Incidental Take Permit No. 21516-01

Supplemental Information Report

to Address Additional Take

[DATE]

United States Department of Commerce

National Oceanic and Atmospheric Administration

National Marine Fisheries Service

Greater Atlantic Region Fisheries Office

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1.0 Background

Virginia Electric and Power Company doing business as Dominion Virginia Power (Dominion) has requested modification of their Endangered Species Act (ESA) permit, Permit no. 21516-01, which authorizes the incidental take of the Chesapeake Bay distinct population segment (DPS) of Atlantic sturgeon as a result of the otherwise lawful operation of the Chesterfield Power Station (CPS). This Supplemental Information Report (SIR) considers Dominion's requested modification to allow for the incidental take of Atlantic sturgeon eggs at CPS.

On April 27, 2022, Dominion requested modification of Permit no. 21516-01 to allow for the incidental take of Atlantic sturgeon eggs. We published notice and accepted public comment on their request (87 FR 47190; August 2, 2022). However, we received new information regarding the take of eggs at CPS after the comment period closed and we determined that more information and time were necessary to process their request. In response to our request for additional information and ongoing coordination with the applicant, Dominion has submitted a revised estimate for the number of Atlantic sturgeon eggs likely to be entrained at CPS for the remainder of the permit (i.e., though December 30, 2025) to support their request for a permit modification.

2.0 Purpose of this Supplemental Information Report

We propose to modify Permit no. 21516-01 and re-issue it to Dominion with the requested modification for take of eggs. The purpose of this review is to determine and document whether our decision to modify Permit no. 21516-01 requires us to supplement the 2020 Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) that we completed for issuance of the original permit (NMFS 2020).

In making a determination on the need for additional analysis under the National Environmental Policy Act (NEPA), we have considered and have been guided by the Council on Environmental Quality (CEQ) NEPA regulations and applicable case law. The CEQ regulations state "[a]gencies should supplement environmental assessments if a major Federal action is incomplete or ongoing, and: (i) The agency makes substantial changes to the proposed action that are relevant to environmental concerns; or (ii) There are substantial new circumstances or information about the significance of the adverse effects that bear on the analysis to determine whether to prepare a finding of no significant impact or an environmental impact statement." 40 C.F.R. § 1501.5(h)(1) (2024); see also NOAA's Policy and Procedures for Compliance with the National Environmental Policy Act and Related Authorities, at 7-8 (effective Jan. 13, 2017). We have determined that any changes to the proposed action or new circumstances or information relevant to environmental concerns are not significant and therefore do not require a supplement.

For this SIR, we compared our proposed action to the action analyzed in the 2020 EA. We next considered whether there are any significant new circumstances or information that are relevant to environmental concerns and have a bearing on the proposed action or its impacts. We consulted, among other sources, our files and other information available to NMFS for our

consideration of new circumstances and information to determine whether a Supplemental EA should be prepared.

3.0 Changes to the Status Quo Action

Our proposed modification to Permit no. 21516-01 is based on new information regarding the incidental take of Atlantic sturgeon eggs at CPS, including an estimate of the amount of anticipated incidental take of eggs over the remaining duration of the permit. Specifically, we propose to authorize the incidental take of up to 36,726 Atlantic sturgeon eggs belonging to the Chesapeake Bay DPS through December 30, 2025, based on an annual take of up to 18,363 (range 4,567-47,617) eggs per year. The annual take of Atlantic sturgeon eggs at CPS would be estimated based on an expected entrainment rate of 2.220850×10^{-4} Atlantic sturgeon eggs per cubic meter of water conveyed into CPS during the time frame when sturgeon eggs could be present in the James River near CPS.

4.0 Background of Original Action

4.1 Original Issuance of Permit No. 21516

We issued Permit no. 21516 on December 10, 2020, based on Dominion's application and Conservation Plan that was submitted to us after two larval Atlantic sturgeon were entrained and one adult Atlantic sturgeon was impinged at CPS in 2015. The entrainment and impingement constituted "taking" of the Chesapeake Bay DPS of Atlantic sturgeon which is listed under the ESA as endangered.

