


United States Nuclear Regulatory Commission Official Hearing Exhibit	
In the Matter of: PSEG POWER, LLC AND PSEG NUCLEAR, LLC (Early Site Permit Application)	
	ASLBP #: 15-943-01-ESP-BD01
	Docket #: 05200043
	Exhibit #: NRC018-MA-BD01
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NRC018

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket No. 52-043-ESP
PSEG POWER, LLC AND PSEG	)	
NUCLEAR, LLC	)	ASLBP No. 15-943-01-ESP-BC01
	)	
(Early Site Permit Application)	)	February 25, 2016

NRC STAFF TESTIMONY RELATED TO FEBRUARY 8, 2016 ORDER  
TOPIC 6: CONSIDERATION OF MITIGATION IN FEIS TABLES 10-1 AND 10-2

**Q1: Please state your name, occupation, employer, and professional qualifications.**

**A1:** (AF) My name is Allen Fetter. I am a Senior Project Manager in the Environmental Projects Branch, Division of New Reactor Licensing, Office of New Reactors (NRO), U.S. Nuclear Regulatory Commission (NRC). A statement of my professional qualifications is included in Ex. NRC002.

(JC) My name is Jack Cushing. I am a Senior Project Manager in the Environmental Technical Support Branch, Division of Site Safety & Environmental Analysis (DSEA), NRO, NRC. A statement of my professional qualifications is included in Ex. NRC002.

(JD) My name is Jennifer Davis. I am a Senior Project Manager in the Environmental Technical Support Branch, DSEA, NRO, NRC. A statement of my professional qualifications is included in Ex. NRC002.

(AK) My name is Andrew Kugler. I am a Senior Project Manager in the Environmental Technical Support Branch, DSEA, NRO, NRC. A statement of my professional qualifications is included in Ex. NRC002.

**Q2: Please describe your responsibilities with regard to the Staff's review of the PSEG Site Early Site Permit (ESP) application.**

**A2:** (AF) I am the Project Manager for the environmental review of PSEG's application for the proposed early site permit (ESP) at the PSEG Site. I was responsible for overseeing the preparation of NUREG-2168, "Environmental Impact Statement for an Early Site Permit (ESP) at the PSEG Site; Final Report," November 2015 (FEIS) (Ex. NRC004).

(JC) I provided technical oversight in the area of historic and cultural resources and guidance to subject matter experts for the cumulative impacts analysis. In addition to the PSEG review, I have coordinated the development of several environmental guidance documents, including COL/ESP-ISG-026, Interim Staff Guidance on Environmental Issues Associated with New Reactors.

(JD) I provided technical oversight in the area of historic and cultural resources. In addition, I have served as an environmental project manager for EIS reviews and have coordinated the development of several guidance documents.

(AK) I provided technical oversight in the area of alternatives. In addition, I have served as an environmental project manager for EIS reviews and have coordinated the development of several guidance documents.

**Q3: What is the purpose of your testimony?**

**A3:** (AF, JC, JD, AK) The purpose of our testimony is to provide information about how the NRC staff complied with the National Environmental Policy Act (NEPA) and NRC staff guidance and provide the basis for the staff's consideration of mitigation measures in Tables 10-1 and 10-2 in of the PSEG ESP FEIS.

**Q4. What NEPA standards did the Staff consider to be applicable in determining whether to consider particular mitigation activities in its impact conclusions?**

A4: (AF, JC, JD, AK) NEPA requires Federal agencies to take a "hard look" at the environmental impacts of major Federal actions; this requirement is bounded by a "rule of reason" that requires agencies to consider impacts that are "reasonably foreseeable"—not remote and speculative. Therefore, in developing its impact conclusions, the Staff takes into consideration mitigation that is reasonably foreseeable, based on the best available information to ensure that environmental consequences have been fairly evaluated. Because NEPA does not require certainty, but rather an estimate based on the best information available, an applicant is not required to have finalized applications for or received permits from other Federal, State, and local agencies in order for the Staff to make a reasoned assessment of the existence of requirements that will provide an upper bound to environmental impacts. Indeed, as described in Appendix H of the FEIS (see footnote (a) on page H-7) (Ex. NRC004C), PSEG has not yet applied for many of the other permits that may be required if it later seeks permission in a combined license (COL) application to perform activities on the site in support of building and operating a nuclear plant. However, the Staff had sufficient information to perform the analysis required by NEPA and the NRC's regulations implementing NEPA in 10 CFR Part 51 for the ESP. If the Applicant later applies for a COL, the Staff will develop a supplemental EIS that considers new and significant information related to the impacts of building and operating a plant at the PSEG site, including with respect to mitigation activities.

**Q5: What is the Staff's guidance on mitigation?**

**A5:** (AF, JC, JD, AK) The Staff's guidance on mitigation is contained in ISG-26 Interim Staff Guidance on Environmental Issues Associated with New Reactors (ADAMS Accession No. ML14092A402). As stated in ISG-26, a mitigation measure is considered reasonably foreseeable if, for example, it is 1) required by the NRC as a license condition (e.g., a requirement imposed pursuant to 10 CFR 50.54(aa)), 2) required or likely to be required by another regulatory agency (e.g., U.S. Army Corps of Engineers (USACE) or New Jersey Department of Environmental Protection), or 3) mitigation that the applicant has stated to the NRC (e.g., in the Environmental Report) that it would perform. Consistent with the requirements of NEPA, the Staff does not require certainty that a specific mitigation measure will be implemented in order to consider it in its analysis, but rather that implementation of the measure is reasonably foreseeable.

