

PSEGESPCEm Resource

From: Arndt, Tricia K. (DNREC) [Tricia.Arndt@state.de.us]
Sent: Monday, December 08, 2014 11:06 AM
To: PSEGESPEIS Resource
Cc: Fetter, Allen
Subject: Delaware comments NRC-2014-0149-corrected
Attachments: NRC2014_0149DNREC_CORRECTED.pdf; Your Comment Submitted on Regulations.gov (ID: NRC-2014-0149-0008)

Good morning,

Comments sent on Friday 12/5/2014 on behalf of Sarah Cooksey representing the Delaware Department of Natural Resources and Environmental Control were missing page 2 of the cover letter. The corrected version is attached.

Regards,

Tricia Arndt
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STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL

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December 5, 2014

Cindy Bladey
Office of Administration
Mailstop: 3WFN-06-A44M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Brian Bellacima
Regulatory Branch
Philadelphia District
U.S. Army Corps of Engineers
Philadelphia, PA 19107

Re: Early Site Permit for the PSEG Site (Docket ID- NRC 2014-0149)
Delaware Coastal Management Program Comments

Dear Ms. Bladey and Mr. Bellacima,

The Delaware Coastal Management Program (DCMP) appreciates the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for an Early Site Permit at the PSEG Site. Staff from the DCMP attended the 1 October public meeting in Salem County, New Jersey as well as the 23 October meeting in Middletown, Delaware. While the willingness of the Nuclear Regulatory Commission and U.S. Army Corps of Engineers to hold an information session and public meeting in Delaware was appreciated, it is important to note that the limited notice (only nine days) provided to Delaware residents undoubtedly hindered the turnout. This oversight was, in part, ameliorated by the thirty-day extension of the public comment period.

The proposed plant site is located outside the boundaries of the State of Delaware. However, the closest residence is actually located in Delaware, and the population is higher in Delaware than New Jersey in proximity to the PSEG site. As of the 2010 census - 40,943 Delaware residents lived within the 10-mile emergency planning zone of the Salem/Hope Creek Nuclear Power Plant in New Jersey. In contrast, the same year

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census data shows only 12,521 New Jersey residents in the same zone. This information is presently to illustrate the uniqueness of this situation in that a nuclear facility entirely contained in one state and generating power solely for the benefit of that state, is in fact closer geographically to denser population centers in the adjacent state. These residents share the potential risk from a catastrophic event, but do not benefit directly from the energy derived from the proposed plant nor from the predicted tax revenue. With this consideration in mind, the NRC should give as much deference to affected adjacent states as given to the state within which the facility may be constructed.

The intent of this letter however is not to focus on potential risk or emergency planning as those issues are to be addressed in the pending Safety Evaluation Report. Rather these comments are pertinent to the natural resources as analyzed within the DEIS. It should be noted that the impacts to the Delaware Estuary from the proposed reactors are not borne by New Jersey residents alone, as the Delaware River and Bay with its recreational and commercial uses, and diverse biotic and abiotic components are a shared communal resource. Increased consumptive water use and resulting resource impacts will be felt throughout the Estuary. As such, any mitigative measures to offset these impacts must be distributed throughout the estuary and benefit all states affected.

The DCMP reviewed the DEIS and coordinated with other sections and experts within the Delaware Department of Natural Resources and Environmental Control. Specific sections that provided their input are the Fisheries Section and the Wildlife Species Conservation and Research Program of the Delaware Division of Fish and Wildlife, the Water Supply section of the Division of Water, and the Division of Energy and Climate. Detailed comments on the document are included as an attachment to this letter. Should you need additional information or clarification of these comments, please contact the DCMP.

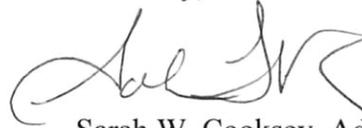
Further, and as referenced in the DEIS Section 4.2 Water-Related Impacts, concurrence from the DCMP is necessary for issuance of the U.S. Army Corps of Engineers permit for the associated dredging necessary to support the water intake and barge structures at the site. This action is subject to the interstate consistency provisions under the Federal Consistency Regulations, Subpart I- Consistency of Federal Activities Having Interstate Coastal Effects (15 C.F.R.930). The DCMP's authority to review certain activities having interstate coastal effects for adherence to federally approved coastal management policies became effective in June 2011.

