

RAS E-494

DOCKETED

March 15, 2011 (8:30 a.m.)

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**ATOMIC SAFETY AND LICENSING BOARD**

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In the Matter of	)
	)
Entergy Nuclear Operations, Inc.	)
(Indian Point Nuclear Generating	)
Units 2 and 3)	)
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Docket Nos.  
50-247-LR  
and 50-286-LR

**RIVERKEEPER INC. COMBINED REPLY TO NRC STAFF AND  
ENTERGY ANSWERS TO RIVERKEEPER'S MOTION FOR LEAVE TO  
FILE A NEW CONTENTION AND NEW CONTENTION CONCERNING NRC  
STAFF'S FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT**

**Filed March 14, 2011**

TEMPLATE = SECY 035

DS 03

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## PRELIMINARY STATEMENT

Pursuant to 10 C.F.R. § 2.309(h)(2) and the Atomic Safety and Licensing Board's ("ASLB") July 1, 2010 Scheduling Order,<sup>1</sup> ("Scheduling Order") Riverkeeper, Inc. ("Riverkeeper") hereby respectfully submits this combined reply to the two separate Answers filed by U.S. Nuclear Regulatory Commission ("NRC") Staff<sup>2</sup> and Entergy Nuclear Operations, Inc.<sup>3</sup> ("Entergy") to Riverkeeper's Motion for Leave to File a New Contention and New Contention Concerning NRC Staff's Final Supplemental Environmental Impact Statement, dated February 3, 2011 (hereinafter "Riverkeeper Contention EC-8").

Riverkeeper Contention EC-8 states that NRC Staff's final supplemental environmental impact statement regarding the proposed license renewal of Indian Point Units 2 and 3 (hereinafter "FSEIS")<sup>4</sup> is deficient for failure to include or consider the assessment of the National Marine Fisheries Service ("NMFS") regarding impacts to endangered species due to incomplete Endangered Species Act ("ESA") § 7 consultation procedures. NRC Staff and Entergy object to Riverkeeper Contention EC-8 on a variety of grounds. As described below, NRC Staff's and Entergy's objections are unconvincing and the contention should be admitted.

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<sup>1</sup> See 10 C.F.R. § 2.309(h)(2) ("the requestor/petitioner may file a reply to any answer. The reply must be filed within 7 days after service of that answer."); Scheduling Order ¶ F.1 ("Within seven (7) days of service of the answer [to a new/amended contention], the movant may file a reply").

<sup>2</sup> NRC Staff's Answer to Riverkeeper, Inc.'s Motion for Leave to File a New Contention, and New Contention EC-8 Concerning NRC Staff's Final Supplemental Environmental Impact Statement, March 7, 2011 (hereinafter "NRC Staff's Answer").

<sup>3</sup> Applicant's Answer to Riverkeeper, Inc.'s Motion for Leave and New Contention Concerning the Consideration of Endangered and Threatened Aquatic Species, March 7, 2011 (hereinafter "Entergy's Answer").

<sup>4</sup> Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 38, Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 (December 2010), ADAMS Accession Nos. ML103350405 (Vol. 1), ML103350438 (Vol. 2), ML103360209 (Vol. 2), ML103360212 (Vol. 2), ML103350442 (Vol. 3) (hereinafter "FSEIS").

## ARGUMENTS IN REPLY

### I. Riverkeeper Contention EC-8 Establishes a Genuine Dispute on a Material Issue

Both NRC Staff and Entergy assert that Riverkeeper Contention EC-8 fails to raise a genuine dispute on a material issue of law or fact because it allegedly does not establish a legal basis for the claim that NRC has failed to meet the requirements of the ESA or the National Environmental Policy Act (“NEPA”). NRC Staff’s Answer at 10-15; Entergy’s Answer at 14-17. The following establishes that NRC Staff’s and Entergy’s assertions are unfounded and that Riverkeeper Contention EC-8 does in fact establish a genuine dispute on a material issue.

#### A. NRC Staff’s Failure to Consider the Results of ESA § 7 Consultation Procedures Prior to Issuing the FSEIS was Improper

NRC Staff and Entergy cite that there is no mandatory requirement that an FSEIS must await the completion of the ESA consultation process. NRC Staff’s Answer at 11; Entergy’s Answer at 14-16. Rather, NRC Staff and Entergy assert that the ESA only requires that § 7 consultation be completed prior to a final determination on the Federal action. NRC Staff’s Answer at 11; Entergy Answer at 14-15. However, NRC Staff and Entergy rely on various misunderstandings regarding the relevant regulatory framework.

NRC Staff and Entergy improperly attempt to minimize the significance of applicable regulations and guidance that explicitly advise Federal agencies to incorporate the results of the consultation process into environmental reviews pursuant to NEPA. See *Endangered Species Consultation Handbook, Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act*, U.S. Fish & Wildlife Service, National Marine Fisheries Service (March 1998), at 4-11, available at [http://www.nmfs.noaa.gov/pr/pdfs/laws/esa\\_section7\\_handbook.pdf](http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section7_handbook.pdf) (hereinafter “NMFS

Consultation Handbook”)<sup>5</sup>; 50 C.F.R. § 402.06(b); Interagency Cooperation – Endangered Species Act of 1973, as Amended, Final Rule, 51 Fed. Reg. 19926 (1986). Such regulations and guidance indicate that the Federal agency “*should*” have completed consultation at the time the final EIS is issued, and “*should*” include the results of the consultation in the final EIS.

“Should” is a term which indicates the existence of an obligation and is used “to express what is probable or expected,” as opposed to indicating a mere permissive suggestion. See Merriam-Webster.com, <http://www.merriam-webster.com/dictionary/should?show=0&t=1300098194> (last visited March 14, 2011).

Such a framework is absolutely the proper approach in view of the basic tenets and principles underlying NEPA. As made clear in the regulations promulgated by the NEPA-created Council on Environmental Quality (“CEQ”), NEPA was designed to “provide full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment.” 40 C.F.R. § 1502.1. Controlling legal authority explains how “NEPA ensures that the agency will not act on incomplete information.” *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360 (1989). Even NRC Staff recognizes that the purpose of NEPA is to encourage “widespread discussion and consideration of the environmental risks and remedies associated with the pending project.” NRC Staff Answer at 13. This is consistent with regulations implementing § 7 consultation procedures, which state that only *after* the issuance of a BO can the Federal agency “determine whether and in what manner to proceed with the action in light of its section 7 obligations and the Service’s biological opinion.” 50 C.F.R. § 402.15.

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<sup>5</sup> The pertinent excerpt is attached hereto as Attachment A (Riverkeeper explicitly cited to and relied on this source in Riverkeeper Contention EC-8, however inadvertently did not append the document to the new contention, and, thus, attaches it here for consideration by the ASLB, in accordance with the Scheduling Order ¶ M).

The ESA consultation results in expert feedback and analysis from the consulting agency, in this case, NMFS, including, *inter alia*, an assessment of the environmental impacts, conservation recommendations, reasonable and prudent alternatives, and/or prudent measures to be taken. *See* 50 C.F.R. § 402.14(g). Accordingly, the final EIS along with appropriate supplements thereto, must undoubtedly consider the outcome of ESA consultation, as NMFS' analysis and conclusions are integral to a "full and fair discussion" in the EIS as contemplated under NEPA. 40 C.F.R. § 1502.1. Surely NMFS ultimate position and recommendations, to be memorialized in a biological opinion ("BO"), would inform NRC Staff's final position on the impacts to endangered resources, cumulative impacts of the continued operation of Indian Point, and NRC Staff's final overall recommendation in the FSEIS. Consideration as part of the NEPA review is necessary to ensure that the Federal agency proceeds in a manner that meaningfully takes into account the § 7 obligation and NMFS' BO. 50 C.F.R. § 402.15.

Thus, NRC Staff's and Entergy's argument that § 7 consultation only has to be completed prior to NRC's final decision regarding the proposed license renewal of Indian Point, but not prior to issuance of the FSEIS, is flawed. For example, NRC Staff states that "even if the license renewal application is ultimately granted, that action would not foreclose the imposition of mitigation measures." NRC Staff's Answer at 11; *see id.* at 14 ("Staff's issuance of the FSEIS in December 2010 does not foreclose the possibility that a supplement to the FSEIS will be issued (or that appropriate measures will be taken to address NMFS's findings and recommendations)"). However, NRC Staff, as well as Entergy are missing a key concept: whatever the eventual outcome of the ESA process is, be it mitigation measures or a jeopardy finding, it will inevitably shape, or at a minimum, logically should shape, the thought process and conclusions of the NRC

Staff regarding impacts to endangered species, which should bear out in the final NEPA document so as to provide a meaningful tool for decision-making purposes.

NRC Staff and Entergy cite to precedent alleged to demonstrate the propriety of issuing a final EIS while ESA § 7 consultation remains ongoing. *See* NRC Staff's Answer at 11-12; Entergy's Answer at 16-17. However, such instances are largely unpersuasive. For example, NRC cites another license renewal proceeding where NRC issued a renewed license even though consultation was ongoing. NRC Staff's Answer at 11. However, NRC Staff fails to mention that in that proceeding the NRC Staff did not conclude that the activity would adversely affect endangered resources, and, thus, formal consultation was not required. *See* Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants: Regarding Wolf Creek Generating Station (NUREG-1437, Supplement 32) (December 2008), at 4-71, 4-76, available at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/supplement32/>. To the extent consultation later commenced in that proceeding and was not considered in the EIS, it would be clearly contrary to applicable regulations and guidance, and simply because it went unchallenged would not, therefore, dictate that it would be an acceptable process.

NRC Staff and Entergy otherwise cite cases that are inapposite and/or clearly distinguishable from the present situation. Generally, while NRC Staff and Entergy maintain that cases show that ESA § 7 consultation may continue after an FSEIS is issued, the cases cited largely demonstrate that in such a situation, an assessment of the necessity of a supplemental EIS is required.<sup>6</sup> This tends to confirm the approach articulated by controlling regulations and

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<sup>6</sup> For example, in *Natural Resources Defense Council v. FAA*, 564 F.3d 549, 561 (2d Cir. 2009), cited by NRC Staff and Entergy, there was no finding of adverse impact to endangered resources, and so reinitiating consultation after FEIS had been issued did not require further review pursuant to NEPA. In *Westlands Water District v. U.S. Dep't of Interior*, 376 F.3d 853, 874 (9th Cir. 2004), cited by NRC Staff, a reasonable prudent measure recommend by NMFS at issue in the case, had been adequately considered in the draft EIS, and the final EIS, such that no supplemental EIS was necessary, which hardly demonstrates Entergy and NRC Staff's proposition.

guidance, namely that the consultation process should be meaningfully incorporated into the overall environmental review process for a given project.

Both NRC Staff and Entergy further appear to maintain that NMFS sufficiently commented on the Draft Supplemental Environmental Impact Statement (“DSEIS”) concerning license renewal of Indian Point,<sup>7</sup> since NMFS requested additional information after reviewing NRC Staff’s initial biological assessment (“BA”) provided in December 2008 with the DSEIS. See NRC Staff’s Answer at 13, fn.39; Entergy Answer at 17; see also Letter from M. Colligan (NMFS) to D. Wrona (NRC), Re: Biological Assessment for License Renewal of the Indian Point Nuclear Generating Unit Nos. 2 and 3 (Feb. 24, 2009), ADAMS Accession No. ML090820316 (“NMFS Feb. 24, 2009 Letter”), appended to NRC Staff’s Answer as Attachment D.<sup>8</sup> In particular, NRC Staff maintains that its Revised BA,<sup>9</sup> issued in December 2010 considered NMFS’ “comments,” and that, accordingly, NRC Staff has satisfied the requirement under NEPA that “[p]rior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved.” See NRC Staff Answer at 13 (citing NEPA); see also Entergy Answer at 17.

However, NMFS’ request for additional information before NMFS could formally start the consultation clock is not tantamount to NMFS’ expert opinion and analysis. Indeed, NMFS’s comments consisted of a list of categories of information without which NMFS could not even

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<sup>7</sup> Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 38, Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, Draft Report for Comment (December 2008), ADAMS Accession No. ML083540594, ML083540614.

<sup>8</sup> Riverkeeper attaches this letter hereto as Attachment B. Riverkeeper explicitly cited to and relied on this source in Riverkeeper Contention EC-8, however inadvertently did not append the document to the new contention, and, thus, attaches it here for consideration by the ASLB, in accordance with the Scheduling Order ¶ M).

<sup>9</sup> Riverkeeper attaches the revised BA hereto as Attachment C. Riverkeeper explicitly cited to and relied on this source in Riverkeeper Contention EC-8, however inadvertently did not append the document to the new contention, and, thus, attaches it here for consideration by the ASLB, in accordance with the Scheduling Order ¶ M).

begin to draw conclusions. *See* NMFS Feb. 24, 2009 Letter. It would, thus, be impossible to conclude that NRC Staff meaningfully or sufficiently considered NMFS' comments when NMFS could not even formulate any substantive feedback.

Based on the foregoing, there clearly exists a genuine dispute as to a material issue regarding whether NRC Staff's FSEIS has satisfied the requirements of the ESA and NEPA. Indeed, as Entergy points out "[a] dispute is material if its resolution would make a difference in the outcome of the licensing proceeding." Entergy's Answer at 9; *see also* NRC Staff's Answer at 16 ("To be materially different under 2.308(f)(2)(ii), the proffered contention must pose matters material to the outcome of the proceeding"). The dispute raised by Riverkeeper Contention EC-8 is clearly material, since meaningful consideration of NMFS' BO could very well result in NRC Staff altering its conclusions and recommendations regarding environmental impacts as well as license renewal of Indian Point.

*B. Preparation of a Supplemental EIS is Appropriate and Necessary Once NMFS Issues a Biological Opinion*

NRC Staff and Entergy both argue that Riverkeeper has no basis to maintain that NRC Staff must supplement the FSEIS following the conclusion of the ESA § 7 consultation process. NRC Staff states that NMFS input would not be inconsequential because if the "BO brings to light any significant new information that was not considered in the FSEIS," NRC Staff "would consider issuing a Supplement to the FSEIS." NRC Staff Answer at 14. NRC Staff, however maintains that it is "not *required* to issue a supplement to the FSEIS unless significant new or materially different information is presented in NMFS's BO." *Id.* Entergy similarly argues that NRC Staff would have the option of supplementing the FSEIS "if genuinely new and significant environmental information emerges during the ESA consultation process." Entergy's Answer at

18. Entergy asserts that “the FSEIS need not be supplemented merely because the NMFS BiOp contains ‘relevant’ information.” *Id.*

This understanding of the law runs contrary to the requirements of NEPA. The Supreme Court has held that “CEQ regulations, which we have held are entitled to substantial deference, . . . impose a duty on all federal agencies to prepare supplements to either draft or final EIS’s if there ‘are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.’” *Marsh*, 490 U.S. at 372 (emphasis added) (internal citations omitted). Thus, it is patent, and completely consistent with the overarching purpose of NEPA, that a Federal agency must supplement a final EIS based on the outcome of a consultation process pursuant to ESA § 7. Certainly the analysis, conclusions, recommended alternatives and/or prudent measures in NMFS’s future BO are relevant to the environmental concerns and will bear on the proposed action and its impacts.

