

May 30, 2002

50-277/278

NOTE TO: File

FROM: Louis L. Wheeler, Senior Project Manager
Environmental Section
License Renewal and Environmental Impacts Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation



SUBJECT: PUBLIC AVAILABILITY OF INFORMATION PROVIDED TO THE NRC STAFF
IN SUPPORT OF THE ENVIRONMENTAL REVIEW OF THE APPLICATION
SUBMITTED BY EXELON GENERATION COMPANY, LLC FOR RENEWAL OF
THE OPERATING LICENSES FOR PEACH BOTTOM ATOMIC POWER
STATION, UNITS 2 AND 3

This Note to File provides a means to make information publically available which was provided to the NRC staff during its environmental review of the application submitted by Exelon Generation Company, LLC for renewal of the operating licenses for Peach Bottom Atomic Power Station, Units 2 and 3.

On 3/14/02, Conectiv Power Delivery emailed to the NRC staff an electronic copy of a Memorandum of Understanding between Conectiv and the U.S. Fish and Wildlife Service which delineates responsibilities for maintenance of the portion of the Keeney transmission line corridor located in Delaware. The email also provided a brochure on the Conectiv program for maintaining the corridor. On 4/12/02, Conectiv faxed to the NRC staff a copy of the last page of the MOU, which included the signatures of the Conectiv and FWS officials. (Enclosure 1).

On 3/25/02, the licensee sent an email message to the NRC staff providing clarifying statements related to information in the Environmental Report (ER) concerning the period of operation for Unit 1 (ER Section 3.1.1), groundwater (ER Section 3.1.2.2), and transmission facilities (ER Section 3.1.3). (Enclosure 2).

On 4/8/02, the licensee sent an email message to the NRC staff providing responses to NRC staff questions sent to the licensee by email on 4/1/02. The responses include a statement of the questions in the NRC email. (Enclosure 3).

On 4/12/02, Exelon faxed to the NRC staff three replacement pages for the ER which will be included when the ER is revised. (Enclosure 4).

On 4/17/02, the U.S. Fish and Wildlife Service sent a letter to the NRC staff responding to an NRC staff request for concurrence in conclusions pertaining to threatened and endangered species. (Enclosure 5).

Copies of the above documents are enclosed with this Note to File for the purposes of placing them in the docket files and making them publicly available.

Docket Nos. 50-277 and 50-278

Enclosures: Five enclosures as described above

Add:
Duke
Wheeler
Cool
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Enclosure 1

Memorandum of Understanding between Conectiv Power
Delivery and the U.S. Fish and Wildlife Service regarding
maintenance of the Delaware portion of the Keeney transmission
line corridor, and a related brochure

**Memorandum of Understanding
between
Conectiv Power Delivery
and the
U.S. Fish and Wildlife Service**

I. Parties

The parties to this Memorandum of Understanding (MOU) are Atlantic City Electric Company and Delmarva Power & Light Company “d/b/a Conectiv Power Delivery” (Conectiv) and the U.S. Fish and Wildlife Service (Service).

II. Purpose

This MOU establishes a partnership between Conectiv and the Service to promote mutually beneficial Integrated Vegetation Management (IVM) on Conectiv Right-of-Ways (ROW) on Service lands and to provide an opportunity for the Service to use, at benchmarked costs, Conectiv’s contractors to carry out vegetation management practices on other Service-owned lands. These actions can improve the management of Service-owned lands and overlaying ROW’s by maintaining forest health, improving wildlife habitat, and reducing the occurrence of non-native invasive plant species.

III. Background Information

Conectiv and the Service both recognize the opportunities to improve natural resource management along electric ROW’s, specifically through proper tree selection, proper pruning techniques and IVM. Proper tree selection (right tree in the right place) improves aesthetics and eliminates or minimizes the need for utility tree maintenance. Proper pruning techniques, such as directional pruning, minimize impacts on tree health and help reduce the need for future tree maintenance and tree removal. IVM, using biological, cultural, chemical, and mechanical methods, controls unwanted vegetation and encourages plant species compatible with maintenance and operation of the ROW corridor and Refuge goals and objectives.

Studies have shown that a three-tiered plant community - grass in the center of the corridor, flanked by progressively taller plants to each side (shrubs then trees) - provides excellent wildlife habitat, particularly when adjacent to a mature forest. It may also serve to minimize forest fragmentation, to the extent possible, while providing the necessary ROW vegetation management. Both Conectiv and the Service recognize the benefits of using this management regime when proper conditions exist (adjacent land use, width of ROW, accessibility, terrain, etc.). Conectiv continues to strive to develop these three-tiered plant communities on its existing ROW’s when possible, using IVM techniques, such as mechanical cutting followed by increasingly selective chemical treatments.

In 2000, Conectiv received the *Tree Line USA* award from the National Arbor Day Foundation for the company's tree planting, public education, employee training, and professional arboricultural programs. Furthermore, the Edison Electric Institute, in its Environmental Stewardship Strategy, cited Conectiv's IVM program as an environmental and economic success.

This strategy was formulated in a partnership with the U.S. Environmental Protection Agency and the U.S. Department of Agriculture. The Strategy's goal is to achieve well managed ROW vegetation while lowering the level of risk to both humans and the environment. Conectiv has helped the Service to teach other utilities and refuge managers IVM techniques. Conectiv's System Forester is an instructor at the Service's ROW Habitat Management Course.