Dominion submitted a complete application to us in 2017 for issuance of a permit to authorize the incidental take of the Chesapeake Bay DPS of Atlantic sturgeon in the course of the otherwise lawful operation of CPS. We prepared a draft EA and published notice in the **Federal Register** announcing the availability of our EA and Dominion's permit application for public comment (82 FR 37849; August 14, 2017). Dominion subsequently revised and resubmitted their application in response to new information, public comment, and questions stemming from our further review. There were also operational changes at CPS since their original submission. Given the extent of the changes, we conducted a new NEPA analysis and announced the availability of a new, draft, EA in the **Federal Register** for review and comment (85 FR 36563; June 17, 2020). The Chesapeake Bay DPS of Atlantic sturgeon was the only resource identified as being potentially affected by issuance of the permit, and their larvae were the only life stage anticipated to be taken.

We issued Permit no. 21516 which authorized the take of up to 54,745 Atlantic sturgeon larvae over the 5-year duration of the permit by entrainment from operation of CPS, plus one take of an Atlantic sturgeon larva as a result of entrainment sampling that was needed to complete Dominion's Clean Water Act 316(b) studies for CPS. The permit did not authorize take of adult Atlantic sturgeon because Dominion implemented new measures following lethal impingement of four adult sturgeon at CPS while their application was in process. As a result, we agreed with Dominion's assessment that impingement of adults was not anticipated to occur in the future. Permit no. 21516 did not include take authorization for sturgeon eggs, juveniles, or subadults

because Dominion believed, and we agreed, that none of those life stages would be present in the vicinity of CPS where take could occur.

Permit no. 21516 required Dominion to carry out the monitoring, mitigation, and minimization measures that they described in their Conservation Plan which were:

- 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
- monitor for the incidental take of Atlantic sturgeon eggs and adults even though take of these life stages was not expected to occur
- mitigate the impacts of taking sturgeon larvae by implementing two studies, "Sturgeon Movement Research" and "Digital Holography"
- use the results from the studies 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. In addition, the studies would provide new information which would otherwise not be collected and would be expected to contribute to the information that is considered the best available scientific information for the Chesapeake Bay DPS.

In the determinations supporting permit issuance, we concluded that the best available scientific information supported a determination that the take of up to 54,746 Atlantic sturgeon larvae over the 5-year duration of the permit would have only a minor impact on the survival and recovery of the Chesapeake Bay DPS because it is just a fraction of the eggs produced by even a single female in a single spawning year of a single spawning population belonging to the Chesapeake Bay DPS. We determined that Dominion's minimization measures that are expected to reduce the taking of adults at CPS to zero would further mitigate the impacts of larval entrainment because preventing the impingement of even one adult female over the 5-year duration of the permit means that the female has an opportunity to spawn and produce more larvae.

We, therefore, identified issuance of an incidental take permit to Dominion for five years as the preferred alternative in the 2020 EA because issuing the permit would benefit the Chesapeake Bay DPS by providing opportunity for monitoring specific to Atlantic sturgeon early life stages and would require Dominion to implement the mitigation measures that would otherwise not occur. We also identified that the monitoring and mitigation might have a secondary effect of providing information that will contribute to knowledge of Atlantic sturgeon habitat use in the James River. We expected that issuing the permit would result in positive impacts to the biological, social, and economic environment in the long-term, would have a positive impact on science and cultural resources, and would have no effect on Essential Fish Habitat for federally managed species (Table 1).

Table 1: Effects Considered in the EA for issuance of Permit no. 21516 (NMFS 2020)

Effects of Permit Issuance On:	
Chesapeake Bay DPS	Issuing the permit will benefit the Chesapeake Bay DPS by providing opportunity for monitoring specific to Atlantic sturgeon early life stages and would