NMFS’ BO will assess existing environmental information (notably because only a discrete realm of information regarding the historical and current impacts of Indian Point on endangered aquatic resources exists, *see, e.g.*, Riverkeeper Contention EC-8 at fn.15 ), which NRC Staff will inevitably categorize as not “significantly new information that was not considered in the FSEIS.” However, NMFS’ BO will definitely contain information that should be considered in the NEPA process before the NRC Staff draws final conclusions. For example, NFMS may conclude that sturgeon are in jeopardy<sup>10</sup> as a result of Indian Point’s operation, that reasonable alternatives to the project are or are not available, that certain mitigation measures are

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<sup>10</sup> Notably, Entergy mischaracterizes the definition “jeopardize” to suggest that an action will jeopardize the continued existence of a species “only if it appreciably diminishes or reduces the likelihood” of survival and recovery of the species. *See* Entergy answer at 9-10 (emphasis added). In fact, the definition of “Jeopardize the continued existence of” means “to engage in an action that *reasonably would be expected*, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species. . . .” 50 C.F.R. § 402.02 (emphasis added).

necessary and must be instituted in order to minimize impacts to sturgeon, etc; such conclusions and recommendations should bear upon NRC Staff's conclusions in the FSEIS about the impacts of Indian Point on endangered resources, notwithstanding that NMFS analysis may be based on the same underlying information that was assessed by NRC Staff.

The cases cited by NRC Staff and Entergy to support their positions are not persuasive. For example, in *Natural Resources Defense Council v. FAA*, the Federal agency determined that the project at issue was unlikely to adversely affect the species, and the consulting agency agreed. 564 F.3d 549, 561 (2d Cir. 2009). As such, no BO or analysis by the expert agency was required. See 50 C.F.R. § 401.12(k) (“If the biological assessment indicates that there are no listed species or critical habitat present that are *likely to be adversely* affected by the action and the Director concurs as specified in paragraph (j) of this section, then formal consultation [which results in the issuance of a BO] is not required.”) (emphasis added). Thus, no analysis or conclusions by the consulting agency were present to necessitate a supplemental EIS. This case is clearly different from the instant situation, where (a) NRC Staff has determined that the proposed activity may indeed adversely affect endangered species (see Attachment C, Revised BA at 14) and (b) NMFS fully intends to weigh-in with its own analysis and issue a BO (see Letter from P. Kurkul (NMFS) to D. Wrona (NRC) Re: Biological Assessment for License Renewal of the Indian Point Nuclear Generating Unit Nos. 2 and 3 (February 16, 2011), Attached as NRC Staff's Attachment I.<sup>11</sup>

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<sup>11</sup> Another interesting distinction from this case is that in *NRDC v. FAA*, the existence of the endangered species was discovered after a record of decision had been issued in the matter. 564 F.3d 549, 561. In contrast, NRC Staff has known about the existence of endangered species since essentially the beginning of the Indian Point license renewal proceeding. See DSEIS, Appendix E at E-88 (“the NRC staff requested, in a letter dated August 16, 2007 . . . that . . . NMFS provide information on federally listed endangered or threatened species . . . that may occur in the vicinity of IP2 and IP3.”); FSEIS at 4-57 (in October 4, 2007, NMFS responded to NRC Staff's request, identifying “two Federally protected sturgeon species under its jurisdiction as having the potential to be affected by the proposed action.”).

At issue in *Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), CLI-99-22, 50 NRC 3 (1999), cited by NRC Staff, was a new document related to cultural resources. See NRC Staff Answer at fn.14. In stark contrast, the instant case involves endangered species, which implicates a federal consultation obligation stemming from an independent federal law, the ESA. This obligation in the instant proceeding will result in preparation and issuance of a BO, and, notably, the parties to the proceeding have known since December 2008, when NRC Staff issued its initial BA, that this document would be prepared.

NRC Staff also cites to *Westlands Water District v. U.S. Dep't of Interior*, however that case involved whether or not the impacts of “reasonable and prudent measure” required by NMFS was adequately considered in the EIS. 376 F.3d 853, 874 (9th Cir. 2004). The court found that the draft EIS had discussed and assessed the measure and that the final EIS contained a technical analysis of the impact of the measure, and, thus, the court concluded that “[t]he analysis undertaken in the EIS was sufficient to show that [the Department of] Interior took a ‘hard look’ at the consequences of using [the measure].” *Id.* By no means does this case support a general proposition that a supplement to a final EIS is not required upon issuance of a BO. In fact, this case actually serves to demonstrate the efficacy and necessity of considering NMFS’ feedback during the NEPA review process.

Lastly, Entergy cites to *Enos v. Marsh*, to support the proposition that a Federal agency need not supplement an EIS when new documents are subsequently generated. See Entergy’s Answer at 18-19. However, that case involved a situation where a species was only *proposed* for listing during the environmental review process. 769 F.2d 1363, 1370 (9th Cir. 1985). Pertinently, the court found that the Federal agency followed the appropriate ESA procedures applicable for the proposed species (which did not require preparation of a BO), as opposed to

those applicable to a listed species. Thus, once again, there was no BO that could have necessitated an EIS supplement.

Overall, the cases cited by NRC Staff and Entergy do not establish that NRC Staff is “not *required* to issue a supplement to the FSEIS” unless the BO contains significantly new information. NRC Staff’s Answer at 14; Entergy Answer at 18-19. Quite the opposite, the discussion above demonstrates that an EIS supplement in the instant proceeding will be necessary once NMFS issues its BO.

Based on the foregoing, it is clear that a genuine dispute exists regarding whether NRC Staff’s FSEIS is sufficient to comply with NEPA and the ESA. The dispute raised by Riverkeeper Contention EC-8 is clearly material, since the preparation of a supplemental EIS to consider the outcome of the ESA § 7 process could very well result in NRC Staff altering its conclusions and recommendations regarding environmental impacts as well as license renewal of Indian Point. *See* Entergy Answer at 9 (“A dispute is material if its resolution would make a difference in the outcome of the licensing proceeding.”); NRC Staff’s Answer at 16 (“the proffered contention must pose matters material to the outcome of the proceeding”).

C. *Riverkeeper Contention EC-8 Does Not Impermissibly Challenge the Timing of NRC’s BA*

Entergy asserts that Riverkeeper has no basis to challenge the timing of NRC Staff’s Revised BA, since formal consultation is now underway and since there is no enforceable deadline by which NRC had to issue its BA. Entergy’s Answer at 19-20. At the outset, it is important to note that Riverkeeper Contention EC-8 criticizes the adequacy of NRC Staff’s FSEIS for failure to consider NMFS’s consultation feedback. As such, the contention does not directly attack any timing requirements, and merely explains NRC Staff’s failure to justify long delays in completing the required BA.

Moreover, Entergy's arguments are simply wrong. Even assuming there is no "enforceable deadline" by which a Federal agency must issue a BA, the relevant regulatory framework contemplates that the agency will proceed in a manner that ensures proper coordination with and consideration of a concurrent NEPA process. *See* Riverkeeper Contention EC-8 at 5-7. Notably, while Entergy cites a final agency rule which states that the timing of the Federal agency's review is at the discretion of the agency, Entergy conveniently omits that the final agency rule emphasizes in the next sentence that "[e]arly review of its actions is to the advantage of the Federal agency so that compliance with section 7 can be attained without undue delays to its action." Interagency Cooperation – Endangered Species Act of 1973, as Amended, Final Rule, 51 Fed. Reg. 19926, 19948 (1986); Entergy's Answer at 20.

## **II. Riverkeeper Contention EC-8 is Timely**

### ***A. Riverkeeper Contention EC-8 Does Not Constitute an Untimely Challenge to NRC's Revised BA***

Both NRC Staff and Entergy claim that to a certain degree, Riverkeeper Contention RK-EC-8 is a late filed contention that fails to demonstrate the admissibility requirements contained in 10 C.F.R. § 2.309(c). NRC Staff's Answer at 17-19; Entergy's Answer at 13-14. However, as explained below, NRC Staff and Entergy fundamentally mischaracterize Riverkeeper's criticisms, which apply to the final conclusions contained in NRC Staff's FSEIS, and are, thus, timely submitted pursuant to 2.309(f)(2). *See* Riverkeeper Contention EC-8 at 18-19.

In particular, NRC Staff contests Riverkeeper Contention EC-8 to the extent it challenges statements contained in NRC Staff's Revised BA, since none of those statements are based on new or materially different information from the initial BA issued in December 2008 as part of the DSEIS. NRC Staff's Answer at 18. Thus, NRC Staff states that Riverkeeper Contention EC-8 impermissibly challenges NRC Staff's statements regarding thermal modeling, entrainment

and impingement of aquatic organisms, and implementation of Ristroph screens at Indian Point. *Id.* at 18-19. However, Riverkeeper cited to NRC Staff's statements in the Revised BA in order to demonstrate the highly important nature of the forthcoming opinions, recommendations, mitigation measures, etc, from NMFS, which should inform the NRC Staff's NEPA review. *See* Riverkeeper Contention EC-8 at 13. Indeed, all of Riverkeeper's statements cited by NRC Staff appear in an explanatory footnote. Thus, Riverkeeper Contention EC-8 does not squarely challenge statements made in the Revised BA, but rather, challenges the NRC Staff's decision to conclude the NEPA review process without considering NMFS's BO, or explaining how the BO will factor into the relevant NEPA assessments and determinations.

Similarly, Entergy asserts that Riverkeeper Contention EC-8 improperly challenges the timing of NRC's BA. In particular, Entergy states that NRC regulations only permit new contentions "if the FSEIS contains data or conclusions that differ significantly from the data or conclusions in previous environmental documents" and that "Riverkeeper's procedural argument about the timing of the BA is not based on [] new information." Entergy's Answer at 13. To begin with, Entergy mischaracterizes the relevant standard. Even if data in the FSEIS does not contain significantly different data or conclusions from previous information, 10 C.F.R. § 2.309(f)(2) allows for the filing of "new contentions . . . after the initial filing . . . with leave of the presiding officer upon a showing that – (i) The information . . . was not previously available; (ii) The information . . . is materially different . . . and (iii) The . . . new contention has been submitted in a timely fashion." Riverkeeper discussed these three categories in Riverkeeper EC-8, at 18-19.

Moreover, Entergy, like NRC, mischaracterizes Riverkeeper's new contention. Again, the essential claim of Riverkeeper Contention EC-8 is that NRC Staff's conclusions in the FSEIS

are inadequate because they fail to take into account NMFS' conclusions and recommendations as articulated in NMFS' yet-to-be-issued BO. Riverkeeper Contention EC-8 discussed NRC Staff's improper and unexplained delays relating to NRC Staff's initial BA and revised BA simply to demonstrate the complete lack of a reasonable basis for NRC Staff's failure to complete the process, especially in light of applicable guidance and regulations which indicate that the consultation process should have been completed and considered in the NEPA review. There was clearly ample time for NRC Staff to do so. *See* Riverkeeper Contention EC-8 at 9.

Furthermore, NRC Staff's and Entergy's assertions that Riverkeeper Contention EC-8 is not based on new information is plainly inaccurate. As Riverkeeper has explained, NRC Staff's final environmental conclusions and NRC Staff's intent to rely only on its own BA and not account for the outcome of the ESA § 7 consultation process only became definitively known upon the issuance of the FSEIS.<sup>12</sup> NRC Staff indicates that in August 2009, NRC Staff did provide NMFS with requested information and informed NMFS that NRC Staff would address the data in the FSEIS and in a Revised BA. NRC Staff's Answer at 9. However, NRC Staff acknowledges that this document was not "among Staff's publicly available document disclosures" and Riverkeeper never located it despite periodic good faith searches on ADAMS.  
*Id.*

Accordingly, it was not clear to Riverkeeper how NRC Staff intended to address the incomplete consultation process until Riverkeeper contacted a NMFS representative around October 2010, as mentioned in Riverkeeper Contention EC-8, fn.9. Upon learning about how

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<sup>12</sup> Thus, Entergy's assertions that Riverkeeper should have filed contentions challenging the initial BA in April 2008, and the revised BA in 2009, are flawed, since at those times, it was not yet clear how NRC Staff intended to account for the § 7 consultation process in its NEPA review. Moreover, this argument completely contradicts Entergy's position that there is no specific timeframe within which NRC Staff must complete its BA, *see supra* page 11, such that Intervenor should have filed a contention promptly after such a timeframe lapsing. *See* Entergy's Answer at 19-20.

NRC might act, on November 5, 2010, Riverkeeper filed supplemental NEPA comments on the DSEIS, asking NRC Staff to clarify its intention and explain how NRC Staff would account for the NFMS' consultation.<sup>13</sup> The FSEIS does not appear to address these comments, and upon issuance of the FSEIS, Riverkeeper first became aware that NRC Staff intended to conclude its NEPA review without the benefit of NMFS' BO. This approach was materially different from what is contemplated by applicable regulations and guidance. *See* Riverkeeper Contention EC-8 at 18-19.

In sum, Riverkeeper Contention EC-8 was not untimely because Riverkeeper has satisfied the requirements of 10 C.F.R. § 2.309(f)(2), as demonstrated here and in Riverkeeper Contention EC-8 at 18-19.

Moreover, NRC Staff argues that Riverkeeper Contention EC-8 is untimely to the extent it challenges the Revised BA without the benefit of the extension granted by the ASLB regarding new contentions concerning the FSEIS. *See* NRC Staff's Answer at 19. NRC Staff maintains that the Revised BA was not a part of the FSEIS, and was issued as a separate, independent document. *Id.* NRC Staff's arguments are flawed for several reasons. To begin with, for the reasons stated above, Riverkeeper Contention EC-8 is focused on the inadequacy of the actual FSEIS, not on the actual conclusions of the Revised BA. Second, NRC Staff's assertion that the Revised BA was not part of the FSEIS is directly contrary to applicable regulations and guidance already cited extensively by Riverkeeper. *See* Riverkeeper Contention EC-8 at 5-7. Indeed, it would make no sense for NRC Staff to cite to and rely upon conclusions and findings in the Revised BA without that document being considered an integral part of the EIS.

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<sup>13</sup> Letter from Riverkeeper to Chief, Rules Review and Directives Branch (NRC), Re: Riverkeeper, Inc. Supplemental Comments on Indian Point Draft SEIS, November 5, 2010, ADAMS Accession No. ML103230050, attached hereto as Attachment D (exhibit omitted).

