

Dimitri Lutchenkov
Director, Environmental Affairs

100 Constellation Way, Suite 1400P
Baltimore, Maryland 21202-3100



January 20, 2009

UN#09-100

Mr. William P. Seib
Chief, Maryland Section Southern
U.S. Army Corps of Engineers – Baltimore District
10 S. Howard Street
Baltimore, Maryland 21201

Subject: Joint Federal/State Application of Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC, Calvert Cliffs Nuclear Power Plant Site, Lusby, Calvert County, Maryland, USACE Tracking No. NAB-2007-08123-M05

Reference: UniStar Letter UN#08-085 from Dimitri Lutchenkov (UniStar) to William P. Seib (USACE), dated December 2, 2008

Dear Mr. Seib:

Enclosed please find updated responses to Questions 3-6, 10 and 13 submitted originally by Reference 1. These updates provide clarification as requested by Ms. K. Anderson on 12/10/08.

Please do not hesitate to contact me at 410-470-5524 if you have any questions concerning the attached response.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Lutchenkov", is written over a light gray signature line.

Dimitri Lutchenkov

Enclosures

cc: Kathy Anderson – USACE
Thomas Fredrichs – NRC
Susan Gray – PPRP
Robert Tabisz- MDE
Jeff Thomson - MDE

Application NAB-2007-08123-M05
Response to U.S. Army Corps of Engineers Information Request Dated 10/28/08
Calvert Cliffs 3 Project, LLC and UniStar Nuclear Operating Services, LLC
Revision 1 - January 20, 2009

Question 3

A detailed analysis of the steps taken to minimize the proposed on-site impacts and the reasons for amending the project as changes developed from the initial proposal through to the current proposal and ultimately to a project that would further minimize the currently proposed impacts, including a complete description of the criteria used to identify, evaluate, and screen project alternatives. This on-site analysis does not preclude the necessity to review of the off-site alternatives or various forms of energy. This information must include the following:

- a. Methods to avoid and minimize impacts to waters of the U.S.
 - i. Methods to minimize dredging and construction related turbidity
 - ii. Methods to minimize adverse effects to water quality
 - iii. Methods to minimize adverse effects to natural and cultural resources

- b. Quantify impacts to waters of the U.S. (both temporary and permanent) to all waters of the U.S., including jurisdictional wetlands, for each on-site project alternative. For waterways, include both the linear feet of waterway impacts (measured along the centerline of the waterway) and square feet of impact; for wetlands, include both square foot and acreage impacts; and for temporary wetland impacts, quantify any change in wetland classification (e.g., palustrine forested to palustrine emergent, etc.) and method of work to accomplish these changes.

RESPONSE

Question 3

The placement of the proposed CCNPP Unit 3 was designed to minimize environmental impacts, while maintaining the integrity of the existing CCNPP campus. A site layout study was conducted to select an appropriate location on the CCNPP campus for Unit 3 (Attachments 1a and 1b). The site selection criteria used to evaluate potential sites (north, south and west parcels) included: environmental impacts; security; land use and zoning; feasibility of construction; switchyard and transmission lines; impact to existing facilities, and process studies. As part of the environmental impact study, aesthetics, wetlands, threatened and endangered species, environmentally sensitive habitats, sound, air, and areas of historic and archaeological significance were evaluated. Choice of cooling water systems, water sources, and plant design specifications, were all made so as to minimize adverse effects to groundwater, the Chesapeake Bay, and the flora and fauna of the site and its environs. Specifically, the hybrid cooling tower design is a low profile design capability intended to minimize

if not totally avoid visual impact from both land and water sides. The plant itself will be situated such that it will be inland of the Chesapeake Bay Critical Area (CBCA) again minimizing visual impact. (The current planned mitigation in the CBCA increases the FIDS habitat by reforestation resulting in extending contiguous forest area within the CBCA and removes impervious area as well.) Placement of CCNPP Unit 3 2,500 ft away from and further inland than Units 1 and 2 allows for minimal impacts to the existing infrastructure of the CCNPP campus. Efforts were made to avoid impacts to wetlands by selecting a configuration that optimized use of uplands to the largest extent possible.

Based on the aforementioned criteria, it was determined that the south parcel would be the most ecologically sound location for the construction of CCNPP Unit 3.

- 3a. The Calvert Cliffs Unit 3 project will implement Best Management Practice (BMP) and Best Available Technologies (BATs) to ensure environmental compliance with applicable state and/or federal requirements to minimize turbidity during dredging and pile driving operations. BMP will be based on utilization of technical guide documents such as:
- 1) Maryland Standards and Specifications for Soil Erosion and Sediment Control, Maryland Department of the Environment, Water Management Administration, 1994;
 - 2) Maryland Stormwater Design Manual, Volumes I and II, Maryland Department of the Environment, Water Management Administration, 2000; and
 - 3) USACE Dredging Operations and Environmental Research (DOER) Program document ERDC TN-DOER-E21, "Silt Curtains as a Dredging Project Management Practice", September 2005 (Attachment 2).

Typical topics covered in these guides include planning considerations (site-specific project conditions), design criteria, construction specifications (curtains and other materials), installation or deployment, removal, and maintenance. Consultation with qualified vendors (see examples, Attachment 3) will also be utilized to ensure BMP and BAT.

Efforts were made to avoid and minimize impacts to cultural resources to the extent possible considering the required contiguous area required to facilitate the major components (power block, cooling towers and switchyard) of an electric power nuclear facility. All cultural resource impacts were identified, are being evaluated by the Maryland Historical Trust (MHT), and a Memorandum of Agreement (MOA) will be entered into as required by CPCN condition 57 to ensure necessary protections are in place.

- 3b. Provided below is an upper level summary of the stages of avoidance and/or minimization of on-site wetlands impacts. It should be noted that due to the magnitude/size of contiguous area required for the project, complete avoidance of some impacts to environmental categories, such as wetlands and cultural resources, associated with the CCNPP Unit 3, was not feasible. Attachment 4 contains a detailed response to 3b including four figures showing layout of the four configurations evaluated.

SUPPLEMENTAL RESPONSE

The operating license for Calvert Cliffs Unit 1 expires 7/31/2034. The operating license for Calvert Cliffs Unit 2 expires 8/13/2036. At the present time there are no plans for the construction of a fourth unit at the Calvert Cliffs site.

Application NAB-2007-08123-M05
Response to U.S. Army Corps of Engineers Information Request Dated 10/28/08
Calvert Cliffs 3 Project, LLC and UniStar Nuclear Operating Services, LLC
Revision 1 - January 20, 2009

Question 4

A revised proposal to reduce wetland and stream impacts to the minimum necessary to meet access and safety requirements.

- a. Relocate or redesign the proposed construction laydown areas to uplands.
- b. Modify the construction schedule so that the areas proposed for permanent impacts could be utilized as construction laydown areas.
- c. Construct a retaining wall for the switchyard in lieu of the proposed grading.

RESPONSE

- 4a. An upland laydown area containing approximately 60 acres is located northwest of the power block and adjacent to the existing Units 1 and 2 laydown yards (located within the Lake Davies area). The remaining laydown areas are required for staging areas for major components and critical materials that will be incorporated into the new plant. Due to the large size of some components and volume of materials that must be moved into the nuclear island, turbine island, and cooling tower coupled with the limited access into those areas, the designated laydown areas are critical to support essential material control and safe material handling activities.
- 4b. The switchyard and cooling tower areas are to be utilized as staging and fabrication areas for the first few years of construction for the larger modules that will be fabricated near the nuclear island. The area to the south of the power block will be utilized for erection of two concrete batch plants and their required aggregate and cement storage. The placement of the batch plant near the nuclear island, the turbine island, and the cooling tower is necessary to minimize concrete transport times and improve the ability to place quality concrete in these critical structures.
- 4c. A retaining wall could be added along the west of the construction access road which runs along the western side of the switchyard. However, this retaining wall would only reduce the impacts directly associated with the embankments and would not decrease impacts associated with the switchyard itself nor the

stormwater management features west of the construction access road (e.g., stormwater pond, filtration trench).

Therefore, it is not practicable to further reduce the wetland and stream impacts within the construction areas.

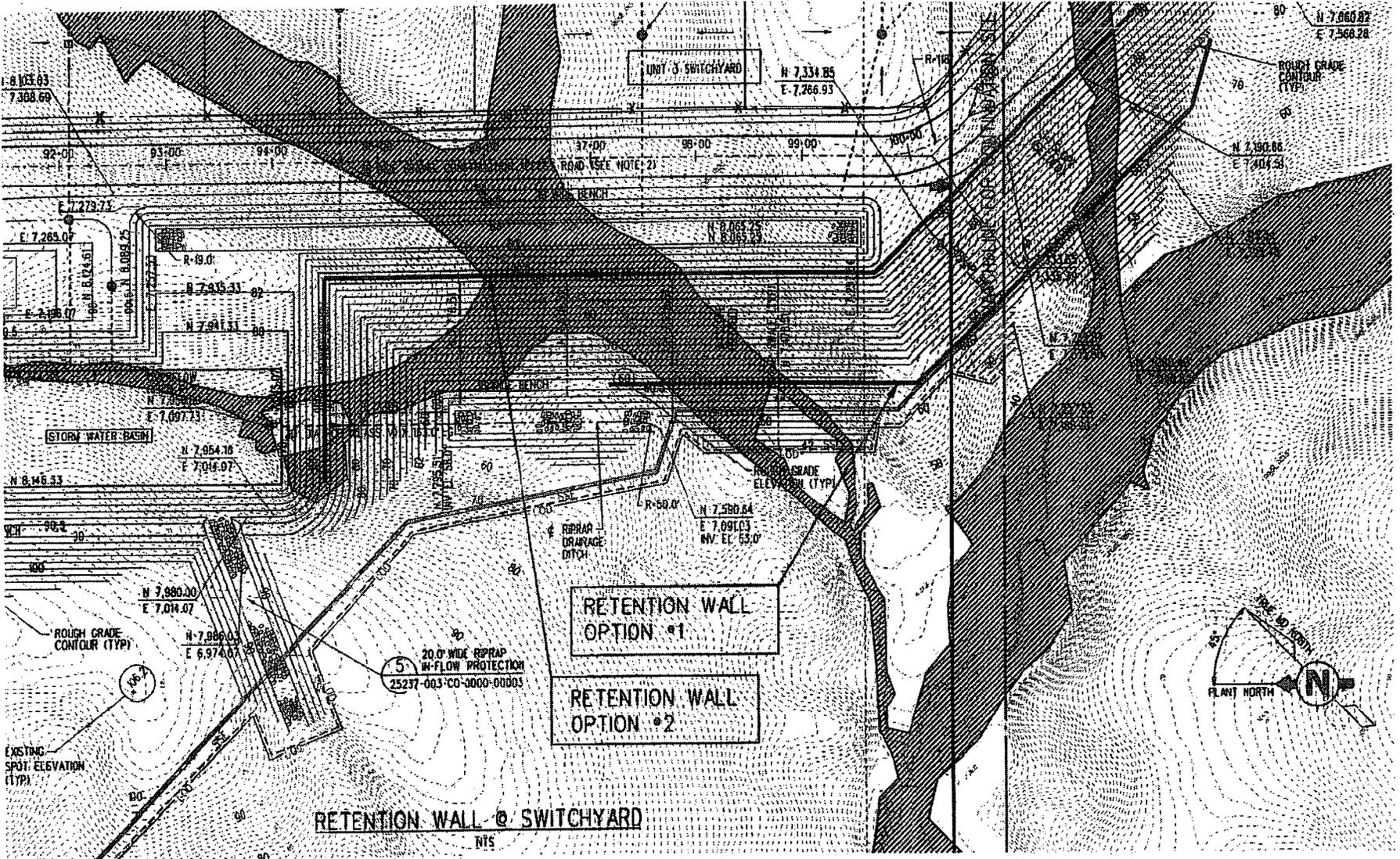
SUPPLEMENTAL RESPONSE

Access to the Calvert Cliffs Unit 3 site is provided by Route 2/4 and the barge slip on the Chesapeake Bay. This access will be limited by anticipated restrictions which may be imposed by the State on the volume of traffic accessing the site from Route 2/4 and by size and weight restrictions that may limit the use of Route 2/4 as a primary means to support construction activities. Additional access limitations will occur due to the Chesapeake Bay Critical Area ("CBCA") located east of the Power Block and due to the heavy haul road and existing parking lots for Units 1 and 2 located north of the Power Block construction. Also, the existing Camp Conoy access road is considered an emergency evacuation route for Units 1 and 2, as such must remain open during construction. Additionally, the western perimeter of the site will be closed off at two to three years into construction due to switchyard construction.

Finally, the area to the south of the Power Block is required for construction activities, construction offices and a laydown area to assemble and stage construction materials and large equipment. A planned concrete batch plant will be located as close as possible to the Power Block construction site to ensure the required quality of concrete needed for nuclear containment structures and to facilitate adherence to the project schedule by creating efficiencies that may be lost by trucking the concrete to the construction site.

The attached sketch shows two options for a retaining wall located to the West of the Unit 3 Switchyard:

- Option 1 provides for a retaining wall that would preserve the existing storm water management features required to drain the Unit 3 Switchyard. This retaining wall option has the approximate dimensions of 700 ft long by 40 ft high. This wall would cost approximately \$2 million. Estimated wetland savings provided a 30 ft setback from the wall is 0.3 acres.
- Option 2 provides a retaining wall immediately adjacent to the storm water basin. This retaining wall option has the approximate dimensions of 1100 ft long by 60 ft high. An order of magnitude estimate for this option is \$5 million to \$10 million given there are numerous uncertainties and significant engineering and construction challenges for a retaining wall system of this size. The drainage from the storm water basin would require re-engineering and may increase the Limits of Disturbance. Estimated wetland savings provided a 30 ft setback from the wall is 0.75 acres.



Application NAB-2007-08123-M05
Response to U.S. Army Corps of Engineers Information Request Dated 10/28/08
Calvert Cliffs 3 Project, LLC and UniStar Nuclear Operating Services, LLC
Revision 1 - January 20, 2009

Question 5

A revised proposal to reduce impacts to tidal waters to the minimum necessary for ingress and egress and erosion control.

- a. Reduce the width of the proposed dredge channel to the minimum necessary for barge ingress and egress and to ensure dredge barge access for the proposed method of dredging**
- b. Reduce the stone revetment footprint channelward of the intake area.**
- c. Reduce the length and width of the impact area for the discharge pipe and fish return to the minimum necessary to meet the purpose of these projects aspects.**

RESPONSE

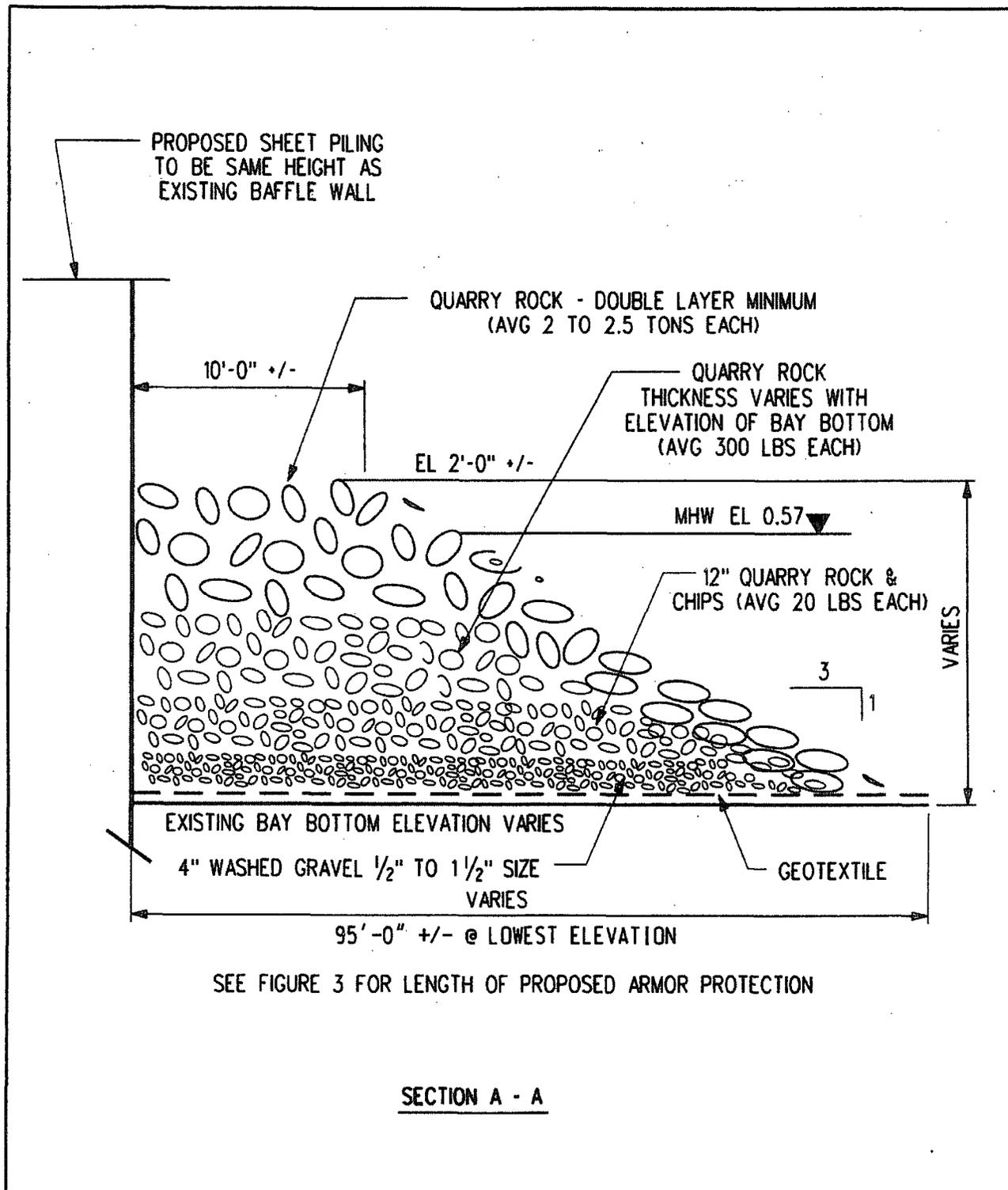
- 5a. The barge area width duplicates the original design for Units 1 and 2 (i.e., maintenance dredging) and is based on allowing for up to 4 barges to be moored at given time to accommodate deliveries during the peak construction period. For reference, see original plant drawing C-29, titled "Offshore Construction Plan - Sheet 2.**
- 5b. The width at base of the riprap protection of 115-ft can be reduced based on the contour and 3:1 slope, to 95-ft. with toe included. This goes to a bottom elevation of El. -22 ft. (shown on Figure 3A). Separately, the top width of armor protection will be changed to 10-ft. instead of 6-ft., as shown.**
- 5c. The length of the fish return pipe (Ref. Figure 4A) is based on having the outlet pipe discharge below the mean low low water (MLLW) to ensure survivability of the fish being returned to the bay through the fish return system. The width of impact area is based on dredging a 5-foot wide pipe channel with 5:1 side slopes. The width and side slopes selected are based on practical dredging limitations and to provide adequate width to ensure that the pipe channel does not fill in prior to installing the pipe, which could potentially require re-dredging of the area prior to placing the outfall. The upper soils that will be dredged are recent sediments and are soft. Smaller and/or steeper slopes will likely encounter constructability issues.**

The length of the discharge pipe (Ref. Figure 5B) is based on requiring the outfall to be set at Elevation -10 ft. for system design requirements. As with the fish return line, the width is based on dredging a 3' - 6' wide trench with 5:1 side slopes. The width and side slopes selected are based on practical dredging limitations and provide adequate width to ensure that the pipe channel does not fill in prior to installing the pipe, which could potentially require re-dredging of the area prior to placing the outfall. The upper soils that will be dredged are recent sediments and are soft. Smaller and/or steeper slopes will likely encounter constructability issues.

Therefore, it is not practicable to further reduce the length and width of the impacted areas.

SUPPLEMENTAL RESPONSE:

A revised Figure 3-B is attached.



PURPOSE: PLANT EXPANSION DATUM: (NGVD 29) PROJECT LATITUDE/LONGITUDE: 38.424133 -76.441598	FIGURE 3B PROPOSED ARMOR PROTECTION	CALVERT CLIFFS NUCLEAR POWER PLANT UNIT 3
	SCALE NOT TO SCALE	IN: PATUXENT/ WEST CHESAPEAKE BAY COUNTY OF: CALVERT STATE: MD APPLICATION BY: UNISTAR NUCLEAR ENERGY SHEET OF DATE:

Application NAB-2007-08123-M05
Response to U.S. Army Corps of Engineers Information Request Dated 10/28/08
Calvert Cliffs 3 Project, LLC and UniStar Nuclear Operating Services, LLC
Revision 1 - January 20, 2009

Question 6

A detailed mitigation plan

- a. Proposed mitigation methods.
- b. Proposed mitigation site(s).
- c. Wetland creation and enhancement plans.
 - i. Planting and grading plans.
 - ii. Hydrologic inputs and maintenance of hydrology.
 - iii. Monitoring and restoration plan.
- d. Stream Mitigation
 - i. Baseline plan
 - ii. Existing site conditions plan including photographic documentation; channel cross section; pattern and profile; ordinary high water mark (OHWM); and channel and structure stability in relationship to permanent survey markers that shall be installed.
 - iii. Proposed project plans.
 - iv. Project plans related to the existing site conditions and the proposed conditions, including all structures or fill; dimensions of structures or fill; proposed water depths relative to the OHWM; channel cross section; pattern and profile; and channel and structure stability in relationship to permanent survey markers.
- e. Distinction between the wetland and stream mitigation plan, critical areas mitigation plan, forest mitigation plan and forest interior dwelling bird (FIDS) habitat mitigation plan.