IV. Conectiv's Responsibilities

Conectiv agrees to:

- A) Coordinate with each respective Refuge Manager prior to implementing ROW habitat management. ROW habitat management will consider impacts to threatened and endangered species, rare or sensitive plant communities, breeding/nesting of birds and other wildlife, cultural and historic resources, and other areas of refuge management concern.
- B) Submit a Pesticide Use Proposal to each respective Refuge Manager covering each proposed herbicide use and include the relevant Environmental Protection Agency pesticide use label.
- C) Apply herbicides in accordance with label instructions and Service/U. S. Department of the Interior-approved Pesticide Use Proposals;
- D) Provide an annual report to each refuge of all pesticides applied on the refuge by January 31 of the following year.
- E) Make available to the Service wood chips from tree pruning operations for use in constructing trails or other purposes.
- F) Use IVM techniques in its ROW's within Service-owned lands. Conectiv shall:
 - Place the debris from tree pruning and tree removal into windrows along the ROW edge, or as directed, to provide additional wildlife habitat. If this is not possible, the debris shall be chipped and chips made available to the Service;
 - Preserve beneficial plant species that meet the objectives of the ROW as much as possible;
 - Minimize the amount of herbicides used over time by employing appropriate IVM techniques of the least hazardous product, and rotate the approved herbicides applied in order to minimize the chance of herbicide-resistant strains;
 - Utilize approved biological controls appropriate to the IVM goals when practical;
 - Attempt to eradicate non-native, invasive plant species that interfere with the ROW vegetation management objectives; and
 - Maintain written documentation of all ROW maintenance activities on ROW's within Service-owned lands, and provide this documentation to the Service upon request.

- G) Help the Service promote IVM techniques to other companies and entities that manage ROW's on Service-owned lands. This assistance could include instructors and demonstrations of these techniques.
- H) Help the Service manage vegetation/habitat on Service-owned lands by helping to train Service employees to use IVM techniques, or by providing trained personnel and equipment at benchmarked costs.
- I) Share its transmission system maps with the Service to assist with fire management operations.

V. Service Responsibilities

The Service agrees to:

- A) Recognize Conectiv's need to manage vegetation in ROW corridors for the safe and reliable transmission of energy.
- B) Coordinate with Conectiv regarding ROW habitat management on Service-owned lands and consider impacts to threatened and endangered species, rare or sensitive plant communities, breeding/nesting of birds and other wildlife, cultural and historic resources, or other areas of refuge management concern.
- C) Provide Conectiv with wood chip disposal sites as needed for vegetation removed from ROW's on Service-owned lands.
- D) Provide Conectiv with a list of Service-owned lands containing Conectiv ROW's, with updates corresponding to property acquisitions.
- E) Invite Conectiv forestry personnel to participate in training of other companies, industries, and entities in IVM techniques along ROW's.

VI. Other Provisions

Nothing in this MOU is intended to conflict with current law or regulation or the directives of the Service. If a term of this agreement is inconsistent with such authority, then that term shall be invalid, but the remaining terms and conditions of this MOU shall remain in full force and effect.

VII. Required Clauses

- A) During the performance of this MOU, the participants agree to abide by the terms of Executive Order 11246 on non-discrimination and will not discriminate against any person because of race, color, religion, sex or national origin. The participants will take affirmative action to ensure that applicants are employed without regard to race, color, religion, sex or national origin.
- B) No member or delegate to Congress, or resident Commissioner, shall be admitted to any share or part of this MOU, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this MOU if made with a corporation for its general benefit.

- C) Notwithstanding any provisions herein, nothing shall commit the Service to incurring monetary obligations for the purposes of this MOU, except to the extent that funds are provided in Congressional Appropriations Acts.

VIII. Terms

This agreement shall be effective for 5 (five) years from the date of the last signature hereto and may be terminated by mutual agreement at anytime or by either party providing thirty (30) days written notice.

If a modification is desired, the party desiring the change shall give thirty (30) days written notice to the other party. The action may be expedited by written mutual consent of both parties.

Any provision of this MOU that is inconsistent with any federal or state laws, regulation, policy, or procedure will be void. Any provision inconsistent with other agreements or directives shall be resolved by consultation and mutual consent.

IX. Signatures

Richard Johnstone
System Forester
Conectiv Power Delivery

____5/21/01_____
Date

Anthony Leger
Chief, National Wildlife Refuge System
Northeast Region
U. S. Fish and Wildlife Service

____6/29/01_____
Date

- C) Notwithstanding any provisions herein, nothing shall commit the Service to incurring monetary obligations for the purposes of this MOU, except to the extent that funds are provided in Congressional Appropriations Acts.

VIII. Terms

The parties to this Memorandum of Understanding (MOU) are Atlantic City Electric Company and Delmarva Power & Light Company "d/b/a Conectiv Power Delivery" (Conectiv) and the U.S. Fish and Wildlife Service (Service)

This agreement shall be effective for 5 (five) years from the date of the last signature hereto and may be terminated by mutual agreement at anytime or by either party providing thirty (30) days written notice.