Thirdly, it is worth noting that based on a review of the NRC Staff's FSEIS, one could reasonably conclude that the revised BA was in fact part of the FSEIS: the FSEIS explicitly states that "NRC staff has prepared a biological assessment (BA) for NMFS that documents its review. The BA is provided in Appendix E to *this* SEIS." See FSEIS at 4-57 (emphasis added). Riverkeeper did take note of this, expressing our understanding that the revised BA, although transmitted as the FSEIS "went to press," was part of the FSEIS. Riverkeeper Contention EC-8, fn. 10 ("Although the FSEIS indicates that "[t]he BA is provided in Appendix E to this SEIS," see FSEIS at 4-57, it does not appear to have been included. See FSEIS, Appendix E."). The NRC Staff's ambiguity should not prejudice intervenors from raising legitimate concerns regarding the FSEIS.

*B. Riverkeeper Contention EC-8 is Otherwise Timely*

NRC Staff and Entergy narrowly assert that Riverkeeper Contention EC-8 is untimely and unsubstantiated pursuant to 10 C.F.R. § 2.309(c), only to the extent NRC Staff and Entergy characterize the contention as disputing statements in NRC Staff's revised BA. As explained above this is unfounded and inaccurate. Riverkeeper contemplated Riverkeeper Contention EC-8 as a timely contention pertaining to the FSEIS, and, thus, only addressed the timing requirements of 10 C.F.R. § 2.309(f)(2). This is consistent with the ASLB's Scheduling Order, ¶ F.2, which states that a proposed new contention is timely if it is filed within 30 days of when new material information becomes available (in this case, the issuance of the FSEIS), as modified by the ASLB's December 27, 2010 Order Granting Intervenor's Unopposed Joint Motion for an Extension of Time, which ordered that new contentions based on significantly new data or conclusions in the FSEIS would be considered timely if filed on or before February 3, 2011. Because NRC Staff's conclusion of the NEPA process absent consideration of NMFS'

BO is materially different information not previously available, Riverkeeper proceeded under the “timely” filed contention requirements.

While Riverkeeper has satisfied the timely-filed contention requirements of 10 C.F.R. §2.309(f)(2), as discussed above, it is also important to note that the proffered contention would likewise satisfy the late-filed requirements contained in 10 C.F.R. § 2.309(c), to the extent the ASLB finds that they apply. 10 C.F.R. § 2.309(c) requires a balancing of 8 different factors to justify the admission of a late-filed contention. As NRC Staff explains, because Riverkeeper has already established standing to participate in the Indian Point license renewal proceeding, the principal factor to be considered in assessing the admissibility of a late-filed contention would be whether there is “good cause” for the failure to file on time. *See* NRC Staff’s Answer at fn.46.

To the extent the ASLB deems Riverkeeper Contention EC-8 a late-filed contention, Riverkeeper submits that the information presented in Riverkeeper Contention EC-8, and herein, establish that good cause exists for the failure to file on time. In particular, good cause is demonstrated by the lack of clarity and transparency regarding the ESA § 7 consultation process, such that the public did not have an opportunity to be aware of NRC Staff’s intentions. *See* NRC Staff’s Answer at fn. 27 (admitting that letter indicating NRC Staff’s intention to provide NMFS with requested information in a revised BA and in the FSEIS was not made available until brought to NRC Staff’s attention by Riverkeeper’s new contention). Moreover, Riverkeeper did take reasonable efforts to ascertain the status of the consultation, and requested in supplemental EIS comments that NRC Staff explain how it intended to proceed. *See* Attachment D. Thus, the reasonable time to file the contention was upon issuance of the FSEIS, when Riverkeeper learned in a definitive way how NRC Staff intended to conclude the NEPA review process

notwithstanding the ongoing ESA § 7 consultation. Moreover, the other balancing factors of 10 C.F.R. § 2.309(c) mitigate in favor of admitting the proposed contention.<sup>14</sup>

### CONCLUSION

For the foregoing reasons, the NRC Staff's and Entergy's assertions that Riverkeeper Contention EC-8 fails to raise a genuine dispute on a material issue of law or fact and that the contention is not timely, are unfounded. The ASLB should, therefore, admit Riverkeeper Contention EC-8 into the Indian Point license renewal proceeding.

Respectfully submitted,



Deborah Brancato, Esq.  
Phillip Musegaas, Esq.  
Riverkeeper, Inc.  
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(914) 478-4501  
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[phillip@riverkeeper.org](mailto:phillip@riverkeeper.org)

March 14, 2011

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<sup>14</sup> For example, Riverkeeper is already a party to the proceeding and has a well-settled environmental interest in the proceeding; the possible decisions on the issues related to Contention EC-8 would certainly affect Riverkeeper's interests as they would directly bear upon the ongoing detrimental impacts of Indian Point on endangered aquatic resources present in the vicinity of the plant in the Hudson River; other means to ensure that the NRC sufficiently considers NMFS' opinions and recommendations prior to reaching final environmental assessment conclusions and an ultimate conclusion regarding the environmental impacts of extending the licenses for Indian Point Units 2 and 3 are not available; issues related to endangered species have not been successfully raised by other parties, and, thus, Riverkeeper's interest in this issue will not be represented by other existing parties; this will not unduly broaden the issue or delay the proceeding, since it is a relatively discrete issue; and Riverkeeper, a well-known organization with requisite credibility and expertise in aquatic issues, will unquestionably assist in developing a sound record on this matter.

**Riverkeeper, Inc. Combined Reply to NRC Staff and Entergy's Answers to  
Riverkeeper's Motion for Leave to File a New Contention and New Contention  
Concerning NRC Staff's Final Supplemental Environmental Impact Statement**

**Riverkeeper Contention EC-8: Attachment A**

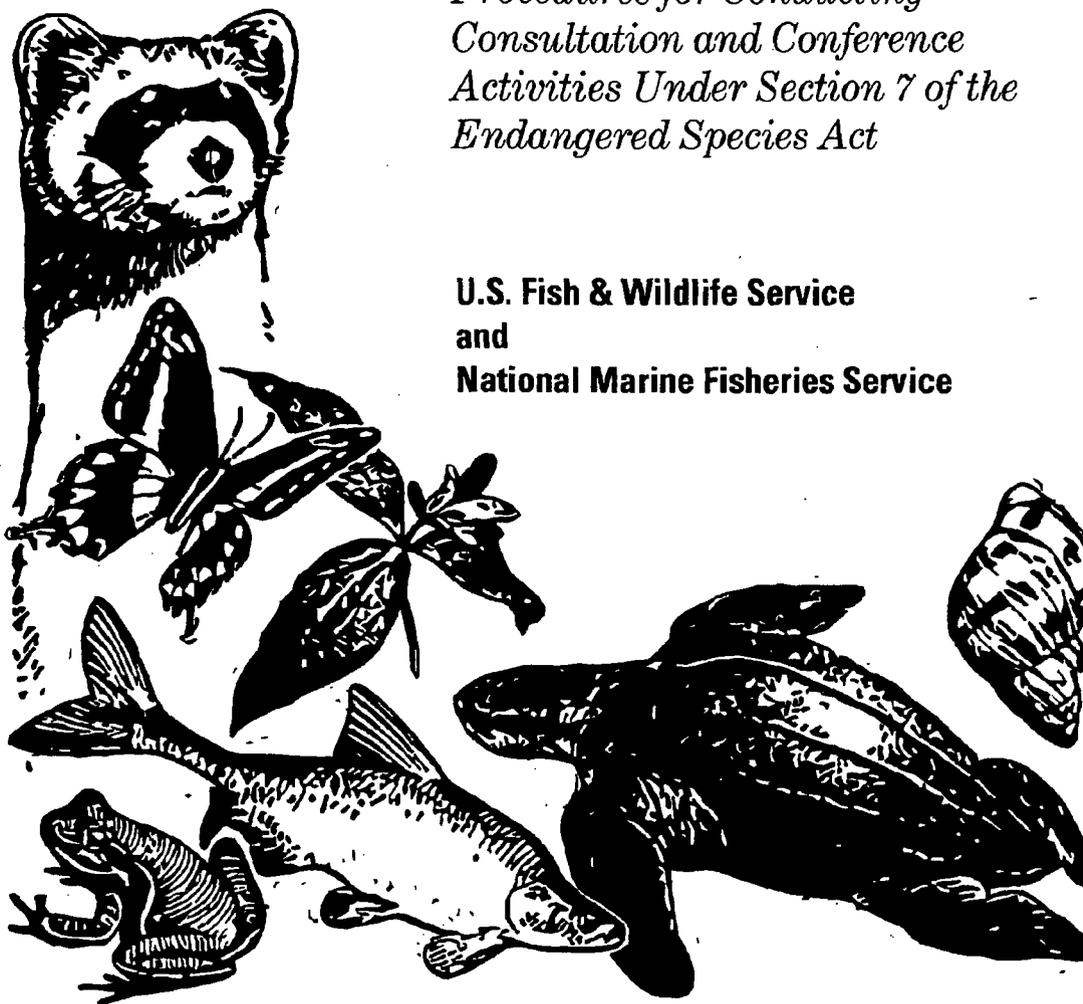
*Endangered Species*



# Consultation Handbook

*Procedures for Conducting  
Consultation and Conference  
Activities Under Section 7 of the  
Endangered Species Act*

**U.S. Fish & Wildlife Service  
and  
National Marine Fisheries Service**



**March 1998  
Final**

Sincerely,

Field Supervisor

**(B) Coordination with other environmental reviews**

Formal consultation and the Services' preparation of a biological opinion often involve coordination with the preparation of documents mandated by other environmental statutes and regulations, including the Fish and Wildlife Coordination Act (FWCA) and the National Environmental Policy Act (NEPA). Although other environmental reviews may be processed concurrently with a section 7 consultation package, they should be separate entities. The contents of the biological opinion and incidental take statement, including the discussion of effects to listed or proposed species and/or critical habitats, and appropriate measures to avoid or minimize those effects, may be addressed in the Service's comments and recommendations under the FWCA, section 404(m) of the Clean Water Act, NEPA, and other authorities. The section 7 consultation package may be prepared as a stand-alone document under separate signature, or one cover transmittal may be used as long as the consultation package is identified as a separate entity.

The Services should assist the action agency or applicant in integrating the formal consultation process into their overall environmental compliance. A major concern of action agencies is often the timing of the consultation process in relation to their other environmental reviews. For example, since the time required to conduct formal section 7 consultation may be longer than the time required to complete preparation of NEPA compliance documents, the action agency should be encouraged to initiate informal consultation prior to NEPA public scoping. Biological assessments may be completed prior to the release of the Draft Environmental Impact Statement (DEIS) and formal consultation, if required, should be initiated prior to or at the time of release of the DEIS. Early inclusion of section 7 in the NEPA process would allow action agencies to share project information earlier and would improve interagency coordination and efficiency. At the time the Final EIS is issued, section 7 consultation should be completed. The Record of Decision should address the results of section 7 consultation.

**4.5 COMPONENTS OF A FORMAL CONSULTATION**

The Services' formal consultation package includes at a minimum a biological opinion and an incidental take statement. The package also may include a conference opinion or notice of a need to confer if proposed species or proposed critical habitats are involved. Conservation recommendations for agency implementation of section 7(a)(1) responsibilities under the Act may be included if relevant to the action under consultation (Figure 4-2).

**Riverkeeper, Inc. Combined Reply to NRC Staff and Entergy's Answers to  
Riverkeeper's Motion for Leave to File a New Contention and New Contention  
Concerning NRC Staff's Final Supplemental Environmental Impact Statement**

**Riverkeeper Contention EC-8: Attachment B**



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
NORTHEAST REGION  
55 Great Republic Drive  
Gloucester, MA 01930-2276

FEB 24 2009

David J. Wrona, Branch Chief  
Projects Branch 2  
Division of License Renewal  
Office of Nuclear Reactor Program  
US Nuclear Regulatory Commission  
Washington, DC 20555-0001

RE: Biological Assessment for License Renewal of the Indian Point Nuclear Generating Unit Nos. 2 and 3

Dear Mr. Wrona:

This correspondence responds to a letter dated December 22, 2008 (received January 2, 2009) regarding the initiation of formal consultation for the proposed renewal by the US Nuclear Regulatory Commission (NRC) of the Indian Point Nuclear Generating Unit Nos. 2 and 3 (IP2 and IP3) operating licenses for a period of an additional 20 years pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended. The current operating licenses for these units expire on September 28, 2013 (IP2) and December 12, 2015 (IP3). Consultation with NOAA's National Marine Fisheries Service (NMFS) regarding the proposed license renewal is appropriate as the action may adversely affect the federally endangered shortnose sturgeon (*Acipenser brevirostrum*). Accompanying your letter was a Biological Assessment (BA) evaluating the impact of the proposed renewal on federally endangered shortnose sturgeon (*Acipenser brevirostrum*), as well as a copy of the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 39 Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 Draft Report*. NMFS has completed an initial review of the BA and draft EIS and has determined that we have not received all of the information necessary to initiate consultation. To complete the initiation package, we will require the information outlined below.

Section 4 of the BA contains life history and status information for shortnose sturgeon. Several corrections are necessary in this section. In the Hudson River, shortnose sturgeon spawn when water temperatures are between 8 and 15°C, which typically occurs in April. Recent information suggests that the population estimate calculated by Bain, and included in the BA, likely overestimates the number of shortnose sturgeon in the Hudson River. Dr. Katherine Hattala, a



biologist with the State of New York, has examined the data used by Bain and determined that a more appropriate estimate is approximately 30,000 adult shortnose sturgeon.

Section 4.3.2 of the BA assesses the impact of impingement on shortnose sturgeon. The BA contains a summary of the available information on impingement of shortnose sturgeon (Table 2). NMFS requests that NRC staff provide the following information in regards to Table 2: (a) for each year, indicate the level of monitoring effort (e.g. weekly for six months, etc.); (b) for each year when there is no number recorded, indicate whether that was due to a lack of monitoring, or due to a lack of capture; (c) indicate the date of impingement; and, (d) indicate the size and condition (i.e., alive, injured or dead) of the impinged fish. It is our understanding that no impingement monitoring has been conducted since traveling Ristroph-type screens were installed at the facility in 1991. As noted in the BA, the lack of information makes it difficult to predict the effects of relicensing and an additional 20 years of operation on shortnose sturgeon. If the NRC is not able to require the applicant to conduct monitoring in support of relicensing, NMFS requests that the NRC provide an estimate, based on the best available scientific information, of the likely number of shortnose sturgeon impinged at the facility with the traveling Ristroph-type screens in use. NMFS expects that the NRC could use the existing impingement data in conjunction with data on the effectiveness of Ristroph-type screens to calculate this estimate. As noted in the BA, another important factor is the mortality rate of impinged sturgeons. NMFS requests that NRC provide an estimate of the mortality rate for impinged shortnose sturgeon. NMFS expects this rate could be calculated based on available mortality rate data for other similar species and/or other facilities where similar screen types have been installed.

