

## Doyle, Daniel

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**From:** Doyle, Daniel  
**Sent:** Thursday, January 20, 2011 2:12 PM  
**To:** Perkins, Leslie  
**Subject:** Salem/Hope Creek DSEIS comments - Dan  
**Attachments:** Salem Hope Creek DSEIS Comments did.docx; License Renewal - Salem - Hope Creek - EPA + NJ comment response.docx

**Categories:** Salem Hope Creek

Leslie,

This is what I have for the Salem/Hope Creek comments. I made edits using the track changes feature from the file you sent me. Let's talk again about how we are going to split up what still needs to be done to finish all the comments.

The other file includes a response from Steve Klementowicz's to EPA that I did not insert. I inserted his other comments and I also inserted Ray Gallucci's comments.

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D-2006

Commenter ID	Commenter Name	Affiliation (If Stated)	Comment Source
SHC-A	Jane Nogaki	New Jersey Environmental Federation	Afternoon Meeting
SHC-B	Julie Acton	Salem County Freeholder	Afternoon Meeting
SHC-C	Dr. Peter Contini	Salem Community College	Afternoon Meeting
SHC-D	Otis Sistrunk	Citizen	Afternoon Meeting
SHC-E	Carlos Parada	PSEG Nuclear, LLC	Afternoon Meeting
SHC-F	Elizabeth Brown	Delaware Riverkeeper Network	Afternoon Meeting, Written
SHC-G	Benjamin Wharton	Delaware Riverkeeper Network	Afternoon Meeting
SHC-H	Christina Matteliano	Delaware Riverkeeper Network	Afternoon Meeting
SHC-I	Jane Charles-Voltaire	Delaware Riverkeeper Network	Afternoon Meeting
SHC-J	Janson Hernandez	Delaware Riverkeeper Network	Afternoon Meeting
SHC-K	Charles Hassler	IBEW Local 94	Afternoon Meeting
SHC-L	Chris Davenport	Stand Up For Salem	Afternoon Meeting
SHC-M	Bob Molzahn	Water Resource Association	Afternoon Meeting
SHC-N	Paul Davison	PSEG Nuclear LLC	Afternoon and Evening Meetings
SHC-O	Dr. Richard Horwitz	Academy of Natural Sciences	Afternoon Meeting
SHC-P	Louis Joyce	County of Salem	Evening Meeting
SHC-Q	Michael Burk	Salem County Improvement Authority	Evening Meeting
SHC-R	Mike De Luca	Rutgers University	Evening Meeting
SHC-S	Andrew Hak	PSEG Nuclear LLC	Evening Meeting
SHC-T	Tom Knoche	Not stated	Evening Meeting
SHC-U	Richard Schneider	Coalition to Protect Fisheries Protection	Evening Meeting, Written
SHC-V	Marv Lewis	Not stated	Email
SHC-W	Scott Brubaker	New Jersey Department of Environmental	Written

Commenter ID	Commenter Name	Affiliation (If Stated)	Comment Source
SHC-X	Robert Braun	PSEG Nuclear LLC	Written

### 1. Comments Concerning License Renewal and its Process

**Comment SHC-F-5:** DRN objects to having been given less than 60 days to comment on this complex document, in particular in the midst of the holiday season. It is unreasonable that public review of the DSEIS should be forced into a compressed time window and it is unclear why NRC has taken this approach.

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**Response:** *The U.S. Nuclear Regulatory Commission (NRC) established the time period for comments on the scope of the environmental review for license renewal to balance the Commission's goal of ensuring openness in the regulatory processes with its goal of ensuring that the NRC's actions are effective, efficient, realistic, and timely. The request did not provide a sufficient basis for an extension to the established comment period. The comment will not be evaluated further.*

**Comment SHC-F-6:** NRC Staff uses a 1996 License Renewal Generic Environmental Impact Statement, NUREG-1437 ("GEIS"). However, the GEIS is inadequate because it is more than 10 years old. The National Environmental Policy Act ("NEPA") requires that federal agencies take a "hard look" at the environmental impacts of a proposed action. This includes assessing "significant new circumstances or information relevant to the environmental concerns that bear on the proposed action or its impacts." To facilitate this process, NEPA requires a GEIS to be updated every 10 years. 10 C.F.R. Part 51, Subpart A, Appendix B. Moreover, evidence exists of material changes affecting the baseline environment since the GEIS was written, including heightened risks of terrorism, the failure of a permanent nuclear waste disposal solution, changes in population density, and progress in the viability of renewable energy technologies. Accordingly, the GEIS is no longer adequate to dispose of such issues, and they must be specifically assessed in the environmental review process for Salem and Hope Creek.

**Response:** *The commenter argues that the GEIS is outdated and should not be used as a basis for this assessment. The NRC staff believes that the current process assures that any new information that comes to light will be used to make the final assessment of the environmental impacts of the proposed action. The GEIS is currently being revised. A draft version of the revised GEIS was issued in July 2009 and the final version is in progress. More information about the GEIS update is available at the following website:*  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/r1/v1/index.html>.

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### 2. Comments in Support of License Renewal, PSEG, and Nuclear Power

SHC-B, SHC-C, SHC-D, SHC-E, SHC-K, SHC-L, SHC-M, SHC-N, SHC-O, SHC-P, SHC-Q, SHC-R, SHC-S, SHC-Y

**Response:** *The comments are supportive of license renewal at Salem Nuclear Generating Station and Hope Creek Generating Station and are general in nature. The comments provide no new and significant information; therefore, the comments will not be evaluated further.*

### 3. Comments Concerning Terrestrial Resources

**Comment SHC-A-1:** My name is Jane Nogaki, from New Jersey Environmental Federation. And I'm looking at the cumulative impacts slide that talks about preliminary findings being small to large for cumulative impacts and socio-economics small to moderate cumulative impacts on aquatic resources, and moderate cumulative impacts on terrestrial resources, small impacts on all other areas.

What made the determination that moderate impacts would happen on terrestrial resources, and what terrestrial resources were you talking about, animals, humans, do you want to answer that?

**Comment SHC-A-12:** Also there was a section, in section 4 on -- although the executive here says that there are no environmental impacts, adverse impacts from emissions from the plant, that there are no green house gases emitted, there is low levels of radioactive effluents emitted to the air and water. Low levels.

These effluents are considered small. Again, radioactivity isn't something that disappears by itself. And I'm concerned that over a cumulative period of time, that these air emissions, and effluents going into the river, could build up, and begin to build up a residual in the plant life, the fish populations, the sediments of the river.

### 4. Comments Concerning Aquatic Resources

**Comment SHC-A-10:** And a lot of the problems, and issues that I brought up in my testimony on May 3rd, including sea level rise, climate change, tritium in groundwater, radioactive releases to the atmosphere.

A lot of those issues have been discussed in the Environmental Impact Statement, but dismissed as being small. Small, okay? And, yet, in the Environmental Impact Statement it says that the water withdrawal from the combined two nuclear stations, and Hope Creek, is combined to the total withdrawal of all other industrial, power, and public water uses in the Delaware estuary, in Delaware, New Jersey, and Pennsylvania.

These plants are this single largest user of water in the river system, in three states. Again, their combined use of water exceeds all other industrial uses combined.

And I just don't think that that impact can be called small. If that is not large, I don't know what large is. How large does it have to be to be considered a large impact?

