

July 25, 2016

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**RE: DRAFT AUTHORIZATION TO DISCHARGE UNDER NPDES FOR ENERGY'S PILGRIM NUCLEAR POWER STATION
(NPDES PERMIT No. MA0003557)**

Dear Mr. Papadopoulos,

On behalf of the undersigned organizations, please accept the following comments concerning the above referenced draft NPDES permit (the draft permit) for Entergy's Pilgrim Nuclear Power Station (PNPS). We appreciate the opportunity to comment and acknowledge the time, effort, and expertise of EPA and MassDEP staff that went into crafting this draft document that seeks to finally renew PNPS's current NPDES permit, which expired in 1996. However, for more than two decades Entergy has avoided substantive review of PNPS's current permit terms and conditions.¹

I. INTRODUCTION

In 2012, a citizen group identified 33,000+ violations of the Federal Clean Water Act (CWA) and issued a Notice of Intent to Sue under the state and federal water pollution controls for these violations.² The group refrained from filing suit due to assurance from EPA and MassDEP that the revised NPDES permit would be issued by the end of 2013. The revised permit was not issued in 2013, and EPA and MassDEP have continued to allow PNPS to discharge pollutants and use massive quantities of water from Cape Cod Bay since that time, as well as violate terms of the original permit.

In 2014, EPA and MassDEP were asked to terminate PNPS's NPDES permit due to massive destruction of Cape Cod Bay resources, ongoing since 1972, and the continued delay in issuing a revised permit.³ It continues to be our position, described in the 2014 letter and subsequent meetings, that the PNPS NPDES permit allowing use of the outdated 'once-through cooling system' should be terminated, and Entergy prohibited from continued use of Cape Cod Bay as a free source of cooling water and a dump for thermal and chemical effluents.⁴ The only continued use that should

¹ For full summary of PNPS's contentious history, see: Chronology of Events: PNPS, Plymouth, MA: 1960-2015.
<<http://www.capecodbaywatch.org/2015/10/pilgrim-chronology-1967-2015/>>

² 33,253 violations (from 1996 to 2012) of the CWA by PNPS are outlined in: Ecolaw Notice of Intent letter. Oct. 5, 2012. Re: CWA § 505 Notice of Intent to Initiate Citizen Suit for Violations at Pilgrim Nuclear Power Station, Plymouth, Mass. NPDES Permit No. MA 0000355 <<http://www.capecodbaywatch.org/wp-content/uploads/2012/10/10.05.12-noi-w-exhibits.pdf?d23684>>

³ CCBW letter to EPA. Jan. 28, 2014. Re: Pilgrim Nuclear Power Station, Plymouth, Mass.: Expired Clean Water Act NPDES Permit No. MA0003557 <http://www.capecodbaywatch.org/wp-content/uploads/2014/01/NPDESletter_Final_2014Jan28.pdf?d23684>

⁴ JRWA. 2015. Entergy: Our Bay is Not Your Dump <<http://jonesriver.org/2015-water-pollution/>>

be considered under the draft permit is cooling associated with spent fuel storage in PNPS's wet pool and for site decommissioning operations post power production.

PNPS's own reports show it has used and discharged massive quantities of water, containing numerous chemical pollutants, and killed billions of organisms each year – causing unquantifiable damage to the Cape Cod Bay ecosystem. Recreational, economic, social, health and environmental benefits are directly linked to a clean and unimpaired water source such as Cape Cod Bay. Entergy has destroyed public trust resources under a dissembled “permit to pollute” issued and sanctioned by EPA and MassDEP, and without any viable review for decades.

As described further below, there are no legitimate grounds for allowing PNPS to continue to operate its cooling water intake structure (CWIS). No modifications or upgrades will be sufficient to meet the standards of the Clean Water Act and the State's Surface Water Quality Standards (SWQS). Simply put, the 2016 draft NPDES permit is too little, too late.

In addition, climate change impacts are compounding the damage and risk associated with Entergy's CWIS and continued operations. According to a June 2016 report on climate change released by the Boston Research Advisory Group,⁵ Boston area sea level is rising faster than previously projected, and precipitation will become more severe. In 2015, Jones River Watershed Association (JRWA) provided the U.S. Nuclear Regulatory Commission (NRC) with a brief analysis of sea level rise impacts at the PNPS site.⁶ This recent science predicting rising seas and extreme precipitation in the Northeast further supports a sooner closure and decommissioning of PNPS. Ignoring these inconvenient truths as well as PNPS's location relative to sea level is a disservice to the public and is contrary to the duty of EPA and MassDEP to protect the public trust resources. EPA and MassDEP are the regulatory guardians of these essential resources. Allowing PNPS to continue to operate under a NPDES permit will not protect these resources and violates agencies' public trust duties.

If EPA and MassDEP decide nonetheless to proceed with NPDES permit renewal for full operations until 2019 and for decommissioning activities after 2019, then we request consideration of the following comments.

II. GENERAL COMMENTS

A. EPA HAS FAILED TO ENSURE TIMELY REISSUANCE OF PNPS'S NPDES PERMIT

The draft permit has a 5-year term — a term imposed by the CWA — and expires at midnight, 5 years from the last day of the month preceding the effective date. The 20+ year delay in renewing

⁵ Boston Research Advisory Group. Climate Projections Consensus Report: Climate change and sea level rise projections for Boston. June 1, 2016. <<http://climateready.boston.gov/findings>>; Another 8 in. of relative sea level rise may happen by 2030, almost 3x faster than previously projected. By 2050, sea level may be as much as 1.5 ft. higher than in 2000, and as much as 3 ft. higher by 2070.

⁶ Analysis of AREVA Flood Hazard Re-Evaluation Report Pilgrim Nuclear Power Station Plymouth, MA and updated geospatial maps of the site. See <http://jonesriver.org/downloads/analysis-of-areva-flood-hazard-re-evaluation-report-for-pilgrim-nuclear-power-station/>

PNPS's 1991 permit, which expired in 1996, has undermined the intent of the CWA by allowing PNPS to continue to operate for decades under one of the longest expired NPDES permits in the U.S. This delay raises serious concerns about whether EPA and MassDEP will issue a timely renewal of PNPS's new final NPDES permit that is issued for operation of the CWIS and decommissioning activities in a timely manner.

As of 2001, EPA had determined 27% of facilities operating under NPDES had expired permits that were "administratively continued."⁷ While EPA is certainly aware of its failure to address permit updates in an appropriate time period, and is apparently working to address this issue,⁸ how can EPA assure the public with certainty that this unacceptable backlog of expired NPDES permit will be resolved and that Entergy's new NPDES permit for PNPS will be reviewed and renewed in a timely manner to protect environmental concerns? It seems certain that EPA will not be in a position to conduct a timely review of PNPS's NPDES permit within 5 years after its issuance.

The CWA declares that NPDES permits to pollute waterways were not to be issued after 1985. As the Senate Report accompanying the legislation explained, "[T]his legislation would clearly establish that no one has the right to pollute - that pollution continues because of technological limits, not because of any inherent rights to use the nation's waterways for the purpose of disposing of wastes."⁹ EPA and MassDEP's failure to address PNPS's expired permit and failure to require updates to eliminate pollution over the last 30+ years of operations under the CWA means EPA continues to ignore Congress' express "no-pollution" goal.

B. EPA HAS FAILED TO ADEQUATELY CONSIDER THE IMPACTS OF CLIMATE CHANGE ON PNPS'S OPERATIONS AND PERMITTED DISCHARGES.

To fully understand the impacts of PNPS operations on water resources, EPA must consider climate change with regard to all requirements and conditions in the draft permit. The Northeast experiences significant impacts caused by climate change, such as coastline alterations due to rising sea levels, increased precipitation, increased air and ocean temperatures, more flooding, higher storm surge, more intense storms, and more.¹⁰ These impacts could interfere with CWIS operations, cause further chemical pollutant discharges into Cape Cod Bay, and exacerbate the effects of PNPS's thermal effluent and impingement/entrainment on marine resources.

In July 2013, the U.S. Department of Energy (DOE) published a report outlining vulnerabilities from climate change trends at energy facilities, including nuclear power stations.¹¹ The report specifically

⁷ U.S. EPA. Factsheet: NPDES Permit Backlog Reduction. <<http://www.epa.gov/npdes/pubs/factsht.pdf>> Accessed 6/10/16.

⁸ EPA Proposed Rule. May 18, 2016. NPDES: Applications and Program Updates. <<https://www.federalregister.gov/articles/2016/05/18/2016-11265/national-pollutant-discharge-elimination-system-npdes-applications-and-program-updates>>

⁹ Sen. Rpt. No. 92-414, 92 Cong. 1st Sess. 41 (1971), reprinted in 2 Env'tl. Policy Div., Cong. Ref. Serv., A Legislative History of the Water Pollution Control Act Amendments at 1972, at 1460 (Sen. Pub. Works Comm. Print 1973); 1972 U.S. C.C.A.N. 3668, 3709.

¹⁰ Coastal Risk Consulting. Dec. 2015. Analysis of AREVA Flood Hazard Re-Evaluation Report for Pilgrim Nuclear Power Station. <http://www.capecodbaywatch.org/wp-content/uploads/2012/06/CRC-PNPS-Analysis-Report_Dec2015_FINAL.pdf?d23684>

¹¹ U.S. Dpt. of Energy. 2013. U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather. 84 pp.

cites climate change patterns such as increasing air and water temperatures, increasing intensity of storm events, sea level rise, and storm surges as having potential negative implications for thermoelectric forms of power generation (including nuclear facilities). Implications for coastally-based nuclear facilities include: 1) reduction in plant efficiencies and generation capacity due to increasing air and water temperatures, 2) increased risk of exceeding thermal discharge limits due to increasing water temperatures, and 3) increased risk of physical damage and disruption due to increasing intensity of storm events, sea level rise, and storm surge.

The National Oceanographic and Atmospheric Association (NOAA) estimates a sea level rise of 3.05 feet by 2065 in the northeastern U.S.¹² However, some have found that sea levels could be rising even faster: sea levels along the northeast coast rose nearly 3.9 inches in just a 2-year period (2009-2010) according to a Feb. 2016 study from the University of Arizona and NOAA.¹³ Another recent study¹⁴ found that Boston area sea level is rising faster than previously projected (another 8 in. of relative sea level could occur by 2030 and levels could be as much as 3 ft. higher by 2070).