Section 4.3.3 of the BA discusses thermal impacts. As noted in the BA, without a model of the thermal plume it is extremely difficult to predict what the level of exposure to elevated water temperatures is for shortnose sturgeon. If NRC is unable to require that the applicant conduct modeling of the thermal plume in support of relicensing, NMFS requests that the NRC use the best available scientific information to estimate the likely temporal and spatial extent to which shortnose sturgeon will be exposed to water temperatures where adverse effects are likely (i.e., greater than 28°C).

It is NMFS understanding that the proposed action is the relicensing of the facility with no modification to the existing intakes. However, in the DEIS, the NRC discusses alternatives including cooling towers. NMFS seeks clarification as to the process by which the NRC will determine whether the installation of cooling towers, or other measures, will be required of the applicant. NMFS also seeks clarification regarding the current requirements of the National Pollutant Discharge Elimination System (NPDES) Permit issued by the State of New York and the potential outcome of the adjudication process currently ongoing regarding this permit, as well as the potential for the State NPDES permit to require cooling towers.

The formal consultation process for the proposed action will not begin until we receive all of the requested information or a statement explaining why that information cannot be made available. We will notify you when we receive this additional information; our notification letter will also outline the dates within which formal consultation should be complete and the biological opinion

delivered. My staff is available to discuss these information needs with NRC staff. I look forward to continuing to work with you and your staff during the consultation process. If you have any questions or concerns about this letter or about the consultation process in general, please contact Julie Crocker at (978) 282-8480.

Sincerely,



Mary A. Colligan  
Assistant Regional Administrator  
for Protected Resources

cc: Crocker, F/NER3 (hardcopy)  
Damon-Randall, Hartley – F/NER3 (pdf)  
Rusanowsky– F/NER4 (pdf)  
Logan – NRC (pdf)

File Code: Sec 7 NRC Indian Point Nuclear Plant Relicensing

PCTS: F/NER/2009/00619

**Riverkeeper, Inc. Combined Reply to NRC Staff and Entergy's Answers to  
Riverkeeper's Motion for Leave to File a New Contention and New Contention  
Concerning NRC Staff's Final Supplemental Environmental Impact Statement**

**Riverkeeper Contention EC-8: Attachment C**



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

December 10, 2010

Ms. Mary A. Colligan  
Assistant Regional Administrator for Protected  
Resources  
U.S. Department of Commerce  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Northeast Region  
One Blackburn Drive  
Gloucester, MA 01930-2298

SUBJECT: REVISED BIOLOGICAL ASSESSMENT FOR LICENSE RENEWAL OF THE  
INDIAN POINT NUCLEAR GENERATING PLANT, UNIT NOS. 2 AND 3

Dear Ms. Colligan:

The U.S. Nuclear Regulatory Commission (NRC) staff has prepared a revised biological assessment (BA) for the proposed license renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3 (IP2 and IP3). The BA is included as the enclosure to this letter. The NRC staff is conveying this revised BA in response to your letter dated February 24, 2009, which indicated that formal consultation under Section 7 of the Endangered Species Act could not begin until NRC submitted additional information or explained why certain information is not available. The enclosed BA contains, wherever possible, the requested information. As noted in our initial consultation letter dated December 22, 2008, the proposed action (license renewal) involves continued operation of IP2 and IP3 for 20 years beyond their current license expiration dates of 2013 and 2015, respectively. The proposed action (license renewal) is not a major construction activity.

On August 16, 2007, the NRC requested that the National Marine Fisheries Service (NMFS) provide lists of Federally listed endangered or threatened species and information on protected, proposed, and candidate species, as well as any designated critical habitat, that may be in the vicinity of IP2 and IP3 and their associated transmission line right-of-ways. The NMFS responded to the NRC request on October 4, 2007, and indicated that the Federally listed endangered shortnose sturgeon (*Acipenser brevirostrum*) and the candidate species Atlantic sturgeon (*Acipenser oxyrinchus*) should be considered for potential impacts of license renewal and operation.

In its letter of December 22, 2008, the NRC staff found that renewal of the operating licenses of IP2 and IP3 to include another 20 years of operation could adversely affect the population of shortnose sturgeon in the Hudson River through impingement and thermal impacts. NRC staff indicated, in the 2008 BA, that it was unable to determine the specific impacts to shortnose sturgeon of continued IP2 and IP3 operation.

On February 24, 2009, NMFS responded to NRC and indicated that additional information would be necessary before NMFS could begin its consultation regarding the shortnose sturgeon. NMFS requested four types of information from NRC:

1. Corrections to the life history section of the BA;
2. Additional information on impingement and impingement mortality;
3. Estimates of thermal impacts; and
4. Closed-cycle cooling and the National Pollutant Discharge Elimination System (NPDES) permit process.

**Item 1: Corrections to life history**

The NRC staff has updated the life history of the shortnose sturgeon as suggested in the February 24, 2009, NMFS letter.

**Item 2: Additional information on impingement and impingement mortality**

The NRC staff requested additional data from Entergy Nuclear Operations, Inc. (Entergy) (owner and operator of IP2 and IP3), and has included the additional data provided by Entergy in the attached BA. These data include the level of monitoring effort, dates of impingements, and size and condition of impinged fish. As reported in the NRC staff's 2008 BA and reiterated by NMFS, no impingement monitoring has occurred since traveling Ristroph-type screens were installed at the facility in 1991.

The NRC staff has not identified any relevant data regarding impingement rates for shortnose sturgeon at similar facilities with Ristroph screens. The NRC staff assumes, however, that impingement has increased proportionately with the Hudson River shortnose sturgeon population. Additionally, the NRC staff did not identify any information resources that could assist the staff in developing mortality rates for shortnose sturgeon after impingement at a facility similar to IP2 and IP3. As noted by the NRC staff and NMFS, however, Ristroph screens may have reduced impingement mortality. In view of the lack of any more recent data, the NRC staff suggests that pre-1991 impingement numbers with a 100 percent mortality rate could be used to estimate current impingement mortality.

**Item 3: Estimates of thermal impacts**

As NMFS is likely aware, the New York State Department of Environmental Conservation (NYSDEC) has requested that Entergy perform a three-dimensional thermal study of the Hudson River near Indian Point to determine plume extent and characteristics. The NRC staff understands that Entergy will be providing model and verification data to NYSDEC in the coming year. At this point, the NRC staff has no basis for estimating the temporal and spatial extent of thermal plume that exceeds 28 degrees Celsius.

**Item 4: Closed-cycle cooling and the NPDES permit process**

As NMFS is aware, SPDES proceedings involving Entergy and NYSDEC are in progress at this time. For water quality matters, the NRC staff defers to NYSDEC, to which the U.S. Environmental Protection Agency has delegated Clean Water Act authority. If NYSDEC determines that cooling towers must be installed at IP2 and IP3, the NRC would review the proposed implementation to the extent that installation could affect safe operations at IP2 and IP3. If the proposed installation of that requirement has no effect on safety-related plant systems, structures, or components, then the NRC would have no role in

approving a proposed cooling tower retrofit. The current SPDES permit does not require closed-cycle cooling or cooling towers and has been administratively extended since 1992.

NMFS requested information about the potential outcome of the ongoing NYSDEC adjudicatory process. On this matter, the NRC staff will continue to defer to NYSDEC, its internal schedules, and its delegated authority under the Clean Water Act. Given the permit's long history of administrative extension and contentious adjudication, the NRC staff cannot predict when a final permit will be issued and what requirements will exist in the final permit. The NRC staff notes that Entergy and NYSDEC are parties to an additional adjudicatory proceeding relating to the SPDES permit in the New York State civil court system. That proceeding also is in progress at this time.

The NRC staff concludes, in the Final Supplemental Environmental Impact Statement Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, (NUREG-1437, Supplement 38) that the impacts of another 20 years of IP2 and IP3 operation to the endangered shortnose sturgeon, due to entrainment and impingement, would be small (FSEIS, 4-20). Regarding the impact of heated plant discharges, the NRC staff analysis of young-of-year shortnose sturgeon in the Hudson River could not resolve a population trend, although other investigators using other methods found a trend of increasing abundance in the overall, mixed-age population. These observations are consistent with NRC's definition of a small level of impact in that any possible adverse effect is not detectable and is not destabilizing the population. This conclusion is based on NRC's specific definitions of small, moderate, and large impact levels as published in the NRC's Generic Environmental Impact Statement for License Renewal of Nuclear Plants and codified in NRC's 10 CFR Part 51 regulations that implement the National Environmental Policy Act.

For the purpose of the enclosed revised BA – prepared pursuant to the Endangered Species Act – the staff determines that renewal of the operating licenses for an additional 20 years could possibly have an adverse effect on the shortnose sturgeon population in the Hudson River, depending on the effects of thermal discharges. Further, NYSDEC has indicated that thermal discharges from the power plant may have an adverse affect on aquatic life. Sufficient information is not available at this time for the NRC staff to quantify the extent to which the population could be affected by thermal discharges, though proceedings between the NYSDEC and Entergy are currently underway that may provide additional information.

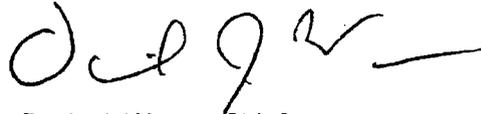
We are requesting your concurrence with our determination. In reaching its conclusion, the NRC staff relied on information provided by the applicant, on research performed by NRC staff and on information from NMFS (including a current listing of species provided by the NMFS). If

M. Colligan

- 4 -

you have any questions regarding this BA or the NRC staff's request, please contact Mr. Andrew Stuyvenberg, Environmental Project Manager, at 301-415-4006 or by e-mail at [Andrew.Stuyvenberg@nrc.gov](mailto:Andrew.Stuyvenberg@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "D. J. Wrona", with a horizontal line extending to the right.

David J. Wrona, Chief  
Projects Branch 2  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket Nos. 50-247 and 50-286

cc w/ encl: Distribution via Listserv

**Biological Assessment**

**Indian Point Nuclear Generating Plant, Unit Nos. 2 and 3  
License Renewal**

**December 2010**

**Docket Nos. 50-247 and 50-286**

**U.S. Nuclear Regulatory Commission  
Rockville, Maryland**

# **Revised Biological Assessment of the Potential Effects on Federally Listed Endangered or Threatened Species from the Proposed Renewal of Indian Point Nuclear Generating Plant, Unit Nos. 2 and 3**

## **Introduction and Purpose**

The U.S. Nuclear Regulatory Commission (NRC) staff prepared this biological assessment (BA) to support the supplemental environmental impact statement (SEIS) for the renewal of the operating licenses for Indian Point Nuclear Generating Unit Nos. 2 and 3 (IP2 and IP3), located on the shore of the Hudson River in the village of Buchanan, in upper Westchester County, New York. The current 40-year licenses expire in 2013 (IP2) and 2015 (IP3). The proposed license renewal for which this BA has been prepared would extend the operating licenses to 2033 and 2035 for IP2 and IP3, respectively.

The NRC is required to prepare the SEIS as part of its review of a license renewal application. The SEIS supplements NUREG-1437, Volumes 1 and 2, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS)," (NRC 1996, 1999)<sup>1</sup> for the license renewal of commercial nuclear power plants. The SEIS covers specific issues, such as the potential impact on endangered and threatened species, that are of concern at IP2 and IP3 and that could not be addressed on a generic basis in the GEIS. The NRC staff published the draft SEIS in December 2008 (NRC 2008) and published the final SEIS on December 3, 2010 (NRC 2010).

Pursuant to Section 7 of the Endangered Species Act of 1973 (ESA), as amended, the NRC staff requested, in a letter dated August 16, 2007 (NRC 2007), that the National Marine Fisheries Service (NMFS) provide information on Federally listed endangered or threatened species, as well as on proposed or candidate species, and on any designated critical habitats that may occur in the vicinity of IP2 and IP3. In its response, dated October 4, 2007 (NMFS 2007), NMFS expressed concern that the continued operation of IP2 and IP3 could have an impact on the shortnose sturgeon (*Acipenser brevirostrum*), an endangered species that occurs in the Hudson River. NMFS also noted that a related species that also occurs in the Hudson River, the Atlantic sturgeon (*Acipenser oxyrinchus*), is a candidate species for which NMFS has proposed listing as endangered. The NRC staff has corresponded with NMFS regarding the Atlantic sturgeon, and requests that NMFS address Atlantic sturgeon to the extent appropriate (NMFS 2010).

Under Section 7, the NRC is responsible for providing information on the potential impact that the continued operation of IP2 and IP3 could have on the Federally listed species, the shortnose sturgeon. In addition, the NRC has prepared information regarding the potential impact on important species, including the Atlantic sturgeon; this information can be found in Chapters 2 and 4 of the SEIS (NRC 2010).

The NRC staff relied on data originally supplied by the applicant, Entergy Nuclear Operations, Inc. (Entergy) in preparing the BA for IP2 and IP3 in the draft SEIS (Entergy 2007b) but

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<sup>a</sup> The GEIS was originally issued in 1996. Addendum 1 to the GEIS was issued in 1999. Hereafter, all references to the "GEIS" include the GEIS and its Addendum 1.

subsequently questioned the impingement data supplied by Entergy. The NRC staff sought, and Entergy later submitted revised impingement data (Entergy 2009). Mathematical errors in the original data submitted to the NRC (Entergy 2007b) apparently resulted in overestimates of the take of shortnose sturgeon that the NRC staff presented in the previous BA. The NRC staff found that the differences in the original (Entergy 2007b) and revised (Entergy 2009) data were of sufficient magnitude to possibly affect the staff's conclusions and has issued this revised biological assessment based on the revised data.