We expect to continue to coordinate with the NRC and the U.S. Army Corps of Engineers regarding potential expansion of the PSEG site. Additionally, any public outreach in New Jersey related to the PSEG expansion, such as informational meetings or

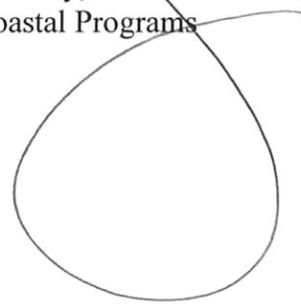
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DCMP Comments
December 5, 2014
Page 3 of 3

hearings, must be adequately noticed and repeated in Delaware to allow equal opportunity for our State's residents to voice their concerns. Thank you for your consideration of our comments as you prepare the Final Environmental Impact Statement.

Sincerely,



Sarah W. Cooksey, Administrator
Delaware Coastal Programs



Enclosure

cc: David Small, DNREC Secretary
Allen Fetter, NRC
Edward Bonner, USACE



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL

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Attachment to December 5, 2014 letter regarding Docket ID- NRC- 2014-0149

Review of the Draft EIS for an Early Site Permit at the PSEG Site

The Delaware Coastal Management Program has collaborated with the Division of Fish and Wildlife, the Division of Water and the Division of Energy and Climate within the Delaware Department of Natural Resources and Environmental Control (DNREC). The following are the collective comments of DNREC scientists after review of the Draft EIS for new reactors at the PSEG site in Salem, New Jersey.

Fisheries concerns

The Draft Environmental Impact Statement (DEIS) indicates the two proposed nuclear generating stations will operate in addition to Salem Generating Station Units 1 and 2 (SGS Units 1 and 2). The proposed new units will use approximately 113 million gallons of Delaware River water per day, which is about 3.5% of the 3.2 billion gallons of water used per day by SGS Units 1 and 2. If the new units were to replace SGS Units 1 and 2, the almost 96% reduction in daily water use would result in a corresponding reduction in the mortality of aquatic resources caused by entrainment and impingement. However, if the water requirements of the new generating stations are added to the existing water requirements of the SGS Units 1 and 2, and the Hope Creek generating station, mortality will rise due to increased impingement and entrainment.

The two new generating stations may not substantially increase the negative impact to the aquatic resources of the Delaware River, but the DEIS documents the existing massive fish mortality resulting from impingement and entrainment by SGS Units 1 and 2. Further, the DEIS states that the cumulative impact of SGS Units 1 and 2, Hope Creek and the two new generating stations on the aquatic resources of the Delaware River is moderate to large.

The negative effects of the continuing operation of SGS Units 1 and 2 on the aquatic resources of the Delaware Estuary have been a source of contention between PSEG and the Delaware Division of Fish and Wildlife (Division) since SGS Units 1 and 2 began operation. According to the DEIS, "operation of SGS Units 1 and 2 continues to impinge and entrain aquatic species and would contribute, in part, to the cumulative loss of these species in the Delaware River Estuary."

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Conversely, the DEIS states that the Nuclear Regulatory Commission (NRC) staff concluded “entrainment, impingement, and thermal discharge impacts on aquatic resources from the operation of SGS Units 1 and 2 collectively have not had a noticeable adverse effect on the balanced indigenous community of the Delaware Estuary.” (Generic Environmental Impact Statement for License Renewal of Nuclear Plants—Supplement 45: Regarding Hope Creek Generating Station and Salem Nuclear Generating Station, Units 1 and 2 Final Report (NRC 2011-TN3131)). The Division has provided data and comments regarding the impact from the once-through cooling system on the fish community of the Delaware River during each permit renewal of SGS Units 1 and 2. An assessment of the annual impingement and entrainment losses conducted by the Division in 2001 concluded that the SGS Units 1 and 2 killed the equivalent of 815,097 adult weakfish and 723,418 lbs. of adult striped bass in 1999 (Kahn, D. M. 2001. Assessment of the Impact of the Salem Nuclear Generating Station on Weakfish and Striped Bass. Delaware Division of Fish and Wildlife, Dover, DE).