The comparison in millions of gallons, between Hope Creek and Salem 1 and 2, is orders of magnitude. The numbers are so large that I would have to write them on the board, and I might do that, because I can't even -- you know, is it trillions of billions? I'm not sure.

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**Response:** *(This comment was binned with groundwater but its really an aquatic comment. Check with aquatic review. Why is the impact of the largest water user classified as SMALL?)*

**Comment SHC-F-1:** Today we will focus on Delaware Riverkeeper Network's concern about the relicensing of the Salem facility, due to continued detrimental environmental effects that the facility's cooling water intake structures have on the aquatic life in the Delaware River.

While we recognize that the New Jersey Department of Environmental Protection has permitting authority over Clean Water Act, Section 316-B, the Nuclear Regulatory Commission should be aware of the regulatory landscape in this area.

A closed-loop cooling system, at the Salem Nuclear facility would circulate a similar total volume of water, as once-through cooling, but would only withdraw a limited amount of water to replace evaporative loss and blowdown. Section 316-B, of the Clean Water Act, requires that the location, design, construction, and capacity of cooling water intake structure, reflect the best technology available for minimizing adverse environmental impacts. Adverse environmental impacts are interpreted, by EPA, to mean the impingement, mortality of fish, and shell fish, and their entrainment of their eggs and larvae.

EPA implemented three rulemaking phases for 316-B. The phase one rule was promulgated in 2001, and covered new facilities. The phase two rule was promulgated in 2004, and covered large existing facilities. And the phase 3 rule, in 2006, covered certain existing facilities, and offshore oil and gas.

Extensive litigation followed the promulgation of the phase two rule. Following a decision, in *Riverkeeper v EPA*, out of the Second Circuit, EPA suspended the cooling water intake structure regulations for existing large power plants. Of course, the Second Circuit decision was challenged to the Supreme Court in 2009. However, the Second Circuit Decision held, in part, that the use of restoration measures, as a means of compliance, is not authorized under 316-B of the Clean Water Act, a decision which was not disturbed by the subsequent Supreme Court opinion.

EPA is now looking to combine, and re-promulgate rules for all existing cooling water intake structure facilities. In the meantime EPA noting that, with so many provisions of the phase 2 rule affected by the Second Circuit decision, the rule should be considered suspended.

And it developed the following policy. All permits for phase 2 facility should include conditions, under Section 316-B, of the Clean Water Act, developed on the best professional judgement basis.

As noted, the phase 2 rule was appealed to the Supreme Court. In 2009 the High Court held that the Agency may consider cost benefit analysis in choosing among regulatory options. But it did not hold that the Agency must consider it. According to certain industry predictions, EPA has signal concerns with using a cost benefit analysis.

EPA's new rulemaking is expected to set significant new national technology-based performance standards to minimize adverse environmental impacts. Current industry predictions

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expect EPA to favor performance commensurate with cooling towers. This regulatory process, combined for phases 2 and 3, is anticipated quite soon. A revised draft rule is expected by February 2011, and a final rule by July of 2012.

It is imperative that any relicensing effort, at Salem, must take these recent developments, and any subsequently promulgated rules, into account. The two major aspects of the 316-B regulatory framework that concern the Delaware Riverkeeper Network at Salem the use of once-through cooling, and the use of restoration measures at the site.

**Comment SHC-G-1:** My name is Benjamin Wharton, and I will address once-through cooling impacts. The 1994 and 2001 NJPDES permits, for Salem, determined BTA to continue to be once-through cooling based on, one, the reduction of permitted intake flow of Salem to its maximum actual operating capacity.

Two, intake screen modifications, and three, a feasibility study for a sound deterrent system. Yet the Salem Nuclear Generating Station kills over three billion fish in the Delaware River every year, taking a huge toll on the living resources of the Delaware River. But in seeking to argue that its adverse environmental impacts are limited, the plant has, consistently, underestimated these numbers by two-fold or more.

The idea that three billion fish, killed per year, is not great enough adverse environmental impact to affect the license renewal process, is simply untenable and absurd.

**Comment SHC-H-1:** My name is Cristina Matteliano, and I will be addressing why closed cycle cooling should be adopted. While the EPA declined to mandate closed cooling systems, it did set national performance standards, which require a nuclear plant to reduce its fish kills by 80 to 95 percent over the baseline. And those are found on the Code of Federal Regulations.

Section 316-B of the Clean Water Act requires that cooling water intake structures utilize the best technology available for minimizing adverse environmental impact. While making the decision on whether to implement cooling technology, in a nuclear plant, cost benefit analysis is permissible. However, that cost benefit analysis must be made based on reliable data.

PSEG has overextended the data used in this analysis. It has grossly underestimated the actual total loss of biomass in the Delaware River fisheries.

Due the conversion of the cooling system to the best technology available, as required by the Clean Water Act, the Salem facility could reduce its fish kills to 95 percent, by converting to closed cycle cooling towers, or to 99 percent, if using a dry cooling system.

PSEG has not shown that the cost of installing a closed cycle cooling system outweigh the benefits. The cost of a closed cooling system is estimated at 13 dollars a year per rate payer.

This is offset by the millions, even billions of fish which could be saved as a result of a closed cooling system. The resulting benefits to the fishing industry will also offset the cost of the cooling system.

**Comments SHC-I-1 and SHC-F-11:**In an effort to mitigate its impact, in 1996, NJDP issued an NJD permit, with special conditions, including a wetland restoration and enhancement program, fish ladder project, and biological monitoring program.

PSEG is required to engage in the wetlands initiative until 2012, in New Jersey, and 2013 for Delaware wetlands. The purpose of the restoration program was to enhance the production of fish, in the estuary, in an effort to offset losses of fish associated with entrainment and impingement at the cooling water intake structure. In other words, to mitigate the harms caused by once-through cooling.

However, PSEG's wetlands restoration experiment, fails to meet the requirements of the Clean Water Act. The experiment has resulted in over 22,000 pounds of herbicide to be dumped over valuable wetland resources. PSEG has failed to demonstrate that this experiment provides any environmental benefit.

The fact remains that there has been no demonstrated increase in abundance, values, represented as important fish species. And, importantly, PSEG has not shown that the wetlands will sustain themselves once the herbicide treatment has ended. This mitigation project is a clear failure, and in no way offsets the millions, the costs of millions of fish lost each year as a result of PSEG's failure to install a closed cooling system.

DRN commissioned a 2003 study that reviewed and evaluated the effectiveness of the wetland restoration project, in increasing fish production, based on the success of the established plant community, plant densities, invasion by phragmites, and other invasive species, utilization of marshes by fish, and the potential for the marshes to increase fish populations in the estuary.

With regard to wetlands restoration efforts, the DRN study concluded that although some phragmites reductions were achieved, the sustainability of that reduction was dependent on annual herbicide treatment, and the true success of the program could not be determined until herbicide treatment, and marsh manipulation efforts, such as burning, were discontinued.

With regard to fish response, the study did not support the assertion that phragmites eradication was resulting in an increased utilization of the site, and increased fish production.

**Comments SHC-J-1 and SHC-F-12:**

For 20 years PSEG has claimed that the exorbitant cost of conversion make a closed cycle cooling system an untenable option. The New Jersey DEPA has accordingly allowed PSEG to rely on mitigation practices, in order to counter the negative effects of the continued operation of their cooling system, on fish. Since 1993, the DRN has addressed several concerns with the mitigation practices proposed by PSEG, including real data showing that the restoration plans are simply not working.