As sea levels rise, groundwater levels will also rise, which will reduce storage capacity in some areas (i.e., more flooding).¹⁵ Studies also suggest precipitation amounts will increase (and already have increased ~70% from 1958-2012) and storms/nor'easters could potentially become more severe.¹⁶

Flooding, sea level rise, and rising groundwater tables could increasingly flush contaminants present in groundwater and soil into Cape Cod Bay. As PNPS moves to decommissioning and site cleanup (which could be deferred for up to 60 yrs.), understanding how these impacts will influence contamination of Cape Cod Bay will become more critical. Additional sources of contamination could result from disturbed soils or demolished structures on the site, however decommissioning does not include cleanup or management of non-radiological contaminants. It is up to EPA to ensure that non-radiological contamination present on-site does not flush into water sources over time.

For example, EPA should ensure yard drain and electrical vault testing is done with more frequency after shutdown and until decommissioning is complete to ensure increased flooding, rising groundwater tables, and other climate change impacts are not leaching on-site contaminants into Cape Cod Bay. Furthermore, Outfall 013 is recognized in the new permit but has no monitoring

¹² USACE (U.S. Army Corps of Engineers). 2014. Climate Change Adaptation. <<http://www.corpsclimate.us/ccaces/curves.cfm>>

¹³ Goddard PB, Yin J, Griffies SM, and S. Zhang. 2015. An extreme event of sea-level rise along the Northeast coast of North America in 2009–2010. *Nature Communications*. 6(6346): doi:10.1038/ncomms7346.

¹⁴ Boston Research Advisory Group. Climate Projections Consensus Report: Climate change and sea level rise projections for Boston. Jun. 1, 2016. <<http://climateready.boston.gov/findings>>; Another 8 in. of relative rise may happen by 2030, almost 3x faster than previously projected. By 2050 levels may be as much as 1.5 ft. higher than in 2000; and as much as 3 ft. higher by 2070.

¹⁵ Coastal Risk Consulting. Dec. 2015. Analysis of AREVA flood hazard re-evaluation report for Pilgrim Nuclear Power Station.

¹⁶ Stratz S.A. and F. Hossain. 2014. Probable maximum precipitation in a changing climate: Implications for dam design. *Journal of Hydrologic Engineering*. 19(12): 06014006; Kunkel K.E., Karl T.R., Easterling D.R., Redmond K., Young J., Yin X., and P. Hennon. 2013. Probable maximum precipitation and climate change. *Geophysical Research Letters* 40(7): 1402-1408; Boston Research Advisory Group. Climate Projections Consensus Report: Climate change and sea level rise projections for Boston. June 1, 2016. <<http://climateready.boston.gov/findings>>; Melillo J.M., Richmond T.C., and G.W. Yohe, Eds. 2014. Climate change impacts in the United States: the third national climate assessment. U.S. Global Change Research Program, 841 pp. doi:10.7930/JOZ31WJ2.

requirements since it's not expected to drain to Cape Cod Bay except during extreme storm events. As discussed in more detail in section II.G, more precipitation and storms are expected as a consequence of climate change; therefore, outfall 013 and all outfalls to Cape Cod Bay should be monitored and limits imposed on contaminants with climate change impacts in mind.

EPA and MassDEP should consider that sea level rise and rising groundwater tables could impact buried and underground piping and tanks. Flood proofing was a part of site construction at PNPS more than 40 years ago, however time, salt, and elements have potentially compromised that protection (as evidenced by the levels of tritium in groundwater wells within several hundred feet of the shoreline, as well as the recent NRC report that identified corroded supports for piping that distributes cooling water to the reactor and other plant systems after it is pumped in from Cape Cod Bay¹⁷). These could become even more vulnerable to saltwater corrosion as saltwater intrusion increases the salinity of the groundwater. These potential sources of contaminants should be considered by EPA and MassDEP in the new permit (i.e., periodic monitoring of buried and underground pipes and tanks that carry non-radiological contaminants). This monitoring should be coordinated with the MassDPH.

In issuing the draft permit, EPA and MassDEP improperly rely on scientific data that are decades old. In particular, the draft permit relies on Entergy's 2000 CWA "Demonstration Report" to set thermal limits on water discharged to Cape Cod Bay. This Demonstration Report is flawed in several ways, discussed in more detail in section II.A. For example, additive and synergistic effects of thermal pollution combined with other existing issues in Cape Cod Bay were not assessed, such as the warming of oceans due to global warming. It would be appropriate for EPA and MassDEP to reassess impacts caused by PNPS's thermal discharge in light of global warming and the recent increase in average water temperatures in Cape Cod Bay. In the Fact Sheet, EPA acknowledges a "statistically-significant warming trend in both the intake and in surface waters in Cape Cod Bay over the 37-year period of record." Until a reassessment of PNPS's thermal plume is carried out, we request that the temperature variance be denied and thermal discharges to Cape Cod Bay be terminated.

President Obama's Executive Order 13653¹⁸ promotes risk-informed decision making among federal agencies and requires the consideration of climate change issues. EPA's own Policy Statement on Climate Change Adaption¹⁹ states that EPA is "...committed to identifying and responding to the challenges that a changing climate poses to human health and the environment."; the "...agency must adapt if it is to continue fulfilling its statutory, regulatory and programmatic requirements" and "...plan for changes in climate and incorporate consideration of climate change into many of its programs, policies, rules and operations to ensure they are effective under future climatic conditions.

¹⁷ NRC. July 6, 2016. PNPS – Evaluation of Changes, Tests, or Experiments and Permanent Plant Modifications Team Inspection Report 05000293/2016007.

¹⁸ Executive Order 13653. 2013. Preparing the United States for the Impacts of Climate Change.

¹⁹ EPA. Policy Statement on Climate Change Adaption. Revised June 2014.

<<https://www3.epa.gov/climatechange/Downloads/impacts-adaptation/adaptation-statement-2014.pdf>.

The draft permit does not adequately address climate change impacts and contradicts EO 13653 and EPA's Policy Statement. EPA's Climate Action Plan, mandated by EO 13653, recognizes that a "...changing climate can affect exposures to a wide range of chemicals. Exposures may change because of changing environmental conditions or changing use patterns." Yet the draft permit does not address how various climate change impacts will influence further chemical pollutant discharges from PNPS into Cape Cod Bay, nor does the science behind the draft permit assess what impacts climate change will have regarding thermal effluent and impingement/entrainment of marine resources.

In view of climate change impacts that will impact PNPS, decommissioning and site decontamination should be completed by 2030 and all NPDES permits should be terminated. No further discharge of pollutants into Cape Cod Bay and the groundwater on-site should be allowed to continue.

C. EPA SHOULD REQUIRE ENTERGY TO MITIGATE THE PAST AND CONTINUING HARM CAUSED BY PNPS'S WATER INTAKE AND POLLUTANT DISCHARGES

The draft permit should require Entergy to fund a mitigation account for environmental restoration and monitoring work in Cape Cod Bay and nearby estuaries, by local public and NGO groups. This account should be a robust dedicated fund used to mitigate the cumulative impacts of PNPS operations since 1972 and for a period after decommissioning ends. Attachment D to the draft permit reads that PNPS's water intake has removed and killed billions of aquatic organisms in Cape Cod Bay. In addition to direct impacts, the loss of aquatic organisms have indirect, ecosystem-level effects, including disruption of aquatic food webs,²⁰ disruption of nutrient cycles and other biochemical processes, alteration of species composition and overall levels of biodiversity, and degrade the overall aquatic environment. It has been assumed that 100% mortality occurs for entrained zooplankton at PNPS, especially when the cooling water temperature at discharge exceeds 84.2°F (29°C) and coincides with chlorination.²¹ Entergy's current NPDES permit allows PNPS to continuously chlorinate each service water system.²² It appears that this chlorinated water is mixed with the condenser discharge cooling water and a review of discharge monitoring reports from 2012-2014 shows that often the discharge temperature is above 84°F.²³ Thus, 100% of the zooplankton can be assumed to have suffered mortality over the years.

²⁰ E.g., PNPS entrainment potentially influences the food chain. Entergy is not required to monitor/report entrainment rates for copepods and other planktonic resources important to North Atlantic right whales and other species. Right whale distribution is directly linked to planktonic resources. See: Memo to JRWA, Kingston, MA from Charles "Stormy" Mayo, Ph.D., Senior Scientist, Director, Right Whale Habitat Studies, Senior Advisor, Whale Disentanglement Program, Center for Coastal Studies, Provincetown, MA. Apr. 12, 2012.

²¹ This does not include mechanical damage. Bridges W.L. and R.D. Anderson. *A brief survey of Pilgrim Nuclear Power Plant effects upon the marine aquatic environment*. In: *Observations on the ecology and biology of western Cape Cod Bay, Massachusetts*. 1984. Eds, Davis, J.D. and D. Merriman. Springer-Verlag, p. 65-76.

²² Permit No. MA 003557, A.1.(a)(2)

²³ For example, in Jun. 2011, the temperature was 97.7°F (36.5°C) and in Jul. 2010, the temperature 99°F (37.2°C) as reported in Entergy's Discharge Monitoring Reports. See Entergy's Jun. 2011 DMR and Jul. 2010 DMRs.

Impacts to the marine environment by PNPS are clear and warrant dedicated monitoring and mitigation until decommissioning is completed (up to 60 years post shutdown). The fund should be used to address:

- Cumulative impacts of past/continued use of PNPS's CWIS, including thermal discharges, on fish eggs/larvae, adult fish, shellfish, crustaceans and other aquatic life.
- Cumulative impacts on the economy, including commercial and recreational uses in Cape Cod Bay, and on recreational, social, and economic interests of the region.
- Restoration and monitoring work in Cape Cod Bay and nearby estuaries to offset PNPS's massive destruction of marine resources and disruption of the local economy.

D. EPA SHOULD REVISE HOW POLLUTANT CONCENTRATIONS ARE REPORTED IN DMRs

It appears that under the current NPDES permit reporting program, only some pollution discharges are reported in Entergy's monthly Discharge Monitoring Reports (DMRs). For example, pH results for outfalls 001 and 002 have not been included in Entergy's past DMRs. The draft permit also requests only select results be recorded and reported in DMRs (e.g., maximum daily flow of all thermal and non-thermal backwashes for outfall 002). Instead, the permit should clearly and explicitly require all effluent limits be recorded and reported in DMRs to ensure transparency and provide information for enforcement purposes. Also, a more accessible system for monitoring results and routine filings to EPA should be provided and maintained on Entergy's or its consultant's website. Data tracking should be provided so that cumulative impacts and chronic issues can be rapidly addressed. The NetDMR system should be made available for public tracking of monitoring efforts and conditions.

