NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of Entergy Nuclear Indian Point 2, LLC, Entergy Nuclear Indian Point 2, LLC, Entergy Nuclear Operations Inc.'s Joint Application for CWA § 401 Water Quality Certification	)	**DEC Nos.: 3-5522-00011/00030 (IP2) and 3-5522-00105/00031 (IP3)**

RIVERKEEPER, NATURAL RESOURCES DEFENSE COUNCIL, AND SCENIC HUDSON PETITION FOR FULL PARTY STATUS AND ADJUDICATORY HEARING

July 10, 2010

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INTRODUCTION

Pursuant to 6 N.Y.C.R.R. § 624.5(b), Riverkeeper, Inc. ("Riverkeeper"), Natural Resources Defense Council ("NRDC"), and Scenic Hudson, Inc. ("Scenic Hudson") (collectively referred to as "Petitioners") respectfully request full party status and an adjudicatory hearing on the above-referenced Joint Application of Entergy Nuclear Indian Point 2, LLC, Entergy Nuclear Indian Point 3, LLC, and Entergy Nuclear Operations, Inc. (hereinafter collectively referred to as "Entergy") for a Water Quality Certification ("WQC") under § 401 of the federal Clean Water Act ("CWA"). On April 2, 2010, the New York State Department of Environmental Conservation ("DEC") Staff issued a Notice of Denial of the subject application ("Notice of Denial"). Entergy thereafter, on April 29, 2010, submitted a request for an adjudicatory hearing, contesting the legal and factual bases of DEC Staff's decision ("Entergy's Hearing Request").

Petitioners herein seek full party status in this proceeding in support of the various grounds cited by DEC Staff for denying Entergy's Application for WQC, and in support of other further grounds not relied upon by DEC Staff, but which also warrant such denial and/or appropriate conditions. Riverkeeper will be represented by Phillip Musegaas, Esq., Rebecca Troutman, Esq., Deborah Brancato, Esq. (Riverkeeper, 828 South Broadway, Tarrytown, New York 10591), Daniel E. Estrin, Esq., and Karl Coplan, Esq. (Pace Environmental Litigation Clinic, 78 North Broadway, E-House, White Plains, New York 10603). NRDC will be represented by Geoffrey Fettus, Esq. 1200 New York Ave., NW, Suite 400, Washington, D.C. 20005. Scenic Hudson will be represented by Paul Schwartzberg, One Civic Center Plaza, Poughkeepsie, NY 12601.

BACKGROUND

The Indian Point nuclear power plant, situated on the banks of the Hudson River in Buchanan, New York and currently owned by Entergy, consists of two active reactors, Units 2 and 3, which began operating in 1973 and 1975, respectively. These reactors were originally licensed to operate for 40 years. Accordingly, the current operating licenses for Units 2 and 3 are set to expire in 2013 and 2015, respectively. Entergy is seeking to operate the two Indian Point reactors for an additional twenty years

beyond the expiration of their current licenses. Entergy's application for operating license renewal for Indian Point is currently pending before the Nuclear Regulatory Commission ("NRC"). In support of this effort, on April 3, 2009, Entergy applied to DEC for a necessary WQC pursuant to § 401 of the CWA ("Entergy's Application for WQC"). Section 401 requires that, prior to the issuance of a federal license or permit, the State must certify that the action meets State water quality standards. Thus, Entergy's Application for WQC seeks certification from DEC that the proposed action of license renewal, i.e., continued operation of Indian Point Units 2 and 3 for twenty years beyond their current license terms, will not violate New York State water quality standards.

NEW YORK STATE WATER QUALITY STANDARDS

Under CWA § 401, States are obligated to ensure compliance with state "water quality standards." It is well established that such "water quality standards" encompass both numerical criteria, as well as the designated uses of the subject waterway.[1] In the instant proceeding, this assessment implicates numerous standards established by DEC in New York State in accordance with the CWA, as set forth in 6 N.Y.C.R.R. Parts 701 through 704. In particular, the continued operation of Indian Point will have an impact upon the Hudson River, as well as the groundwater beneath and around the plant.

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[1] Generally, it is well-settled that during assessment under CWA § 401, the reviewing agency must ensure compliance not simply with numerical criteria, but also with the other component of the state's water quality standards, i.e., the designated uses of the subject waterway. See *PUD No. 1 v. Washington Dep't of Ecology*, 511 U.S. 700, 714-15 (1994) (upholding a § 401 WQC condition requiring minimum stream flows necessary to ensure consistency with the designated use of the water body as fish habitat, finding that the certifying agency has to make sure that the project is "consistent with both components [of the WQS], namely the designated use and the water quality criteria."); *see also Chasm Hydro, Inc. v. State Dep't of Envtl. Conservation*, 14 N.Y.3d 27, 32 (N.Y. 2010) (acknowledging that consistency with designated uses is part of § 401 WQC); *Niagara Mohawk Power Corp. v. State Dep't of Envtl. Conservation*, 82 N.Y.2d 191, 197, 200-01 (N.Y. 1993) (acknowledging that water quality standards consist of both designated uses and numerical criteria, and that the state's job in a § 401 certification review is to ensure compliance with such water quality standards); *Port of Oswego Auth. v. Grannis*, 897 N.Y.S.2d 736, 739 (N.Y. App. Div. 2010) (acknowledging that § 401 WQC requires ensuring that waters will not be impaired for their best usages); *In re Application for a SPDES Permit by Mirant Bowline*, 2002 N.Y. ENV LEXIS 22, *46 (2002) (DEC, in the context of issuing a permit for an electric generating facility using a cooling water intake structure, acknowledging that EPA had recognized that under § 401, a state may impose requirements "necessary to ensure attainment of water quality standards, including *designated uses*, criteria, and antidegradation requirements.") (emphasis added); *In re Application of Erie Boulevard Hydropower, L.P., for a 401 Water Quality Certification for the School Street Project*, 2000 ENV LEXIS 88, *4 (2000) (acknowledging the holding in *PUD* that a State may impose conditions on 401 certifications insofar as necessary to enforce a designated use contained in the State's water quality standard); *In re Application for a SPDES Permit by Athens Generating Co.*, 2000 N.Y. ENV LEXIS 40, *94-95 (2000) (positively acknowledging the minimum stream flow requirement imposed to maintain a designated use upheld in *PUD*).

Thus, WQC hinges upon whether continued operation of Indian Point, as proposed by Entergy, will comply with the designated uses and other narrative and/or numerical criteria applicable to these waters of New York.

Relevant Designated Uses

New York State classifications of surface waters for their best uses dictate that the Hudson River "shall be suitable for fish, shellfish, and wildlife propagation and survival."[2] Moreover, for all portions of the Hudson River, DEC has consistently designated fishing as a "best usage."[3] In the particular region where Indian Point is located, the Hudson River is classified as "SB saline surface waters."[4] The "best usages" of this class of water are "primary and secondary contact recreation and fishing."[5] This includes "recreational activities where the human body may come in direct contact with raw water to the point of complete body submergence," such as "swimming, diving, water skiing, skin diving and surfing,"[6] and "recreational activities where contact with the water is minimal and where ingestion of the water is not probable," such as "fishing and boating."[7] Varying portions of the rest of the Hudson River have also been designated for such primary and/or secondary contact recreational purposes.[8]

Regarding groundwater, all fresh groundwaters of New York State are classified as "GA fresh groundwaters."[9] The groundwater at Indian Point falls within this classification.[10] The best usage of "GA

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[2] DEC has assigned varying classifications to different portions of the Hudson River including "Class I saline surface waters," "Class SB saline surface waters," "Class A fresh surface waters," "Class B fresh surface waters," "Class C fresh surface waters," and "Class AA fresh surface waters." *See* 6 N.Y.C.R.R. §§ 864.6, 858.4, 941.6. All of these classifications state that such "waters shall be suitable for fish, shellfish, and wildlife propagation and survival." *See* 6 N.Y.C.R.R. §§ 701.5, 701.6, 701.7, 701.8, 701.11, 701.13.

[3] The varying classifications of the Hudson River (*see supra* Note 3), all designate fishing as a "best usage." *See* 6 N.Y.C.R.R. §§ 701.5, 701.6, 701.7, 701.8, 701.11, 701.13.

[4] *See* 6 N.Y.C.R.R. § 864.6 (classifying the portion of the Hudson River from the New York State Bronx County line to Bear Mountain Bridge as "Class SB saline surface waters").

[5] 6 N.Y.C.R.R. § 701.11.

[6] *Id.* § 700.1(a)(49).

[7] *Id.* § 700.1(a)(56).

[8] The portion of the Hudson River from the mouth at the New York Harbor to the New York State Bronx County line is classified as "Class I saline surface waters," the best uses of which are for secondary contact recreation and fishing. *See* 6 N.Y.C.R.R. §§ 864.6; 701.13. Upstream of Indian Point, the Hudson River is classified as either "Class A fresh surface waters," "Class B fresh surface waters," "Class C fresh surface waters," or "Class AA fresh surface waters." *See* 6 N.Y.C.R.R. §§ 858.4, 941.6. The "best usages" for all of these classes of water include "primary and secondary contact recreation." *See* N.Y.C.R.R. § 701.5, 701.6, 701.7, 701.8.

[9] 6 N.Y.C.R.R. §§ 701.18, 701.15.

fresh groundwater" is "as a source of potable water supply."[11] "Potable water" is defined as "those fresh waters usable for drinking, culinary or food processing purposes."[12]

Relevant Narrative Standards

Narrative standards applicable to the Hudson River and New York State groundwaters provide, *inter alia*, that toxic or other deleterious substances shall not be present in the water in amounts that "impair the waters for their best usages."[13] Moreover, a water quality standard related to thermal water impacts states that "[a]ll thermal discharges to the waters of the State shall assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water."[14] Lastly, New York's water quality standards also require that "[t]he location, design, construction and capacity of cooling water intake structures, in connection with point source thermal discharges, shall reflect the best technology available for minimizing adverse environmental impacts."[15]

Finding numerous violations of the foregoing New York State water quality standards, DEC Staff denied Entergy's Application for WQC, which Entergy now contests.

PETITIONERS' ENVIRONMENTAL INTEREST

DEC's regulations grant full party status to petitioners who demonstrate, *inter alia*, an "adequate environmental interest." 6 N.Y.C.R.R. § 624.5(d)(1)(iii). Petitioners easily meet this requirement. Together, Petitioners and their members comprise a substantial portion of the people with the most direct interest in the Hudson River and its ecosystem, as well as the history of activism to protect it. In particular, the following demonstrates that Petitioners have more than the "adequate environmental interest" required for full party status in the instant proceeding.

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[10] *See* Entergy's Detailed Responses to the New York State Department of Environmental Conservation's Request for Information, dated May 13, 2009) at 8, *available at*, http://www.dec.ny.gov/docs/permits_ej_operations_pdf/elecbdrdetresp.pdf (last accessed July 9, 2010).
[11] 6 N.Y.C.R.R. § 701.15.
[12] *Id.* § 700.1(a)(48).
[13] *Id.* § 703.2.
[14] *Id.* § 704.1(a).
[15] *Id.* § 704.5

Riverkeeper's Environmental Interest

Riverkeeper is a New York State not-for-profit public interest organization dedicated to protecting the ecological, recreational, commercial, and aesthetic qualities of the Hudson River and its watershed and tributaries. Riverkeeper is the surviving corporation that resulted from a merger in 1986 with the Hudson River Fisherman's Association, Inc., a private conservation organization founded by fishermen in 1966 to protect and conserve the Hudson River.

Riverkeeper's approximately 4,000 active members, many of whom reside in the Hudson Valley at or near the river, share a deep commitment towards the protection of the river's water quality and rich ecosystem, particularly its fisheries. Its members use the river, its tributaries, and its banks for a variety of purposes, including recreational and commercial fishing, swimming, boating, hiking, and additional aesthetic enjoyment from its natural beauty and biodiversity.

In order to protect the Hudson River from degradation and misuse, Riverkeeper, on behalf of its members, enforces and facilitates others' enforcement of federal environmental laws, including the CWA, Resource Conservation and Recovery Act, and Endangered Species Act, and New York's Environmental Conservation Law, including the New York State Environmental Quality Review Act and State Pollution Discharge Elimination System ("SPDES") law. Riverkeeper and its members have participated in and continue to participate in numerous legal proceedings against various polluters and others damaging the Hudson River and its tributaries.

Since its inception, Riverkeeper has used litigation, science, advocacy, and public education to raise and address concerns relating to the operation of the Indian Point nuclear power plant. For decades, Riverkeeper has fought tirelessly against the continued use of an environmentally destructive cooling water intake system at Indian Point. In more recent years, Riverkeeper has been actively involved in addressing newly discovered accidental leaks of radioactive water to the environment from degraded plant components. As a party in the license renewal proceeding currently pending before the NRC,[16]

[16] *See* Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3), Memorandum and Order, Ruling on Petitions to Intervene and Requests for Hearing, Docket Nos. 50-247-LR, 50-286-LR, ASLBP No. 07-

Riverkeeper continues to play an integral role in addressing concerns regarding these leaks on behalf of our members.

Entergy's plans to continue operating Indian Point as proposed in Entergy's Application for WQC would lead to ongoing excessive fish kills and other environmental degradation from radioactive leaks that will injure Riverkeeper's members by impairing their ecological and recreational interest in the Hudson River. Riverkeeper and its members clearly merit the opportunity to demonstrate why such ongoing operation is wholly inconsistent with New York State water quality standards.

NRDC's Environmental Interest

As a national not-for-profit environmental advocacy environmental organization organized under the laws of New York State and headquartered in New York City, NRDC includes among its principal purpose safeguarding the earth's people, its plants and animals, and the natural systems on which all life depends. The protection of the environment, including the land, air, energy, and water, as well as advocacy to protect aquatic life from adverse impacts from power plants such as harm from cooling water intake structures, remain core functions of its organizational mission. Founded in 1970, NRDC is composed of approximately 1.3 million members, tens of thousands of which live in New York State. NRDC strives to protect nature in ways that advance the long-term welfare of present and future generations by working to foster the fundamental right of all people to have a voice in decisions that affect their environment. Many of NRDC's members engage in fishing, swimming, boating, and other recreational, conservation, education, and aesthetic activities in the Hudson River and the New York Harbor, into which the Hudson River flows.