RESPONSE

- 6a-d Attached is a copy of the Concept Nontidal Wetland and Stream Mitigation Plan. A final mitigation plan will be submitted prior to issuance of the US Army Corps of Engineers non-tidal wetland permit. This final mitigation plan will incorporate appropriate changes based upon the collection of additional field data, input from various agencies, and public comment.
- 6e The Concept Nontidal Wetland and Stream Mitigation Plan for the CCNPP Unit 3 project proposes wetland creation and enhancement and stream restoration and enhancement as mitigation for the loss of jurisdictional waters of the United States and waters of the State of Maryland as a result of development of the Unit 3 facility. This compensatory mitigation plan does not include mitigation for impacts to the Chesapeake Bay Critical Area (CBCA), even though one of the proposed mitigation sites occurs in the CBCA.

Selection of candidate sites for the CBCA mitigation plan, the forest mitigation plan, and the forest interior dwelling species (FIDS) habitat mitigation plan are being considered separately, and the proposed forested wetland creation site has been designed to have the added advantage of being consistent with the habitat goals for the CBCA-continuous forest canopy and FIDS habitat. Figure 1-6e, attached, presents the mitigation sites for the wetland and stream mitigation plan, the forest mitigation plan, and the FIDS habitat mitigation plan.

SUPPLEMENTAL RESPONSE

In the proceeding before the Maryland Public Service Commission for the granting of a Certificate of Public Convenience and Necessity (CPCN) to construct Calvert Cliffs Unit 3, PPRP has recommended, as of October 24, 2008, a series of initial licensing conditions. The recommended licensing conditions are attached and include Condition 53 which states **“UniStar shall pay \$5,000 to DNR (by December 31, 2008) to be applied to the cost of mapping the substrate of NOB 19-2 in the vicinity of the Project. UniStar shall also fund, up to a capped amount of \$45,000 per acre (2008 dollars), the cost of moving, creating, or restoring oyster habitat equal to the area of bottom in NOB 19-2 that would be directly, adversely impacted by UniStar’s new dredging or filling of tidal wetlands within NOB 19-2 pursuant to Condition 44. This effort will be completed within two (2) years of the completion of USACE/MDE authorized work in tidal wetlands.”**

With regards to oyster mitigation in the 1970’s, attached is the direct testimony of Paul C. Myers which was submitted in the CPCN proceeding at the evidentiary hearings held in August, 2008. The oyster mitigation in the 1970’s is captured here beginning on line 14 of page 15. Exhibit B which is attached to this document contains copies of various records that support the mitigation efforts. In summary, 500 acres of the original 680 acres of oyster bar in front of the plant were removed and transplanted to another oyster bar in Calvert County as mitigation for the construction of Units 1 and 2 of the original plant. In addition, the Baltimore Gas and Electric Company (BGE) paid the sum of \$200,000 as additional compensation for rehabilitation of natural oyster bars in Calvert County.



STATE OF MARYLAND

October 24, 2008

The Honorable Douglas R.M. Nazarian
Chairman Public Service Commission
6 St. Paul Center
Baltimore, Maryland 21202

Re: Case No. 9127, In the Matter of the Application of Calvert Cliffs 3 Nuclear Project LLC and UniStar Operating Services, LLC ("UniStar") for a Certificate of Public Convenience and Necessity to Construct a Nuclear Power Plant in Calvert County, Maryland

Dear Chairman Nazarian:

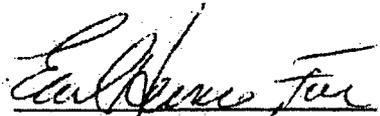
In accordance with Section 3-306(b) of the Natural Resources Article and the process described in Sections 7-207 and 7-208 of the Public Utility Companies Article, we are enclosing our revised initial recommendations in Case Number 9127 on behalf of the Departments of Natural Resources, Environment, Agriculture, Transportation, Business and Economic Development, and Planning and the Maryland Energy Administration. Our recommendation and proposed conditions relate to the application for a Certificate of Public Convenience and Necessity (CPCN) for UniStar to construct a 1710MW generating facility in Calvert County, Maryland.

On July 16, 2008, we filed a letter of recommendation in this proceeding that, in addition to recommending that the proposed project be granted, incorporated a set of conditions we had determined were necessary and appropriate to protect the public interest and assure that the Project would comply with statutory and regulatory requirements. Since that filing was made, UniStar made several revisions to its proposed project and has requested revisions to the State's initial recommended conditions. The water appropriation conditions have been a particular area of focus, as UniStar has requested several changes to the substance of those conditions, including an increase in the amount of surface water appropriation needed for Unit 3 operation. UniStar also introduced changes to their air emission estimates. While these changes have not altered the State's general conclusions regarding the acceptability of the project, they did require the State agencies to conduct significant re-evaluations of the impacts associated with these technical areas. In addition to the water supply and air quality re-evaluations, the Department of Natural Resources further analyzed the potential impact to oyster habitat due to dredging in the Chesapeake Bay. These revisions and re-evaluations have resulted in modifications to many of the conditions.

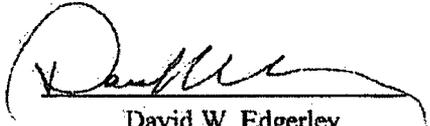
Based on our review of the revised application and associated environmental information, we have concluded that the site is suitable and that the plant can be constructed and operated in accordance with all applicable environmental regulations provided the Certificate incorporates the attached recommendations as conditions to the CPCN. In the course of further proceedings, should circumstances require, we will provide our final recommendations and conditions for the project in accordance with Section 7-207(d)(4) of the Public Utility Companies Article.

The Honorable Douglas R.M. Nazarian
October 24, 2008
Page 2 of 2

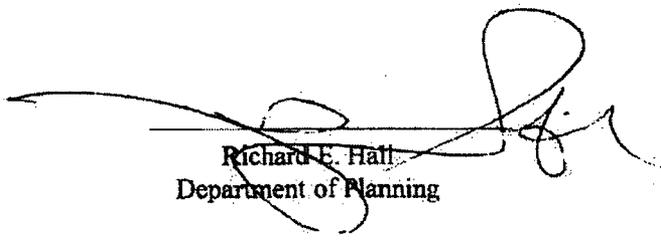
Sincerely,



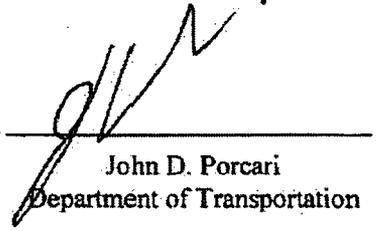
Roger L. Richardson
Department of Agriculture



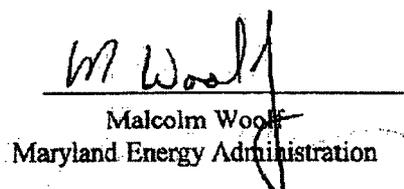
David W. Edgerley
Department of Business and
Economic Development



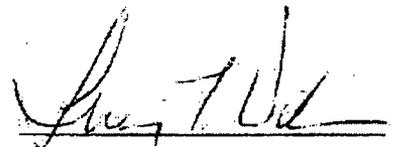
Richard E. Hall
Department of Planning



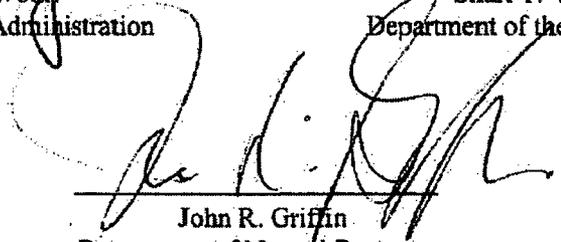
John D. Porcari
Department of Transportation



Malcolm Woolf
Maryland Energy Administration



Shari T. Wilson
Department of the Environment



John R. Griffin
Department of Natural Resources

Recommended Licensing Conditions - Revised 24 October 2008
PSC Case No. 9127
UniStar Nuclear Energy, LLC

General

1. a. Except as otherwise provided for in the following provisions, the application for the Certificate of Public Convenience and Necessity (CPCN) by Calvert Cliffs 3 Nuclear Project, LLC, and UniStar Nuclear Operating Services, LLC (owner and operator, respectively and collectively "UniStar") is considered to be part of this CPCN for the Calvert Cliffs Unit 3 Project (Calvert Cliffs Unit 3). The application consists of the original application received by the Maryland Public Service Commission (PSC) in November 2007 and subsequent amendments that have been filed with the Commission prior to the issuance of this CPCN. Except as provided in paragraphs (b) and (c) below, construction of the facility shall be undertaken in accordance with the CPCN application and subsequent amendments. If there are any inconsistencies between the conditions specified below and the application, the conditions in this CPCN shall take precedence. If CPCN conditions incorporate federal or state laws or regulations through paraphrased language, where there is any inconsistency between the paraphrased language and the actual state or federal laws or regulations being paraphrased, the applicable federal or state laws or regulations shall take precedence.
- b. In addition to the requirements set forth in the following provisions of this CPCN, the construction of the facility may be subject to requirements or conditions imposed by the U.S. Nuclear Regulatory Commission (NRC) in its licensing process. To the extent that the NRC provision: (1) is required to ensure the radiological protection of public health and safety, or provide for defense and security concerns and (2) conflicts with the conditions specified in the CPCN, the NRC provision shall take precedence subject to this Commission's review and determination that: (1) the NRC requirement takes precedence and (2) is in conflict with the conditions imposed by this CPCN. The Commission shall revise a condition to be consistent with the NRC requirement(s) only after consultation with the appropriate State agency or agencies whose conditions are affected by this determination.
- c. In the application, estimates of dimensions, volumes, emission rates, operating rates, feed rates, and hours of operation are not deemed enforceable numeric limits except to the extent that they are necessary to make a determination of compliance with applicable statutes and regulations. To the extent that the terms and conditions set forth herein rely upon the information contained in the application to develop conditions deemed necessary to ensure compliance with applicable regulatory requirements, the dimensions, volumes, emission rates, operating rates, feed rates, and hours of operation are deemed enforceable limits necessary to comply with applicable statutes and regulations.
- d. Prior to the beginning of any site clearing or construction pursuant to this CPCN, UniStar shall develop a proposed protocol for access and inspection of the site by

State and local agencies for both the construction and operation of the facility. UniStar shall submit the proposed protocol to the Commission for approval. The Commission shall consult with affected agencies before approving the protocol. UniStar may revise the protocol as necessary to ensure compliance with NRC requirements, but shall submit any revisions to the Commission for review and approval.

2. If any provision of this CPCN shall be held invalid for any reason, the remaining provisions shall remain in full force and effect and such invalid provision shall be considered severed and deleted from this CPCN.
3. Representatives of the Maryland PSC shall be afforded escorted access to the Calvert Cliffs Unit 3 Project location at any reasonable time to conduct inspections and evaluations necessary to assure compliance with the CPCN in accordance with the protocol pursuant to Condition 1(d) above. Subject to any applicable confidentiality and security requirements set forth in the approved protocol, UniStar shall provide such assistance as may be necessary to conduct such inspections and evaluations by representatives of the PSC effectively and safely.
4. In accordance with the protocol approved pursuant to Condition 1(d), representatives of the Maryland Department of the Environment (MDE) and the Calvert County Health Department shall be afforded escorted access to the Calvert Cliffs Unit 3 Project location at any reasonable time to conduct inspections and evaluations necessary to assure compliance with the CPCN requirements. Subject to any applicable confidentiality and security requirements set forth in the approved protocol, UniStar shall provide such assistance as reasonably may be necessary to conduct such inspections and evaluations effectively and safely, which may include but need not be limited to the following:
 - a. Inspecting construction authorized under this CPCN;
 - b. Sampling any materials stored or processed on site, or any waste or discharge into the environment;
 - c. Inspecting any monitoring or recording equipment required by this CPCN or applicable regulations;
 - d. Having access to or copying any records required to be kept by UniStar pursuant to this CPCN or applicable regulations;
 - e. Obtaining any photographic documentation and evidence; and
 - f. Determining compliance with the conditions and regulations specified in the CPCN.
5. In the event that UniStar commences site preparation/preconstruction activities and subsequently either (a) the NRC does not issue an operating license, or (b) UniStar decides not to proceed with construction and operation of Calvert Cliffs Unit 3, UniStar shall be responsible for returning the site to a long-term environmentally

stable condition. If either (a) or (b) occurs, UniStar shall inform the PSC within sixty (60) days and at the same time will describe specific measures that will be taken to stabilize the site. Such measures will depend upon the status of site preparation or preconstruction that has already occurred; however, at a minimum, UniStar must consider appropriate actions to address the following areas:

- Stormwater management measures and erosion/sediment control as required by Conditions 40 and 54;
- Wetlands mitigation and buffering as required by Conditions 44 and 46, and as specified in the joint federal/State wetlands permit;
- Revegetation and reforestation as required by Conditions 47 and 48, and as specified in the approved Forest Conservation Plan;
- Protection for species and habitats as required by Conditions 45, 49, 50, 51, 52, and 53, and as specified by the Chesapeake Bay Critical Area Commission and the joint federal/State wetlands permit; and
- Mitigation for cultural resource impacts as required by Condition 57, and as specified in the Memorandum of Agreement (MOA) with Maryland Historical Trust (MHT).

UniStar shall work with the Maryland Power Plant Research Program (PPRP) to obtain PSC approval of its site stabilization plan and shall complete implementation of the approved plan on the schedule outlined in the plan.

Water Supply

I. Surface Water Supply for Operations

6. This CPCN authorizes UniStar to appropriate and use surface waters of the State. Appropriation means a withdrawal, movement, or diversion of water from its source of natural occurrence. The appropriation shall be tracked under MDE Water Management Administration (WMA) permit number CAXXXXXXXX. The surface water appropriation shall be subject to the following conditions:
 - a. Allocation— The surface water withdrawal granted by this appropriation is limited to a daily average of 63,000,000 gallons on a yearly basis and a maximum daily withdrawal of 72,000,000 gallons;
 - b. Use— The water shall be used for cooling water and operational uses for the new unit designated Calvert Cliffs Nuclear Power Plant Unit 3, and may be used for operational uses at the Calvert Cliffs Units 1 and 2 in accordance with Condition 36;
 - c. Source— The water shall be withdrawn from the Chesapeake Bay; and
 - d. Location— The point of withdrawal shall be a new intake on the Chesapeake Bay adjacent to the south side of the Units 1 and 2 intake structure.

7. **Initiation of Withdrawal** – UniStar shall notify MDE WMA by certified mail when withdrawals for the uses specified in this appropriation have been initiated. This appropriation shall expire if water withdrawal is not commenced within seven (7) years after the effective date of issuance of the CPCN. The time limit has been established based on the anticipated construction schedule and necessary review and approval of the project by the NRC. The time limit may be extended for good cause, at the discretion of MDE WMA, upon written request to MDE WMA prior to the expiration of the seven-year period. Withdrawal associated with operating the desalination plant for generation of fresh water for construction or operation qualifies as initiation.
8. **Change of Operations** – UniStar shall report any anticipated change in appropriation, which may result in a new or different withdrawal, quantity, source, or place of use of water, to MDE WMA by submission of a new application.
9. **Permit Review** – UniStar shall be queried every three years (triennial review) regarding water withdrawal under the terms and conditions of this appropriation. Failure to return the triennial review query may result in suspension or revocation of this appropriation.
10. **Appropriation Renewal** – This appropriation will be reviewed and eligible for renewal 12 years from the date that the CPCN was issued. In order to renew the appropriation, UniStar shall file a renewal application with MDE WMA no later than 45 days prior to the expiration.
11. **Right of Entry** – UniStar shall allow authorized representatives of MDE WMA and the PSC staff escorted access to the Unit 3 facility to conduct inspections and evaluations necessary to assure compliance with the conditions of this appropriation. Subject to any applicable confidentiality and security requirements set forth in the approved protocol, UniStar shall provide such assistance as may be necessary to conduct such inspections and evaluations effectively and safely.
12. **Appropriation Suspension or Revocation** – MDE WMA may suspend or revoke this appropriation upon violation of the conditions of this appropriation, or upon violation of any regulation promulgated pursuant to Title 5 of the Environment Article, Annotated Code of Maryland (2007 replacement volume) as amended, subject to UniStar's right to an evidentiary hearing and rights of appeal.
13. **Non-Transferable** – This initial appropriation encompassed in this CPCN is only transferable to a new owner if the new owner acquires prior authorization to continue this appropriation by filing a new application with the PSC and obtaining authorization from the PSC. The new application must include documentation of the previous owner's consent to the transfer. The PSC shall notify MDE WMA of the transfer of ownership.
14. **Additional Permit Conditions** – MDE WMA may at any time (including at triennial review or when a change application is submitted) revise any condition of this appropriation or add additional conditions concerning the character, amount, means and manner of the appropriation or use, which may be necessary to properly protect

control and manage the water resources of the State. Condition revisions and additions will be accompanied by issuance of a revised appropriation.

15. UniStar shall conduct the following monitoring activities in support of the appropriation:
 - a. Flow Measurement— UniStar shall measure all water used under this authorization by a method which shall be approved by MDE WMA;
 - b. Withdrawal Reports— Submit water withdrawal records to MDE WMA semi-annually (for July-December, no later than January 31 and for January-June, no later than July 31). These records shall show the total quantity of water withdrawn each month under this appropriation, and the total quantity of water consumed.
16. Emergency Backup Supply - Within one year after the issuance of this CPCN, UniStar shall submit to MDE the results of an analysis of alternatives to address the potential need for an emergency backup supply for the desalination plant. The analysis shall consider additional intake locations, treatment equipment and sources of water other than ground water for the non-potable emergency backup water supply needs. The analysis shall describe the type of emergencies under consideration for which a backup supply is needed and evaluate a suite of remedies for each condition. The analysis shall also consider the relative suitability of different aquifers, in light of arsenic levels above drinking water standards in nearby Aquia aquifer users' wells, and to minimize potential short-term impacts on other users. Any appropriations request shall be contained within the analysis and shall include an explanation of the need for the water, the desired volume and duration of the withdrawal and the specific location(s) of the proposed withdrawal(s). MDE shall evaluate the requested appropriation(s) and alternative analysis. MDE may direct UniStar to conduct any field studies or water quality analyses that MDE determines to be needed to determine aquifer or water course characteristics, potential impacts to the resource and potential impacts to other users of the resource.

II. Ground Water Supply for Construction

17. This CPCN authorizes UniStar to appropriate and use ground waters of the State from the Aquia aquifer. The appropriation will be tracked under MDE WMA permit number CXXXXXXX. The ground water appropriation will be subject to the following conditions:
 - a. Allocation— The ground water withdrawal granted by this appropriation is limited to a daily average of 100,000 gallons on a yearly basis and a daily average of 180,000 gallons for the month of maximum use;
 - b. Use— The water is to be used to support the construction of Calvert Cliffs Nuclear Power Plant Unit 3. Uses for the water will be for construction activities, including, but not limited to, sanitary and potable use by the construction workforce, dust suppression, hydrostatic testing of pipes and tanks, concrete mixing and curing, and wash waters;

- c. **Source**—The water shall be withdrawn from up to two production wells completed in the Aquia aquifer. UniStar shall identify to MDE WMA the final number of wells to be installed prior to use;
 - d. **Location**—The point of withdrawal shall be located at the site of the Calvert Cliffs Nuclear Power Plant Unit 3. UniStar shall identify to MDE WMA the final locations of the wells prior to use.
18. **Initiation of Withdrawal**—UniStar shall notify MDE WMA by certified mail when withdrawals for the uses specified in this appropriation have been initiated. This appropriation shall expire if water withdrawal is not commenced within two years after the effective date of issuance of the CPCN. The time limit may be extended based on a delay in the construction schedule or necessary review and approval of the project by the NRC or for other good cause, at the discretion of MDE WMA, upon written request to MDE WMA prior to the expiration of the two-year period.
19. **Change of Operations**—UniStar shall report any anticipated change in appropriation, which may result in a new or different use, quantity, source, or place of use of water, to MDE WMA by submission of a new application.
20. **Permit Review**—UniStar shall be queried every three years (triennial review) regarding water withdrawal under the terms and conditions of this appropriation. Failure to return the triennial review query may result in suspension or revocation of this appropriation.
21. **Appropriation Duration and Renewal**—The appropriation will expire in eight (8) years from the effective date of the issuance of the CPCN. In the event that the construction schedule for Unit 3 is extended, and ground water will continue to be needed to support construction, a one-year renewal of the appropriation shall be granted only if UniStar provides written documentation to MDE WMA within six months of the expiration date demonstrating that the construction schedule will be extended and ground water will continue to be needed.
22. **Additional Permit Conditions**—MDE WMA may at any time (including triennial review or when a change application is submitted) revise any condition of this appropriation or add additional conditions concerning the character, amount, means and manner of the appropriation or use, which may be necessary to properly protect, control and manage the water resources of the State. Condition revisions and additions will be accompanied by issuance of a revised appropriation.
23. **Right of Entry**—UniStar shall allow authorized representatives of MDE WMA and the PSC staff escorted access to the Unit 3 facility to conduct inspections and evaluations necessary to assure compliance with the conditions of this appropriation. Subject to any applicable confidentiality and security requirements set forth in the approved protocol, UniStar shall provide such assistance as may be necessary to effectively and safely conduct such inspections and evaluations.
24. **Appropriation Suspension or Revocation**— MDE WMA may suspend or revoke this appropriation upon violation of the conditions of this appropriation, or upon violation

of any regulation promulgated pursuant to Title 5 of the Environmental Article, Annotated Code of Maryland (2007 replacement volume) as amended, subject to UniStar's right to an evidentiary hearing and rights of appeal.