E. 2012 RELICENSING & FUTURE USE

The U.S. NRC extended Entergy's operating license for PNPS in 2012 despite a NPDES permit that had expired in 1996.²⁴ During relicensing, the NRC failed to complete several environmental assessments (e.g., climate change impacts, ESA section 7 consultations) that are prerequisite to relicensing, making the NRC's environmental impact statement for the relicensing invalid.²⁵ EPA and MassDEP should have ensured that PNPS was not relicensed until a valid, current NPDES permit was in place. The lack of oversight by EPA and MassDEP of PNPS's CWIS operations and failure to ensure that relicensing did not occur until the NPDES permit was reissued was an egregious failure of the agencies' regulatory duties. Although the draft NPDES permit now in 2016 is stronger in some ways, it does nothing to mitigate these failures. At a minimum the new permit should prevent continued use of Cape Cod Bay prior to any re-fueling (scheduled for spring 2017), and then focus on site decommissioning and decontamination post power production.

²⁴ As well as pending citizen challenges referred to NRC administrative appeal board, and pressure from the host community, citizens, legislators and organizations to not relicense PNPS. For example, see: Cape Cod National Seashore Advisory Commission letter to NRC. March 30, 2012. Re: Pilgrim Nuclear Facility <<http://www.pilgrimcoalition.org/wp-content/uploads/2012/05/03302012-NatSeashoreAdvisoryCom-to-NRC.pdf>>

²⁵ JONES RIVER WATERSHED ASSOCIATION PETITIONS FOR LEAVE TO INTERVENE AND FILE NEW CONTENTIONS UNDER 10 C.F.R. § 2.309(a), (d) OR IN THE ALTERNATIVE 10 C.F.R. § 2.309(e) and JONES RIVER WATERSHED ASSOCIATION AND PILGRIM WATCH MOTION TO REOPEN UNDER 10 C.F.R. § 2.326 AND REQUEST FOR A HEARING UNDER 10 C.F.R. §2.309(a) and (d) IN ABOVE CAPTIONED LICENSE RENEWAL PROCEEDING. March 8, 2012.

The final permit should specify that the permit cannot be transferred to another company (or the same company) for re-use of the site for commercial/industrial purposes, especially without a public review process. In 1999, Entergy inherited PNPS's NPDES permit from Boston Edison, and subsequently did not follow all permit conditions. This new permit should not automatically transfer as the previous permit was in 1999.

F. INCREASED EPA ENGAGEMENT

We are not aware of EPA or MassDEP programs or efforts to address the significant threat posed by nuclear waste fuel stockpiles. EPA and MassDEP must become more fully engaged in this issue despite the long standing policy to defer to NRC, which does not yet have a long-term program for waste stockpiles, but rather defers to DOE which has not established a clear policy or practice for handling the tons of nuclear waste that threatens our environment and more.

Although DOE is working on a "consent-based siting" plan, hundreds of tons of enriched nuclear waste is stored close to the shoreline at PNPS, and will continue to be in that location for an unknown period of time. At this location, there is high risk of salt water corrosion or storm damage. Efforts to manage ice, snow, and debris build-up is likely to include chemical, as well as mechanical, means. Run-off from the waste storage facility will ultimately end up in Cape Cod Bay.

Even though NRC is charged with handling radiological safety, EPA and MassDEP should address related issues such as siting and maintenance to ensure the potential for environmental impact is minimized. Here, we ask that EPA and MassDEP take a stand to require storage of nuclear waste, both spent nuclear fuel and stranded Greater-than-Class-C waste, to be stored beyond the reach and level of climate change impacts. Entergy has multiple options, and should be required to engage in the safest handling of nuclear waste and avoid of any need for a permit to pollute. This stockpile of nuclear waste should not be allowed to impact the marine environment. EPA and MassDEP should issue an order to move it or to formally address management activities.

II. COMMENTS SPECIFIC TO DRAFT PERMIT EFFLUENT LIMITATIONS

A. CONDITIONS AND EFFLUENT LIMITATIONS APPLICABLE TO OUTFALL 001 MUST BE REVISED (DISCHARGE OF NON-CONTACT COOLING WATER TO CAPE COD BAY)

Part 1.A: Permit effective date until shutdown

We support the draft permit's reduction in maximum daily flow rate from 510 million gallons per day (MGD) to 447 MGD until May 31, 2019 or before, and the preservation of flow limits despite requests by the permittee that these limits be removed for outfall 001.

The temperature rise (delta-T) in the draft permit is the same as the current permit (32°F). While we do not support any thermal pollution discharged into Cape Cod Bay, we at least recommend that this limit be reassessed in order to be granted a variance under CWA § 316(a) and we are strongly opposed to any increase in this limit in the final permit.

The delta-T limit is based on the CWA § 316(a) variance that was granted in the current 1991 permit. However, this variance is based on Entergy's outdated and flawed Demonstration Report. Much of information from the 1975 Demonstration Report was seemingly carried over to the updated 2000 report, with some exceptions. The 2000 Demonstration Report:

- 1) relies on outdated and incomplete data -- studies are mostly from the 1970s and the newer 1995 study was cut short and meaningful data were only collected for 2.5 days.
- 2) The 1975 report states that there are no rare and endangered species in the vicinity of PNPS, which is false (e.g., the entirety of Cape Cod Bay has recently been deemed critical habitat for critically endangered North Atlantic right whales); and the 2000 report does not discuss endangered species at all.
- 3) Representative Species (chosen due to biological importance, whether they are affected by operations, and commercial/recreational interest) are likely different 20 years later.
- 4) Additive and synergistic effects of thermal pollution combined with other existing issues in Cape Cod Bay was not assessed (e.g., invasive species, other pollution, and the warming of our oceans due to global warming was not considered at all).

Thermal pollution harms marine life and poses a serious threat to ecological health and individual species.²⁶ An average annual increase in water temperature of only about 1.8°F (1°C) can have significant effects on coastal marine community dynamics by impacting a variety of biological and ecological processes.²⁷ According to one study used in Entergy's 2000 Demonstration Report, hundreds of acres of Cape Cod Bay could increase by at least 1°C due to the thermal discharge. In this Demonstration Report, Entergy did not adequately demonstrate how this temperature increase would affect the development/survivorship of ichyoplankton or affect the reproduction of adult fish in the long-term.²⁸ Not only is the Demonstration Report flawed for the reasons mentioned above, but Entergy did not adequately show that no significant impacts occur due to the heated discharge – not in 2000, and certainly not today.

Entergy has to reapply for its variance and has chosen to make the case for a variance “retrospectively” – showing that monitoring data collected during the plant's operations show no evidence of appreciable harm to balanced, indigenous populations attributable to the thermal discharge. This is in contrast with making the case “prospectively,” where an extensive modeling of the thermal plume would be required. Entergy should be required to prospectively prove no harm and new modeling of the plume should be required.

Cape Cod Bay is different than it was when the studies in Entergy's Demonstration Report were carried out. Reassessing impacts from PNPS's thermal discharge in light of global warming, the

²⁶ Azmi S., et al. 2015. Monitoring and trend mapping of sea surface temperature (SST) from MODIS data: a case study of Mumbai coast. *Environmental Monitoring and Assessment*. 187:165; Oviatt C.A. 2004. The changing ecology of temperate coastal waters during a warming trend. *Estuaries*. (27)6: 895-904.

²⁷ Including metabolic rates, population growth, distribution and abundance of prey, including phenology and productivity, and population connectivity; Oviatt C.A. 2004. The changing ecology of temperate coastal waters during a warming trend. *Estuaries*. (27)6: 895-904.; Hoegh-Guldberg O., et al. 2010. The impact of climate change on the world's marine ecosystems. *Science*. (328): 1523-1528.

²⁸ Letter to EPA from MassCZM, Jun. 27, 2000. Re: MCZM review of the Entergy-Pilgrim Station §316 Demonstration Report.

recent increase in average temperatures in Cape Cod Bay,²⁹ among other more current information would be appropriate. Until this is done, we strongly recommend that the variance be denied.

CWA § 316(a) provides a mechanism for a variance from applicable thermal water quality standards where the permittee is able to demonstrate to EPA's satisfaction that the thermal effluent limit that would otherwise apply would be "more stringent than necessary to assure the projection [sic] and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on the body of water into which the discharge is to be made[.]" 33 U.S.C. § 1326(a). Such demonstration must take into account "the cumulative impact of [the discharger's] thermal discharge together with all other significant impacts on the species affected[.]" 40 C.F.R. § 125.73(a). Further, the discharger's variance request must show:

- (i) That no appreciable harm has resulted from the normal component of the discharge (taking into account the interaction of such thermal component with other pollutants and the additive effect of other thermal sources to a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge has been made; or
- (ii) That despite the occurrence of such previous harm, the desired alternative effluent limitations (or appropriate modifications thereof) will nevertheless assure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made.

Id. § 125.73(c)(1). EPA guidance emphasizes the need for current information to support a renewed § 316(a) variance request.³⁰ The granting of a variance should not be automatic; rather, "the burden imposed by CWA section 316(a) is a stringent one[.]" *In Re Dominion Energy Brayton Point, L.L.C.*, 12 E.A.D. 490 (E.P.A. Feb. 1, 2006),.

The permit record does not support EPA's proposed renewal of PNPS's § 316(a) thermal variance. First, it is apparent from the § 316(a) Determination included as Attachment A to the Fact Sheet that the limited and outdated data relied upon by EPA in its decision to grant a renewed § 316(a) variance does not meet the "stringent" standard imposed by the Clean Water Act. Much of the data relied upon by EPA were derived from decades-old studies. For example, all of the studies regarding benthic fauna relied upon by MassDEP and EPA (including studies of the commercial lobster fishery, benthic fish assessments by otter trawl, and near-shore benthic assessments via shrimp trawl) occurred during the 1970's and 1980's, and the MassDEP Marine Organisms Impact Assessment does not mention a single benthic fauna study that is less than 25 years old. Further, the bulk of the in-shore fish assessments relied upon by MassDEP and EPA are from the 1970's and 1980s, and the more recent studies (Gill Net studies at PNPS, which apparently continued "through the early

²⁹ As outlined by EPA in Attachment C to the draft permit.

³⁰ Memorandum from James Hanlon, Director, Office of Wastewater Management, to Water Division Directors, Regions 1 – 10, Implementation of Clean Water Act Section 316(a) Thermal Variances in NPDES Permits (Review of Existing Requirements) (Oct. 28, 2008) (hereinafter, "Hanlon 316(a) Memo"), *available at* <https://www3.epa.gov/region1/npdes/merrimackstation/pdfs/ar/AR-338.pdf>.