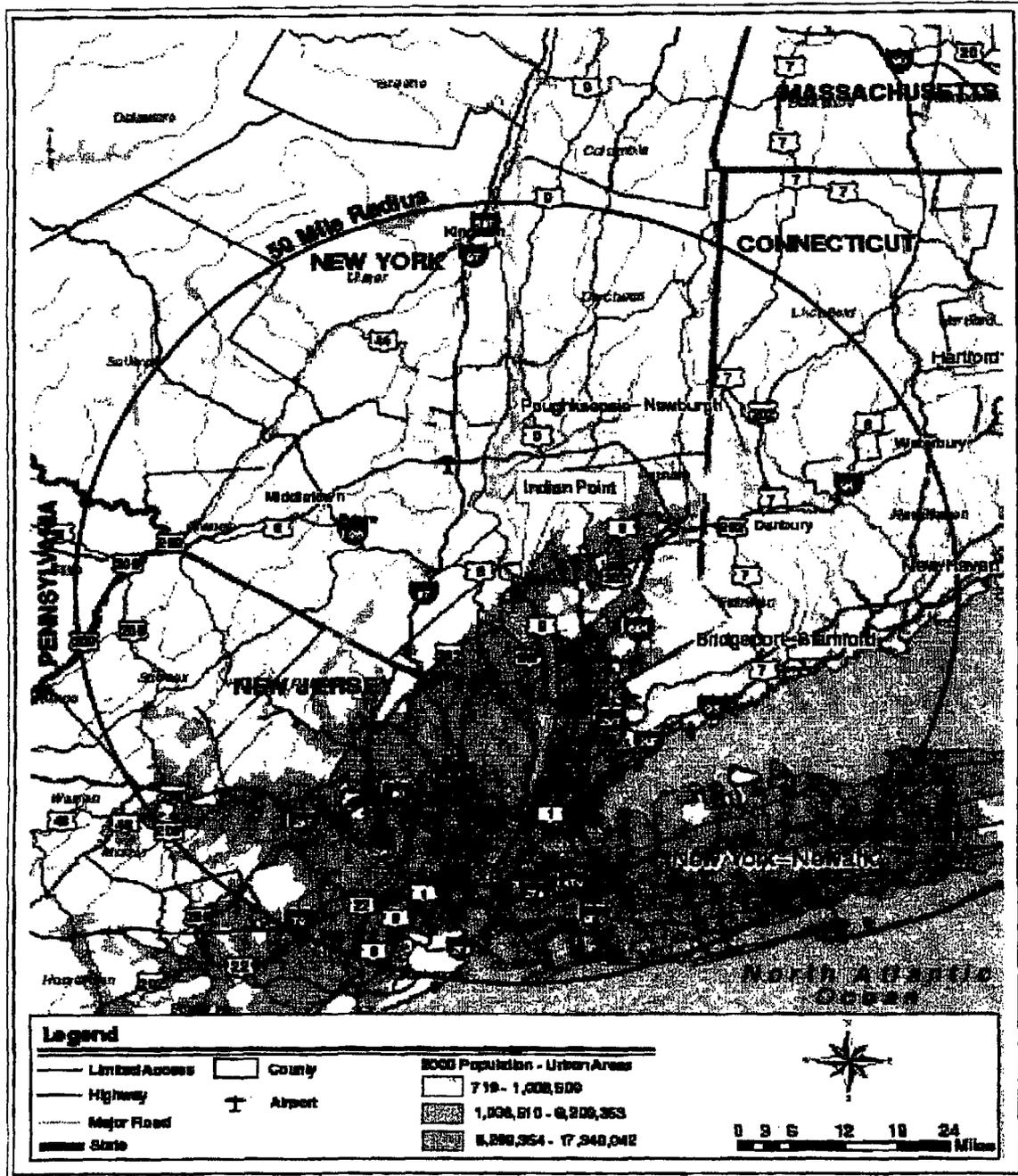
## **Proposed Action**

The current proposed action considered in the SEIS is the renewal of the operating licenses for IP2 and IP3 for an additional 20-year term beyond the period of the existing licenses. The applicant has indicated that it may replace reactor vessel heads and control rod drive mechanisms during the period of extended operation. (For a description of these activities and potential environmental effects, see Chapter 3 of the SEIS.) If the NRC grants the operating license renewals, the applicant can operate and maintain the nuclear units, the cooling systems, and the transmission lines and corridors as they are now until 2033 and 2035.

## **Site Description**

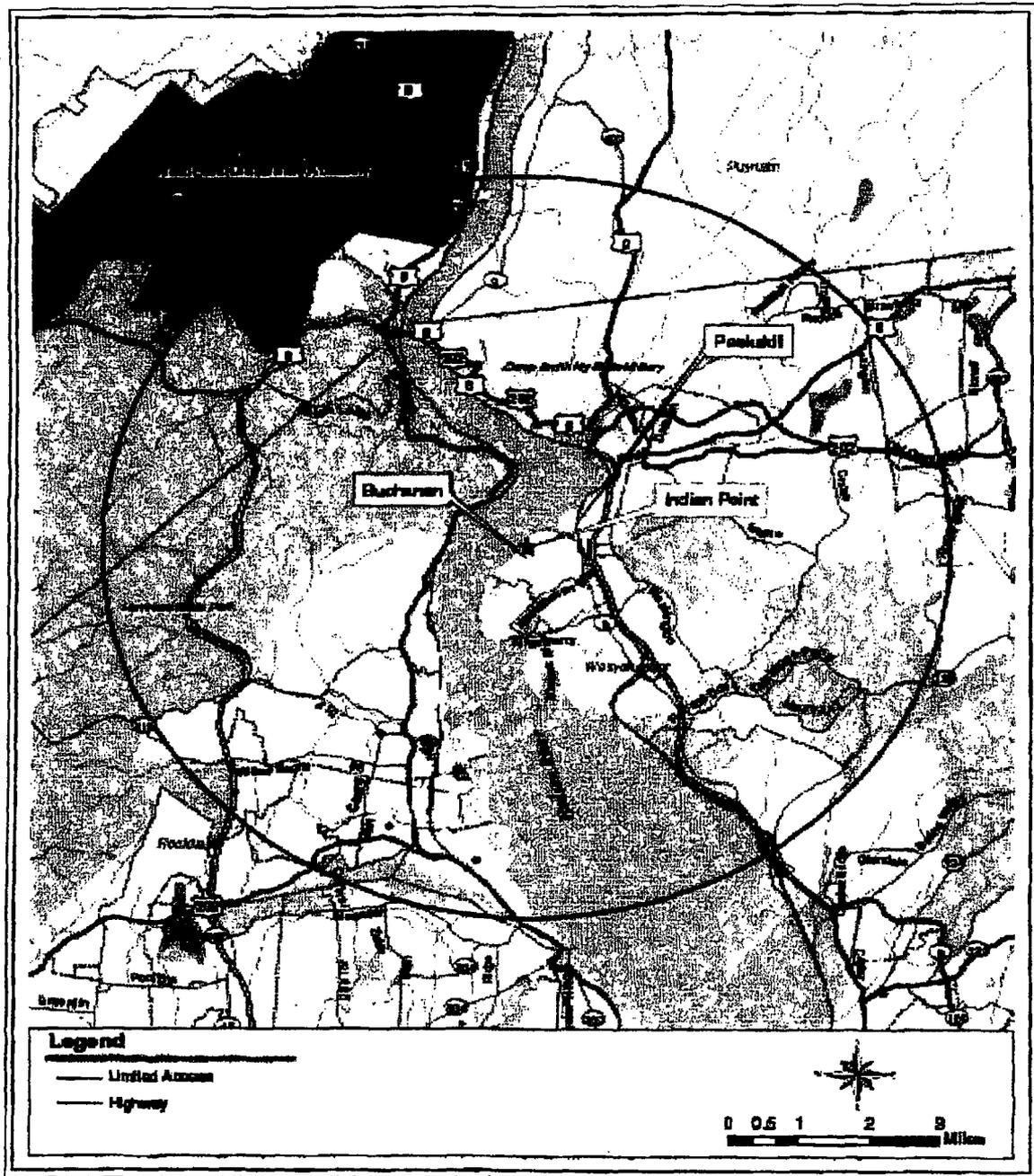
IP2 and IP3 are located on a 239-acre (97-hectare) site on the eastern bank of the Hudson River in the village of Buchanan, Westchester County, New York, about 24 miles (mi) (39 kilometers [km]) north of New York City, New York (Figures 1 and 2). Privately owned land bounds the north, south, and east sides of the property (Figure 3). The area is generally described as an eastern deciduous forest, dominated by oak (*Quercus*), maple (*Acer*), and beech (*Fagus*) species. The lower Hudson River is a tidal estuary, flowing 152 miles (244 km) from the Federal Dam at Troy, New York, to the Battery in New York City. IP2 and IP3 are located at River Mile (RM) 43 (RKM 69), where the average water depth is 40 feet (ft) (12 meters [m]), and the average width of the river is 4500 ft (1370 m). The Hudson River is tidal all the way to the Federal Dam, and the salinity zone in the vicinity of the facility is oligohaline (low salinity, ranging from 0.5 to 5 parts per thousand (ppt)), with the salinity changing with the level of freshwater flow. Water temperature ranges from a winter minimum of 34 degrees Fahrenheit (F) (1 degree Celsius (C)) to a summer maximum of 77 degrees F (25 degrees C) (Entergy 2007a).

The mid-Hudson River provided the cooling water for four other power plants: Roseton Generating Station, Danskammer Point Generating Station, Bowline Point Generating Station, and Lovett Generating Station; all four stations are fossil-fueled steam electric stations, located on the western shore of the river, and all use once-through cooling. Roseton consists of two units and is located at RM 66 (RKM 106), 23 mi (37 km) north of IP2 and IP3. Just 0.5 mi (0.9 km) north of Roseton is Danskammer, with four units. Bowline lies about five mi (eight km) south of IP2 and IP3 and consists of two units (Entergy 2007a; CHGEC 1999). Lovett, almost directly across the river from IP2 and IP3, is no longer operating.