**Q6: How did the Staff determine that the mitigation measures in Tables 10-1 and 10-2 are reasonably foreseeable and could be relied upon to determine impact levels in the final EIS?**

**A6:** (AF, JC, JD, AK) The mitigation measures listed in Tables 10-1 and 10-2 are reasonably foreseeable based upon the Staff's consideration of the best available information at the time the FEIS was published. In addition, the measures relied upon in determining impact levels in the final EIS meet the standards of NEPA and the objectives of the Staff guidance discussed in questions 4 and 5 above. The witnesses coordinated with subject matter experts in each resource area to confirm the information in the tables. The tables below document the basis for the Staff's determination that the mitigation measures are reasonably foreseeable.

**TABLE 10-1. UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS DURING CONSTRUCTION AND PRECONSTRUCTION**

<b>Resource Area</b>	<b>Adverse Impacts</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
<b>Land Use</b>	MODERATE	Minimize land disturbance and comply with requirements of applicable Federal, State, and local permits, regulations, and zoning.	About 430 ac on and adjacent to the site would be committed to the project throughout preconstruction and construction, of which 205 ac would be available for use after construction is complete. About 69 ac off the site would be committed during preconstruction for the causeway, of which 23.5 ac would be available for use after the causeway is built	<p>The actions to mitigate land use impacts are reasonably foreseeable because they are expected to be conditions of the various land use approvals required for any pre-construction or construction on the PSEG Site. These approvals include the Federal USACE Section 10 and Section 404 Permit, the New Jersey Department of Environmental Protection (NJDEP) Coastal Area Facility Review Act / Waterfront Development Permit, the local Lower Alloways Creek Township zoning, planning and construction approvals, and other approvals such as those required by Salem County.</p> <p>Also, the actions to mitigate land use impacts are reasonably foreseeable because PSEG has committed to using standard construction and construction management practices, which include minimizing land disturbance. See, e.g., PSEG ER Section 4.6.3 (Ex. PSEG004Z). PSEG also stated in response to question 8 of the Board's second round of prehearing questions (Ex. PSEG006) that, based on its experience with other large construction projects, combined with the anticipated conditions of the NJDEP and USACE land use construction approvals, specific mitigation actions would most likely be included and the agencies would enforce compliance with any such conditions.</p>

**Table 10.1 Continued**

<b>Resource Area</b>	<b>Adverse Impacts</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
<b>Water Use</b>	SMALL	Obtain a Clean Water Act (33 USC 1251 et seq. -TN662) Section 401 certification before site preparation activities. Comply with Federal and State regulations and permits.	Small amounts of surface water from stormwater retention ponds would be used for dust suppression during building of the new nuclear power plant. Groundwater would be obtained under the existing water-use permit for the Hope Creek and Salem Generating Stations (HCGS and SGS). Temporary and localized groundwater impacts would result from dewatering for power block construction and preconstruction and construction support (including concrete batch plant supply and dust suppression)	NJDEP will conduct a water quality certification review under Clean Water Act (CWA) Section 401. Existing groundwater use is permitted by NJDEP Water Allocation Permit No. WAP120001 under New Jersey Administrative Code (NJAC) 7:19, Water Supply Allocation Permits, and New Jersey Statutes Annotated (NJS) 58:1A-5, Supply and Diversion of Water, Rules and Regulations.
<b>Water Quality</b>	SMALL	Implement best management practices (BMPs) and a site-specific Stormwater Pollution Prevention Plan (SWPPP).	Surface-water quality would be affected by clearing vegetation, disturbing the land surface, inadvertent release of	Discharges from the site, including stormwater discharges, are permitted under NJAC 7:14A, New Jersey Pollutant Discharge Elimination System (NJPDES). Provisions of the NJPDES permit include the use of BMPs (NJAC 7:14A-6.2).

**Table 10.1 Continued**

<b>Resource Area</b>	<b>Adverse Impacts</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
		Comply with Federal and State regulations and permits.	contaminants associated with building materials and equipment, building activities in the tidal marsh and tidal stream areas, and dredging activities in the Delaware River. Temporary and localized groundwater-quality impacts would result from dewatering for power block construction and discharge of groundwater to adjacent surface-water bodies	
<b>Ecological Impacts</b>				
—Terrestrial and Wetland Resources	MODERATE	Minimize land disturbance, implement BMPs, and comply with requirements of applicable Federal and State permits and regulations. Revegetate temporarily disturbed areas.  Any conditions required by the USACE, such as	Construction and preconstruction would disturb 430 ac on and adjacent to the site and 69 ac along the proposed causeway. About 225 ac on the site would be permanently disturbed, and 205 ac on and adjacent to the site would be temporarily	The actions to mitigate terrestrial ecology impacts are reasonably foreseeable because they are expected to be conditions of the various land use approvals required for any building activities on the PSEG Site. These approvals include 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 other approvals such as those required by Salem County.