1990s”) found “large differences . . . in pelagic species caught in the gill net deployed in the direct path of the thermal discharge[.]” *Id.* at 18. Prior to considering whether a § 316(a) variance is appropriate for PNPS, EPA should require the discharger to obtain new relevant data to support its assertion that a balanced, indigenous community of shellfish, fish and wildlife has been and will continue to be preserved in western Cape Code Bay.

Second, the § 316(a) Determination does not adequately take into account “the cumulative impact of [PNPS’s] thermal discharge together with all other significant impacts on the species affected[.]” 40 C.F.R. § 125.73(a). Although the § 316(a) Determination pays brief lip service to the “cumulative impact” of PNPS’s thermal discharge, *id.* at 8-9, the language used by EPA throughout its § 316(a) Determination makes clear that the agency was considering the effects of PNPS’s thermal plume in isolation. See, e.g., *id.* at 9 (“There have not been detected any changes in the zooplankton community that could be attributed to the thermal plume.”); *id.* at 10 (“There has been no evidence of impaired/reduced reproduction in fish resulting from exposure to the thermal plume.”). EPA should revise its § 316(a) Determination after performing the requisite cumulative impacts analysis. This is especially relevant given the increasing temperatures in Cape Cod Bay due to climate change, which are only compounded by PNPS’s thermal discharge. Indeed, as MassDEP’s Marine Organisms Impact Assessment³¹ notes, “there has been a statistically-significant warming trend in both the intake and in surface waters in Cape Cod Bay over the 37-year period of record.” *Id.* at 6.

Third, in its § 316(a) Determination EPA either minimized or ignored certain impacts to aquatic communities discussed elsewhere in the permit record which, taken together, indicate that there has been and will continue to be appreciable harm to the community of shellfish, fish and wildlife in Western Cape Cod Bay. For example, EPA states that there are no rare and endangered species in the vicinity of PNPS, which is false; the entirety of Cape Cod Bay has recently been designated as critical habitat for critically endangered North Atlantic right whales. Further, the Fact Sheet does not acknowledge that MassDMF scientists investigating the abundance of Irish moss in the vicinity of PNPS “estimated that about 10% of the test area (one of the harvest zones) had been negatively affected by the PNPS discharge.” MDEP Marine Organisms Impact Assessment at 12.

In sum, the permit record - including the Fact Sheet, PNPS’s § 316(a) Demonstration Report, MassDEP Marine Organisms Impact Assessment, and documents referenced therein - do not support the conclusion that PNPS’s thermal discharge, in combination with other pollutant discharges and thermal impacts, results in “no appreciable harm” to the aquatic community of western Cape Code Bay. Thus, a renewed CWA § 316(a) variance is inappropriate at this time, and PNPS should be required to comply with all applicable thermal effluent limitations pursuant to CWA § 301.

Page 8 of EPA’s Fact Sheet states, “the discharge temperature is almost entirely a function of the intake water temperature.” EPA also asserts that that effluent temperature and delta-T have never

³¹ See Massachusetts Department of Environmental Protection’s Assessment of Impacts to Marine Organisms from the Pilgrim Nuclear Thermal Discharge and Thermal Backwash, included as Attachment C to the Fact Sheet.

exceeded required limits. However, Entergy has shut PNPS down (or powered down) on several occasions due to the incoming water being too warm. For example, on August 9, 2015, PNPS's discharge water was very close to exceeding the permitted limit of 102°F (reaching 101.2°F), and incoming water temperature exceeded the NRC's permitted limit of 75°F – forcing the plant to power down. As an increasingly warming climate heats the water temperature of our oceans, the water in Cape Cod Bay will continue to periodically (and likely more frequently) become too warm for PNPS's cooling system. EPA should monitor the discharge temperature and delta-T limits with more scrutiny in the future to ensure all limits are met, and it should be prepared to impose enforcement actions when they are not.

Temperature readings should be electronic and continuous, and public access to real-time monitoring data should be provided online.

We support EPA and MassDEP efforts to clarify how delta-T is calculated. The current NPDES permit is poorly written and this provision is unclear, and allowed Entergy to provide less than transparent DMR reporting since at least 1994. It is now understood that Entergy will be required to report the "highest level recorded" for temperature each month in the DMRs – for both the daily maximum discharge temperature and delta-T. The draft permit should require the DMRs to explicitly state this methodology and how its applied in each instance.

For effluent limits related to Total Residual Oxidants (TRO; to measure chlorine dosing), in the current permit TRO is reported in mg/L while the new permit limits are reported in ug/L. There is also some inconsistency throughout the draft permit – some TRO limits are reported in ug/L (e.g., outfall 001) while some are reported in mg/L (e.g., outfall 002). We request that the draft permit be modified by keeping all units consistent. It appears that the TRO limit has been lowered for outfall 001 to 0.0075 mg/L (7.5 ug/L) as a monthly average and 0.013 mg/L (13 ug/L) daily maximum, and we support this reduction. EPA's Fact Sheet explains that the daily maximum for TRO has been exceeded on three occasions (but the monthly average limit has not been exceeded). We support the reduction, but EPA should ensure all limits are met and should be prepared to impose enforcement actions when they are not.

Oil and Grease (O&G) limits do not appear in the current 1991 permit, and we support the inclusion of these limits in the new draft permit. However, we are unclear why numeric limits are not included (only "report" is listed in the requirements). While the associated footnote states that EPA's testing method 1664A is to be used, which has a minimum level of quantification of 5 mg/L, it is still unclear why a specific limit is not included. EPA should include a specific limit for O&G for outfall 001, or at least explain why one is not included.

It appears that pH limits are more stringent (from 0.5 standard units to 0.2 standard units) and there is now specific monitoring requirements (weekly) added to the new permit. We support these changes.

Part 1.B: From shutdown until permit expires

After PNPS shuts down, scheduled to be no later than May 2019, the draft permit provides that flow rate for outfall 001 is reduced from 447 MGD to 11.2 MGD (average monthly) and 224 MGD

(maximum daily) to support shutdown operations. We support this flow rate reduction, but there should be a date certain upon which withdrawals must end. The permit should outline what the 224 MGD will be used for.

We also support continued pH and O&G limits for discharges after shutdown. Since Entergy will be prohibited from chlorinating the water that is withdrawn to support shutdown operations, EPA has removed the TRO limits from outfall 001 after shutdown. We support prohibiting chlorination post shutdown and therefore the removal of TRO limits in the permit after that time.

Since 001 will no longer be used for cooling the main condenser after shutdown, the maximum daily temperature is reduced from 102°F to 85°F (and a monthly average is added = 80°F). Although we do not support any thermal discharge to Cape Cod Bay, we do not object to these reduced temperature limits. However, the delta-T limit, which is reduced from 32°F to 3°F, seems arbitrary and should instead be consistent with the MA SWQS's delta-T limit of 1.5°F. EPA also states in the Fact Sheet that it is unclear what will cause the 3°F increase in temperature, and at no point is cooling of the spent fuel pool mentioned in this section. In order to effectively set thermal limits in the final permit, EPA should clearly understand and outline which activities at PNPS will create thermal effluent at 001 and not set limits based on assumptions.

B. CONDITIONS AND EFFLUENT LIMITATIONS APPLICABLE TO OUTFALL 002 MUST BE REVISED (DISCHARGE OF THERMAL AND NON-THERMAL BACKWASH WATER TO INTAKE STRUCTURE AND OUT TO CAPE COD BAY)

Part 1.A: Permit effective date until shutdown

The draft permit reduces the maximum daily flow limit from 255 MGD to 28 MGD. We support this reduction, especially since it appears that Entergy never used close to the 255 MGD limit.

The temperature limit is reduced from 120°F to 115°F in the draft permit. While we support a reduction, 115°F is higher than that allowed by the MA SWQS and requires a variance to be granted from these standards. Entergy should be required to meet the MA SWQS limits (maximum daily temperature limit of 85°F and a monthly average limit of 80°F). Additionally, if a variance is needed for outfall 002, we reiterate our comments in the outfall 001 section: Entergy's Demonstration Report is flawed and Entergy has not adequately shown that no significant impacts occur due to the thermal discharge. Impacts from PNPS's thermal effluent needs to be reassessed in light of global warming and more current information now being available. Entergy should be required to conduct a comprehensive assessment of the impact of the thermal discharge before a variance is granted or the variance should be denied.

The draft permit provides that the frequency of thermal backwash operations is reduced from 2x per week to 1x per week, with the same duration (3-hour maximum) as the current permit. While most thermal backwash operations last for about 1 hour, the draft permit indicates that under certain conditions three hour durations would be necessary. The supporting information for the draft permit should specify under which specific conditions a 3-hour backwash is allowed. Furthermore, EPA

reports that thermal backwashes are performed 4-5 times per year and non-thermal backwashes are performed 3-4 times per year. It is unclear why the draft permit allows backwash operations up to 1x per week (50+ per year), if roughly 10 operations per year are occurring. This should be explained, and this requirement made more stringent.

The draft permit does not adequately address the range of tides at the site. A thermal backwash discharge at low tide could have a greater impact on the benthic environment than one at high tide. Backwash operations should not only be limited in terms of length of time and frequency, but also potentially to tide cycles to avoid superheating the near shore environment. If, during decommissioning, PNPS engages in restoration of the benthic environment, this will encourage more appropriate and thoughtful management of thermal and polluted discharges.

We support the draft permit's more stringent limit for pH for outfall 002. As for TRO, again, we request that numeric limits be established and not just that the licensee "reports" TRO results.

Part 1.B: From shutdown until permit expires

We support that thermal backwash operations are prohibited post shutdown at outfall 002. Limits for 002 only apply to non-thermal backwash water after shutdown. However, if Energy can prove thermal backwashes are needed post shutdown, then limits should be quickly reinstated in the permit via a formal amendment process.

C. CONDITIONS AND EFFLUENT LIMITATIONS APPLICABLE TO OUTFALLS 003 AND 012 MUST BE REVISED (DISCHARGE OF INTAKE SCREENWASH WATER TO CAPE COD BAY VIA THE MAIN FISH SLUICEWAY)

Part 1.A: Permit effective date until shutdown & Part 1.B: From shutdown until permit expires

While flow limits are the same in the current and draft permits (4.1 MGD average monthly and 4.1 MGD daily maximum), the pH limits are more stringent, which we support. Again, we support TRO limits being added to the draft permit, but the draft permit should set actual numeric limits as opposed to Entergy being allowed to simply "report" test results.