Whereas the 2009 Supreme Court Decision in Entergy Corp. v Riverkeeper, Inc., held that the cost benefit analysis was an appropriate measure in determining the best available technology for cooling methods, it has not overturned the previous 2007 decision, in which it determined

that after the fact restoration measures are not appropriate for addressing the environmental impacts highlighted by Section 316-B.

This means that going forward the failed restoration measures at Salem should not count as valid means of minimizing adverse environmental impacts.

**Comment SHC-F-2:** it is clear that under the Clean Water Act, the location, design, construction, and capacity of cooling water intake structures must reflect the best technology available for minimizing adverse environmental impacts.

In order to properly address the extreme and negative effects that the continued use of the cooling system has on aquatic life, within the area, Delaware Riverkeeper Network believes that the relicensing of the Salem Nuclear facility must require a conversion to closed cycle cooling systems, and should end the practice of so-called mitigation to changes necessary to comply with the Clean Water Act.

**Comment SHC-A-7:** Salem 1 and 2 are also huge consumers of water, for cooling, as well as Delaware Riverkeeper recently attested to, in their testimony, killing three billion fish a year through entrainment and impingement.

I read the Draft Supplemental Environmental Impact Statement, according to their own permit renewal application, it states that one-sixth of the production of the Delaware River is being lost to impingement and entrainment in the facility.

And, furthermore, the application states that between 2000 and 2006, the fish loss from impingement and entrainment were 2.4 million alewives, 87 million croaker, two thousand million bay anchovies, 14 million striped bass, 32 million weak fish, and that is just a partial list.

At the same time PSEG stated that increased production of fish, from restored salt hay farms, is estimated at 2.3 times the annual production lost from impingement and entrainment at Salem.

PSEG did not evaluate the fish populations at the phragmites sites. Although I'm not a scientist, I find it hard to believe that restoration mitigates the fish loss.

But even if it did, it does not make up for the years of damage done to the ecosystem before the salt hay farms were restored to Wetlands, nor does it offset the continuing loss of fish, on a daily basis, from the once-through cooling system.

**Comment SHC-A-8:** As part of the Stop the Salem Fish Slaughter, and Unplug Salem Coalition, the New Jersey Environmental Federation has called on PSEG to install cooling towers, at Salem 1 and 2, to reduce the fish loss and protect the estuary, the Delaware River.

If PSEG is not willing to spend the money to install cooling towers, and protect the fisheries and estuary of the Delaware River, when cooling towers would obviously provide the best technology available to protect the ecosystem, how are we to trust that they will maintain their plants for the next 20 years using the safest methods, using the best available technology.

**Comment SHC-U-1:** I'm with the Coalition to Protect Fisheries. We feel that Salem 1 and 2 should not be permitted to operate for another 20 years, because of many areas of concern.

If, however, it is allowed to, by the NRC, to operate for another 20 years, the needless and senseless destruction of aquatic life, millions of dead fish and crabs every year, must not be allowed to continue.

There are several aspects that are troubling. First, the Salem 1 and 2 units are over 40 years old. The projected life of these nuclear plants was designed for 40 years. To extend the operation of these old plants is very risky.

**Comment SHC-U-3:** If the NRC allows Salem 1 and 2 to operate, for another 20 years, the massive fish kill caused by Salem 1 and 2, needs to be stopped, as part of a permit renewal.

The outdated, destructive, open loop cooling system used at Salem 1 and 2, needs to be changed to a non-destructive closed loop cooling system, a cooling tower, the same as used at Hope Creek.

**Comment SHC-U-4:** To allow Salem 1 and 2 to kill billions of fish, every year, for another 20 years, is unacceptable, and unexcusable. Salem 1 and 2 draws in over three billion gallons of water a day. Three billion gallons of water a day, every day.

The EPA estimates that Salem 1 and 2 kills over 350 million age 1 equivalent fish every year. And age 1 is a standard of measuring the fish kill. It actually kills billions of little fish, also.

But they, for the statistics, they say that 5,000 little fish equals one age one-equivalent fish. But the statistics, and data, uses age one- equivalent fish as a standard that is common in the fish analysis industry.

This massive amount of fish are needlessly being destroyed. Salem 1 and 2 is, also, in violation of the Federal Clean Water Act, of the 1970s, which requires the best technology available to protect fisheries.

Salem 1 and 2 is not using the best technology, a closed loop system. Salem 1 and 2 is the largest destroyer of aquatic life on the Delaware River. It has, and is still, destroying the fishing industry along the Delaware River. To say that Salem 1 and 2 is having no negative effect on the Delaware River fishery is absurd, and outrageous.

I'd like to present, as evidence, a Wilmington News Journal Article, dated January 14th, 2007, titled, "Cooling Systems Ravage River", subtitled "Big Industrial Sites on the Delaware Kill Tens of Billions of Fish in Crabs Each Year".

It is an excellent article about the fish kill along the Delaware River. The EPA estimate of 350 age one-equivalent fish kill by Salem 1 and 2, every year, is shown in this article. The facts show the destruction Salem is causing.

**Comment SHC-U-5:** The NRC needs to know that weakfish are so few in numbers, now in the Delaware River, that the fishing regulation is you can only legally catch one weakfish a day, recreationally, fishing.

So the fisherman goes out, on his boat, is only allowed to keep one weakfish, and that is it. All that effort, trying to go fishing recreationally, and that is all he can keep. The weakfish are low.

I'd also like to present, as evidence, a fish kill report by Dr. Desmond Kahn, of the Delaware Department of Environmental Control, DENREC, on the fish kill damage to the weakfish, and stripers, in the Delaware River caused by Salem 1 and 2.

This is an excellent in-depth report. The report states that Salem 1 and 2 killed more weakfish in one year, than what was caught commercially, and recreationally, in Delaware, in the same year.

**Comment SHC-U-6:** Salem 1 and 2 has destroyed, and is continuing to destroy the fishing industry. It is not right that Salem continues to needlessly destroy the fishing industry, while commercial and recreational fishermen suffer.

The water intake issue, the fish kill issue, is relegated to be a state permit decision. The federal rules say that the state decides the water intake.

The Nuclear Regulatory Commission, as part of a permit renewal, considers environmental impacts. As part of an overall environmental review, the NRC comments on various aspects, the water intake fish kill being one part.

For the NRC to say that Salem 1 and 2 drawing in over three billion gallons of water a day, and killing over 350 million age one-equivalent fish every year, is causing little harm to the fishery, is totally wrong and unexcusable.

The NRC's environmental evaluation on the fish needs to state the truth and the facts. Salem 1 and 2 draws in over three billion gallons of water a day, Salem 1 and 2 kills 350 age one-equivalent fish every year.

Salem 1 and 2 is the largest destroyer of aquatic life in the Delaware River. Salem 1 and 2 has, and is, destroying the fishery and will continue to destroy the fishery for another 20 years, if the destructive open loop cooling systems are still used.

**Comments SHC-U-7:** The NRC needs to recommend that the non-destructive closed loop cooling system be used at Salem 1 and 2 to stop the fish kill, and protect the fisheries and the fishing industry.

The NRC needs to step up to the plate and do the right thing. We, the Coalition to Protect the Fisheries, are just trying to stop the needless and senseless destruction of the fisheries.