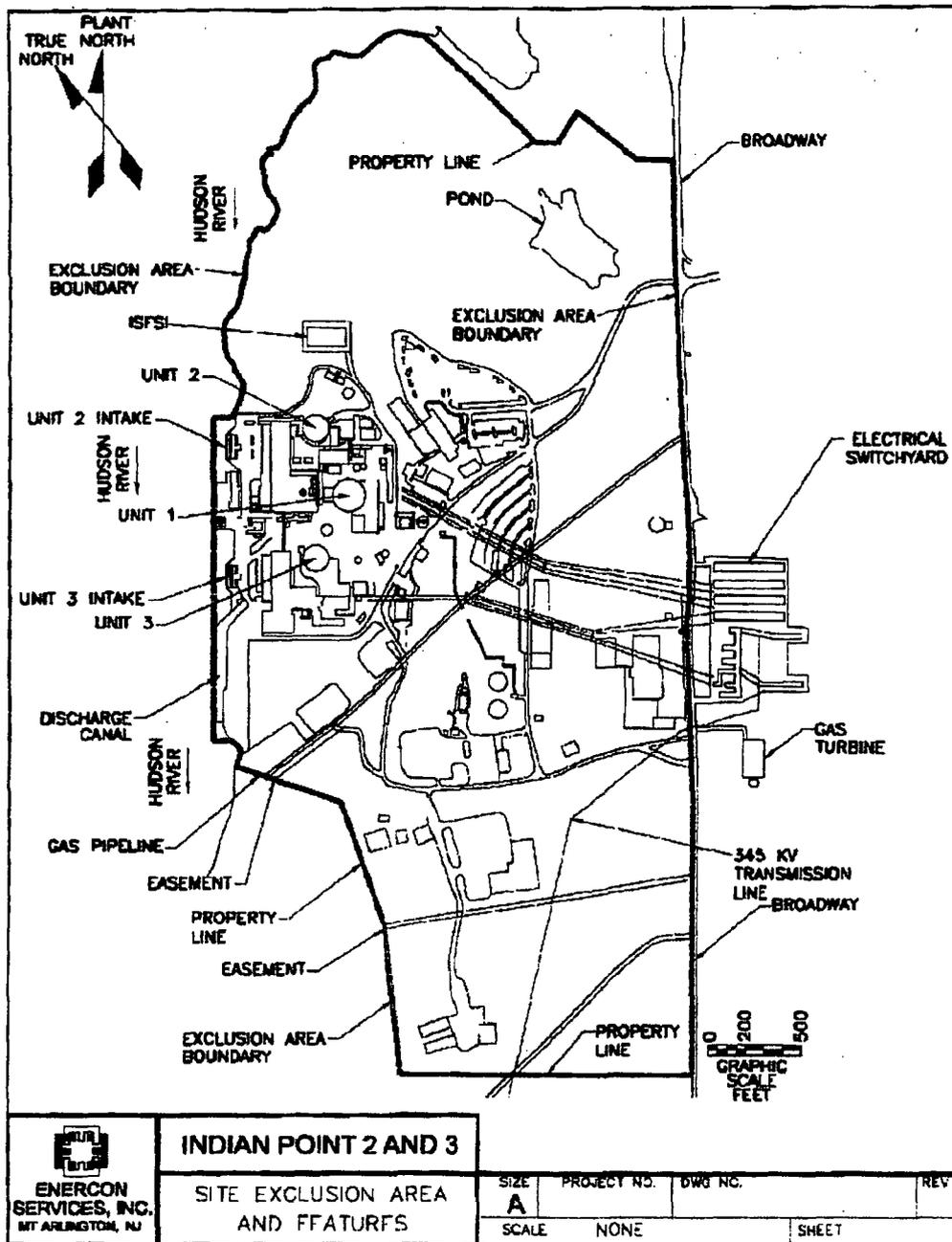
Source: Entergy 2007a

Figure 1: Location of IP2 and IP3, 50-mile (80-km) radius



Source: Entergy 2007a

Figure 2: Location of IP2 and IP3, 6-mile (10-km) radius

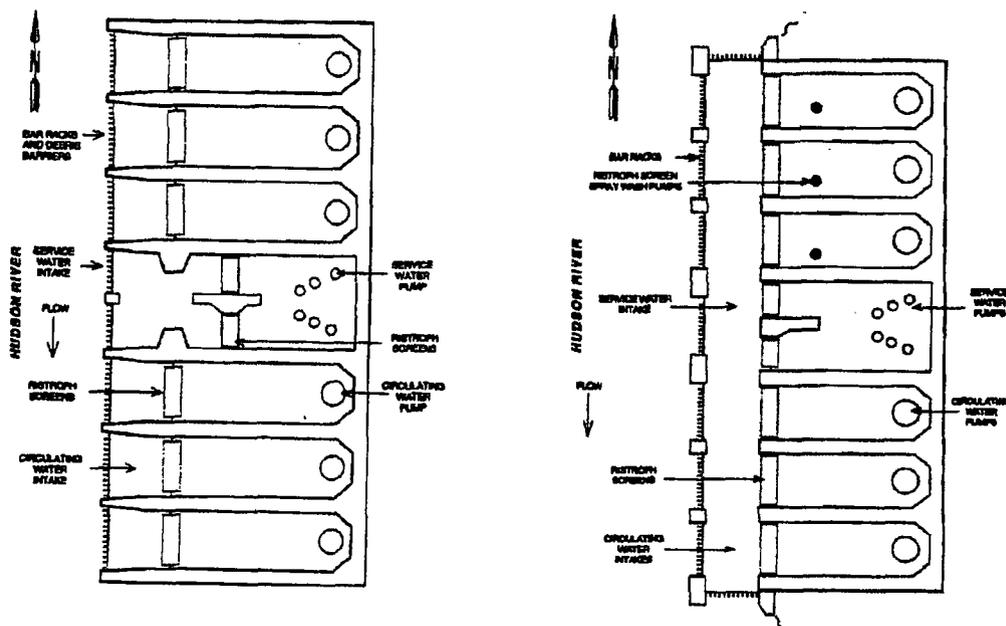


Source: Entergy 2007a

**Figure 3: IP2 and IP3 property boundaries and environs**

## Description of Plants and Cooling Systems

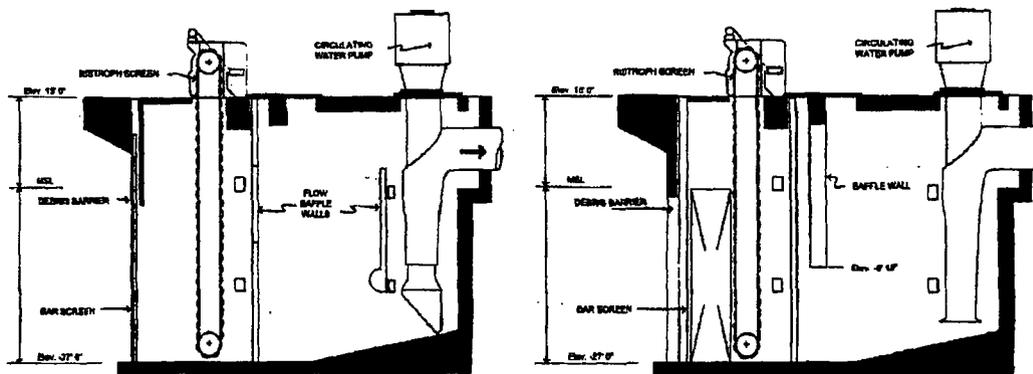
IP2 and IP3 are pressurized-water reactors with turbine generators that produce a net output of 6432 megawatts-thermal and approximately 2158 megawatts-electrical. Both IP2 and IP3 use water from the Hudson River for their once-through condensers and auxiliary cooling systems. Each unit has seven intake bays (Figure 4), into which the river water flows, passing under the floating debris skimmer wall and through Ristroph traveling screens (Figure 5). IP2 has six dual-speed circulating water pumps that can each pump 140,000 gallons per minute (gpm) (8.83 cubic meters per second [ $\text{m}^3/\text{s}$ ]) at full speed and 84,000 gpm (5.30  $\text{m}^3/\text{s}$ ) at reduced speed; at full speed, the approach velocity is approximately 1 foot per second (fps) (0.30 meters per second [ $\text{m}/\text{s}$ ]) and at reduced speed, the approach velocity is 0.6 fps (0.2  $\text{m}/\text{s}$ ). IP3 also has six dual-speed circulating water pumps. The full speed flow rate of each of these pumps is 140,000 gpm (8.83  $\text{m}^3/\text{s}$ ), with a 1 fps (0.30  $\text{m}/\text{s}$ ) approach velocity; the reduced speed is 64,000 gpm (4.04  $\text{m}^3/\text{s}$ ), with a 0.6 fps (0.2  $\text{m}/\text{s}$ ) approach velocity (Entergy 2007a).



Source: Entergy 2007a

**Figure 4: IP2 intake structure (left) and IP3 intake structure (right)**

The traveling screens employed by IP2 and IP3 are modified vertical Ristroph-type traveling screens installed in 1990 and 1991 at IP3 and IP2, respectively. The screens were designed in concert with the Hudson River Fishermen's Association, with screen basket lip troughs to retain water and minimize vortex stress (CHGEC 1999). Studies indicated that, assuming the screens continued to operate as they had during laboratory and field testing, the screens were "the screening device most likely to impose the least mortalities in the rescue of entrapped fish by mechanical means" (Fletcher 1990). The same study concluded that refinements to the screens would be unlikely to greatly reduce fish kills.



Source: Entergy 2007a

**Figure 5: IP2 intake system (left) and IP3 Intake system (right)**

There are two spray-wash systems—the high-pressure spray wash removes debris from the front of the traveling screen mechanism; the low-pressure spray washes fish from the rear of the mechanism into a fish sluce system to return them to the river. A 0.25 x 0.5-inch (in.) (0.635 x 1.27-centimeter (cm)) clear opening slot mesh on the screen basket panels was included to minimize abrasion as the fish were washed into the collection sluce. The sluce system is a 12-in.-diameter (30.5-cm-diameter) pipe that discharges fish into the river at a depth of 35 ft (10.7 m), 200 ft (61 m) from shore (CHGEC 1999).

## Status Review of Shortnose Sturgeon

### Life History

The shortnose sturgeon (*Acipenser brevirostrum*, family Acipenseridae) is amphidromous, with a range extending from the St. Johns River, FL, to the St. John River, Canada. Unlike anadromous species, shortnose sturgeon spend the majority of their lives in freshwater and move into salt water periodically without relation to spawning (Collette and Klein-MacPhee, 2002). From colonial times, shortnose sturgeon have rarely been the target of commercial fisheries but have frequently been taken as incidental bycatch in Atlantic sturgeon and shad gillnet fisheries (NEFSC 2006; Dadswell et al. 1984). The shortnose sturgeon was listed on March 11, 1967, as endangered under the ESA. In 1998, NMFS completed a recovery plan for the shortnose sturgeon (NMFS 1998).

Shortnose sturgeon can grow up to 143 cm (56 in.) in total length and can weigh up to 23 kilograms (kg) (51 pounds [lb]). Females are known to live up to 67 years, while males typically do not live beyond 30 years. As young adults, the sex ratio is 1:1; however, among fish larger than 90 cm (35 in.), measured from nose to the fork of the tail, the ratio of females to males increases to 4:1. Throughout the range of the shortnose sturgeon, males and females mature at 45 to 55 cm (18 to 22 in.) fork length, but the age at which this length is achieved varies by geography. At the southern extent of the sturgeon's range, in Florida, males reach maturity at age two, and females reach maturity at six years or younger; in Canada, males can reach maturity as late as 11 years, and females, 13 years. In one to two years after reaching

maturity, males begin to spawn at two-year intervals, while females may not spawn for the first time until five years after maturing and, thereafter, spawn at three- to five-year intervals (Dadswell et al. 1984).

In the Hudson River, shortnose sturgeon migrate into freshwater to spawn during late winter or early summer when water temperatures are between 8 and 15 degrees C (NMFS 2009). Eggs sink and adhere to the hard surfaces on the river bottom, hatching after 4 to 6 days. Larvae consume their yolk sac and begin feeding in 8 to 12 days, as they migrate downstream away from the spawning site, remaining close to the river bottom (Kynard 1997; Collette and Klein-MacPhee 2002). The juveniles, which feed on benthic insects and crustaceans, do not migrate to the estuaries until the following winter, where they remain for three to five years. As adults, they migrate to the near-shore marine environment, where their diet consists of mollusks and large crustaceans (Dadswell 1984).

### **Status of Shortnose Sturgeon in Hudson River**

Shortnose sturgeon inhabit the lower Hudson River; the Federal Dam creates a physical barrier preventing the species from swimming farther north. They are found dispersed throughout the river-estuary from late spring to early fall and then congregate to winter near Sturgeon Point (RM 86). Spawning occurs in the spring, just downstream of the Federal Dam at Troy, between RM 118 and 148 (between Coxsackie and Troy) (Bain et al. 2007; NMFS 2000). According to the NMFS environmental assessment (2000) for a permit for the incidental take of shortnose sturgeon at the nearby power plants, Roseton and Danskammer, larvae are typically found upstream of the intakes of all five power plants along the mid-Hudson River.

The Hudson River population of the shortnose sturgeon was estimated to be approximately 13,000 adults in 1979–1980. Based on population studies done in the mid-1990s, the population has apparently increased as much as 400 percent since then, up to almost 57,000 adult fish. Bain et al. (2007) suggested that the total population of the shortnose sturgeon in the Hudson River is approximately 61,000, including juveniles and nonspawning adults, although NMFS (2009) indicates that the adult population may be less than half that size (approximately 30,000 individuals). Woodland and Secor (2007) ascribed the population growth to several strong year-classes and two decades of sustained annual recruitment. Bain et al. (2007) maintained that the annual trawl surveys conducted by the electric utilities (CHGEC 1999) show an increase in abundance between the mid-1980s and mid-1990s, supporting the finding that the Hudson River population has increased. The NRC staff assessed the population trend for yearling and older shortnose sturgeon in the fall juvenile survey data provided by the applicant and found a small but statistically significant increase in the catch-per-unit-effort from 1975 to 2005.

### **Impact Assessment of Indian Point on the Shortnose Sturgeon Population Entrainment**

The southern extent of the shortnose sturgeon spawning area in the Hudson River is approximately RM 118 (RKM 190), about 75 RM (121 RKM) upstream of the intake of IP2 and IP3 (NMFS 2000). The eggs of shortnose sturgeon are demersal, sinking and adhering to the bottom of the river, and, upon hatching, the larvae in both yolk-sac and post-yolk-sac stages remain on the bottom of the river, primarily upstream of RM 110 (RKM 177) (NMFS 2000). Shortnose sturgeon larvae grow rapidly, and, after a few weeks, they are too large to be

entrained by the cooling intake (Dadswell 1979). Because the egg and larval life stages of the shortnose sturgeon (the life stages susceptible to entrainment) are not found near the intake for IP2 and IP3, the probability of their entrainment at IP2 and IP3 is low.

IP2 and IP3 monitored entrainment from 1972 through 1987. Entrainment monitoring became more intensive at Indian Point from 1981 through 1987, and sampling was conducted for nearly 24 hours per day, four to seven days per week, during the spawning season in the spring (NMFS 2000). Entrainment monitoring reports list no shortnose sturgeon eggs or larvae at IP2 and IP3. NMFS (2000) lists only eight sturgeon larvae collected at any of the mid-Hudson River power plants (all eight were collected at Danskammer, and four of the eight may have been Atlantic sturgeon). Entrainment sampling data supplied by the applicant (Entergy 2007b) include large numbers of larvae for which the species could not be determined, although sturgeon larvae are distinctive and most likely were identified when they occurred. Entergy currently conducts no monitoring program to record entrainment at IP2 and IP3, and any entrainable life stages of the shortnose sturgeon taken in recent years would go unrecorded.

Based on the life history of the shortnose sturgeon, the location of spawning grounds within the Hudson River, and the patterns of movement for eggs and larvae, the number of shortnose sturgeon in early life stages entrained at IP2 and IP3 is probably low or zero. The available data from past entrainment monitoring do not indicate that entrainment was occurring. Therefore, the NRC staff concludes that the continued operation of Indian Point for an additional 20 years is not likely to adversely affect the population of shortnose sturgeon in the Hudson River through entrainment.

#### **Impingement**

IP2 and IP3 monitored impingement of most fish species daily until 1981, reduced collections to a randomly selected schedule of 110 days per year until 1991, and then ceased monitoring in 1991 with the installation of the modified Ristroph traveling screens. IP2 and IP3 monitored the impingement of sturgeon species daily from 1974 through 1990 (Entergy 2009). As described in Section 2.2.5.3 of the 2008 draft SEIS (NRC 2008) and the final SEIS (NRC 2010), the Ristroph screens, installed in 1990 and 1991, were designed in a collaborative effort with the Hudson River Fishermen's Association to minimize the mortality of impinged fish.

In 2000, NMFS prepared an environmental assessment (EA) for the incidental take of shortnose sturgeon at Roseton and Danskammer (NMFS 2000). The EA included the estimated total number (Table 1) of shortnose sturgeon impinged at Roseton, Danskammer, Bowline Point, Lovett, and IP2 and IP3, with adjustments to include the periods when sampling was not conducted.

**Table 1: Estimated Total and Average Shortnose Sturgeon Impinged by Mid-Hudson River Power Plants, Adjusted for Periods Without Sampling**

Power Plant	1972–1998		1989–1998	
	Total	Average No. Impinged/Year	Total	Average No. Impinged/Year
Bowline Point	23	0.9	0	0
Lovett	0	0	0	0
IP2	37	1.4	8	0.8
IP3	26	1.0	8	0.8
Roseton	49	1.8	15	1.5
Danskammer Point	140	5.2	44	4.4
<b>Total</b>	<b>275</b>	<b>10.2</b>	<b>75</b>	<b>7.5</b>

Source: Adapted from NMFS 2000.

Entergy (2009) provided revised shortnose sturgeon impingement data (Table 2), which are available through the NRC's online Agencywide Documents Access and Management System (ADAMS). The average impingement rate of shortnose sturgeon at IP2 and IP3 combined from 1975 through 1990 is about four fish per year. Appendix 1 to this BA reproduces detailed information from Entergy (2009) on the impinged fish. These data are the most recent and complete available.

An increase in the population of shortnose sturgeon in the Hudson River would most likely result in an increase in impinged shortnose sturgeon at IP2 and IP3. If the population data presented by Bain et al. (2007) and Woodland and Secor (2007) are accurate, then a four-fold increase in population between the mid-1980s and mid-1990s could result in a similar increase in impingement rates. Impingement data (Table 2), however, do not increase concomitantly with population through 1990. A population increase would mean that the population-level effect of taking an individual shortnose sturgeon would decrease.

When considering the effects of impingement, it is important to consider the affected species' impingement mortality rate. For IP2 and IP3, however, there are few data regarding the survival of the shortnose sturgeon after impingement. In 1979, NMFS issued a biological opinion (BO) relating to the take of shortnose sturgeon at Indian Point (Dadswell 1979). At the time, there was only one year in which records describing the status of impinged shortnose sturgeon were kept. In that year, 60 percent of collected impinged shortnose sturgeon were dead when collected. The BO assumed both that all dead sturgeon died as a result of the impingement and that no impingement-related mortality occurred after the impinged sturgeon were released.

**Table 2: Estimated\* Numbers of Impinged Shortnose Sturgeon from Impingement Monitoring at Indian Point Units 2 and 3**

Year	Unit 2	Unit 3
1975	3	NA
1976	2	0
1977	11	2
1978	5	5
1979	4	3
1980	0	2
1981	0	0
1982	0	0
1983	0	0
1984	3	2
1985	0	0
1986	0	0
1987	0	2
1988	7	2
1989	0	2
1990	3	0
<b>Yearly Mean</b>	2.8	1.2
<b>Sum of Unit Yearly Means</b>	4.0	

\*Numbers are corrected for collection efficiency and then rounded to whole numbers.

NA means data not available.

Source: Entergy 2009, ML091950345

The BO estimated that, in a worst-case scenario, 35 shortnose sturgeon would be impinged at IP2 and IP3 per year, and that 60 percent (21 individuals) would die on the intake screens. At the time, the population of adult shortnose sturgeon in the Hudson River was estimated to be 6,000, and this level of mortality would result in a 0.3 to 0.4 percent death rate caused by impingement at IP2 and IP3 (Dadswell 1979). The average yearly impingement rate from 1975 through 1990 based on revised data (Entergy 2009) is about four shortnose sturgeon, a rate almost an order of magnitude lower than Dadswell's (1979) worst-case assumption of 35 fish per year in the BO. Also, as stated above, the population of shortnose sturgeon in the Hudson River has increased and the population-level effect of IP2/IP3 impingement is thus lower than was previously estimated by NMFS in its BO.