Outfall 012 will continue after shutdown, but 003 will not. Entergy requested that the dechlorination requirement be omitted when screenwash water is discharged to outfall 012, but EPA has kept the dechlorination requirement in the draft permit to protect organisms washed from the screen. We support this decision. (Use of Beaudrey WIP technology could reduce the need for chlorination and protect species even more – see section III.B for more information.)

D. CONDITIONS AND EFFLUENT LIMITATIONS APPLICABLE TO OUTFALL 010 MUST BE REVISED (DISCHARGE OF NON-CONTACT COOLING WATER FROM THE SALT SERVICE WATER SYSTEM (LOW VOLUME WASTE) TO THE DISCHARGE CANAL/CAPE COD BAY)

Part 1.A: Permit effective date until shutdown

The flow rate in the draft permit is the same as current permit (19.4 MGD average monthly), however a daily maximum flow rate was added to new permit (also 19.4 MGD). This monthly average flow rate could be reduced further, especially since Energy doesn't appear to use more than about 14 MGD via outfall 010. Based on our review of DMRs from 2015-2016,³² Energy never used more than 14 MGD. The draft permit supporting documents indicates that, based on a review of DMRs, Energy never reported a rate higher than 14.5 MGD. The monthly average flow rate should be reduced further to 15 MGD.

In contrast to the outfalls discussed so far (001, 002, 003, 012), there is an actual TRO numeric limit listed for outfall 010 (0.5 mg/L average monthly and 0.1 mg/L maximum daily). The permit's supporting documentation should clarify why it has listed a numeric limit for 010 but no other outfalls. These limits are the same as the current permit, and EPA reports that the daily maximum TRO limits have been exceeded 5 times at PNPS, but monthly averages have not. Just because one limit has not been exceeded does not excuse other violations. Violations should be taken seriously and EPA should hold Energy accountable for any past exceedances, and be ready to impose enforcement actions for future exceedance under the new permit.

We support the addition of new limits added to the draft permit (TSS, O&G, pH) that were not in the current 1991 permit.

Part 1.B: From shutdown until permit expires

We support the reduced flow rate from 19.4 MGD (both average monthly and maximum daily) before shutdown, to 7.8 MGD (average monthly) and 15.6 MGD (maximum daily) after shutdown. We also support the TSS, O&G, and pH limits remaining in the permit post shutdown.

As discussed above, TRO units are inconsistent. Before shutdown, TRO limits are reported in mg/L, but then after shutdown are reported in ug/L. Units should remain consistent or at least add a footnote with the conversion. Aside from this, we support the reduction in TRO limits (before shutdown: 0.5 mg/L or 500 ug/L (average monthly) and 1.0 mg/L or 1000 ug/L (max daily); after shutdown: 0.0075 mg/L or 7.5 ug/L (average monthly) and 0.013 mg/L or 13 ug/L (max daily)).

After shutdown, outfall 010 will be the sole continuous remaining outlet in the discharge canal for heated effluent. We agree that it is important to establish temperature limits for this outfall for that reason, and support the draft permit requirement that Energy identify limits that meet the state's SWQS (80°F average monthly and 85°F maximum daily). The delta-T limit of 3°F should be changed to 1.5°F for outfall 010 in order to meet state SWQS.

³² For DMRs, this includes all 2015 months except Sept.; and Jan. and Feb. 2016.

E. CONDITIONS AND EFFLUENT LIMITATIONS FOR PNPS'S STORMWATER DISCHARGES (OUTFALLS 004, 005, 006, 007) MUST BE REVISED

Part 1.C: Permit effective date until permit expiration date

Under the current permit Entergy is supposed to test for O&G and TSS at 4 stormwater drain outfall locations twice per year (April and September, or “next possible opportunity”) at PNPS when rainfall of >0.1” occurs after at least 3 days of dry weather, and in accordance with EPA’s protocol and as required under 40 CFR 136. The draft permit supporting materials state that Entergy failed to conduct required sampling over roughly the past 10 years. Our research confirms this: After reviewing Entergy’s DMRs from Jan 2009-Feb 2016, we found that sampling has only occurred 3 times since January 2009 and this only includes 3 of the 4 drains:

- June 9, 2009 Entergy sampled 3 of the 4 storm drain outfall locations (discharge points #005, #006 and #007). Discharge point #004 was omitted.
- November 4, 2010 Entergy sampled 2 of the 4 storm drain outfall locations (discharge points #005 and #006). Discharge points #004 and #007 were omitted.
- October 16, 2014 Entergy sampled 3 of the 4 storm drain outfall locations (discharge points #005, #006 and #007). Discharge point #004 omitted.

Entergy’s claims that there was inadequate rainfall and therefore not enough flow are inaccurate. NOAA precipitation data from the Plymouth airport station (Jan. 2009-Apr. 2016) shows that Entergy missed 53 opportunities to test storm drains in the screening seasons they did not test (screening the months Apr.-Dec. of each year and using a conservative value of >0.5” of precipitation). Using EPA’s storm event criteria of >0.1” of precipitation, Entergy missed 28 opportunities to test storm drains just in the months of Apr. and Sept. (in seasons with no testing). In other words, Entergy failed to test drains in the months of Apr. and Sept. between Jan. 2009 and Apr. 2016, but had 28 opportunities to do so. This constitutes a violation of the NPDES permit and EPA and MassDEP should initiate enforcement action and seek penalties.

Page 29 of the Fact Sheet states that Entergy has indicated some of its stormwater outfalls are difficult to access and its often unclear whether a particular storm event triggers the monitoring requirement. However, in every DMR where the required testing was not reported, at no time does Entergy explain this. Instead, Entergy often states in DMRs – which it certifies to be accurate – that testing was not possible due to “environmental conditions” or “insufficient water flow.” If Entergy has been unclear about certain NPDES requirements or was unable to test at a specific drain, it has had more than twenty years to clarify questions, formally amend the current permit, and/or remedy the methodology. Instead, Entergy, EPA, and MassDEP have allowed a decade to pass with minimal testing. This is wholly unacceptable and we strongly believe that EPA should impose the maximum penalty for every season that testing was not done in the past 10 years.

Even more concerning is, on page 31 of the Fact Sheet, EPA states that when storm drain sampling was done more frequently (from 1998-2007) certain parameters (e.g., TSS) were exceeded on many

occasions. Not only has testing not been done, but exceedances were likely regularly occurring at the outfalls and went unreported to EPA and MassDEP. Maximum penalties should be imposed.

The draft permit supporting materials also indicate a “significant storm event” was not defined under the current permit, which contributed to Entergy’s failure to conduct sampling. However, from our understanding grab sampling was supposed to occur when a “sudden onset of daytime rainfall” occurred after at least 72 hours of dry weather. According to EPA storm event criteria, this precipitation must amount to greater than 0.1” and the precipitation event must be preceded by at least 72 hours of dry weather. The rainfall criteria are clearly defined; and it is the common standard for stormwater sampling. Both professional sampling companies and volunteer monitoring programs conduct this type of sampling routinely throughout the U.S. Entergy’s unfounded excuse for failing to conduct the sampling, which is required by law under the permit, warrants maximum penalties.

To address Entergy’s failure to conduct the sampling required by the current permit, EPA has redesigned PNPS’s storm drain sampling regime. We support the increase in sampling frequency in the draft permit, particularly given Entergy’s minimal sampling in the past. This sampling will also be important post shutdown. When PNPS closes in 2019 or sooner, yard drains and storm water runoff could continue or increase pollution into Cape Cod Bay. The permit should require increased sampling frequency and contain stipulated penalties for failure to sample. The draft permit allows Energy to use undefined “unsafe conditions to evade sampling requirements. While we understand the safety of employees should be a priority, Entergy’s track record of using unfounded excuses to evade sampling requirements raises concerns that “unsafe conditions” will be used as an unfounded excuse in the future. The conditions that relieve Entergy of sampling requirements should be detailed, and EPA and MassDEP should monitor this with heightened scrutiny and be prepared to impose enforcement actions when testing is not done or limits are exceeded.

Outfall 013 is addressed on page 29 of the Fact Sheet and is identified as a miscellaneous stormwater outfall that was never covered under the current permit. EPA states that this discharge is now acknowledged and authorized by the draft permit, but is still not listed in the permit language and no monitoring requirements apply since it is inaccessible. Although Entergy reports that it is not often used and it is not expected to drain to Cape Cod Bay except during extreme storm events, it should be included in the final permit and effluent limits should apply. This will be particularly important after decommissioning begins (when structures are demolished and soils disturbed), as these outfalls could become channels for contaminants entering Cape Cod Bay. Furthermore, the consequences of climate change are being experienced in the Northeast, including more intense storm events, precipitation and storm surge. If outfall 013 only drains to Cape Cod Bay during extreme storm events, there is no better time than now to apply effluent limits.

F. CONDITIONS AND EFFLUENT LIMITATIONS FOR PNPS’S DISCHARGE OF STORMWATER VIA ELECTRICAL VAULTS (MANHOLES) TO CAPE COD BAY (OUTFALLS 004A 005A 005B 007A 007B) MUST BE REVISED

Part 1.C: Permit effective date until permit expiration date

As outlined by EPA in the draft permit supporting documentation, stormwater from 25 electrical vaults on the property is pumped to the closest stormwater outfall locations and discharged to Cape Cod Bay. These vaults are only now being considered for monitoring in the draft permit; they have gone unmonitored for years. Monitoring these vaults should have been added as a permit requirement via a formal amendment as soon as EPA and MassDEP learned of these outfalls. The draft permit supporting documentation does not specify exactly when the agencies learned of these vaults, only that it was “during the permit term.” This vague language could mean that agencies knew about these discharge locations for two decades but failed to make them subject to the NPDES permit program. EPA and MassDEP should clarify when they learned of these discharges, and explain why the vaults were not added to the permit until now.

The Draft Authorization indicates that EPA sent PNPS a CWA Section 308 letter on March 24, 2015 requiring water sampling from only seven of its 25 electrical vaults for a variety of pollutants.³³ While the draft permit requires a 1-time test of all 25 vaults, quarterly monitoring for only 5 vaults is considered representative of discharges from the 25 vaults.