Table 10.1 Continued

Resource Area	Adverse Impacts	Actions to Mitigate Impacts	Unavoidable Adverse Impacts	Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable
		<p>compensatory mitigation, would be addressed in the USACE permit, if issued. Mitigation may only be used after all appropriate and practical steps to avoid and minimize adverse impacts to aquatic resources, including wetlands and streams, have been taken. All remaining unavoidable impacts must be compensated to the extent appropriate and practicable. Onsite, in-kind mitigation such as wetland creation and enhancement would be used.</p>	<p>disturbed. Permanent disturbance on the site would include 108 ac of wetland habitat and 9 ac of old field and brush/shrubland habitat. Temporary disturbance on the site would include 80 ac of old field and <i>Phragmites</i>-dominated old field habitat and 32 ac of wetland habitat. Temporary disturbance adjacent to the site would include 30.2 ac of wetland habitat.</p> <p>Preconstruction would disturb 69.0 ac along the proposed causeway; of this, 45.5 ac would be permanently disturbed and 23.5 ac would be temporarily disturbed. Permanent disturbance would include 23 ac of wetland habitat and 3.5 ac of forestland habitat. Temporary disturbance would include 19.6 ac of wetland habitat</p>	<p>Also, the actions to mitigate terrestrial ecology impacts are reasonably foreseeable because PSEG has committed to using standard construction and construction management practices, which include minimizing land disturbance. See, e.g., PSEG ER Section 4.6.3 (Ex. PSEG004Z). PSEG also stated in response to question 8 of the Board's second round of prehearing questions (Ex. PSEG006) that, based on its experience with other large construction projects, combined with the anticipated conditions of the NJDEP and USACE land use construction approvals, specific mitigation actions would most likely be included and the agencies would enforce compliance with any such conditions.</p>

**Table 10.1 Continued**

<b>Resource Area</b>	<b>Adverse Impacts</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
—Aquatic Resources	SMALL	Minimize marsh creek and Delaware River Estuary bottom disturbance and dredging, implement BMPs, and comply with requirements of applicable Federal and State permits and regulations.	Physical alteration of habitat (e.g., infilling, dredging, pile driving), including temporary or permanent removal of associated benthic organisms, sedimentation, changes in hydrological regimes, and changes in water quality. Aquatic habitats affected would include desilt basins (artificial lakes) and small marsh creeks, habitats associated with the Delaware River Estuary, and the interconnected system of tidal wetlands and marsh creeks primarily north of the PSEG Site.	The Department of the Army (DA) permit authorizing activities under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the CWA and the NJDEP CWA Section 401 water quality certification will contain special conditions, including BMPs, to minimize impacts to aquatic resources and habitats. Such conditions are standard requirements included in permits for similar industrial projects. In addition to these expected conditions that will require minimization of impacts, a detailed compensatory mitigation plan to address unavoidable impacts to aquatic resources must be developed prior to issuance of the DA permit.
<b>Socioeconomic Impacts</b>				
—Physical	SMALL (most) to MODERATE (aesthetics)	Implement standard noise-control measures for construction equipment and limit the types of construction activities during nighttime and weekend hours.	Minor physical impacts associated with increased noise, air pollution emissions, and vehicle traffic. Building two new cooling towers and two new reactor domes at	Several Federal and State requirements are expected to limit noise. Limiting day and night activities is typically a combination of law and ordinance, e.g., Department of Labor (DOL) Occupational Safety and Health Administration (OSHA) time-weighted noise requirements in 29 CFR 1910.95. Construction industry



**Table 10.1 Continued**

<b>Resource Area</b>	<b>Adverse Impacts</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
		<p>Control fugitive dust through watering. Control vehicle emissions through regularly scheduled maintenance.</p> <p>Follow local ordinances that require mitigation of road degradation.</p>	<p>the PSEG Site and an elevated causeway to the PSEG Site would noticeably affect aesthetic qualities from sensitive viewpoints.</p>	<p>specific requirements in, DOL OSHA 29 CFR 1926.52; 1926.101 and the National Institute of Occupational Safety and Health (NIOSH) Publication No. 98-126 on occupational noise also require noise limits. New Jersey also has established protective noise levels. NJAC 7:29 includes regulatory limits on continuous noise levels at the residential property line from industrial, commercial, public service, or community service facilities. For continuous noise sources, the protective level is 65 dBA during the day and 50 dBA during the night at the residential property line (NJAC 7:29). Delaware (7 Del Admin. C. § 1149) provides for a protective level of 65 dBA during the day and 55 dBA during the night for residential receptors.</p> <p>Air quality limits are regulated by Clean Air Act (CAA) Title V permit requirements and under New Jersey Administrative code NJAC 7:27-14 "Control and Prohibition of Air Pollution from Diesel-Powered Motor Vehicles (Diesel-Powered Motor Vehicle Inspection and Maintenance Program)."</p> <p>Dust control would be regulated by NJDEP under the New Jersey Administrative code, either under NJAC 7:27-5 "Prohibition of Air Pollution", NJAC 7:27-8.2 "Applicability" covering equipment that would require permits, or as a permit requirement for the implementation of a Dust Management Plan for</p>

**Table 10.1 Continued**

<b>Resource Area</b>	<b>Adverse Impacts</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
				facilities where there exists a possibility of significant fugitive dust emissions.
—Demography	SMALL	None	The in-migration of workers and their families to support building the new nuclear power plant would increase the population of the economic impact area by about 0.16 percent. The increase would be most pronounced in Salem County, New Jersey, which would experience about a 1.24 percent increase in population.	Not Applicable
—Economic and Tax	SMALL (beneficial) to MODERATE (beneficial)	None	None	Not Applicable
—Infrastructure and Community Services	SMALL (most) to MODERATE (traffic and recreation)	Incorporate traffic impact analysis recommendations discussed in Section 4.4.4.1	Increase in local traffic during building resulting in increased congestion. Aesthetic impacts near recreational resources, specifically on the Delaware River and PSEG Estuary Enhancement Program	As the Staff stated in Response 33 to the Board's second round of questions (Ex. NRC016), with respect to the PSEG traffic study in Table 10-1 in the FEIS, the recommendations are not requirements of another permitting agency. However, the staff considers it likely that these measures would be implemented as a result of Salem County's and Lower Alloways Creek Township's process for approval of the causeway routing.