25. Drought Period Emergency Restrictions – If MDE WMA determines that a drought period or emergency exists requiring preservation of the Aquia aquifer, UniStar may be required under MDE WMA's direction to reduce ground water withdrawal subject to the continuation of nuclear safety-related, water dependent construction activities or continuation of continuous concrete pours. Any reduction of water withdrawal must continue until MDE WMA directs UniStar that water withdrawal under standard appropriation conditions may be resumed, but in no event longer than the duration of the drought or emergency.
26. Non-Transferable – This initial appropriation encompassed in this CPCN is only transferable to a new owner if the new owner acquires prior authorization to continue this appropriation by filing a new application with the PSC and obtaining authorization from the PSC. The new application must include documentation of the previous owner's consent to the transfer. The PSC shall notify MDE WMA of the transfer of ownership.
27. UniStar shall conduct the following monitoring activities in support of the ground water appropriation:
 - a. Flow Measurement – UniStar shall measure all water used under this authorization by a method which shall be approved by MDE WMA.
 - b. Water Level Measurements – Pumping equipment shall be installed in the production well so that water levels can be measured during withdrawal and non-withdrawal periods without dismantling any equipment. Any opening for tape measurements of water levels shall have a minimum inside diameter of 0.5 inch and be sealed by a removable cap or plug. UniStar shall provide a tap for taking raw ground water samples before water enters a treatment facility, pressure tank, or storage tank.
 - c. Withdrawal Reports – Submit withdrawal records to MDE WMA semi-annually (for July-December, no later than January 31; for January-June, no later than July 31). These records shall show the total quantity of ground water withdrawn each month under this appropriation.

III. Construction Dewatering

28. This CPCN authorizes UniStar to appropriate and use ground waters of the State from the Surficial aquifer. The appropriation will be tracked under MDE WMA permit number CAXXXXXXX. The ground water appropriation will be subject to the following conditions:
 - a. Allocation – The ground water withdrawal granted by this appropriation is limited to a daily average of 75,000 gallons on a yearly basis and a daily average of 100,000 gallons for the month of maximum use;

- b. Use—The water is to be used for construction dewatering to facilitate excavation for foundations, and water generated from the construction dewatering will be used to the extent practicable for dust control and other miscellaneous construction activities;
 - c. Source—The water shall be withdrawn from the excavations completed in the Surficial aquifer; and
 - d. Location—The points of withdrawal shall be located at sites associated with the construction of the Calvert Cliffs Nuclear Power Plant Unit 3.
29. Change of Operations—UniStar shall report any anticipated change in appropriation, which may result in a new or different use, quantity, source, or place of use of water, to MDE WMA by submission of a new application.
30. Appropriation Duration and Renewal—The appropriation will expire in six (6) years from the effective date of the issuance of the CPCN. In order to renew the permit for a period of one year, UniStar shall file a renewal application with MDE WMA no later than 45 days prior to expiration.
31. Additional Permit Conditions—MDE WMA may at any time (including review or when a change application is submitted) revise any condition of this appropriation or add additional conditions concerning the character, amount, means and manner of the appropriation or use, which may be necessary to properly protect, control and manage the water resources of the State. Condition revisions and additions will be accompanied by issuance of a revised appropriation.
32. Right of Entry—UniStar shall allow authorized representatives of MDE WMA and the PSC staff escorted access to the Unit 3 facility to conduct inspections and evaluations necessary to assure compliance with the conditions of this appropriation. Subject to any applicable confidentiality and security requirements set forth in the approved protocol, UniStar shall provide such assistance as may be necessary to effectively and safely conduct such inspections and evaluations.
33. Appropriation Suspension or Revocation—MDE WMA may suspend or revoke this appropriation upon violation of the conditions of this appropriation, or upon violation of any regulation promulgated pursuant to Title 5 of the Environmental Article, Annotated Code of Maryland (2007 replacement volume) as amended, subject to UniStar's right to an evidentiary hearing and rights of appeal.
34. Non-Transferable—This initial appropriation encompassed in this CPCN is non-transferable to a new owner. A new owner may acquire authorization to continue this appropriation by filing a new application with the PSC and obtaining authorization from the PSC. The new application must include documentation of the previous owner's consent to the transfer. The PSC shall notify MDE WMA of the transfer of ownership.
35. UniStar shall conduct the following monitoring activities in support of the ground water appropriation:

- a. **Flow Measurement and/or Estimation of Flow** – UniStar shall report all ground water used under this authorization by a method which shall be approved by MDE WMA.
- b. **Withdrawal Reports** – Submit withdrawal records to MDE WMA semi-annually (for July-December, no later than January 31; for January-June, no later than July 31). These records shall show the total quantity of ground water withdrawn each month under this appropriation.

IV. Other Water Supply Conditions

36. UniStar shall ensure that the desalination treatment system installed at Unit 3 has at least the capacity indicated in Table 2.3-1 Rev. 1 of the August 8, 2008 version of the UniStar Technical Report and shall make available water in excess of the requirement of Calvert Cliffs Unit 3 for use by Calvert Cliffs Nuclear Power Plant, Inc. at Units 1 and 2.
37. UniStar shall provide a letter of commitment to Calvert Cliffs Nuclear Power Plant, Inc., with copies provided to MDE WMA and PPRP, indicating their intent to make available to Calvert Cliffs Nuclear Power Plant, Inc. water treated in the desalination plant that exceeds the requirements of Calvert 3. The letter of commitment shall be provided within six (6) months of the issuance of the CPCN. Until such time as MDE WMA notifies UniStar that such updates are no longer required, UniStar shall provide written updates to MDE WMA beginning one year after issuance of the CPCN and annually thereafter describing the status of the desalination plant construction and the availability of water for use by Calvert Cliffs Nuclear Power Plant, Inc.
38. UniStar shall not haul fresh ground water to Calvert Cliffs Unit 3 until UniStar notifies MDE WMA of the name and contact information of the hauler, the water source (if known), a maximum estimate of the amount of water to be hauled, and the approximate period of time that the water will be hauled to the Unit 3 site. The notification shall occur at least one week in advance of the commencement of water hauling. Nothing in this condition shall limit or prevent UniStar from hauling water to Unit 3 in the event of an emergency where the construction or operation of Calvert Cliffs Unit 3 is jeopardized by the temporary unavailability of a fresh water supply. In the event of an emergency requiring UniStar to haul water to Unit 3, UniStar shall notify MDE WMA as soon as practicable, but no later than 24 hours from the commencement of water hauling to the Unit 3 site.

Water Discharge

39. The CPCN is not an authorization to discharge wastewater to waters of the State. UniStar shall obtain a new discharge permit from MDE under the National Pollutant Discharge Elimination System (NPDES) for the Calvert Cliffs Unit 3 facility. This permit shall incorporate the USEPA Phase I regulations implementing Section 316(b) of the Federal Clean Water Act for Cooling Water Intake Structures.
40. UniStar shall prepare a Stormwater Management Plan for review and approval by the local authority. The Stormwater Management Plan shall be prepared in accordance

with the Stormwater Management Subtitle, COMAR 26.17.02, applicable county or municipal ordinance, and the Maryland Stormwater Design Manual, including any new provisions adopted as a result of the Stormwater Management Act of 2007, which requires Environmental Site Design (ESD) practices to be used to the maximum extent practical.

41. If treated effluent is used for dust control, UniStar needs to submit an application for a Ground Water Discharge Permit to the MDE WMA Wastewater Permits Program in accordance with the requirements set forth in COMAR 26.08, and obtain MDE WMA approval for the use of treated effluent for dust control. Treated effluent sources to be used for dust control shall be identified to MDE WMA in writing no later than six (6) months after issuance of the CPCN.
42. If dewatering occurs from an excavation and the water requires discharge in excess of 10,000 gallons per day to a surface water body, UniStar shall obtain authorization from MDE in accordance with COMAR 26.08 to discharge dewatering water in excess of 10,000 gallons per day to a surface water body that is not used for dust control.

Terrestrial and Aquatic Ecology

43. Construction and operation of the Calvert Cliffs Unit 3 power facility and all its appurtenant features shall comply with all applicable local, State, and Federal regulations, including but not limited to the following:
 - a. Nontidal Wetlands – COMAR 26.23 applies to activities conducted in nontidal wetlands.
 - b. Waterway Construction – COMAR 26.17.04 applies to activities in State waterways.
 - c. Water Quality and Water Pollution Control – COMAR 26.08.01 through COMAR 26.08.04 apply to discharges to surface water and maintenance of surface water quality.
 - d. Erosion and Sediment Control – COMAR 26.17.01 applies to the preparation, submittal, review, approval, and enforcement of erosion and sediment control plans.
44. UniStar shall obtain applicable State and federal dredge-and-fill and waterway construction permits for the Chesapeake Bay intake and discharge facilities and for the barge facility modifications. UniStar shall not commence construction of any aspect of the project that is under the jurisdiction of Section 404 of the Clean Water Act covered by the *Joint Federal/State Application for the Alteration of Any Floodplain Waterway, Tidal or Nontidal Wetland in Maryland*, until such application has been approved by the U.S. Army Corps of Engineers and MDE. Appropriate time-of-year dredging restrictions will apply to the project to minimize impacts to Natural Oyster Bar (NOB) 19-2.
45. UniStar shall not commence construction on any aspect of the project under the jurisdiction of the Chesapeake Bay Critical Area Commission (CAC) until it has received approval of the proposed Unit 3 project from the CAC. All site preparation,

preconstruction, and construction activities at the site shall be implemented in accordance with the CAC-approved plans.

46. Portions of the Calvert Cliffs Unit 3 construction footprint adjacent to existing forested nontidal wetlands shall comply with Best Management Practices for Nontidal Wetlands of Special State Concern and Expanded Buffers, COMAR 26.23.06.03, which provides for stringent best management practices in the vicinity of very sensitive nontidal wetlands sites. These practices and techniques may include, but are not limited to, use of adequately sized temporary sediment traps, as needed, as well as super silt fencing, berms, and other specialized techniques specifically needed for limiting the quantity of sediment entering existing forested wetlands and streams during the power facility construction process.
47. All portions of the power plant and rights-of-way disturbed during construction shall be stabilized after the cessation of construction activities within that portion of the footprint and right-of-way, followed by seed application, except in actively cultivated lands, in accordance with the best management practices presented in the current edition of the *Maryland Standards and Specifications for Soil Erosion and Sediment Control*, and as approved by Calvert County. In wetlands and wetland buffers, seed application shall consist of the following species: annual ryegrass (*Lolium multiflorum*), millet (*Setaria italica*), barley (*Hordeum* spp.), oats (*Uniola* spp.), and/or rye (*Secale cereale*). Other non-persistent vegetation may be acceptable, but must be approved by the MDE Water Management Administration. Kentucky 31 fescue shall never be used in wetlands or buffers.
48. UniStar shall construct the facilities for Calvert Cliffs Unit 3 in accordance with an approved DNR Forest Conservation Plan (FCP). To minimize forest losses, cleared areas that are no longer in use and not anticipated to be in use following project construction shall be replanted with tree species appropriate for the area. Tree planting and maintenance should be conducted in accordance with the State Forest Conservation Technical Manual, 3rd edition, 1997 and COMAR 08.19.04.05B(4)(a). Areas not replanted with trees shall be vegetated with grasses. Grasses will be planted along streams and other open areas where acceptable. If the areas along streams are wetlands or wetland buffers, only grasses listed in Condition 47, or others approved by MDE WMA, shall be used. If areas along streams are uplands, the following grass species may be used: blue joint grass (*Calamagrostis canadensis*), switchgrass (*Panicum virgatum*), little bluestem (*Schizachyrium scoparium*), or Indian grass (*Sorghastrum nutans*). Other non-persistent vegetation may be acceptable, but must be approved by DNR or MDE WMA. Kentucky 31 fescue shall never be used. Prior to the commencement of tree clearing associated with site preparation, pre-construction, or construction activities, a forest conservation easement shall be granted to Maryland DNR Forestry Division, or another State or county agency, in accordance with the provisions of the FCP.
49. For the protection of bald eagles (*Haliaeetus leucocephalus*) at the project site, UniStar shall comply with the terms of the Endangered Species Permit Number 45135, as may be amended or revised, issued September 8, 2008 by Maryland DNR Wildlife and Heritage Service. It should be understood that acquiring a State permit for take of a bald eagle does not carry any authority for take under the federal Bald and Golden

Eagle Protection Act as administered by the USFWS.

50. For the protection of showy goldenrod (*Solidago speciosa*), UniStar should take steps to avoid habitat alteration during the proposed construction activities. Mitigation for impacts to this population through transplanting individuals is discouraged. Transplanting of threatened or endangered plants is not considered a substitute for the protection of existing populations and may result in limited or no conservation value. However, since threatened and endangered plants are the property of the landowner, transplanting such species is not illegal provided the plants are not transported off the property. If such an action is pursued, UniStar shall adhere to DNR's guidelines for the reintroduction of rare plants. Prior to construction, DNR Heritage botanists shall be afforded escorted access to the site to confirm the identity of the showy goldenrod.
51. For the protection of the two species of State endangered, federally threatened tiger beetles (northeastern beach tiger beetle and Puritan tiger beetle) that are known to occur along the Chesapeake Bay shoreline and proximal to the project site, no construction activities shall occur within 500 feet of currently suitable habitat for either species, with the exception of those activities (a) occurring within the designated Intensively Developed Area, (b) associated with the demolition of the Eagle's Den building and removal of related impervious surfaces, and (c) associated with any Forest Interior Dwelling Species habitat restoration or wetlands mitigation. Activities undertaken in these areas will be conducted, to the greatest extent practicable, to minimize impacts to any adjacent cliff or beach habitats that are suitable for either species. Administrative controls that restrict personnel access to beaches shall be implemented. DNR shall be afforded escorted access to the shoreline as requested to conduct surveys to examine the health of tiger beetle populations.
52. To compensate for impacts to the American eel (*Anguilla rostrata*), UniStar shall design the stream restoration and enhancement portion of the proposed compensatory wetlands mitigation plan in a manner that will not prohibit the passage of migratory fish species and, more specifically, the catadromous American eel. Stream restoration and enhancement activities shall incorporate known habitat needs of the American eel, such as vegetative or substrate cover, and shall address the physiological needs of the American eel, other migratory fish species, and the remaining resident fish and benthic macroinvertebrate populations. Habitat needs such as base flow hydraulic regimes, appropriate depth, and substrate shall also be addressed.
53. UniStar shall pay \$5,000 to DNR (by December 31, 2008) to be applied to the cost of mapping the substrate of NOB 19-2 in the vicinity of the Project. UniStar shall also fund, up to a capped amount of \$45,000 per acre (2008 dollars), the cost of moving, creating, or restoring oyster habitat equal to the area of bottom in NOB 19-2 that would be directly, adversely impacted by UniStar's new dredging or filling of tidal wetlands within NOB 19-2 pursuant to Condition 44. This effort will be completed within two (2) years of the completion of USACE/MDE authorized work in tidal wetlands.

Stormwater Management/Erosion and Sediment Control

54. Sediment/erosion control during construction of all aspects of this project shall be in

accordance with the Best Management Practices presented in the current edition of the *Maryland Standards and Specifications for Soil Erosion and Sediment Control*, and as approved by Calvert County. Best Management Practices may include construction of earth dikes and retaining walls in appropriate locations, sediment traps, use of super silt fences, stabilizing disturbed areas as quickly as possible, and converting silt traps to permanent features as soon as practicable.

Noise

55. UniStar shall monitor noise levels at the boundaries of the facility, after the plant is operational, to demonstrate that Calvert Cliffs Unit 3 will operate in compliance with the noise limits specified in COMAR 26.02.03. The scope of work for the noise monitoring shall be provided to PPRP for review within one year after the issuance of the CPCN. The noise study shall include monitoring at facility site boundaries in closest proximity to residentially zoned land. Measurements will be taken while the plant is operating at full load, to represent maximum noise emissions. Results shall be provided to PPRP within six months after Unit 3 begins commercial operation. If the results of the noise monitoring indicate that Unit 3 operation is creating an exceedance of the Maryland noise standards, UniStar shall take corrective action in consultation with the PSC and PPRP.

Socioeconomics

56. Prior to construction, UniStar shall submit to the Maryland Historical Trust (MHT) a copy of training programs, or guidelines provided to applicant inspectors or contractors, to identify and/or protect unforeseen archeological sites that may be revealed during construction of the project. If such relics are identified in the project area, UniStar, in consultation with and as approved by MHT, shall develop and implement a plan for avoidance and protection, data recovery, or destruction without recovery of the properties adversely affected by the project.
57. Prior to construction, UniStar shall execute an MOA with MHT to mitigate the adverse effects of site preparation and construction upon on-site cultural resources that are eligible for the National Register of Historic Places. No site preparation activities (such as clearing or grading) or construction activities having the potential to affect historic properties will take place within the limits of National Register-eligible archeological or structural resources, and no removal or demolition of eligible structures will take place until an MOA has been executed.
58. Prior to construction, UniStar shall revise its Phase II Traffic Study to address Maryland State Highway Administration (SHA) comments contained in its letter dated 26 June 2008 from Steven D. Foster, Chief, Engineering Access Permits Division to Susan Gray, PPRP. The revised study must determine the extent of traffic impacts caused by the anticipated workforce and the roadway improvements necessary to mitigate those impacts. UniStar shall submit eight copies to SHA for review, comments, and acceptance of the report to SHA satisfaction.
59. UniStar shall execute an MOA with SHA for the planning, engineering, and construction of roadway improvements necessary to mitigate the power plant.

generated traffic impacts. Benchmarks for the permitting, construction, and completion of the required roadway improvements will be part of the MOA.

60. Prior to construction, UniStar shall consult with the Calvert County Department of Public Safety regarding the adequacy of technical resources, including personnel, within the Department and other County agencies to manage the additional burden associated with emergency planning, pursuant to NRC and Federal Emergency Management Administration (FEMA) requirements, for the construction and operation of Calvert Cliffs Unit 3. UniStar shall assist the Calvert County Department of Public Safety through contributions, training, and/or general support in accordance with UniStar's obligations under NRC and FEMA requirements.
61. Prior to construction, UniStar shall contact the Calvert County Department of Public Safety to establish a relationship with fire departments and emergency response agencies under this Department to address site safety/EMS coverage during construction, and to establish timely response options and facilitate emergency vehicle access throughout the site in case of an accident or injury as may be required by NRC and FEMA requirements. UniStar shall assist the Calvert County Department of Public Safety through contributions, training, and/or general support in accordance with UniStar's obligations under NRC and FEMA requirements.
62. UniStar shall develop a lighting distribution plan that will mitigate intrusive night lighting and avoid undue glare onto adjoining properties, subject to the requirements of the NRC, the Federal Aviation Administration, and, to the extent practical, consistent with Article 6-6 of the Calvert County Zoning Ordinance. UniStar shall submit the plan to PPRP and the PSC for review with the PSC to approve the plan prior to operation of the facility.

Air Quality

I. General Air Quality Requirements

63. MDE Air and Radiation Management Administration (MDE-ARMA) shall have concurrent jurisdiction with the PSC to enforce the air quality conditions of this CPCN.
64. The CPCN serves as the Prevention of Significant Deterioration (PSD) approval and air quality construction permit for the Calvert Cliffs Unit 3 Project.
65. For air permitting purposes, the facility shall be comprised of the following equipment:
 - a. One circulating water system (CWS) cooling tower;
 - b. Four essential service water system (ESWS) cooling towers;
 - c. Four 10,130-kilowatt (kWe) emergency diesel generators (EDGs);
 - d. Two 5,000-kWe station black out generators (SBOs); and
 - e. Up to 15 fuel oil storage tanks.

66. Definition: "Commence" as applied to the construction of the Project means that the owner or operator either has begun, or caused to begin, a continuous program of actual on-site construction of the source, to be completed within a reasonable time.
67. In accordance with COMAR 26.11.02.04B, the air quality provisions expire if, as determined by MDE-ARMA:
- a. Construction is not commenced within 18 months after the date of issuance of a final CPCN;
 - b. Construction is substantially discontinued for a period of 18 months or more after it has commenced; or
 - c. Construction is not completed within a reasonable period of time after the issuance of a final CPCN.
68. At least 60 days prior to the anticipated date of start-up of the facility, UniStar shall submit to MDE-ARMA an application for a temporary permit to operate.
69. All requirements pertaining to air quality that apply to UniStar shall apply to all subsequent owners and/or operators of the facility. In the event of any change in control or ownership, UniStar shall notify the succeeding owner/operator of the existence of the requirements of this CPCN pertaining to air quality by letter and shall send a copy of that letter to the PSC and MDE-ARMA.

II. Applicable Air Quality Regulations

Facility-wide Requirements

70. The Calvert Cliffs Unit 3 Project is subject to all applicable federally enforceable State air quality requirements including, but not limited to, the following regulations:
- a. COMAR 26.11.01.04A-C Testing and Monitoring — Requires UniStar to follow test methods described in §C of this regulation to determine compliance. MDE-ARMA may require UniStar to install, use, and maintain monitoring equipment or employ other methods as specified by MDE-ARMA to determine the quantity or quality, or both, of emissions discharged into the atmosphere and to maintain records and make reports on these emissions to MDE-ARMA in a manner and on a schedule approved by MDE-ARMA or the control officer.
 - b. COMAR 26.11.01.07C Malfunctions and Other Temporary Increase of Emissions — Requires UniStar to report the onset and the termination of the occurrence of excess emissions, expected to last or actually lasting for one hour or more to MDE-ARMA by telephone;
 - c. COMAR 26.11.06.12 — Prohibits UniStar from constructing, modifying, or operating, or causing to be constructed, modified, or operated, a New Source Performance Standard source as defined in COMAR 26.11.01.01C, which results or will result in violation of the provisions of 40 CFR Part 60; and

- d. COMAR 26.11.06.14 – Prohibits UniStar from construction, modifying or operating a PSD source which will result in violation of 40 CFR 52.21.
71. The Calvert Cliffs Unit 3 Project is subject to all applicable State-only enforceable air quality requirements including, but not limited to, the following regulations:
- a. COMAR 26.11.02.13A(50) – UniStar shall not operate or cause to operate Calvert Cliffs Unit 3 without first obtaining, and having in current effect, a State Permit to Operate. A complete application for an initial State permit to operate shall be submitted to MDE ARMA not later than 60 days before the source is to commence operation;
 - b. COMAR 26.11.02.19A Fee Schedule – Requires UniStar to pay annual Title V operating permit fees;
 - c. COMAR 26.11.02.19D Emission Certification – Requires UniStar to certify, as provided at Regulation .02F of this chapter, the actual emissions of regulated air pollutants from all installations at the plant or facility. Certification shall be on a form obtained from MDE-ARMA and shall be submitted to MDE-ARMA not later than April 1 of the year following the year for which certification is required. An emission certification submitted pursuant to this section and which contains all information required by COMAR 26.11.01.05-1, for NO_x and VOC, satisfies the requirements of COMAR 26.11.01.05-1;
 - d. COMAR 26.11.03.17 – Requires UniStar to update the Calvert Cliffs Part 70 Operating Permit to include applicable Calvert Cliffs Unit 3 project requirements;
 - e. COMAR 26.11.06.08 – Prohibits UniStar from operating or maintaining any source in such a manner that a nuisance is created; and
 - f. COMAR 26.11.06.09 – Prohibits UniStar from causing or permitting the discharge into the atmosphere of gases, vapors, or odors beyond the property line in such a manner that a nuisance or air pollution is created.

