of CPS do sturgeon occur, the frequency of individual sturgeon near CPS during the spawning season). The new information will also be shared with sturgeon researchers, including academia, and state wildlife managers.
b. For the study, “Digital Holography,” Dominion will implement a pilot study to test the use of digital holography to identify Atlantic sturgeon larvae at CPS with traditional water sampling serving as the control. The digital holography instruments would be deployed at the same time as traditional water sampling (the control), and the results compared to determine whether the technique can reliably detect Atlantic sturgeon larvae and if the data is sufficient to determine abundance. The pilot study could provide new information which would otherwise not be collected through traditional water sampling and, if successful, will provide a new tool that has many beneficial applications for recovery of the Atlantic sturgeon DPS (e.g., abundance or distribution surveys of Atlantic sturgeon early life stages).

Minimization
The impacts of taking sturgeon larvae by entrainment will be minimized through the implementation and results from the studies described under Mitigation, and the impacts of taking adult sturgeon are minimized by changes to the intake guards (already implemented during permit processing), as follows.

a. Results from the “Sturgeon Movement Research” and “Digital Holography” studies will be used to better define the Atlantic sturgeon spawning season, and will be used by Dominion to plan and implement routine maintenance outages, when practicable, to coincide with peak larval abundance periods - thereby minimizing the incidental take of Atlantic sturgeon larvae by entrainment.

b. Following the impingement event of four adult Atlantic sturgeon on September 22, 2018, and while the ITP application was still in-process, the intake guards for CWISs Units 3, 4, and 8 were removed and replaced. The Unit 5 and 6 intake opening was expanded to reduce water velocities and new intake guards were installed. The intake guard for Unit 7 did not need to be modified, as it met the new design criteria. Based on these changes, impingement of adult Atlantic sturgeon is expected to have been reduced to zero and no further take by impingement is authorized by this permit.

C. Reporting Requirements

1. Annual Reporting Plan

Dominion must prepare an annual reporting plan that details how observed take of Atlantic sturgeon will be extrapolated to generate an accurate and reliable estimate of total take at the facility. This report is due to NMFS within 90 days of issuance of the ITP (please see number 5 “Addresses” below).
2. **Take Reports**

NMFS GARFO must be notified of all sturgeon incidental takes (e.g., capture, injuries, mortalities) that occur during CPS operational activities and during entrainment sampling to complete the facilities CWA section 316(b) studies within 24 hours of their occurrence or confirmed identification to the NMFS GARFO incidental take reporting email at incidental.take@noaa.gov. Notification should include the date of the take and the condition and life stage of the sturgeon (e.g., egg, yolk-sac larvae, post yolk-sac larvae, adult).

Within 7 days, Dominion must electronically submit a report of each confirmed take of Atlantic sturgeon to NMFS (incidental.take@noaa.gov). The same written report should be submitted to NMFS by mail (see 5. Addresses). For non-larval stage sturgeon, these reports must include the information consistent with the data fields on the reporting form included in Appendix A, and information for the activity being conducted when the sturgeon was taken, and the circumstances (e.g., where and how) any live sturgeon was released. For larval sturgeon, these reports must include:

a. The date and time when take was observed or occurred (e.g., based on entrainment sample collection)

b. The number of sturgeon taken in the individual take event (e.g., if multiple sturgeon were taken in an entrainment sample)

c. The preservative used for any larval-stage sturgeon

d. The activity being conducted when the sturgeon was taken (e.g., CPS operation entrainment, CWA 316(b) sampling)

e. Operational data and river conditions

f. Any unique or unusual circumstances when take occurred

g. The circumstances (e.g., where and how) any live sturgeon was released

h. A summary of NMFS’ directions (per the 24-hour incidental take report) for disposition of dead specimens (any life stage) and the status of carrying out the disposition directions. If Dominion has not yet received directions from NMFS, Dominion should provide a statement to the effect that direction from NMFS is pending and confirm that dead sturgeon (any life stage) are being held by Dominion.

The form provided in Appendix A can be used to report the take of larval sturgeon as long as all of the information described above is provided.
3. **Semi-Annual Reports**

Dominion must prepare and submit (see 5. Addresses) a semi-annual report for each year of the permit. The first semi-annual report is due by July 31, 2021, for the time period from January 1, 2021 through July 1, 2021. All other semi-annual reports are similarly due by July 31 of each subsequent calendar year for the time period of January 1 to July 1. The semi-annual report must include:

a. A narrative describing the progress made for implementing each of the mitigation measures

b. A narrative describing any issues encountered that interfered with implementation of the Conservation Plan

c. A narrative describing any changed circumstances at Dominion as a result of completing the VPDES renewal for CPS, particularly changes resulting from identification of the Best Technology Available measures.