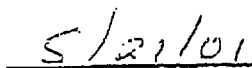
If a modification is desired, the party desiring the change shall give thirty (30) days written notice to the other party. The action may be expedited by written mutual consent of both parties.

Any provision of this MOU that is inconsistent with any federal or state laws, regulation, policy, or procedure will be void. Any provision inconsistent with other agreements or directives shall be resolved by consultation and mutual consent.

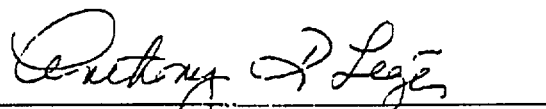
IX. Signatures



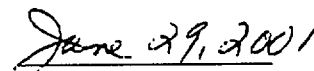
Richard Johnstone
System Forester
Conectiv Power Delivery



Date



Anthony Lege
Chief, National Wildlife Refuge System
Northeast Region
U. S. Fish and Wildlife Service



Date



Vegetation Management Notice

Overgrown vegetation is the leading cause of temporary power outages!

Because tall brush, "weed trees" and vines have grown too close to the power lines or equipment that deliver electricity to homes and businesses in your community, Conectiv Power Delivery will soon be performing integrated vegetation management in your area.

Conectiv is committed to manage this process in a way that is compatible with the intended use of the right-of-way, and discourages only growth that poses safety or reliability problems for energy delivery. Conectiv has been recognized by the National Arbor Day Foundation for its professional pruning methods, training and tree planting efforts. In fact, a well-managed right-of-way corridor can act as a wildlife greenway and can actually recreate ecosystems necessary for the survival of many rare or endangered plants.

Please read this brochure for more information about Conectiv's eco-friendly vegetation management process. If you have a question about this service, feel free to call Conectiv Power Delivery at one of the numbers listed on the back of this brochure, and our representative will respond to your questions.

Thank you in advance for your cooperation. By working together, we here at Conectiv Power Delivery can continue to provide you with safe, affordable and reliable electricity!

Questions?

For questions or additional information on Conectiv's Integrated Vegetation Management Program, please call one of the following numbers:

New Castle County, DE
302-454-0300

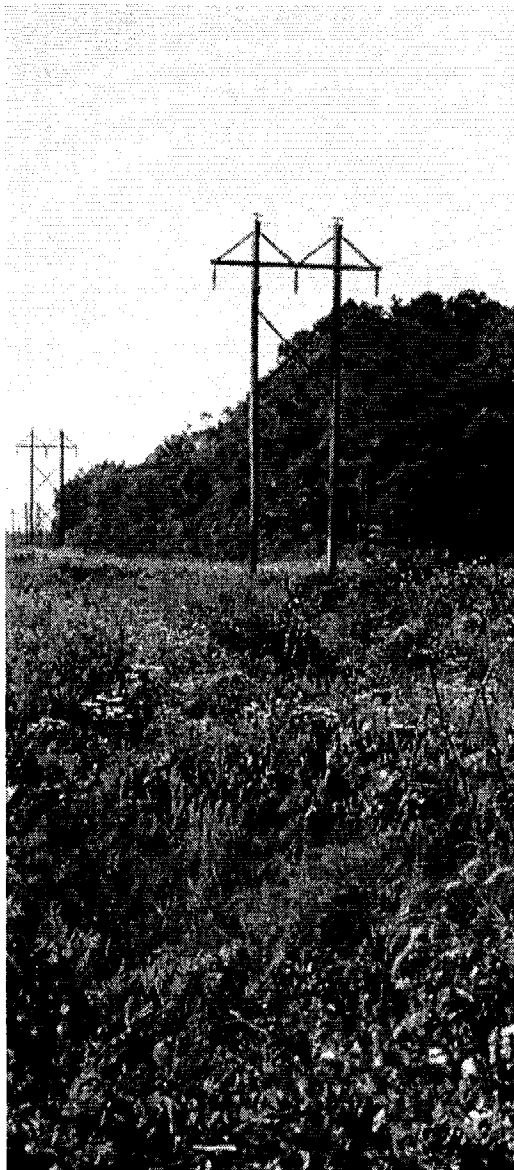
Delmarva Peninsula and
Harford County, MD
800-375-7117

New Jersey
800-642-3780



Integrated Vegetation Management Program





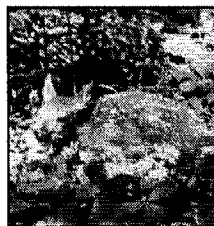
Why Vegetation Management?

Conectiv Power Delivery must maintain thousands of miles of electric corridors or rights-of-way in order to bring electric power to you our customer. A right-of-way can range from several hundred feet wide for transmission of high voltage from power plants to substations, to as little as a few feet wide for distribution of the power to your homes. Vegetation growing in these rights-of-way must be controlled in order to allow access for workers to maintain or repair the poles and wires, and to prevent them from growing into or falling through the power lines.

You can prevent tree and electric wire conflicts in your yard by planting only low growing shrubs and trees under our facilities. Where conflicts do occur we must prune tree branches away from our conductors to maintain safe and reliable service. Conectiv's professional pruning methods, training and tree planting efforts have been recognized by the National Arbor Day Foundation through their "Tree - Line USA Award".