Emergency Diesel Generators (EDGs) and Station Blackout Generators (SBOs)

72. The EDGs and SBOs for the Unit 3 Project are each subject to all applicable federally enforceable State air quality requirements including, but not limited to, the following regulations:
- a. COMAR 26.11.09.05A(1) – Prohibits UniStar from discharging emissions greater than 20 percent opacity from fuel burning equipment associated with Unit 3, other than water in an uncombined form. This limitation does not apply to emissions during load changing, soot blowing, startup, or adjustments or occasional cleaning of control equipment if:
 - i. The visible emissions are not greater than 40 percent opacity; and

- ii. The visible emissions do not occur for more than 6 consecutive minutes in any 60-minute period.
 - b. COMAR 26.11.09.07A(1)(c) — Prohibits UniStar from burning, selling or making available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds 0.3 percent for distillate fuel oils;
 - c. COMAR 26.11.09.05B(2)-(4) Visible Emissions Stationary Internal Combustion Engine Powered Equipment — Prohibits UniStar from causing or permitting the discharge of emissions from any engine:
 - i. Operating at idle at an opacity greater than 10 percent; or
 - ii. At conditions other than idle at an opacity greater than 40 percent.
 - d. COMAR 26.11.09.08E(1-5) — Requires UniStar to do the following for each piece of fuel burning equipment with a rated heat input capacity of 100 MMBTU per hour or less:
 - i. Submit to MDE-ARMA (for each installation) an identification, information on the rated heat input capacity of the unit, and the type of fuel burned;
 - ii. Perform a combustion analysis at least once each year;
 - iii. Maintain the results of the combustion analysis for at least 2 years;
 - iv. Once every 3 years, require an operator to attend operator training programs on combustion optimization; and
 - v. Prepare and maintain a record of training program attendance.
73. The EDGs and SBOs are each subject to New Source Performance Standards (NSPS) 40 CFR 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines and the associated fuel, monitoring, compliance, testing, notification, reporting, and recordkeeping requirements (40 CFR §60.4200 *et seq.*), and related applicable provisions of 40 CFR §60.7 and §60.8.
- a. The EDGs shall each meet the following standards:
 - i. Reduce PM emissions by 60 percent or more, or limit emissions of PM to 0.15 grams per kilowatt-hour (g/kW-hr) (0.11 grams per horsepower-hr); and
 - ii. Reduce NO_x emissions by 90 percent or more, or limit emissions of NO_x to 1.6 g/kW-hr (1.2 grams per horsepower-hour).
 - b. Emissions from each SBO shall not exceed the following:
 - i. 0.5 g/kW-hr of PM;
 - ii. 11.0 g/kW-hr of total hydrocarbons plus nitrogen oxides (THC+NO_x); and

- iii. 5.0 g/kW-hr of CO.

Cooling Towers

74. The cooling towers associated with the Calvert Cliffs Unit 3 Project are subject to all applicable federally enforceable State air quality requirements including, but not limited to, COMAR 26.11.06.02(C)1 – Prohibits UniStar from discharging emissions from any installation or building, other than water in an uncombined form, which is greater than 20 percent opacity.

III. Best Available Control Technology (BACT)

75. Particulate matter (PM, PM10, and PM2.5) emissions from the emergency diesel generators (EDGs) associated with Unit 3 shall not exceed 0.15 g/kW-hr on a 3-hour average basis. These limits will be achieved by exclusively burning diesel fuel with a maximum sulfur content of 0.05 percent by weight. Reasonable worst case hours of operation are determined to be no more than 600 hours per year total for all EDGs combined.
76. The station blackout generators (SBOs) associated with Unit 3 shall be designed so that particulate matter (PM, PM10, PM2.5) emissions shall not exceed 0.5 g/kW-hr. These limits will be achieved by exclusively burning ultra-low sulfur diesel fuel with a maximum sulfur content of 0.0015 percent by weight. Reasonable worst case hours of operation are determined to be no more than 200 hours per year total for all SBOs combined.
77. Emissions from the CWS cooling tower shall not exceed 1,782 pounds per day of PM, 1,426 pounds per day of PM10, and 231 pounds per day of PM2.5. These emissions shall be achieved through the use of high efficiency drift eliminators designed to achieve a drift loss rate not to exceed 0.0005 percent of recirculating water flow.
78. Emissions from each of the ESWS cooling towers shall not exceed 45 pounds per day of PM, 44 pounds per day of PM10, and 14 pounds per day of PM2.5. These emissions shall be achieved through the use of high efficiency drift eliminators designed to achieve a drift loss not to exceed 0.005 percent of recirculating water flow.

IV. Testing

79. Within 60 days of the initial start-up date, UniStar shall provide MDE-ARMA with a Performance Test Plan. The Plan shall describe the proposed methods for conducting initial performance tests to demonstrate compliance with the NSPS Subpart III standard, as applicable.
80. Within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup, UniStar shall conduct performance tests outlined in UniStar's Performance Test Plan.
81. In accordance with COMAR 26.11.01.04A, UniStar may be required by MDE-ARMA to conduct additional stack tests to determine compliance with COMAR Title 26, Subtitle 11. This testing will be done at a reasonable time.

V. Monitoring, Recordkeeping, and Reporting

82. UniStar shall determine compliance with the BACT limits as follows:

- a. For the EDGs and the SBOs, UniStar shall conduct initial performance tests or provide the manufacturer's certification to demonstrate compliance with the BACT limitations in accordance with the New Source Performance Standards for Compression Ignition Internal Combustion Engines under 40 CFR 60, Subpart III.
- b. For the CWS cooling tower and the ESWS cooling towers, UniStar shall monitor:
 - i. the conductivity of the circulating water to determine the concentrations of total dissolved solids (TDS), and
 - ii. the flow rate of the circulating water.
- c. At least 90 days prior to the anticipated startup of each of the units subject to BACT, UniStar shall submit a detailed monitoring plan to MDE-ARMA for approval. MDE-ARMA shall approve the plan prior to startup of any of these emissions units.

83. In accordance with 40 CFR §60.4209, UniStar shall install non-resettable hour meters prior to the start up of the EDGs and the SBOs.

84. UniStar shall submit to MDE-ARMA and U.S. EPA written reports of the results of all performance tests conducted to demonstrate compliance with the standards set forth in applicable NSPS within 60 days of completion of the tests.

85. UniStar shall prepare and submit reports to MDE-ARMA that summarize emissions and other parameters necessary to calculate particulate matter emissions determined according to Condition 82.

86. UniStar shall furnish written notification to MDE-ARMA and U.S. EPA of the following events related to the EDGs and SBOs:

- a. Date construction commenced of each EDG and each SBO within 30 days after such date;
- b. Anticipated startup date, not more than 60 or less than 30 days prior to such date;
- c. Actual startup date within 15 days after such date; and
- d. Anticipated date of compliance stack testing at least 30 days prior to such date.

87. UniStar shall furnish written notification to MDE-ARMA of the following events related to the cooling towers:

- a. Date construction commenced of each ESWS cooling tower and the CWS cooling tower within 30 days after such date;

- b. Anticipated startup date, not more than 60 or less than 30 days prior to such date;
 - c. Actual startup date within 15 days after such date.
88. UniStar shall submit a certified emissions statement for Unit 3 to MDE-ARMA.
- a. Certification shall be on a form obtained from MDE-ARMA and shall be submitted to MDE-ARMA no later than April 1 of the year following the year for which certification is required.
 - b. The individual making the certification shall certify that the information is accurate to the individual's best knowledge. The certifying individual shall be:
 - i. Familiar with each source for which the certification form is submitted; and
 - ii. Responsible for the accuracy of the emission information.
89. All records and logs required by this CPCN shall be maintained at the facility for at least 5 years after the completion of the calendar year in which they were collected. These data shall be readily available for inspection by representatives of MDE-ARMA.
90. All air quality notifications and reports required by this CPCN shall be submitted to:

Administrator, Compliance Program
Air and Radiation Management Administration
1800 Washington Boulevard
Baltimore, Maryland 21230

91. All notifications and reports required by 40 CFR 60 Subpart III provisions, unless specified otherwise, shall be submitted to:

Regional Administrator, U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

VI. General and Miscellaneous Provisions

92. Except as otherwise provided herein, neither UniStar nor any other entity or entities that subsequently become the owner and/or operator of Calvert Cliffs Unit 3 (hereafter referred to as "owner") shall transfer ownership or control of the facility so as to divest the owner of its ability to control the construction or operation of the facility without the written consent of the PSC. In the event of any such proposed transfer, the owner shall notify the proposed successor of the existence of the requirements of this CPCN by letter and shall send a copy of that letter to the Secretary of the PSC, the Director, Air and Radiation Management Division of the Maryland Department of the Environment, and the Director of the Power Plant Research Program of the Maryland Department of Natural Resources. Any such successor shall be subject to the CPCN and all applicable requirements and obligations therein. Prior to the commencement of its operation of the facility, any such successor shall provide

appropriate assurances required by the PSC that the facility will be operated in compliance with this CPCN and its conditions. The approval of the PSC shall not be required if (i) the owner sells a minority interest in the facility to a third-party investor that does not result in a transfer of majority ownership or control of the facility, (ii) the owner transfers a collateral security interest in the facility, or (iii) the owner sells its interest in the facility to a person or entity that becomes a passive owner of the facility solely for financing purposes, nor shall such transferee or purchaser be subject to the CPCN and the requirements and obligation therein solely by virtue of acquiring and holding such interests. In the event that an entity holding a collateral security interest in the facility or passive ownership for financing purposes acquires ownership or control of the facility so as to divest the owner of its ability to control the construction or operation of the facility, such entity shall be subject to this CPCN and its conditions.

93. Informational copies of the reports required regarding change of ownership, air quality requirements, cultural resources, and traffic, as described in Conditions 57, 58, 68, 69, 71a, 79, 82, 84, 86, and 87 shall be sent to the Power Plant Research Program at the following address:

Director
Power Plant Assessment Division
Department of Natural Resources
Tawes State Office Bldg., B-3
580 Taylor Avenue
Annapolis, Maryland 21401

client and agency contact for wetland delineation and permitting issues. Managed and coordinated the field activities of several wetland biologists. Prepared wetland delineation reports and impact assessments.

Gaia Inc. – Stream Restoration Project, Brevard, NC - Project Botanist - Worked with the North Carolina Natural Resources Conservation Service (NRCS) to prepare a plan to restore 2+ linear miles of Class A trout waters in Transylvania County, North Carolina. Prepared a riparian vegetation restoration plan.

McNeil Island Wetland Delineation and Critical Areas Inventory – Washington Department of Corrections, Olympia, Washington. Wetland Scientist/Senior Biologist. Conducted wetland delineations, wetlands ratings, and wetlands classification for the McNeil Island Correctional Facility. Delineated wetlands in accordance with the Washington State Wetlands Delineation Manual; evaluated the quality and condition of wetlands using the Washington Wetlands Rating System (Western Region); classified wetland and surrounding upland vegetative community types; evaluated the project area for special status species (state and federal threatened, endangered, and candidate species, as well as Department of Fish and Wildlife priority species and habitats); prepared a wetland delineation report in accordance with Title 18 for Pierce County, WA.

Bee Hive Basin Subdivision Wetland Delineation and Permitting – Bee Hive Development – Bozeman, Montana. Project Manager/Wetland Scientist. Conducted wetland assessment and delineation, prepared section 404 wetland and Montana State 310 stream crossing permit application, and consulted with both state and federal regulatory agencies to gain permit approval.

Agrium Phosphate Mine Wetland Delineation – Soda Springs, Idaho. Wetland Biologist. Conducted a wetland delineation of a proposed railroad extension corridor in southeastern Idaho. Prepared the wetland delineation report. Consulted with USACE regarding site hydrology and other site data to evaluate jurisdictional status.

Agrium Phosphate Mine, Tailings Pond Wetland Delineation – Soda Springs, Idaho. Wetland Scientist. Conducted a wetland delineation of a proposed tailings pond site at Agrium's Conda Phosphate Operations Facility. Prepared the wetland delineation report. Consulted with USACE regarding site hydrology and other site data to evaluate jurisdictional status.

Norem Wetland Bank Monitoring Plan, Big Timber, Montana. Wetland Scientist. Developed and prepared a site-specific wetland monitoring protocol including a quantitative sampling scheme using vegetative cover data collected along linear transects to evaluate the establishment of wetland vegetation and other features at the wetland bank site. Conducted a wetland delineation of a proposed tailings pond site at Agrium's Conda Phosphate Operations Facility. Prepared the wetland delineation report. Consulted with USACE regarding site hydrology and other site data to evaluate jurisdictional status.

Wetland Delineation and Permitting – Federal Highways Administration – Six Rivers National Forest, California – Conducted wetland delineation for an approximately 8 mile railroad corridor and several bridge crossings in northern California. Completed threatened and endangered species surveys and wetland permit application to support project Environmental Assessment.

Wetland Delineation and Permitting – NC Army National Guard – Raleigh, North Carolina – Conducted wetland delineation for a proposed road corridor and bridge crossing for the NC Army National Guard in central North Carolina. Completed wetland permit application and stream buffer zone protection survey.

Rare Plant Survey and Floristic Inventory – US Army National Guard, Butner, North Carolina. *Lead Botanist.* Characterized and mapped vegetation communities in accordance with the NC Natural Heritage Program and International Vegetation Classification systems. Identified and documented rare plants and community types including several rare plant occurrences within Piedmont basic mesic forest and mafic outcrops occurring on the approximately 5,000 acre camp.

Rare Plant Survey and Floristic Inventory – US Army National Guard, Smyrna and Gorman VTS, Nashville, Tennessee. *Lead Botanist.* Characterized and mapped vegetation communities in accordance with the TN Natural Heritage Program and International Vegetation Classification systems. Identified and documented rare plants and community types including several rare plant occurrences within cedar glade and western mesophytic forest communities on both training sites.

Rare Plant Survey - Threatened and Endangered Species Survey, Georgia Transmission Company - Valdosta Transmission Line – Southern Georgia. *Lead Botanist.* Characterized vegetation and identified rare plant species and habitats within a forty-mile corridor in southern Georgia. Project involved field reconnaissance to identify and classify vegetative community types, identification of rare plant species and/or suitable habitat, determination of habitat quality and condition, and Section 7 consultation with the USFWS. Identified several rare plant occurrences within longleaf pine savanna communities including yellow pitcher plant (*Sarracenia flava*), parrot pitcher plant (*S. psittactna*), honeycomb (*Balchina atropurpurea*), and plum leaf azalea (*Rhododendron prunifolium*).

Quantitative Vegetation Survey of Overton Park - The National Audubon Society, Memphis, Tennessee. *Project Botanist.* Conducted a vegetation assessment and rare plant survey of remnant old growth forest communities in Overton Park, Memphis, TN. Quantitatively sampled vegetation and analyzed data using multivariate analysis techniques to classify community types. Prepared a site conservation and management plan.

Vegetation Survey - Meadowcreek Land Trust, Nashville, Tennessee. *Project Ecologist/Botanist.* Conducted baseline documentation, including a rare plant survey for a 2000-acre property conservation easement property located in central Tennessee. Prepared a site management plan addressing road density and recreational use.

Vegetation Survey and Community Classification - North Carolina Natural Heritage Program – Conducted a botanical inventory of portions of the Pigeon River Gorge bordering Great Smoky Mountains National Park. Documented several new rare plant occurrences including several stands of *Buckleya distichophylla*, considered one of the rarest shrubs in North America. Mapped vegetation community types and prepared documentation to be included in the statewide database.

Botanical Survey for the H.P. Fuller Preserve – H.P. Fuller Company - St. Paul, Minnesota. Project Manager/Lead Botanist. Conducted a rare plant survey and characterized and mapped vegetative habitats. Evaluated habitat quality and condition. Prepared a vegetative resources report. Unique features encountered included several remnant prairie communities containing species considered uncommon in the region.

Elk River Planned Unit Development (PUD) – Elk River, Minnesota. Project Manager/Lead Botanist. Conducted a rare plant survey and characterized and mapped vegetative habitats. Evaluated habitat quality and condition. Prepared a biological survey report. Unique features encountered included several remnant Hill's oak savannah communities containing species considered uncommon in the region.

Baseline Botanical Survey for City of Boise Land Exchange Project – North Idaho. Lead Botanist. Characterized vegetation resources and identified rare plant species within several U.S. Forest Service (USFS) and Bureau of Land Management (BLM) parcels proposed for exchange with the state of Idaho. Project involved compiling existing information and performing field reconnaissance to identify and classify vegetative community types, identify rare plant species and/or suitable habitat, and determine habitat quality and condition. Unique features identified included several rare plant species within old growth mesic forest communities, including Pacific starflower (*Trientalis latifolia*), the state endemic Case's fumitory (*Corydalis caseana* var. *hastata*), chickweed monkeyflower (*Mimulus alsinoides*), and Constance's cardamine (*Cardamine constancei*).

Baseline Vegetation Survey to Support Proposed Smokey Canyon Mine Expansion EIS – Simplot Corporation/USFS - Soda Springs, Idaho. Botanist. Project involved completing threatened and endangered species surveys and vegetation characterization and mapping. Sagebrush communities were quantitatively sampled and characterized across an elevation gradient using the line intercept method to provide baseline conditions for future effects analysis and monitoring.

Rare Plant Survey – Atlanta Gold, Inc. – Atlanta, Idaho. Botanist. Project involved completing threatened and endangered species surveys and vegetation characterization and mapping of a USFS tract proposed for mine expansion. Targeted surveys included those for Ute's ladies Tresses (*Spiranthes diluvialis*), a federally threatened species. Vegetation in riparian areas was quantitatively sampled using a riparian classification protocol developed by the Idaho Natural Heritage Program.

consultation. Prepared Environmental Resource Reports (ERRs) for water and biological resources. Primary issues included potential impacts to spotted owl, marbled murrelet, 13 Evolutionarily Significant Units (ESUs) of salmonids, marine mammals, and coastal zone management concerns.

Programmatic Biological Assessment (BA) for Bull Trout – Montana Department of Transportation, Montana. Assistant Project Manager. Provided support for the development of a programmatic BA for Bull Trout for proposed and future projects. The BA was developed to conserve bull trout populations by recommending impact minimization and mitigation measures to be employed in different biological "zones" (i.e. core spawning habitat or stream reaches, migratory habitat, marginal habitat, etc.) under various construction scenarios including bridge maintenance activities, reconstruction, etc. The programmatic BA was also developed to jointly group actions according to the appropriate effects determinations.

Essex-Middlesex Natural Gas Pipeline Project, Tennessee Gas Pipeline Company, Boston, Massachusetts Responsible for conducting rare species and vernal pool assessment surveys for specified rare species and significant habitats (including vernal pools) along 7.81 miles of proposed pipeline. Surveys were conducted in accordance with Massachusetts Endangered Species Act M.G.L. c. 131A and regulations 321 CMR 10.00 and based on consultation with Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program (NHESP). As part of this task, the project team conducted surveys, prepared summary reports, filed rare species and habitat documentation with agencies, and filed appropriate permits.

Saco Industrial Park Natural Resource Permit Application, Intelligent Controls, Inc., Saco, Maine - Responsible for conducting threatened and endangered species investigations to support a Maine Site Location of Development Act (SLDA) permit application for a proposed industrial facility in the town of Saco Maine. Project also involved preparation of the SLDA application and an associated Maine Natural Resource Permit Application (NRPA) that reviewed potential impacts to natural resources including special status state and federally listed species, wetlands, and significant wildlife habitats. Consulted with Maine Department of Inland Fisheries and Wildlife, Maine Natural Areas Program, and the US Fish and Wildlife Service to further evaluate potential impacts to significant natural resources including rare species habitat, wetlands, and tidal streams.

Georgia Department of Transportation (GDOT) Villa Rica Bypass EA – Villa Rica, GA. Senior Biologist. Conducted baseline investigations and impact analyses for a proposed highway bypass near Villa Rica, GA. Consulted with GDOT on avoidance and minimization measures and corridor alignment. Consulted with regulatory agencies such as USFWS and the USACE regarding regulatory compliance. Prepared wetland permit application and mitigation plan, Section 7 consultation documents, Ecology Assessment, and EA.