If you want to create jobs build the cooling towers, which would create hundreds of construction jobs. Also the fish that are no longer killed by Salem 1 and 2, will create hundreds of jobs in commercial and recreational fishing.

The fishing docks at Salem should be packed with fish, fishing boats, and there should be a fishing industry, like there used to be. That is the way Salem should be if you want to create jobs.

**Comment SHC-U-8:** Another part of my comments pertains to the actual Environmental Statement in the report, there. There are the sentences, and I want to go over, like, three of them that are part of the report, that I need -- that I feel need to be discussed. And I differ on my opinion, or my opinion differs from what was said.

The first sentence, in the statement, about the open loop cooling system, and the impact, is "This analysis found that in the vicinity of Salem and HGS, since 1978, when Salem began in operation, fin fish richness has not changed, and species densities has increased, PSEG 2006C". End of quote.

I disagree with that statement, strongly disagree with it. I would like to present, to the NRC, a report that states -- a fish kill report on another facility, but I was a study done, from the weakfish, from 1980 to 1990, the population declined 85 percent. In ten years it was 15 percent of the population that it used to be.

The fish have declined, the weak fish has declined. Also, the weakfish now are so low, that the regulations for weakfish, in the Delaware River, is you are only allowed to catch one fish, recreationally.

And now I would like to provide some information about that. And then also, too, in another fish kill report that I have read, and I will provide information. The stripers were so low, in the 1980s, that commercial stripe fishery industry was banned for five years, from 1985 to 1990.

For five years no commercial stripe fishing industry in the Delaware River. The commercial stripe fishermen were put out of business. But yet the nuclear plant continued to kill them needlessly.

So to say that the fish are doing great, and they have been for decades, is factually wrong. And I will provide this information. And just because PSEG cited it in a particular report, does not mean that it is correct. And I will provide this information on the fish kill, and the decline in the fish population.

**Comment SHC-U-9:** The second sentence, or the following sentence: "Operation of Salem, during relicensing period, likely would continue to contribute substantially to cumulative impacts on aquatic resources, in conjunction with HCGS, and other facilities, that withdraw water from, or discharge to the Delaware River".

This is a true statement. It will continue to cause harm to the fishery, because of all the water being withdrawn. And it is not just the Salem facility. There are dozens of them, all along the river, that draw in. Salem happens to be the one single biggest.

But you must consider the cumulative effect of all the facilities. So, you know, it wouldn't be so bad if you only had one facility that took a little bit of water, but you have many, and Salem is the biggest. So that statement is true.

**Comment SHC-U-10:** The next sentence, "However, given long-term improvements in the estuarine community, during the recent decades while these facilities were operating, NRC expects cumulative impacts expected to be limited, with effects on individual species populations, potentially ranging from negligible, to noticeable."

Well, the first part is wrong, because the fish populations have declined. And the last part is just saying, well, there is the fish kill, but it is okay, don't worry about it, you know?

It is not okay, they are destroying the fisheries. And this is the statement, and the sentences that I want to critique. And, specifically, I find incorrect.

So for the NRC to conclude that, oh, it is okay, it is wrong, it is not okay. And I will provide the data and the information that I was talking about, previously.

The moral code we should live by is, if something is causing harm, it should be stopped. The open loop cooling system is causing great harm to the fisheries, and should be stopped.

Salem knows they are causing great harm. Why do they continue to destroy the fishery?

**Comment SHC-F-3:** DRN's review of the DSEIS reveals glaring deficiencies which undermine the NRC's conclusion that the environmental impacts of Salem and Hope Creek's operations are not severe enough to preclude renewing its operating license. DRN absolutely disagrees with this determination, and submits that if the NRC Staff had performed the proper assessments, they would have reached the opposite conclusion, in particular with regard to impacts on aquatic resources. DRN urges the NRC Staff to fully consider and address our comments prior to issuing the Final SEIS for License Renewal of Salem. DRN would like to reaffirm its longstanding position to convert Salem to closed cycle cooling as mandated by Section 316(b) of the Clean Water Act. The Act states that generating plants such as Salem "shall be required that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact."

**Comment SHC-F-4:** The NRC DSEIS does not call for compliance with the Clean Water Act as it relates to best technology available, and even fails to acknowledge the significant environmental impact occurring in the absence of this technology. Every year the Salem Nuclear Generating Station kills over 3 billion Delaware River fish including:

- Over 59 million Blueback Herring
- Over 77 million Weakfish
- Over 134 million Atlantic Croaker
- Over 412 million White Perch
- Over 448 million Striped Bass
- Over 2 billion Bay Anchovy

The Salem facility is already clearly having a significant environmental impact on the Estuary, and another twenty years of this destruction will lead to further significant impacts.

**Comment SHC-F-7:** The DSEIS concludes that "impacts to fish and shellfish from the collective effects of entrainment, impingement and heat shock at Salem during the renewal term would be SMALL." DSEIS 4-46. This is completely unsupportable position. As a starting point, NMFS has gone on record that:

Evidence suggests that northeast coast estuaries have lost much of their rich former fishery productivity because of habitat degradation or loss, but lack of absolute species abundance data for early historical periods prior to significant human disturbances makes this conclusion somewhat inferential. Yet the linkage is supported by strong evidence, particularly that stock sizes for most estuarine dependent fishery resources under the jurisdiction of the Atlantic States Marine Fisheries Commission, New England or Mid-Atlantic Management Councils, or the states of New York and New Jersey fishery management agencies, are not currently over fished, but fall below historic levels (NEFMC 1998; ASMFC 2005). This observation suggests that the Hudson River's ability to support and produce living aquatic organisms has been compromised over the years by lost habitat quality and quantity as humans have dredged, filled, and withdrawn river water for a myriad of uses, resulting in conflicts of use with fishery resources.

Oct. 12, 2010 Letter from NMFS (Colosi) to NRC at 3-4. The DSEIS relies heavily on industry provided data to evaluate effects of impingement and entrainment. However, the DSEIS concedes that its analysis is flawed, "due to the differences in methods used during the more than 30 years since Salem Unit 1 began commercial operation in 1978, it is difficult to compare impingement estimates across studies." DSEIS at 4-28. Additionally, study results reported in the GEIS are decades old, with the most recent information collected in 1990. This was identified as a concern by NMFS in a 2010 letter to NRC regarding another facility in the Northeast, noting, "This concerns us on two counts: 1) the data may not accurately depict contemporary habitat usage of the [mid-Hudson region] by fishes, invertebrates, and other aquatic life, and 2) the project proponents have not evaluated the effectiveness of adaptive measures that have been implemented since the original [agreement] was put into place."

**Comment SHC-F-8:** The Draft SEIS fails to consider EPA's 2004 report entitled "Regional Analysis Document for the Final Section 316(b) Phase II Existing Facilities Rule." The report detailed EPA's section 316(b) Phase II benefits analysis and study results. This critical information is missing from the NRC analysis and provides evidence and data challenging the DSEIS's finding that "the Staff concludes that impacts to fish and shellfish from the collective effects of entrainment, impingement and heat shock at Salem during the renewal term would be SMALL." DSEIS 4-46.

EPA itself has acknowledged significant impacts from once-through cooling. EPA has determined that operation of industrial scale cooling water intakes results in a wide spectrum of undesirable and unacceptable adverse effects on aquatic resources including entrainment and impingement; disrupting the food chain; and losses to aquatic populations that may result in reductions in biological diversity or other undesirable effects on ecosystem structure or function. See, 66 Federal Register 65,256, 65,292 (December 18, 2001), 69 Federal Register 41,576, 41,586 (July 9, 2004); NMFS letter at 4.