Scenic Hudson's Environmental Interest

Scenic Hudson is a not-for-profit environmental organization and separately incorporated land trust dedicated to protecting and enhancing the scenic, natural, historic, agricultural, and recreational

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858-03-LR-BD01, LBP-08-13 (July 31, 2008), *accessible at*, http://www.nrc.gov/reading-rm/adams/web-based.html, ADAMS Accession No. ML082130436 ("IP License Renewal Memorandum and Order") (admitting Riverkeeper as a party in the Indian Point license renewal proceeding, and advancing three contentions filed by Riverkeeper to an adjudicatory hearing, one related to spent fuel pool leaks at Indian Point).

treasures of the Hudson River and its valley. Scenic Hudson was originally founded to oppose the proposed Storm King Mountain pumped storage electrical generation facility. Since its incorporation, Scenic Hudson has been an active participant in efforts to promote environmentally sound development and protection of the Hudson River Valley. Scenic Hudson is dedicated to protecting and restoring the Hudson River, its riverfront and the majestic vistas and working landscapes beyond as an irreplaceable national treasure for America and a vital resource for residents and visitors.

Scenic Hudson has approximately 20,000 members from New York State and the nation, a majority who reside in the counties along the Hudson River. Its supporters are regular users of the Hudson River for fishing, boating, swimming, and other activities. Scenic Hudson's interests include protecting and improving the River's water quality and aquatic life.

Petitioners' Historic Involvement in Power Plant Water Intake Issues

Petitioners' substantial participation in decades of negotiations and litigation related to Hudson River power plant cooling water intakes, including and especially Indian Point, further demonstrates their interest in the instant proceeding. Petitioners were active parties in the battle to prevent the massive fish kills that would have occurred with the construction of the proposed Storm King Pumped Storage Facility, during the 1960s and 1970s. They participated in the late-1970s adjudication of the draft NPDES permits and negotiated the historic Hudson River Settlement Agreement ("HRSA"). They sued DEC in 1991 to overturn a "letter agreement" purporting to informally extend the HRSA without SPDES re-permitting, and negotiated and signed a series of subsequent consent orders. They have adjudicated proposals for new power plants to ensure use of the best cooling towers. They submitted substantial technical comments on the 1999 Draft Environmental Impact Statement, which assisted in DEC's rejection of industry's argument that the power plants are benign.

Riverkeeper, along with Assemblyman Richard Brodsky and others initiated an Article 78 proceeding to compel a long overdue SPDES permit renewal proceeding for Indian Point, and thereafter

successfully petitioned for full party status and an adjudicatory hearing on the problematic draft permit that DEC issued.[17] Petitioners continue to participate in the ongoing Indian Point SPDES proceeding.

ISSUES FOR ADJUDICATION

In accordance with 6 N.Y.C.R.R. § 624.5(b)(2), Petitioners identify the following adjudicable issues and submit pertinent offers of proof in response to DEC Staff's Notice of Denial and Entergy's Hearing Request in response thereto. As described below, Petitioners are prepared to submit substantial and credible expert testimony and documentary evidence at an adjudicatory hearing to demonstrate that continued operation of Indian Point for an additional 20 years beyond their current licenses would be inconsistent with New York State water quality standards.

Issue 1

Extended Operation Of Indian Point With A Once-Through Cooling Water Intake Structure, As Currently Operated Or With Installation Of Cylindrical Wedge Wire Screens, Will Violate New York State's Water Quality Standard That Cooling Water Intake Systems Reflect The Best Technology Available For Minimizing Adverse Environmental Impacts

As a basis for denial of Entergy's Application for WQC, DEC Staff cites Entergy's failure to comply with New York State's water quality standard set forth in 6 N.Y.C.R.R. § 704.5, which requires that "[t]he location, design, construction and capacity of cooling water intake structures, in connection with point source thermal discharges, shall reflect the best technology available ["BTA"] for minimizing adverse environmental impacts."[18] In particular, DEC Staff states that Entergy's plan to operate during an extended license period using cylindrical wedge-wire ("CWW") screens in lieu of installing a closed-cycle cooling system will not minimize adverse environmental impacts to aquatic organisms of the

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[17] *See* In the Matter of a Renewal and Modification of a State Pollutant Discharge Elimination System (SPDES) permit pursuant to Environmental Conservation Law (ECL) Article 17 and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Parts 704 and 750 *et seq.* by Entergy Nuclear Indian Point 2, LLC and Entergy Nuclear Indian Point 3, LLC, Permittees (DEC No.: 3-5522-00011/00004 SPDES No.: NY-0004472) , Ruling on Proposed Issues For Adjudication and Petitions For Party Status (February 3, 2006), *available at*, http://www1.dec.state.ny.us/docs/permits_ej_operations_pdf/issuesruling.pdf (last accessed July 9, 2010).

[18] *See* Notice of Denial at 13-21.

Hudson River.[19] Entergy contests this ground for DEC Staff's denial, alleging various legal and factual deficiencies with DEC Staff's determination.[20]

For the following reasons, Petitioners support DEC Staff's legally and factually sound determination, and likewise submit that continued operation of Indian Point as proposed by Entergy would contravene New York State's water quality standard requiring BTA for cooling water intake structures. Accordingly, Petitioners concur that denial of Entergy's Application for WQC is necessary.

Closed-Cycle Cooling is the Best Technology Available to Minimize Indian Point's Adverse Environmental Impacts

Hybrid closed-cycle cooling systems require only a small fraction of the water which is required by once-through cooling systems.[21] Since aquatic mortality is directly related to the amount of water use, a retrofit to a hybrid closed-cycle cooling system results in substantial reductions in aquatic mortality.[22] Given this capability, closed-cycle cooling sets the standard for minimizing adverse environmental impacts of cooling water intake structures. The U.S. Environmental Protection Agency ("EPA") has long-acknowledged this fact:

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[19] *See id.*

[20] *See* Entergy's Hearing Request at 4-8, 16-19. Entergy argues, *inter alia*, that DEC necessarily made a BTA determination when it issued a SPDES permit to the Indian Point facilities in 1987, and suggests that this determination should be controlling for the present case. *See id.* at 5-6. Entergy ignores the fact, however, that the 1982 WQC and 1987 SPDES permit were issued pursuant to the Hudson River Settlement Agreement, in which the then-owner of Indian Point agreed to conduct studies on the environmental impacts over a 10-year period, from 1980 to 1990, which would inform the parties' BTA determination. The agreement term was extended four times and finally expired in 1998. In 2003, DEC issued a draft SPDES permit for Units 2 and 3, which required the Indian Point facilities to begin using closed-cycle cooling. Entergy requested an adjudicatory hearing on the draft SPDES permit in 2004 and that process is presently ongoing. *See* Notice of Denial at 5-7. Therefore, Entergy's argument that a BTA determination in the 1987 SPDES permit should be controlling for the present case is without merit. Closed-cycle cooling has long been considered the best technology available and the owners of Indian Point have simply postponed implementation of the BTA requirement for over 30 years. *See id.* at 14-17. Entergy further argues that DEC should issue a § 401 certification now for Indian Point which simply defers to the outcome of the ongoing SPDES adjudication. However, it would be clearly inappropriate for DEC Staff to defer its obligations under section § 401 to the unknown outcome of an ongoing proceeding. DEC must make the necessary determinations in the instant proceeding, wait until the conclusion of the ongoing SPDES proceeding, or consolidate the instant proceeding with the SPDES proceeding – and then only issue a § 401 certification when all necessary determinations have been made and Entergy demonstrates compliance with all applicable law.

[21] *See* DEC Fact Sheet, New York State Pollutant Discharge Elimination System (SPDES) Draft Permit Renewal With Modification, Indian Point Electric Generating Station, Buchanan, NY – November 2003, at Attachment B, p.3, *available at* http://www.dec.ny.gov/docs/permits_ej_operations_pdf/IndianPointFS.pdf (last accessed July 9, 2010) (hereinafter referred to as "DEC Fact Sheet") ("Closed-cycle cooling recirculates cooling water in a closed system that substantially reduces the need for taking cooling water from the River.").

[22] *See, e.g.*, Network for New Energy Choices, *The Truth About Closed-Cycle Cooling* (2010), *available at*, http://www.newenergychoices.org/uploads/fishkill_truth.pdf (last accessed July 9, 2010).

> Closed-cycle cooling systems (e.g., systems employing cooling towers) are the most effective means of protecting organisms from I&E [i.e., Impingement & Entrainment]. Cooling towers reduce the number of organisms that come into contact with a CWIS [i.e., cooling water intake structure] because of the significant reduction in the volume of intake water needed by a closed-cycle facilities. Reduced water intake results in a significant reduction in damaged and killed organisms.[23]

DEC has also recognized the pre-eminence of closed-cycle cooling. Most recently, DEC issued a draft proposed statewide policy to ensure that the reduction in adverse impacts achieved by closed-cycle cooling or its equivalent is the "performance goal" for the best technology available for existing industrial facilities in New York.[24] The draft policy acknowledges that "[t]he demonstrated technology that achieves the greatest reduction in non-contact cooling water use is closed-cycle cooling."[25] The draft further explains that wet closed-cycle cooling reduces cooling water requirements by at least 93-98 percent from that required by once-through cooling technology.[26] As DEC Commissioner Pete Grannis states, "[w]ith this policy, New York is saying that closed cycle cooling is the best technology available and must be implemented to protect the environment . . . . This is a positive step forward that will result in long-term benefits for our natural resources."[27]

DEC Staff has relied on projections of such high reductions in impacts to aquatic life to declare closed-cycle cooling as BTA for Indian Point:

> The benefit of hybrid cooling towers for minimizing adverse environmental impacts is substantial, with greater than a 98% reduction in fish mortality . . . that is primarily a result of reducing intake flow volumes . . . . After evaluating all of the known and available alternatives, the Department has determined that in this case closed-cycle cooling represents the best technology available for minimizing adverse environmental impacts from the cooling water intake structure at Indian Point.[28]

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[23] U.S. Environmental Protection Agency Office of Science and Technology Engineering and Analysis Division, *Economic and Benefits Analysis for the Proposed Section 316(b) Phase II Existing Facilities Rule*, at § A2-2.1(a), p.A2-5 (Feb. 28, 2002) *available at*, http://www.epa.gov/waterscience/316b/phase2/econbenefits/toc.pdf (last accessed July 9, 2010).

[24] NYSDEC Draft Policy, Best Technology Available (BTA) for Cooling Water Intake Structures (March 4, 2010), at 1, 4, *available at*, http://www.dec.ny.gov/docs/fish_marine_pdf/drbtapolicy1.pdf (last accessed July 9, 2010).

[25] *Id.* at 4.

[26] *See id.*

[27] NYSDEC Press Release, *DEC Takes Action to Protect Aquatic Life, Limit Water Intake by Certain Industrial Facilities* (March 10, 2010), http://www.dec.ny.gov/press/63408.html (last visited July 9, 2010).

[28] DEC Fact Sheet, *supra* note 21, at Attachment B, pp.3-4.

Closed-Cycle Cooling is Feasible at Indian Point

Closed-cycle cooling is both available and feasible as retrofit technology at Indian Point. Entergy has admitted the feasibility of at least one configuration of cooling towers,[29] and both Petitioners and DEC Staff assert that additional differing configurations of cooling towers are also feasible, and could be constructed in a timely fashion.[30]

Cylindrical Wedgewire Screens are not a Reasonable Alternative to Satisfy New York State's Water Quality Standard Requiring BTA

Entergy's Application for WQC proposes CWW screens as an "alternative" technology to achieve New York State's BTA requirement. However, it is highly doubtful whether such screens at Indian Point would be able to reduce adverse impacts to the aquatic ecology of the Hudson River at any level even approaching that which closed-cycle cooling could achieve. Indeed, the wedgewire screens proposed by Entergy are highly experimental. Entergy's own report, submitted in support of Entergy's Application for WQC and concluding CWW screens are a reasonable alternative, admits that the proposed screens would require laboratory and site-specific studies in order to evaluate critical matters including slot size, screen numbers, configurations, and construction materials to be used to address looming problems of bio-fouling, corrosion, and icing.[31]

A review of CWW screens by the EPA confirms the questionable nature of this technology, finding that "the lack of more representative full-scale plant data makes it impossible to conclusively say that wedgewire screens can be used in all environmental conditions. There are no full-scale data

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[29] *See* Enercon Services, Inc., *Economic and Environmental Impacts Associated with Conversion of Indian Point Units 2 and 3 to a Closed-Loop Condenser Cooling Water Configuration* (June 2003).

[30] *See e.g., In the Matter of the Application of Entergy Nuclear Indian Point 2, LLC, Entergy Nuclear Indian Point 3, LLC, Status Teleconference Transcript*, prepared by David A. Arsenault, dated March 25, 2010, at 12 - 14. In this transcript, DEC Staff indicates plans to submit proposed linear cooling tower configurations at the SPDES hearing. *See also*, separate correspondence dated May 21, 2010, from both Riverkeeper and DEC Staff, to ALJ's Villa and O'Connell, indicating similar intent regarding low profile, plume-abated cooling tower configurations to be advanced in the hearing.

[31] *See* Enercon Services Inc., Evaluation of Alternative Intake Technologies at Indian Point Units 2 and 3 (Feb. 12, 2010), at 57-59 (hereinafter "Enercon Alternatives Report").

specifically for marine environments where biofouling and clogging are significant concerns."[32] The NRC, in the context of an Essential Fish Habitat assessment, has also identified obstacles toward the effective use of CWW screens at Indian Point:

> Because the portion of the Hudson River near IP2 and IP3 is subject to tidal influence, a sweeping current is periodically absent, and, during such times, impingement against wedgewire or fine-mesh screen systems would be exacerbated. Although the use of these technologies at IP2 and IP3 is possible, numerous technical challenges would exist, including how to configure and clean the screens, how to evaluate capture and removal success, and how to assess the environmental effects and tradeoffs that would occur when one type of impact (entrainment) is reduced while another impact (impingement) may increase.[33]

Significantly, it is still unclear from an engineering perspective, whether, given the necessary and massive intake flow of Indian Point, the slot size of CWW screens could be small enough to produce any significant reductions in entrainment of aquatic organisms in the Hudson River.[34] Slot size is absolutely essential for minimizing entrainment and must be sufficiently small in order to effectively reduce entrainment impacts. For example, laboratory testing of fine mesh wedgewire screens for a proposed 1540 MW power plant in the 1970s "showed that entrainment of fish eggs (including striped bass) could effectively be prevented with slot widths of 1 mm or less."[35] Notably, Entergy suggests a range of slot sizes for study that is quite wide, 2 mm all the way to 9 mm;[36] most points in the range would provide only minimal improvements in adverse entrainment impacts.[37]

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[32] U.S. Environmental Protection Agency, Technical Development Document for the Final Regulations Addressing Cooling Water Intake Structures for New Facilities, EPA-821-R-01-036 (November 9, 2001), at 5-5 to 5-7, *available at*, http://www.epa.gov/waterscience/316b/phase1/technical/ch5.pdf (hereinafter "EPA 316(b) TDD Report") (last accessed July 9, 2010).