- The draft permit lacks a basis for choosing the 5 test vaults without knowing whether (and which) pollutants are present in the other 18 vaults. All 25 vaults should be tested before representative test vaults are selected and the list of sampling parameters are finalized. At a minimum, the draft permit should provide an explanation that assures the public that all the vaults produce the same pollutants.
- A greater number of vaults should be tested regularly to ensure the tests are an appropriate representative of all 25 vaults -- testing only 5 vaults (20%) is not enough.
- All 25 vaults should be tested at least annually and frequency of testing in the representative vaults should be increased to monthly post shutdown. Testing of representative vaults should be adaptive; if annual tests show certain vaults are trending higher for pollutants, then these vaults should subsequently be tested monthly. While quarterly testing for representative vaults seems sufficient from the time the permit goes into effect until PNPS shuts down, the monitoring frequency should be increased to monthly post shutdown. As discussed previously, when decommissioning commences in 2019, yard drains and stormwater runoff could become conduits for pollution into Cape Cod Bay and it will be a critical time for monitoring these outlets. Furthermore, as sea level rises and storm severity increases, a more frequent and severe level of flooding is anticipated, which will lead to inundation and leaching of on-site contaminants to the environment. This will not be controlled without proper monitoring.

Water sampling from the 7 vaults found TSS, cyanide, phenols, phthalates, PCBs, antimony, iron, copper, zinc, lead, nickel, cadmium, hexavalent chromium. Lead, copper, and zinc were all exceeding marine water quality criteria. EPA states that the parameters listed in the draft permit reflect those pollutants that were detected in at least 1 vault. However, not all of these pollutants are included in the draft permit. Cyanide, antimony, nickel, and hexavalent chromium appear to be omitted. EPA

³³ Draft Authorization to Discharge under the National Pollution Discharge Elimination System (Fact Sheet at 30).

should test all 25 vaults, develop a complete list of parameters, then the complete list of parameters should be included in the final permit.

The presence of these pollutants in PNPS's discharge warrants further investigation for violations of the current permit, which prohibits discharge of metals. Page 3 of the current permit reads, "There shall be no discharge of treated or untreated chemicals which result from cleaning or washing of condensers or equipment wherein heavy metals may be discharged." The electrical vault sample results show that, for an unknown length of time, PNPS has been discharging heavy metals via the vaults and stormwater outfall locations to Cape Cod Bay. This is a further reason why a comprehensive study of the impacts of PNPS's discharges on marine life is needed before any further discharges are allowed. Entergy never documented that discharging these contaminants are consistent with the CWA and SWQS. In addition, the cumulative impact of these pollutants on the environment have never been studied.

Hexavalent chromium (Cr(VI)) is particularly harmful to aquatic life. One study³⁴ conducted research on eels, trout, and winter flounder (species present at PNPS) and found that Cr is highly toxic to fish and can cause physiologic, histologic, bio-chemical, enzymatic, and genetic problems, even upon short-term exposure. Cr(VI) induced "alterations in the morphology of gills and liver in fish in a dose- and time-dependent manner." The permit should require monitoring and impose limits for hexavalent chromium to ensure this pollutant is not causing harm in Cape Cod Bay.

Cyanide was also found in one vault, at an estimated concentration of 5.3 ug/L. It is our understanding that EPA's limit for cyanide in saltwater is 1.0 ug/L based on effects to aquatic organisms. It is unclear how the 5.3 ug/L relates to EPA's saltwater limit, and why cyanide was omitted from the monitoring requirements in the draft permit Limits for cyanide, and all other pollutants, should be assessed not only in terms of impacts to aquatic life, but also to the public. There is a popular public swimming beach located approximately 1-2 miles down current from PNPS. The recent revelation of the discharge of these harmful pollutants reflect Entergy's blatant disregard for the public health and the environment. The fact that EPA and MassDEP have allowed these discharges to occur for an unknown length of time and are only now subjecting PNPS's electrical vaults to the NPDES permit program is an egregious failure of regulatory oversight.

PNPS's current permit (page 3) states that "there shall be no discharge of polychlorinated biphenyl compounds commonly used for transformer fluid." National effluent limitation guidelines (ELGs) for Steam Electric facilities also appear to prohibit discharges of PCBs (see page 15 of the Fact Sheet: "for all discharges: no discharge of polychlorinated biphenyl compounds (PCBs)"). However, as reported by EPA in the draft permit supporting documentation, PCBs were found in 1 of the 7 electrical vaults tested on the PNPS site, which drain to the closest stormwater outfall and then to Cape Cod Bay – a violation of the current permit and ELGs. If agencies are aware that PCBs could be discharging to Cape Cod Bay, all electrical vaults should be tested immediately; and is even more

³⁴ Velma V, Vutukuru SS, and PB Tchounwou. 2009. Ecotoxicology of hexavalent chromium in freshwater fish: a critical review. *Reviews on Environmental Health*. 24(2): 129-145.

reason that the number of vaults tested regularly should be increased and testing should be adaptive depending on monitoring results. Agencies need to impose enforcement actions when PCBs are found to be discharging to Cape Cod Bay.

There are only monitoring requirements included in the draft permit in order to assess the need for effluent limitations for these toxic pollutants. The fact that these pollutants were found in the vaults should be enough evidence to implement effluent limitations in the final permit. Shockingly, the draft permit only requires Entergy to monitor these pollutants; instead, the permit should immediately impose pollutant limits for these parameters. Further, if stormwater from these 25 vaults is being discharged to stormwater outfalls 004, 005, 006, and 007, then the stormwater outfalls themselves should also be tested for the full list of pollutants discussed above (quarterly until shutdown, then monthly post shutdown) and pollutant limitations implemented immediately.

G. CONDITIONS AND EFFLUENT LIMITATIONS FOR PNPS'S INTERNAL OUTFALL: DEMINERALIZER REJECT WATER, STATION HEATING, AND SERVICE WATER SYSTEMS (OUTFALL 011) AND VARIOUS PROCESS WATER/WASTEWATER FROM WASTE NEUTRALIZATION SUMP (OUTFALL 014) TO CAPE COD BAY MUST BE REVISED

Part 1.C: Permit effective date until permit expiration date

While some of the criteria in the draft permit are the same as the current permit (e.g., flow rate, TSS, sodium nitrite), tolyltriazole has been added. PNPS has been discharging tolyltriazole for years but it was not formally permitted until now. Entergy's discharge of tolyltriazole was "approved" in a letter from the EPA in 1995, after PNPS's permit was finalized and outside of the normal permit modification process. Beginning in February 2014, a leak was discovered that discharged trace amounts of sodium nitrite and tolyltriazole into Cape Cod Bay from PNPS's outfall #001. Even if the discharges were lawfully within the NPDES permit, the discharges are allowed only through outfall #011, not outfall #001, where the leak occurred. EPA should hold Entergy accountable and impose the maximum penalty for these unlawful past discharges of tolyltriazole.

EPA should not allow any further releases of tolyltriazole into Cape Cod Bay – it should be filtered and/or treated, as opposed to diluted, before discharge to Cape Cod Bay. EPA should require extraction of all of the most environmentally harmful pollutants, including tolyltriazole, from water before discharge to Cape Cod Bay. If EPA does move forward with formally permitting tolyltriazole without filtering/treatment, then it should monitor the discharge of tolyltriazole with more scrutiny to ensure limits are met, should ensure tolyltriazole is only discharged via the approved outfall, and should be prepared to impose enforcement actions when violations occur.

EPA merely asks Entergy to calculate the concentrations of sodium nitrite and tolyltriazole in the discharge canal by using a dilution factor. The idea that "dilution is a solution" is a flawed, unacceptable way to permit discharges of pollutants to Cape Cod Bay and undermines the fundamental "no-pollution" goal of the CWA.

While we know that many pollutants (including industrial chemicals) can be harmful to people and wildlife even in small amounts, the full effects of most manufactured chemicals are still unknown due to the sheer number of contaminants, the lack of information on biological effects of complex mixtures, and the fact that chemical effects are often species-specific. Dilution cannot render most pollutants harmless. These, and other, industrial chemicals have been discharged into Cape Cod Bay for more than 40 years since PNPS began operating. The draft permit should require all pollution to be treated and removed before being dumped into Cape Cod Bay.

According to the draft permit, Entergy will need to carry out WET tests in Apr. and Oct. every other year (years 1, 3, and 5), or if no discharge occurs in these months, as soon as a discharge from these outfalls does occur. If this new permit is “administratively extended” as the current permit has been for two decades, EPA should be clear that testing would not end at year 5 and would continue despite an expired permit if needed, especially since decommissioning will be a critical time for the environment.

III. ADDITIONAL PERMIT PROVISIONS

A. PART I.D PROVISIONS

Section 5.d. states that toxic components of PNPS’s effluent shall not result in any demonstrable harm to aquatic life, and section 10 states that the thermal plume shall not block, severely restrict, interfere with spawning, or change the balanced indigenous population of the receiving waters. However, PNPS’s operations have already impacted marine life and will continue to do so. Page 45 of the Fact Sheet discusses 2 events of gas bubble disease (e.g., in 1973 an estimated 43,000 menhaden died from gas bubble disease) and occurrences when dissolved nitrogen exceeded 115% (2005 and 2009). Entergy’s thermal effluent has also interrupted the fall migration of those species that are attracted to the thermal plume (e.g., striped bass).³⁵ In a 2000 letter to EPA,³⁶ the Massachusetts Office of Coastal Zone Management addressed Entergy’s Demonstration Report by stating that the report “does not provide adequate evidence to determining how a temperature increase of just a few degrees may affect the development and survivorship of eggs and larvae or how a temperature increase may affect the future fecundity of adults exposed to the discharge plume in Cape Cod Bay.” We reiterate this point – Entergy has not sufficiently shown that it’s thermal effluent has no effect on marine species and communities, nor that there is no increase in toxicity of other chemicals present. Entergy should be required to fund an independent comprehensive study of the impacts of the CWIS and discharges before the permit can be renewed. In the meantime, discharges and use of the CWIS should cease. The thermal discharge variance in the draft permit cannot be supported on the basis of the outdated Demonstration Report.

Section 8 states that Entergy must notify EPA/DEP as soon as possible if activity occurs that will result in a toxic pollutant discharged that is not limited in the permit and that will exceed the highest

³⁵ Letter to Boston Edison from MassDEP (PATC), Oct. 15, 1998, regarding a number of recent recommendations of the A-T Committee regarding monitoring, plant impacts and fisheries habitat restoration.

³⁶ Letter to EPA from MassCZM, Jun. 27, 2000. Re: MCZM review of the Entergy-Pilgrim Station §316 Demonstration Report.

of the notification levels. It seems that any unpermitted pollutant should be reported if it will exceed the lowest of the notification levels.