Effects of Permit Issuance On:	
	require Dominion to implement the mitigation measures that would otherwise not occur. The monitoring and mitigation might also have a secondary effect of providing information that will contribute to knowledge of Atlantic sturgeon habitat use in the James River.
Physical and Biological Environment	A moderate positive impact by virtue of positively impacting survival of adult Atlantic sturgeon and their offspring which help to transfer nutrients between the ocean and the James River estuary. If the proposed minimization and mitigation measures for Atlantic sturgeon incidentally reduce effects to another native species, then issuance of the ITP may have a positive impact on that other native species as well.
Essential Fish Habitat for federally managed species	No impact because none is designated in the vicinity of CPS.
Social and Economic Environment	A slight positive impact by virtue of the positive impacts to Atlantic sturgeon survival and reproduction in the James River (e.g., an increased abundance of Atlantic sturgeon would contribute to ecotourism focused on Atlantic sturgeon in the river, and could contribute to the economy of cities, such as Richmond, where people view sturgeon in the river. Other fish species, such as those targeted for recreation and commercial purposes, could also benefit from the positive impacts to the physical and biological environment with concomitant economic benefits to the human environment.
Historic Places, Scientific, Cultural, and Historical Resources	A positive impact on scientific resources (e.g., Virginia Commonwealth University with whom Dominion is partnering to further knowledge of Atlantic sturgeon), a slight positive impact on cultural resources because Atlantic sturgeon has a valued place in the pre- and post-colonial history of the James River and measures that benefit and support the recovery of Atlantic sturgeon spur public interest for further action to benefit the DPS and the environment.

4.2 Dominion's Request for Modification of Permit No. 21516

Dominion notified us in September 2021 that Atlantic sturgeon eggs belonging to the Chesapeake Bay DPS of Atlantic sturgeon were incidentally captured during required monitoring for the permit. We advised Dominion that they could request modification of Permit no. 21516 if they anticipated take of Atlantic sturgeon eggs is likely to occur in the future at CPS. We understand that at about the same time, Dominion became aware of future operational changes at CPS including at which intake units entrainment sampling would occur.

Dominion submitted a complete permit modification request to us on April 27, 2022, requesting authorization for the anticipated take of sturgeon eggs as well as changes to the permit conditions. We initially processed their request as one action and published notice in the **Federal Register** for public comment (87 FR 47190; August 2, 2022). However, before the permit modification was issued we determined it was appropriate to process Dominion's request in two parts. This determination was made after 42 sturgeon eggs were captured at CPS in September 2022; we determined that additional information was needed to complete a response to Dominion's request for the take of eggs.

We continued to process Dominion's request for modifications due to the operational changes only, and we reissued the permit (now Permit no. 21516-01) to:

- allow entrainment sampling for monitoring to occur at the furthest upriver cooling water intake structure that is operational at CPS at the time monitoring occurs
- allow entrainment sampling for monitoring to be paused on the rare occasion that all CPS river circulating pumps are not operating provided that NMFS is notified within 24 hours of Dominion shutting down all water intake at the circulating water pumps, and provided the notification includes information describing the reason(s) for the shutdown and the expected duration of the shutdown
- require visual inspections of the cooling water intake structure trash racks (and the immediate area upstream) from September 1 through October 31
- require Dominion to annually inspect (i.e., by divers) the intake guards at CPS cooling water intake structures no earlier than March 1 and no later than August 15 to confirm that the guards are intact and capable of excluding any adult Atlantic sturgeon as designed, and make repairs to the guards, as needed, prior to September 1
- require Dominion to clean the trash racks via a mechanical trash rake only as operationally necessary or, in the event a specific intake guard is found to be in jeopardy of not functioning as designed, the trash racks associated with that intact guard must be cleaned via a mechanical trash rake twice per day (once per 12-hour shift during daylight hours) during the fall sturgeon spawning window of September 1 through October 31
- require that, prior to September 1, trash raking must occur at a specific intake guard if it is found to be at risk of not functioning as designed and adult Atlantic sturgeon are present in the vicinity of CPS as indicated by the real-time telemetry system.

Permit condition IV.C.4.g. was also corrected to reflect the 8-week period from September through October for each year of the permit (88 FR 82324; November 24, 2023).