[33] U.S. Nuclear Regulatory Commission, Essential Fish Habitat Assessment for the Proposed Renewal of Indian Point Nuclear Generating Units Nos. 2 and 3, Docket Nos. 50-247 and 50-286 (April 2009), at 17, *accessible at* http://www.nrc.gov/reading-rm/adams/web-based.html, ADAMS Accession No. ML090790187 (hereinafter "NRC EFH Assessment for IP").

[34] Notably, CWW screens have only been implemented at facilities with considerably smaller intake flows than at Indian Point. *See* EPA 316(b) TDD Report, *supra* note 32, at 5-5 to 5-7. Moreover, where CWW screens have been used at facilities with high intake flow (although flows were not comparable to that of Indian Point), they have only been used to reduce impingement impacts. *See id.* (entrainment "not a major concern" at plant on Lake Michigan).

[35] EPA 316(b) TDD Report, *supra* note 32, at 5-6.

[36] *See* Enercon Alternatives Report, *supra* note 31, at 56-57.

[37] *See* EPA 316(b) TDD Report, *supra* note 32.

Furthermore, CWW screens would do nothing to abate the severe thermal output which emanates from the plant and contributes to degradation of the aquatic biology of the Hudson River. In comparison, a closed-cycle cooling system would significantly reduce the amount of heat discharged from Indian Point to the river.[38]

Based on the foregoing, it is apparent that Entergy has yet to demonstrate that CWW screens would be effective in any measurable way, let alone to the level and degree closed-cycle cooling could achieve at Indian Point. Entergy has failed to even adequately define and delineate the technology it wishes to implement. Given the highly experimental, questionable nature of Entergy's proposal to install CWW screens in lieu of closed-cycle cooling (a technology which indisputably reduces water usage by 93-98% and adverse impacts by commensurate amounts) it is clear that Entergy's proclaimed "alternative" would not satisfy New York State's BTA standard.

Offer of Proof

Petitioners will offer the expert testimony of aquatic biologist Peter Henderson, Ph.D., of Pisces Conservation Ltd. in Lymington, U.K., and of William Powers, P.E., of Powers Engineering in San Diego, California. Dr. Henderson's and Mr. Powers' backgrounds and experience are clearly ample to support acceptance of their testimony.[39] These experts will make clear that closed-cycle cooling is the

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[38] *See, e.g.*, NRC EFH Assessment for IP, *supra* note 33, at 16 ("Of the possible mitigation measures, [for minimizing aquatic impacts caused by Indian Point] only flow reductions, planned outages, and closed-cycle cooling will reduce thermal effluents from IP2 and IP3.").

[39] Dr. Henderson has over thirty years of experience in applied ecological research, and lectures on population ecology and ecological methods at the University of Oxford. He specializes in fishery population dynamics, including population modeling, and tropical and temperate crustacean and fish ecology. Dr. Henderson has extensive experience on the ecological effects of power stations, including on the Hudson River, and has studied the fish and crustacean population dynamics in the Bristol Channel since 1980 using samples of animals impinged on cooling water intake screens. He obtained bachelors and doctoral degrees from Imperial College, London. Riverkeeper includes his *curriculum vitae* as Exhibit A.

Mr. Powers specializes in power plant permitting, testing, monitoring, and retrofit design. He has demonstrated that right-sizing control equipment would optimize operations for a coal fired power plant, has consulted on the design of closed-cycle dry cooling for a 1000 mw project proposed with once-through cooling, and has done cooling system comparison studies for several power plants. He has published articles on his work on an air-cooled condenser design at a cogeneration plant and drafted sections on dry cooling and zero discharge liquid systems for the electric industry's trade association, Electric Power Research Institute. Riverkeeper includes Mr. Powers's *curriculum vitae* as Exhibit B.

best technology available for minimizing the adverse impacts of Indian Point's current once-through cooling water intake structure. In particular, these experts will testify to the following:

1. William Powers, P.E. will testify that wet or hybrid closed-cycle cooling reduces water use by about 97 percent at Indian Point. He will base his testimony on his experience, and standard engineering analyses of the condensers' heat rejection and recirculation capability of cooling towers.
2. Dr. Peter Henderson will testify that closed cycle cooling mechanisms will reduce entrainment impacts to aquatic ecology at Indian Point commensurate with the reduction in water withdrawals. He will base his testimony on his analysis of data on existing plants throughout the U.S. and elsewhere.
3. Dr. Henderson will testify that, absent such reductions, Indian Point will continue to damage the fisheries and biotic resources of the Hudson River. He will base his testimony on current Hudson River fisheries population reports and personal experience.
4. Mr. Powers will demonstrate that several possible cooling tower configurations are feasible and available at Indian Point that would be consistent with site constraints, several of which could utilize inline, compact plume-abated towers, which would reduce capital cost, parasitic fan loads, and visual impacts of cooling towers. Mr. Powers will base his opinion on a review of aerial site photographs, schematic diagrams, site visits, and a thorough assessment of construction considerations, costs, visual impacts, plume impacts, cooling tower blowdown discharge impacts, and noise impacts associated with different cooling tower configurations.
5. Mr. Powers will further rebut various inaccuracies of Entergy's Application for WQC as to different circumstances that Entergy asserts mitigate against implementation of a closed-cycle cooling system at Indian Point. For example, Mr. Powers will demonstrate that: Entergy's cost estimate for constructing cooling towers is greatly overstated; construction of cooling towers will not take the lengthy number of years Entergy estimates, but rather, could be accomplished in just a few years; installation of cooling towers will only require short outages necessary for hooking

up the cooling water systems to the towers, and would likely not exceed the length of the periodic refueling outages that occur at each Indian Point reactor; and that the gross power output of the Indian Point reactors will remain essentially unchanged following a closed-cycle cooling tower retrofit. Mr. Powers will base such testimony on standard engineering practices, his engineering expertise and judgment, and information from leading manufacturers of cooling towers, including cooling tower performance specifications and price quotations.

6. Dr. Henderson will demonstrate the high uncertainty regarding the effectiveness of CWW screen technology at Indian Point to reduce adverse aquatic impacts to the Hudson River. In particular, Dr. Henderson will testify regarding the various potential obstacles toward effective implementation of CWW screens at Indian Point including, but not limited to, biofouling and frazil ice formation. Dr. Henderson will testify that to effectively reduce entrainment of aquatic organisms, the wedgewire screen slot widths would need to be in the range of 0.5 to 3.0 mm. Dr. Henderson will testify that CWW screens would provide no relief from the thermal output of the current discharge from Indian Point. Dr. Henderson will base his opinion on an as analysis of current performance of CWW screens at other facilities in the United States, his best professional judgment, and personal experience.

Entergy's Violation of New York State's Water Quality Standard Requiring BTA is a Substantive and Significant Issue For Which Petitioners Should be Granted Full Party Status

Pursuant to 6 N.Y.C.R.R. § 624.4(c)(ii), this is an adjudicable issue as it "relates to a matter cited by department staff as a basis to deny the permit and is contested by the applicant." Entitlement to full party status is based on, *inter alia*, "a finding that petitioner has raised a substantive and significant issue or that the petitioner can make a meaningful contribution to the record regarding a substantive and significant issue raised by another party."[40] Thus, Petitioners submit that this is also a "substantive and significant" issue that warrants Petitioners' full party participation in any future briefings and/or adjudicatory hearing that may take place as a result of Entergy's Hearing Request.

[40] 6 N.Y.C.R.R. § 624.5(d)(1)(ii).

Whether Entergy's plan to operate during a period of extended operation with CWW screens instead of a closed-cycle cooling system violates New York's State's BTA standard easily meets the regulatory threshold of being a "substantive and significant" issue. This issue is "substantive" since the certain, clear and overwhelming protectiveness of closed-cycle cooling would prompt a reasonable person to inquire further as to whether Entergy's alternative proposal would provide sufficient protection to comply with New York State's water quality standard requiring BTA, as well as the federal CWA.[41] This is a "significant" issue since it has the potential to result in the upholding of DEC Staff's determination to deny Entergy's Application for WQC, or, alternatively, could result in "a major modification to the proposed project," should DEC require Entergy to retrofit Indian Point with a closed-cycle cooling system.[42]

In any event, Petitioners would be more than able to "make a meaningful contribution to the record" regarding this issue. For decades, Petitioners have been using litigation, science, advocacy, and public education to demonstrate why the retrofit of the Indian Point plant to a closed-cycle cooling system is necessary for the health of the Hudson River ecology.[43] To this end, Petitioners are currently full parties in the ongoing Indian Point SPDES permit renewal proceeding, where similar issues are being adjudicated, and where the experts identified herein are participating. Petitioners' experts are widely respected scientists and engineers who provide independent analyses and studies to inform DEC's decision making. Petitioners are, thus, usually well situated to meaningfully contribute experience and expertise to the record on this issue.[44]

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[41] *Id.* § 624.4(c)(2).
[42] *Id.* § 624.4(c)(3).
[43] *See supra* pages 7-8.
[44] Moreover, should the Administrative Law Judges assigned to the instant proceeding determine that consolidation with the Indian Point SPDES permit proceeding is appropriate, the rights of Riverkeeper as a full party in the Indian Point SPDES proceeding would be directly implicated, making Riverkeeper an indispensible party on this issue in the context of the proceeding regarding Entergy's Application for WQC. Should the Administrative Law Judges presiding over the instant proceeding determine that separate tracks are appropriate, Riverkeeper hereby incorporates by reference all legal and factual positions Riverkeeper has thus far put forth in the Indian Point SPDES proceeding regarding the best technology available for minimizing adverse environmental impacts at Indian Point, including the availability and feasibility of cooling towers.

Issue 2

Extended Operation Of Indian Point With A Once-Through Cooling Water Intake Structure, As Currently Operated Or With Installation Of Cylindrical Wedge Wire Screens, Will Be Inconsistent With The Designated Best Use Of The Hudson River As Suitable Fish Habitat

As a basis for denial of Entergy's Application for WQC, DEC Staff cites Entergy's failure to comply with the designated best use of the Hudson River in 6 N.Y.C.R.R. § 701.11 as "suitable for fish, shellfish, and wildlife propagation and survival."[45] DEC Staff cites historical data collected on the Hudson River by the owners of the Indian Point facilities and others over the past 35 years that demonstrates that the withdrawal of cooling water by Indian Point causes "significant adverse environmental impact upon aquatic organisms, particularly fish eggs, larvae, and fish."[46] DEC Staff determined that "continued operation of the Indian Point Units 2 and 3 in once-through cooling mode for an additional 20 years, as proposed by Entergy . . . would continue to exacerbate [such] adverse impact."[47] Entergy alleges that this ground for DEC Staff's denial is legally unfounded since the designated uses set forth in 6 N.Y.C.R.R. § 701 do not apply to impacts of cooling water intake structures.[48]

For the following reasons, Petitioners support DEC Staff's legally sound determination, and likewise submit that continued operation of Indian Point as proposed by Entergy would contravene New York State's water quality standard designating the Hudson River as suitable habitat for fish, shellfish, and wildlife. Accordingly, Petitioners concur that denial of Entergy's Application for WQC is necessary.

Continued Operation of Indian Point Will Interfere With Hudson River Fish Habitat

The once-through cooling water intake system employed at Indian Point has a profound impact upon fish in the Hudson River. Since Indian Point Units 2 and 3 began operating in 1973 and 1975,

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[45] *See* Notice of Denial at 10-11. DEC has assigned varying classifications to different portions of the Hudson River including "Class I saline surface waters," "Class SB saline surface waters," "Class A fresh surface waters," "Class B fresh surface waters," "Class C fresh surface waters," and "Class AA fresh surface waters." *See* 6 N.Y.C.R.R. §§ 864.6, 858.4, 941.6. All of these classifications state that such "waters shall be suitable for fish, shellfish, and wildlife propagation and survival." *See* 6 N.Y.C.R.R. §§ 701.5, 701.6, 701.7, 701.8, 701.11, 701.13.
[46] *See* Notice of Denial at 10.
[47] *See id.* at 10-11.
[48] *See* Entergy's Hearing Request at 10-11.

respectively, an antiquated once-through cooling water intake structure has withdrawn and discharged approximately 2.5 billion gallons of Hudson River water per day, killing millions of fish, eggs, and larvae annually through entrainment, impingement, and heat related impacts.[49] For example, estimated averages for years where data is available show that the once-through cooling system at Indian Point has been recorded to entrain about 13 million American shad, 327 million bay anchovy, 467 million river herring, 158 million striped bass, and 243 million white perch annually, and impinge over 1.2 million fish a year among just 8 species sampled, causing significant mortality.[50] The decimation of aquatic life caused by the once-through cooling at Indian Point is truly staggering. DEC has characterized the destructive impacts associated with the operation of once-through cooling water intake structures as "comparable to habitat degradation; the entire natural community is impacted. . . . [I]mpingement and entrainment and warming of the water impact the entire community of organisms that inhabit the water column."[51]

Nearly 40 years of such degradation resulting from the use of once-through cooling at Indian Point has resulted in serious long-term impacts. Evidence indicates an increasingly unstable ecosystem and long-term declines of several signature Hudson River fish species. A Riverkeeper report released in May 2008 ("Pisces Report") revealed that many Hudson River fish are in serious long-term decline.[52] As

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[49] *See generally* Entrainment, Impingement and Thermal Impacts at Indian Point Nuclear Power Station, Pisces Conservation Ltd., November 2007, *available at*, http://www.riverkeeper.org/wp-content/uploads/2010/03/1397-PH-Henderson-Attachment-3-Expert-Report-Cont-EC-1.pdf (last accessed July 9, 2010), and annexed to this petition as Exhibit D (hereinafter cited as "Pisces IP Report"); DEC Fact Sheet, *supra* note 21, at 2, Attachment B, page 1 ("Each year Indian Point Units 2 and 3. . . cause the mortality of more than a billion fish from entrainment of various life stages of fishes through the plant and impingement of fishes on intake screens. . . . Thus, current losses of various life stages of fishes are substantial.").