Expert federal agency NMFS has also explicitly identified significant impacts from intake structures that are ignored in the DSEIS for Salem.

According to NMFS' assessment of the DSEIS for another Northeastern facility:

The intake impacts for once-through cooling systems largely surround physical habitat loss associated with construction of the intakes themselves as well as the inability of aquatic species from being successfully able to use habitat within the volumes of water withdrawn from the source supply. These impacts may include changing particular ecological features such as local hydrological patterns as suggested in the foregoing section, but the preponderance of the impacts usually are associated with organism impingement and entrainment. Impingement impacts tend to accrue to larger species and life stages that cannot pass through the impingement screens nor avoid the intake current, but become trapped on cooling water screens and sometimes cannot escape before suffering exhaustion, injury or even mortality.

...

Unlike impingement impacts, which tend to exhibit some selective characteristics in that they largely accrue to larger taxonomic or more mature life stages, entrainment of organisms into the cooling water source stream are relatively indiscriminate and may adversely affect any organism that fits through the screens and cannot counter the suction force of the intake. While the review material indicates that the IP2 and IP3 cooling systems have been retrofitted with dual-speed and variable-flow pumps in order that intake flows can be regulated to some degree to provide some level of mitigation or protection, we note that the dGEIS also indicates that using planned seasonal outages or maximum pump speeds does not eliminate the losses of fishes and other organisms to entrainment.

Regarding these collective intake impact matters, NMFS disagrees with the NRCs approach to presenting and analyzing the impingement and entrainment data. We particularly dispute the NRCs decision to attempt correlating overall population level trends with operation of the Indian Point nuclear generating facilities.

First of all, analyzing the data over the entire range of a species instead of a more meaningful population segment does not follow the spirit of the National Environmental Policy Act nor the implementing regulations for EFH in the MSA because it ignores real and obvious impacts that could adversely affect a local stock.

It is rare for the preponderance of a particular species to be extirpated unless it already is endangered or threatened, but it certainly is quite plausible that a more local segment of an otherwise healthy population could be effectively decimated in an acute event or after years of suffering chronic or cumulative impacts. Thus, when considering the impacts of cooling water withdrawal on more local stock contributions emanating from the Hudson River and potentially recruiting to a greatly dispersed coastal fishery, the effects of cooling withdrawal even from a limited portion of the total available habitat (as it is construed in the dGEIS) could be quite profound.

Finally, we are critical of this type of data transformation because it also has great potential for creating undesirable artifacts because it assumes all fishery habitats, regardless of their geographic location, size, and ecological condition, are equally valuable to the living resources that they support. The scientific literature is replete with studies that organisms do not use habitats uniformly over their ranges, and this observation is borne out in our own status and trends data that have been used to select closed areas or to make similar resource management decisions for certain federally managed fishery resources.

**Comment SHC-F-9:** Specific to this site, NJDEP reviewed PSEG data as part of its state permit application in 2006. NJDEP's expert (ESSA) found that PSEG's assertions were not credible and were not backed by the data and studies PSEG had presented. According to the ESSA report, PSEG "underestimated biomass lost from the ecosystem by perhaps greater than 2-fold." (ESSA report p. xi) And "... the actual total biomass of fish lost to the ecosystem ... is at least 2.2 times greater than that listed" by PSEG. (ESSA Report p. 75)

ESSA Technologies' 154 page review of PSEG's permit application documented ongoing problems with PSEG's assertions and findings including bias, misleading conclusions, data gaps, inaccuracies, and misrepresentations of their findings and damage. Some examples of ESSA's findings:

- With regards to fisheries data and population trends, ESSA said "The conclusions of the analyses generally overextend the data or results." (p. ix)
- PSEG "underestimates biomass lost from the ecosystem by perhaps greater than 2-fold."(p. xi) "... the actual total biomass of fish lost to the ecosystem ... is at least 2.2 times greater than that listed in the Application." (p. 75)
- "Inconsistency in the use of terminology, poorly defined terms, and a tendency to draw conclusions that are not supported by the information presented detract from the rigor of this section and raises skepticism about the results. In particular, there is a tendency to draw subjective and unsupported conclusions about the importance of Salem's impact on RIS finfish species." (p. 77)

Referring to PSEG's discussion and presentation of entrainment mortality rates ESSA found PSEG's "discussion in this section of the Application to be misleading." (p. 13) The NRC's DSEIS fails to take this analysis into account.

In concluding Section 4.5.6 of the DSEIS, NRC names several potential mitigation options, but neither arrives at the specific conclusions that the units should be retrofitted with closed-cycle cooling systems, nor selects particular alternatives that they would recommend in lieu of closed-cycle cooling. Moreover, NRC unfairly minimizes its role, and stresses NJDEP's responsibility to issue permits and impose mitigation requirements. This is completely separate from an analysis of environmental impacts for purposes of NEPA and should not prevent NRC from undertaking a full and fair analysis of the impacts.

**Comment SHC-F-10:** On October 6, 2010, NOAA's National Marine Fisheries Service (NMFS) issued a proposed rule to list five distinct population segments (DPS) of the Atlantic sturgeon as threatened or endangered under the Endangered Species Act (ESA). In recognition of the many threats to riverine habitat, including dredging, filling, and degraded water quality, facing Atlantic sturgeon in the Hudson and Delaware Rivers, NMFS proposed to list a DPS consisting of these populations, the New York Bight (NYB) DPS, as endangered. See, 75 Fed. Reg. 61,872 at 61,881 (Oct. 6, 2010). We also note with alarm that the Delaware River population of Atlantic sturgeon is more precariously poised than the Hudson River population, according to research on the record. According to the Delaware River State of the Basin Report, 2008, which is based on science collected in the region, the status of the Atlantic Sturgeon is considered "poor and getting worse" with numbers "estimated to be less than 1,000 and probably less than 100 across the Estuary." Furthermore, there is scientific evidence that the Delaware River is home to a genetically unique population of Atlantic Sturgeon, and that this small but distinct population is currently reproducing. That the Delaware River population is not only genetically unique but also may have a population of fewer than 100 fish makes protection of this portion of the NYB DPS a critical priority.

This change in status means that a critical piece of information is missing from the DSEIS, and must be evaluated prior to NRC's issuance of a final SEIS. A lack of sufficient data relating to impingement, entrainment and thermal impacts of Salem on Atlantic sturgeon in the vicinity of Salem leads to an at best incomplete and at worst erroneous determination regarding the environmental impact of relicensing on this critical species. Given the impending designation of the Atlantic sturgeon NYB as endangered, NRC Staff's thinly supported assessment and indefinite conclusions are insufficient for purposes of meeting the obligations of NEPA. Thus, the DSEIS should consider and incorporate all relevant information contained in the Proposed Listing prior to reaching any final conclusions related to the impacts of license renewal of Salem on endangered aquatic resources.

**Comment SHC-W-39:** The New Jersey Division of Fish & Wildlife (DFW) continues to be concerned with the issue of impacts to the eggs, larval forms, juveniles and adults of the fish, shellfish and other invertebrate species which exist in the Delaware River Estuary.

The DFW was initially concerned with the statement in section 9.1 (lines 21-23), however because one of the overall goals of the Estuary Enhancement Program is to minimize the effects of the Salem Generating Station (Station) on Delaware Estuary biota, these issues can be addressed anytime.