**Table 10.1 Continued**

<b>Resource Area</b>	<b>Adverse Impacts</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
			viewing platforms, would not be amenable to mitigation for the increased industrialization at the PSEG Site.	
<b>Environmental Justice</b>	No disproportionately high and adverse impacts	None	None	Not Applicable
<b>Historic and Cultural</b>	SMALL to MODERATE	Inadvertent discovery procedures are in place to minimize impacts to potential historic and cultural resources. The USACE consultations with the New Jersey State Historic Preservation Office and Native American tribes are ongoing.	No unavoidable adverse impacts to historic and cultural resources are anticipated on Artificial Island. An adverse visual effect to historic properties in New Jersey could occur if natural draft cooling towers are constructed.	In the event that natural draft cooling towers are selected, there would be an adverse visual effect in New Jersey. A Memorandum of Agreement (MOA) was executed to mitigate the adverse effect as required by Section 106 of the National Historic Preservation Act (See FEIS Sections 4.6 and 5.6 and Appendix F pp. F-29-F42) (Ex. NRC004A and NRC004C).  PSEG has committed to following its corporate inadvertent discovery procedure EN-AA-602-0006, Revision 0 (see FEIS Sections 4.6 and 5.6) (Ex. NRC004A).
<b>Air Quality</b>	SMALL	Implement emission-specific strategies and measures to ensure compliance with the applicable regulatory limits defined by the National Primary and Secondary Ambient Air	Fugitive dust and emissions of criteria pollutants, hazardous air pollutants, and greenhouse gases from land-disturbing and building activities and equipment and from	NAAQS are regulated under 40 CFR Part 50 and NESHAPS are covered under 40 CFR Part 63 under the CAA. Additionally, vehicle emissions are covered under NJAC 7:27-14 "Control and Prohibition of Air Pollution from Diesel-Powered Motor Vehicles (Diesel-Powered Motor Vehicle Inspection and Maintenance Program)." Dust control would be

**Table 10.1 Continued**

<b>Resource Area</b>	<b>Adverse Impacts</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
		Quality Standards (NAAQS) and the National Emission Standards for Hazardous Air Pollutants (NESHAPS). Also, implement a dust control program and require contractors, vendors, and subcontractors to adhere to appropriate Federal and State regulations governing construction activities and construction vehicle emissions.	additional vehicle traffic, but impacts would be temporary	regulated by NJDEP under the New Jersey Administrative code, either under NJAC 7:27-5 "Prohibition of Air Pollution", NJAC 7:27-8.2 "Applicability" covering equipment that would require permits, or as a permit requirement for the implementation of a Dust Management Plan for facilities where there exists a possibility of significant fugitive dust emissions.
<b>Nonradiological Health</b>	SMALL	Comply with Federal, State, and local regulations governing construction activities and construction vehicle emissions; comply with Federal and local noise-control ordinances; comply with Federal and State occupational safety and health regulations.  Use causeway for construction traffic; implement traffic	Fugitive dust, occupational injuries, noise, and the transport of materials and personnel to the site	As discussed above with respect to physical socioeconomic impacts of construction and preconstruction, several Federal and State requirements are expected to limit noise. Limiting day and night activities is typically a combination of law and ordinance, e.g., DOL OSHA time-weighted noise requirements in 29 CFR 1910.95. Construction industry specific requirements in, DOL OSHA 29 CFR 1926.52; 1926.101 and NIOSH Publication No. 98-126 on occupational noise also require noise limits. New Jersey also has established protective noise levels. NJAC 7:29 includes regulatory limits on continuous noise levels at the residential property line from industrial,

**Table 10.1 Continued**

<b>Resource Area</b>	<b>Adverse Impacts</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
		management plan; implement proposed improvements to roads and install traffic signals to improve traffic patterns.		<p>commercial, public service, or community service facilities. For continuous noise sources, the protective level is 65 dBA during the day and 50 dBA during the night at the residential property line (NJAC 7:29). Delaware (7 Del Admin. C. § 1149) provides for a protective level of 65 dBA during the day and 55 dBA during the night for residential receptors.</p> <p>Air quality limits are regulated by CAA Title V permit requirements and the under NJAC 7:27-14 "Control and Prohibition of Air Pollution from Diesel-Powered Motor Vehicles (Diesel-Powered Motor Vehicle Inspection and Maintenance Program)."</p> <p>Dust control would be regulated by NJDEP under the New Jersey Administrative code, either under NJAC 7:27-5 "Prohibition of Air Pollution", NJAC 7:27-8.2 "Applicability" covering equipment that would require permits, or as a permit requirement for the implementation of a Dust Management Plan for facilities where there exists a possibility of significant fugitive dust emissions.</p> <p>Federal and State occupational safety and health regulations are located at:</p> <ul style="list-style-type: none"> <li>• DOL OSHA 29 CFR 1904 - regulations for worker recordable and non-recordable injuries and</li> </ul>