Section 12 requires that Energy continue to report “unusual impingement events,” as defined in the permit provisions. We support this requirement. EPA only states that Energy should report these usual events to EPA and MassDEP by phone, but it should be clear that these events should also be reported in DMRs, and in fact be made more publically available (immediately upon reporting to EPA and MassDEP) via a designated online reporting page. Part 12.c. requests that Entergy provide its opinion of why an unusual event occurs. In most past DMRs, Entergy only reports “natural causes,” which is at best a disingenuous explanation. EPA should require Entergy to address migration and spawning seasons of the effected species and the status of the thermal effluent right before and during an event. Weather, tide and sea conditions should also be included in the report. If the Pilgrim Administrative-Technical Committee is reestablished (see below), then it should address this.

The draft permit fails to acknowledge that the 1991 permit that is still in place has a requirement for the Pilgrim Administrative-Technical Committee (PATC; sometimes also referred to as the Pilgrim Technical Advisory Committee). This science-oriented PATC is a cornerstone of PNPS’s current NPDES permit, and supervised marine impacts and recommend technology improvements or mitigation efforts as needed from 1991-2001. The PATC was disbanded in 2001, shortly after Entergy bought PNPS. This is in violation of PNPS’s current permit, which requires Entergy to “carry out the monitoring program under the guidance of the Pilgrim Technical Advisory Committee.”

The new permit should require the PATC – or a similar advisory committee or third-party consultant – to provide independent, transparent oversight of Entergy’s compliance with the permit. It should also provide guidance for practical adjustments during the remainder of operating years as well as during decommissioning. A monitoring program is only as valuable as the periodic evaluations that assess the program and the data generated.

B. PART I.F: THE DRAFT PERMIT DOES NOT COMPLY WITH CWA § 316(B) BECAUSE IT FAILS TO ENSURE THAT PNPS’S CWIS USES THE BTA FOR MINIMIZING ADVERSE ENVIRONMENTAL IMPACT

Under § 316(b) of the Clean Water Act, “any standard established pursuant to section 1311 of this title or section 1316 of this title and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available [BTA] for minimizing adverse environmental impact.” 33 U.S.C.A. § 1326(b). PNPS’s once-through cooling system is undeniably not BTA – even before operations began, in the 1970s, the Commonwealth requested closed-cycle cooling be installed at PNPS, which would cause less environmental damage and comply with state laws. Boston Edison sued to prevent having to install a closed-cycle system, winning the case and installing the cheaper, perennially destructive once-through CWIS that PNPS still uses today. Continuing to allow PNPS to operate with the same CWIS that was installed in the 1970s is a clear violation of the CWA requirement for BTA.

Failure to implement BTA causes massive environmental destruction through impingement, entrainment, thermal pollution, and scouring of the sea floor. PNPS's impingement impacts alone include twenty-one "large impingement events," where 1,000 to 107,000 fish have been killed in, oftentimes, a matter of a few days. The marine species affected are part of the larger ecosystem of Cape Cod Bay, and impingement impacts extend far beyond the mere number of fish killed. The same is true for entrainment – the cumulative and ecosystem-wide impacts of entraining large numbers of fish eggs and larvae has largely been ignored. Extensive impingement and entrainment of marine organisms will continue under the new draft permit.

In Attachment D to the draft permit, EPA states that the withdrawal of cooling water by PNPS's CWIS removes and kills billions of aquatic organisms, predominantly fish eggs and larvae, but also adult fish, shellfish, crustaceans and other aquatic life, from Cape Cod Bay. In addition to these direct impact, the loss of aquatic organisms due to CWISs can have indirect, ecosystem level effects, including disruption of aquatic food webs, disruption of nutrient cycle and other biochemical processes, alteration of species composition and overall levels of biodiversity, as well as degradation of the overall aquatic environment. While Entergy claims that impingement and entrainment mortality at PNPS are not of a magnitude to constitute an adverse environmental impact, we agree with EPA that Entergy's adverse impacts are clear. These impacts warrant terminating the permit that allows use of the destructive CWIS; impacts also warrant dedicated monitoring and mitigation until the time of shutdown and until decommissioning is complete (up to 60 years).

Despite the dictates of § 316(b), the EPA has taken an impermissibly broad reading of §1326(b) that expands BTA to include the operational measures of a facility, here, those of PNPS. The EPA considers PNPS's proposed cessation of electricity generation by June 1, 2019 to represent BTA at PNPS because it will lead to a 96% reduction in flow. *Draft Authorization to Discharge under the National Pollution Discharge Elimination System* (see attachment D at 86).

In short, the EPA inappropriately treats the implementation of no new technology at PNPS as reflective of BTA. The EPA finds its justification in *Entergy Corporation v. Riverkeeper, Incorporated*, which held that the phrase, "best technology available," does not preclude cost-benefit analysis. 556 U.S. 208 at 220. As a consequence, the EPA has determined that:

If all technologies considered have social costs not justified by the social benefits, or have unacceptable adverse impacts that cannot be mitigated, the Director may determine that no additional control requirements are necessary beyond what the facility is already doing. The Director may reject an otherwise available technology as a BTA standard for entrainment if the social costs are not justified by the social benefits.

40 C.F.R. § 125.98(f)(4). The EPA does just this when it dismisses the inclusion of cooling towers, assisted recirculation, and variable frequency as potential BTA for entrainment. However, the EPA's rule and application is not supported by the Supreme Court decision nor is it supported by the dictates of the Clean Water Act. For one, the Supreme Court decision permits the inclusion of a cost-

benefit analysis, but it does not permit a complete disregard for the dictates of 1326(b) which requires the location, design, construction, and capacity of CWIS to reflect the BTA.

In the present case, the CWIS at PNPS does not reflect BTA because it utilizes a once-through cooling system that is detrimental to aquatic life. Furthermore, the EPA's dismissal of potential BTA is not supported by the Supreme Court decision and runs afoul of the CWA. This is because the EPA's draft authorization leads to the absurd result that a power plant can sit on its outdated technologies, and its structures can still be considered to reflect BTA.

Technologies exist today that could entirely replace Entergy's CWIS or at least mitigate some of the environmental damage and pollution from PNPS. For example, approximately 40% of U.S. nuclear reactors use closed-loop, or some other type of recirculating system for cooling. Closed-cycle cooling is easily available for PNPS.³⁷ The draft permit Fact Sheet (page 46) addresses the applicability of closed-cycle cooling and the technology is discussed at length in Attachment D. Entergy not surprisingly came to the self-interested conclusion that converting to a closed system is not feasible because it would substantially impact the capacity of PNPS to generate electricity and is generally not consistent with a nuclear power plant designed for baseload generation. This is not an adequate justification for Entergy's refusal to install closed cycle cooling.

More than 40 years ago, prior to construction of PNPS, and before the CWA, the Commonwealth of Massachusetts's predecessor to MassDEP sought to require that PNPS's original owner, Boston Edison, install a closed-cycle cooling water system. Boston Edison filed a legal challenge to avoid implementing a closed-cycle system, and eventually prevailed. Yet in 2011, the Massachusetts Superior Court of Appeals found that "the Clean Waters Act, G. L. c. 21, §§ 26-53, confers on the Department of Environmental Protection (department) the authority to protect the water resources of the Commonwealth, and that that authority is broad enough to permit the department to regulate not only water pollution in the traditional sense (i.e., the discharge of harmful substances into a body of water) but also the intake of water, specifically, the components of industrial facilities that withdraw water from surface waterbodies."³⁸ Despite this, PNPS continues to use the more environmentally destructive, and outdated once-through cooling system.

If operations continue until 2019 as planned, and if EPA is unwilling to require a closed-cycle cooling system, there are other systems not considered here by EPA that have been implemented and could reduce impacts at PNPS. For example, the Beaudrey³⁹ water intake protection (WIP) system was approved by EPA in 2014 as BTA pursuant to 316(b), and has been in use in other electrical generating facilities. This system is presently under review in the Taunton River estuary for water intake up to 20 MGD to supply raw water to the water supply desalination plant. It is a system that is used world-wide, including in nuclear facilities' CWIS.⁴⁰ The Beaudrey WIP is a system designed to

³⁷ Bechtel Power Corporation. 2013. Final Technologies Assessment for the Alternative Cooling Technologies or Modifications to the Existing Once-Through Cooling System for Diablo Canyon Power Plant (Draft). Report No. 25762-0003H-G01G-0001.

³⁸ ENTERGY NUCLEAR GENERATION COMPANY vs. DEPARTMENT OF ENVIRONMENTAL PROTECTION. 459 Mass. 319. February 7, 2011 - April 11, 2011. Superior Court, Suffolk.

³⁹ E. Beaudrey & Cie.

⁴⁰ See: https://beaudrey.secsites.com/page.php?language=English&file_name=products-wip.html

retrofit existing intake screening methods, and appears to achieve improved results to reduce mortality from impingement and entrainment, and is capable of handling velocities of 0.5 fps. The fish return system appears to be an improvement over the travelling screens and backwashing system, providing a gentler return for live organisms to their source water. Entergy apparently dismissed this alternative in a 2008 report to EPA (report in response to an EPA §308 letter) due to the fragility of species impinged by PNPS and the system had not yet been proven at U.S. facilities.⁴¹

WIP screens have been used at non-U.S. based nuclear facilities, and at other electricity generating facilities in the U.S. Further, additional studies have come out (at recently as 2016) that look at impacts to species that are found near PNPS. PNPS should be required to evaluate and consider this, and other alternatives, to upgrade its antiquated and non-conforming once-through cooling system that has led to significant mortality of marine organisms over 40+ years of operation. The Beaudrey WIP system could be designed to retrofit PNPS, and be installed during PNPS's shutdown for refueling in 2017, and if the alternatives analysis suggests, could be required for the period post shutdown, and during decommissioning activities and site clean-up.

Modified Traveling Screens are another option that EPA must consider for PNPS. The EPA has determined in its Final Rule for existing facilities that the BTA for minimizing the adverse impacts of impingement mortality is modified traveling screens with a fish friendly return. 79 F.R. 48337. Additionally, the EPA has concluded that the existing traveling screens at PNPS lack specific measures for the protection of fish. Nevertheless, the EPA has excused PNPS's obligations because it determined that PNPS "may not complete the necessary upgrades and impingement technology performance optimization study before the facility would comply with the actual through-screen velocity BTA." *Draft Authorization to Discharge under the National Pollution Discharge Elimination System* (See Attachment D at 90).