The scale of mortality as a result of the continued operation of the SGS Units 1 and 2 have contributed to declining trends in fish populations, thereby decreasing community resilience. While the increase in fish mortality predicted from new generating stations may not be significant (due to reduced intake water requirements), it is unacceptable if it is in addition to the fish mortality already caused by SGS Units 1 and 2. The Division recognizes that the scope of this permit only covers use of the current Salem site as the location for the new generating stations, and that the New Jersey Department of Environmental Protection has been directed to issue a draft discharge permit by June 2015 for the Salem Nuclear Station by the New Jersey Superior Court. It is expected that the draft permit will require protective technologies which will reduce aquatic impacts from the facility. Nonetheless, the final EIS should better characterize the magnitude of the impact of the existing units in the discussion of cumulative effects.

Protected species concerns

Development of these new reactors is also a concern given the anticipated impacts to numerous federally endangered and state-rare species that are known to utilize Delaware River adjacent to Artificial Island. Currently, the water intake structures of the adjacent nuclear power plants (Salem 1 and 2) are known to entrain or impinge federally endangered Atlantic and shortnose sturgeons (*Acipenser oxyrinchus* and *Acipenser brevirostrum*, respectively), additional anadromous species that are important to Delaware’s commercial and recreational fishing industries species (e.g. striped bass *Morone saxatilis*), and several federally protected sea turtle species, including two Kemp’s Ridley sea turtles (*Lepidochelys kempii*). Expected increases in salinity as a result of climate change, sea level rise and channel deepening activities may bring more sea turtles to this part of the River thereby increasing incidence of sea turtle impingement

and/or entrainment at these water intake structures. Given the existing conditions at the Salem Nuclear Power Plants, we expect that additional water intake structures associated with the new plants would have a detrimental additive impact on the species referenced above.

Table 1 (below) includes a list of rare species that occur the vicinity (6 mile radius) of the project area within State of Delaware boundaries. Please note that we have not surveyed all of the areas within Delaware and additional rare species may occur within the vicinity of the project area.

Table 1. State rare, federally listed or Species of Greatest Conservation Need (SGCN) that occur within the Vicinity (6 mile radius) of the project site.

Scientific Name	Common Name	Taxon	Global Rank	State Rank	State Status	Federal Status
<i>Falco peregrinus</i>	Peregrine Falcon	Bird	G4	S1B, S3N		
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Bird	G5	S3B, S4N		*
<i>Ixobrychus exilis</i>	Least Bittern	Bird	G5	S2B		
<i>Pandion haliaetus</i>	Osprey	Bird	G5	S4B		**
<i>Podilymbus podiceps</i>	Pied-billed Grebe	Bird	G5	S1B, S3N	E	
<i>Acantharchus pomotis</i>	Mud Sunfish	Fish	G4G5	S2		
<i>Acipenser oxyrinchus</i>	Atlantic Sturgeon	Fish	G3	S2	E	E
<i>Acipenser brevirostrum</i>	Shortnose Sturgeon	Fish	G3	S3N	E	E
<i>Alosa mediocris</i>	Hickory Shad	Fish	G4	S2		
<i>Apeltes quadracus</i>	Fourspine stickleback	Fish	G5	S2		
<i>Enneacanthus obesus</i>	Banded Sunfish	Fish	G5	S2		
<i>Notropis amoenus</i>	Comely Shiner	Fish	G5	S2		
<i>Asterocampa celtis</i>	Hackberry Emperor	Insect	G5	S1S3		
<i>Lycaena hyllus</i>	Bronze Copper	Insect	G4G5	S2		
<i>Myotis septentrionalis</i>	Northern Long-eared bat	Mammal	G2G3	SU		***
<i>Cicuta bulbifera</i>	Bulb-bearing Water-hemlock	Plant	G5	S1	N/A	
<i>Cynoglossum virginianum</i>	Wild Comfrey	Plant	G5	S1	N/A	
<i>Limnobium spongia</i>	American Frog's-bit	Plant	G4	S2	N/A	
<i>Malix unifolia</i>	Green Adder's mouth	Plant	G5	S1	N/A	
<i>Phragmites Australis ssp. americanus</i>	Common Reed	Plant	G5T4	S2	N/A	
<i>Spartina pectinata</i>	Freshwater Cordgrass	Plant	G5	S1	N/A	
<i>Tsuga Canadensis</i>	Eastern Hemlock	Plant	G5	S1	N/A	
<i>Caretta caretta</i>	Loggerhead Sea Turtle	Reptile	G3	†SNA	E	E
<i>Chelonia mydas</i>	Green Sea Turtle	Reptile	G3	†SNA	E	T
<i>Glyptemys muhlenbergii</i>	Bog Turtle	Reptile	G3	S1	E	T
<i>Lepidochelys kempii</i>	Kemp's Ridley Sea Turtle	Reptile	G1	†SNA	E	E
<i>Thamnophis sauritus</i>	Eastern Ribbon Snake	Reptile	G5	S2		