**Table 10.1 Continued**

<b>Resource Area</b>	<b>Adverse Impacts</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
				<ul style="list-style-type: none"> <li>NJSA 34:6A-25 et seq. New Jersey Public Employees' Occupational Safety and Health Act.</li> </ul> <p>PSEG would implement worker safety policies/procedures used by SGS and HCGS (See, PSEG Response to RAI No. ENV-09, ADAMS Accession No. ML12290A078).</p>
<b>Radiological Health</b>	SMALL	Maintain doses to construction workers below the NRC public dose limits	Radiological doses to the public and to construction workers at the PSEG Site from the adjacent SGS and HCGS would be below the NRC public dose limits.	<p>The following regulations minimize impacts:</p> <ul style="list-style-type: none"> <li>10 CFR Part 20 Subpart D, Radiation Dose Limits for Individual Members of the Public.</li> </ul> <p>Specifically:</p> <ul style="list-style-type: none"> <li>20.1301: Dose limits for individual members of the public (includes 40 CFR 190)</li> <li>20.1302: Compliance with dose limits for individual members of the public</li> </ul>
<b>Nonradiological Wastes</b>	SMALL	Manage wastes according to existing practices currently used at HCGS and SGS and in compliance with Federal, State, and county regulations. Implement SWPPP to manage stormwater runoff	Solid, liquid, and gaseous wastes would be generated when building the new nuclear power plant at the PSEG Site. Increased consumption of landfill space for disposition of wastes	The following regulations implementing the Resource Conservation and Recovery Act (RCRA) are applicable to management of non-radiological hazardous waste:

				<ul style="list-style-type: none"> <li>• 40 CFR Part 261, Identification and Listing of Hazardous Waste</li> <li>• 40 CFR Part 262, Standards Applicable to Generators of Hazardous Waste</li> <li>• 40 CFR Part 263, Standards Applicable to Transporters of Hazardous Waste</li> <li>• 40 CFR Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities</li> <li>• 40 CFR Part 266, Standards for the Management of Specific Hazardous Wastes and Specific Hazardous Waste Management Facilities</li> <li>• 40 CFR Part 268 Land Disposal Restrictions</li> </ul> <p>In addition, the following Federal regulations implementing the Toxic Substances Control Act (TSCA) and Federal and State regulations pertaining to hazardous material transportation are applicable:</p> <ul style="list-style-type: none"> <li>• 40 CFR Part 761 PCBs, Subpart D Storage and Disposal</li> <li>• Hazardous Material Transportation Regulations, 49 CFR Parts 171-180</li> <li>• Administrative Code NJAC 7:26 (NJ Solid and Hazardous Waste Regulations).</li> </ul> <p>PSEG has committed to following procedures for construction waste minimization and</p>
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**Table 10.1 Continued**

<b>Resource Area</b>	<b>Adverse Impacts</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
				<p>recycling of waste (PSEG ER, Section 5.5.3 (Ex. PSEG004AA) and "PSEG Response to RAI No. Env-15, Question ESP EIS 5.10-2" – ADAMS Accession No. ML12296A443).</p> <p>The Staff considered that the nearby Salem County Improvement Authority (SCIA) is a permitted landfill.</p> <p>Water discharges from the site, including stormwater discharges, are permitted under NJAC 7:14A, New Jersey Pollutant Discharge Elimination System. Provisions of the NJPDES include the use of BMPs (NJAC 7:14A-6.2).</p>

**TABLE 10-2. UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS FROM OPERATIONS**

<b>Resource Area</b>	<b>Adverse Impact</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
<b>Land Use</b>	SMALL	None	Areas of permanent disturbance (225 ac on the site and 45.5 ac along the causeway) would be unavailable for other uses for the operational life of the new nuclear power plant.	Not Applicable



<b>Water Use</b>	SMALL	PSEG could (1) revise the consumptive use allocations of other plants it owns and supports through its allocation in Merrill Creek reservoir or (2) temporarily or permanently acquire additional storage from the existing rights of other Merrill Creek co-owners.	Surface-water withdrawals from the Delaware River could result in consumptive use mitigation requirements that exceed the PSEG current storage allocation of water in the Merrill Creek reservoir. Groundwater withdrawals for sanitary and potable water systems and for the demineralized water distribution system	PSEG has stated that it can negotiate with other Merrill Creek Owners Group members for additional water rights (See ER Section 5.2.2.1) (Ex. PSEG004AA). Release operations of the Merrill Creek reservoir are stipulated in Delaware River Basin Commission Docket No. D-1977-110 CP-18.
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**Table 10.2 Continued**

<b>Resource Area</b>	<b>Adverse Impact</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
<b>Water Quality</b>	SMALL	Implement best management practices (BMPs) and a Stormwater Pollution Prevention Plan (SWPPP) and maintain compliance with Federal and State regulations and permit requirements.	Impacts to the Delaware River surface water from thermal discharge and discharge of nonradioactive liquid effluents from the cooling water system, as well as potable and sanitary discharges and liquid radioactive waste discharge. Possible groundwater impacts from chemical or radiological spills that could migrate to shallow water (brackish) zones or saline intrusion to deep aquifers due to groundwater withdrawals	Discharges from the site, including stormwater and thermal discharges, are permitted under NJAC 7:14A, New Jersey Pollutant Discharge Elimination System. Provisions of the NJPDES include the use of BMPs (NJAC 7:14A-6.2).
<b>Ecological Impacts</b>				
—Terrestrial and Wetland Resources	SMALL	Implement BMPs to limit potential impacts from vegetation control, road maintenance, and other activities.	Permanent disturbance on the site of 108 ac of wetland habitat and 9 ac of old field and brush/shrubland habitat, and permanent disturbance along the causeway of 23 ac of wetland habitat and 3.4 ac of old field habitat. Increased risk of bird	The actions to mitigate terrestrial ecology impacts are reasonably foreseeable because they are expected to be conditions of the various approvals required for maintenance and repairs of existing features on the PSEG Site. These approvals include the Federal USACE Section 10 and Section 404 Permit, and the NJDEP Wetlands Act of 1970.