There is no support for the contention that PNPS is unable to install upgrades and perform the accompanying study before June 1, 2019, and that contention should not excuse PNPS's obligations for the next three years. Modified traveling screens with a fish friendly return have already been established as BTA and the installation of a modified traveling screen with a fish friendly return will decrease impingement. The EPA overlooks the benefits of requiring modified traveling screens when it claims that "such improvements to the traveling screen and fish return are not expected to provide as great a reduction in impingement mortality as that associated with shutdown." *Draft Authorization to Discharge under the National Pollution Discharge Elimination System* (See Attachment D at 90). While shutdown will provide greater benefits than fish screens, it will not do so for another three years. On the other hand, modified traveling screens with fish friendly return can minimize the destruction of aquatic life during this time.

⁴¹ See: Letter from EPA to NRC, July 10, 2014. Re: Clean Water Act Permit for Pilgrim Station in Plymouth, MA, and Nuclear Safety Issues Alleged by the Facility. <<http://www.capecodbaywatch.org/wp-content/uploads/2012/10/Pilgrim-EPA-letter-to-NRC-071014-1.pdf?d23684>>

IV. COMMENTS ON EPA'S FACT SHEET

A. PART 5.6: ANTI-BACKSLIDING

We support cases where permit limits and conditions in the draft permit are more stringent than the existing 1991 permit. However, PNPS's permit has been weakened in several ways and Entergy's activities are less protective of Cape Cod Bay resources than in years past. For example:

- PATC oversight committee was disbanded in 2000: One of the cornerstones of PNPS's 1991 NPDES permit was the requirement for a scientific panel, the PATC, to oversee impacts and recommend technology improvements or mitigation as needed. The PATC was disbanded in early 2000, shortly after Entergy bought PNPS, because Entergy refused to participate. This is in violation of PNPS's current NPDES permit, which says Entergy must "*carry out the monitoring program under the guidance of the Pilgrim Technical Advisory Committee.*" Before it disbanded, the PATC met several times per year, issued reports, and regularly expressed recommendations about PNPS's operations and monitoring. Since the PATC disbanded, there has been no regulatory oversight of PNPS's operations in the manner required by the current NPDES permit, and now the new draft permit omits the PATC altogether. The PATC should be reinstated, and strengthened, under the new permit.
- Entergy is no longer coordinating refueling and maintenance shut downs with times when there are high concentrations of winter flounder eggs and larvae in the water to avoid entrainment. There is no record that Energy has ever fully observed the PATC's recommendations to coordinate PNPS's planned refueling outages or to use "alternate cooling" during the last 2 weeks of April until the end of May to "coincide with the peak densities of winter flounder larvae in the water column."⁴² While PNPS's scheduled refueling outages sometimes overlap with the months of April and May, the outages do not fully follow the PATC's recommendation (last 2 weeks of Apr. and throughout May). In years when refueling does not occur, Entergy does not use an alternate cooling system as recommended by PATC during this timeframe, despite the real and potential impacts to winter flounder and other migrating and threatened species like smelt and river herring. EPA should make this a restriction in the new draft permit.
- Entergy stopped funding mitigation projects. In the past, Boston Edison, and later Entergy, was required to fund mitigation projects in an effort to offset PNPS's destructive marine ecosystem impacts.⁴³ Soon after Entergy bought PNPS, most of the restoration funding ceased.
- Entergy ended marine monitoring of the "benthic" or sea floor habitat in front of PNPS.⁴⁴ The last benthic survey was done in 1999, the year Entergy bought PNPS.

B. PART 5.7: ANTI-DEGRADATION

⁴² Letter to EPA from Szal G.M. (PATC), Dec. 8, 1998. Re: Pilgrim Nuclear Power Plant.

⁴³ For example, rainbow smelt spawning habitat enhancement in the Jones River. See: Entergy, 1999. *Final report on rainbow smelt (Osmerus mordax) restoration efforts in the Jones River, 1994-1999*. PNPS Marine Environmental Monitoring Program, Report Series No. 8. (Mass. DMF, Lawton R. and J. Boardman)

⁴⁴ Oct. 5, 2012 Notice of Intent to Sue Letter, p. 12.

There are no new or increased discharges being proposed within this permit reissuance therefore EPA believes that MassDEP is not required to conduct an anti-degradation review. We disagree. There are new outfalls, and outfalls have been identified that were not covered under the last permit (012, 014, 013). Decommissioning could also create new sources of contamination entering Cape Cod Bay. As buildings are demolished and soils disturbed, new contaminants could end up in Cape Cod Bay. MassDEP should be required to conduct an anti-degradation review. As discussed above in section III.B, the CWA affords MassDEP the authority to protect the water resources, including the discharge of pollutants and water intake.

C. PART 6.8: ADDITIONAL PERMIT CONDITIONS

EPA states that the lack of discharge related mortality events and recent gas saturation data (as well as pending shutdown in 2019) shows that gas bubble disease is unlikely to occur, therefore PNPS's draft permit does not include permit conditions requiring a fish barrier net or a maximum average dissolved nitrogen saturation level. This is unacceptably less stringent than the previous permit – the fish barrier net should be required, a maximum average dissolved nitrogen saturation level should be included, and PNPS should be required to shut down during certain time of the year when migrating fish are more likely to be impacted by operations.

D. PART 11: ENDANGERED SPECIES

EPA discusses a consultation between NOAA Fisheries (NMFS) and NRC concerning an assessment of the potential effects of PNPS operations on listed species as part of PNPS's renewal process in 2012. NMFS specified that re-initiation would likely be necessary when EPA reissued a revised NPDES permit. We recommend that a re-initiation would be appropriate given that EPA is revising PNPS's NPDES permit, the newly established, expanded critical habitat area for North Atlantic right whales in Cape Cod Bay,⁴⁵ the fact that more endangered right whales (including at least 1 calf)⁴⁶ are being sighted in the western part of Cape Cod Bay with more frequency than when PNPS's current NPDES permit was issued and when PNPS was relicensed in 2012, the current special concern status of rainbow smelt, and on-going moratorium on the take of river herring.

EPA outlines listed species in vicinity of PNPS in section 11.1, however no birds are listed. Roseate terns spend extended periods of time in close proximity to PNPS (within 4 miles) and PNPS's

⁴⁵ Right whale distribution and occurrence is keyed directly to the plankton resources and the health of the population depends on the quality and quantity of the food that the whales obtain in all of their few known critical feeding habitats areas of which one is Cape Cod Bay. See: Memo to Jones River Watershed Association, Kingston, MA from Charles "Stormy" Mayo, Ph.D., Senior Scientist, Director, Right Whale Habitat Studies, Senior Advisor, Whale Disentanglement Program, Center for Coastal Studies, Provincetown, MA. Apr. 12, 2012.

⁴⁶ See Ecolaw letter to NOAA Fisheries. June 28, 2012. Re: Pilgrim Nuclear Power Station: Request to Reinitiate Consultation for Entergy Nuclear Generating Corporation Operating License Renewal. <<http://www.capecodbaywatch.org/wp-content/uploads/2013/01/06.28.12-final-nmfs-req-reinitiate-1.pdf?d23684>>; Declaration of Regina Asmutis-Silvia, Whale and Dolphin Conservation, regarding the Jan. 2013 sighting of Wart and calf in Cape Cod Bay. Mar. 21, 2013.

operations impinge fish species that terns rely on for prey (e.g., blueback herring, Atlantic menhaden).⁴⁷ Roseate terns should be considered.

E. ATTACHMENT B: BIOLOGICAL MONITORING

We support the requirement to continue to require biological monitoring after shutdown in 2019 to ensure monitoring of impingement and entrainment. After shutdown, impingement and entrainment monitoring will occur periodically when cooling withdrawals and circulating water pumps are operating. As long as PNPS's spent fuel pool requires cooling, we understand that cooling water will be used from Cape Cod Bay – therefore, we expect impingement and entrainment monitoring to be required until PNPS's spent fuel pool is no longer used, and the intake system is shut down permanently.

Winter flounder studies will cease after shutdown. However, Energy should be required to continue these studies in order to monitor any improvement to the populations after PNPS ceases operating. Entergy should be required to study and mitigate the impacts it has had over the past 40+ years, including at least 10 years after shutdown and certainly until decommissioning is completed.

Due to the discontinuance of the PATC, Entergy no longer carries out rainbow smelt studies but PNPS continues to impinge and entrain them with impunity. One study estimates that more than 1,300,000 rainbow smelt are killed each year by Entergy's operation of PNPS.⁴⁸ Smelt populations in the Jones River are erratic, and this species continues to be listed as of "special concern" by NMFS. The smelt studies should be reestablished.

V. COMMENTS: NPDES STANDARD CONDITIONS, PART II.A, GENERAL REQUIREMENTS

A. VIOLATIONS OF PERMIT STANDARDS AND REQUIREMENTS

Part I, Duty to Comply, reads, "the permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application." However, Entergy has been in noncompliance with the current permit in a variety of ways discussed in our comments above (e.g., not carrying out required storm drain testing for nearly a decade, disbanding the required PATC that watched over marine impacts, exceeding effluent limits for a variety of pollutants).

These violations should be "grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application." It is clear that enforcement of NPDES requirements have been woefully inadequate in the past. EPA and MassDEP

⁴⁷ Affidavit of Ian Christopher Thomas Nisbet, Ph.D., from: JRWA and Pilgrim Watch Request to Reopen, For a Hearing, and to File New Contentions and JRWA Motion to Intervene on Issues of: (1) Violation of State and Federal Clean Water Laws; (2) Lack of Valid State § 401 Water Quality Certification; (3) Violations of State Coastal Zone Management Policy; and (4) Violation of NEPA.

⁴⁸ Based on data from 1974-1999; Stratus Consulting. 2002. *Habitat-based replacement costs*. Report for the U.S. EPA, Region 1.

should hold Entergy accountable for past violations, and ensure this pattern does not continue with the new permit. It is imperative that EPA and MassDEP hold Entergy accountable to NPDES limits and requirements in order to effectively reduce impacts to Cape Cod Bay.

Due to the electronic submission format, we assert that all citations and links in this comment letter are actual attachments. All supporting documentation are available and we can provide to EPA or MassDEP upon request. We are also available to clarify any comments as needed.

Thank you for considering our comments.

Sincerely,

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Karen Vale-Vasilev
Program Manager, Jones River Watershed Association's Cape Cod Bay Watch Program

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Diane Turco
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Deb Katz
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Heather Lightner
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Regina Asmutis-Silvia
Executive Director, NA, Whale and Dolphin Conservation

Claire Miller
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Timothy Judson
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