Outside of a maintained yard, trees and vines naturally grow and can soon conflict with safe transport of electricity. These "weed trees" can also be maintained through periodic cutting of their stems with chainsaws or mowers, but cutting can only temporarily control their growth, it does not remove them from the rights-of-way. Like most weeds, a tree's root system simply resprouts to replace those that were cut.

Mechanized saws and mowers may also present hazards to workers from their sharp blades, they may injure or kill animals living in the right-of-way, and they may pose environmental hazards from oil and gasoline spillage and soil erosion. Mowing is also non-selective, so in addition to the weed trees, cutting also removes beneficial low growing plants that do not pose a problem for the utility.



Pioneering Responsible Solutions

Integrated Vegetation Management (IVM) is a new approach to controlling weed trees and vines that Conectiv has helped to pioneer. IVM is a system of controlling vegetation by first identifying plants that pose a problem, and then using a combination of control options based on effectiveness, safety, environmental impact and cost. While manual or mechanical cutting may be appropriate tools under some circumstances, other control options include biological, chemical and cultural methods. The goal of an IVM program is to manage for vegetation that is compatible with the intended use of the



right-of-way, and discourage only those weed plants that pose safety and reliability problems.

To begin an IVM program the vegetation may first need to be cut because of its overall

height and density, but then after it has resprouted the incompatible trees are treated with herbicides that stop the roots and stems from further growth. Today's herbicides do this by blocking chemicals plants need to convert water, sunlight and nutrients into food for their growth. Since animals and humans do not have these same chemicals, these herbicides are very low in toxicity to people or animals. Without any food, the weed trees are starved out of the rights-of-way.

Promoting Biodiversity

With the removal of the weed trees the rights-of-way are now open for the growth of desirable plants; grasses, herbs, wildflowers, shrubs and small trees. These low growing plants do not need to be constantly maintained, in fact they help to maintain the corridor themselves! In addition to competing with weed trees for sunlight, water and nutrients, many plants also produce chemicals in their leaves or root that act as herbicides. These natural herbicides reduce the number of weed trees that can become established and need to be maintained.

With the return of grasses, herbs, wildflowers, shrubs and small trees comes increased food and cover for a wide variety of wildlife. Bobwhite quail and wild turkey benefit from the high protein of grass insects; bees and butterflies obtain food and pollinate the wildflowers; while shrubs and small trees provide berries and nesting sites for birds and other mammals. The increased wildlife also provides increased control of the weed trees. Birds, voles and field mice consume a vast quantity of seeds and help to control any new growth of weed trees. This management assistance again limits the amount of work the utility needs to perform, and when treatment is necessary, it can then be done selectively to only remove the incompatible weed trees without disturbing the rest of the plants or animals.

Protecting the Natural Ecosystem

A well-managed right-of-way corridor can actually recreate ecosystems necessary for the survival of many rare or endangered plants. Wetland meadows, shrub-scrub forest and old field habitat once occupied large areas of the Mid-Atlantic States due to naturally occurring and native American induced fire. Judicious herbicide use can duplicate this effect and restore these valuable refuges. Conectiv manages close to 100 different rare plants, some of which only occur within its rights-of-way corridors.



Conectiv has shared its vegetation management expertise by forming agreements with state and private conservation agencies and by conducting training for other companies, associations, and wildlife refuge managers. Conectiv is a charter member of the United States Environmental Protection Agency's Pesticide Environmental Stewardship Program, a voluntary agreement to lower the level of risk to humans and the environment. We are also partners with Project Habitat, a wildlife enhancement program cosponsored by Quail Unlimited, National Wild Turkey Federation, Butterfly Lovers International, Buckmasters and American Cyanamid Company.

Enclosure 2

Licensee email, dated 3/25/02, to the NRC staff providing
clarifying statements related to three
parts of the Environmental Report

From: "Maher, William D." <william.maher@exeloncorp.com>
To: "McDowell Bruce (E-mail)" <mcdowell5@lnl.gov>, "Duke Wheeler (E-mail)" <dxw@nrc.gov>
Date: 3/25/02 10:37AM
Subject: Clarifying Statements on Peach Bottom Environmental Report

What follows are clarifying statements made with respect to what is written in the Environmental Report for Peach Bottom Atomic Power Station.

* On page E.3-2, Section 3.1.1 (Reactor and Containment Systems) Unit 1 is described as being operated from 1996 to 1974. This should read that the unit was operated from 1966 to 1974.

* On page E.3-7, Section 3.1.2.2 (Groundwater), there are two wells that do not have flowrates associated with them. One well is at the North Substation while the other one is located at the Salt Storage Facility at the North Substation. We state that the depth and capacity of either well is unknown. We stated this position after reviewing station records and after contacting the contractor responsible for drilling those particular wells. Due to the nature of the intended use of the wells (non-potable), there is no further information with respect to these wells.

* On page E.3-8, Section 3.1.3 (Transmission Facilities), it is stated that PECO owns approximately 99 percent of the land in the corridor and holds an easement on the remaining 1 percent. This statement refers to the division of ownership of the land within the Keeney Line corridor within Pennsylvania and Maryland. It does not take into account the portion of the corridor within Delaware. As stated in our response (ADAMS Accession Number ML020600194) to your Request for Additional Information (ADAMS Accession Number ML013300623), Conectiv is responsible for the operation and maintenance of the Keeney Line corridor within Delaware.