*De-listed from Endangered Species List in June of 2007, however, protection maintained via federal Bald and Golden Eagle Protection Act, federal Migratory Bird Treaty Act and Title 7 of the Delaware Code, Chapter 1.

**Osprey included in this list because they are considered a species of concern and an important indicator species. Individuals are protected via federal Migratory Bird Treaty Act. Nests are federally protected when containing eggs and young.

***Northern Long-eared bat are proposed for listing under the U.S. Endangered Species Act.

†SNA rank is currently being re-evaluated due to evidence that indicates the Delaware Estuary is an important foraging and developmental habitat for sea turtles

Global Rank: G1 - imperiled globally because of extreme rarity (5 or fewer occurrences worldwide); G2 - imperiled globally because of great rarity (6 to 20 occurrences); G3 - either very rare and local throughout its range (21 to 100 occurrences) or found only locally in a restricted range; G4 - apparently secure globally but uncommon in parts of its range; G5 - secure on a global basis but may be uncommon locally.

State Rank: **S1**- extremely rare within the state (typically 5 or fewer occurrences); **S2**- very rare within the state (6 to 20 occurrences); **B** - Breeding; **N** - Nonbreeding; **SNA**-occurrences in DE of limited conservation value. **SU**-Status uncertain within the state. Usually an uncommon species which is believed to be of conservation concern, but there is inadequate data to determine the degree of rarity.

State Status: **E** – endangered, i.e. designated by the Delaware Division of Fish and Wildlife as seriously threatened with extinction in the state pursuant to State of Delaware Code (7 Del. §601 *et seq.*) and implementing regulation (Title 7, 3900, 16.0 Endangered Species) ; n/a-plants are not included in Title 7.

Federal Status: **E** – endangered, i.e. designated by the U.S. Fish and Wildlife Service as being in danger of extinction throughout its range; **T** – threatened, i.e. designated by USFWS as being likely to become endangered in the foreseeable future throughout all or a significant portion of its range; C-candidate – Taxa for which the U.S. Fish and Wildlife Service has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species.

There are extensive areas mapped as Key Wildlife Habitat (KWH) in the Delaware Wildlife Action Plan (DEWAP - <http://www.dnrec.delaware.gov/fw/dwap/Pages/DEWAPlan.aspx>) that are within the Vicinity of the project area. These areas are considered KWH either because they are rare within the state and have the potential to harbor a high diversity of Species of Greatest Conservation Need (SGCN) or they are part of a large complex/block that can support an array of plant and animal species. KWH documented include: Chestnut Oak – Hairgrass Forest, Early Successional Habitat, Impoundments, Mixed Broadleaf Freshwater Tidal Marsh, Spartina High Salt Marsh, Un-vegetated Intertidal Mudflats and Wetlands.