Because all monitoring of impingement ceased after the Ristroph screens were installed in 1991, no updated mortality rate estimates for impinged shortnose sturgeon exist at IP2 and IP3. The NRC staff does not know the current level of impingement or the level of mortality. Although the laboratory and field tests (Fletcher 1990) performed on the modified Ristroph screens were not conducted using the shortnose sturgeon, the tests did show that injury and death were reduced for most species when compared to the first version of screens that were proposed (and rejected, based on their "unexceptional performance") (Fletcher 1990). If the NRC staff assumes that the modified Ristroph screens performed as well as the Fletcher's 1990 results indicated, then mortality and injury from impingement would be lower than reported by the NMFS in its BO (Dadswell 1979), and the impact to the species would be less. Without current monitoring, however, the NRC staff cannot confirm this.

In its BO, NMFS (Dadswell 1979) found that that operation of IP2 and IP3 is "not likely to jeopardize the continued existence of the shortnose sturgeon because, even assuming 100% mortality of the impinged fish, its contribution to the natural annual mortality is negligible." The NRC staff finds that the best estimate of takes of shortnose sturgeon by IP2 and IP3 based on revised data (Entergy 2009) is much less than that assumed by Dadswell (1979) in the NMFS BO, that installation of Ristroph screens since the original BO was prepared may have decreased the mortality rate of shortnose sturgeon that are impinged, and that the population of shortnose sturgeon in the Hudson River is increasing although impingement rates appear not to have increased concomitantly through 1990. The NRC staff recognizes the difficulties in drawing conclusions from two-decade old impingement data and incomplete impingement mortality data, but concludes that, based on the best available information, impingement and entrainment resulting from operation of IP2 and IP3 for an additional 20 years beyond the original license term are not likely to jeopardize the continued existence of the endangered shortnose sturgeon in the Hudson River.

### **Thermal Impacts**

The discharge of heated water into the Hudson River can cause lethal or sublethal effects on resident fish, influence food web characteristics and structure, and create barriers to migratory fish moving from marine to freshwater environments.

State Pollution Discharge Elimination System (SPDES) permit NY-0004472 regulates thermal discharges associated with the operation of IP2 and IP3. This permit imposes effluent limitations, monitoring requirements, and other conditions to ensure that all discharges are in compliance with Article 17 of the Environmental Conservation Law of New York State, Part 704 of the Official Compilation of the Rules and Regulations of the State of New York, and the Clean Water Act. Specific conditions of the SPDES permit related to thermal discharges from IP2 and IP3 are specified by NYSDEC (2003) and include the following:

The maximum discharge temperature is not to exceed 110 degrees F (43 degrees C).

The daily average discharge temperature between April 15 and June 30 is not to exceed 93.2 degrees F (34 degrees C) for an average of more than 10 days per year during the term of the permit, beginning in 1981, provided that it not exceed 93.2 degrees F (34 degrees C) on more than 15 days during that period in any year.

The final environmental impact statement (FEIS) associated with the SPDES permit for IP2 and IP3 (NYSDEC 2003) concludes that "Thermal modeling indicates that the thermal discharge from Indian Point causes water temperatures to rise more than allowed." The thermal modeling referred to in the FEIS appears to represent a worst-case scenario; the modeling indicates the potential for the discharges from IP2 and IP3 to violate the conditions of the IP2 and IP3 SPDES permit, which could result in a negative impact on the shortnose sturgeon. IP2 and IP3 have not yet completed triaxial thermal studies, to completely assess the size and nature of the thermal plume created by the discharge from IP2 and IP3 and the possible impact on the sturgeon. The NRC staff understands, however, that Entergy has collected triaxial thermal data, and will submit a final, verified thermal model to NYSDEC in the next year.

According to the NMFS Final Recovery Plan for the Shortnose Sturgeon (NMFS 1998), "During summer months, especially in southern rivers, shortnose sturgeon must cope with the physiological stress of water temperatures that often exceed 82 degrees F (28 degrees C)." Although the area closest to the discharge from IP2 and IP3 can exceed these temperatures, the summer maximum temperature of the Hudson River in the area of IP2 and IP3 is 77 degrees F (25 degrees C) (Entergy 2007a). The combined discharge from both Indian Point units is about 1.75 million gpm (110 m<sup>3</sup>/s), including the service water (Entergy 2007a). Table 3 presents the net downstream flow (controlling for the influence of tides) of the Hudson River at Indian Point. These data suggest that discharges from IP2 and IP3 equal, at most, 15% of the river flow 20% of the time, while up to 2% of the time, IP2 and IP3 discharges equal 97% or more of the downstream river flow. This variation – due to differences in seasonal precipitation, tidal influence, and other factors – suggests that discharges may mix in very different ways under different conditions.

**Table 3: Cumulative Frequency Distribution of Net Downstream Flows of Hudson River**

Million gallons per minute (gpm)	Cumulative percentile
11.7	20
6.8	40
4.71	60
3.1	80
1.8	98

Adapted from Entergy 2007a

The NRC staff cannot determine, based on available information, whether a shortnose sturgeon in the Hudson River would experience any prolonged physiological stress from the thermal plume caused by the discharge from IP2 and IP3. Shortnose sturgeon could be forced to seek refuge from elevated water temperatures as they are forced to do in southern rivers, and this could limit their available habitat. If studies reveal that the plume is buoyant, shortnose sturgeon could pass underneath the plume on their passage past the facility, but there are no data to indicate that this is the case.

As noted earlier, the NYSDEC thermal modeling of the Hudson River suggests that the discharge from IP2 and IP3 could exceed the limits specified in the SPDES permit, but without a triaxial thermal study, the exact size and nature of the thermal plume is unknown. Information about the species, based on the NMFS recovery plan, suggests that increased temperatures can have a significant effect on the shortnose sturgeon. Therefore, the NRC staff concludes that the continued thermal effects from operation of IP2 and IP3 for an additional 20 years could potentially adversely affect the population of shortnose sturgeon in the Hudson River through thermal discharge, but the staff is unable to determine the extent to which the population would be affected.

## Conclusion

Renewal of the operating licenses of IP2 and IP3 to include another 20 years of operation could potentially adversely affect the population of shortnose sturgeon in the Hudson River due to the

thermal effects of once-through cooling. An analysis of the revised impingement data recently submitted by Entergy indicates that impingement and entrainment would not adversely affect the population of shortnose sturgeon. Sufficient information is not available at this time for the NRC staff to quantify the extent to which the shortnose sturgeon population could be affected by thermal effects, though forthcoming data is likely to provide additional information.

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## **Appendix 1 to Biological Opinion**

This appendix presents a reproduction of Tables 2a, 2b and 4 from Entergy (2009) showing detailed information on shortnose sturgeon impinged at IP2 and IP3 for the years 1974 through 1990. The Entergy submittal is available at ADAMS Accession No. ML091950345.

Table 2a. Individual Data File Records of Shortnose Sturgeon Collected by Impingement at Indian Point Unit No. 2 In Each Year, 1974 through 1990.

Unit	Year	Taxon	Date	Sample Number	Total Weight (g)	Length (mm)	Condition (alive or dead)	K20 Temp (deg C)	Total Count	Table V-38 DEIS 1999	DEIS 2008 Table 4-11	Coll. Eff. Adj. Cnt	Comments
2	1974	Shortnose Sturgeon	5-May-74	212506	532			7.0	1			2.19	
2	1974	Shortnose Sturgeon	20-Jun-74	217105	1702			21.5	1			3.02	
2	1974	Shortnose Sturgeon	8-Aug-74	222005	1588			25.7	1			3.39	
2	Total 1974	Shortnose Sturgeon							3	3	NR	8.60	1974 not reported in DEIS Table 4-11
2	1975	Shortnose Sturgeon	20-Jun-75	217105	84			23.0	1			3.14	
2	Total 1975	Shortnose Sturgeon							1	1	3	3.14	
2	1976	Shortnose Sturgeon	16-Feb-76	204708	253			2.5	1			2.01	
2	Total 1976	Shortnose Sturgeon							1	2	2	2.01	
2	1977	Shortnose Sturgeon	23-Jan-77	202309	516			0.5	1			1.94	
2	1977	Shortnose Sturgeon	23-Feb-77	205405	1800			3.0	1			2.09	
2	1977	Shortnose Sturgeon	2-Apr-77	209205	67			5.3	2			4.23	Two fish combined; no individual records
2	1977	Shortnose Sturgeon	25-May-77	214509	73			19.2	1			2.85	
2	Total 1977	Shortnose Sturgeon							5	6	11	11.06	
2	1978	Shortnose Sturgeon	9-Jan-78	200904	27			1.7	1			1.98	
2	1978	Shortnose Sturgeon	14-Nov-78	231808	940			14.5	1			2.55	
2	Total 1978	Shortnose Sturgeon							2	2	5	4.53	
2	1979	Shortnose Sturgeon	28-Feb-79	205909	567			0.7	1			1.95	
2	1979	Shortnose Sturgeon	29-Apr-79	211908	625			10.9	1			2.36	
2	Total 1979	Shortnose Sturgeon							2	2	4	4.31	
2	Total 1980	Shortnose Sturgeon							0	0	NR	0.00	
2	Total 1981	Shortnose Sturgeon							0	0	NR	0.00	
2	Total 1982	Shortnose Sturgeon							0	0	NR	0.00	
2	Total 1983	Shortnose Sturgeon							0	0	NR	0.00	
2	1984	Shortnose Sturgeon	30-May-84	215106	673			17.6	1			2.75	
2	Total 1984	Shortnose Sturgeon							1	1	176	2.75	
2	Total 1985	Shortnose Sturgeon							0	0	NR	0.00	
2	Total 1986	Shortnose Sturgeon							0	0	NR	0.00	
2	1987	Shortnose Sturgeon	8-Mar-87	206707	127	320	D	3.0	1			2.03	
2	1987	Shortnose Sturgeon	17-Feb-87	NS	1845	710	A	4.3	1			2.08	
2	Total 1987	Shortnose Sturgeon							2	1(1)	116	4.11	
2	1988	Shortnose Sturgeon	1-Feb-88	NS	637	580	D	1.6	1			1.98	
2	1988	Shortnose Sturgeon	27-Apr-88	NS	1160	605	D	14.1	1			2.52	
2	1988	Shortnose Sturgeon	4-Nov-88	NS	1785	671	D	13.9	1			2.52	
2	Total 1988	Shortnose Sturgeon							3	0(3)	NR	7.02	
2	Total 1989	Shortnose Sturgeon							0	0	NR	0.00	
2	1989	Shortnose Sturgeon	18-Sep-90	NS	687	443	D	25.5	1			3.37	
2	Total 1990	Shortnose Sturgeon							1	0(1)	NR	3.37	

NS : Collected on a non-scheduled sampling date

NR Not reported

na Not available

1.7 Water temperature estimated from weekly average

Blank space = no data in the SAS Impingement Data Files

(1) Numbers in parentheses indicate number of shortnose sturgeon taken on non-sample days

Table 2b. Individual Data File Records of Shortnose Sturgeon Collected by Impingement at Indian Point Unit No. 3 in Each Year, 1974 through 1990.

Unit	Year	Taxon	Date	Sample Number	Total Weight (g)	Length (mm)	Condition (alive or dead)	H2O Temp (deg C)	Total Count	V-38 DEIS 1999	DSEIS 2008 Table 4-11	Coll. Eff. Adj. Cnt	Comments
3	Total 1974	Shortnose Sturgeon							0	NR	NR	0.00	
3	Total 1975	Shortnose Sturgeon							NR	NR	NR	NR	
3	Total 1976	Shortnose Sturgeon							0	0	NR	0.00	
3	1977	Shortnose Sturgeon	23-Sep-77	326609	99			23.0	1			1.87	
3	Total 1977	Shortnose Sturgeon							1	1	2	1.87	
3	1978	Shortnose Sturgeon	27-Jan-78	302709	65			3.8	1			1.46	
3	1978	Shortnose Sturgeon	2-Mar-78	306109	54			2.9	1			1.44	
3	1978	Shortnose Sturgeon	27-May-78	314709	62			16.9	1			1.72	
3	Total 1978	Shortnose Sturgeon							3	3	5	4.62	
3	1979	Shortnose Sturgeon	3-Apr-79	309309	450			8.0	1			1.53	
3	1979	Shortnose Sturgeon	4-May-79	312407	595			12.2	1			1.61	
3	Total 1979	Shortnose Sturgeon							2	2	3	3.14	
3	1980	Shortnose Sturgeon	29-Apr-80	312004	525			13.3	1			1.64	
3	Total 1980	Shortnose Sturgeon							1	1	2	1.64	
3	Total 1981	Shortnose Sturgeon							0	0	NR	0.00	
3	Total 1982	Shortnose Sturgeon							0	0	NR	0.00	
3	Total 1983	Shortnose Sturgeon							0	0	NR	0.00	
3	1984	Shortnose Sturgeon	19-May-84	314010	598			15.8	1			1.69	
3	Total 1984	Shortnose Sturgeon							1	1	154	1.69	
3	Total 1985	Shortnose Sturgeon							0	0	NR	0.00	
3	Total 1986	Shortnose Sturgeon							0	0	NR	0.00	
3	1987	Shortnose Sturgeon	29-Apr-87	311908	325	433	D	13.0	1			1.63	
3	Total 1987	Shortnose Sturgeon							1	1	35	1.63	
3	1988	Shortnose Sturgeon	19-Aug-88	323210	479	434	D	28.0	1			2.02	
3	Total 1988	Shortnose Sturgeon							1	1	166	2.02	
3	1989	Shortnose Sturgeon	6-Oct-89	NS	600	530	A	21.0	1			1.82	
3	Total 1989	Shortnose Sturgeon							1	0(1)	NR	1.82	
3	Total 1990	Shortnose Sturgeon							0	0	NR	0.00	

NS Collected on a non-scheduled sampling date

NR Not reported

na Not available

1.7 Water temperature estimated from weekly average

Blank space = no data in the SAS Impingement Data Files

(1) Numbers in parentheses indicate number of shortnose sturgeon taken on non-sample days.