* On page E.3-9, Section 3.1.3 (Transmission Facilities), it is stated that in Delaware, the Keeney corridor is maintained by Conectiv. This is placed after the sentence that describes the Exelon right-of-way vegetation management practices within the Keeney corridor. It also should have been mentioned that, as stated in our response (ADAMS Accession Number ML020600194) to your Request for Additional Information (ADAMS Accession Number ML013300623), Conectiv is responsible for the operation and maintenance of the Keeney Line corridor within Delaware.

If you should have any questions, please feel free to contact me at any time.

Bill Maher
610.765.5939

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received this e-mail in error, please notify the sender immediately and permanently delete the original and any copy of this e-mail and any printout. Thank You.

CC: "Phillabaum, Jerry L." <jerry.phillabaum@exeloncorp.com>, "Polaski, Fred W." <fred.polaski@exeloncorp.com>

Enclosure 3

Licensee email to the NRC staff providing responses
to a staff request for additional information

From: "Maher, William D." <william.maher@exeloncorp.com>
To: "Duke Wheeler (E-mail)" <dxw@nrc.gov>, "Bob Palla (E-mail)" <rlp3@nrc.gov>
Date: 4/8/02 12:20PM
Subject: Clarifying Statements Based on RAI Responses

Based on your e-mails dated 3/25/02 and 4/1/02, the attached information is being provided in an effort aid you in the writing of the SAMA portion of the EIS.

If you would have any additional questions or you desire additional information, please feel free to contact me at any time.

Bill Maher
610.765.5939

<<Additional SAMA Responses.doc>>

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CC: "Phillabaum, Jerry L." <jerry.phillabaum@exeloncorp.com>, "Krueger, Gregory A." <gregory.krueger@exeloncorp.com>, "Polaski, Fred W." <fred.polaski@exeloncorp.com>, "Honon, David" <david.honon@exeloncorp.com>

Question: "NUREG/BR-0184 provides a means to calculate the total benefit for a given SAMA. For public health (accident), the equations require the use of reduction in person-rem. You have provided the reduction in CDF and LERF for the five SAMAs that had cost estimates prepared. Based on this information, it is not clear that a reduction in person-rem for a given SAMA was estimated and used. Please indicate whether a reduction in person-rem was used. If not, please provide details on how you arrived at the total benefit (averted cost-risk) for a given SAMA."

Response: The table below summarizes the results for each Peach Bottom Atomic Power Station (PBAPS) Phase 2 SAMA quantification. The information provided for each SAMA includes the SAMA specific CDF, Offsite Economic Cost-Risk, Dose-Risk (in Person-Rem), Averted Cost-Risk, Cost of Implementation at the Site, and the Net Value. (Previously the person-rem results were not directly provided.)

The Dose-Risk and Offsite Economic Cost-Risk are calculated based on the process described in G.2 and G.3 of Appendix G of the PBAPS Environmental Report. This process converts the PBAPS Level 2 PSA results into categories equivalent to those used to report results in NUREG/CR-4551. The Dose-Risk and Offsite Economic Cost-Risk are then calculated for the SAMA based on a ratio of the re-categorized Level 2 PSA results to the original NUREG/CR-4551 results. The final step includes the application of a correction factor to estimate site conditions at the end of the license renewal period.

Summary of the PBAPS SAMA Phase 2 Analyses

Phase II SAMA ID	CDF	Offsite Economic Cost-Risk	Dose-Risk (Person-Rem)	Averted Cost- Risk	Cost of Site Implemen- tation	Net Value
Base Case	4.53E-6	\$557K	14.72	N/A	N/A	N/A
1	4.50E-6	\$554K	14.71	\$8K	\$50,000	-\$42K
11	3.70E-6	\$491K	12.87	\$265K	\$1,600,000	-\$1,334K
13	4.52E-6	\$557K	14.72	\$388	\$50,000	-\$50K
18(a)	4.36E-6	\$530K	14.04	\$94K	\$2,000,000	-\$1,906K
18(b)	4.30E-6	\$509K	13.24	\$174K	\$2,000,000	-\$1,826K
21	4.17E-6	\$478K	10.73	\$351K	\$480,000	-\$129K

Question 1. "Provide a further description of the jockey pump modification, including the related plant changes that would be necessary and the estimated costs of these changes."

Response: The response to Question 2 includes a more realistic evaluation of the impact of installing the suppression pool jockey pump. The results indicate an averted cost-risk of approximately \$152,000. This is judged to be significantly less than the cost of any major hardware modification. Installation of a new pump, power supply cables, and new piping is judged to be a major modification. A detailed evaluation of the jockey pump equipment is deferred based on this assessment.