Georgia Department of Transportation (GDOT) Carrolton Connector Roads EA – Carrolton, GA. Senior Biologist. Conducted baseline investigations and impact analyses for a proposed highway expansion near Carrolton, GA. Consulted with GDOT on avoidance and minimization measures and corridor alignment. Consulted with regulatory agencies such as

Environmental Impact Statement (EIS) for Proposed Steel Mill and Railroad, Minnesota Steel, Inc. and Itasca County, Minnesota – Grand Rapids, Minnesota. *Senior Biologist and Technical Advisor.* Involved in the planning of a Surface Transportation Board (STB) led EIS for a proposed steel mill and railroad corridor in northern Minnesota. Oversaw the completion of baseline surveys including wetland delineations, T&E species surveys, and habitat mapping. Conducted agency scoping and oversaw the completion of preliminary analyses and document preparation for resources within the affected environment.

Environmental Assessment (EA) and USACE Individual Permit Application for a Proposed Feldspar Mine - I-minerals, Inc. – Bovill, Idaho. *Project Manager.* Mr. Myers is currently managing a USACE led EA for a proposed feldspar mine and processing facility in northern Idaho. Conducted agency consultation and scoping meetings. Oversaw the completion of baseline surveys including wetland delineations, T&E species surveys, and habitat mapping. Overseeing the completion of impact analyses and document preparation for all resources within the affected environment. Overseeing the completion of a USACE Individual Permit Application for unavoidable impacts to waters of the U.S. and preparation of a wetland mitigation and stream relocation design plan.

Environmental Impact Statement (EIS) for Hartsfield International Airport 5th Runway– Atlanta, Georgia. *Senior Biologist.* Responsible for completing the baseline natural resource investigations, analysis of potential impacts, and preparing the affected environment and environmental consequences sections for the proposed Hartsfield International Airport 5th Runway Extension EIS. Assisted in facilitating public and interdisciplinary team meetings. Conducted agency consultations including USFWS Section 7 consultation and preparation of a Biological Assessment (BA).

Environmental Assessment (EA) - Air National Guard – Alpena CRTC – Alpena, Michigan. *Assistant Project Manager.* Assisted in managing the completion of a NEPA EA for proposed threat emitter construction on the Alpena CRTC in northern Michigan. Completed baseline investigations and impact analyses. Prepared the biological and physical resource components of the NEPA EA document. Consulted with the ANG and other federal and state agencies regarding environmental review and regulatory compliance.

Environmental Assessment (EA) – Wyoming Army National Guard – Camp Guernsey – Guernsey, Wyoming. *Project Manager.* Assisted in managing the completion of a NEPA EA for proposed range improvements and changes to the range training program and mission. Completed baseline investigations and impact analyses. Prepared the biological and physical resource components of the NEPA EA document. Consulted with the WYANG and other federal and state agencies regarding environmental review and regulatory compliance.

FERC Application – Environmental Resource Reports for Northern Star Natural Gas LNG Terminal Facility and Pipeline, Astoria, Oregon. *Senior Biologist and Advisor.* Conducted baseline investigations and impact analyses for a proposed LNG terminal and pipeline in northwestern Oregon. Helped coordinate public and agency meetings. Conducted agency

USFWS and the USACE regarding regulatory compliance. Prepared wetland permit application and mitigation plan, Section 7 consultation documents, Ecology Assessment, and EA.

USFS Idaho Panhandle National Forest – Sandpoint, Idaho. Senior Botanist. Completed analysis of effects to vegetation resources for a proposed timber sale near Sandpoint, Idaho. Prepared Biological Assessment (BA) and vegetation sections of the Affected Environment and Environmental Consequences chapters for project Environmental Impact Statement (EIS). Participated in USFS agency meetings.

Georgia Department of Transportation (GDOT) – Alpharetta Intersections. Senior Biologist. Conducted baseline investigations for several proposed GDOT intersection projects. Completed numerous Categorical Exclusion (CE) documents for these projects.

Georgia Department of Transportation (GDOT) – Southern Georgia Bridge Upgrades. Senior Biologist. Conducted baseline investigations and impact analyses for proposed bridge expansion projects in southern GA. Consulted with GDOT on avoidance and minimization measures and bridge design. Consulted with regulatory agencies such as USFWS and the USACE regarding regulatory compliance. Prepared permit applications and Categorical Exclusion documents (CE) for the projects.

Georgia Department of Transportation (GDOT) US 27 Realignment – Cuthbert to Bluffton, GA. Senior Biologist. Conducted baseline investigations and impact analyses for a proposed highway extension between Cuthbert and Bluffton, GA. Consulted with GDOT on avoidance and minimization measures and corridor alignment. Consulted with regulatory agencies such as USFWS and the USACE regarding regulatory compliance. Prepared wetland permit application and mitigation plan, Section 7 consultation documents, Ecology Assessment, and EA.

Georgia Department of Transportation (GDOT) McGinnis Ferry Road Upgrades – Forsyth County, GA. Senior Biologist. Conducted baseline investigations and impact analyses for highway upgrades in Forsyth County, GA. Consulted with GDOT on avoidance and minimization measures and corridor alignment. Consulted with regulatory agencies such as USFWS and the USACE regarding regulatory compliance. Prepared wetland permit application and mitigation plan, Section 7 consultation documents, Ecology Assessment, and EA.

Georgia Department of Transportation (GDOT) US HWY 400 Upgrade – Cornelia, GA. Senior Biologist. Conducted baseline investigations and impact analyses for a proposed highway expansion near Cornelia, GA. Consulted with GDOT on avoidance and minimization measures and corridor alignment. Consulted with regulatory agencies such as USFWS and the USACE regarding regulatory compliance. Prepared wetland permit application and mitigation plan, Section 7 consultation documents, Ecology Assessment, and EA.

Flint Hills Kansas Wind Farm Fatal Flaw Analysis and Natural Resource Studies - Florida Power and Light Energy, LLC. Completed a fatal flaw analysis for a proposed 100-megawatt wind farm in the Flint Hills of Kansas. This included analyzing existing site conditions and

potential environmental and natural resource issues for consideration during turbine siting and project permitting. Conducted baseline biological studies including characterization and mapping of existing tall grass prairie habitats, spring and fall migratory bird surveys, and a greater prairie chicken lek survey and inventory. Consulted with regulatory agencies including the USFWS and various Kansas state agencies regarding strategies for avoidance and minimization of impacts to sensitive resources. Information gathered during both the baseline investigations and agency consultations was used to assist FPL Energy with design and configuration of the wind farm site.

Front Range Colorado Wind Farm Fatal Flaw Analysis - Navitas Energy. Completed a fatal flaw analysis for a proposed 50-megawatt wind farm near Colorado Springs, Colorado. This included analyzing existing site conditions and potential environmental and natural resource issues for consideration during project permitting. Primary issues identified and evaluated included locations of avian migratory pathways and raptor prey sources (primarily black tailed prairie dog towns). Consulted with USFWS migratory bird specialists to determine the significance of the project area for migrating raptors and other birds. Consulted with state and federal regulatory agencies regarding the full range of permitting requirements for the project site. Conducted a baseline investigation of black tailed prairie dog towns and native rangeland habitats that support sensitive grassland bird species.

Alberta and Montana Tie 250 kv Transmission Corridor. Alberta, Canada, and Montana, USA. Senior Biologist. Involved in completing baseline studies and impact analyses to support the preparation of a Montana Facility Siting Act Application and Presidential Permit for an approximately 120-mile transmission corridor between Alberta and Montana, USA. Project involved conducting baseline studies including habitat assessments and surveys for special status species including burrowing owl, sharp-tailed grouse, and several listed plant species. Assisted with overseeing the impact analysis, agency coordination and consultation, and preparation of final documents.

Wetland and Stream Restoration Design Plan, Mitigation Bank, and Biological Assessment (BA), Montana Department of Transportation Opportunity Ponds Bank Design - Anaconda, Montana. Project Manager. Prepared a wetland and stream restoration design plan for a proposed wetland bank within the Butte-Anaconda Superfund site in western Montana. Design plan included techniques for restoring fluvial and wetland processes, as well as development of a phytoremediation buffer to reduce concentrations of surrounding heavy metal contaminants. An EPA rapid assessment was used to evaluate existing and desired future stream conditions. Consulted with EPA, the USACE, USFWS, and various state agencies to address water quality, threatened and endangered species, and permitting issues and to assess the potential mitigation credit value of the proposed project.

Wetland Permitting and Mitigation for CSXT, Inc., Mainline Sidings Projects, Indiana, Kentucky, Tennessee, and Alabama. Senior Wetland Scientist. Prepared individual and nationwide wetland permit applications including wetland and stream mitigation plans for over 20 siding projects in five states. Project also involved consulting with client attorneys and regulatory personnel regarding potential impacts, mitigation plans, and property acquisition.

Exhibit A

Exhibit B

FILING DEPT.

FILE NO. 805.

CALVERT CLIFFS NUCLEAR POWER PLANT

MARYLAND, STATE OF
BOARD OF PUBLIC WORKS

DECEMBER 17, 1968

PERMIT

1. Remove the oysters from Flag Pond natural oyster bar and transplant said oysters on a natural oyster bar.
2. Construct a revetment and a jetty and to dredge and place fill in Chesapeake Bay near Lusby, Calvert County, Maryland.



000059721

10-00-00-1D-00-00 000059721
BGE PRESIDENT'S OFFICE
ASSET MANAGEMENT SERVICES DIV

MD, STATE OF BOARD OF PUBLIC WORKS (12/17/1968)
PERMIT TO REMOVE OYSTERS FROM FLAG POND
Box#: 000017717 Shelf Location:

✓ Maryland, State of
Board of Public Works
Permit dated 12/17/68.

FILE NO. 805.



STATE OF MARYLAND
DEPARTMENT OF CHESAPEAKE BAY AFFAIRS
STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21404

JOSEPH H. MANNING
DIRECTOR
LOUIS N. PHIPPS, JR.
DEPUTY DIRECTOR

May 15, 1969

No. 11/11/69
in [unclear]
File # 116

Mr. Austin E. Penn
Chairman of the Board
Baltimore Gas and Electric Company
Gas and Electric Building
Baltimore, Maryland 21203

Dear Mr. Penn:

I am advised by the Natural Resources Management Division that no significant quantity of oysters now remains in that area of Flag Pond Natural Oyster Bar from which the Baltimore Gas and Electric Company agreed to remove the oyster population. Accordingly, no additional effort is required of the Baltimore Gas and Electric Company to meet the terms of our agreement.

We wish to express our appreciation for the excellent cooperation we have had from the Baltimore Gas and Electric Company in the removal operations.

Sincerely yours,

Joseph H. Manning
Joseph H. Manning
Director

JHM:baf

cc: Mr. Frederick W. Sieling
Mr. Paul W. McKee



STATE OF MARYLAND
DEPARTMENT OF CHESAPEAKE BAY AFFAIRS
STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21404

JOSEPH H. MANNING
DIRECTOR
LOUIS N. PHIPPS, JR.
DEPUTY DIRECTOR

January 20, 1969

*Mr. Manning
Mr. Phipps
General File ✓
1/22/69
1/22*

Mr. Austin E. Penn
Chairman of the Board
Baltimore Gas and Electric Company
Gas and Electric Building
Baltimore, Maryland 21203

Dear Mr. Penn:

Receipt of your letter of January 16 and the check for \$200,000 in accordance with the agreement reached at the meeting of the Board of Public Works on December 17, 1968 is acknowledged.

As stipulated in your letter, if the Baltimore Gas and Electric Company does not receive from the U. S. Army Corps of Engineers a permit for construction of a revetment and jetty and to dredge and fill in the Chesapeake Bay near Lusby, Maryland, the payment of \$200,000 would be refunded to the Baltimore Gas and Electric Company.

*1 Dec 17/68
1/22/69*

Sincerely yours,

Joseph H. Manning
Joseph H. Manning
Director

JHM:bsf

State of Maryland



Board of Public Works

Annapolis, Maryland

January 9, 1969

Spivey T. Agnew
Governor
Frank T. Golshrin
Comptroller
John A. VanMeter
Secretary
Andrew Hamrick, Jr.
Assistant Secretary

Mr. Austin E. Penn
Chairman of the Board
Baltimore Gas and Electric Company
Baltimore Gas and Electric Building
Baltimore, Maryland

Dear Mr. Penn:

The Board of Public Works at its meeting on December 17, 1968, considered your request that the Board approve the application for a permit requested by you from the Corps of Engineers to construct a revetment and a jetty and to dredge and place fill in the Chesapeake Bay near Lusby, Calvert County, Maryland.

After considerable discussion by the representatives of the Baltimore Gas and Electric Company and the Department of Chesapeake Bay Affairs, the following agreement was approved by the Board of Public Works:

1. Baltimore Gas and Electric Company will immediately remove the oysters from Flag Pond natural oyster bar and transplant said oysters on a natural oyster bar designated by the Department of Chesapeake Bay Affairs under supervision of that Agency.
2. The Company is authorized to proceed with construction of a revetment and a jetty and to dredge and place fill in Chesapeake Bay near Lusby, Calvert County, Maryland as described in Public Notice dated 5 November 1968, Department of Army, Baltimore District Corps of Engineers NABOP-P (Baltimore Gas and Electric Company) 112.
3. Baltimore Gas and Electric Company will immediately deposit \$200,000 to the credit of the Department of Chesapeake Bay Affairs, to be expended exclusively by that Agency for rehabilitation of natural oyster bars of Calvert County for loss from the destruction of Flag Pond natural oyster bar by construction of the Nuclear Power Plant (including the construction referred to in #2 above, and the intake and discharge channels to be applied for later).
4. Baltimore Gas and Electric Company and the Department of Chesapeake Bay Affairs will each appoint one representative to an Arbitration Board. These two representatives will then select a third, neutral member of said Board.

Mr. Austin Penn
Baltimore Gas and Electric Company

January 9, 1969

Page -2-

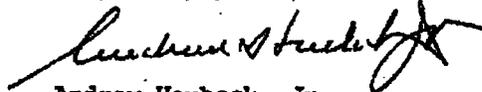
5. Arbitration will take place three years after the Calvert Cliffs Nuclear Power Plant has commenced normal operation.

6. The Arbitration Board is limited only to the determination of damages. It will determine what allowance in excess of \$200,000, if any, is warranted by the damage to Flag Pond Oyster Bar resulting from all the construction and the operation of the nuclear power plant.

7. In no event will such allowance in excess of the initial \$200,000 exceed an additional \$200,000, i.e., in no event will the total possible allowance be less than \$200,000 or more than \$400,000.

It is, therefore, in order for you to proceed to make arrangements with the Department of Chesapeake Bay Affairs for the removal of oysters from Flag Pond and to transplant them.

Very truly yours,



Andrew Heubeck, Jr.
Secretary

AH:blk

cc: Mr. Joseph H. Manning

MEMORANDUM

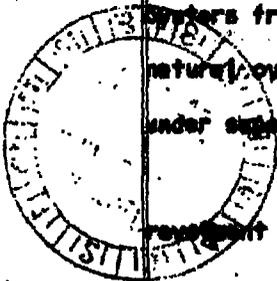
Re:

Agreement Between
Baltimore Gas and Electric Company
and State of Maryland

On Tuesday, December 17, 1968, the Board of Public Works held a public meeting to consider, among other things, the issuance of a permit to the Baltimore Gas and Electric Company for the construction of a revetment and jetty and to dredge and place fill in the Chesapeake Bay. Mr. Joseph H. Manning, Director of the Department of Chesapeake Bay Affairs, and Mr. Edward S. Digges, Special Assistant Attorney General, appeared to advise the Board that the plans of the Company to dredge and fill on Flag Pond natural oyster bar, would, if carried out, result in destruction of a natural oyster bar estimated to be worth approximately \$500,000 to the State as a capital asset. Mr. George W. Della, III, legislative counsel to the Company, and Mr. Austin E. Penn, Chairman of the Board and Chief Executive Officer, expressed willingness to provide reasonable compensation to the State, but objected to the computation producing the \$500,000 sum on the ground that it excluded several relevant factors from consideration. Since the parties' opening statements revealed their basic disagreement to be over the amount of compensation and procedures, the Governor directed that the parties retire to his office for negotiation of these points.

This negotiation resulted in the adoption by the two parties of the following agreement which was submitted to and approved by the Board of Public Works:

1. Baltimore Gas and Electric Company will immediately remove the oysters from Flag Pond natural oyster bar and transplant said oysters on a natural oyster bar designated by the Department of Chesapeake Bay Affairs under supervision of that Agency.
2. The Company is authorized to proceed with construction of a revetment and a jetty and to dredge and place fill in Chesapeake Bay near



FILE
PUBLIC RELATIONS

Lusby, Calvert County, Maryland as described in Public Notice dated 5 November 1966, Department of Army, Baltimore District Corps of Engineers WABOP-P (Baltimore Gas and Electric Company) 112.

3. Baltimore Gas and Electric Company will immediately deposit \$200,000 to the credit of the Department of Chesapeake Bay Affairs, to be expended exclusively by that Agency for rehabilitation of natural oyster bars of Calvert County for loss from the destruction of Flag Pond natural oyster bar by construction of the Nuclear Power Plant (including the construction referred to in #2 above, and the intake and discharge channels to be applied for later) shall be expended for oyster repletion in that County.

4. Baltimore Gas and Electric Company and the Department of Chesapeake Bay Affairs will each appoint one representative to an Arbitration Board. These two representatives will then select a third, neutral member of said Board.

5. Arbitration will take place three years after the Calvert Cliffs Nuclear Power Plant has commenced normal operation.

6. The Arbitration Board is limited only to the determination of damages. It will determine what allowance in excess of \$200,000, if any, is warranted by the damage to Flag Pond Oyster Bar resulting from all the construction and the operation of the nuclear power plant.

7. In no event will such allowance in excess of the initial \$200,000 exceed an additional \$200,000, i.e., in no event will the total possible allowance be less than \$200,000 or more than \$400,000.

January
Sixteenth
1969

Mr. Joseph E. Manning, Director
Department of Chesapeake Bay Affairs
Annapolis, Maryland

Dear Mr. Manning:

Enclosed is check for \$100,000 payable to the order of the State of Maryland for the use of the Department of Chesapeake Bay Affairs covering damages to the Flag Pond oyster bar resulting from construction and operation of this Company's Calvert Cliffs nuclear power plant, in accordance with the agreement reached at the meeting with the Board of Public Works for the State of Maryland on December 17, 1968.

This payment is being made at this time with the understanding that it will be refunded to the Baltimore Gas and Electric Company in the event that the Corps of Engineers, U.S. Department of the Army, does not grant the necessary permit to this Company for construction of a revetment and jetty and permission to dredge and place fill in the Chesapeake Bay near Lusby, Calvert County, Maryland, in connection with the construction and use of this Company's Calvert Cliffs plant at the above location. I am sure that you understand that, if such permit were not issued by the Corps of Engineers, this Company could not proceed with the construction of its Calvert Cliffs plant and, hence, there would be no destruction or damage to the Flag Pond oyster bar and, therefore, no reason for this Company making such payment.

Accordingly, it is requested that you acknowledge receipt of this payment and the above understanding on the part of the Department of Chesapeake Bay Affairs.

Very truly yours,

Chairman of the Board

cc: Messrs. Paul W. Collins
Anthony B. Black, Jr.

FILE

DEPARTMENT OF BOARDS

January 9, 1969

Mr. Joseph H. Manning, Director
Department of Chesapeake Bay Affairs
State Office Building
Annapolis, Maryland

Dear Mr. Manning:

The Board of Public Works at its meeting on December 17, 1968 considered a request that the Board approve the application for a permit requested by the Baltimore Gas and Electric Company from the Corps of Engineers to construct a revetment and a jetty and to dredge and place fill in the Chesapeake Bay near Lusby, Calvert County, Maryland.

After considerable discussion between representatives of the Baltimore Gas and Electric Company and the Department of Chesapeake Bay Affairs, the following agreement was approved by the Board of Public Works:

1. Baltimore Gas and Electric Company will immediately remove the oysters from Flag Pond natural oyster bar and transplant said oysters on a natural oyster bar designated by the Department of Chesapeake Bay Affairs under supervision of that Agency.
2. The Company is authorized to proceed with construction of a revetment and a jetty and to dredge and place fill in Chesapeake Bay near Lusby, Calvert County, Maryland as described in Public Notice dated 5 November 1968, Department of Army, Baltimore District Corps of Engineers WABOP-P (Baltimore Gas and Electric Company) 112.
3. Baltimore Gas and Electric Company will immediately deposit \$200,000 to the credit of the Department of Chesapeake Bay Affairs, to be expended exclusively by that Agency for rehabilitation of natural oyster bars of Calvert County for loss from the destruction of Flag Pond natural oyster bar by construction of the Nuclear Power Plant (including the construction referred to in #2 above, and the intake and discharge channels to be applied for later).
4. Baltimore Gas and Electric Company and the Department of Chesapeake Bay Affairs will each appoint one representative to an Arbitration Board. These two representatives will then select a third, neutral member of said Board.
5. Arbitration will take place three years after the Calvert Cliffs Nuclear Power Plant has commenced normal operation.
6. The Arbitration Board is limited only to the determination of damages. It will determine what allowance in excess of \$200,000,

January 16, 1969

TO Mr. C. L. Nixon
FROM G. W. Gephart
SUBJECT Order to Have a Check Drawn

Please pay to the order of:

NAME State of Maryland
For the use of the
ADDRESS Department of Chesapeake Bay Affairs
State Office Building
Annapolis, Maryland 21401
AMOUNT \$200,000.00

REASON As per agreement made before the Board of Public Works on December 17, 1968, \$200,000.00 is hereby paid to the Department of Chesapeake Bay Affairs to be expended exclusively by that Agency for rehabilitation of natural oyster bars of Galvert County for loss from the destruction of Flag Pond natural oyster bar by construction of the Nuclear Power Plant. Such payment is subject to refund in the event the payor is unable to secure the required permit from the

DEPARTMENT Corps of Engineers, U.S. Army.

44-Electric Construction

CHARGE ACCOUNT EC 11260-2

Public Relations Dept.

