

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

In the Matter of	)	
PSEG POWER, LLC AND PSEG	)	Docket No. 52-043-ESP
NUCLEAR, LLC	)	
(Early Site Permit Application)	)	January 28, 2016
	)	

**PSEG RESPONSE TO SECOND SET OF BOARD QUESTIONS**

Pursuant to the Memorandum and Order (Second Set of Board Questions and Associated Administrative Directives) issued by the Atomic Safety and Licensing Board (Board) on January 6, 2016, PSEG Power, LLC and PSEG Nuclear, LLC (collectively, PSEG) provide their responses to the Board’s written questions identified in that Order. Those questions primarily pertain to subjects discussed in the Nuclear Regulatory Commission (NRC) Staff’s *Environmental Impact Statement for an Early Site Permit (ESP) at the PSEG Site* (NUREG-2168), dated November 2015.

In the January 6, 2016 Order, the Board stated that “most of the Board’s questions are directed primarily to the NRC Staff. As appropriate, however, answers to the Board’s questions should be submitted both by the NRC Staff and by the Applicant. To the extent practicable, the parties are encouraged to coordinate their responses so as to avoid repetition.” January 6, 2016 Order at 2. In accordance with the Board’s directions, PSEG has coordinated its responses with the NRC Staff to the extent practicable. As a result, PSEG is not providing written responses to all of the Board’s questions. Instead, PSEG is providing responses to those questions for which it concluded that a response by the applicant would be appropriate and beneficial to support this

proceeding. The questions not being answered in whole or in part by PSEG are identified in this submittal.

PSEG's responses to the Board's questions are provided in Attachment A. All of the Board's questions are repeated in the Attachment, followed by either PSEG's response or a notation that the Staff exclusively is responding to the question. Each PSEG response identifies the individual supporting the response on behalf of PSEG. Attachment B provides the affidavit for the individual who is responding on behalf of PSEG. As directed by the Board, that affidavit is submitted "under oath, so that [it is] suitable for receipt into evidence without the necessity of the personal appearance of each expert or individual." January 6, 2016 Order at 1 (quoting Licensing Board Order (Initial Scheduling Order) (Nov. 16, 2015) at 4 (unpublished)). Attachment C provides the statement of qualifications for the individual submitting the affidavit.

Respectfully submitted,

*Executed in Accord with 10 C.F.R. § 2.304(d)*

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Dated in Washington, DC  
this 28th day of January 2016

**ATTACHMENT A**

**PSEG RESPONSE TO SECOND SET OF BOARD QUESTIONS**

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**SER Question 1:** On page 2-208 Staff summarizes the scheme used by Crone and Wheeler (2000) to classify the 17 potential Quaternary tectonic features that occur within the site region. Sixteen of these are “Class C Features,” in which geologic evidence is insufficient to demonstrate the existence of a tectonic fault or Quaternary deformation associated with the feature. What is the significance of the Crone and Wheeler classification for demonstrably active seismic zones? Does a Class C designation imply that earthquakes in the Lancaster seismic zone could not pose a potential hazard to structures at the PSEG ESP site?

**PSEG RESPONSE:**

To avoid repetition, only the NRC Staff is responding to this question.

**SER Question 2:** On page 2-210 Staff, citing the applicant, notes that the Cacoosing earthquake in the Lancaster Seismic Zone “. . . was anthropogenic (i.e., the result of human activities related to quarrying), rather than tectonic, in origin.” Clarify what is meant by this statement; specifically, what role, if any, did tectonic stresses play in producing the destructive energy associated with this earthquake?

**PSEG RESPONSE:**

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 3:** Explain the measures taken to verify the accuracy of PSEG’s Environmental Report to the extent it has been relied on as a primary source for the NRC Staff’s analysis.

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 4: Staff states: “Section 2.2.1 describes land use on the site and in the vicinity, defined as the area encompassed within a 6-mi radius of the site.”**

**Why is a 6-mile radius used? Is this a standard value or chosen specifically for this site? If it is a standard value, why is it appropriate for this site? If it is a value chosen specifically for this site, what was that choice based upon?**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 5: On page 2-10 Staff states, “Figure 2-6 depicts the jurisdictional wetlands (considered important terrestrial habitat) on the PSEG Site. The printed version of this figure may not be legible; however, the electronic version is viewable when zoomed in.”**

**This is not correct. The electronic version is as illegible as the printed version. If practicable Staff shall provide a link to a more readable version.**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 6: On page 2-18 of the FEIS, Staff states: “PSEG has stated that additional access road capacity is necessary to address future transportation needs for the PSEG Site (PSEG 2015-TN4280). To provide this additional access road capacity, PSEG has designed a three-lane causeway that would be constructed on elevated structures for its entire length through the coastal wetlands.”**

**Has there been an evaluation of whether improvements to the current access road could provide the additional capacity with fewer environmental impacts? If so, summarize that evaluation.**

PSEG RESPONSE (J. Mallon):