**Table 10.2 Continued**

<b>Resource Area</b>	<b>Adverse Impact</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
			collisions with structures, wildlife avoidance due to increased noise and artificial light, and potential impacts of salt deposition on vegetation near the cooling towers	
—Aquatic Resources	SMALL	Implement BMPs and SWPPP and maintain compliance with Federal and State regulations and permit requirements. Use of closed-cycle cooling system would reduce impingement and entrainment of aquatic biota.	Impacts to aquatic biota in the Delaware River Estuary from impingement and entrainment due to cooling system operations, heat stress due to the thermal discharge plume, and chemicals in the discharged blowdown from the new nuclear power plant.	Discharges from the site, including stormwater and thermal discharges, are permitted under NJAC 7:14A, New Jersey Pollutant Discharge Elimination System (NJPDES). Provisions of the NJPDES include the use of BMPs (NJAC 7:14A-6.2). The cooling water intake system will be compliant with EPA 316(b) Phase I requirements specified in 40 CFR 125.84, which were established to reduce injury and mortality to impingement and entrainment of aquatic biota.
<b>Socioeconomic Impacts</b>				
—Physical	SMALL (most) to MODERATE (aesthetics)	None	Minor physical impacts associated with increased noise, air pollution emissions, and vehicle traffic. Operating two new cooling towers and two new reactor domes at the PSEG Site and an elevated causeway to the PSEG	Not Applicable

**Table 10.2 Continued**

<b>Resource Area</b>	<b>Adverse Impact</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
			Site would noticeably affect aesthetic qualities from sensitive viewpoints.	
—Demography	SMALL	None	The in-migration of workers and their families to support operating the new nuclear power plant would increase the population of the economic impact area by about 0.05 percent. The increase would be most pronounced in Salem County, New Jersey, which would experience about a 0.39 percent increase in population.	Not Applicable
—Economic and Tax	None; all impacts are beneficial	None	None	Not Applicable
—Infrastructure and Community Services	SMALL (most) to MODERATE (recreation)	None	Aesthetic impacts near recreational resources, specifically on the Delaware River and PSEG Estuary Enhancement Program viewing platforms, from increased industrialization at the PSEG Site that would not	Not Applicable

Table 10.2 Continued

Resource Area	Adverse Impact	Actions to Mitigate Impacts	Unavoidable Adverse Impacts	Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable
			be amenable to mitigation strategies	
Environmental Justice	No disproportionately high and adverse impacts	None	None	Not Applicable
<b>Historic and Cultural</b>	SMALL to MODERATE	<p>The NRC executed a Memorandum of Agreement (NRC 2015-TN4377) to resolve any effect to historic properties in New Jersey resulting from construction and operation of natural draft cooling towers.</p> <p>In the event that significant historic and cultural resources were encountered, procedure EN-AA-602-0006 for considering inadvertent discovery of cultural resources during normal operations would be followed.</p> <p>The USACE will continue consultation with the New Jersey State Historic Preservation Office and Native American tribes.</p>	<p>The NRC executed a Memorandum of Agreement (NRC 2015-TN4377) to resolve any effect to historic properties in New Jersey from construction and operation of natural draft cooling towers.</p>	<p>In the event that natural draft cooling towers are selected, there would be an adverse visual effect in New Jersey. A MOA was executed to mitigate the adverse effect as required by Section 106 of the National Historic Preservation Act (See FEIS Sections 4.6 and 5.6 and Appendix F pp. F-29-F-42) (Ex. NRC004A and NRC004C).</p> <p>PSEG has committed to following its corporate inadvertent discovery procedure EN-AA-602-0006, Revision 0 (see FEIS Sections 4.6 and 5.6) (Ex. NRC004A).</p>

**Table 10.2 Continued**

<b>Resource Area</b>	<b>Adverse Impact</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
<b>Air Quality</b>	SMALL	Comply with Federal, State, and local air-quality permits and regulations, including Clean Air Act (CAA, 42 USC 7401 et seq. –TN1141) requirements and requirements of the New Jersey Department of Environmental Protection (NJDEP) Division of Air Quality. Obtain a modification to NJDEP Air Operating Permit under Title V of CAA.	Criteria pollutant, hazardous air pollutant, greenhouse gas, and cooling system emissions. Operations would increase gaseous and particulate emissions by a small amount, primarily from equipment associated with auxiliary systems and the cooling towers. The primary sources of emissions from auxiliary systems would be the auxiliary boilers, standby power units such as diesel generators and/or gas turbines, and engine-driven emergency equipment. The cooling towers would be the primary source of particulate emissions	Applicant would be required to comply with NAAQS under 40 CFR Part 50 and NESHAPS under 40 CFR Part 63; these would be enforced with the Title V operating permit issued pursuant to the CAA and would cover operational emissions.
<b>Nonradiological Health</b>	SMALL	Adhere to permits and authorizations issued by State and local agencies.  Comply with Occupational Safety and Health Administration standards	Exposure to etiologic microorganisms through cooling systems, noise generated by unit operations, and accidents during transportation of	As noted in Table 10-1, several Federal and State requirements are expected to limit noise. Limiting day and night activities is typically a combination of law and ordinance, e.g., DOL OSHA time-weighted noise requirements in 29 CFR 1910.95.