Construction impacts

Chapter 4, entitled “Construction Impacts at the Proposed Site” provides a detailed overview of anticipated land-use changes from Preconstruction and Construction Activities on the PSEG site. A summary of both the total onsite and offsite permanent and temporary land use changes is presented in Table 4-1. Adjacent offsite areas are located in the USACE Artificial Island Confined Disposal Facility.

These changes are categorized as modifications of Urban or Built-Up Land; Forestland; Water; Wetlands; Barren Land; and Managed Wetlands. Preconstruction/site mobilization impacts would continue for 1 to 3 years where most impact to onsite terrestrial habitat, wetland, marsh creeks and artificial ponds would occur. This would be followed by a construction phase where impacts would occur over a period of over five years.

On the existing PSEG owned site (total of 819.1 acres representing all land use categories) 225.4 acres will have a permanent land use change. From the information presented in Table 4-1 it is unclear what the permanent land use changes will be, although it is expected that much of the

change will result in an overall increase in urban or built-up land. It is also expected that there will be a permanent loss of 8.7 acres of Forestland; 42.3 acres of Water; 108 acres of Wetlands; and 18.8 acres of Barren land. In addition, on the existing PSEG site it is anticipated that there will be a temporary loss, perhaps as long as 8 years during the preconstruction/site mobilization and construction periods of 80.3 acres of Forestland and 31.8 acres of Wetlands.

On the Adjacent Offsite Area, located in the USACE Artificial Island Confined Disposal Facility, there will be a temporary, again perhaps as long as 8 years, disturbance of 30.2 acres of Wetlands and 12.5 acres of Barren Land.

Mitigation for temporary as well as permanent impacts should be considered and discussed in the final EIS given the potential for long lasting impacts from the proposed “temporary” impacts. Forest impacts are of particular concern here as impacted forest land will take a relatively long time to re-establish.

Pea Patch Island Heronry concerns

The DEIS states that there are no known heron/egret rookeries or tern colonies on the PSEG site. Importantly, Pea Patch Island is approximately six nautical miles northwest from PSEG and supports the largest heron rookery in the Mid-Atlantic and perhaps the entire east coast. Nine species of wading birds nest on Pea Patch island; Black-Crowned Night-Heron, Yellow-Crowned Night-Heron; Great Blue Heron; Glossy Ibis; Tri-colored heron, Snowy Egret, Great Egret, Little Blue Heron and Cattle Egret. A Special Area Management Plan for Pea Patch Island region has been developed to better manage the island and the surrounding foraging areas. This information should be included in the final EIS and used to develop compensating measures for the loss of nesting and foraging habitat. The plan can be found here:

<http://www.dnrec.delaware.gov/coastal/Documents/PPISAMP/PPISAMPFinal1998.pdf> .

Terrestrial Habitat disturbance

The DEIS describes anticipated ecological impacts to plants and animals living in the various land use categories covered in Table 4-1. Forestland cover, particularly old field communities represent important habitat for many birds and insects. Almost 90 acres of this habitat would be disturbed, most (80.3 acres) temporarily. The DEIS states that there are over 2000 acres of this habitat nearby, but that does not alleviate concerns with regards to the up to eight years of temporary impacts and permanent loss proposed. In addition agricultural lands (currently offsite) provide important habitat for migrating songbirds and Monarch butterflies. Over 12 acres of agricultural lands (Table 4-2) would be permanently lost. The DEIS notes that the greatest

challenge to species impacted by disturbance would be competition from existing resident species in adjacent suitable habitat. This will place additional pressure on neighboring species outside of the impact areas.

Specific impacts to avian species that frequent old fields and open habitat should be compensated through establishing permanent habitat protections for those species. These species include brown thrasher, eastern meadowlark, yellow-breasted chat, horned lark, bobolink, grasshopper sparrow and savanna sparrow. The DEIS indicates that the northern parula and hooded warbler, two species of concern, were recorded during the Breeding Bird Survey by USGS, yet these species are not expected to be impacted because the site contains very little viable habitat to support these species. However, these species were found breeding nearby, indicating that they are also foraging to feed their young during this time. It is likely they would enter the site to collect food and thus be impacted by disturbance at the proposed site.