PSEG has evaluated alternatives for site access, and specifically whether improvements to the current access road could provide the desired additional access road capacity with fewer environmental impacts over the proposed causeway. The United States Army Corps of Engineers (USACE) is a Cooperating Agency with the NRC for the preparation of the *Environmental Impact Statement for an Early Site Permit (ESP) at the PSEG Site* (FEIS),

dated November 2015. PSEG filed a permit application for the new plant at the PSEG Site with the USACE on August 8, 2014 under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. The permit application is described in FEIS Section 1.3.2 (The USACE Permit Action), which explains that the application is for work needed to prepare the PSEG Site for a new nuclear power plant. The permit application includes PSEG's evaluation of access alternatives. Specifically, the permit application includes a detailed analysis of eight alternative access concept routes, discussion of each potential access road/causeway routing concept, associated impacts of each alternative, and 50 causeway structure/construction alternative designs. One of the alternatives PSEG considered was improvements to the existing site access road. Although widening of the existing site access road would have resulted in a significantly lower cost than the proposed causeway, it was rejected due to larger environmental impacts and introduction of adverse traffic impacts in the surrounding area. The environmental impacts of widening the existing road (i.e., wetland and floodplain fill) are larger than the proposed causeway. Additionally, the routing of increased construction and operational traffic through the same road network currently used by the operating units' staff introduces significant traffic challenges. As such, the evaluation concluded that the associated environmental impacts, including traffic impacts, of this alternative were larger than those for the proposed causeway described in the FEIS.

The review of alternatives to the proposed causeway is appropriately addressed by the USACE during its review of the submitted permit application, in accordance with the USACE's routine regulatory processes.

**FEIS Question 7: On page 2-52, the Staff indicates that the water supply wells are monitored quarterly for chlorides. What would occur if future saltwater intrusion were discovered? Would PSEG's state permit from NJDEP be subject to review or possible reduction?**

**PSEG RESPONSE (J. Mallon):**

As discussed in FEIS Subsections 4.2.3.2 (Groundwater-Quality Impacts) and 5.2.3.2 (Groundwater-Quality Impacts), groundwater use for the PSEG Site during construction and operation, respectively, would come from the Potomac-Raritan-Magothy (PRM) aquifers. FEIS Subsection 5.2.3.2 concludes that "[t]he 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." That subsection discusses some of the factors that would limit chloride intrusion impacts, including lack of significant nearby groundwater use, availability of the upper PRM aquifer as an alternative water source, and aquitards that would limit the potential for saline intrusion.

If regional water withdrawals were to result in future salt water intrusion into the PRM aquifer that reaches a level that threatens the PSEG Site's freshwater supply, then PSEG would evaluate mitigating measures and implement them as appropriate. PSEG would assess

the new plant water withdrawal, along with the withdrawal for the adjacent Salem Generating Station and Hope Creek Generating Station, and would take necessary actions to assure adequate freshwater supplies are available. These actions cannot be determined at this time as the actual water use, along with aquifer-specific conditions that may exist, are not known. However, the potential actions would consider water use reductions, potential pre-treatment modifications, and recycling where appropriate. Both the Delaware River Basin Commission (DRBC) and New Jersey Department of Environmental Protection (NJDEP) water withdrawal authorizations are subject to re-opening by the respective agency if conditions warrant. PSEG expects that the agencies would consider revised limits or other measures to assure that the regional PRM aquifer is protected.

**FEIS Question 8: On page 2-67, the Staff discusses the Bog Turtle. (See also page 5-24.) The Staff acknowledges that bog turtles were present on the site and within the vicinity between 1972 and 1978. Then the Staff indicates that they were not present between 2009 and 2010. What is the explanation for this loss of the species in this location? Is it due to PSEG’s operations or to some other factor? (See page 4-33: “[I]ntense land uses such as those found on the PSEG Site are not favorable to [the Bog Turtle].”) Additionally, will there be any attempt to monitor for this species during future construction?**

PSEG RESPONSE (J. Mallon):

FEIS Subsection 2.4.1.3 (Important Terrestrial and Wetland Species and Habitats—Site and Vicinity) states (page 2-68): “The bog turtle was recorded historically for Artificial Island and vicinity during a study conducted between 1972 and 1978. There were no records for this species in the latest surveys conducted by PSEG in 2009 to 2010.” The PSEG Environmental Report Table 2.4-5 (Reptiles and Amphibians Observed On-Site and in the Vicinity of the PSEG Site, 2009 – 2010) indicates that the Bog Turtle was not observed during the 2009 – 2010 survey, but had been observed in a prior survey. The table provides a reference (Reference 2.4-87) to the survey report, Ichthyological Associates, Inc., The Terrestrial Ecology of Artificial Island and Vicinity, 1972-1978: A Summary, Prepared for Public Service Electric and Gas Company, 1980 (available at ADAMS Accession No. ML13309A649).