4.3 Dominion's Request for Modification of Permit No. 21516-01

As described above, three Atlantic sturgeon eggs were found in entrainment samples collected at CPS in September 2021. An additional 42 sturgeon eggs were captured in September 2022, and 11 sturgeon eggs were captured in two separate entrainment sampling events in September 2023. In each instance, Dominion has reported the take to us consistent with the requirements in their Permit. As a result of these events, Dominion has concluded that take of Atlantic sturgeon eggs at CPS is reasonably certain to occur in the future. Dominion has explored several modeling approaches for estimating the take of Atlantic sturgeon eggs likely to occur in the future. We reviewed Dominion's method for estimating take of sturgeon eggs at CPS and concluded that the approach is based on the best available information. Dominion is requesting modification of Permit no. 21516-01 to authorize the incidental take of up to 36,726 Atlantic sturgeon eggs belonging to the Chesapeake Bay DPS through December 30, 2025, based on an annual take of up to 18,363 (range 4,567-47,617) eggs per year. Dominion is not requesting any other changes to the permit.

5.0 Changes from the Original Action

5.1 New Information regarding the Take of Atlantic sturgeon Eggs

The original permit was issued without any authorization for incidental take of Atlantic sturgeon eggs based on a determination that Atlantic sturgeon eggs would not be entrained at CPS because fertilized Atlantic sturgeon eggs adhere to the substrate near where they are spawned until they hatch into yolk-sac larvae, and because non-fertilized eggs would either be eaten by predators or drift downstream within the main channel of the river beyond the influence of the water intake velocities for any of the CPS cooling water intake structures. Therefore, even any free-floating eggs would not likely to be entrained at the CPS intakes (NMFS 2020). Public comments on the proposed permit provided information that supported our conclusion. As described above, three Atlantic sturgeon eggs were found in entrainment samples collected at CPS in September 2021 during monitoring required as a condition of Permit no. 21516. Dominion notified us, as required, and subsequently sent us additional information including information to confirm that the takes occurred during a high-flow event in the James River. Based on the best available information at that time, we concluded that sturgeon eggs would only be taken at CPS when there was a high-flow event (i.e., when river flow was higher than normal during the time of year when eggs may be present upstream of CPS). Dominion prepared an estimate of take of Atlantic sturgeon eggs at CPS based on the number of high-flow events Dominion anticipated would occur in the James River during the Atlantic sturgeon fall spawning season for the remaining time frame of Permit No. 21516. However, 42 sturgeon eggs were captured in September 2022 under normal river conditions. These captures suggested that free-floating Atlantic sturgeon eggs could be present near CPS during the Atlantic sturgeon spawning season under normal river flow conditions. In September 2023, 11 sturgeon eggs were captured in two separate entrainment sampling events, also under normal river conditions.

The take of eggs in 2022 and 2023 demonstrates that free-floating eggs can be entrained at CPS regardless of high flow conditions. Dominion revised its methodology for estimating future take of Atlantic sturgeon eggs at CPS based on this new information, resulting in the request for a

permit modification to allow for the take of 36,726 Atlantic sturgeon eggs. In developing this estimate, Dominion considered several model approaches and considered comments from NMFS experts. Dominion determined that the best fit model was the one that does not include the 42 eggs captured in one of the entrainment samples in 2022 or the 9 eggs captured in one of the entrainment samples in 2023. This is because the capture of the 42 eggs in one sampling event and the capture of 9 eggs in another are outliers relative to the other available data (i.e., the many other entrainment sampling events in which no sturgeon eggs were collected). Including these in the model introduced bias such that the generated take estimate was not the best representation of what is most likely to occur. We considered the information provided by Dominion and the information from NMFS experts. We concluded that Dominion used the best information available to estimate take of Atlantic sturgeon eggs at CPS.