APPROVED

January 16, 1969

Mr. Andrew Neubeck, Jr.
Secretary
Board of Public Works
Annapolis, Maryland

Dear Mr. Neubeck:

I acknowledge your letter of January 9 confirming the agreement reached on December 17 between the Department of Chesapeake Bay Affairs and Baltimore Gas and Electric Company concerning the effect on Flag Pond Oyster Bar of the construction of the Calvert Cliffs Nuclear Power Plant, and advising that it is in order to proceed with arrangements with the Department for removal and transplanting of oysters from the Bar.

I also acknowledge copies of your letters of January 9 to the Department of the Army and to Mr. Manning regarding this subject.

My sincere appreciation is extended for your cooperation in bringing this matter to a satisfactory conclusion.

Sincerely,

(Signed) A. E. Penn

Chairman of the Board

Copies to Messrs. G. W. Gephart
J. A. Biddison

Mr. Joseph H. Manning, Director
Department of Chesapeake Bay Affairs

January 9, 1969

Page -2-

if any, is warranted by the damage to Flag Pond Oyster Bar resulting from all the construction and the operation of the nuclear power plant.

7. In no event will such allowance in excess of the initial \$200,000 exceed an additional \$200,000, i.e., in no event will the total possible allowance be less than \$200,000 or more than \$400,000.

Very truly yours,

Andrew Hanbeck, Jr.
Secretary

AH:blk

cc: Baltimore Gas and Electric Company

**BOARD OF PUBLIC WORKS
STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND**

January 9, 1969

**Mr. John L. Reynolds, Chief
Operations Division
Department of the Army
Baltimore District
Corps of Engineers
P. O. Box 1725
Baltimore, Maryland**

Dear Mr. Reynolds:

The Board of Public Works at its meeting on December 17, 1968 considered the application of the Baltimore Gas and Electric Company for a permit to construct a revetment and a jetty and to dredge and place fill in the Chesapeake Bay near Ladb, Calvert County, Maryland. At that meeting the Baltimore Gas and Electric Company and the Department of Chesapeake Bay Affairs reached the following agreement:

1. Baltimore Gas and Electric Company will immediately remove the oysters from Flag Pond natural oyster bar and transplant said oysters on a natural oyster bar designated by the Department of Chesapeake Bay Affairs under supervision of that Agency.
2. The Company is authorized to proceed with construction of a revetment and a jetty and to dredge and place fill in Chesapeake Bay near Ladb, Calvert County, Maryland as described in Public Notice dated 5 November 1968, Department of Army, Baltimore District Corps of Engineers MABOP-P (Baltimore Gas and Electric Company)112.
3. Baltimore Gas and Electric Company will immediately deposit \$200,000 to the credit of the Department of Chesapeake Bay Affairs, to be expended exclusively by that Agency for rehabilitation of natural oyster bars of Calvert County for loss from the destruction of Flag Pond natural oyster bar by construction of the Nuclear Power Plant (including the construction referred to in #2 above, and the intake and discharge channels to be applied for later).
4. Baltimore Gas and Electric Company and the Department of Chesapeake Bay Affairs will each appoint one representative to an Arbitration Board. These two representatives will then select a third neutral member of said Board.

Mr. John L. Reynolds, Chief
Operations Division

January 9, 1969

Page -2-

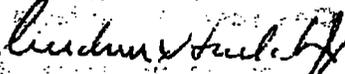
5. Arbitration will take place three years after the Calvert Cliffs Nuclear Power Plant has commenced normal operation.

6. The Arbitration Board is limited only to the determination of damages. It will determine what allowance in excess of \$200,000, if any, is warranted by the damage to Flag Pond Oyster Bar resulting from all the construction and the operation of the nuclear power plant.

7. In no event will such allowance in excess of the initial \$200,000 exceed an additional \$200,000, i.e., in no event will the total possible allowance be less than \$200,000 or more than \$400,000.

The Board of Public Works, therefore, has no objection to a permit being requested by the Baltimore Gas and Electric Company.

Very truly yours,



Andrew Heubeck, Jr.
Secretary

AH:blk

cc: Mr. George Gophart ✓

MEMORANDUM

Re:
Agreement Between
Baltimore Gas and Electric Company
and State of Maryland

On Tuesday, December 17, 1968, the Board of Public Works held a public meeting to consider, among other things, the issuance of a permit to the Baltimore Gas and Electric Company for the construction of a revetment and Jetty and to dredge and place fill in the Chesapeake Bay. Mr. Joseph H. Manning, Director of the Department of Chesapeake Bay Affairs, and Mr. Edward S. Digges, Special Assistant Attorney General, appeared to advise the Board that the plans of the Company to dredge and fill on Flag Pond natural oyster bar, would, if carried out, result in destruction of a natural oyster bar estimated to be worth approximately \$500,000 to the State as a capital asset. Mr. George W. Della, III, legislative counsel to the Company, and Mr. Austin E. Penn, Chairman of the Board and Chief Executive Officer, expressed willingness to provide reasonable compensation to the State, but objected to the computation producing the \$500,000 sum on the ground that it excluded several relevant factors from consideration. Since the parties' opening statements revealed their basic disagreement to be over the amount of compensation and procedures, the Governor directed that the parties retire to his office for negotiation of these points.

This negotiation resulted in the adoption by the two parties of the following agreement which was submitted to and approved by the Board of Public Works:

1. Baltimore Gas and Electric Company will immediately remove the oysters from Flag Pond natural oyster bar and transplant said oysters on a natural oyster bar designated by the Department of Chesapeake Bay Affairs under supervision of that Agency.
2. The Company is authorized to proceed with construction of a revetment and a Jetty and to dredge and place fill in Chesapeake Bay near

Lusby, Calvert County, Maryland as described in Public Notice dated 5 November 1968, Department of Army, Baltimore District Corps of Engineers NABOP-P (Baltimore Gas and Electric Company) (12).

3. Baltimore Gas and Electric Company will immediately deposit \$200,000 to the credit of the Department of Chesapeake Bay Affairs, to be expended exclusively by that Agency for rehabilitation of natural oyster bars of Calvert County for loss from the destruction of Flag Pond natural oyster bar by construction of the Nuclear Power Plant (including the construction referred to in #2 above, and the intake and discharge channels to be applied for later) shall be expended for oyster repletion in that County.

4. Baltimore Gas and Electric Company and the Department of Chesapeake Bay Affairs will each appoint one representative to an Arbitration Board. These two representatives will then select a third, neutral member of said Board.

5. Arbitration will take place three years after the Calvert Cliffs Nuclear Power Plant has commenced normal operation.

6. The Arbitration Board is limited only to the determination of damages. It will determine what allowance in excess of \$200,000, if any, is warranted by the damage to Flag Pond Oyster Bar resulting from all the construction and the operation of the nuclear power plant.

7. In no event will such allowance in excess of the initial \$200,000 exceed an additional \$200,000, i.e., in no event will the total possible allowance be less than \$200,000 or more than \$400,000.

8. An arbitration agreement will be drafted by the Baltimore Gas and Electric Company and submitted to the Department of Chesapeake Bay Affairs for approval by the Attorney General.



Austin E. Penn
Chairman of the Board

1/2/69

Exhibit C

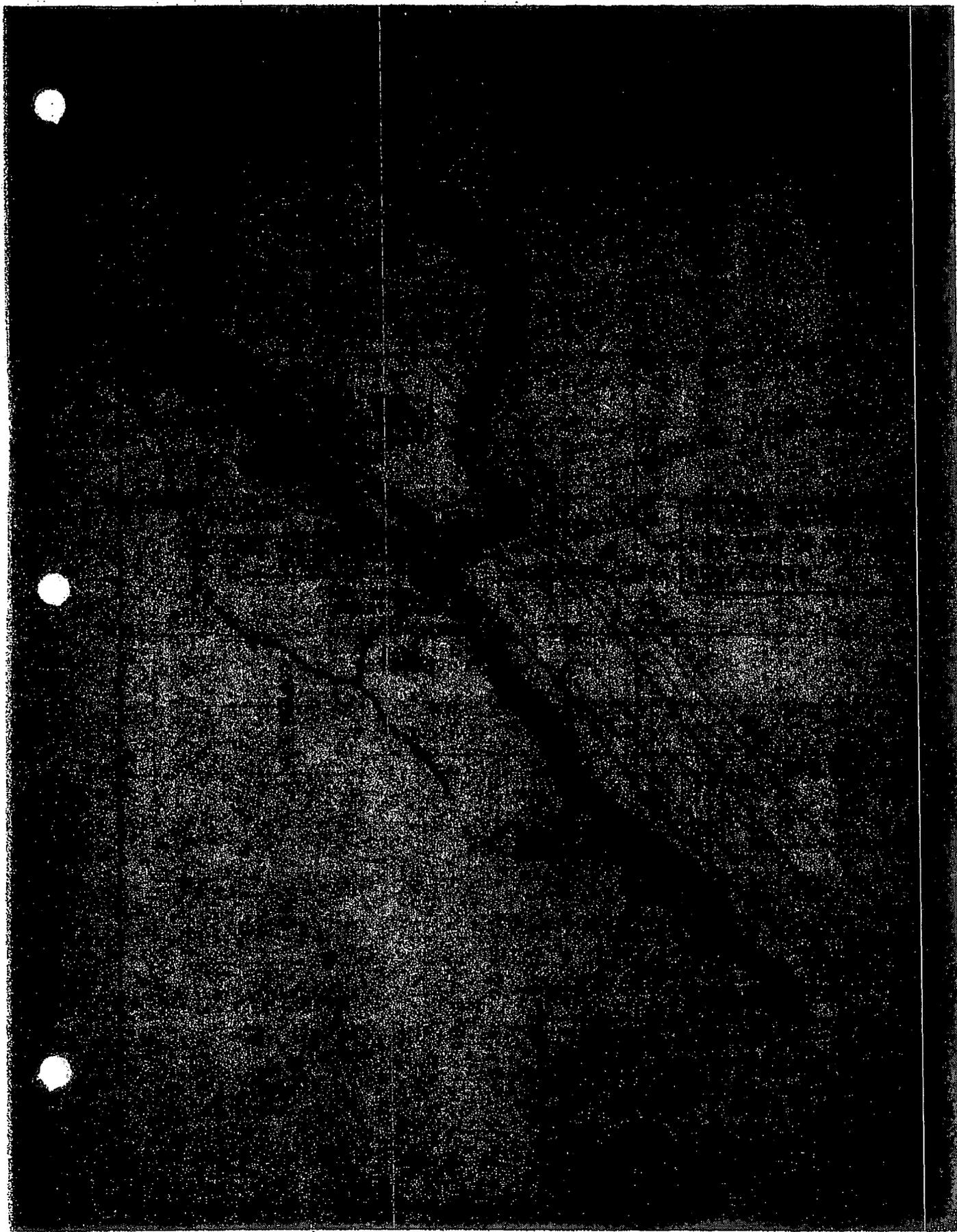


Exhibit D

**SUPPLEMENT TO
ENVIRONMENTAL REPORT**

CALVERT CLIFFS NUCLEAR POWER PLANT

**BALTIMORE GAS AND ELECTRIC COMPANY
BALTIMORE, MARYLAND**

NOVEMBER 8, 1971

**FILE COPY
ENVIRONMENTAL SECTION**

9.2.2 Structures On Previously Open Or Wooded Land

Approximately 300 acres of the 1135-acre site are currently being used in some phase of the construction work. When the plant is completed, approximately 100 acres will be occupied by the plant and switching station complex. The other 200 acres being used in connection with construction will be restored by reseeding and replanting.

9.2.3 Loss Of Recreational Use Of Adjacent Shoreline and Waters

The shoreline in the area of the plant is such that there is a very limited beach area and this exists only under low tide conditions. Also, the continuous erosion of the cliffs presents a significant hazard to anyone who might utilize the limited beach area for recreational purposes. There has been no previous recreational benefit associated with the shoreline in the area of the plant and, therefore, the plant does not create a loss of recreational use in this area.

The plant will not preclude the use of the adjacent waters of the Chesapeake Bay for recreational purposes.

9.2.4 Removal Of Oyster Bar

Since a portion of the Flag Pond oyster bar, located in the Chesapeake Bay in front of the Calvert Cliffs plant, was in the area to be dredged for the intake and discharge channels and the barge slip for the plant, the Company entered into an agreement with the State of Maryland, which was approved by the Board of Public Works on December 17, 1968, whereby the Company agreed to remove the oysters from the relatively unproductive natural oyster bar and to transplant them onto a natural oyster bar designated by the Department of Chesapeake Bay Affairs. In addition, the Company agreed to deposit the sum of

\$200,000 with the Department of Chesapeake Bay Affairs to be expended by that agency for rehabilitation of natural oyster bars in the waters of Calvert County. The agreement further provided for an additional sum to be paid as the result of arbitration to be conducted three years after the Calvert Cliffs plant had commenced normal operation, in the event that it was determined by an arbitration board that any damage to marine life had occurred.

The oyster removal operation, conducted under the supervision of the Department of Chesapeake Bay Affairs, was completed in April 1969. A total of 8,756 bushels of oysters were removed and transplanted to a natural oyster bar in the Patuxent River. The original bar consisted of 680 acres. Oysters were removed from the 500 acres in the area to be affected by the dredging operations. However, the majority of the oysters moved were located on 29 acres which had been seeded in 1962 and 1963. One hundred eighty acres of the original bar remain undisturbed. The 500-acre portion has been closed and taken off the State oyster bar charts.

The environmental "costs" associated with this oyster bar removal have been balanced by the transplantation of the bar and the rehabilitation of natural oyster bars in the waters of Calvert County.

9.2.5 Increase In School Population

There will undoubtedly be an increase to the school population in Calvert County as a result of the movement into the county of families of members of the permanent plant staff. Based on the discussion in Section 9.1.2 it is estimated that about 80 plant employees will be moving into the county. It is not expected that this number of new families will create a burden on the capacity of the Calvert County school system.

Exhibit E

DRAFT DETAILED STATEMENT ON THE ENVIRONMENTAL CONSIDERATIONS
RELATED TO THE PROPOSED ISSUANCE OF AN OPERATING LICENSE
TO THE BALTIMORE GAS AND ELECTRIC COMPANY
FOR THE CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2
DOCKET NOS. 50-317 AND 50-318

BY THE
U.S. ATOMIC ENERGY COMMISSION
DIVISION OF RADIOLOGICAL AND ENVIRONMENTAL PROTECTION

Issued: January 20, 1972

100 acres of forest bordering a deep ravine which was set aside for the disposal of 3,000,000 cubic yards of bottom material dredged from the Bay. The spoil material is diked and saline water pumped back into the Bay. The applicant will re-vegetate the spoil as soon as practical after dredging ceases. Clearing of the forest has been confined to the actual construction site and to the roads needed for access to the site. In those places where forest cover has been removed the exposed soil has been successfully planted with bluegrass. Also, in a number of instances, access roads were routed around large trees and groves of trees so that these would be preserved and adjacent areas would remain scenically attractive.

Most of the impact of construction activities on the upland biota has already taken place. Clearing of forest acreage has resulted in the loss of some nesting sites for certain kinds of song birds as well as a loss of habitat for certain small mammals. At the same time, the opening of the forest has encouraged more diverse vegetation that is attractive to other kinds of birds and mammals.

Dredging operations necessary for the establishment of the cooling water intake channel and outfall conduits will disturb about 50 acres of the bottom of the Bay near the site. Additional dredging has been done to permit barges to unload onshore. The dredging involves 500 acres of the 680-acre Flag Pond oyster bar immediately offshore from the plant. Baltimore Gas and Electric Company has paid \$200,000 to the Department of Chesapeake Bay Affairs of the State of Maryland as compensation for damage to this oyster bar and has transplanted many of the oysters from the bar to a site on the nearby Patuxent River which was selected by the State. Additional compensation may be paid to the State of Maryland by Baltimore Gas and Electric Company if, after three years of plant operation, it is determined that marine life has been damaged.

Production records of the Flag Pond bar range from 122 bushels in 1964-1965 to a maximum of 6,772 bushels in 1967-1968; the latter figure partially represents the number of oysters removed from the bar and transplanted by the applicant.

Sampling by the Academy of Natural Sciences of Philadelphia at near-shore stations within one mile of the plant site indicated that the abundance of bottom fauna was depressed in 1968 and 1969. This depression may be the result of silting from the dredging. Continued biological sampling in this area should better establish the interaction of the dredging with the alteration.

Application NAB-2007-08123-M05
Response to U.S. Army Corps of Engineers Information Request Dated 10/28/08
Calvert Cliffs 3 Project, LLC and UniStar Nuclear Operating Services, LLC
Revision 1 - January 20, 2009

Question 10

A narrative to describe and quantify cumulative and indirect impacts resulting from the project.

RESPONSE

As stated in Section 10.5 of the Calvert Cliffs (CCNPP) Unit 3 Environmental Report (ER), "Activities to be undertaken during construction and operation of CCNPP Unit 3 are consistent with those currently in place for CCNPP Units 1 and 2. Except for the construction footprint, available land use and the terrestrial environmental will remain unchanged." Section 10.5 further states, in part, "The environmental assessment demonstrates that cumulative adverse impacts to the vicinity and to the region will be small."

CCNPP Unit 3 ER Section 10.5.1 provides a detailed description of the cumulative impacts during construction and summarizes, "...the construction of CCNPP Unit 3 will not result in long-term cumulative impacts that are inconsistent with existing land use. Activities that occur during construction will be managed using best management practices and compliance with applicable regulations to limit both short-term and long-term adverse impacts. Furthermore, impacts will cease following completion of CCNPP Unit 3 and efforts made to reclaim those areas not required for operations."

CCNPP Unit 3 ER Section 10.5.2 provides a detailed description of the cumulative impacts of plant operation and summarizes, "Potential cumulative adverse impacts from operations include the withdrawal of water from the Chesapeake Bay, discharge of cooling tower blowdown, radiological dose consequences, waste generation, noise from the new hybrid cooling tower and socioeconomic changes." Section 10.5.2 also describes the impacts associated with several projects in the area of the CCNPP site that may contribute to cumulative socioeconomic and environmental impacts and concludes that the cumulative impacts of these projects should be small.

CCNPP Unit 3 ER Section 10.5.3 provides a summary of cumulative impacts and concludes that for both construction and operation of CCNPP Unit 3; "The environmental assessment demonstrates that cumulative adverse impacts to the vicinity and to the region will be small."

SUPPLEMENTAL RESPONSE

ER Section 10.5 of CCNPP Unit 3 COLA, Revision 3 is attached and provides additional details regarding cumulative and indirect impacts resulting from the project.

The 3.4 mile exclusion zone was established by the U. S. Coast Guard for LNG tankers approaching the Calvert Cliffs site and is described further on pages 2.2-81 and 2.2-82 (attached) of FASR Section 2.2.3.1.2 of the CCNPP Unit 3 COLA, Revision 3.

10.5 CUMULATIVE IMPACTS

Sections 10.1 through 10.3 summarize the adverse environmental impacts from construction and operation of {Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3} that are potentially unavoidable, irreversible or irretrievable. Measures to mitigate these impacts are also discussed. Section 10.4 compares the environmental and economic costs and benefits of the facility. This section summarizes the potential cumulative adverse environmental impacts to the {CCNPP} region. Cumulative impacts include those that are incremental to past and ongoing activities on the site, along with those that are reasonably foreseeable in the future.

This evaluation of cumulative impacts is based on a comparison between the existing environmental conditions presented in Chapter 2 and the potential adverse environmental impacts of construction and operation detailed in Chapter 4 and Chapter 5, respectively. The evaluation also considers continued operation and license renewal of {CCNPP Units 1 and 2}.

{CCNPP Unit 3} will be co-located on the existing nuclear power plant site currently occupied by CCNPP Units 1 and 2. CCNPP Units 1 and 2 occupy approximately 220 acres (89 hectares), while CCNPP Unit 3 construction is expected to utilize approximately 420 acres (170 hectares) of which 281 acres (114 hectares) will be permanently committed to structures and roads.

The CCNPP site consists of approximately 2,070 acres (838 hectares) located in Calvert County, Maryland, on the west bank of the Chesapeake Bay. Other major facilities located nearby include the Patuxent Naval Air Test Center 10 mi (16 km) south of the CCNPP site, and the Dominion Cove Point Liquefied Natural Gas site 3.6 mi (5.8 km) to the south. The 50 mi (80 km) radius surrounding the site includes parts of Maryland, Virginia, Delaware and Washington D.C.

Land use in Calvert County is predominantly farm, forest and residential housing. The CCNPP site consists mostly of mixed deciduous forest in various stages of succession, with a smaller percentage occupied by fields associated with an employee recreational campground and an area consisting of dredge spoils. None of the construction area is farmland. Topography is gently rolling, with steeper slopes along water courses. The site average height above sea level is approximately 100 ft (30 m).

The eastern boundary of the CCNPP site is the Chesapeake Bay. The Chesapeake Bay is approximately 195 mi (313 km) long and varies in width from 3 to 35 mi (5 to 56 km). Freshwater input comes from several major tributaries throughout its length, the largest being the Susquehanna River. The average depth is approximately 21 ft (9 m).

The Chesapeake Bay is a valuable natural resource in that it sustains active commercial and recreational fisheries for blue crab, oyster and several migratory fish species. Harvest, transport and marketing these resources are culturally and economically important to the region.

10.5.1 CUMULATIVE IMPACTS FROM CONSTRUCTION

Construction impacts associated with {CCNPP Unit 3} include grading and clearing, allocation of land to material lay-down and parking, use of ground and surface waters, equipment noise and emissions, increased traffic and use of public resources. These activities are consistent with those conducted during the construction of {CCNPP Units 1 and 2.} Many of the impacts will be temporary and most can be mitigated through the use of best management construction practices and stormwater pollution prevention planning required under State and Federal regulation.