[50] *See* NYSDEC Hudson River Power Plants FEIS (June 25, 2003), at 2-3, *available at* http://www.dec.ny.gov/docs/permits_ej_operations_pdf/FEISHRPP1.pdf (last accessed July 9, 2010) (hereinafter "NYSDEC Power Plants FEIS"); Pisces IP Report, *supra* note 49, at 12. This data captures only a limited number of fish species, offering a very conservative picture of the devastation that has been caused by the cooling system at Indian Point. *See id.* at 4 ("Notably, "[t]he species for which entrainment mortality has been quantified form only a very small proportion of the total species present in the estuary. As was noted in the FEIS (page 53): '*Finally, although impingement and entrainment mortality is measured, it is typically measured only for several of the 140 species of fishes found in the Hudson. Information about the impact on the full suite of aquatic organisms is limited.*' The impact on other species is un-quantified and may be significant.") (emphasis in original).

[51] NYSDEC Hudson River Power Plants FEIS (June 25, 2003), Public Comment Summary at 53-54, http://www.dec.ny.gov/docs/permits_ej_operations_pdf/FEISHRPP5.pdf (last accessed July 9, 2010) (hereinafter "NYSDEC Power Plants FEIS Comment Summary").

[52] *See* The Status of Fish Populations and the Ecology of the Hudson, Pisces Conservation Ltd., April 2008, *available at*, http://www.riverkeeper.org/wp-content/uploads/2009/06/Status-of-Fish-in-the-Hudson-Pisces.pdf (last accessed July 9, 2010) and annexed to this petition as Exhibit C (hereinafter cited as "Pisces 2008 Status of Fish

DEC has stated, such "[d]eclines in the abundances of several species and changes in species composition raises concerns and questions regarding the health of the River's fish community."[53] With by far the largest water intake on the Hudson estuary, slaughtering hundreds of millions, and possibly over a billion aquatic organisms every year, the once-through cooling water intake structure at Indian Point has undoubtedly contributed to such decline, destabilization, and loss of aquatic resources.[54]

Entergy's insistence on relying upon an obsolete cooling technology with mere implementation of CWW screens, and refusal to implement a far-superior closed-cycle system, would lead to at least two additional decades of enormous entrainment, impingement, and heat impacts on an already precarious ecosystem.[55] This will lead to ongoing habitat degradation, and only further exacerbate the current decline and destabilization of Hudson River fish populations. Thus, continued operation of Indian Point in the manner proposed is wholly contrary to New York State's water quality standard that the Hudson River be "suitable for fish, shellfish, and wildlife propagation and survival."

Report") (analyzing 13 "key" species of the Hudson River, and finding that 10 such species are in decline); *see also* NYSDEC Power Plants FEIS Comment Summary, *supra* note 51, at 57 ("Several species of fish in the Hudson River estuary, such as American shad, white perch, Atlantic tomcod and rainbow smelt, have shown trends of declining abundance.").

[53] NYSDEC Power Plants FEIS Comment Summary, *supra* note 51, at 58.

[54] *See, e.g.,* Pisces 2008 Status of Fish Report, *supra* note 52, at 37-38 ("The impact of Indian Point is the largest of several impacts from once-through cooling on the Hudson. When all the power plants are considered, the impact is large. . . 'Tens- to hundreds-of-millions of eggs, larvae, and juvenile fishes of several species are killed per year for once-through users. The cumulative impact of multiple facilities substantially reduces the young-of-year (YOY) population for the entire river.' . . . in some years these effects have been very large . . . between 33 – 79% reductions in Young of Year population. . . . Even if the power companies are not the sole cause of degradation of the Hudson River fish community, the loss of such high proportions of the fish populations must be important." (quoting NYSDEC Water Quality 2006 Report)); *see also* NYSDEC Power Plants FEIS Comment Summary, *supra* note 51, at 58 (expressly recognizing that "[t]he millions of fish that are killed by power plants each year represent a significant mortality and are yet another stress on the River's fish community" that "must be taken into account when assessing these population declines."); NYS Governor's Office, Press Release, *With American Shad Stocks at Historically Low Levels, Governor Paterson Announces New Initiatives to Rebuild and Protect Hudson River Fisheries* (May 28, 2008), *available at*, http://www.state.ny.us/governor/press/press_0528082.html (last visited July 9, 2010) (In the context of announcing that Hudson River fisheries are in trouble, recognizing that "[t]he number of fish entering water intake pipes each year at the two Indian Point nuclear power plants alone is significant – over 1.2 billion fish eggs and larvae, including bay anchovy, striped bass, and Atlantic tomcod – with the vast majority dying during the process. Another 1.18 million fish per year become trapped against intake screens and likely die.")

[55] Moreover, Entergy has not ruled out the possibility of applying for additional 20-year license extensions in the future, which are allowed under the NRC regulations. *See* 10 C.F.R. § 54.31 ("Issuance of a renewed license. . . . (d) A renewed license may be subsequently renewed in accordance with all applicable requirements."). Thus, destructive impacts from Indian Point could persist for decades to come under Entergy's proposal.

DEC Staff May Properly Base Denial of Entergy's Application for WQC on Inconsistency with the Designated Usages of the Hudson River

Entergy's Hearing Request alleges that DEC Staff's reliance on the designated best usage of the Hudson River as suitable for fish habitat set forth in 6. N.Y.C.R.R. § 701.11 is misplaced since "§ 701 does not impose any requirement or limitation on cooling water withdrawals or cooling water intake structures with respect to compliance with the best usages of the Hudson River."[56] Entergy points specifically to 6 N.Y.C.R.R. § 701.1, which limits the "discharge of sewage, industrial waste or other waste" to waters of New York, to demonstrate that "Part 701 is strictly limited to the impacts associated with discharge" of such wastes.[57]

However, Entergy's interpretation of Part 701 is improperly narrow. What Entergy fails to reveal is that § 701.1 does not define the applicability of Part 701 overall, but rather sets forth "General conditions applying to all water classifications."[58] Indeed, a reading of Part 701 as Entergy suggests would render meaningless other DEC regulations which set forth criteria based on the water classifications of Part 701.[59] It is, therefore, legally appropriate for DEC Staff to assess whether the cooling water intake structure to be used during the proposed period of extended operation would be consistent with the designated uses of the Hudson River in the context of a CWA § 401 WQC assessment.[60]

Offer of Proof

Petitioners offer the report referenced above entitled "The Status of Fish Populations and the Ecology of the Hudson," (April 2008), prepared for Riverkeeper by aquatic biology experts at Pisces Conservation Ltd, which demonstrates that numerous Hudson River fish are in serious long-term decline, due in part to impacts from the operation of Indian Point. This report is annexed hereto as Exhibit C.

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[56] Entergy Hearing Request at 10.
[57] *Id.* at 10-11.
[58] 6. N.Y.C.R.R. § 701.1.
[59] *See, e.g. id.* § 703.2 (setting forth narrative criteria for thermal discharges for groundwaters of New York: "None in amounts that will impair the waters for their best usages"; setting a narrative standard for "flow" for certain water classifications: "No alteration that will impair the waters for their best usages.")
[60] *See also supra* Note 1.

Petitioners also offer the report referenced herein entitled, "Entrainment, Impingement and Thermal Impacts at Indian Point Nuclear Power Station," (November 2007), prepared for Riverkeeper by aquatic biology experts Pisces Conservation Ltd., which demonstrates the destructive impact Indian Point has had to date on the aquatic ecology of the Hudson River. This report is annexed hereto as Exhibit D.

Petitioners will also offer the expert testimony of aquatic biologist Peter Henderson, Ph.D., of Pisces Conservation Ltd. in Lymington, U.K.. Dr. Henderson's background and experience is clearly ample to support acceptance of his testimony.[61] Dr. Henderson's testimony will make clear that continued operation of Indian Point without installation of a closed-cycle cooling system will interfere with the propagation and survival of fish, shellfish, and wildlife in the Hudson River. In particular, Dr. Henderson will testify to the following:

1. Dr. Henderson will testify regarding the current peril of various important fish species in the Hudson River and destabilized state of the Hudson River ecosystem. He will base his testimony on current Hudson River fisheries population reports and personal experience.
2. Dr. Henderson will testify regarding the destructive impacts of the once-through cooling water intake structure that has been employed at Indian Point for almost the last four decades. He will base his testimony on current Hudson River fisheries population reports and personal experience.
3. Dr. Henderson will demonstrate the highly uncertain effectiveness of CWW screen technology at Indian Point at reducing adverse aquatic impacts to the Hudson River, as discussed under Issue 1 of this petition. Dr. Henderson will base his opinion on an as analysis of current performance of CWW screens at other facilities in the United States, his best professional judgment, and personal experience.
4. Dr. Henderson will testify that, absent reductions commensurate with those attainable with a closed-cycle cooling system, Indian Point will continue to damage the fisheries and biotic resources of the Hudson River. He will base his testimony on current Hudson River fisheries population reports and personal experience.

[61] *See supra* note 39.

Entergy's Violation of New York State's Designated Best Use of the Hudson River as Suitable Fish Habitat is a Substantive and Significant Issue For Which Petitioners Should be Granted Full Party Status

Pursuant to 6 N.Y.C.R.R. § 624.4(c)(ii), this is an adjudicable issue as it "relates to a matter cited by department staff as a basis to deny the permit and is contested by the applicant." Petitioners submit that this is also a "substantive and significant" issue that warrants Petitioners' full party participation in any future briefings and/or adjudicatory hearing that may take place as a result of Entergy's Hearing Request.[62]

Whether Entergy's plan to operate during a period of extended operation with CWW screens instead of a closed-cycle cooling system violates the best use of the Hudson River as suitable fish habitat certainly meets the "substantive and significant" issue threshold. This issue is substantive since evidence showing that continued operation of Indian Point with once-through cooling would exacerbate habitat degradation of the Hudson River ecosystem would cause a reasonable person to inquire further as to whether Entergy's alternative proposal would be consistent with New York State's designated use of the river.[63] This is a "significant" issue since it has the potential to result in the upholding of DEC Staff's determination to deny Entergy's Application for WQC, or, alternatively, could result in "a major modification to the proposed project," should DEC require Entergy to retrofit Indian Point with a closed-cycle cooling system in order to ensure consistency with the best use of the Hudson River as suitable fish habitat.[64]

In any event, Petitioners would be more than able to "make a meaningful contribution to the record" regarding this issue. Petitioners are organizations dedicated to the ecological integrity of the Hudson River. For decades, Petitioners have been using litigation, science, advocacy, and public education to demonstrate how the once-through cooling water intakes used at Indian Point are a destructive force on the Hudson River ecosystem. Petitioners have retained technical and scientific

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[62] *See* 6 N.Y.C.R.R. § 624.5(d)(1)(ii) (Stating that entitlement to full party status is based on, *inter alia*, "a finding that petitioner has raised a substantive and significant issue or that the petitioner can make a meaningful contribution to the record regarding a substantive and significant issue raised by another party.")
[63] *Id.* § 624.4(c)(2).
[64] *Id.* § 624.4(c)(3).

experts who provide independent analyses and studies to inform DEC's decision making. Petitioners are, thus, uniquely situated to have the particular expertise to meaningfully contribute to the record on this issue.

Issue 3

Extended Operation Of Indian Point With A Once-Through Cooling Water Intake Structure, As Currently Operated Or With Installation Of Cylindrical Wedge Wire Screens, Will Be Inconsistent With The Designated Best Use Of The Hudson River For Recreational Fishing Purposes

As a basis for denial of Entergy's Application for WQC, DEC Staff states that Entergy's "noncompliant 'thermal discharges' . . . into a class SB water . . . impair the water for its best usage, particularly where, as here, primary and secondary contact recreation is concerned."[65] Entergy contests this basis of denial "as arbitrary, capricious and not in accordance with law" since DEC Staff's Notice of Denial "provides no rationale whatsoever that thermal discharges from the Stations impair the water for its best usage."[66] Petitioners support this basis of DEC Staff's denial of Entergy's Application for WQC, and more specifically submit that continued operation of Indian Point as proposed, without a closed-cycle cooling retrofit and instead with CWW screens, would contravene New York State's water quality standard designating the Hudson River for recreational fishing purposes. Accordingly, Petitioners concur that denial of Entergy's Application for WQC is necessary.

With Indian Point's destructive cooling water intake system contributing to overall declines in numerous fish populations in the Hudson River,[67] diminished fish stocks exist in the river, and accordingly, less fish are available for the enjoyment of sport fishermen. If the plant operates for an additional 20 years as proposed, such trends will persist. Ongoing entrainment, impingement, and excessive heat will continue to cause fish mortality and further contribute to general deterioration of fish communities, thereby impacting the ability to recreationally fish the river.

Moreover, diminishing numbers of fish in the Hudson River, due in part to once-through cooling water system impacts, have led to efforts to affirmatively ban certain kinds of recreational fishing. For

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[65] Notice of Denial at 11.
[66] Entergy Hearing Request at 13-14.
[67] *See supra* pages 18-19.

example, in March 2010, DEC announced regulations which prohibit recreational fishing of American shad, a popular sport fishing target of Hudson River anglers,[68] due to historically low levels of the species in the river.[69] Similarly, the Atlantic States Marine Fisheries Commission recently approved an amendment to the Interstate Fisheries Management Plan which establishes a coastwide moratorium on commercial and recreational fishing of river herring as of January 1, 2013, absent a showing of sustainability.[70] With herring in peril in the Hudson River,[71] New York may very well seek to impose a ban on fishing of that species in the near future as well.

Such bans on fishing would demonstrably impede the ability of fishermen to freely recreate in the Hudson River. Notably, data indicates that the once-through cooling water intake structure at Indian Point has impacted such species, thereby contributing to the population decline that has necessitated such measures.[72] For example, Indian Point has killed as many as 10 million American shad and 371 million river herring per year due to entrainment alone.[73] Operation of Indian Point with massive water withdrawals for 20 additional years will only lead to ongoing impacts that will continue to contribute to the need for prohibitions against certain fishing in the river.