Also the DFW feels that this line should include "Additionally, the Staff concludes that impacts to fish and shellfish from entrainment, impingement, and heat shock at Salem and HCGS would not warrant additional mitigation beyond the Estuary Enhancement Program *for the purposes of this license renewal.*"

**Comment SHC-X-29:** Page 2-78, lines 23 to 28. PSEG Nuclear recommends that the text on page 2-78, lines 23 to 28, be updated to reflect the recent Endangered Species Act listing notice for Atlantic Sturgeon, which was published in the Federal Register on October 6, 2010 (75 FR 61897

#### **4. Comments Concerning Radioactive Waste Management**

**Comment SHC-A-3:** Specific to Salem and Hope Creek the existing three nuclear plants produce radioactive waste that remains a danger for thousands of years into the future.

This nuclear waste has outgrown its spent fuel pools, and is now contained in above-ground dry cask storage sheds. How much more waste will be produced by relicensing the three nuclear plants for another 20 years?

With no future in sight for a permanent safe storage site, other than on-site, in the Lower Alloways Creek. It pretty much dooms that area, forever, to be a nuclear waste dump that will never go away, it will always be a residual radioactive hazard in Salem County.

**Comment SHC-A-5:** Recent EPA internal documents have raised a concern that in the case of a major nuclear accident, or release, it is unclear whether the Federal Government, and the Nuclear Regulatory Commission, would have the authority and the finances to clean up a radioactive release to the environment.

Would the EPA be in charge of overseeing a cleanup, and would the regulations, under the Superfund Act apply? Would the NRC, or PSEG, care to answer that question, as a part of their relicensing process?

I think the public has a right to know who would be paying for such a clean up, and who would be supervising it, and if the money is set aside to do so.

**Comment SHC-A-6:** It doesn't bode well that the NRC recently, in a case nearby, in Newfield, New Jersey, a shieldalloy radioactive dump site, the NRC recently gave jurisdiction for the New Jersey DEP to oversee a cleanup of that radioactive waste in Newfield.

Then challenged the court decision, successfully, to gain back control of the site, when it was clear that the New Jersey DEP's cleanup would direct the waste to be shipped to a radioactive waste disposal site in another state, instead of being left on-site.

The NRC, against all local public opinion, and the opinion of DEP scientists, wanted to contain the nuclear waste in Newfield, that being the cheaper option.

The NRC is not an agency that the public has confidence in, to protect the environment, because often or in most every case, go for the cheapest solution, and that is not always the safest.

**Comment SHC-T-1:** we have serious issues regarding the disposal of nuclear waste and we do not have an adequate solution at the federal level. And so the continued use of nuclear facilities without that is of great concern.

**Comment SHC-W-2:** Radioactive Waste Management / Page 2-11 Line(s) 16-18, Is the current Independent Spent Fuel Storage Installation (ISFSI) capable of providing storage for all three nuclear generating stations (Salem 1 & 2 and Hope Creek) plus the proposed new plant? Will there be an addition to the existing pad or will a separate new pad be built? How will the cumulative effects of all this storage of spent fuel be assessed? In the Early Site Permit SEIS?

**Comment SHC-W-3:** Radioactive Liquid Waste / Page 2-11, Line(s) 22-24, "However, because the Salem units are cooled by a once-through RCS and the HCGS unit is cooled by a closed-cycle RCS, the management of potentially radioactive liquids is different".

It appears you mean Circulating Water System (CWS) not RCS?

**Comment SHC-W-4:** Mixed Waste / Page 2-13 Lines 19-21, The draft SEIS states that there are no processes in which mixed waste can be generated. Mixed waste includes hazardous substances/liquids (non-radiological) and radioactive materials.

While there may be no routine processes where mixed wastes are generated at Salem or Hope Creek, the possibility of human error and inadvertent mixing of wastes may occur, especially during refuel and maintenance outages. In fact, discussions of mixed waste are part of the routine General Employee Training given to all of your employees and contractors, including instructions on how to minimize the amount of mixed wastes that could be created due to the high costs associated with processing the waste and the potential spread of contamination both inside and beyond the Radiological Control Areas.

**Response:** *The staff acknowledges the comment that although there are currently no processes at Salem and HCGS that product mixed wastes; it is possible that due to human error and inadvertent mixing of wastes may result in the generation of mixed waste at Salem and HCGS. If mixed waste is produced, it will be safely handled and processed in accordance with plant procedures to comply with regulatory requirements.*

*No changes will be made to the SEIS based on the comment.*

**Comment SHC-A-4:**... the safety hazard associated with the malfunction and potential release of toxic radiation, into the vicinity of the three nuclear plants, would only be exacerbated by the aging of the facilities.

Aging of the facilities is a significant environmental concern, it is a maintenance problem, but it can have very severe environmental impacts.

Tritium leaks at the Salem reactors have occurred, despite redundant safeguards, and are an indication that the safety culture at the plant, and that the preventive maintenance, were a significant improvement.

## 5. Comments Concerning Human Health

**Comment SHC-A-13:** There was a calculation that said that these effluents do not exceed the human criteria, which is 25 millirems. It gave a calculation of what the actual emissions are.

But I cannot really understand these. So I would like them to be written in a way that they compare to the 25 millirems, because how it was expressed, the actual emissions, was 7.26 times ten to the minus three millirems.

That doesn't really tell me, you know, what that compares to, to the 25 millirems analysis. And so I would like that clarified. And that if these exposures are going to be calculated, that they be done in such a way that it is more transparent to the general public.

**Response:** *The actual emissions were much lower than the limit. The actual emissions were approximately 0.03% of the 25 millirem limit.*

*No changes will be made to the SEIS based on the comment.*

**Comment SHC-W-13:** Radiological Impacts of Normal Operation / Radioactive Effluent Release Program / Page 4-56.

Based on the flow of material (aquatic biota such as seagrass, weeds, etc) along the Delaware River, and the fact that the liquid discharge point (both Salem and Hope Creek blow-down discharge) is further upstream of the intake structure at Salem, is it possible that debris potentially exposed to radionuclide discharge can be re-circulated back into the plant? Does PSEG routinely sample aquatic biota that is captured on trash racks at the Salem intake structure (such as seaweed and grasses) and perform radionuclide analyses on the material? How often is that done?

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**Deleted: Comment SHC-A-3:** Specific to Salem and Hope Creek the existing three nuclear plants produce radioactive waste that remains a danger for thousands of years into the future.¶

This nuclear waste has outgrown its spent fuel pools, and is now contained in above-ground dry cask storage sheds. How much more waste will be produced by relicensing the three nuclear plants for another 20 years?¶

With no future in sight for a permanent safe storage site, other than on-site, in the Lower Alloways Creek. It pretty much dooms that area, forever, to be a nuclear waste dump that will never go away, it will always be a residual radioactive hazard in Salem County.¶

**Comment SHC-A-6:** It doesn't bode well that the NRC recently, in a case nearby, in Newfield, New Jersey, a shieldalloy radioactive dump site, the NRC recently gave jurisdiction for the New Jersey DEP to oversee a cleanup of that radioactive waste in Newfield.¶

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The NRC is not an agency that the public has confidence in, to protect the environment, because often or in most every case, go for the cheapest solution, and that is not always the safest.¶

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**Comment [DID1]:** Need to verify that the data is correct

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Although not likely an impact with regard to the 10CFR50, Appendix I dose limits, effluent release to the environment is an issue of public concern and should be considered during the relicensing period.