That report states (page 23): “The rarely observed bog turtle, *Clemmys muhlenbergi*, was found in the present study in Delaware by Arndt (1977) who reported on its natural history.” Appendix Table 3 of the report (Relative abundance and habitat of reptiles in New Jersey and Delaware within a 16 kilometer radius of southern Artificial Island, New Jersey from 1972-1978) further states the following regarding the bog turtle (page 78): “Rare, found in a bog in the Delaware portion of the study area; recorded from Salem County, New Jersey by Grant (1966).” It should be noted that in 1966, only the USACE Confined Disposal Facility existed on Artificial Island; construction of Salem Unit 1 did not commence until 1968. Additionally, while there are a number of acres of freshwater wetlands within 16 kilometers (km) of Artificial Island whose habitat would potentially support this species, there is no indication in the report that the Bog Turtle was ever observed on Artificial Island itself.

During both pre-construction and construction, PSEG routinely implements monitoring to assure compliance with the conditions of regulatory approvals. No land use/construction approvals have been received to date for the new plant at the PSEG Site and therefore, there are no specific conditions to implement identified at this time. Based on PSEG's experience with other large construction projects, combined with the anticipated conditions of the NJDEP and USACE land use construction approvals, specific monitoring conditions will most likely be included. As necessary, observations during the initial stages of site preparation activities are expected to identify any changed site conditions or species of concern, and appropriate mitigation measures would be implemented.

The PSEG Site is generally (and currently) a disturbed industrial site. Therefore, habitat for specific species is either non-existent or very limited, excepting forage habitat for avian species. The Bog Turtle species is not expected to be present on the site due to lack of appropriate habitat and the existing site conditions as discussed in FEIS Subsection 4.3.1.2 (Important Terrestrial and Wetland Species and Habitats). Bog Turtles also are not expected under any circumstances due to the regional water salinity levels. Regardless, if this species, or any other threatened, endangered or other species of concern were identified, PSEG would take appropriate mitigating measures.

**FEIS Question 9: On page 2-78 and 79, a similar situation to the Bog Turtle exists with the Eastern Tiger Salamander. It once existed on the Artificial Island and is now absent. Is there an explanation for this finding in the most recent ecological survey? Additionally, will there be any attempt to monitor for this species during future construction?**

PSEG RESPONSE (J. Mallon):

FEIS Subsection 2.4.1.3 (Important Terrestrial and Wetland Species and Habitats—Site and Vicinity) states (page 2-79): “The eastern tiger salamander was not observed on the site or in the vicinity during the 2009 to 2010 PSEG survey. However, tiger salamanders were recorded during an ecological survey conducted on Artificial Island from 1972 through 1978.” The PSEG Environmental Report Table 2.4-5 (Reptiles and Amphibians Observed On-Site and in the Vicinity of the PSEG Site, 2009 – 2010) indicates that the Eastern Tiger Salamander was not observed during the 2009 – 2010 survey, but had been observed in a prior survey. The table provides a reference (Reference 2.4-87) to the survey report, Ichthyological Associates, Inc., *The Terrestrial Ecology of Artificial Island and Vicinity, 1972-1978: A Summary*, Prepared for Public Service Electric and Gas Company, 1980 (available at ADAMS Accession No. ML13309A649).

That report states (page 22): “Nine salamanders and 11 frogs and toads have been recorded within a 16 km radius of southern Artificial Island (Appendix Table 2). All except the southern leopard frog, *Rana pipiens sphenoccephala*, are restricted to freshwater areas of moist woodland inland of the marsh. . . . The eastern tiger salamander, *Ambystoma t. tigrinum*, was found in southern New Castle County, Delaware just outside the study area and may occur within it.” Appendix Table 2 of the report (Relative abundance and habitat of amphibians in New Jersey and Delaware within a 16 kilometer radius of southern Artificial



Island, New Jersey from 1972-1978) further states the following regarding the Eastern Tiger Salamander (page 77): “We recorded it rarely just out of the study area, near the southwestern corner of New Castle County, Delaware, and it may occur in the Delaware portion of the study area. In New Jersey, it has been recorded from Salem County by Grant (1966).” It should be noted that in 1966, only the USACE Confined Disposal Facility existed on Artificial Island; construction of Salem Unit 1 did not commence until 1968. Additionally, while there are a number of acres of freshwater wetlands within 16 km of Artificial Island whose habitat would potentially support this species, there is no indication in the report that the Eastern Tiger Salamander was ever observed on Artificial Island itself.

As discussed above, during both pre-construction and construction, PSEG routinely implements monitoring to assure compliance with the conditions of regulatory approvals. No land use/construction approvals have been received to date for the new plant at the PSEG Site and therefore, there are no specific conditions to implement identified at this time. Based on PSEG’s experience with other large construction projects, combined with the anticipated conditions of the NJDEP and USACE land use construction approvals, specific monitoring conditions will most likely be included. As necessary, observations during the initial stages of site preparation activities are expected to identify any changed site conditions or species of concern, and appropriate mitigation measures would be implemented.