Question 2: "In regard to the jockey pump, on page E.4-59 you state that there is no reduction in LERF and yet also state that the "Averted Cost Risk" is \$350,956, a relatively large number. From your Table G.2-3, we are assuming that the largest contribution by far to risk (50-mile person-rem risk) comes from early containment failure (totaling 13.3 person-rem). There appears to be an inconsistency between saying that this SAMA offers no reduction in LERF and at the same time showing a sizable Averted Cost Risk (the large Averted cost Risk being consistent with having a large early containment failure). Please explain. (It could be that you are assuming that only a small fraction of your early containment failure results in LERF or is it all due to the "conservative" nature of your analysis as described on page E.4-59, namely "... the translation of the PBAPS PSA model's Level 2 endstates into the collapsed APBs conservatively grouped "late" releases into the 'early' bins due to the definition of the collapsed APBs."?). As part of the explanation, please describe the sequences and containment failure modes that would be addressed by the jockey pump mods, and justify the delta CDF and delta person-rem estimates for this mod."

Response: In the analysis of the potential benefit from the addition of a suppression pool jockey pump, the scenarios that were reduced in frequency were all scenarios with failure of injection following venting or containment failure. In the base level 2 model, these are not LERF scenarios by definition (Accident Class 2 scenarios). As noted above, however, the averted cost-risk calculated for these scenarios was "conservative" because some of the Level 2 accident sequences were grouped into 'early' bins due to the definition of the APBs.

Additionally, as noted in the original RAI responses, there are many factors to consider, when looking at the benefits of the SAMA candidates. Plant specific implementation of SAMA candidates may be complicated by space limitations, outage costs, regulatory requirements, and other considerations. These factors tend to result in underestimation of the costs. Additionally, the specific PSA analyses that were performed in addressing specific SAMA candidates were done optimistically. That is, the potential cost-benefit was derived from a case that maximized the CDF reduction that would result from implementation of the SAMA. Both of these factors would, in effect, offset the uncertainties associated with the CDF estimates.

In the original evaluation of the installation of a separate jockey pump (SAMA 21), optimistic assumptions were made in the PSA calculation to estimate the maximum potential benefit that could be obtained from the installation of such a system. In the RAI responses (reference ADAMS Ascension Number ML020510139), a more realistic assessment of the benefit of installing a jockey pump was performed to consider the cost-benefit if the 95th percentile CDF were employed instead of the mean CDF value.

The more realistic PSA calculation results were further utilized with the mean CDF value of 4.53E-6 to provide a more realistic cost-benefit analysis of this SAMA. This PSA evaluation assumes that the jockey pump is supplied by the E2 480V bus (i.e., the bus with the lowest current risk achievement worth in the model), and consists of a total system reliability of 0.05 (e.g., including human error contribution) instead of an optimistic value of 0.01. The results of that analysis are shown below.

More Realistic Analysis of PBAPS SAMA 21 Phase 2 Analysis

Phase II SAMA ID	CDF	Offsite Economic Cost-Risk	Dose-Risk (Person-Rem)	Averted Cost- Risk	Cost of Site Implemen- tation	Net Value
Base Case	4.53E-6	\$557K	14.72	N/A	N/A	N/A
21 (Optimistic)	4.17E-6	\$478K	10.73	\$351K	\$480,000	-\$129K
21 (Realistic)	4.32E-6	\$515K	13.39	\$152K	\$480,000	-\$328K

In reviewing the detailed case results for these scenarios, it was noted that the optimistic case included dose risk reduction from a lower core damage frequency (CDF) from the Level 1 model, and from an increased contribution of recovered-in-vessel scenarios in the Level 2 model. In the more realistic evaluation, the CDF decrease was less, and the recovered-in-vessel benefit in the Level 2 model was significantly reduced compared with the optimistic case. Hence, as can be seen in the table above, the more realistic analysis shows that the averted cost-risk is not as great as with the optimistic analysis, and that the net value obtained identifies the SAMA more clearly as being not cost-beneficial.

Question 3: "Provide additional justification (including deterministic/engineering rationale) as to why this modification should not be implemented."

Response: The original analysis utilized optimistic PSA assumptions that assumed that the suppression pool jockey pump would provide a totally independent means of supplying reactor vessel injection following venting or containment failure. The cost associated with installing a totally independent system capable of injecting saturated water from the suppression pool would be much higher than the \$240K per unit referenced in the original submittal. Additionally, as described in the response to Question 2 above, the more realistic PSA analysis that assumes that one of the existing

4 kV buses could be utilized to power such a system showed that the averted cost-risk is not as great, and that the negative net value of greater than \$300K identifies the SAMA more clearly as being not cost-beneficial. Even then, conservatisms still exist in the assignment of the results to the APBs in these scenarios in estimating the averted cost-risk, and it is highly doubtful that the installation of the jockey pumps could occur at an existing facility for the \$240K per unit used in the analysis.

Enclosure 4

Licensee fax to the NRC staff of three replacement
pages for the Environmental Report

ExelonSM

Nuclear

200 Exelon Way, KSA-1-N
Kennett Square, PA 19348
Fax No. (610) 765-~~5640~~

5640

FAX

Date:

4/12/02

To:

Duke Wheeler
301. 415. 3061

cc:

From:

Bill Maher

Subject:

#/Pages:

4

Attached you will find pages that should be replaced in the ER.
The pages to be replaced are E.7-25, E.7-32, and E.7-34.