A mitigation and compensation plan should be developed and implemented. The DEIS states on page 4-41 “Following the implementation of reasonable measures to avoid or minimize impacts to wetlands, compensation for unavoidable adverse impacts could be undertaken with the execution of an approved wetland restoration and/or rehabilitation program.” – This tiered approach of avoid, minimize and mitigate for impacts need not be solely for wetland impacts. The same considerations and compensation should be discussed in the final EIS for upland habitats and the associated species that utilize these habitats including the bird species and habitats mentioned above.

Wetland Impacts

The path of the causeway transects a mitigation area that is included in the Estuary Enhancement Program (EEP), as well as two wildlife management areas. The DEIS does not address any possible alternate routes that were considered or how the route presented was chosen. The final EIS should provide background on alternatives presented and the justification for the selected route. What are the implications of impacting a designated wetland mitigation area? The EEP is supposed to be compensating for species impacts from the existing facility by providing nursery habitat for aquatic species. Degradation of this habitat must be addressed.

Further, the compaction of wetland soils around the causeway as a result of construction and staging of materials and equipment is not adequately addressed. Compaction could alter hydrology and the distribution of plant species.

Statements within the DEIS are generally dismissive of the potential wetland impacts; the rationale being that wetlands are abundant in the area. While this is a likely habitat to

predominate an estuarine environment, coastal wetlands are subject to development pressure and sea level rise, and losses are occurring at alarming rates. The final EIS should evaluate predicted wetland losses from these pressures.

Environmental Impacts of Operation

In Chapter 5 it is stated that avian mortality as a result of collision with natural draft cooling tower design could occur, but would not result in a significant decline in avian populations. This statement is supported by reference to an NRC publication (NRC 2013-TN2654). This cited document is entitled *Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS) Revision 1, Volume 1 (Main Report), Washington, D.C. Accession No ML13106A241*. A generic EIS is insufficient to use as evidence that avian impacts in the Atlantic flyway are minimal. The final EIS should substantiate this claim with peer-reviewed journal publications.

Groundwater concerns

The U.S. Nuclear Regulatory Commission Environmental Impact Statement for an Early Site Permit at the PSEG Site addresses the impact of proposed groundwater use on other water users in sections 2.3, 5.2, and 7.2. The design water use of the existing facility was 493 gallons per minute (gpm) annual average. The DEIS relies heavily on a 1988 study authored by Dames and Moore, (Section 5.2.2, page 5-9 of the DEIS). This study predicted approximately 15 to 20 feet of drawdown after 20 years at 4 miles from the facility using a one-dimensional drawdown calculation.

A single calculation of one-dimensional drawdown does not seem adequate for an assessment of groundwater impacts from a nuclear power plant. Nonetheless, a similar one-dimensional calculation was used to project the impact of using an additional 210 gpm for 40 years. The estimate of 210 gpm for the new facility came from a water balance diagram (Figure 3-2 of the DEIS). Although several cooling options are presented, it is not clear how this withdrawal was derived. The maximum proposed withdrawal is 953 gpm (Section 3.2.1.1, line 15 of the DEIS). The projected impact of 210 gpm withdrawal for 40 years at 5 miles is 14.4 feet of drawdown. At peak withdrawal periods, the drawdown at 5 miles could be between 14.4 and 65 feet.

There is not enough data to precisely calculate the impact that this peak use could already be having on the Potomoc aquifer wells in southern New Castle County in Delaware. However, hydrologists within the Delaware Division of Water estimated possible capacity losses for some

Delaware wells and are concerned about the continued viability of these wells given the predicted increase in water usage of the proposed new facility.