The PSEG Site is generally (and currently) a disturbed industrial site. Therefore, habitat for specific species is either non-existent or very limited, excepting forage habitat for avian species. The Eastern Tiger Salamander species is not expected to be present on the site due to lack of appropriate habitat and the existing site conditions as discussed in FEIS Subsection 4.3.1.2 (Important Terrestrial and Wetland Species and Habitats). Regardless, if this species, or any other threatened, endangered or other species of concern were identified, PSEG would take appropriate mitigating measures.

**FEIS Question 10: The draft EIS included in this table the Leatherback sea turtle and the Hawksbill sea turtle. The FEIS did not include these turtles. Staff shall explain their deletion from the table.**

**PSEG RESPONSE:**

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 11: This table lists unemployment rates from selected counties for several years. The most recent year shown is 2011. This was during an economic slump from which the economy has generally recovered, so the 2011 data might not be indicative of current conditions. Was consideration given to updating this table?**

**PSEG RESPONSE:**

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 12: Staff shall confirm that the reference on page 2-159 to “the last age” should be to “the last ice age.”**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 13: On pages 4-11 and 12, the Staff states that “building the proposed causeway would not be part of the NRC-authorized construction activities at the PSEG Site.” (See also pages 4-83 and 84.) Staff shall confirm that the causeway is not a component of the NRC’s NEPA review and that the extensive discussion of the causeway is largely a result of NRC’s collaboration with USACE in preparing the FEIS.**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 14: On page 4-27 Staff notes that most of the wetland areas that would be impacted by future construction are near monocultures dominated by the invasive non-native common reed Phragmites. Could construction activities in Phragmites-dominated wetlands facilitate the spread of this species to nearby wetlands with more desirable plant communities? If so, will special procedures be followed to reduce the likelihood of this happening?**

PSEG RESPONSE (J. Mallon):

As noted in FEIS Subsection 4.3.1.1 (Terrestrial and Wetland Resources – Site and Vicinity), the majority of wetland impacts during construction will occur within Phragmites-dominated wetlands. Many of the impacts are within the existing Confined Disposal Facilities (CDFs) operated by the USACE and PSEG. The Phragmites-dominated wetlands within the CDFs are self-contained by the existing containment berms of the CDFs, and are subject to periodic filling and disturbance by dredged material disposal operations. Accordingly, the filling of the CDFs is consistent with existing practices and will not increase the potential spread of Phragmites to the surrounding marsh.

As shown in FEIS Table 2-1 (NJDEP 2002 Land Use and Land Cover Within the Proposed PSEG Site), the majority of wetland impact area associated with the project outside of the CDFs is also Phragmites-dominated. Most of the disturbance activities will occur within the confines of existing Phragmites stands. Given that the primary mechanism for Phragmites expansion is through rhizome (i.e., underground plant stem capable of producing the shoot and root systems of a new plant) disruption and displacement, and the fact that the disturbance to these areas is fill placement, no viable mechanism exists for causing

Phragmites to spread. The areas surrounding the impact areas will remain as the most likely source for any Phragmites expansion to surrounding marshes. Therefore, construction activities occurring within the confines of existing Phragmites-stands are not likely to increase Phragmites presence beyond the boundaries of the existing Phragmites stands.

As described in the PSEG Environmental Report Table 4.3-2 (Construction-Related Changes in Land Cover for the Proposed Causeway), the construction of the proposed causeway occurs in portions of the marsh that are not exclusively Phragmites-dominated. Elevations within the routing of the proposed causeway generally are low enough to counter Phragmites invasion due to the tidal flooding effects. However, the potential for Phragmites invasion may exist as a result of disturbance, depending on specific salinity at the time of construction related disturbance, as well as the potential for tidal inundation. PSEG will monitor construction and post-construction conditions along the causeway for the onset of Phragmites. Should Phragmites become prevalent in areas along the causeway where it was not present prior to construction, PSEG will implement appropriate management techniques, as necessary.

**FEIS Question 15: On page 4-27, the Staff indicates that close to 100 acres of wetlands would be temporarily disturbed during construction activities. Would these areas be recovered post-construction? If so, how?**

**PSEG RESPONSE (J. Mallon):**

Areas of temporary impact to wetlands will be restored primarily through the removal of the temporary fill and return of the area to the pre-existing grade. Re-planting/seeding of disturbed areas may occur if natural re-seeding does not occur. Based on past experience with restoration of disturbed sites as part of PSEG's Estuary Enhancement Program, including many sites in close proximity to the PSEG Site, sufficient desirable seed source exists within the Delaware Estuary to restore previously disturbed sites to desirable vegetation without seeding.

Any restoration of temporary fill areas will be monitored by regulatory agencies, including the USACE and the NJDEP. PSEG expects that permits issued by both agencies will have strict compliance and monitoring requirements for restoration of temporarily disturbed wetlands to assure they are restored to pre-disturbance conditions or enhanced beyond existing conditions.