Groundwater is currently utilized by CCNPP Units 1 and 2 for domestic, plant service and demineralized makeup water needs. Groundwater use conforms to an allocation imposed by the Maryland Department of the Environment. Of the 450,000 gpd (1,700,000 lpd) allocated, CCNPP Units 1 and 2 utilize, on average, approximately 388,000 gpd (1,470,000 lpd). Groundwater use during construction will remain within that allocated and its use will eventually be replaced with an onsite desalinization plant for CCNPP Unit 3. However, to date, neither saltwater intrusion nor land subsidence has been reported.

Additional impacts on wetlands, surface waters and groundwater resources may occur due to excavation or other activities that change flow patterns such as construction of sedimentation impoundments, stormwater runoff and dewatering, or that receive construction related waste effluents. It is anticipated that several vernal streams and impoundments will be affected by these activities. Environmental controls will conform to applicable regulations to minimize these effects. Efforts to reclaim areas not occupied by permanent structures or to provide offsetting habitat such as constructed wetlands will also be undertaken.

Protection of important or otherwise unique terrestrial habitats, flora and fauna were also considered in developing the construction plan for CCNPP Unit 3. Surveys of the site were undertaken to identify sensitive locations and protected species and efforts made to limit encroachment on these areas. Examples include the Chesapeake Bay Critical Area that encompasses lands within 1,000 ft (305 m) of mean sea high tide, locations with federally or state designated threatened or endangered species, wetland buffers and contiguous forest blocks. While certain state or federal designated vegetation and faunal species were found onsite, their presence was not found to be unique to areas potentially affected by construction.

Impacts to aquatic organisms found within freshwater impoundments and streams may be realized to the extent these surface waters are removed or water quality is affected. A survey of aquatic resources identified no unique aquatic species occurring with the construction zone. Typical fauna included the eastern mosquito fish, bluegill sunfish, invertebrate larvae, and submerged vegetation. Construction activities that may affect these natural resources, such as erosion and waste water discharge, will be managed using best management practices in conformance with applicable State and Federal permits and regulations.

Because of the preventive measures and corrective actions identified above and the short-term nature of construction activities, the cumulative impact on surface and groundwater from CCNPP Unit 3 construction in conjunction with the continued operation of CCNPP Units 1 and 2 should be small. Further, use of the existing offsite transmission right-of-way will limit the amount of land and related natural resources potentially impacted by construction.

An archaeological survey identified 14 sites potentially eligible for listing on the National Register of Historic Places. Four of these are located within the construction footprint. Phase II archaeological investigations, and subsequent consultation with the Maryland State Historic Preservation Officer (SHPO) will be performed for the four potentially eligible archeology sites to determine their National Register of Historic Places eligibility if they cannot be avoided.

Potential impacts to the Chesapeake Bay would be associated with construction of the cooling water intake and discharge structures and improvements to the barge unloading facility. The Circulating Water Supply System (CWS) and the Essential Service Water System (ESWS) (Ultimate Heat Sink) will utilize independent structures located in the southern portion of the existing CCNPP Units 1 and 2 intake embayment.

Dredging of the areas approaching the new structures and the installation of sheet pile may create some suspended sediment and removal of benthic substrate. Similarly, the dredging required for installation of the subsurface multi-port discharge structure will also require removal of sediment. Refurbishment of the barge slip will include new sheet pile and widening of the slip to receive heavy equipment. Activities in navigable waters will conform to applicable State of Maryland and U.S. Army Corps of Engineers regulations.

Impacts to marine biota will be negligible as previous studies conducted for CCNPP Units 1 and 2 indicate that the benthic substrate will reestablish following construction and that benthic species will quickly recolonize. Further there are no endangered or threatened marine species in the CCNPP site area that could be affected by sedimentation or sediment removal. As a result, cumulative construction impacts in the Chesapeake Bay are not expected.

Potential adverse cumulative impacts to public health and wellbeing stem from construction related noise, increased vehicular traffic, aesthetics and emissions. Noise levels will increase during construction with operation of heavy equipment and vehicles. The State of Maryland has established maximum decibel levels for different land use zones, the most sensitive being residential housing. Estimated noise levels that may occur during construction indicate that due to distance, topography and surrounding forest, levels at the site boundary are expected to meet applicable criteria. For onsite workers, it will be necessary to meet Occupational Safety and Health Administration (OSHA) exposure limits through training and use of personal protective equipment. Cumulative impacts are not expected as construction related noise will cease upon completion of the construction activities.

Traffic will increase during construction as workers commute from within and outside Calvert County. The main highway, Maryland State Highway 2/4, will experience additional traffic during shift change over. A new access road and an additional perimeter road will be constructed onsite to accommodate the excess traffic resulting from CCNPP Unit 3 construction. The access road will remain the primary entrance for CCNPP Unit 3 during operation when the number of workers is dramatically reduced. Heavy equipment and plant components will be barged in avoiding temporary blockage of local highways. Construction of the access road, use of the barge slip for heavy equipment and the decrease in workers following construction will limit cumulative impacts of traffic.

Dust, engine exhaust and other facility operations will result in construction related emissions. Protective actions will be required to ensure that applicable ambient air quality and hazardous pollutant regulations are met. Applicable permits will be obtained and construction practices, such as dust control, will be implemented so that cumulative impacts onsite from emissions are limited and are discontinued following construction.

Topography of the site and its forest canopy will limit visibility of construction activities. The Chesapeake Bay shoreline consists of high 100 ft (31 m) vertical cliffs. Construction activities, except for activities related to intake and discharge construction, will occur inland of the 1,000 ft (305 m) set back further reducing visibility from the water surface. Following construction, the multi-port diffuser will be beneath the surface. The intake structures will be confined to the southern end of the intake embayment and will be visible from certain portions of the Chesapeake Bay but their appearance will be consistent with CCNPP Units 1 and 2 intake structure.

Socioeconomic benefits accrue from capital expenditures as well as the increased number of jobs created during construction and the additional spending the results. It is estimated that peak construction workforce will exceed 3,900 full time equivalents. While it is difficult to

predict the number of new jobs created for local county residents compared to those from the greater Washington D.C. area and beyond, it is clear that spending will augment the regional economy.

For example, it is estimated that for each dollar spent an additional \$0.69 of indirect revenue would be generated within the region of influence. However, the extent to which construction workers temporarily relocate to within a reasonable commuting distance, will place some added pressure on the availability of housing and public services. No disproportionate impact on minority or low income populations is expected since no specific minority populations were found to exist in Calvert County and St. Mary's County and only one of 55 census groups in St. Mary's County contained a low-income population. None were found in Calvert County.

During construction a total of approximately 410 households would move into Calvert County and 135 into St. Mary's (ER Section 5.8.2.2). The total number of individuals (CCNPP Unit 3 construction and operations workforce) would increase by about 2,466 in Calvert County and 834 in St. Mary's. This influx may impact various public service institutions such as fire, EMS, education and recreational facilities. However, as a percentage, the increase in population is small and existing Comprehensive County Plans are in place to address the needs of an expanding population base.

Construction workers onsite will receive some radiation dose from the continued operation of CCNPP Units 1 and 2. Doses were calculated based on exposure to direct radiation, gaseous effluents and liquid effluents. Total collective dose during the construction period from all onsite sources is calculated to be approximately 14.6 person-rem (0.146 person-Sieverts). The annual maximum dose was calculated to be 38.8 mrem per yr (388 μ Sv/yr) compared to the public dose criteria of 100 mrem/yr year (1,000 μ Sv/yr).

In summary, the construction of CCNPP Unit 3 will not result in long-term cumulative impacts that are inconsistent with existing land use. Activities that occur during construction will be managed using best management practices and compliance with applicable regulations to limit both short-term and long-term adverse impacts. Furthermore, impacts will cease following completion of CCNPP Unit 3 and efforts made to reclaim those areas not required for operations.)

10.5.2 CUMULATIVE IMPACTS OF OPERATIONS

{Potential cumulative adverse impacts from operations include the withdrawal of water from the Chesapeake Bay, discharge of cooling tower blowdown, radiological dose consequences, waste generation, noise from the new hybrid cooling tower and socioeconomic changes. Each of these potential impacts is discussed below.

Because CCNPP Unit 3 will utilize closed-cycle cooling, the amount of cooling water withdrawn from the Chesapeake Bay will be significantly reduced below that required for once-through cooling. The CWS cooling tower is a circular, wet-dry type, mechanical draft tower with drift eliminators, and is approximately 164 ft (50 m) high. It is estimated that the CCNPP Unit 3 CWS will withdraw approximately 34,800 gpm (143,00 lpm) on average to replace evaporative loss, drift, and blowdown from the one mechanical draft cooling tower. Blowdown from the CWS to the retention basin, and ultimately to the Chesapeake Bay will be approximately 17,400 gpm (65,700 lpm). Maximum CWS cooling water makeup demand is approximately 40,400 gpm (153,080 lpm).

The ESWS will utilize closed-cycle cooling, and will have 4 mechanical draft cooling towers. The ESWS cooling towers will each be rectilinear structures, 96 ft (29 m) high, by 60 ft (18.3 m) long,

by 60 ft (18.3 m) wide. The ESWS cooling towers will typically be supplied with fresh water makeup from storage tanks that are supplied from a desalinization plant. Makeup flow to the ESWS cooling towers during normal operations will be approximately 1,880 gpm (7,100 lpm). Blowdown from the ESWS cooling towers will be routed to the retention basin, and ultimately the Chesapeake Bay, and will be approximately 940 gpm. Maximum ESWS cooling water makeup demand is approximately 3,764 gpm (14,248 lpm).

Physical impacts of cooling system water withdrawal could include alteration of site hydrology in the immediate vicinity of the intakes structures. Previous hydrodynamic modeling for CCNPP Units 1 and 2 indicated that their operation would represent less than 1% of tidal flow. Since the amount of cooling water to be used for CCNPP Unit 3 is a small fraction of the intake flow from CCNPP Units 1 and 2, there should be no incremental cumulative adverse impact to the Chesapeake Bay hydrology.

Aquatic impacts attributable to operation of the CCNPP Unit 3 intake structures and cooling water systems include impingement of organisms on the traveling screens and entrainment of fish and invertebrate eggs and larvae within the cooling system. Use of closed-cycle cooling systems at CCNPP Unit 3 will significantly reduce these impacts compared to power plants that operate open-cycle (once-through). In addition, CCNPP Unit 3 will incorporate additional design criteria to limit impingement including intake approach velocities to less than 0.5 ft/sec (0.15 m/sec).

Although some small amount of entrainment will occur, studies indicate that the CCNPP site area is not a spawning area for key species of commercial or recreational value, and that entrainment at CCNPP Units 1 and 2 has not resulted in detectable changes in population levels. Further, the dominant species that occur in the CCNPP site area of the Chesapeake Bay have not been identified as requiring habitat protection.

Blowdown from the cooling towers is returned to the Chesapeake Bay through a submerged multi-port diffuser. The temperature of this discharge will be several degrees above ambient creating a small thermal plume. Modeling of this plume shows that its size and distribution will meet all State water quality criteria and will be sufficiently small that it is unlikely to cause impacts to marine benthos or motile organisms migrating through the area.

Included in the blowdown discharge are chemicals used in biocide treatment and in plant process control. The concentrations discharged will be in conformance with National Pollutant Discharge Elimination System (NPDES) permit conditions and applicable water quality criteria. Further the amount of water being discharge from the closed-cycle system will be small compared to tidal flow such that concentrations of chemicals discharged will rapidly disperse. Solids will be allowed time for settlement and chemical treatment in an onsite retention basin, if required.

Because the use of closed-cycle cooling will limit cooling water requirements, the incremental impact from operation of CCNPP Unit 3 should not result in cumulative adverse ecological impacts.

Excess heat within the CWS will be dissipated to the environment using a hybrid mechanical draft cooling tower with drift eliminators installed. No visible plume is created when a portion of the cooling water evaporates as it leaves the tower and undergoes partial condensation. Fogging is predicted to occur most frequently onsite and is expected to occur less than 38 hours annually in the vicinity of the cooling towers, reaching the site boundary less than 8 hours annually. Icing is likely to occur most frequently onsite, and is estimated to occur less

than 2 hours in all directions on an annual basis. Cloud shadowing is predicted to occur for 38 hours during the spring season, and a total of 113 hours annually on Maryland State Highway 2/4. The relative small size of the four ESWS towers is not expected to contribute to offsite impacts.

Salt deposition from CWS cooling tower operations will occur since the source of makeup water is the Chesapeake Bay. The extent of deposition will be limited through installation of drift eliminators that restrict the amount and size of water particles released from the tower. Model predictions indicate that the maximum salt deposition from the condenser cooling water tower is expected to be below NUREG-1555 (NRC, 1999) significance levels for possible vegetation damage.

While the new cooling towers to be installed and operated as part of the CCNPP Unit 3 closed-cycle cooling water system will create a visible plume, the cumulative impact offsite is expected to vary by season and primarily be a function of viewpoint.

Elevated temperatures within cooling tower systems are known to promote the growth of thermophilic bacteria such as *Legionella* sp., amoeba such as *Naegleria* sp., and fungi. Thermophilic organisms are typically associated with freshwater and the Nuclear Regulatory Commission (NRC) has linked health issues to power plants that use cooling ponds, lakes and canals, and that discharge to small rivers. Given that Chesapeake Bay water withdrawn to supply the CWS cooling tower is mesohaline (salinity between 5 to 18 parts per thousand), the growth and dispersion of thermophilic organisms from the CWS cooling tower is not expected to create a public health issue at CCNPP Unit 3.

Makeup water for the ESWS cooling towers will be supplied by a desalinization plant. Biocide treatment will limit the propagation and dispersal of thermophilic organisms in this system including the four small mechanical ESWS cooling towers. Blowdown will combine with the saline discharge of the CWS cooling tower prior to its discharge to the Chesapeake Bay.

Cumulative impacts on land use and the terrestrial environment are expected to be minimal given that the final footprint of the CCNPP Unit 3 structures will be permanently established following construction and no new transmission corridors offsite will be required. Sensitive onsite species that require protection include the bald eagle.

Terrestrial vegetative and faunal species that are critical to structure and function have been identified and will be managed within the Site Management Program. Implementation of the Stormwater Pollution Prevention Plan will also serve to limit future impacts of erosion and inadvertent releases from industrial activities onsite.

Bird mortality from collision is a concern particularly at sites where tall structures such as natural draft cooling towers extend will beyond the tree canopy. The CWS cooling tower to be installed for CCNPP Unit 3 is a low-profile design that will extend 164 ft (50 m) above ground. This compares to the height of a natural draft tower that is typically in excess of 400 ft (122 m).

The sources of noise from operations include the switchyard, transformers, cooling towers and traffic. A baseline noise survey of existing conditions showed that there was no observed offsite audible noise from the operation of CCNPP Units 1 and 2. A modeled prediction of noise from the new CCNPP Unit 3 cooling towers shows that day and nighttime noise levels beyond the site boundary will be below maximum allowable levels. Traffic noise will be limited to normal work day business hours during shift changes. Noise from the new onsite switchyard and transformers will be similar to that currently associated with CCNPP Units 1 and 2. Taken

together, the additional noise associated with CCNPP Unit 3 is not expected to alter predictions that noise levels offsite will not represent an adverse cumulative impact.

Air emissions are limited by U.S. EPA standards and permits as well as by OSHA worker health based standards. The primary sources of operational related emissions are the four emergency diesel generators and two station blackout diesel generators. Periodic testing of the diesels is required to ensure their operability. The diesel generator engines are designed to meet the increasingly stringent emission standards.

Additional emissions reductions from the diesel generators will be achieved through the purchase of low sulfur fuels. Carbon dioxide production will be limited to that small amount attributed to testing of the diesel generators. By contrast, CCNPP Unit 3 operation would avoid the emission of approximately 1,731,000 CO₂e (CO₂ equivalent) from coal combustion and 565,000 CO₂e from natural gas combustion.

Exposure of the general public to radiation from the operation of CCNPP Unit 3 is a function of meteorology, relative location, population density, land use practices, harvest and consumption of food sources, as well as the allowable radiological release limits. Dose consequences result from liquid and gaseous releases and from direct radiation. Each of these potential pathways has been analyzed to ensure that applicable public health exposure limits are met.

In addition, the potential dose from the operation of CCNPP Unit 3 has been combined with that predicted for CCNPP Units 1 and 2. Results show that applicable NRC exposure limits are met, and that while there will be dose consequences resulting from operation of CCNPP Unit 3, exposure will remain within applicable limits and will not represent an adverse cumulative impact.

Conservative estimates of radiological dose to biota also demonstrate that exposure to key selected species should result in no observable effects. An existing long-term radiological monitoring program will continue to verify that dose consequences to the general public are as low as reasonably achievable (ALARA).

The uranium fuel cycle will contribute to cumulative impacts from fuel production, transportation, storage and disposal. Related environmental impacts are attributed to land and water use, electrical consumption, chemical effluents, radioactive effluents and waste generation. The cumulative impacts from each of these sources has been reviewed based on an NRC mandated comparative assessment detailed in 10 CFR 51.51(a) (CFR, 2007).

Non-radioactive and mixed-wastes will be produced during CCNPP Unit 3 operations. Typically these consist of recyclables, solid waste debris, and sewage. Cumulative impacts will be managed through implementation of waste minimization practices including the procurement process, allocation of material for work, storage and recycling. Wastes that can not be recycled will be stored and disposed in accordance with applicable state and federal hazardous and non-hazardous waste regulations, and at licensed liquid and solid waste disposal locations. Properly sized and designed onsite facilities for storage will be provided and procedures put in place to deal with potential spills and emergency response.

Socioeconomic impacts (benefits) from long-term CCNPP Unit 3 operation result from the increased operational work force, facility taxes, and generation of competitively priced electricity. Approximately 363 additional employees will be required to support CCNPP Unit 3 operations. Most of these employees are expected to reside primarily within Calvert County

and St. Mary's County. The CCNPP Unit 3 workforce will result in increased indirect employment of approximately 1,400 jobs or about 1.9% of the existing two-county work force.

An overall increase in population is expected as families relocate, acquire housing and utilize public services. It is estimated that the additional workforce will increase population within Calvert County and St. Mary's County by approximately 2,500 people compared to the existing 160,774 people. An analysis of available housing suggests that adequate supply is currently available to support the influx of operational employees.

Although some existing police, fire, EMS, and school districts are operating at, or near, capacity, operation of CCNPP Unit 3 would only add 545 direct and indirect households to the region of influence. Representatives of these agencies have indicated that this limited addition would either have no or small impact and would not require mitigation.

While there will be an overall socioeconomic benefit from the operation of CCNPP Unit 3, the cumulative impact, as a percentage, appears to be small. Further, because there are no minority populations prevalent in the area and only one small low-income population in St. Mary's County, there should be no disproportionate impact on these groups.

As described in Section 2.8, several projects have been identified within the CCNPP site area that may contribute to cumulative socioeconomic and environmental impacts. Dominion LNG is planning to expand the Cove Point Liquid Natural Gas Plant located approximately 3.6 mi (5.8 km) south of the CCNPP site. Construction is expected to be completed in 2008. Impacts include construction related activities, use of additional land for on and offsite infrastructure including pipeline expansion, increased shipping, emissions from additional onsite power generation and noise. In addition, approximately 38 new employees will be added to the operational workforce. Potential construction and operational impacts have been reviewed and mitigation measures identified (FERC, 2006).

In addition to expansion of the Dominion LNG facility, additional electrical capacity is being installed at two locations in the CCNPP site region. Two combustion turbine generating units are being added in Easton, Maryland and two at the Chalk Point Generating Station.

Since construction of the LNG facility is to be completed in 2008, there should be limited if any overlap in activities that might impact planned activities at CCNPP Unit 3. Operation of the LNG facility and the addition of additional electrical capacity in Easton and at Chalk Point will contribute to increased emissions but these facilities will be required to meet air quality standards. As a result, the cumulative impacts of these projects should be small.)

10.5.3 CUMULATIVE IMPACTS SUMMARY

{The potential adverse short-term and long-term impacts from the construction and operation of CCNPP Unit 3 have been identified and actions to mitigate those impacts proposed. Activities to be undertaken during construction and operation of CCNPP Unit 3 are consistent with those currently in place for CCNPP Units 1 and 2. Except for the construction footprint, available land use and the terrestrial environmental will remain unchanged.

Operation of the new unit will require the use of certain natural resources including water withdrawal from the Chesapeake Bay for cooling and will result in the release of process gaseous, liquid and solid wastes, all in conformance with applicable Local, State, and Federal permit requirements and standards. Economic benefits accrue from capital expenditures, additional tax revenue and the jobs created during construction and operation. The

environmental assessment demonstrates that cumulative adverse impacts to the vicinity and to the region will be small.)

10.5.4 REFERENCES

{CFR, 2007. Title 10, Code of Federal Regulations, Part 51, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions, 2007.

FERC, 2006. Final EIS Dominion Cove Point LNG Project Expansion, Docket Nos. CP05-310-000 et al., U.S. Federal Energy Regulatory Commission, April 28, 2006, Website: www.ferc.gov/Industries/Ing/enviro/eis/04-28-06-eis-cove.asp, Date accessed: May 26, 2006

NRC, 1999. Standard Review Plans for Environmental Reviews for Nuclear Power Plants, NUREG-1555, Nuclear Regulatory Commission, 1999.)

Conservative assumptions were used in both ALOHA analyses with regard to meteorological inputs and identified scenarios. The following meteorological assumptions were used as inputs to the computer model, ALOHA: Pasquill stability class F (stable), with a wind speed of 1 m/sec; ambient temperature of 25°C; relative humidity 50%; cloud cover 50%; and an atmospheric pressure of 1 atmosphere. Pasquill Stability class F represents the most limiting 5% of meteorological conditions observed at a majority of nuclear plant sites. For each of the identified chemicals, it was conservatively assumed that the entire contents of the vessel leaked forming a 1 cm thick puddle. This provides a significant surface area to maximize evaporation and the formation of a vapor cloud.

{Ammonium hydroxide was analyzed across a spectrum of meteorological conditions.