Atlantic sturgeon eggs that are entrained at CPS are non-viable eggs because they are either unfertilized eggs or because they are fertilized eggs that have become dislodged from the substrate. Male and female Atlantic sturgeon spawn (i.e., release milt and eggs, respectively) in close proximity to each other and in close proximity to the spawning substrate. Typically, male Atlantic sturgeon move to the spawning grounds before females and then search for or follow females as each female moves onto the spawning grounds (Hilton et al. 2016; NMFS 2017; Breece et al. 2021). The scrapes and abrasions observed on male Atlantic sturgeon captured during the spawning season support that, similar to Gulf sturgeon (*Acipenser oxyrinchus desotoi*) and other sturgeon species, male Atlantic sturgeon rub against the female during spawning which induces the female to release her eggs at the same time as the male is releasing milt (Ryder 1888; Bruch and Binkowski 2002; Sulak and Randall 2009; Sulak 2014; Balazik and Musick 2015). The simultaneous release of eggs and milt in the same location maximizes the number of eggs that are fertilized before river currents disperse the eggs and dilute the milt. Unfertilized eggs that float away from the spawning site are not expected to be fertilized at a later time because milt released elsewhere by a male sturgeon would be quickly dispersed and diluted by the flowing river water making a chance encounter between an unfertilized egg and an Atlantic sturgeon sperm cell highly unlikely.

Fertilized Atlantic sturgeon eggs become sticky within minutes of fertilization and adhere to the substrate where they remain until hatching (Ryder 1888; Dees 1961; Murawski and Pacheco 1977; Hilton et al. 2016; Siddique et al. 2016). It is essential that the fertilized eggs adhere to the substrate near where they are spawned because the environmental conditions at the spawning site (e.g., flowing freshwater and substrate with interstitial spaces) are necessary for egg and early life stage survival. The hatched out embryos and the subsequent larvae must remain in well-oxygenated freshwater to survive, and the substrate used for spawning provides interstitial spaces where the early life stages shelter from predators (Bain et al. 2000; Kynard and Horgan 2002; Niklitschek and Secor 2009; Hilton et al. 2016). A number of fish species have been identified as likely feeding on the early Atlantic sturgeon life stages in the James River and in the other Chesapeake Bay tributaries (Hilton et al. 2016; Bunch et al. 2021; Secor et al. 2022). Therefore, fertilized Atlantic sturgeon eggs that become dislodged from the substrate before hatching are not expected to survive because they lack the essential habitat features (i.e., continued access to freshwater and places to hide from predators) that are necessary for survival.

While we do not know what circumstances increase the chances that free-floating eggs (whether fertilized or unfertilized) will drift nearer to the CPS CWIS intakes such that they are vulnerable

to impingement, we have not identified any factors that would result in Dominion's estimate of egg take being under- or over-estimated. Based on the telemetry tracking information gathered under the monitoring required by conditions of Permit no. 21516-01 (i.e., results from Dominion's study, "Sturgeon Movement Research"), we know that Atlantic sturgeon spawn kilometers upriver of CPS, and that there may also be a spawning area within a few kilometers downriver of CPS (Dominion 2022). In our initial consideration of where free-floating sturgeon eggs might occur in the James River near CPS, we determined that the eggs would primarily occur in the deeper waters of the river because spawning is hypothesized to occur in the channel in water 7 to 10 meters deep (Hilton et al. 2016). While that may still be accurate, the collection of eggs at CPS in multiple years and under different river flow conditions suggests that other factors influence whether free-floating sturgeon eggs will be present near enough to the CPS water intakes such that entrainment is possible.

5.2 New Information Regarding the Chesapeake Bay DPS of Atlantic Sturgeon

We listed the Chesapeake Bay DPS of Atlantic sturgeon as endangered in 2012 (77 FR 5880; February 6, 2012). In 2022, we completed a 5-year review of the Chesapeake Bay DPS in which we described new information available since the listing, including information that further supports our understanding of when and where spawning occurs, the spawning periodicity (i.e., the number of years between spawning runs), and the number of spawning adults (NMFS 2022). While the most recent review was completed after the EA for the original permit and provided some updated details regarding the Chesapeake Bay DPS, none of that new information would change the overall understanding of the DPS considered in the EA, or change any anticipated impacts.