**FEIS Question 16: On page 4-29, the Staff states that “[s]ome direct loss of less mobile species . . . would be expected.” This includes “small rodents, amphibians, and turtles.” Does this statement increase the need to explain the current absence of the Bog Turtle and Eastern Tiger Salamander from this location?**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 17: As referenced beginning on page 4-40, when will the USACE make a mitigation determination regarding this matter, particularly regarding wetlands resources?**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 18: Explain in more detail how “an approved wetland restoration and/or rehabilitation program” (page 4-41) might be instituted and enforced.**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 19: On page 4-42 Staff states “Wetland mitigation plan details would primarily be guided by conditions established under CWA Section 404 permits issued by the USACE or the NJDEP Land Use Regulation Program and Section 401 water-quality certifications issued by NJDEP. Therefore, specific wetland mitigation efforts could be determined as part of such authorizations (PSEG 2015-TN4280).” What role does the NRC have in ensuring that loss of wetland resources caused by future construction will be minimized and, if necessary, mitigated?**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 20: In the first paragraph of page 4-43, Staff states: “Mannington Meadow is a large enough area (3,800 ac) to provide good mitigation opportunities; however, much of it is in private, State, or Federal ownership (PSEG 2015-TN4280).”**

**Is not virtually all property in either “private, State, or Federal ownership”? Is there meaning to this sentence that is not immediately obvious?**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 21: On page 5-8, the Staff indicates that third-party rights to Merrill Creek Reservoir can be obtained as required. What is the process to acquire these rights?**

**PSEG RESPONSE (J. Mallon):**

As stated in the Site Safety Analysis Report (SSAR), Subsections 2.4.1.2.3 (Dams and Reservoirs) and Section 2.4.11.2 (Low Water from Drought), the Merrill Creek Reservoir ensures sufficient flows downstream during a drought so PSEG may continue to withdraw water from the Delaware River to maintain power generation at multiple power plants on the Delaware River. This flow augmentation from Merrill Creek is initiated when flows at Trenton, which is approximately 80 miles north of the PSEG Site at river mile (RM) 133, fall below 3,000 cubic feet per second (cfs). Flow augmentation offsets consumptive use during power generation to assure that the salt line remains at or below the Philadelphia area fresh water intakes, which are north of RM 80, or about 28 miles north of the PSEG Site. Merrill Creek does not provide flow augmentation for the purposes of safety or non-safety cooling system operability for the Merrill Creek Owners Group (MCOG) plants; it is intended to allow power generation to continue for these power plants without impacting the salt line in the Delaware River.

PSEG holds proportionate ownership rights to Merrill Creek for its existing nuclear and fossil generating stations along the Delaware River. As of the most recent Delaware River Basin Commission (DRBC) approved Docket issued to the MCOG (March 2015), approximately 36 generating stations were listed as “designated units.” If PSEG were to determine that additional Merrill Creek water rights were necessary for the new unit(s) at the PSEG Site, its initial action would be to determine if additional water rights were available for transfer from either another PSEG owned facility or a PSEG co-owned facility. If additional water rights were still required, PSEG would pursue them through the other MCOG members, which include several Pennsylvania and New Jersey energy companies. To do this, PSEG would enter into negotiations with the other MCOG members to obtain these rights, which would be followed by a submittal to the DRBC to modify the Docket listing of designated units. As the initial operation dates for the current designated units range from 1949 to 2003, of which approximately 15 have been in service over 40 years, it is likely that rights would be available for acquisition from older generating stations that typically have higher operating and maintenance costs.

**FEIS Question 22: On page 5-18 Staff states that dissolved solids in vapor plumes and drift from new LMDCT cooling towers have the potential to damage some plants. Modeling conducted by PSEG and confirmed by the Staff shows that maximum salt deposition rate is 1.31 kg/ha/mo, which is within the rate described by NUREG-1555 as generally not damaging to plants. On page 7-21 of Section 7.3.1.1 the Staff notes that other facilities, including HCGS, would have similar effects. What is the cumulative maximum salt deposition rate from all sources, including the proposed new PSEG facility, in the area downwind from the PSEG site shown on Figure 5-3? Is this value within the rate described by NUREG- 1555 as generally not damaging to plants?**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 23: On page 5-18, Table 5-1 shows the maximum salt deposition for a LMDC tower is in an easterly direction, but that maximum salt deposition for a natural draft cooling tower occurs in a northerly direction. Why does the type of tower used affect the direction of maximum salt deposition?**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 24: Table 5-2 on page 5-20 shows that ambient noise at night is typically similar to ambient noise during the day. The two exceptions to this are locations 3 (open area adjacent to high-use onsite road) and 6 (open area near Delaware River shoreline). In these two areas, nighttime noise levels are higher than daytime noise levels. Are these higher nighttime noise levels due to human activities or are they from natural sources?**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 25: On page 5-38, the Staff asserts that cold shock is less likely to occur at a multi-unit plant. Are there other favorable environmental consequences (apart from positive economic impacts) that are likely to occur from construction of an additional reactor or reactors on Artificial Island?**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 26: On the bottom of page 5-118 one example of “measures to minimize impacts and protect the environment” is given as “using BMPs for construction and preconstruction activities.” Are using “BMPs for construction and preconstruction activities” expected to limit adverse impacts during operation?**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 27:** This section calculates radiological and nonradiological impacts of transporting new fuel under normal and accident conditions. The shipping of new fuel is shown to be so innocuous that one might reasonably question the value of the effort put into these calculations. For future environmental impact assessments, can this evaluation be performed in a generic manner?