**Response:** *As discussed in the SEIS, both facilities discharge radioactive liquid effluents into the Delaware Estuary in accordance with NRC requirements. Once the effluent is released into the estuary, it will be dispersed and move with the tide. Therefore, it is possible that debris in the water could be exposed to the radioactive material and be pulled into the cooling water intake. However, as discussed in section 2.1.6.1 of the SEIS, both facilities are equipped with several features to prevent intake of debris and biota into the lines. Any debris and biota that pass through the coarse-grid trash racks on the intake line will be picked up on the vertical traveling screens. The traveling screens are washed and the contents of both fish and debris are released back into the estuary. The NRC requires that Salem and HCGS conduct a radiological environmental monitoring program (REMP) that obtains samples of environmental media outside of the plant boundary to determine if radioactivity released from the facility is impacting the public and the environment. Section 4.8, "Human Health" of the SEIS contains a discussion of the radiological impacts of radioactive effluents released by Salem and HCGS. The REMP is not required to sample the fish and debris collected by the traveling screens and returned to the estuary. The staff's review of the REMP and dose data from radioactive gaseous and liquid effluents from Salem and HCGS found no adverse impact to the public or the environment. The radioactivity in the environmental samples was low, below NRC reporting criteria and the doses were below NRC dose limits in 10 CFR Part 20 and Appendix I to 10 CFR Part 50. Based on that information, it is unlikely that debris that may have been briefly exposed to radioactive material in the estuary would contain a measurable amount of radioactivity.*

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*No changes will be made to the SEIS based on the comment.*

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**Comment SHC-W-20:** The Bureau of Environmental Radiation (BER) does not have regulations governing the exposure to 60 Hertz electric and magnetic fields. Similarly, BER does not regulate induced or contact currents. What we do have is a guideline that states that the electric field at the edge of the right of way (ROW) should be no greater than 3 kilovolts per meter, measured at a height of 1 meter above the ground. This is a recommendation adopted in 1981 by resolution of the Commission on Radiation Protection. It would be advisable but not mandatory that the utility conduct periodic measurements along ROW's to document electric field levels.

Regarding magnetic fields, at this point in time, the consensus among the scientific community is that there is inconclusive evidence to suggest that long-term exposure to magnetic fields from power lines would result in adverse health outcomes. However, for new or modified lines, many health-based organizations are still recommending reducing magnetic fields if low or no-cost options exist. In a June 2007 fact sheet put forth from the World Health Organization (WHO Fact sheet No. 322), the following guidance is issued: "When constructing new facilities and designing new equipment...low-cost ways of reducing exposures may be explored." Therefore, in light of such uncertainty, if there are any future changes made to the power delivery system that would lower the existing magnetic fields from the power lines, it may be prudent to explore

such options. Likewise, if new lines are installed, it would be advisable to construct the lines so that magnetic fields at ground level are as low as reasonably achievable.

**Response:** *The NRC staff evaluated the significance of the electric shock potential from the transmission lines from Salem and HCGS in section 4.8.4 of the SEIS. The staff concluded that the electric shock potential from the transmission lines from Salem and HCGS was small because the lines were below the applicable National Electric Safety Code criteria of 5 millamperes.*

*The comments provided by the State regarding electric shock and magnetic fields guidelines are noted.*

*No changes will be made to the SEIS based on the comment.*

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## 6. Comments Concerning Cooling and Auxiliary Water Systems

**Comment SHC-W-5:** Cooling and Auxiliary Water Systems / Salem Generating Station Page 2-23 Lines 6-12, The Salem Generating Station Service Water System (SWS) intake does not contain a modified Ristroph travelling screen or fish discharge system. There is no explanation provided as to why they were not used.

**Comment SHC-W-6:** Page 2-23 Lines 13-15 and Lines 28-29, contradict each other regarding the use of sodium hypochlorite.

**Comment SHC-W-7:** Page 2-23 and 2-26 appear to conflict;

*Page 2-23 Lines 10-12: "The SWS intake structure is equipped with trash racks, travelling screens, and filters to remove debris and biota from the intake water stream, but do not have a modified Ristroph-type travelling screen or fish return system".*

*Page 2-26 Line 42: "The Salem SWS intake is also fitted with trash racks, travelling screens, and fish return troughs".*

**Comment SHC-W-8:** Cooling and Auxiliary Water Systems / Hope Creek Generating Station / Page 2-24 Lines 4-9.

Are the travelling screens utilized at this single intake structure (SWS water at HC) modified Ristroph screens? In addition, with the possibility of utilizing the empty bays for the proposed second unit on the Hope Creek site, would an upgrade to the travelling screens and Ristroph system be needed during the relicensing period if a new plant was built during that time period/

## 7. Comments Concerning Postulated Accidents & SAMA

**Comment SHC-U-2:** Second, Salem 1 and 2 are built at the worst location possible. They are built on mud, and at sea level. They are built on mud, and their foundations are not imbedded in bed rock. Their pilings do not reach the bedrock. They are prone to great damage from

earthquakes. Being based on mud, the well-known earthquake liquification process amplifies the damage that can occur.

A mild earthquake is amplified, many times, by the liquification effect. The nuclear complex would be shaken severely.

Third, Salem 1 and 2 are at sea level. They are prone to flooding from storm surges, and high tides from hurricanes.

**Comment SHC-V-1:** The proposal to extend the operating life of the Hope Creek nuclear plant along with the Salem I and Salem II by 20 years reeks with betrayal of responsibility to protect the public.

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Nothing lasts forever. When an automobile wears out, it is replaced. When a nuclear plant wears, it becomes a multi-billion dollar or trillion dollar threat to the public safety and the general economy.

Not only are these particular aging nuclear plants a threat in ordinary terms, but they are built in a seismic area. These plants are built on soft ground.

They are on Artificial Island in the Delaware River. It was named "Artificial" because it was man-made with filled in land. There is a swamp on one side of the island with the river on the other side. There is no solid rock underneath. Borings were made up to 100 feet deep. No rock was found. The reactors are built on pilings similar to the pilings in a collapsed Shanghai City building.

Like so many nuclear facilities, these three nukes are close to an earthquake fault that rumbled on February 3, 2009. The noise of geological shocks in February, terrified people in Morris County who thought the shocks were explosions as reported by The Star Ledger.

The Morris County (NJ) quake had an intensity of 3.0. That was a small event according to the US Geological Survey. But much more intense earthquakes may happen and the ability to be absolutely sure of their impact is hardly secure regardless of a know-it all attitude. Earthquakes occur a few times a year in New Jersey. Most are so small that they are hardly noticed. A biggie can happen in a hundred years or tomorrow.

In Japan, seven reactors at the Kashiwazi-Kariwa nuclear power plant in Japan were shut down due to an earthquake, fire and nuclear leak. People were killed and injured by the 6.8 magnitude quake, which struck in July, 2007. A new fire at the still shut down plant occurred in March, 2009. 600,000 residents signed a petition opposing restart of the plant.

It seems that the NRC has put its head in the sand about a possible seismic threat to these three nukes, just as it has ignored many other credible threats, and has routinely rubber stamped 20 year extensions for every other nuclear plant application.