Offer of Proof

Petitioners offer the report referenced herein entitled "The Status of Fish Populations and the Ecology of the Hudson," (April 2008), prepared for Riverkeeper by aquatic biology experts at Pisces Conservation Ltd., which demonstrates that numerous Hudson River fish are in serious long-term decline, due in part to impacts from the operation of Indian Point. This report is annexed hereto as Exhibit C.

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[68] *See* NYSDEC, Hudson River Recreational Fishing Survey, http://www.dec.ny.gov/animals/37214.html (last visited July 9, 2010.)

[69] NYSDEC Press Release, *DEC Proposes American Shad Fishery Closures* (November 18, 2009), *available at*, http://www.dec.ny.gov/press/59881.html (last visited July 9, 2010); NYSDEC Press Release, *DEC Enacts Closures and Restrictions for American Shad Fisheries* (March 17, 2010), *available at*, http://www.dec.ny.gov/press/63619.html (last visited July 9, 2010).

[70] *See* Atlantic States Marine Fisheries Commission, News Release, *ASMFC Approves American Shad Amendment*, February 5, 2010 *available at*, http://www.asmfc.org/press_releases/2010/pr05ShadAmendment3.pdf (last accessed July 9, 2010).

[71] *See* Pisces 2008 Status of Fish Report, *supra* note 52.

[72] *See generally* Pisces IP Report, *supra* note 49.

[73] *See* NYSDEC Power Plants FEIS, *supra* note 50, at 3.

Petitioners also offer the report referenced herein entitled, "Entrainment, Impingement and Thermal Impacts at Indian Point Nuclear Power Station," (November 2007), prepared for Riverkeeper by aquatic biology experts Pisces Conservation Ltd., which demonstrates the destructive impact Indian Point has had to date on the aquatic ecology of the Hudson River. This report is annexed hereto as Exhibit D.

Petitioners will further offer the expert testimony of aquatic biologist Peter Henderson, Ph.D., of Pisces Conservation Ltd. in Lymington, U.K.. Dr. Henderson's background and experience is clearly ample to support acceptance of his testimony.[74] Dr. Henderson's testimony will demonstrate that continued operation of Indian Point without the installation of a closed-cycle cooling system will interfere with recreational fishing in the Hudson River. In particular, Dr. Henderson will testify to the following:

1. Dr. Henderson will testify regarding the current peril of various important fish species in the Hudson River and destabilized state of the Hudson River ecosystem. He will base his testimony on current Hudson River fisheries population reports and personal experience.
2. Dr. Henderson will testify regarding the destructive impacts of the once-through cooling water intake structure that has been employed at Indian Point for almost the last four decades. He will base his testimony on current Hudson River fisheries population reports and personal experience.
3. Dr. Henderson will demonstrate the highly uncertain effectiveness of CWW screen technology at Indian Point at reducing adverse aquatic impacts to the Hudson River, as discussed under Issue 1 of this petition. Dr. Henderson will base his opinion on an as analysis of current performance of CWW screens at other facilities in the United States, his best professional judgment, and personal experience.
4. Dr. Henderson will testify that, absent reductions commensurate with those attainable with a closed-cycle cooling system, Indian Point will continue to damage the fisheries and biotic resources of the Hudson River. He will base his testimony on current Hudson River fisheries population reports and personal experience.

[74] *See supra* note 39.

Entergy's Violation of New York State's Designated Best Use of the Hudson River for Recreational Fishing Purposes is a Substantive and Significant Issue For Which Petitioners Should be Granted Full Party Status

Pursuant to 6 N.Y.C.R.R. § 624.4(c)(ii), this is an adjudicable issue as it "relates to a matter cited by department staff as a basis to deny the permit and is contested by the applicant." Petitioners submit that this is also a "substantive and significant" issue that warrants Petitioners' full party participation in any future briefings and/or adjudicatory hearing that may take place as a result of Entergy's Hearing Request.[75]

Whether Entergy's plan to operate during a period of extended operation with CWW screens instead of a closed-cycle cooling system violates the best use of the Hudson River for recreational fishing purposes easily meets the "substantive and significant" issue threshold. This issue is substantive since evidence showing that operating in such a manner would exacerbate habitat degradation of the Hudson River ecosystem would cause a reasonable person to inquire further as to whether Entergy's alternative proposal would be consistent with New York State's designated use of the river.[76] This is a "significant" issue since it has the potential to result in the upholding of DEC Staff's determination to deny Entergy's Application for WQC, or, alternatively, could result in "a major modification to the proposed project," should DEC require Entergy to retrofit Indian Point with a closed-cycle cooling system in order to ensure consistency with the best use of the Hudson River for recreational fishing purposes.[77]

In any event, Petitioners would be more than able to "make a meaningful contribution to the record" regarding this issue. For example, Riverkeeper is actively engaged in fisheries policy addressing Hudson River fish species.[78] Riverkeeper was founded by commercial and recreational fishermen seeking

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[75] *See* 6 N.Y.C.R.R. § 624.5(d)(1)(ii) (Stating that entitlement to full party status is based on, *inter alia*, "a finding that petitioner has raised a substantive and significant issue or that the petitioner can make a meaningful contribution to the record regarding a substantive and significant issue raised by another party.").
[76] *Id.* § 624.4(c)(2).
[77] *Id.* § 624.4(c)(3).
[78] *See, e.g.* Letter from Joshua Verleun (Riverkeeper), to Kate Taylor (Atlantic States Marine Fisheries Commission), Re: Draft Amendment 3, ASMFC Management Plan for Shad and River Herring (Oct. 22, 2009), *available at*, http://www.riverkeeper.org/wp-content/uploads/2009/11/Shad-Amendment-RK-comments-FINAL.pdf (last accessed July 9, 2010); Letter from Joshua Verleun (Riverkeeper) to Kathy Hattala (DEC Hudson River Fisheries Unit), Re: Proposed Fishery Closures for Hudson River American Shad (Jan. 4, 2010); Riverkeeper.org,

to protect the integrity of the Hudson River as a fishing resource. Riverkeeper's current membership is well founded upon this precept. NRDC and Scenic Hudson also seek to protect the Hudson River for the enjoyment of their members for recreational activities, including fishing. Petitioners are, thus, uniquely situated to have the particular expertise to meaningfully contribute to the record on this issue.

Issue 4

Extended Operation Of Indian Point With A Once-Through Cooling Water Intake Structure, As Currently Operated Or With Installation Of Cylindrical Wedge Wire Screens, Will Be Inconsistent With New York State's Narrative Standard that All Thermal Discharges Support Healthy Fish Habitat

As a basis for denial of Entergy's Application for WQC, DEC Staff cites Entergy's failure to demonstrate compliance with the narrative standard set forth in 6 N.Y.C.R.R. § 704.1(a), that "[a]ll thermal discharges to the waters of the State shall assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water."[79] DEC Staff points to an inadequate thermal study Entergy submitted in support of its Application for WQC, which was not based upon data from critical summer months, and, thus, inadequate to show compliance with thermal criteria during the known critical environmental period.[80] Entergy contests this basis of denial, maintaining that the thermal study performed was appropriate and demonstrates reasonable assurance that continued operation of Indian Point will comply with New York State thermal discharge standards.[81] Petitioners support this basis of DEC Staff's denial of Entergy's Application for WQC, and likewise submit that Entergy has failed to demonstrate that continued operation of Indian Point would not violate New York State's narrative thermal discharge standard. Accordingly, Petitioners concur that denial of Entergy's Application for WQC is necessary.

Entergy proposes to operate throughout an extended licensing term with continued use of a once-through cooling water intake system. Thus, billions of gallons of water would continue to be withdrawn

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RvK Support Shad Recovery, http://www.riverkeeper.org/news-events/news/rvk-supports-shad-recovery/ (last visited July 9, 2010).

[79] Notice of Denial at 11-12.

[80] *Id.* at 11-13.

[81] Entergy Hearing Request at 13-14.

from the Hudson River on a daily basis and absorb huge amounts of heat as it is used to cool plant systems. This massive amount of heated water will continue to be released into the Hudson River, resulting in ongoing deleterious impacts to aquatic life. A scientific report prepared for Riverkeeper in 2007 discussing the effects of heated water on river life explains that "[t]emperature can affect survival, growth and metabolism, activity, swimming performance and behavior, reproductive timing and rates of gonad development, egg development, hatching success, and morphology" of Hudson River fish species.[82] Many such effects on fish species can occur well below upper lethal temperature levels.[83] Increased water temperature from heated discharges of once-through cooling structures many also interfere with proper fish migration.[84]

The thermal discharges from Indian Point indisputably reach levels that produce such adverse impacts.[85] As revealed from the discussion above, such impacts have also played a role in the overall decline and destabilization of Hudson River fish populations. Now Entergy would like to operate for 20 additional years with a cooling water intake system that would not mitigate the thermal impacts to aquatic life of the river in any way. Mere installation of CWW screens with use of once-through cooling would do nothing to ameliorate the severe thermal output which emanates from the plant.[86] Therefore, continued operation of Indian Point in this manner will not "assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water" as required by New York State's narrative water quality standard.

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[82] Pisces IP Report, *supra* note 49, at 29-36.
[83] *See id.* at 25, 30.
[84] *See generally id.* at 32-35.
[85] *See, e.g. id.* at 25, 36 ("The cooling water discharge [from Indian Point] is large and affects the receiving waters of the Hudson River. In recent years (2000 to 2007), the discharge temperature regularly exceeded 90°F and in summer frequently exceeded 100°F. A temperature exceeding 100°F will produce lethal conditions for aquatic life of all kinds, including algae, crustaceans and fish. . . . [A]n upward trend in the background temperature of the river, and a corresponding trend down in dissolved oxygen . . . will result in increased harm from thermal pollution, if present levels of heat discharge continue into future. . . . The spatial and vertical extent of the Indian Point plume is sufficient to raise concerns about the passage of fish and impacts on the benthic life of the river.").
[86] *See, e.g.*, NRC EFH Assessment for IP, *supra* note 33, at 16 ("Of the possible mitigation measures, [for minimizing aquatic impacts caused by Indian Point] only flow reductions, planned outages, and closed-cycle cooling will reduce thermal effluents from IP2 and IP3.").

Offer of Proof

Petitioners offer the report referenced herein entitled "The Status of Fish Populations and the Ecology of the Hudson," (April 2008), prepared for Riverkeeper by aquatic biology experts at Pisces Conservation Ltd, which demonstrates that numerous Hudson River fish are in serious long-term decline, due in part to impacts from the operation of Indian Point. This report is annexed hereto as Exhibit C.

Petitioners also offer the report referenced herein entitled, "Entrainment, Impingement and Thermal Impacts at Indian Point Nuclear Power Station," (November 2007), prepared for Riverkeeper by aquatic biology experts Pisces Conservation Ltd., which demonstrates the destructive impacts of the heated discharges from Indian Point on the aquatic ecology of the Hudson River. This report is annexed hereto as Exhibit D.

Petitioners will also offer the expert testimony of aquatic biologist Peter Henderson, Ph.D., of Pisces Conservation Ltd. in Lymington, U.K.. Dr. Henderson's background and experience is clearly ample to support acceptance of his testimony.[87] Dr. Henderson's testimony will show that continued use of once-through-cooling at Indian Point will result in ongoing severe thermal impacts to the aquatic ecology of the Hudson River, inconsistent with New York State's narrative water quality standard that thermal discharges support healthy fish habitat. In particular, Dr. Henderson will testify to the following:

1. Dr. Henderson will testify regarding the current peril of various important fish species in the Hudson River and destabilized state of the Hudson River ecosystem. He will base his testimony on current Hudson River fisheries population reports and personal experience.
2. Dr. Henderson will testify regarding the destructive thermal impacts of the once-through cooling water intake structure that has been employed at Indian Point for almost the last four decades. He will base his testimony on current Hudson River fisheries population reports and personal experience.
3. Dr. Henderson will testify that CCW screens would fail to abate the thermal impacts of the cooling water intake system at Indian Point in any way and that such impacts would, thus,

[87] *See supra* note 39.

continue to damage the fisheries and biotic resources of the Hudson River. He will base his testimony on personal experience, Hudson River fisheries population reports, and on information about how CWW screens function and operate.

Entergy's Violation of New York State's Narrative Standard that All Thermal Discharges Support Healthy Fish Habitat is a Substantive and Significant Issue For Which Petitioners Should be Granted Full Party Status

Pursuant to 6 N.Y.C.R.R. § 624.4(c)(ii), this is an adjudicable issue as it "relates to a matter cited by department staff as a basis to deny the permit and is contested by the applicant." Petitioners submit that this is also a "substantive and significant" issue that warrants Petitioners' full party participation in any future briefings and/or adjudicatory hearing that may take place as a result of Entergy's Hearing Request.[88]

Whether Entergy's plan to operate during a period of extended operation with no effort to abate the severe thermal discharges from Indian Point violates New York State's narrative standard that thermal discharges support healthy fish habitat certainly meets the "substantive and significant" issue threshold. This issue is substantive since evidence showing that ongoing heated discharges would exacerbate habitat degradation of the Hudson River ecosystem would cause a reasonable person to inquire further about Entergy's ability to meet the narrative standard.[89] This is a "significant" issue since it has the potential to result in the upholding of DEC Staff's determination to deny Entergy's Application for WQC, or, alternatively, could result in "a major modification to the proposed project," should DEC require Entergy to retrofit Indian Point with a closed-cycle cooling system in order to ensure that thermal discharges would not hinder "protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife."[90]

In any event, Petitioners would be more than able to "make a meaningful contribution to the record" regarding this issue, given their long-standing involvement in raising concerns about and

[88] *See* 6 N.Y.C.R.R. § 624.5(d)(1)(ii) (Stating that entitlement to full party status is based on, *inter alia*, "a finding that petitioner has raised a substantive and significant issue or that the petitioner can make a meaningful contribution to the record regarding a substantive and significant issue raised by another party.").
[89] *Id.* § 624.4(c)(2).
[90] *Id.* § 624.4(c)(3).

addressing the destructive thermal impacts associated with the once-through cooling water intake at Indian Point.