**PSEG RESPONSE:**

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 28:** On page 6-25, concerning new fuel radiation levels, Staff states: “Assuming conservatively that the external dose rate at 2 m (6.6 ft) is at the maximum allowed by regulations (10 mrem/hr), the dose rate at 1 m (3.3 ft) is about 14 mrem/hour (Weiner et al. 2008-TN302).”

This indicates that at 1 meter the dose rate is greater than the dose rate at 2 meters by a factor of 1.4. On page 6-26, also concerning new fuel radiation levels, the Staff states:

This scenario addresses potential traffic interruptions that could lead to a person being exposed to a loaded shipment for 1 hour at a distance of 4 ft. The NRC staff’s analysis assumed this exposure scenario would occur only one time to any individual, and the dose rate was at the regulatory limit of 10 mrem/hour at 2 m (6.6 ft) from the shipment. The dose to the MEI was calculated in DOE (2002-TN1236) to be 16 mrem.

This indicates that at 1.22 meters (4 ft) the dose rate is greater than the dose rate at 2 meters by a factor of 1.6. These two statements are inconsistent. The dose rate should increase monotonically as the fuel is approached. So one of the Staff statements appears incorrect. Staff shall resolve this discrepancy.

**PSEG RESPONSE:**

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 29:** On page 7-24, the Bog Turtle and Eastern Tiger Salamander are referenced in conjunction with transmission line construction. What is the specific “cumulative” impact on these two species as a result of Salem, Hope Creek, a new reactor plant, the proposed causeway, traffic strikes (see page 5-22), and new transmission lines? Although referenced generally on page 7-24, what are the specific proposed BMPs, mitigation proposals, and avoidance strategies that would reduce the cumulative impacts on these two species?

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 30: This section evaluates the cumulative effects of past and present projects upon environmental justice issues. Since the need to perform a cumulative impact assessment derives from NEPA while the need to assess environmental justice does not, why is this section needed? Did the Staff develop insights into environmental justice issues through this evaluation that it could not have developed through other means?**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 31: The evaluation of the need for power—as well as numerous other evaluations throughout the FEIS—are all based upon a new plant that becomes operational in 2021. As a practical matter, there appears very little chance of this occurring. If an application for a COL or CP is eventually submitted, will all the evaluations based upon an operational date of 2021 be updated? If not, which evaluations will not be updated and why is this acceptable?**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.

**FEIS Question 32: This table compares alternative sites for construction of a new nuclear power plant. This comparison is based upon the cumulative impacts of building and operating a new plant plus the impacts of all other projects, past and present, that have affected the local environment. It seems this comparison has results based more upon what prior projects have done to the environment and less on what effect the current project would have on the environment. (Consider section 7.0 that evaluates cumulative impacts of building and operating a plant at the PSEG site in conjunction with all other past, present and foreseeable future actions. The impacts of NRC related activities are essentially negligible contributors to the cumulative impacts.) Also, it biases the decision in the direction to construct the plant at the location having the most virgin, pristine and pure environment (because cumulative effects there would be less).**

**Why then are cumulative impacts a better basis for comparison of alternate sites than the impacts of the project itself?**

PSEG RESPONSE:

To avoid repetition, only the NRC Staff is responding to this question.



**FEIS Question 33: Some of the “actions to mitigate impacts” listed in Table 10-1 are required by law, and some are not. Has Applicant committed to implement some or all of the latter? If some, which? How will compliance be monitored and enforced?**

**Update status of the “ongoing” consultation between USACE and the New Jersey State Historic Preservation Office, described on page 10-11.**

**PSEG RESPONSE (J. Mallon):**

With regard to specific mitigating measures addressed in FEIS Table 10-1 (Unavoidable Adverse Environmental Impacts During Construction and Preconstruction), the majority, if not all, are expected to be conditions of the various land use approvals required for any construction on the PSEG Site (inclusive of pre-construction and construction as defined by the NRC). These approvals include, but are not limited to, the federal USACE Section 10 and Section 404 Permit, the NJDEP Coastal Area Facility Review Act / Waterfront Development Permit, the local Lower Alloways Creek Township zoning, planning and construction approvals, and others such as Salem County.