The further impact that is partially addressed in the DEIS is saltwater intrusion. Section 5.2.3.2 (page 5-15) states: "Recent estimates place the 250 mg/L line of equal chloride concentration close to Artificial Island in the middle PRM aquifer (dePaul et al. 2009-TN2948)." Saltwater intrusion is already active along the New Jersey coastline and could advance toward New Castle County if not properly managed. The same section (page 5-16) of the DEIS states: "The available data and the modeling results suggest that operational pumping for a new nuclear power plant would increase chloride concentrations in the middle PRM aquifer, but these increases would be manageable." Although the need for management is acknowledged, no management strategy is proposed. A saltwater management strategy must include maps of chloride concentrations, monitor well locations and a monitoring plan. None of these have been proposed or provided.

The Delaware Division of Water has an informal prohibition of new water allocations from the Potomac aquifer in New Castle County, similar to New Jersey's Water Supply Critical Area 2. Upon consideration of the scant information provided in the DEIS, it appears that this prohibition should remain in effect for the proposed facility, and the new water use should not be approved without substantial new information and justification.

Relevant information is omitted in the DEIS. Readily available data, such as water use graphs and water level hydrographs for the existing plant were not provided. Although frequent references are made to other studies, the references do not include page numbers or figure numbers, and are very burdensome when further information is needed.

Additionally, there is recent literature available that pertains to this site. The United States Army Corps of Engineers (USACE) updated the stratigraphic framework of the Potomac aquifer in Delaware and adjacent areas in Maryland and New Jersey in 2004 (Benson, 2006). This update includes the area surrounding the PSEG site. The USACE used the stratigraphic approach to develop their three dimensional finite element groundwater model for the Potomac Formation. The time-stratigraphic framework of the model allows for the potential correlation of aquifer-quality sands that may be genetically related at the time of their deposition and therefore may be better connected hydraulically (Benson, 2006). In contrast, the model cited in the DEIS (Martin 1998) is based on a sequence of aquifers and confining beds based on general hydraulic properties of sediment and may not accurately represent the degree of lateral transmissivity of groundwater. Additionally, the USACE model assumes direct recharge to the uppermost aquifer sands and limited or no recharge to lower aquifers from the surficial aquifer (Benson, 2006). In contrast, the Martin 1998 model assumed direct recharge to all aquifers from the unconfined aquifers.

Based on the information presented in the DEIS, one cannot dismiss the concern that additional pumping at the PSEG site would have a significant impact on the PRM aquifer system regionally. An impact to the PRM may affect the quantity and quality of drinking water available to the citizens of New Jersey and Delaware. To address these concerns, a finite analytical model should be developed using current site-specific data. The following references provide more recent information than the studies referenced within the DEIS:

Benson, R.N., 2006, Internal Stratigraphic Correlation of the Subsurface Potomac Formation, New Castle County, Delaware, and Adjacent Areas in Maryland and New Jersey, Delaware Geological Survey Report of Investigations No. 71, p.15

Mullikin, L., 2011, Expansion of Monitoring Well Network in Confined Aquifers of the New Jersey Coastal Plain, 1996-1997, New Jersey Geological Survey Open File Report 11-1, p. 61

Spent fuel storage and transport concerns

The State of Delaware has laws that prohibit the transport, storage, disposal or reprocessing of spent nuclear fuel in the State. Should future national policy allow for the relocation of spent fuel from the PSEG site to a federal repository, the route of transfer may be affected by Delaware law. See the Delaware Authority on Radiation Protection and the Delaware Code Title 16 Chapter 74 for more information. The text of this regulation is available here: <http://delcode.delaware.gov/title16/c074/index.shtml>.

It is possible that the new proposed site may not be decommissioned until 2200. Long term planning must address potential complications as a result sea level rise which may compromise spent fuel storage facilities.

Climate change concerns

Overall, the document does not adequately address the likely impacts of climate change (sea level rise, increased temperature and increased precipitation) over the lifespan of the proposed facility. Although climate change and sea level rise are mentioned several times within the text of the DEIS, it is unclear the extent to which future sea levels have truly been taken into consideration. No future planning scenarios are provided to understand the assumptions that were made in site selection, alternatives evaluations and cumulative impact assessments.