Table 4. Impingement Data File Level 5 Actual Counts and Level 5 Counts Adjusted for Collection Efficiency for Shortnose and Atlantic Sturgeon Collected in Impingement Samples, Indian Point, 1975 through 1991

Study Year	IP2						IP3						IP2 & IP3	
	Shortnose Sturgeon		Atlantic Sturgeon		Total IP2		Shortnose Sturgeon		Atlantic Sturgeon		Total IP3		Grand Total Level 5 Collection Efficiency	Grand Total Level 5 Adjusted Count
	Level 5 Count	Efficiency <sup>a</sup>	Level 5 Count	Efficiency	Level 5 Count	Efficiency	Level 5 Count	Efficiency	Level 5 Count	Efficiency	Level 5 Count	Efficiency		
1975	1	3.14	118	301.81	119	304.95	NR	NR	NR	NR	NR	NR	119	304.95
1976	1	2.01	8	16.64	9	18.65	0	0.00	8	14.09	8	14.09	17	32.74
1977	5	11.06	44	104.85	49	115.91	1	1.87	153	252.20	154	254.07	203	369.98
1978	2	4.53	16	38.28	18	42.81	3	4.62	21	31.43	24	36.05	47	78.86
1979	2	4.31	32	74.75	34	79.06	2	3.14	38	60.97	40	64.11	74	143.17
1980	0	0.00	9	23.72	9	23.72	1	1.64	10	18.54	11	18.22	20	41.94
1981	0	0.00	3	8.01	3	8.01	0	0.00	5	7.46	5	7.46	8	15.47
1982	0	0.00	1	2.39	1	2.39	0	0.00	1	1.41	1	1.41	2	3.80
1983	0	0.00	3	6.11	3	6.11	0	0.00	0	0.00	0	0.00	3	6.11
1984	1	2.75	3	6.43	4	9.18	1	1.69	5	9.75	6	11.44	10	20.62
1985	0	0.00	9	19.23	9	19.23	0	0.00	17	25.00	17	25.00	26	44.23
1986	0	0.00	2	5.54	2	5.54	0	0.00	5	5.79	5	5.79	7	11.33
1987	2	4.11	2	6.01	4	10.12	1	1.63	1	1.79	2	3.42	6	13.54
1988	3	7.02	1	2.11	4	9.13	1	2.02	0	0.00	1	2.02	5	11.15
1989	0	0.00	0	0	0	0.00	1	1.82	0	0.00	1	1.82	1	1.82
1990	1	3.37	0	0	1	3.37	0	0.00	2	3.07	2	3.07	3	6.44
Grand Total	18	42.30	251	615.88	269	658.14	11	18.43	288	429.54	277	447.97	546	1,108.13

NR - Not reported

<sup>a</sup> Unit specific collection efficiency coefficients calculated according to the equations presented in the 1990 Indian Point Annual Report and applied to the Level 5 raw count.

M. Colligan

- 4 -

you have any questions regarding this BA or the NRC staff's request, please contact Mr. Andrew Stuyvenberg, Environmental Project Manager, at 301-415-4006 or by e-mail at [Andrew.Stuyvenberg@nrc.gov](mailto:Andrew.Stuyvenberg@nrc.gov).

Sincerely,

/RA/

David J. Wrona, Chief  
Projects Branch 2  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket Nos. 50-247 and 50-286

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Letter to Mary A. Colligan from David J. Wrona dated December 10, 2010

**SUBJECT: REVISED BIOLOGICAL ASSESSMENT FOR LICENSE RENEWAL OF THE  
INDIAN POINT NUCLEAR GENERATING PLANT, UNIT NOS. 2 AND 3**

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**Riverkeeper, Inc. Combined Reply to NRC Staff and Entergy's Answers to  
Riverkeeper's Motion for Leave to File a New Contention and New Contention  
Concerning NRC Staff's Final Supplemental Environmental Impact Statement**

**Riverkeeper Contention EC-8: Attachment D**



**RIVERKEEPER.**  
NY's clean water advocate

November 5, 2010

VIA E-MAIL AND FIRST-CLASS MAIL

Chief, Rules Review and Directives Branch  
U.S. Nuclear Regulatory Commission  
Mail Stop TWB-05-B01  
Washington, DC 20555-0001  
[IndianPoint.EIS@nrc.gov](mailto:IndianPoint.EIS@nrc.gov)

Re: Riverkeeper, Inc. Supplemental Comments on the U.S. Nuclear Regulatory Commission's Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 38, Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, Draft Report for Comment, Docket Nos. 50-247 and 50-286

Dear Rules Review and Directives Branch Chief:

Please accept the following supplemental comments of Riverkeeper, Inc. ("Riverkeeper"), on the above-referenced draft environmental impact statement regarding the license renewal of Indian Point nuclear generating Units 2 and 3 (hereinafter "IP DSEIS"). Riverkeeper previously submitted comments on the IP DSEIS on March 18, 2009, in accordance with the prescribed deadline,<sup>1</sup> as well as on April 2, 2010, to advise the U.S. Nuclear Regulatory Commission ("NRC") Staff of new information relevant to the environmental review process.<sup>2</sup> Riverkeeper herein offers the following further additional comments to ensure that NRC Staff's review

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<sup>1</sup> Riverkeeper, Inc.'s Comments on the U.S. Nuclear Regulatory Commission's Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 38, Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, Draft Report for Comment, Docket Nos. 50-247 and 50-286 (March 18, 2009), ADAMS Accession No. ML090860983 (hereinafter "Riverkeeper's IP DSEIS Comments").

<sup>2</sup> Riverkeeper, Inc. Supplemental Comments on the U.S. Nuclear Regulatory Commission's Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 38, Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, Draft Report for Comment, Docket Nos. 50-247 and 50-286 (April 2, 2010), ADAMS Accession No. ML101030178 (Explaining how recent information regarding a proposal for a new high-voltage direct current energy transmission project bears upon the NRC Staff's obligation to fully assess alternatives to license renewal in the IP DSEIS, including alternative sources of energy to replace the power generated by Indian Point).

considers all appropriate information concerning endangered and threatened aquatic resources that will be impacted by the continued operation of Indian Point.

### New Information Concerning Atlantic Sturgeon in the Hudson River

On October 6, 2010, the National Marine Fisheries Service (“NMFS”) officially proposed the listing of the New York Bight population segment of Atlantic sturgeon as “endangered.”<sup>3</sup> A copy of this Proposed Listing is attached hereto as Attachment 1.

In the Proposed Listing, NMFS explains the importance of the Hudson River for the survival and propagation of Atlantic sturgeon:

Atlantic sturgeon spawn in the Hudson River in May through July . . . Atlantic sturgeon have been documented from the Hudson and Delaware rivers . . . Genetic analyses of samples from Atlantic sturgeon caught in Mid-Atlantic sink gillnet gear revealed that the majority of fish originated from the Hudson River.<sup>4</sup>

NMFS explicitly recognized that the operation of Indian Point’s destructive once-through cooling water intake structure impacts this critical species in the river:

The Hudson River has six power plants located between rkm 34–74, which *overlap with known nursery grounds for Atlantic Sturgeon larvae and early juveniles* located at rkm 43–100. Of the six power plants located in this area, the Danskammer, Roseton, Lovett, and *Indian Point pose the greatest risk to Atlantic sturgeon.*<sup>5</sup>

It is imperative that NRC Staff review the environmental impacts of license renewal of Indian Point on Atlantic sturgeon in the Hudson River with due consideration for this recent development. However, a review of the IP DSEIS reveals that NRC Staff review is wanting in light of this new information regarding the imperiled nature of Atlantic sturgeon. For example, NRC Staff apparently accepted the 2007 conclusion of the “Status Review Team for Atlantic sturgeon” that “the Hudson River subpopulation has a moderate risk (less than 50 percent) of becoming endangered in the next years” and emphasized that “the Hudson River supports the

<sup>3</sup> Proposed Rule; Request for Comments, Endangered and Threatened Wildlife and Plants; Proposed Listing Determinations for Three Distinct Population Segments of Atlantic Sturgeon in the Northeast Region, 50 CFR Parts 223 and Part 224, RIN 0648–XJ00, Docket No. 100903414–0414–02, 75 Fed. Reg. 61,872, 61,872 (Oct. 6, 2010) (hereinafter “Proposed Listing”) (“We, NMFS, have completed an Endangered Species Act (ESA) status review for Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Based on the status review report (ASSRT, 2007), and other information available since completion of the status review report, we have determined that the species is comprised of five distinct population segments (DPSs) that qualify as species under the ESA: . . . New York Bight (NYB) . . . We have also determined that, for those DPSs that are located within the jurisdiction of NMFS’ Northeast Region . . . listing as endangered is warranted for the NYB DPS”). The New York Bight encompasses the Hudson River. *See id.* at 61,876 (“the “New York Bight (NYB)” population segment . . . includes Atlantic sturgeon originating from the Hudson and Delaware Rivers”).

<sup>4</sup> *See* Proposed Listing at 61,875, 81,881, 61,887–88.

<sup>5</sup> *Id.* at 61,890 (emphasis added).

largest subpopulation of spawning adults and juveniles, and some long-term surveys indicate that the abundance has been stable since 1995 or is even increasing.”<sup>6</sup>

Thus, while NRC Staff may have “prepared information regarding the potential impact on important species, including Atlantic sturgeon,”<sup>7</sup> in light of new information present in NMFS’s Proposed Listing, it is not clear that NRC Staff reviewed the potential impacts to this species to an appropriate degree.

Moreover, as Riverkeeper discussed in our previously submitted comments, a complete lack of sufficient or recent data relating to impingement, entrainment and thermal impacts of Indian Point on Atlantic sturgeon in the Hudson River has resulted in NRC Staff making uselessly vague conclusions regarding the degree of impact to this critical species.<sup>8</sup> Given the impending official designation of Atlantic sturgeon in the Hudson River as “endangered,” NRC Staff’s thinly supported assessment and indefinite conclusions are clearly insufficient for purposes of meeting the obligations of the National Environmental Policy Act (“NEPA”).<sup>9</sup>

Thus, NRC Staff’s assessment should consider and incorporate all relevant information contained in the Proposed Listing prior to reaching any final conclusions related to the impacts of license renewal of Indian Point on endangered aquatic resources. A thorough consideration of the information which had led NMFS to propose Atlantic sturgeon in the Hudson River as “endangered” is the only way to ensure that NRC Staff reaches accurate, reasoned conclusions.<sup>10</sup>

### **NRC Staff’s Forthcoming Unfinished Evaluation of Impacts to Endangered Aquatic Resources**

Due to the potential impacts of Indian Point on shortnose sturgeon, a listed endangered species, in early 2009 NRC sent NMFS a request for formal § 7 “consultation” pursuant to the ESA. It is

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<sup>6</sup> IP DSEIS at pg. 2-77.

<sup>7</sup> IP DSEIS Appendix E at E-88.

<sup>8</sup> See Riverkeeper’s IP DSEIS Comments at 17; see also IP DSEIS at 4-52 (“Because of the uncertainty of the current impingement losses of both species of sturgeon and because insufficient data exist to use the WOE [weight of evidence] approach . . . IP2 and IP3 has the potential to adversely affect the Atlantic and shortnose sturgeons during the license renewal term. Therefore, the NRC staff concludes that the impacts of an additional 20 years (beyond the current term) of operation . . . on aquatic species that are Federally listed as threatened or endangered could be SMALL to LARGE.”). Also as discussed in Riverkeeper’s IP DSEIS Comments, such a conclusion lacks any kind of definitiveness and is essentially meaningless. See Riverkeeper’s IP DSEIS Comments at 14-15.

<sup>9</sup> See generally Riverkeeper’s IP DSEIS Comments at 13-15, 17 (discussing the problems associated with relying on insufficient biological data in relation to impacts of Indian Point on shortnose sturgeon and Atlantic sturgeon).

<sup>10</sup> If and when the New York Bight population segment of Atlantic sturgeon is actually listed as “endangered,” NRC Staff should engage in § 7 consultation under the ESA, and issue an addendum to the Final Supplemental Environmental Impact Statement (“FSEIS”) regarding the license renewal of Indian Point that appropriately accounts for the outcome of such consultation. In fact, Riverkeeper’s communications with NMFS indicate that NMFS is already considering the necessity of “conferencing” for this species. Formal consultation will be an effective way of ensuring that the “taking” of Atlantic sturgeon by Indian Point will be properly mitigated. See IP DSEIS at 4-52 (discussing how a “biological opinion” from NMFS in relation to shortnose sturgeon, a part of the § 7 consultation process, would include “any reasonable and prudent measures that the applicant could undertake, as well as the terms and conditions for the applicant to comply with the formal Section 7 consultation. Possible mitigation measures could range from monitoring to determine the number of shortnose sturgeon impinged at IP2 and IP3 to changes in the cooling water intake”).

Riverkeeper's understanding that NMFS responded by indicating it did not have enough information to engage in official "consultation" and by, thusly, requesting further information. It is further Riverkeeper's understanding that NRC subsequently indicated it would provide such requested information in a revised Biological Assessment ("BA"). Riverkeeper's recent communication with NMFS indicates that this revised BA will be forthcoming in early November 2010, *almost two years* after NRC Staff first initiated consultation.<sup>11</sup> Riverkeeper recognizes that once NMFS has determined it has all the information necessary for official "consultation," it will have 135 days to produce a Biological Opinion.<sup>12</sup>

Based on these circumstances, it is evident that ESA "consultation" will be going on for months after the NRC Staff officially concludes the environmental review process in the Indian Point license renewal proceeding.<sup>13</sup> This consultation is necessary to determine how illegal "takings" of endangered species by Indian Point may be adequately addressed, if at all. Thus, the outcome is crucial for determining whether the continued operation of Indian Point is consistent with the existence of endangered species in the Hudson River.

Riverkeeper seriously questions NRC Staff's ability to draw final, definitive conclusions as to the impact continued operation of Indian Point will have on endangered species in the Hudson River, while the consultation process is ongoing. Furthermore, without accurate conclusions regarding Indian Point's impact to endangered aquatic resources, NRC will not be in a position to make final conclusions regarding the overall environmental impact of Indian Point's proposed license renewal. Any conclusions reached without the benefit of the outcome of the consultation process would be rendered unsupported, and call into question whether NRC Staff has meaningfully complied with the spirit and intent of NEPA, which requires a hard look at all relevant environmental impacts of a project.

Thus, Riverkeeper respectfully requests that NRC withhold final judgment on relevant issues pending the outcome of the consultation process, issue a supplement to the FSEIS once the consultation is complete appropriately incorporating any findings and conclusions ascertained from that process, or otherwise clarify and explain how it intends to reconcile this situation.

### **Conclusion**

For the reasons articulated above, Riverkeeper submits that the NRC Staff must consider new information concerning the Proposed Listing of Atlantic Sturgeon to the Endangered Species List in the environmental review process for the license renewal of Indian Point, and explain how the as-yet unfinished "consultation process" concerning endangered species in the Hudson River will be accounted for in the final outcome of NRC Staff's review.

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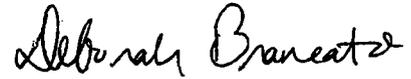
<sup>11</sup> As of the date of this letter, Riverkeeper is not aware that this revised BA has yet been submitted to NMFS.

<sup>12</sup> Furthermore, as evidenced by the Proposed Listing, and as NMFS has acknowledged to Riverkeeper, it may be prudent and necessary to engage in formal consultation in relation to Atlantic sturgeon in the near future.

<sup>13</sup> As of November 2, 2010, NRC Staff's projected completion date for the FSEIS regarding Indian Point license renewal is on or before November 19, 2010. See NRC Staff's Fourth FSEIS Status Report (Nov. 2, 2010).

Riverkeeper appreciates your consideration of the foregoing. Should you have any questions about any of the above comments or require further information, please do not hesitate to contact the undersigned at (914) 478-4501, ext. 230, or via e-mail at [dbrancato@riverkeeper.org](mailto:dbrancato@riverkeeper.org).

Sincerely,



Deborah Brancato  
Staff Attorney

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U.S. Nuclear Regulatory Commission  
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March 14, 2011