Minimization of impacts to terrestrial or aquatic resources are expected to be specific requirements and conditions of the various state and federal authorizations. In addition, formal wetland and habitat mitigation will be conditions in the USACE and NJDEP authorizations and PSEG will implement those as required. Similarly, the use of Best Management Practices (BMPs) for both stormwater and soil erosion / sediment control is normally required in specific NJDEP authorizations. PSEG anticipates preparation of a Soil Erosion and Sediment Control Plan which will be reviewed and approved, with monitoring conditions by Salem County and / or NJDEP and a Stormwater Pollution Prevention Plan, which will be reviewed and approved by NJDEP. PSEG also anticipates that stormwater plans for both the final plant design and construction stormwater will be required and subject to conditions imposed by NJDEP.

Other areas where specific mitigating measures are identified in Table 10-1 will be addressed through the use of standard construction and construction management practices. These include control of fugitive dust during construction, use of properly maintained equipment, control of site activities that generate excessive noise during off-hours, and any locally required traffic mitigation actions (whether passive such as road or intersection improvements, or active such as remote parking / car-pooling). PSEG will implement those activities as required. Standard practices include the use of processes to identify and manage the identification of unexpected historic or cultural resources, as well as any unexpected natural resources.

No land use/construction approvals have been received to date for the new plant at the PSEG Site and therefore, there are no specific conditions to implement at this time. Based on PSEG’s experience with other large construction projects, combined with the anticipated conditions of the NJDEP and USACE land use construction approvals, specific mitigation

activities will most likely be included. Those agencies will enforce compliance with any such conditions. Most of the mitigation activities identified in Table 10-1 should be identified as such conditions. As necessary, observations during the initial stages of site preparation activities also are expected to identify any changed site conditions or species of concern, and appropriate mitigation measures would be implemented.

PSEG defers to the NRC Staff on the status of consultation.

**FEIS Question 34: Some of the “actions to mitigate impacts” listed in Table 10-2 are required by law, and some are not. Has Applicant committed to implement some or all of the latter? If some, which? How will compliance be monitored and enforced?**

**Update status of USACE’s consultation with Native American tribes, described on page 10-15.**

PSEG RESPONSE (J. Mallon):

With regard to specific mitigating measures addressed in FEIS Table 10-2 (Unavoidable Adverse Environmental Impacts from Operations), the majority, if not all, are expected to be conditions of the various operational approvals required for the new plant at the PSEG Site (inclusive of start-up and commissioning activities). These approvals include, but are not limited to, the New Jersey Pollutant Discharge Elimination System permit, the Title V Air Operating Permit, and the numerous other authorizations required to operate and maintain the new plant. Those agencies will enforce compliance with any conditions in their approvals.

Minimization of impacts to terrestrial or aquatic resources are expected to be ongoing obligations of the various approvals. In addition, formal wetland and habitat mitigation conditions in the USACE and NJDEP authorizations may continue into the operational phase and PSEG will continue to implement those as required. Similarly, the use of BMPs for both stormwater and soil erosion / sediment control is normally required in specific NJDEP authorizations; some of these will be applicable during the operational phase as well.

Other areas where specific mitigating measures are identified in Table 10-2 will be addressed through the use of standard maintenance and maintenance management practices, which are similar to construction practices. These include site maintenance, road maintenance, vegetation management and other similar approvals. Water use is monitored and managed on an ongoing basis; this is not expected to change.

PSEG currently maintains an environmental compliance organizational role and expects to continue this accountability in the future. This includes monitoring for unexpected or newly identified cultural, historic or natural resources on the PSEG Site.

PSEG defers to the NRC Staff on the status of consultation.

**ATTACHMENT B**

**AFFIDAVIT FOR PSEG RESPONSE TO SECOND SET OF BOARD QUESTIONS**

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

In the Matter of	)	
PSEG POWER, LLC AND PSEG	)	Docket No. 52-043-ESP
NUCLEAR, LLC	)	
(Early Site Permit Application)	)	January 28, 2016
	)	

**AFFIDAVIT OF JAMES MALLON**

I, James Mallon, do hereby affirm:

1. I am the Nuclear Development Manager for the Nuclear Development Department at PSEG Power, LLC. A statement of my professional qualifications is attached.
2. PSEG Power, LLC and PSEG Nuclear, LLC are providing responses to questions raised by the Atomic Safety and Licensing Board in the Memorandum and Order (Second Set of Board Questions and Associated Administrative Directives), issued on January 6, 2016.
3. I am responsible for the responses provided in Attachment A to the “PSEG Response to Second Set of Board Questions” for which I am listed as the author.
4. Those responses were prepared by me or under my direction. I attest to the accuracy of those responses, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those responses, and my statements in this affidavit, are true and correct to the best of my information, knowledge, and belief.