6.0 NEPA Compliance

While acknowledging that there are adverse effects to the Chesapeake Bay DPS that result from the continued operation of CPS, we concluded in the 2020 EA that issuing the permit would benefit the Chesapeake Bay DPS because it would require monitoring specific to the Atlantic sturgeon early life stages and would require Dominion to implement the mitigation measures that, absent the issuance of the Incidental Take Permit, would otherwise not occur. The monitoring and mitigation might also have a secondary effect of providing information that will contribute to knowledge of Atlantic sturgeon habitat use in the James River. We also expected that the positive impacts to Atlantic sturgeon survival and reproduction in the James River from issuing the permit would result in positive impacts to the biological, social, and economic environment in the long-term, and will have a positive impact on science and cultural resources. We concluded that issuing the permit would have no effect on Essential Fish Habitat for federally managed species because none is designated in the vicinity of CPS (NMFS 2020).

The new information on the take of Atlantic sturgeon eggs at CPS, inclusive of Dominion's estimate of the amount of take, does not change our previous determinations, as summarized in Table 1. There is no new information that would suggest operations at CPS are causing healthy, adhered, fertilized sturgeon eggs to be dislodged. The CPS cooling water intake structures occur along the shoreline kilometers downriver from the spawning area near Richmond, Virginia, and kilometers upriver of a second, suspected spawning area. The intake velocities for the CPS

CWIS are too low to have any impact on sturgeon eggs that are adhered to substrate in the deeper waters of the river, and the intakes are kilometers away from spawning areas (Hager 2011; Balazik and Musick 2015; Hilton 2016; Dominion 2022b; Dominion 2024).

The new information on the take of Atlantic sturgeon eggs at CPS also does not change our determinations for effects to the physical and biological environment, social and economic environment, historic places, scientific, cultural, and historical resources, and Essential Fish Habitat because CPS is not the cause of the eggs becoming dislodged and drifting downriver, and, as explained above, the eggs will not survive to develop into sturgeon even if entrainment or capture does not occur at CPS.

7.0 Public Participation

We provided opportunities for public review of Dominion's permit application and Conservation Plan, as well as the 2020 EA through publication of notices in the **Federal Register** (82 FR 37849; August 14, 2017, and 85 FR 36563; June 17, 2020). We reviewed and considered the information provided by commenters in the final EA, and responses to those comments are addressed in the 2020 document.

We provided an opportunity for public review of the first of Dominion's requested permit modifications and our draft SIR for that modification through publication of a notice in the **Federal Register** (87 FR 47190; August 2, 2022). We received comment from the Southern Environmental Law Center (SELC) who agreed with most of the proposed permit changes but suggested additional measures to ensure that the scheduled dive inspection of the intake guards was not conducted too far in advance of the fall spawning season and disagreed with any changes in the frequency of trash raking. The final modifications incorporated changes based on these public comments.

The SELC disagreed with our preliminary determination that there was no need to supplement the 2020 EA and FONSI. They stated that the capture of three eggs at CPS in 2021 following a high flow event supported their previous statement that the CPS thermal discharge is likely preventing or reducing the probability of successful Atlantic sturgeon migration and spawning. We considered the effects of CPS's thermal discharge in the 2020 EA. The capture of three sturgeon eggs in 2021 during a high river flow event did not change our conclusion that the CPS thermal discharge does not create a thermal barrier that prevents Atlantic sturgeon from moving upriver to spawn. The capture of 42 sturgeon eggs in 2022 and the capture of 11 sturgeon eggs in 2023 under normal river conditions provides further support that the thermal plume at CPS is not a barrier to migrating adults or that it is preventing spawning.

8.0 Conclusion

In accordance with CEQ regulations at 40 C.F.R. § 1501.5(h)(2)(i) (2024) and NOAA's NEPA procedures, NMFS is documenting its preliminary determination that the permit modification and its impacts are not relevant to environmental concerns and do not bear on the action or its impacts. Supplementation of the 2020 EA evaluating "The Effects of Issuing an Incidental Take Permit (No. 21516) to Virginia Electric and Power Company, Doing Business as Dominion

Virginia Power for Incidental Take of Atlantic Sturgeon from the Chesapeake Bay Distinct Population Segment in the Tidal Freshwater Portion of the James River from the Operation and Maintenance of Chesterfield Power Station," is therefore not needed.

Preparers:

This document was prepared by the Greater Atlantic Regional Fisheries Office, Protected Resources Division (GARFO PRD) in Gloucester, Massachusetts who consulted with GARFO's NEPA program in preparing this document.

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