This document does indicate that sea level rise and flooding impacts will be further evaluated in the Safety Evaluation Report, however, incorporating detailed information about climate change,

sea level rise and flooding during initial planning is critically important. To evaluate these impacts only in the context of the Safety Evaluation Report is at odds with the intent of the NEPA process. The final EIS should clearly define the future climate change and sea level rise scenarios that were utilized in this analysis and should utilize several different climate scenarios to ensure that the full range of climate consequences for the site, its operations, the Delaware River and surrounding areas were considered. Due to the site's proximity to tidal water and the expected lifespan of this facility, climate change and sea level rise should be a lens under which all design and siting decisions for this facility are viewed.

The final EIS should provide the following information in regards to climate change and sea level rise:

1. The sea level rise projection used in the site selection and design for this project.
2. The maximum storm surge used in site selection and design.
3. The current Mean Higher High Water (MHHW) level in the river and adjacent tributaries, and the elevation above MHHW of the land surface as well as the facility.
4. Explain if sea level rise and storm surges were considered in combination. For example, information should be provided that explains the implications of a 2 meter sea level rise coupled with a 2 meter storm surge.
5. Sea level rise will impact depth to groundwater and cause saltwater intrusion into surface and groundwater. Information should be provided that explains the implications of rising water tables and saltwater intrusion on this site and the facility. An analysis of thresholds for the site should be included that establish the point at which the site would no longer function as designed. Additionally, discussion should be included on how site specific modeling will be conducted to ensure future operational issues have been evaluated.
6. A discussion on the measures developed for the site to mitigate the potential for flooding during the entire life-span of this facility.
7. In light of increasing sea levels, and lack of permanent storage for spent fuel, explanation is needed on how the facility will ensure protection of human and ecological health during and after decommissioning.

The following paragraphs and links provide basic information and resources to assist in addressing these issues and assess climate impacts to the PSEG site:

NOAA projects that global sea levels will increase between 0.5 and 2.0 meters by the year 2100 (http://www.noanews.noaa.gov/stories2013/20130125_coastalclimateimpacts.html). In the mid-Atlantic, seas are currently rising at a rate roughly double the global rate.

The state of Delaware is planning for a rise in sea levels of 0.5 to 1.5 meters by 2100 (<http://de.gov/slradaptplan>) and will soon reevaluate whether to increase the highest planning scenario based upon emerging literature which is increasingly supporting high sea level rise projections. The impacts that sea level rise will have to the state of Delaware and the Delaware Bay have been well documented (<http://de.gov/slrva>) and include significant permanent inundation of tidal wetlands, roadways, infrastructure and homes and significant changes to salinity (both groundwater and surface water) resulting in contaminated drinking water supplies and major habitat shifts. Decreased depth to water table is also predicted as a result of sea level rise.

NOAA has produced LiDAR based bathtub models of future sea levels for New Jersey. They can be viewed and downloaded at <http://coast.noaa.gov/digitalcoast/tools/slr/>

Delaware has downscaled climate change projections for temperature and precipitation for the state which can be applied to your site. These projections can be downloaded here: <http://www.dnrec.delaware.gov/energy/Pages/The-Delaware-Climate-Impact-Assessment.aspx>

General comments and corrections

Chapter 7 “Cumulative Impacts” states that “Literature regarding bat collisions with cooling tower structures is limited.” Yet goes on the state that Erickson et. al. suggest that bat species may not use echolocation during migration, which can result in higher collision rates with human-made structures. The project and other actions considered in the Cumulative Impact Analysis presented in Table 7-1 notes several additional nearby human made structures where avian and bat collisions are documented or are thought to cause additional impacts. Until additional site specific information is collected, relying on Erickson et. al’s 2002 report is not prudent.

The DEIS contains figures that are unreadable in the online version, even when zoomed in for an enlarged view. These figures are on p.65 and figure 2-6. This irregularity should be corrected in the Final version of the EIS.

The DEIS states on page 415, that Total Dissolved solids (TDS) found in the vapor and drift have the potential to be deposited onto foliage or soil and cause visible damage and or chronic effects. Discussion focuses solely on salt deposition. Are there any other dissolved solids that should be discussed (such as chemicals/cleaning agents/biocides/etc.) ?