This communication and any of its attachments may contain Exelon propriety information which is privileged, confidential or subject to copyright belonging to the Exelon family of companies. This communication is intended solely for the use of the individual or entity to which it is addressed. If you are not the intended recipient of this communication, you are hereby notified that any dissemination, distribution, copying or action taken in relation to the contents of and attachments to this communication is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately and permanently delete the original and any copy of this communication. Thank you.

Appendix E – Environmental Report
Section 7.2 Alternatives That Meet System Generating Needs

7.2.2.2 GAS-FIRED GENERATION

NRC evaluated environmental impacts from gas-fired generation alternatives in the GEIS, focusing on combined-cycle plants. Section 7.2.1.1 presents Exelon's reasons for defining the gas-fired generation alternative as a combined-cycle plant on the PBAPS site. Land-use impacts from gas-fired units would be less than those from the coal-fired alternative at a hypothetical site. Reduced land requirements, due to construction on the existing site and a smaller facility footprint, would reduce impacts to ecological, aesthetic, and cultural resources as well. A smaller workforce could have adverse socioeconomic impacts. Human health concerns associated with air emissions, and aquatic biota losses due to cooling water withdrawals and discharges would be of concern.

The NRC has evaluated the environmental impacts of constructing and operating four 440-MW combined-cycle gas-fired units as an alternative to a nuclear power plant license renewal (Ref. 7.2-7). This analysis is for a slightly smaller generating capacity than the PBAPS gas-fired alternatives analysis, because Exelon would install four 508-MW units. Exelon has adopted the rest of the NRC analysis with necessary Pennsylvania- and Exelon-specific modifications noted.

Air Quality

Natural gas is a relatively clean-burning fossil fuel and the gas-fired alternative would release similar types of emissions, but in lesser quantities, than the coal-fired alternative. Control technology for gas-fired turbines focuses on nitrogen oxides emissions. Exelon estimates the gas-fired alternative emissions (four units, each with twin 175-MW combustion turbines) to be as follows:

- Sulfur oxides = 123 tons per year
- Nitrogen oxides = 462 tons per year
- Carbon monoxide = 607 tons per year

Particulates = 69 tons per year (all particulates are PM₁₀)

Table 7-4 shows how Exelon calculated these emissions.

The Section 7.2.2.1 discussion of regional air quality and Clean Air Act requirements is also applicable to the gas-fired generation alternative. Nitrogen oxides effects on ozone levels, sulfur dioxide allowances, and nitrogen oxides

**Appendix E – Environmental Report
Section 7 Tables**

**TABLE 7-2
GAS-FIRED ALTERNATIVE**

Characteristic	Basis
Unit size = 508 MW ISO rating net: ¹ Two 168-MW combustion turbines and a 172-MW heat recovery boiler	Manufacturer's standard-size gas-fired combined-cycle plant
Unit size = 528 MW ISO rating gross: ¹ Two 175-MW combustion turbines 179-MW heat recovery boiler	Calculated based on 4 percent onsite power
Number of units = 4	Calculated to be ≤ PBAPS Units 2 and 3 gross capacity of approximately 2,320 MW
Fuel type = natural gas	Assumed
Fuel heating value = 1,035 Btu/ft ³	Exelon experience
Fuel sulfur content = 0.0034 lb/MMBtu	Used when sulfur content is not available (Ref. 7.2-16, Table 3.1-2a)
NO _x control = selective catalytic reduction (SCR) with overfire air	Best available for minimizing NO _x emissions (Ref. 7.2-16, Table 3.1-2, pg. 3.1-8)
Fuel NO _x content = 0.0128 lb/MMBtu	Typical for large SCR-controlled gas-fired units (Ref. 7.2-16, Table 3-1, database)
Fuel CO content = 0.0168 lb/MMBtu	Typical for large SCR-controlled gas-fired (Ref. 7.2-16, Table 3-1, database)
Fuel particulate content = 0.0019 lb/MMBtu	Typical for stationary gas turbines (Ref. 7.2-16, Table 3.1-2a)
Heat rate = 6,928 Btu/Kwh	ISO value for manufacturer's standard-size gas-fired combined-cycle plant (Ref. 7.2-14)
Capacity factor = 0.85	Typical for large gas-fired base load units

¹The difference between "net" and "gross" is electricity consumed onsite.

Btu = British thermal unit

ft³ = cubic foot

ISO rating = International Standards Organization rating at standard atmospheric conditions of 59°F, 60 percent relative humidity, and 14.696 pounds of atmospheric pressure per square inch