R2

The analyzed effects of flammable vapor clouds and vapor cloud explosions from internal and external sources are summarized in Table 2.2-9 and are described in the following sections relative to the release source.}

Pipelines

{The DCPLNG facility operates a pipeline corridor that passes within the vicinity of the CCNPP site. At its closest distance, this pipeline passes within approximately 1.54 mi (2.48 km) of CCNPP Unit 3.

The Maryland Power Plant Research Program commissioned an independent risk study (i.e., hazard study) that addressed the overall risk from the facility and pipeline (MDNR, 2006). Looking specifically at the rupture of the gas pipeline, the study indicates that the frequency of occurrence is $3.60E-3$ for the existing site (based on 13.1 mi (21.1 km) of existing gas export pipeline) and $7.48E-3$ for the expanded site (based on 13.1 mi (21.1 km) of existing and 14.1 mi (22.7 km) of new gas export pipeline).

The safe distance for exposure to thermal consequences resulting from a rupture of the gas pipeline or for jet fires is 2,362 ft (720 m), or 0.45 mi (0.72 km). The safe distance is identified as the maximum distance where thermal radiation heat flux exceeds 10,000 Btu/hr-sq ft (980 kJ/hr-sq m). At a thermal flux of 10,000 Btu/hr-sq ft (980 kJ/hr-sq m), a high thermal dose is achieved rapidly, offering little chance of escape for exposed individuals. The maximum range for flash fires is 722 ft (220 m), or 0.14 mi (0.22 km), and is measured as the distance to the LFL (MDNR, 2006).

Both the jet fire and flash fire safe distances are significantly less than the distance from the pipeline to the CCNPP site. Therefore, a flammable vapor cloud ignition or explosion from a rupture in the DCPLNG pipeline would not adversely affect operation of CCNPP Unit 3. The results of flammable vapor cloud ignition analyses are summarized in Table 2.2-9.}

Waterway Traffic

{CCNPP Unit 3 is located about 1,000 ft (305 m) from the west bank of the Chesapeake Bay. The plausible chemicals identified for further analysis due to their capability of forming a vapor cloud with delayed ignition and possibly exploding are: gasoline; benzene; toluene; ammonia; and liquefied natural gas. Despite its poor ability to ignite, anhydrous ammonia is conservatively evaluated as a potential flammable vapor cloud. Studies have demonstrated that an ammonia-air mixture does not ignite at less than 1562°F (ANSI, 1989). If spilled, ammonia would immediately vaporize and form a vapor cloud at a rate far greater than gasoline, benzene or toluene.

As detailed in Section 2.2.2.4.2, the DCPLNG facility operates a liquefied natural gas facility with an offshore terminal located approximately 3.2 mi (5.2 km) south of the CCNPP site. It is estimated that approximately 90 LNG tankers per year currently transit the Chesapeake Bay to the DCPLNG terminal. With the planned expansion of the DCPLNG facility, nearly 200 LNG tankers per year will transit the Bay to this facility. Section 2.2.3 addresses the overall risks associated with the DCPLNG facility for both the current and planned expansion, including its terminal, to the CCNPP site (MDNR, 2006).

The specific hazards associated with LNG tankers in the vicinity of the CCNPP site are presented in Table 2.2-9. The greatest consequence range presented, 13,943 ft (4,250 m), or 2.64 mi (4.25 km), was for the scenario where a total loss of LNG tanker inventory occurred. This maximum range is less than the distance from the postulated accident site to the CCNPP site. It is also less than the 3.4 mi (5.5 km) exclusion zone the U.S. Coast Guard committed to establish for LNG tankers in the vicinity of the CCNPP site (NRC, 2004b).

An analysis was conducted for the remaining identified hazardous materials, gasoline, benzene, toluene, and ammonia. The conservative methodology presented in Section 2.2.3.1 was used to determine the distance the formed vapor cloud could travel prior to ignition (the lower flammability limit (LFL) boundary) utilizing the ALOHA dispersion modeling. The maximum quantity of gasoline, benzene and toluene spilled on the water was assumed to be 5.2 million pounds (2.4 million kg) (CRS, 2005). For these cases, the maximum allowable surface area of the spill that ALOHA would allow 31,400 m² (337,987 ft²) was used.

Using data from the U.S. Army Corps of Engineers for the Port of Baltimore, the quantity of ammonia transported annually in proximity to the CCNPP site is 2.0 million pounds (0.9 million kg) (USACE, 2004a) (USACE, 2004b). The frequency of transport was not available; consequently, it was conservatively assumed that the entire 2.0 million pounds (0.9 million kg) was transported in one shipment and released.

For the analysis of ammonia, a partition coefficient of 0.6 was applied to the 2.0 million pounds (0.9 million kg) to account for the high rate at which ammonia dissolves in water as ALOHA does not account for this phenomena (Raj, 1974). The quantity of ammonia assumed in the analysis of distance to the LFL and the minimum separation distance (i.e., safe distance) was 1.2 million pounds (0.54 million kg).

For the identified chemicals, the distances to the LFL, which is the safe distance for: gasoline, 1,464 ft (446 m); benzene, 2,373 ft (723 m); toluene, 1,515 ft (462 m); and ammonia, 6,864 ft (2,092 m). Each of these distances is less than the minimum distance to the nearest safety related CCNPP Unit 3 structure from a probable release point on a navigable portion of the Chesapeake Bay. Therefore, a flammable vapor cloud with the possibility of ignition from a transported hazardous material on the Chesapeake Bay, would not adversely affect the safe operation of CCNPP Unit 3.)

Additionally, because each of the identified chemicals has the potential to explode, a vapor cloud explosion analysis was performed as described in Section 2.2.3.1.2. The results of the vapor cloud explosion analysis indicate that the safe distances, the minimum distances, with drift taken into consideration, required for an explosion to have less than a 1 psi (6.9 kPa) peak incident pressure, are less than the shortest distance to the nearest safety related structure for CCNPP Unit 3, the intake structure, and a probable release point on the Chesapeake Bay. The safe distance for gasoline is 3,312 ft (1,009 m); for benzene, 4,437 ft (1,352 m); for toluene, 3,003 ft (915 m); and for ammonia, 10,032 ft (3,058 m). (Table 2.2-9) Therefore, a flammable vapor

Application NAB-2007-08123-M05
Response to U.S. Army Corps of Engineers Information Request Dated 10/28/08
Calvert Cliffs 3 Project, LLC and UniStar Nuclear Operating Services, LLC
Revision 1 - January 20, 2009

Question 13

A description of the relative extent of the public and private need for the proposed project.

RESPONSE

Section 8.4 of the Calvert Cliffs (CCNPP) Unit 3 Environmental Report (ER) provides a description of the relative extent of the public and private need for the proposed project. As stated in Section 8.4, the Maryland Public Service Commission (PSC) has concluded that there is a need for new capacity and that the need for in-state generating capacity is increasing rapidly. A copy of Section II, Electricity Industry in Maryland, of the PSC's Electric Supply Adequacy Report of 2007 is attached. Additionally, given Maryland State concerns about climate change and carbon emissions, CCNPP Unit 3 serves another important need by reducing carbon emissions in Maryland. Also, the current national policy is to develop ways to reduce dependence on fossil fuels. New baseload nuclear generating capacity is required to enhance U.S. energy supply diversity and energy security, a key National Energy Policy objective.

SUPPLEMENTAL RESPONSE

ER Section 8.4 of CCNPP Unit 3 COLA, Revision 3 is attached.

8.4 ASSESSMENT OF NEED FOR POWER

{In assessing the costs and benefits of the project, NUREG-1555, "Standard Review Plan for Environmental Reviews of Nuclear Power Plants" (ESRP) 8.4 (NRC, 1999), provides the following review criterion:

If a need-for-power analysis conducted by or for one or more relevant regions affected by the proposed plant concludes there is a need for new generating capacity, that finding should be given great weight provided that the analysis was systematic, comprehensive, subject to confirmation, and responsive to forecast uncertainty.

Although this criterion does not show a need for baseload capacity, it does demonstrate a need for new capacity that is independent of type. This criterion, coupled with an affirmative indication that there is a need for baseload capacity, justifies a baseload addition within the time span determined by the ... forecast analysis.

8.4.1 ASSESSMENT OF THE NEED FOR NEW CAPACITY

As the Maryland Public Service Commission (PSC) noted in its latest adequacy supply report (MDPSC, 2007), the need for in-state generating capacity is increasing rapidly. The PSC assessed the following factors as contributing to its growing concern about reliability and power supply:

- ◆ Maryland's growing reliance on imported electricity.
- ◆ Need for infrastructure additions and new transmission.
- ◆ Energy efficiency, wholesale, and retail opportunities.

Maryland's Growing Reliance on Imported Electricity

Maryland's dependence on out-of-state generation resources will likely increase over the next 5 to 10 years because of both growth in electricity demand and the possible de-rating or retirement of existing generating units. Both Maryland utilities and PJM are forecasting electricity demand to grow by between 1% and 2% per year. Military base realignments, proximity to the national capital, Maryland's attractive port facilities, its central location in the Atlantic economic corridor, and Maryland's attractiveness as a recreational destination lends credence to these forecasts.

Need for Infrastructure Additions and New Transmission

Further contributing to uncertainty in the power supply adequacy outlook is that over the next 10 years only a small number of new electricity generators will likely be built in Maryland. In 2003 the PSC granted a CPCN for a new 640 MWe generating unit to be built at the Doubs substation near Frederick, Maryland; however, the site developer has taken no action to initiate construction, and no prospective action appears to be likely.

As described in Section 2.8.6, the only other significant baseload generation plants in the PJM generation project queue are the addition of two combustion turbine generating units at an existing power plant near Easton, Maryland, and the addition of four combustion turbine generating units at an existing power plant near Eagle Harbor, Maryland. These units, even if built, would not provide sufficient baseload generating capacity to alleviate current generating capacity shortfalls in the region and future demand growth without reliance on additional new

baseload generating capacity. The proposed CCNPP Unit 3, if licensed and built in a timely fashion, would enter service in 2015 at the earliest.

In addition, federal and Maryland regulations require sharp reductions in sulfur dioxide, nitrous oxide, and mercury emissions from fossil-fired generating plants. Some of the older generating units may have difficulty in satisfying the stricter emission limits, or may be unable to satisfy them at all. If they are unable to comply, it is possible they would discontinue operations.

Even units that achieve compliance may see net energy output reduced because of parasitic losses associated with operation of the emission control equipment. Other states in PJM have also put in place strict air emission requirements, with similar potential effects on fossil-fired generating units. Maryland has also joined the Regional Greenhouse Gas Initiative (RGGI), which will place further limitations on fossil-fueled generation.

Energy Efficiency, Wholesale, and Retail Opportunities

More efficient use of electricity is occurring in Maryland. Electricity demand growth has been moderate despite strong economic growth. Since restructuring legislation was implemented, electric consumption in Maryland has increased at an average annual rate of 2.5%. The recent increase in wholesale electricity rates will likely reduce this rate of electric load growth. Both the Maryland utilities and PJM are forecasting that, over the next 10 years, electricity demand growth will be about 1.5% per year. Regional efforts under PJM, such as load response programs to encourage consumers to voluntarily reduce consumption, also contribute to efficiency. The long-term objective of these efficiency programs is to establish market conditions so that demand response and generation are, in effect, competing with one another (MDPSC, 2007).}

8.4.2 OTHER BENEFITS OF NEW NUCLEAR CAPACITY

The guidance in NUREG-1555 (NRC, 1999) allows for an applicant to assess the need for the proposed facility on other grounds. The following criteria suggest the continuing benefits of, and the need for, a new nuclear baseload generating facility in the state independent of the need for power:

- ◆ The relevant region's need to diversify sources of energy (e.g., using a mix of nuclear fuel and coal for baseload generation).

Although new generation should be sufficient to meet established reliability criteria within the region, the PSC is concerned about the lack of fuel diversity exhibited by generation additions. Combustion turbine capacity in eastern PJM is expected to remain the predominant source of quickly built generation for at least the next 5 years. Natural gas prices have of course risen sharply in recent years and remain volatile.

In the PJM region, many projects have been withdrawn because of unsatisfactory profit forecasts, general financial market instability, and, more recently, the much higher fuel costs for gas-fired plants, making them less economical to operate (MDPSC, 2002). The addition of new nuclear would help diversify the fuel mix and reduce dependence on gas-fired plants.

- ◆ The potential to reduce the average cost of electricity to consumers.

The PSC and the Power Plant Research Program (PPRP) of the Maryland Department of Natural Resources (MDNR) note that the potential for new power generation to

increase availability to in-state consumers is essential to ensure reliability and a robust competitive market. The addition of a new nuclear plant to Maryland's electricity supply would provide an additional source of baseload power that would help stabilize the cost of electricity for consumers.

- ◆ The national need to reduce reliance on fossil fuels generally and increase energy security.

The current national policy is to develop ways to reduce dependence on fossil fuels. New baseload nuclear generating capacity is required to enhance U.S. energy supply diversity and energy security, a key National Energy Policy (NEP) objective (WH, 2001). The national policy in support of new nuclear is also apparent in Nuclear Power 2010, which is a joint government/industry cost-shared effort to identify sites for new nuclear plants, develop and bring to market advanced nuclear plant technologies, evaluate the business case for building new nuclear power plants, and demonstrate untested regulatory processes (DOE, 2007). The Energy Policy Act of 2005 (PL, 2005) also encourages needed investment in the national energy infrastructure, helps boost electric reliability, and promotes a diverse mix of fuels, including nuclear, to generate electricity. The Energy Policy Act of 2005 includes a number of provisions that directly encourage the development of new nuclear facilities, including the following:

- ◆ Authorizes construction cost-overrun support of up to \$2 billion total for up to six new nuclear power plants;
- ◆ Authorizes a production tax credit of up to \$125 million total per year, estimated at 1.8 US¢/kWh during the first eight years of operation for the first 6000 MW of new nuclear capacity;
- ◆ Authorizes a loan guarantee program to support advanced nuclear energy facilities.

The addition of nuclear baseload power to the nation's electricity supply supports national policy objectives and increases energy security.

Other recent national policy statements assert the benefits of baseload capacity that reduces GHG, including nuclear power. The concern over GHG, and the resulting climate change, has triggered a number of policy trends:

- ◆ During the 109th Congress, both houses of the U.S. Congress introduced resolutions calling for a national program of carbon reduction (USC, 2006) (USS, 2006).
- ◆ Several states, including Maryland, have joined regional GHG initiatives (MD, 2007). In addition to the RGGI, several western states have likewise joined the trend (WCGGI, 2004). California has recently passed stringent requirements in order to curtail GHG (CAB, 2007).
- ◆ The 110th Congress continues its exploration of legislation that would limit carbon emissions in the U.S. Known as "cap and trade" legislation, the legislation seeks to bring carbon emissions down through a series of industry caps and trading strategies (USS, 2007b).

Costs of climate change have also triggered concerns about the economic effects of continuing carbon emission growth. The following examples highlight the growing concern in the U.S.:

- ◆ A British study reviewed by the U.S. Senate notes that unabated climate change will sharply affect economic systems globally, ultimately costing more than 20 percent annually of gross domestic product by the year 2050 (USS, 2007a).
- ◆ U.S. economic reviews of the British study support it with “high confidence” (Yohe, 2007).”

Because nuclear power plants do not produce significant GHG emissions, the addition of nuclear baseload power to the nation’s electricity supply supports national policy objectives and furthers national efforts to reduce GHG emissions.

- ◆ The Maryland need to reduce reliance on fossil fuels generally.

The state recently placed drastic limits on emissions from coal- and natural gas-fired plants. The Maryland Healthy Air Act (MDE, 2006) will provide larger reductions in NO_x, SO₂, and mercury in a faster timeframe than the federal Clean Air Interstate Rule (CAIR) and Clean Air Mercury Rule (CAMR). The Maryland Healthy Air Act prohibits Maryland power plants from acquiring out-of-state emissions allowances (trading credits) in lieu of adding pollution controls locally.

Maryland has also recently joined RGGI to combat state reliance on fossil fuels, as well as to reduce greenhouse gases (GHG). RGGI is a cap-and-trade program to control carbon dioxide emissions and is aimed primarily at reducing carbon dioxide pollution through a mandatory emissions cap on the electric generating sector, coupled with a market-based trading program (MD, 2007).

Because nuclear power plants do not produce significant GHG emissions, new nuclear plants provide the benefits of baseload power without the environmental costs of other fossil-fueled facilities. The addition of nuclear baseload power to Maryland’s electricity supply supports state policy objectives and furthers state programs that aim to reduce GHG emissions.

8.4.3 SUMMARY OF NEED FOR POWER

In summary:

- ◆ The State of Maryland has a well-defined, systematic, and comprehensive resource monitoring, assessment, and reporting process that reviews the State’s resources and growing demand for additional baseload capacity, eliminating the need for additional NRC review.
- ◆ The Maryland PSC has concluded that there is a need for new baseload capacity, and this conclusion has been given “great weight,” herein as allowed for by the guidance in NUREG-1555 (NRC, 1999).
- ◆ The Maryland PSC/PPRP/CPCN process gives NRC assurance that construction would not proceed without the State’s due consideration of the project’s impact on supply adequacy and on the stability and reliability of the electric system in the state.

- ◆ The growing demand for new capacity shows benefits to be derived from CCNPP Unit 3.
- ◆ Given State concerns about climate change and carbon emissions, CCNPP Unit 3 serves another important need by reducing carbon emissions in Maryland. The new plant will offset significant amounts of carbon, as compared to a coal-fired generating plant.
- ◆ Decreased reliance on fossil fuels.
- ◆ The potential to reduce the average cost of electricity to consumers by increasing availability of low cost power generation to in-state consumers through the competitive marketplace.
- ◆ Improved diversity of the sources of energy relied upon for baseload generation.

Section 9.2 discusses the viability of various baseload energy alternatives. Section 10.4 further reviews the costs and benefits of CCNPP Unit 3.]

8.4.4 REFERENCES

{CAB, 2007. California Global Warming Solutions Act, California Assembly Bill (CAB) 32 2007, Chapter 488, California Statutes of 2006, Division 25.1, Section 38500, et seq., Website: http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_0001-0050/ab_32_bill_20060927_chapterd.pdf, Date accessed: May 16, 2007.

DOE, 2007. Nuclear Power 2010 Program, Department of Energy, Website: <http://www.ne.doe.gov/np2010/neNP2010a.html>, Date accessed: June 12, 2007.

MD, 2006. Maryland Power Plant Research Act, Maryland Code Annotated, Natural Resources Article, Section 3-304, 2006, Website: http://mlis.state.md.us/cgi-win/web_statutes.exe?gnr&3-304, Date accessed: April 23, 2007.

MD, 2007. "Governor Martin O'Malley Signs Greenhouse Gas Agreement, Climate Change Executive Order," Office of the Governor, State of Maryland, Press Release dated April 20, 2007 available online at, <http://www.gov.state.md.us/pressreleases/070420.html>, accessed June 25, 2007.

MDE, 2006. The Maryland Healthy Air Act, Maryland Department of the Environment, available online at: http://www.mde.state.md.us/Air/MD_HAA.asp, accessed June 25, 2007.

MDPSC, 2007. Electric Supply Adequacy Report of 2007 in compliance with Section 7-505(e) of the Public Utility Companies Article, Maryland Public Service Commission, January 2007, Website: http://www.psc.state.md.us/psc/Reports/2007SupplyAdequacyReport_01172007.pdf, Date accessed: April 11, 2007.

NRC, 1999. Standard Review Plans for Environmental Reviews of Nuclear Power Plants, NUREG-1555, Nuclear Regulatory Commission, October 1999.

PL, 2005. Energy Policy Act of 2005, Public Law 109-58, August 2005, Website: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_public_laws&docid=f:publ058.109, Date accessed: May 19, 2007.

USC, 2006. Expressing the Sense of Congress Regarding the Need for the United States to Address Global Climate Change Through the Negotiation of Fair and Effective International Commitments, H.CON.RES 453, 109th Congress, 2nd Session, July 25, 2006, available online at: <http://thomas.loc.gov/cgi-bin/query/D?c109:3:./temp/~c109kmQUJP::>, accessed June 25, 2007.

USS, 2006. Expressing the Sense of the Senate Regarding the Need for the United States to Address Global Climate Change Through the Negotiation of Fair and Effective International Commitments, S.RES 312, 109th Congress, 2nd Session, May 25, 2006, available online at: <http://thomas.loc.gov/cgi-bin/query/D?c109:2:./temp/~c109kmQUJP::>, accessed June 25, 2007.

USS, 2007a. Full Committee Hearing: Stern Review of the Economics of Climate Change, U.S. Senate Committee on Energy and Natural Resources, February 13, 2007, Website: http://energy.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing_ID=1605, Date accessed: May 16, 2007.

USS, 2007b. January 22nd, 2007 – Global Warming Documents Bingaman-Specter Discussion Draft, U.S. Senate Committee on Energy and Natural Resources, January 22, 2007, Website: http://energy.senate.gov/public/index.cfm?FuseAction=IssueItems.Detail&IssueItem_ID=47&Month=1&Year=2007, Date accessed: May 16, 2007.

WCGGWI, 2004. “West Coast States Strengthen Joint Climate Protection Strategy,” West Coast Governors Global Warming Initiative, 2004, Press Release dated November 2004. available online at: <http://www.ef.org/westcoastclimate/>, accessed June 25, 2007.

WH, 2001. National Energy Policy: Report of the national Energy Policy Development Group, Website: <http://www.whitehouse.gov/energy/National-Energy-Policy.pdf>, Date accessed: June 12, 2007.

Yohe, 2007. Prepared Statement of Gary W. Yohe, Full Committee Hearing: Stern Review of the Economics of Climate Change, February 13, 2007, Website: http://energy.senate.gov/public/_files/Yohe.doc, Date accessed: May 16, 2007.}