4. **Annual Reports and Final Report**

Dominion must prepare and submit (see 5. Addresses) an annual report for each year of the permit detailing all observed takes of Atlantic sturgeon at CPS. Draft annual reports are to be submitted to NMFS by February 15 of each year (e.g., the 2020 report is due on February 15, 2021). NMFS will provide any comments or suggestions back to Dominion by April 1 and a final report is due to NMFS by May 15. The review of this annual report provides an opportunity to monitor the ongoing amount of take at CPS and detect any trends that may indicate a potential exceedance of the ITS before such an event occurs. Each annual report must include:

a. A reliable and reasonable estimate of the total amount of take derived from the observations using the agreed to methodology outlined in the annual reporting plan (see C.1. above)

b. A detailed narrative describing the progress made for implementing each of the mitigation measures and the results to date, including for “Sturgeon Movement Research”, how Dominion used the real-time data for VCU’s acoustically-tagged Atlantic sturgeon during the reporting period (e.g., scheduling maintenance outages based on receiver detections of tagged sturgeon); an update on the contract with VCU to deploy and maintain receivers to detect acoustically-tagged sturgeon downriver of CPS; and how Dominion has shared the new information with sturgeon researchers, including academia, and state wildlife managers, during the reporting period
c. A narrative describing any issues encountered that interfered with implementation of the Conservation Plan, including monitoring

d. A narrative describing any changed circumstances at CPS as a result of completion of the VPDES permit renewal, particularly changes resulting from identification of the Best Technology Available measures

e. A summary (e.g., table) of the incidental takes that occurred, including for each take the: date taken, life stage taken, whether take was lethal, the cause of the incidental take (e.g., take by CPS operation/entainment, take by CPS CWA entrainment sampling, take by CPS operation/impingement)

f. A summary (e.g., narrative or spreadsheet) for impingement monitoring during the reporting period including the times of inspections, whether sturgeon were sighted, and the outcome of the impingement event

g. A summary (e.g., narrative or spreadsheet) for entrainment monitoring during the reporting period including the: six-week time period from September through October when entrainment sampling was conducted; specific entrainment sampling days; number of entrainment samples collected; number of entrainment samples that contained sturgeon larvae; total number of sturgeon larvae found in the samples; life stage of the entrained sturgeon; total volume of water sampled; unit(s) where sampling occurred; river conditions during the total sampling period; any changed circumstances from the entrainment monitoring plan and why, and any response to the changed circumstance

h. The Permit Holder must submit a final report within one hundred eighty (180) days of the expiration of this Permit summarizing the total take that occurred under the permit and the circumstances surrounding it. Reports must be submitted to the individuals indicated below.

5. **Addresses**

Semi-annual, Annual, and the Final Report must be submitted to:

Julie Crocker, Endangered Fish Branch Chief  
Greater Atlantic Regional Fisheries Office  
Protected Resources Division  
National Marine Fisheries Service  
55 Great Republic Drive  
Gloucester, MA 01930  
(julie.crocker@noaa.gov)
D. General Permit Conditions

1. NMFS may suspend or revoke the permit that it issued for cause in accordance with applicable laws and regulations (See 5 U.S.C. § 558; 50 C.F.R. § 222.306; 15 C.F.R. § 904.). Such suspension or revocation may apply to an entire permit, or only to specified Covered Species, Permit Areas, or covered activities.

2. The Permit Holder may not transfer or assign this permit to any other person(s), as person is defined in Section 3(12) of the ESA. This permit is not in force or effective if transferred or assigned to any other person.

3. Upon request by the Regional Administrator of GARFO, the Permit Holder must permit any employee(s) of NMFS, or any other person(s) duly designated by the Regional Administrator, to inspect the Permit Holder’s records and facilities if such records and facilities pertain to activities for which a take of ESA-listed species is authorized by this permit, relate to ESA-listed species covered by this permit, or pertain to the Regional Administrator’s responsibilities under the ESA.

4. The provisions of this permit may be amended upon reasonable notice by the Regional Administrator, GARFO, in accordance with applicable law.

5. In the event any ESA-listed species under NMFS jurisdiction and not authorized by this incidental take permit is killed, injured, or collected, the Permit Holder must notify the NMFS Assistant Regional Administrator, Protected Resources Division, GARFO as soon as possible, but not later than two days after the event. If the individual is killed, it must be retained for scientific analysis. The Permit Holder must then submit a written report to the Assistant Regional Administrator, Protected Resources Division, GARFO describing the circumstances of the unauthorized take. Pending review of these circumstances, NMFS may suspend or amend this permit.

6. The Permit Holder is responsible for the activities of any individual who is operating under the authority of this permit. Such activities include capturing, handling, releasing, transporting, maintaining, and caring for any animal.
authorized to be taken by this permit.

7. Under the terms of the ESA regulations, a violation of any of the terms and conditions of this permit will subject the Permit Holder, and/or any individual who is operating under the authority of this permit, to penalties as provided for in the ESA.

8. NMFS GARFO will annually review this permit and determine whether it needs to be suspended or amended. Yearly evaluation of this permit by NMFS GARFO will include re-analyses of all data and a reassessment of the take levels. In addition, the first three years of monitoring data collected under the permit will be analyzed to verify the requested total annual incidental take. As data are gathered and analyzed through monitoring, NMFS may amend the permit to reflect any changes in the take estimate, if appropriate.

9. 50 CFR Section 222.23(d)(8) provides for a reasonable fee to be charged to cover the costs of issuance of permits under the ESA. The fee for this permit has been waived.

10. The Permit Holder is required to adequately fund the Conservation Plan. Upon request by NMFS GARFO, the Permit Holder shall provide documentation that the Conservation Plan is receiving adequate funding. If NMFS GARFO reasonably believes that the Conservation Plan is not being adequately funded, then NMFS GARFO may require the Permit Holder to produce an annual budget for the Conservation Plan, which will be subject to review and approval by NMFS GARFO.

11. The Permit Holder shall strictly adhere to the Conservation Plan and the conditions of this Permit. If the Permit Holder is not implementing or adhering to the Conservation Plan or the conditions of this Permit, then the take authorization provided by this Permit shall not apply.

12. This permit does not relieve the Permit Holder from compliance with other applicable foreign, state, local, or other federal law.