Issue 5

Extended Operation Of Indian Point With A Once-Through Cooling Water Intake Structure, As Currently Operated Or With Installation Of Cylindrical Wedge Wire Screens, Will Be Inconsistent With The Designated Best Use Of The Hudson River As Suitable Fish Habitat for Endangered Species

As a basis for denial of Entergy's Application for WQC, DEC Staff cites "the taking of shortnose sturgeon by the operation of the Indian Point facilities," which violates Environmental Conservation Law § 11-0535[91] and "impairs the best usage of the waters of the Hudson River for propagation and survival of sturgeon."[92] Entergy contests this ground for DEC Staff's denial, alleging that the designated uses of Part 701 do not apply to impacts of cooling water intake structures, and since "impingement and entrainment – to the extent it occurs at all – does not impair sturgeon propagation and survival."[93] For the following reasons, Petitioners support DEC Staff's legally and factually sound determination, and likewise submit that harm to endangered aquatic resources during the proposed period of extended operation will contravene New York State's water quality standard that the Hudson River "be suitable for fish . . . propagation and survival." Accordingly, Petitioners concur that denial of Entergy's Application for WQC is necessary.

Data indicates that about 700 endangered shortnose sturgeons were impinged at Indian Point from 1975 to 1990, the only timeframe for which any data is available.[94] Additionally, proposed candidate species Atlantic sturgeon, which is currently undergoing consideration for listing by National Marine

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[91] Prohibiting taking of endangered or threatened species without a proper permit.
[92] Notice of Denial at 22-23 (citing 6 N.Y.C.R.R. § 701.11)
[93] Entergy Hearing Request at 19-20.
[94] *See* Generic Environmental Impact for License Renewal of Nuclear Plants, Supplement 38, Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, Draft Report for Comment, December 22, 2008, at pg. 4-51 to 4-52, *available at* http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/supplement38/ and relevant excerpts annexed to this petition as Exhibit E (last visited July 9, 2010) (hereinafter cited as "IP Relicensing DSEIS").

Fisheries Service in a 90-day finding review,[95] has also been impacted by Indian Point's cooling water intake structure. Data shows that from 1975-1988, again, the only timeframe for which data is available, almost 4,000 Atlantic sturgeon were impinged by Indian Point.[96] No information exists to suggest that the historic rate of impingement of these critical species has changed since monitoring ceased, and presumably, harmful impacts to these fish have continued since 1990 and 1988, respectively. Entergy's plan to continue using once-through cooling at Indian point would result in ongoing mortality of endangered aquatic resources, and, thus, interfere with the suitability of the Hudson River as habitat for such endangered or threatened species.

Moreover, as discussed earlier in this petition, there is no merit to Entergy's assertion that the designated use of the Hudson River as suitable fish habitat set forth in Part 701 does not apply to impacts of cooling water intake structures.[97]

Offer of Proof

Petitioners are prepared to demonstrate that the once-through cooling water intake structure at Indian Point has harmed and will continue to harm endangered and/or threatened aquatic resources of the Hudson River without a permit. Although Entergy asserts that the implementation of mitigation technologies at Indian Point, namely Ristroph screens and a fish return system,[98] have alleviated impacts to endangered and/or threatened species in the river, Petitioners will point to a complete lack of monitoring data to support such a conclusion. Entergy cannot simply assume that impacts are no longer

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[95] *See* Endangered and Threatened Wildlife; Notice of 90–Day Finding on a Petition to List Atlantic Sturgeon as Threatened or Endangered under the Endangered Species Act (ESA), Docket No. 0912231440–91443–01, RIN 0648–XT28, 75 Fed. Reg. 838 (Jan. 6, 2010).

[96] *See* IP Relicensing DSEIS, *supra* note 94, at pg. 4-51 to 4-52; *see also* Letter from F. Dacimo (Entergy Nuclear Operations, Inc.) to U.S. Nuclear Regulatory Commission, Re: Transmission of Additional Requested Information Regarding Sturgeon Impingement Data, Indian Point Nuclear Generating Unit Nos. 2 & 3, Docket Nos. 50-247 and 50-286, License Nos. DPR-26 and DPR-64 (July 1, 2009), at Table 2c., pgs. 24-37, Table 3c., pg. 40, Table 3d., pg. 42 and Table 4, pg. 42, *accessible at*, http://www.nrc.gov/reading-rm/adams/web-based.html, ADAMS Accession No. ML091950345; Letter from F. Dacimo (Entergy Nuclear Operations, Inc.) to U.S. Nuclear Regulatory Commission, Re: Entergy Nuclear Operations Inc. Reply to Request for Additional Information (RAI) Environmental Report - Impingement Data, Indian Point Nuclear Generating Unit Nos. 2 & 3, Docket Nos. 50-247 and 50-286, License Nos. DPR-26 and DPR-64 (September 24, 2009), *accessible at*, http://www.nrc.gov/reading-rm/adams/web-based.html, ADAMS Accession No. ML092810351.

[97] *See supra* page 20.

[98] *See* Entergy's Hearing Request, Appendix D at 36-37.

occurring and will not occur in the future. Petitioners will point to a report in which the NRC concluded that an extended operating license would likely result in impacts to endangered species, but that, without current monitoring data, it is impossible to gauge the extent of the impact.[99] The NRC admits in this report that an assessment of the extent to which the installation of the mitigative screens has reduced impacts to sturgeon is not possible given the lack of data.[100] Moreover, even with such uncertainty, the NRC concluded in this report that the impacts to endangered sturgeon during the proposed license renewal period could range up to "large."[101] The relevant excerpts of this NRC report are annexed hereto as Exhibit E.

Entergy's Application for WQC once again relies upon speculative, uncorroborated, and highly questionable assumptions about the efficacy of its newest "mitigation technology," i.e. CWW screens.[102] Without definitive data, Entergy will not have demonstrated that impacts to endangered and/or threatened species in the Hudson River have ceased. Thus, continued operation of Indian Point as Entergy proposes would violate the designated use of the water as suitable habitat for shortnose and Atlantic sturgeon.

Entergy's Violation of New York State's Designated Best Use of the Hudson River as Suitable Fish Habitat for Endangered/Threatened Species is a Substantive and Significant Issue For Which Petitioners Should be Granted Full Party Status

Pursuant to 6 N.Y.C.R.R. § 624.4(c)(ii), this is an adjudicable issue as it "relates to a matter cited by department staff as a basis to deny the permit and is contested by the applicant." Petitioners submit that this is also a "substantive and significant" issue that warrants Petitioners' full party participation in

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[99] IP Relicensing DSEIS, *supra* note 94, at Appendix E, BA § 4.3.2, at E--98 to E-99.

[100] *Id.* at Appendix E, at E-99. The lack of complete and recent impingement data significantly limited the NRC ability to form a conclusion about the actual effects of Indian Point on the shortnose sturgeon. The NRC readily admitted that it was unable to come to a definitive conclusion based on the incomplete data. In fact, the NRC Staff explicitly admits that the supplied data was insufficient and current monitoring is needed to form a conclusion about the effects of impingement on the shortnose sturgeon. *Id.* at Appendix E, BA § 4.3.2, at E--98 to E-99.

[101] Based on its review of the impingement data supplied by Entergy, the NRC Staff concluded that due to "the uncertainty of the current impingement losses of . . . sturgeon and because insufficient data exist," the effects on endangered shortnose sturgeon due to license renewal could range from "SMALL to LARGE." *Id.* at Main Report § 4.6.1, at 4-52. *See also* IP Relicensing DSEIS, *supra* note 94, at Appendix E, BA § 4.3.2, at E-100 ("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. At this time, the NRC staff cannot quantify the extent to which the population could be affected.")

[102] *See* Entergy's Hearing Request, Appendix D at 36-37.

any future briefings and/or adjudicatory hearing that may take place as a result of Entergy's Hearing Request.[103]

Whether the mortality of endangered/threatened species during Entergy's proposed period of extended operation violates the best use of the Hudson River as suitable fish habitat easily meets the "substantive and significant" issue threshold. This is a substantive issue since the complete lack of evidence to support Entergy's assumption that mortality of endangered resources has ceased would cause a reasonable person to inquire further about the ability of Entergy to comply with New York State's designated use of the river.[104] This is a "significant" issue since it has the potential to result in the upholding of DEC Staff's determination to deny Entergy's Application for WQC, or, alternatively, could result in "a major modification to the proposed project," should DEC require Entergy to retrofit Indian Point with a closed-cycle cooling system in order to ensure consistency with the best use of the Hudson River as suitable fish habitat, or, alternatively, in the "imposition of significant permit conditions" to ensure Entergy's currently unsupported assumptions are based on proper analysis of current data.[105]

In any event, Petitioners would be more than able to "make a meaningful contribution to the record" regarding this issue given Petitioners' extensive work to ensure the protection of the ecological integrity of the Hudson River.

Issue 6

Radioactive Leaks At Indian Point Will Cause Inconsistency With New York State Water Quality Standards

DEC Staff's Notice of Denial correctly identifies concerns related to previous and ongoing long-running leaks from spent fuel pools and other systems, structures, and components at Indian Point.[106] As outlined below, these leaks are inconsistent, and will continue to cause inconsistency, with various New York State water quality standards. This warrants denial of Entergy's Application for WQC, or, at a

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[103] *See* 6 N.Y.C.R.R. § 624.5(d)(1)(ii) (Stating that entitlement to full party status is based on, *inter alia*, "a finding that petitioner has raised a substantive and significant issue or that the petitioner can make a meaningful contribution to the record regarding a substantive and significant issue raised by another party.")
[104] *Id.* § 624.4(c)(2).
[105] *Id.* § 624.4(c)(3).
[106] Notice of Denial at 11.

minimum imposition of conditions to ensure the proper consistency. As a threshold matter, Petitioners first explain why it is legally appropriate for DEC Staff to base its determination on Entergy's Application for WQC on the release of radiological materials from Indian Point, since Entergy calls DEC's authority here into question.[107]

DEC Staff's Legal Authority to Ensure Radioactive Leaks Comply with New York State Water Quality Standards

I. Applying Relevant New York State Water Quality Standards To Releases of Radioactive Materials into Groundwater and the Hudson River does not Constitute Regulation Under Independent State Law Authority and, Thus, is not Preempted by Federal Law

Entergy argues that DEC is preempted from denying a § 401 WQC on the basis of Indian Point's release of radiological materials into groundwater and the Hudson River because state regulation of nuclear facilities is preempted by federal law.[108] While Entergy is correct in stating that direct state regulation of radiological hazards from nuclear facilities is preempted by federal law, application of relevant state water quality standards under a § 401 certification in a federal licensing proceeding does not constitute direct regulation of nuclear facilities and, thus, is not preempted by federal regulations; even in an area of regulation typically preempted by federal law.[109]

Courts generally hold that states are preempted from regulating nuclear facilities with respect to radiological health and safety.[110] Courts have found state health and environmental standards preempted, however, only where a state attempts to directly enforce health and environmental regulations based on independent state authority.[111] For example, in *Northern States*, the court held that federal regulations preempted a State's efforts to condition a state waste disposal permit for a nuclear power plant on compliance with radioactive discharge restrictions significantly stricter than the NRC requirements.[112]

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[107] Entergy Hearing Request at 8-10.
[108] *See id.* at 8-9.
[109] *See, e,g., PUD No. 1 of Jefferson County v. Wash. Dep't of Ecology*, 511 U.S. 700, 711, 114 S. Ct. 1900, 1908-09 (1994); *N. States Power Co. v. Minn.*, 447 F.2d 1143, 1154 (1971), *aff'd*, 405 U.S. 135 (1972); *Karuk Tribe of N. Cal. v. Cal. Reg'l Water Quality Control Board, N. Coast Region*, 183 Cal.App.4th 330, 359-360, 108 Cal.Rptr.3d 40, 65 (Cal. Ct. App. 2010).
[110] *See, e.g., Pac. Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm'n*, 461 U.S 190, 216, 103 S. Ct. 1713, 1728 (1983); *N. States*, 447 F.2d at 1154.
[111] *See, e.g., United States v. City of New York*, 462 F. Supp. 604, 614 (S.D.N.Y. 1978); *N. States*, 447 F.2d at 1154.
[112] *See N. States*, 447 F.2d at 1145.

Likewise, in *New York*, a city attempted to force a university to obtain an additional permit from the city Department of Health after it had already received an operating license from the NRC.[113] The court held that the city was preempted from requiring additional licensing procedures with regard to radiological health and safety.[114]

Courts, however, have recognized a distinction between regulation under independent state authority and application of state water quality standards in the context of a federal licensing proceeding.[115] In general, courts have recognized a distinction between state attempts to enforce state health and safety regulations for radiation hazards versus states applying incidental regulatory pressure related to federally approved state standards.[116] Moreover, under *PUD No. 1*, states have substantial authority to condition a federal license on state standards in a § 401 certification, even in areas of regulation where the federal government typically retains exclusive authority.[117] New York case law supports this point. In two decisions regarding CWA § 401 certifications for hydroelectric plants, New York courts have held that, although the federal government typically retains exclusive regulatory authority for hydroelectric projects, states may impose state water quality standards within the context of a § 401 WQC.[118]

In addition, a recent California administrative board decision, whose reasoning was cited in a California appeals court decision, explicitly recognized a distinction between federally preempted state

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[113] *See New York*, 462 F. Supp. at 604-607.
[114] *See id.* at 614.
[115] *See, e.g., PUD No. 1*, 511 U.S. at 711; *Karuk Tribe*, 183 Cal.App.4th at 340 n.6, 359-360.
[116] *See Goodyear Atomic Corp. v. Miller*, 486 U.S. 174, 186, 108 S. Ct. 1704, 1712 (1988) (holding that a state worker's compensation statute applied to nuclear facilities, explaining that "Congress may reasonably determine that incidental regulatory pressure is acceptable, whereas direct regulatory authority is not."); *Karuk Tribe*, 183 Cal.App.4th at 359-360. In the present case, New York State water quality standards are enacted by the State and approved by the EPA pursuant to § 303 of the CWA and applied in the federal licensing process pursuant to § 401 of the CWA.
[117] *See PUD No. 1*, 511 U.S. at 711 (Supreme Court holding that § 401(d) expands state authority to enforce any appropriate state water quality standards beyond the specific requirements of the Clean Water Act in the context of a relicensing proceeding for a hydroelectric plant); *see also S.D. Warren Co. v. Maine Board of Envtl. Prot.*, 547 U.S. 370, 126 S. Ct. 1843.
[118] *See Chasm Hydro, Inc. v. State Dep't of Envtl. Conservation*, 14 N.Y.3d 27, 30 (N.Y. 2010); *Niagara Mohawk Power Corp. v. State Dep't of Envtl. Conservation*, 82 N.Y.2d 191, 197, 200-01 (N.Y. 1993).

regulation and application of state water quality standards in a § 401 proceeding.[119] In particular, this board distinguished state water quality standards applied in the context of a federal licensing proceeding from direct state regulation.[120] The board explained that "[f]or purposes of federal preemption analysis, the substantive requirements of state law applied through the water quality certification analysis become requirements of federal law."[121] The board analogized WQC for hydroelectric plants to state agency recommendations during a federal licensing process, except that in the context of a WQC the state conditions are binding on the federal agency.[122] The board recognized that, in a federally preempted area, states have a narrow procedural window to apply state conditions, but within that window a "state has broad authority to deny or condition certification based on federal or state water quality requirements."[123] The court in *Karuk Tribe*, after citing the above reasoning by the California administrative board, stated:

> A determination of federal preemption does not automatically mean that state input is categorically prohibited and state opinion of no consequence. The Clean Water Act gives states what appears to be a very substantial role by requiring that an applicant for any federal license comply with state water quality procedures . . . . It is only when states attempt to act outside of this *federal* context and this *federal* statutory scheme under authority of independent state law that such collateral assertions of state power are nullified.[124]

Similarly, denying or conditioning Entergy's Application for WQC based upon concerns regarding radioactive contamination in groundwater and the Hudson River is appropriate. DEC is simply applying state standards in the context of a federal licensing process, not regulating radiation hazards or radiological health and safety at Indian Point under independent state authority. Indeed, in *S.D. Warren*, the court recognized the policy behind § 401, stating that "[s]tate certifications under § 401 are essential in the scheme to preserve state authority to address the broad range of pollution."