**Table 10.2 Continued**

<b>Resource Area</b>	<b>Adverse Impact</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
		<p>and other Federal, State, and local safety regulations.</p> <p>Stagger arrival and departure times and outage schedules to minimize impacts to transportation routes.</p> <p>Control vehicle emissions by regularly scheduled maintenance.</p> <p>Use standard sound attenuation measures for mechanical draft cooling towers. These should be sufficient to limit the noise impact.</p>	<p>operations and outage workers to and from the site</p>	<p>Construction industry specific requirements in, DOL OSHA 29 CFR 1926.52; 1926.101 and NIOSH Publication No. 98-126 on occupational noise also require noise limits. New Jersey also has established protective noise levels. NJAC 7:29 includes regulatory limits on continuous noise levels at the residential property line from industrial, commercial, public service, or community service facilities. For continuous noise sources, the protective level is 65 dBA during the day and 50 dBA during the night at the residential property line (NJAC 7:29). Delaware (7 Del Admin. C. § 1149) provides for a protective level of 65 dBA during the day and 55 dBA during the night for residential receptors.</p> <p>Air quality limits are regulated by CAA Title V permit requirements and under NJAC 7:27-14 "Control and Prohibition of Air Pollution from Diesel-Powered Motor Vehicles (Diesel-Powered Motor Vehicle Inspection and Maintenance Program)."</p> <p>Dust control would be regulated by NJDEP under the New Jersey Administrative code, either under NJAC 7:27-5 "Prohibition of Air</p>

**Table 10.2 Continued**

<b>Resource Area</b>	<b>Adverse Impact</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
				<p>Pollution", NJAC 7:27-8.2  "Applicability" covering equipment that would require permits, or as a permit requirement for the implementation of a Dust Management Plan for facilities where there exists a possibility of significant fugitive dust emissions.</p> <p>Federal and State occupational safety and health regulations are located at:</p> <ul style="list-style-type: none"> <li>• DOL OSHA 29 CFR 1904 - regulations for worker recordable and non-recordable injuries and</li> <li>• NJSA 34:6A-25 et seq. New Jersey Public Employees' Occupational Safety and Health Act.</li> </ul> <p>PSEG would implement worker safety policies/procedures used by SGS and HCGS (See, PSEG Response to RAI No. ENV-09, ADAMS Accession No. ML12290A078).</p>
<b>Radiological Health</b>	SMALL	Doses to members of the public would be maintained below the U.S. Nuclear Regulatory Commission (NRC) and U.S. Environmental Protection Agency standards; workers' doses would be maintained	Small radiation doses to members of the public, operations workers, and biota other than humans	<p>The following regulations minimize impacts:</p> <ul style="list-style-type: none"> <li>• 10 CFR Part 20 Subpart B, Radiation Protection Programs</li> <li>• 10 CFR Part 20 Subpart C, Occupational Dose Limits.</li> </ul>



**Table 10.2 Continued**

<b>Resource Area</b>	<b>Adverse Impact</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
		below the NRC limits and as low as reasonably achievable; mitigative actions instituted for members of the public would also ensure that doses to biota other than humans would be well below National Council on Radiation Protection and International Atomic Energy Agency guidelines		<p>Specifically:</p> <ul style="list-style-type: none"> <li>– 20.1201: Occupational dose limits for adults</li> <li>• 10 CFR Part 20 Subpart D, Radiation Dose Limits for Individual Members of the Public. Specifically: <ul style="list-style-type: none"> <li>– 20.1301: Dose limits for individual members of the public (includes 40 CFR 190)</li> <li>– 20.1302: Compliance with dose limits for individual members of the public</li> </ul> </li> <li>• 10 CFR Part 50 App I</li> </ul>
<b>Nonradiological Wastes</b>	SMALL	Maintain compliance with National Pollutant Discharge Elimination System permit requirements; adhere to local, State, and Federal permits and regulations regarding the classification and disposition of wastes	Increased consumption of landfill space for disposition of wastes; increased consumption of fuels for the transportation and disposition of wastes	<p>Water discharges from the site, including stormwater discharges, are permitted under NJAC 7:14A, New Jersey Pollutant Discharge Elimination System. Provisions of the NJPDES include the use of BMPs (NJAC 7:14A-6.2).</p> <p>As noted in Table 10-1 with respect to nonradiological wastes, the following regulations implementing the RCRA are for management of non-radiological hazardous waste:</p>

**Table 10.2 Continued**

<b>Resource Area</b>	<b>Adverse Impact</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
				<ul style="list-style-type: none"> <li>• 40 CFR Part 261, Identification and Listing of Hazardous Waste</li> <li>• 40 CFR Part 262, Standards Applicable to Generators of Hazardous Waste</li> <li>• 40 CFR Part 263, Standards Applicable to Transporters of Hazardous Waste</li> <li>• 40 CFR Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities</li> <li>• 40 CFR Part 266, Standards for the Management of Specific Hazardous Wastes and Specific Hazardous Waste Management Facilities</li> <li>• 40 CFR Part 268 Land Disposal Restrictions</li> </ul> <p>In addition, the following Federal regulations implementing the TSCA and Federal and State regulations pertaining to hazardous material transportation are applicable:</p> <ul style="list-style-type: none"> <li>• 40 CFR Part 761 PCBs, Subpart D Storage and Disposal</li> </ul>

**Table 10.2 Continued**

<b>Resource Area</b>	<b>Adverse Impact</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
				<ul style="list-style-type: none"> <li>• Hazardous Material Transportation Regulations, 49 CFR Parts 171-180</li> <li>• Administrative Code NJAC 7:26 (NJ Solid and Hazardous Waste Regulations)</li> </ul> <p>PSEG has committed to following procedures for construction waste minimization and recycling of waste (PSEG ER, Section 5.5.3 (Ex. PSEG004AA) and "PSEG Response to RAI No. Env-15, Question ESP EIS 5.10-2" – ADAMS Accession No. ML12296A443).</p> <p>The Staff considered that the nearby Salem County Improvement Authority (SCIA) is a permitted landfill.</p>