Kwh = kilowatt hour

MM = million

MW = megawatt

NO_x = nitrogen oxides

**Appendix E – Environmental Report
Section 7 Tables**

**TABLE 7-4
AIR EMISSIONS FROM GAS-FIRED ALTERNATIVE**

Parameter	Calculation	Result
Annual gas consumption	$4 \text{ units} \times \frac{350 \text{ MW}}{\text{unit}} \times \frac{6,928 \text{ Btu}}{\text{kW} \times \text{hr}} \times \frac{1,000 \text{ kW}}{\text{MW}} \times 0.85 \times \frac{\text{ft}^3}{1,035 \text{ Btu}} \times \frac{24 \text{ hr}}{\text{day}} \times \frac{365 \text{ day}}{\text{yr}}$	69,790,772,162 ft ³ per year
Annual Btu input	$\frac{69,790,772,162 \text{ ft}^3}{\text{yr}} \times \frac{1,035 \text{ Btu}}{\text{ft}^3} \times \frac{\text{MMBtu}}{10^6 \text{ Btu}}$	72,233,449 MMBtu per year
SO _x ^a	$\frac{0.0034 \text{ lb}}{\text{MMBtu}} \times \frac{\text{ton}}{2,000 \text{ lb}} \times \frac{72,233,449 \text{ MMBtu}}{\text{yr}}$	123 tons SO _x per year
NO _x ^b	$\frac{0.0128 \text{ lb}}{\text{MMBtu}} \times \frac{\text{ton}}{2,000 \text{ lb}} \times \frac{72,233,449 \text{ MMBtu}}{\text{yr}}$	462 tons NO _x per year
CO ^b	$\frac{0.0168 \text{ lb}}{\text{MMBtu}} \times \frac{\text{ton}}{2,000 \text{ lb}} \times \frac{72,233,449 \text{ MMBtu}}{\text{yr}}$	607 tons CO per year
TSP ^a	$\frac{0.0019 \text{ lb}}{\text{MMBtu}} \times \frac{\text{ton}}{2,000 \text{ lb}} \times \frac{72,233,449 \text{ MMBtu}}{\text{yr}}$	69 tons filterable TSP per year
PM ₁₀ ^a	$\frac{69 \text{ tons TSP}}{\text{yr}}$	69 tons filterable PM ₁₀ per year

a. Ref. 7.2-13, Table 3.1-1.

b. Ref. 7.2-13, Table 3.1-2.

CO = carbon monoxide

NO_x = oxides of nitrogen

PM₁₀ = particulates having diameter less than 10 microns

SO_x = sulfur oxides

TSP = total suspended particulates

Enclosure 5

U.S. Fish and Wildlife Service letter to the NRC staff
concurring in NRC staff conclusions regarding
threatened and endangered species



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850



April 17, 2002

Duke Wheeler
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

Dear Mr. Wheeler:

This responds to your letter of March 13, 2002, requesting our review of the Peach Bottom Atomic Power Station, Units 2 and 3, license renewal - "No Effect" and "Not Likely to Adversely Affect" determinations, located in York County, Pennsylvania. The Power Station is located within the range of two federally listed species, the threatened bald eagle (*Haliaeetus leucocephalus*) and bog turtle (*Clemmys muhlenbergii*). The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species.

Bald Eagle

Bald eagles typically occur in the vicinity of aquatic ecosystems; they frequent lakes, reservoirs, large rivers (e.g., Delaware River, Juniata River, Susquehanna River), and wetland systems. Their nests are usually built in large trees within two miles of these features. Because eagles are vulnerable to human disturbance, particularly during the nesting season, nests are often located in relatively remote forested areas.

The Fish and Wildlife Service proposed to remove the bald eagle from the federal *List of Endangered and Threatened Wildlife* on July 6, 1999 (*Federal Register*, Vol. 64, No. 128), but final action on that proposal has not been taken. The bald eagle, therefore, continues to be listed under the Endangered Species Act. Any changes in the regulatory status of the bald eagle can be monitored by accessing the Service's web site (www.fws.gov).

The bald eagle population in Pennsylvania has increased substantially from the three nest sites found in the State from 1963 through 1980. In 2001, 53 eagle nests were documented. Because bald eagles are continuing to recover and expand their breeding range in Pennsylvania, new eagle nests may be found in previously undocumented locations.

The Pennsylvania Game Commission has determined that the project is in the vicinity of 10 eagle nests on the Lower Susquehanna. In Pennsylvania, the closest nest site is located three miles upstream. Downstream of the project (Maryland), the closest eagle nest is approximately two miles away. Because of the distance between the project and the known eagle nests, continued

operation of the power plant is not likely to adversely affect the bald eagle.

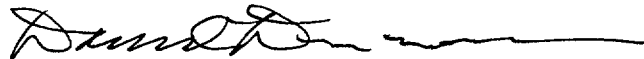
Bog Turtle

A Phase I Bog Turtle Habitat Survey was conducted by Tetra Tech in 2000. According to the report, no wetlands are located at the power plant site. However, the transmission corridor traverses several streams and wetlands. Four of the five streams were incised channels with rocky substrates. The fifth stream crossing had a small, adjacent wetland. However, hydrology adequate to support bog turtles is not present in this wetland. Therefore, based on our review of this information, we conclude that the proposed project will have no permanent or temporary impacts on palustrine wetland habitat that could be occupied by bog turtles.

If this project is implemented as proposed, we concur that renewal of the license of the Peach Bottom Power Station will not effect the bog turtle or its habitat, and is not likely to adversely affect the bald eagle. This response relates only to endangered or threatened species under our jurisdiction, based on an office review of the proposed project's location. No field inspection of the project has been conducted by this office. Consequently, this letter is not to be construed as addressing potential Service concerns under the Fish and Wildlife Coordination Act or other authorities.

If we can be of further assistance, please contact Bonnie Dershem of my staff at 814-234-4090.

Sincerely,

A handwritten signature in black ink, appearing to read "David Densmore", followed by a long horizontal flourish.

David Densmore
Supervisor