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[119] *See Karuk Tribe*, 183 Cal.App.4th at 340 n.6, 336-37, 359-60 (reviewing administrative board denying petition to force board to regulate waste discharge from a large hydroelectric project on the Klamath River, stating the State was preempted from regulating hydroelectric dams by the Federal Power Act).
[120] *See id.* at 340 n.6 (reasoning relying on *S.D. Warren* and *PUD No. 1*)
[121] *Id.* at 340 n.6.
[122] *See id.*
[123] *Id.*
[124] *Id.* at 359-60 (emphasis in original).

II. *DEC Staff Can Apply State Water Quality Standards to Atomic Energy Act ("AEA") Materials in a § 401 Proceeding Notwithstanding the Fact that the Clean Water Act Does Not Regulate Radiological Discharges from NRC Licensed Facilities*

Entergy argues that DEC Staff cannot deny a § 401 certification on the basis of release of radioactive materials because the meaning of "discharge" in § 401(a) of the CWA means discharge of a "pollutant(s)," which the Supreme Court has held does not include AEA materials, and, thus, AEA materials do not fall within the regulatory sphere of the CWA.[125] Entergy misses the mark here, however. This argument completely ignores § 401(d), which explicitly states that applicants must comply with "any other appropriate requirement of State Law . . . and [such requirements] shall become a condition on any Federal license or permit subject to the provisions of this section."[126] Moreover, the Supreme Court has interpreted § 401(d) as *expanding* state authority to impose water quality standards beyond those specifically enunciated in the CWA.[127]

Although courts have held that review under a § 401 certification cannot expand beyond activities related to water quality, this does not limit DEC's ability to consider the impact of radiological materials on state water sources.[128] In *PUD No. 1*, the court explicitly stated that state water quality standards pursuant to § 303 of the CWA are appropriate state standards to apply in a § 401 certification.[129] Section 303 requires that the state enunciate designated usages for water sources and apply an anti-degradation policy aimed to ensure that the state's waters are not adversely affected for the specified usages.[130] It is, therefore, completely appropriate for DEC Staff to apply New York State water quality standards, including assigned designated uses, explicitly promulgated pursuant to § 303 of the CWA, to radioactive leaks which are contaminating waters of New York, namely groundwater as well as the Hudson River.

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[125] *See Train v. Colo. PIRG, Inc.*, 426 U.S. 1, 96 S. Ct. 1398 (1976).
[126] 33 U.S.C. § 1341(d).
[127] *See PUD No. 1*, 511 U.S. 700, 711.
[128] *Eastern Niagara Project Power Alliance v. State D.E.C.*, 840 N.Y.S.2d 225 (3d Dep't 2007).
[129] *PUD No. 1*, 511 U.S. 713.
[130] *Id.* at 714-718.

Issue 6.A: Radioactive Leaks At Indian Point Will Cause Inconsistency With New York State's Water Quality Standard Designating Best Use Of Groundwater For Potable Purposes During A Period Of Extended Operation

Leakage issues at Indian Point have proven to be a persistent problem. Decades of inadvertent releases of radioactive water have resulted in at least two extensive groundwater plumes underlying the site.[131] With no plans to remediate the contamination, the radionuclide plumes will remain in the groundwater and/or slowly leach into the Hudson River for decades to come. If the Indian Point reactors operate for an additional 20 years beyond their current licenses, it is reasonably foreseeable that future accidental leaks will add to the existing plumes.

This is especially so with regard to potential future leakage from the Indian Point spent fuel pools. In fact, Entergy has yet to definitely prove that active leaks from the spent fuel pools have ceased. This is because Entergy has been unable to inspect 40% of the Unit 2 pool liner due to the high density of the spent fuel storage racks and the minimal clearance between the bottom of the racks and the floor of the pool.[132] Entergy has explicitly acknowledged that "active leaks cannot be completely ruled out."[133] Such potential leakage would continue to add to the present groundwater contamination.

Furthermore, Entergy has no preventative measures in place to be able to detect future leaks from the Unit 2 pool during the proposed relicensing term.[134] Rather, Entergy relies upon a one-time

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[131] *See* E-mail from James Noggle, NRC, to Timothy Rice and Larry Rosenmann of the NYSDEC (Nov. 6, 2006), NRC ADAMS Accession No. ML070400157; Groundwater Investigation Executive Summary (Indian Point Entergy Center, Buchanan, N.Y., Jan. 2008), at 2-4, *available at* http://jic.semo.state.ny.us/Resources/ExecutiveSummary%20GW%20final.pdf (last accessed July 9, 2010) and annexed to this petition as Exhibit F (hereinafter cited as "Entergy Groundwater Investigation Summary").

[132] *See* U.S. Nuclear Regulatory Commission, Safety Evaluation Report Related to the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3, Docket Nos. 50-247 and 50-286 (November 2009), at 3-134, *accessible at*, http://www.nrc.gov/reading-rm/adams/web-based.html, NRC ADAMS Accession No. ML093170671, and relevant excerpt annexed to this petition as Exhibit G (hereinafter cited as "IP SER").

[133] *See* Entergy Groundwater Investigation Summary, *supra* note 131, at 3; *see also* IP SER, *supra* note 131, at 3-134 (expressing concern that spent fuel pool leakage problems have not been permanently corrected). Notably, Entergy has never provided any information on the feasibility of examining the remainder of the pool liner, or explained any other steps it intends to take to find any and all sources of leaks from the pools, now, or in the future.

[134] *See* NRC Request for Additional Information for the Review of the Indian Point Nuclear Generating Unit Nos. 2 and 3, License Renewal Application – Open Items (April 3, 2009), *accessible at*, http://www.nrc.gov/reading-rm/adams/web-based.html, ADAMS Accession No. ML090920150 (NRC expressing concern that Entergy's aging management plans do not include any method for determining if a degraded condition exists in the spent fuel pools during the period of extended operation, nor any explanation of how Entergy will adequately manage potential aging

inspection of the limited accessible portion of the liner for its assurance that the liner is sound and will remain sound throughout the proposed 20-year relicensing term. Instead of committing to necessary augmented inspections of the spent fuel pool liners now and during a period of extended operation, Entergy would simply depend upon a groundwater monitoring program. NRC has already sanctioned Entergy's plan to simply monitor radionuclide levels in the groundwater as the method to detect any future leaks and degraded condition of the pools.[135] However, such a method would only be able to discover leaks *after* they occur.[136]

With a history of problems indicating a degraded condition of the spent fuel pools, failure to fully discern the extent of the current leakage, and no measures in place to be able to anticipate and avert future leaks from the pools, it is likely that additional accidental releases of radioactive water from the spent fuel pools will occur and add to the already extensive contamination in the groundwater. It is further foreseeable that leaks from other plant systems may occur and thereby contribute to the existing radionuclide plumes. As a facility with a noted history of safety problems and aging plant components, it is not unreasonable to assume that such occurrences are likely to happen in the future.

Thus, the operation of Indian Point for an additional 20 years will lead to foreseeable radioactive leaks from plant systems, structures and components, and, as a result thereof, persistent and ever-accumulating contamination in the groundwater beneath the site. This is inconsistent with New York State water quality standards for the following reasons.

The designated best usage of the groundwater beneath Indian Point is as a source of potable water supply, i.e., for drinking, culinary, or food processing purposes. New York State's narrative standard applicable to groundwater dictates that deleterious substances not "impair the waters for their best

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of the spent fuel pool in the future); IP SER, *supra* note 131, at 3-134 (NRC Staff expressing concern about the lack of a system at IP2 to monitor, detect and quantify potential leakage through the spent fuel pool liner);

[135] *See* IP SER, *supra* note 131, at 3-137, 3-139 ("Tritium in the groundwater would indicate leakage from the spent fuel pool, which may lead to degradation . . . . Based on . . . applicant's additional commitment to monitor the groundwater samples from monitoring wells adjacent to the spent fuel pool, there is reasonable assurance that any degradation of the IP2 spent fuel pool would be identified").

[136] This appears to be acceptable to the NRC, since their relevant concern is not whether the environmental would be harmed but rather whether a condition exists which would result in "loss of intended function" of the spent fuel pools. *See id.* at 3-139. However, NRC's acceptance of Entergy's plan here puts Entergy's inability to preventatively detect future leaks from the pools starkly into focus.

usages."[137] So, the groundwater beneath Indian Point during the extended operating period must not be impaired for use as drinking, culinary, or food processing water, notwithstanding whether the groundwater is *actually* used for such purposes.[138] However, the current and future groundwater contamination caused by radioactive leaks at Indian Point would conflict with such uses during the extended license term.

The extensive groundwater contamination caused by radioactive leaks at Indian Point has regularly exceeded maximum contaminant levels ("MCL") allowed by the EPA in drinking water.[139] Quarterly monitoring reports prepared on behalf of Entergy encompassing data from 2008 (the most recent monitoring well data in Riverkeeper's possession at this time), reveal that certain wells continue to show radionuclide levels in excess of such limits.[140] Thus, the contamination currently remains at levels that would not allow potability. Current and potential future radioactive releases will likely cause the contamination to remain at such a level. In any event, given the notable lack of ability to preventatively detect future leakage at the plant, it is impossible to conclude that the groundwater plumes at Indian Point would reach and maintain levels that are acceptable for potability purposes. Therefore, the groundwater

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[137] 6 N.Y.C.R.R. § 703.2

[138] Thus, any reliance upon the fact that the groundwater underlying Indian Point is not used for drinking water is completely immaterial. In fact, this actually serves to demonstrate that DEC's authority here is not preempted by NRC authority over safety and health hazards, since compliance with the designated use of the groundwater for potable purposes such that the water will be safe to drink, but rather for the ecological integrity of the waters of New York.

[139] *See, e.g.*, E-mail from James Noggle (NRC), to Timothy Rice (DEC) with attached NRC Data from Indian Point Split Monitoring Well Samples (Aug. 23, 2007), *accessible at*, http://www.nrc.gov/reading-rm/adams/web-based.html, ADAMS Accession No. ML072840497 (monitoring well data showing cesium-137 and strontium-90 levels well above EPA limits); E-mail from James Noggle, NRC, to Timothy Rice and Larry Rosenmann of the NYSDEC (Nov. 6, 2006), *accessible at*, http://www.nrc.gov/reading-rm/adams/web-based.html, NRC ADAMS Accession No. ML070400157 (discussing monitoring well groundwater sampling data indicating levels of tritium, strontium-90 well in excess of EPA MCL's). EPA limits for radionuclides in drinking water are as follows: tritium, 20,000 pCi/l; strontium-90, 8 pCi/l; cesium-137, 200 pCi/l. *See* U.S. EPA, *Radionuclides in Drinking Water: A Small Entity Compliance Guide* (February 2002), *available at*, http://www.epa.gov/ogwdw000/radionuclides/pdfs/guide_radionuclides_smallsystems_compliance.pdf (last accessed July 9, 2010); *see also* U.S. EPA, Commonly Encountered Radionuclides, http://www.epa.gov/rpdweb00/radionuclides/index.html (last visited July 9, 2010).

[140] *See* GZA GeoEnvironmental, Inc., Final IPEC Quarterly Long-Term Groundwater Monitoring Report, Quarter 4 2008, at Table 3: 2008 Groundwater Analytical Results and Averages, Table 4: 2008 4th Quarter Groundwater Analytical Results (Sept. 1, 2009), annexed to this petition as Exhibit H (data showing levels of tritium in excess of EPA's MCL in monitoring wells 31, 33, and 111, levels of strontium-90 in excess of EPA's MCL in monitoring wells 36, 37, 42, 49, 50, 54, 55, 57, 66, 67, and levels of cesium-137 in excess of EPA's MCL in monitoring well 42).

contamination at Indian Point during a 20-year period of extended operation would be wholly inconsistent with New York State's designated best use of the groundwater for potable purposes.

Failure to ensure compliance with this water quality standard warrants denial of Entergy's Application for WQC, or, at a minimum, imposition of appropriate conditions to ensure such consistency.