Executed in Accord with 10 C.F.R. § 2.304(d)

James Mallon

Nuclear Development Manager

Nuclear Development Department

PSEG Power, LLC

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Salem, NJ 08079

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**ATTACHMENT C**

**STATEMENT OF PROFESSIONAL QUALIFICATIONS FOR PSEG RESPONSE TO  
SECOND SET OF BOARD QUESTIONS**

**James Mallon**

**PSEG Power, LLC**

**Energy and Environmental Resource Center**

**244 Chestnut Street**

**Salem, New Jersey 08079**

**Phone: 856-339-7908**

**E-mail: James.Mallon@pseg.com**

## **EDUCATION**

ANSI 3.1 SRO Certification - 2003

Graduate Business Courses for an M.B.A., University of Southern Maine

B.A. Physics, Franklin and Marshall College, Lancaster, Pa., 1981

## **PROFESSIONAL EXPERIENCE**

### PSEG Power, LLC

2011 – Present

Since 2011 Mr. Mallon has been the Manager of Nuclear Development for PSEG. This includes the Early Site Permit project, partnering with Holtec International on SMR design, land acquisition for Nuclear Development, and advanced technology monitoring.

2008 – 2011

Mr. Mallon was the Early Site Permit Manager during the initial phases of the project, including the choice to pursue an ESP, vendor selection, application preparation, and response to NRC requests of additional information.

### Exelon Nuclear

2006 – 2008

Mr. Mallon was on loan as Licensing Manager for Salem and Hope Creek stations, responsible for all NRC submittals from both stations. During this time he led licensing efforts to obtain a license amendment for a 15% Extended Power Uprate on Hope Creek.

2004 – 2006

In 2004 Mr. Mallon became the Regulatory Assurance Manager for the Peach Bottom Atomic Power Station. In the capacity he was responsible for site interface with NRC, INPO, OSHA,

and PA DEP. He successfully led site teams to close NRC Supplemental inspections for Emergency Diesel performance problems, and for an excessive number of SCRAMs

2003 – 2004

Mr. Mallon was the Director of Training for the Peach Bottom Atomic Power Station, where he was responsible for all site accredited and non-accredited training.

2000 – 2003

Following the merger that created Exelon, Mr. Mallon was the Corporate Radiation Protection Manager. In that capacity he initiated practices to effectively oversee fleet RP activities post merger. This practice enabled Radiation Protection to quickly move to a standard program and enhanced communication throughout the fleet. Mr. Mallon established a process for development of the standard procedures involving site subject matter experts. Using this process all programs were standardized within scheduled times with no contracted resources.

#### Maine Yankee Atomic Power Company

1996 – 2000

Mr. Mallon was the Radiation Protection & Waste Manager prior to and during the decommissioning of the facility. He managed the Radiation Protection program during highly challenging work such as site wide asbestos abatement, chemical decontamination of coolant systems, and removal of all reactor coolant piping and components. Mr. Mallon also worked with stakeholders to resolve concerns about the end state of the site and provide the organization with regulatory certainty.

#### Environmental Dimensions Inc.

1995 – 1996

In 1995 Mr. Mallon consulted to Sandia National Laboratories as a Senior Health Physicist. He authored the Internal Dosimetry Technical Basis Document to meet 10CFR835 requirements and developed process management tools for program activities and for evaluating radiochemistry services provided by contract labs.

#### PECO Energy Co

1988 – 1995

Mr. Mallon worked in a number of positions of increasing responsibility at the Limerick Generating Station. He began as a Radiological Engineer, became a First line supervisor in Radiation Protection and ultimately was the Health Physics Support Manager responsible for the Dosimetry, Respiratory Protection, HP Instrumentation, and Process and Effluent Radiation Monitoring Programs. As Support Manager he managed the implementation of the 10CFR20



revision, including scope determination, work schedule development, and supervised extensive rewrites of 45 procedures, changes to the corporate exposure tracking database, and training for 1800 workers.

1987 – 1988

Mr. Mallon was a contracted engineer working in PECO's corporate office. He established a program to provide an ALARA review during the design of plant modifications.

Stone and Webster Engineering Corporation

1982 – 1986

Mr. Mallon held a series of positions of increasing responsibility starting from Engineer to eventually becoming the Principal Radiation Protection Engineer. As the Principal Engineer for the Nine Mile Point Unit 2 project, Mr. Mallon supervised twelve engineers working on design basis calculations for equipment qualification, shielding, licensing and effluent monitoring.

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

In the Matter of	)	
PSEG POWER, LLC AND PSEG	)	Docket No. 52-043-ESP
NUCLEAR, LLC	)	
(Early Site Permit Application)	)	January 28, 2016
	)	

**CERTIFICATE OF SERVICE**

Pursuant to 10 C.F.R. § 2.305, I certify that, on this date, a copy of the “PSEG Response to Second Set of Board Questions” was served upon the Electronic Information Exchange (the NRC’s E-Filing System) in the above-captioned proceeding.

*Signed (electronically) by Stephen J. Burdick*  
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Nuclear, LLC*