**Table 10.2 Continued**

<b>Resource Area</b>	<b>Adverse Impact</b>	<b>Actions to Mitigate Impacts</b>	<b>Unavoidable Adverse Impacts</b>	<b>Staff's Basis for Considering Mitigation to Be Reasonably Foreseeable</b>
<b>Fuel Cycle, Transportation, and Decommissioning</b>	SMALL	<p>Industrywide changes in technology are reducing fuel cycle impacts.</p> <p>Implement waste-minimization program.</p> <p>Comply with the NRC and U.S. Department of Transportation (DOT) regulations</p>	<p>Small impacts from fuel cycle as presented in Table S-3, 10 CFR Part 51 (TN250).</p> <p>Small impacts from carbon dioxide, radon, and technetium-99.</p> <p>Small radiological doses that are within the NRC and DOT regulations from transportation of fuel and radioactive waste.</p> <p>Small impacts from decommissioning as presented in NUREG-0586 (NRC 2002-TN665)</p>	<p>10 CFR 20.1406 requires minimization of contamination.</p> <p>Radioactive material shipments must meet the requirements of 10 CFR Part 71: Packaging and Transportation of Radioactive Material, which incorporate the appropriate DOT regulations.</p>

**Q7: Does this conclude your testimony.**

**A7:** (AF, JC, JD, AK) Yes.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket No. 52-043-ESP
PSEG POWER, LLC AND PSEG	)	
NUCLEAR, LLC	)	ASLBP No. 15-943-01-ESP-BC01
	)	
(Early Site Permit Application)	)	February 25, 2016

AFFIDAVIT OF ALLEN FETTER

I, Allen Fetter, do hereby declare under penalty of perjury that my statements in the foregoing testimony and statement of professional qualifications (Ex. NRC002) are true and correct to the best of my knowledge and belief. I attest to the accuracy of my testimony and endorse its inclusion into the record of this proceeding.

**Executed in Accord with 10 CFR § 2.304(d)**

Allen Fetter  
Senior Project Manager  
Division of New Reactor Licensing  
Office of New Reactors  
U.S. Nuclear Regulatory Commission  
Mail Stop T6-E55  
Washington, DC 20555-0001  
(301) 415-8556  
Allen.Fetter@nrc.gov

Executed at Rockville, Maryland  
This 25th day of February, 2016

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket No. 52-043-ESP
PSEG POWER, LLC AND PSEG	)	
NUCLEAR, LLC	)	ASLBP No. 15-943-01-ESP-BC01
	)	
(Early Site Permit Application)	)	February 25, 2016

AFFIDAVIT OF JACK CUSHING

I, Jack Cushing, do hereby declare under penalty of perjury that my statements in the foregoing testimony and statement of professional qualifications (Ex. NRC002) are true and correct to the best of my knowledge and belief. I attest to the accuracy of my testimony and endorse its inclusion into the record of this proceeding.

**Executed in Accord with 10 CFR § 2.304(d)**

Jack Cushing  
Project Manager  
Division of Site Safety and Environmental Analysis  
Office of New Reactors  
U.S. Nuclear Regulatory Commission  
Mail Stop T7- F27  
Washington, DC 20555-0001  
(301) 415-1424  
Jack.Cushing@nrc.gov

Executed at Rockville, Maryland  
This 25th day of February, 2016

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket No. 52-043-ESP
PSEG POWER, LLC AND PSEG	)	
NUCLEAR, LLC	)	ASLBP No. 15-943-01-ESP-BC01
	)	
(Early Site Permit Application)	)	February 25, 2016

AFFIDAVIT OF JENNIFER DAVIS

I, Jennifer Davis, do hereby declare under penalty of perjury that my statements in the foregoing testimony and statement of professional qualifications (Ex. NRC002) are true and correct to the best of my knowledge and belief. I attest to the accuracy of my testimony and endorse its inclusion into the record of this proceeding.

**Executed in Accord with 10 CFR § 2.304(d)**

Jennifer Davis  
Senior Project Manager  
Division of Site Safety and Environmental Analysis  
Office of New Reactors  
U.S. Nuclear Regulatory Commission  
Mail Stop T7-F27  
Washington, DC 20555-0001  
(301) 415-3835  
Jennifer.Davis@nrc.gov

Executed at Rockville, Maryland  
This 25th day of February, 2016



UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket No. 52-043-ESP
PSEG POWER, LLC AND PSEG	)	
NUCLEAR, LLC	)	ASLBP No. 15-943-01-ESP-BC01
	)	
(Early Site Permit Application)	)	February 25, 2016

AFFIDAVIT OF ANDREW KUGLER

I, Andrew Kugler, do hereby declare under penalty of perjury that my statements in the foregoing testimony and statement of professional qualifications (Ex. NRC002) are true and correct to the best of my knowledge and belief. I attest to the accuracy of my testimony and endorse its inclusion into the record of this proceeding.

**Executed in Accord with 10 CFR § 2.304(d)**

Andrew Kugler  
Senior Project Manager  
Division of Site Safety and Environmental Analysis  
Office of New Reactors  
U.S. Nuclear Regulatory Commission  
Mail Stop T7-F27  
Washington, DC 20555-0001  
(301) 415-2828  
Andrew.Kugler@nrc.gov

Executed at Rockville, Maryland  
This 25th day of February, 2016