Offer of Proof

Petitioners are prepared to demonstrate that radioactive leaks have been a persistent problem at Indian Point and will likely continue to be problematic throughout Entergy's proposed period of extended operation. Petitioners will demonstrate that excessive levels of groundwater contamination have been and/or are currently present at the Indian Point site, which will threaten to violate the designated use of the groundwater for potability purposes during any extended operation. Petitioners will also point to deficiencies in Entergy's plan to monitor and detect leaks to further demonstrate Entergy's failure to guarantee that leaks and attendant violations of the designated use of the groundwater will not occur during the proposed period of extended operation. Petitioners offer the following documents as proof of the foregoing:

1. Entergy's Groundwater Investigation Executive Summary, which explains the existence of two large contamination plumes in the groundwater beneath the Indian Point site and acknowledges that future leaks have not been ruled out. This document is annexed hereto as Exhibit F.
2. A relevant excerpt from the Safety Evaluation Report Related to the License Renewal of Indian Point, which demonstrates how Entergy's planned methodology for detecting leaks during the period of extended operation would not prevent future releases to the groundwater. This document is annexed hereto as Exhibit G.

3. Two tables from the most recent Indian Point quarterly groundwater monitoring report that is in Riverkeeper's possession,[141] which shows radionuclide levels in excess of EPA MCLs. These tables are annexed hereto as Exhibit H.

The Violation of the Best Use of New York State Groundwater Due to Radioactive Leaks is Substantive and Significant For Which Petitioners Should be Granted Full Party Status

Petitioners submit that this is a "substantive and significant" issue that warrants Petitioners' full party participation in any future briefings and/or adjudicatory hearing that may take place as a result of Entergy's Hearing Request.[142] Petitioners' proposed issue is "substantive" since there is ample evidence regarding excessive levels of radioactive contamination in the groundwater at Indian Point and potential future leakage, such that a reasonable person would require further inquiry about Entergy's ability to maintain compliance with New York State's designated best use of the groundwater for potability purposes.[143] This is a "significant" issue since it has the potential to result in the denial Entergy's Application for WQC, or, alternatively, could result in the "imposition of significant permit conditions" to ensure Entergy's compliance with the designated use of the groundwater.[144]

Issue 6.B: Radioactive Discharges From Indian Point Will Cause Inconsistency With New York State's Water Quality Standard Designating The Best Use Of The Hudson River For Primary Contact Recreational Purposes

As a basis for denial of Entergy's Application for WQC, DEC Staff cites "the discharge of radiological substances (including but not limited to, radioactive liquids, radioactive solids, radioactive gases, and stormwater) from the Indian Point site into . . . the Hudson River," which "are 'deleterious substances' and could impair the water for their best usage" in violation of 6 N.Y.C.R.R. § 703.2.[145] Entergy contests this ground for DEC Staff's denial, alleging legal deficiencies with DEC Staff's

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[141] More recent data is forthcoming as a result of Riverkeeper's involvement in the Indian Point NRC license renewal proceeding, where Riverkeeper is adjudicating an issue related to the spent fuel pool leaks. *See supra* note 16. To the extent any such data further supports Riverkeeper's position, Riverkeeper will offer such data as well.
[142] *See* 6 N.Y.C.R.R. § 624.5(d)(1)(ii) (Stating that entitlement to full party status is based on, *inter alia*, "a finding that petitioner has raised a substantive and significant issue").
[143] *Id.* § 624.4(c)(2).
[144] *Id.* § 624.4(c)(3).
[145] Notice of Denial at 11.

determination, which, based on the discussion provided above, are unfounded.[146] Entergy further alleges that DEC Staff's determination is factually deficient because it was "entirely speculative."[147] For the following reasons, Petitioners support DEC Staff's legally and factually sound determination, and likewise submit that continued operation of Indian Point would contravene New York State's water quality standard designating the best use of the Hudson River for primary contact recreation. Accordingly, Petitioners concur that denial of Entergy's Application for WQC, or, at a minimum, imposition of appropriate conditions is necessary.

It is undisputed that the large plumes of groundwater contamination caused by radioactive leaks from degraded plant components at Indian Point are, and will continue to, slowly migrate into the Hudson River. Additionally, Entergy also discharges radioactive liquid effluent into the river on a regular basis as part of routine operations. For example, Entergy's 2008 Radioactive Effluent Release Report indicates that throughout 2008, 210 and 667 curies of tritium were released from Units 2 and Unit 3, respectively, to the Hudson River through liquid effluent.[148] Moreover, the operation of Indian Point also results in accidental releases of radioactive water to the Hudson River. For example, in February 2009, a sudden underground pipe leak at the facility resulted in over 100,000 gallons of tritiated water being released directly into the waterway.[149] An extended operating license for Indian Point would result in 20 additional years of intentional and accidental radioactive discharges to the river.

Such future releases of radioactivity from the plant to the Hudson River would conflict with the ability of the public to engage in primary contact recreational activities. Entergy's "[l]iquid offsite dose calculations involve fish and invertebrate consumption pathways only."[150] Thus, there is currently no way to determine how the public would be affected by the radioactivity from Indian Point when engaging in recreational activities "where the human body may come in direct contact with raw water to the point

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[146] *See* Entergy's Hearing Request at 8-10; *see supra* pages 35-38.
[147] *See* Entergy Hearing Request at 14-16.
[148] 2008 Radioactive Effluent Release Report, Entergy Nuclear Operations, Inc., Indian Point Nuclear Generating Units Nos. 1, 2 & 3, at 17, 20, annexed to this petition as Exhibit I (hereinafter cited as "2008 IP RERR").
[149] *See* Annie Correal, *Indian Pt. Broken Pipe Spurs Safety Worries*, THE NEW YORK TIMES (Feb. 27, 2009), *available at*, http://www.nytimes.com/2009/03/01/nyregion/westchester/01nukewe.html (last visited July 9, 2010).
[150] 2008 IP RERR, *supra* note 148, at 34.

of complete body submergence"[151] in the Hudson River. Members of the public may face increased exposure to radioactive effluent if they decide to go swimming on a day when Entergy happens to perform a sizeable liquid effluent release, or if they participate in primary contact activities in the river over longer periods of time, and thereby face long-term exposure to the radioactivity that is discharged from Indian Point, both intentionally, and inadvertently. Notably, the National Academies Biological Effects of Ionizing Radiation report ("BEIR VII") indicates that there is no safe level of radiation.[152] This report revealed a "linear-no-threshold" association between exposure to radiation and a person's risk of cancer, i.e., "that the risk of cancer proceeds in a linear fashion at lower doses without a threshold and that the smallest dose has the potential to cause a small increase in risk to humans."[153]

At a minimum, these radiological discharges to the river may deter the public from engaging in primary contact recreation in the river due to the public's perception about the risks of exposure to radiation. Any deterrent effect resulting from liquid radioactive releases from Indian Point further undermines the designated use of the Hudson River for primary contact recreational purposes, by discouraging such use.

Consequently, because Indian Point will continue to discharge radioactive effluent to the Hudson River, through both monitored and unmonitored pathways, with the potential to affect any members of the public who partake or wish to partake in primary contact activities in the Hudson River, continued operation is inconsistent with New York State water quality standards. Failure to ensure compliance with such standards warrants denial of Entergy's Application for WQC, or, at a minimum, imposition of appropriate conditions to ensure such consistency.

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[151] 6 N.Y.C.R.R. § 700.1(a)(49).

[152] The National Academies, Health Risks From Exposure to Low Levels of Ionizing Radiation, BEIR VII (National Academies Press 2006).

[153] *See id.*; *see also* The National Academies, BEIR VII: Health Risks From Exposure to Low Levels of Ionizing Radiation, Report in Brief, *available at*, http://dels-old.nas.edu/dels/rpt_briefs/beir_vii_final.pdf, and annexed to this petition as Exhibit J ("The BEIR VII report concludes that the current scientific evidence is consistent with the hypothesis that, at the low doses of interest in this report, there is a linear dose-response relationship between exposure to ionizing radiation and the development of solid cancers in humans. It is unlikely that there is a threshold below which cancers are not induced").

Entergy protests that such a basis for denial is speculative, pointing to DEC Staff's determination that radioactive substances merely "have the potential to impair the best use of the water."[154] However, a § 401 certification requires the State to certify that a federal permittee will remain in compliance with relevant state water quality standards for the duration of its permit. Insofar as DEC finds reasonable doubt that Entergy will comply with New York State standards, denial or imposition of conditions on the certification is entirely proper. Given the utter lack of analysis to guarantee that the radioactive discharges from Indian Point would not interfere with primary contact recreation in the Hudson River, it is, at best, unclear whether Entergy will be able to comply with the designated uses of the river throughout a period of extended operation. It is, therefore, reasonable for DEC to either deny Entergy's Application for WQC or impose appropriate conditions to ensure consistency with the designated use of the river for primary contact recreation.

Examples of appropriate conditions could include, but would not be limited to, increased in-river sampling, increased sampling of aquatic biota, sediments, fish, shellfish, and wildlife,[155] publication/public accessibility to any sampling data, public advisories in advance of planned discharges, prompt public advisories during and/or after accidental discharges, and the like. Notably, such conditions would clearly not constitute direct regulation of the radioactive discharge from Indian Point, since they would be incidental to the federal relicensing process. Such conditions are, thus, plainly within the authority of the DEC to impose.[156]

Offer of Proof

Petitioners are prepared to demonstrate that radioactive discharges from Indian Point have the potential to interfere with the designated primary contact recreational use of the Hudson River.

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[154] Notice of Denial at 11.

[155] Entergy points to the results of a one-time study completed by DEC in November 2009 to demonstrate that there is reasonable assurance that Entergy will comply with New York State's designated uses of the river during a 20-year extended operating term. However, given that extensive groundwater plumes are slowly migrating to the River and will be doing so for years to come, Entergy should not be able to rely on the results of a one-time study to show compliance for the next two decades.

[156] In fact, a 1965 memorandum of understanding pursuant to § 2021 of the AEA clarifying the respective regulatory responsibilities of New York State and the NRC explicitly provides for State authority to sample, measure, and survey effluents and radiation contamination from nuclear facilities. *See* 30 Fed. Reg. 6883 (1965).

Petitioners will demonstrate the existence of two extensive plumes of contamination at the Indian Point site which are, and will continue to migrate to the Hudson River. Petitioners will demonstrate that the operation of Indian Point results in intentional and accidental releases directly to the Hudson River. Petitioners will further point to the inadequate monitoring of the Hudson River to ensure safe primary contact recreational use by members of the public. Petitioners offer the following documents as proof of the foregoing:

1. Entergy's Groundwater Investigation Executive Summary, which explains the existence of two large contamination plumes in the groundwater beneath the Indian Point site, which slowly leach and discharge into the Hudson River. This document is annexed hereto as Exhibit F.
2. Entergy's 2008 Radioactive Effluent Release Report, which demonstrates how Entergy regularly releases radioactive effluent into the Hudson River, and only monitors for fish and invertebrate consumption pathways. This document is annexed hereto as Exhibit I.
3. A report summarizing the BEIR VII study, which demonstrates a no threshold, linear dose-response relationship between exposure to ionizing radiation and the development of solid cancers in humans. This document is annexed hereto as Exhibit J.

The Violation of the Best Use of Hudson River for Primary Contact Recreation Due to Radioactive Discharges is a Substantive and Significant Issue For Which Petitioners Should be Granted Full Party Status

Pursuant to 6 N.Y.C.R.R. § 624.4(c)(ii), this is an adjudicable issue as it "relates to a matter cited by department staff as a basis to deny the permit and is contested by the applicant." Petitioners submit that this is also a "substantive and significant" issue that warrants Petitioners' full party participation in any future briefings and/or adjudicatory hearing that may take place as a result of Entergy's Hearing Request.[157]

This issue is "substantive" since the potential for the radioactive discharges from Indian Point to interfere with the public's ability to freely and safely recreate in the Hudson River would cause a

[157] *See* 6 N.Y.C.R.R. § 624.5(d)(1)(ii) (Stating that entitlement to full party status is based on, *inter alia*, "a finding that petitioner has raised a substantive and significant issue or that the petitioner can make a meaningful contribution to the record regarding a substantive and significant issue raised by another party.")

reasonable person to inquire further about Entergy's ability to maintain compliance with New York State's designated best use of the Hudson River.[158] This issue is a "significant" issue since it has the potential to result in the denial Entergy's Application for WQC, or, alternatively, could result in the "imposition of significant permit conditions" to ensure Entergy's compliance with the designated use of the Hudson River.[159]

In any event, Petitioners would be more than able to "make a meaningful contribution to the record" regarding this issue. Riverkeeper has been vigorously involved in raising concerns about and addressing the radioactive leaks that have become so problematic at Indian Point. To this end, Riverkeeper has raised, and is adjudicating this issue in the Indian Point license renewal proceeding.[160] Riverkeeper is, thus, uniquely situated to have the particular expertise to meaningfully contribute to the record on this issue.

CONCLUSION

Based on the foregoing petition and offers of proof, Petitioners respectfully request full party status in the instant Indian Point § 401 WQC proceeding, and that DEC accept the testimony and evidence on the issues identified herein.

Respectfully submitted,

Deborah Brancato
Staff Attorney
Riverkeeper, Inc.
828 South Broadway
Tarrytown, New York 10591
914-478-4501 (ext. 230)
dbrancato@riverkeeper.org

[158] *Id.* § 624.4(c)(2).
[159] *Id.* § 624.4(c)(3).
[160] *See* IP License Renewal Memorandum and Order, *supra* note 16 (admitting for adjudication an issue raised by Riverkeeper related to spent fuel leaks at Indian Point).

Phillip Musegaas, Esq.
Hudson River Program Director
Riverkeeper, Inc.
828 South Broadway
Tarrytown, New York 10591
914-478-4501 (ext. 224)
phillip@riverkeeper.org

Rebecca Troutman
Senior Counsel
Riverkeeper, Inc.
828 South Broadway
Tarrytown, New York 10591
914-478-4501 (ext. 241)
rtroutman@riverkeeper.org

Daniel E. Estrin
Supervising Attorney
Pace Environmental Litigation Clinic, Inc.
78 North Broadway
White Plains, New York 10603
914-422-4343
destrin@law.pace.edu

Karl Coplan
Co-Director
Pace Environmental Litigation Clinic, Inc.
78 North Broadway
White Plains, New York 10603
914-422-4343
kcoplan@law.pace.edu

Geoffrey Fettus, Esq.
Natural Resources Defense Council
1200 New York Ave., NW, Suite 400
Washington, DC 20005
202-289-6868
gfettus@nrdc.org

Paul Schwartzberg
Scenic Hudson, Inc.
One Civic Center Plaza
Poughkeepsie, NY 12601
845- 473- 4440
schwartzberg@scenichudson.org

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