For once in your life, do the right thing. Reject this reckless proposal for a 20 year operating extension.

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**Comment SHC-W-14:** SAMA – Breakdown of Population Dose by Containment Release Mode for Salem Generating Station / Table 5-4 / Page 5-6 / Line 10.

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For the "Basemat Melt Through (BMT)", population dose is considered negligible. The BMT is a protection system for the basemat of reactor containment buildings in nuclear power stations. The system comprises a structure located in a cavity below the reactor vessel and submerged in water. The structure comprises staggered layers of stainless steel beams for intercepting molten material escaping from the reactor vessel during meltdown of the reactor core. The system is designed so that the molten material is distributed in thin layers over wings of the beams and transfers its heat to the surrounding water thus affording a rapid quenching of the molten core and safeguarding the integrity of the basemat.

Would there be any chance, even within the basemat system of staggered layers of steel beams, of a flash to steam of the molten material and potential release to the atmosphere augmenting/causing a potential contribution to population dose? Have there been model studies done to confirm the report's claims of negligible contribution to population dose? The steam generated during this core melt must be relieved somewhere.

**Response:** *(check with a safety reviewer who is familiar with the containment for an explanation how water flashing to steam is managed)*

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**Comment SHC-W-15:** Why is there no basemat system present at HCGS? Is it related to the design of the HCGS BWR?

**Response:** *Several beneficial factors at Salem make basemat melt-through less severe than other plants. First, Salem has a "wet" containment design. If the contents of the refueling water storage tank are injected into the primary system or containment via emergency core cooling or containment spray, the water will drain to the reactor cavity and provide cooling of the molten corium, thus preventing basemat melt-through. Second, the Salem containment has a very thick basemat – 18 feet thick. Even without cooling of the molten corium, basemat melt-through will require many hours to erode through this thickness of concrete. Third, Salem has a relatively large cavity floor area, meaning the molten corium will have more space to spread, resulting in a shallow layer of corium which can be more easily cooled by overlying water.*

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**Comment SHC-W-16:** SAMA – Evaluation of Risk Reduction and Costs of Improvements / Section 5.3.4 / Page 5-9 Lines 20-22.

"PSEG evaluated the risk-reduction potential of the remaining 25 SAMA's for SGS, as well as four additional SAMA's that were added in response to an NRC staff request for additional information."

What were the four added SAMA's at SGS and the bases for their inclusion? Can they affect potential offsite individual or population dose during the relicensing period?

**Response:** *The additional four consisted of SAMA 5A ("Install Portable Diesel Generators to Charge Station Battery and Circulating Water Batteries"), added as a sensitivity case to SAMA 5*

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to provide a comprehensive, long term mitigation strategy for station blackout scenarios; and SAMAs 30 through 32 ("Automatic Start of Diesel-Powered Air Compressor;" "Fully Automate Swap-over to Sump Recirculation;" "Enhance Flood Detection for 100-foot Auxiliary Building and Enhance Procedural Guidance for Responding to Internal Floods;" respectively). While each could reduce potential offsite individual or population dose during relicensing (by ~10% of the theoretical maximum for SAMA 5A; by less than 1% each for SAMAs 30 through 32), only SAMA 5A was shown to be potentially cost-effective. SAMA 5A will be considered for implementation through the established Salem Plant Health Committee process.

**Comment SHC-W-17:** SAMA – Cost-Benefit Comparison / Section 5.3.5 / Page 5-10 Lines 14-15. "SAMA 2 – Re-configure Salem 3 to provide a more expedient backup to AC power source for Salem 1 and 2"

A member of the public and/or casual reader should be made aware that "Salem 3" is fossil fuel back-up generator and not a third nuclear plant on the Salem footprint. A reference to the definition of Salem 3 could not be found in the document. It could lead to confusion.

**Response:** *Salem Unit 3 is an air-cooled combustion turbine peaking unit rated at approximately 40 MWe. Salem Unit 3 has two gas turbines, each of which has enough power for both Salem units. This description has been added to chapter 2 of the SEIS.*

**Comment SHC-W-18:** SAMA – Cost-Benefit Comparison / Section 5.3.5 / Page 5-11

"SAMA 5A – Install portable diesel generators to charge station battery and circulating water barriers"

What is PDP and what is the sensitivity basis behind SAMA 5A? Both are based on the generic installation of the Portable Diesel Generator.

**Response:** *PDP stands for Positive Displacement Pump. "Sensitivity" for SAMA 5A refers to it being an alternate approach to mitigating SBOs to limit the scope of SAMA 5 to only address cases in which the reactor coolant pump (RCP) seals remain intact, which occurs in a majority of the station blackout (SBO) scenarios based on the assumptions used in the SGS probabilistic risk assessment (PRA). Due to the uncertainty related to RCP seal performance, the original SAMA 5 design is considered to be the most appropriate for SBO scenarios, but the PRA model will show that most of the benefit for SBO sequences can be achieved by prolonging the availability of secondary side heat removal and recovering offsite power. Adopting this approach to the SAMA design, however, places a large amount of importance on the assumptions related to RCP seal performance. In order to investigate the potential benefit of only prolonging secondary side heat removal and offsite power restoration capability, the air cooled PDP/centrifugal charging pump was removed from the SAMA 5 design and the size of the 460V AC generator was reduced to match the loads associated with turbine driven auxiliary feedwater operation (SAMA 5A).*

**Comment SHC-W-19:** SAMA – Cost-Benefit Comparison / Section 5.3.5 / Page 5-11

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Comment [DID2]: probably a good idea to add this in chapter 2 somewhere

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"SAMA 5A – Install portable diesel generators to charge station battery and circulating water barriers"

From a Clean Air Act (CAA) standpoint, do the additional diesel generators, compressors, or any other fuel source equipment pose an issue with the existing Title V permit at the site – still maintaining a cost beneficial environment?

Response: *(check with air person)*

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## 8. Comments Concerning Ground Water

**Comment SHC-A-11:** And the other thing that I wanted to raise was that while the tritium issue in groundwater is said to have been addressed, and that the leak has been fixed, and there is no longer going to be an issue with it, and that the tritium levels in groundwater are decreasing, and that the source was a spent fuel pool water leak.

I'm concerned that if a leak happened once, it can happen again. And with the aging infrastructure, you know, the pipes that are replaced every few years, you know, because they start to leak, because they are made of metal, the salinity in the area, to concrete structures which will leak.

I'm not assured that this isn't going to happen again. And so I think that the tritium issue should not be considered small, the impact should not be considered small.

**Comment SHC-W-9:** Groundwater Resources / Available Volume / Page 2-34 Lines 1-7.

Large-scale withdrawals of water in the area (through the 1970's) led to the NJDEP placing limits on water withdrawal from the aquifer. Since that time, general recovery of the Potomac-Raritan-magothy (PRM) aquifer has occurred. Salem and Hope Creek were excluded from the limiting water withdrawal. Even though outside the "critical area", future population growth and a potential new plant would have a serious impact as evidenced by the current plant water levels in the middle PRM of about -70 feet and the lower PRM of about -45 feet. (USGS Report). Future restrictions on water usage would have to be approved by the NJDEP's Division of Water Supply.

**Comment SHC-W-11:** Ground Water Use Conflicts (plants using greater than 100 gpm) / Page 4-3 Lines 33-38.

**Moved up [1]: Comment SHC-A-10:** And a lot of the problems, and issues that I brought up in my testimony on May 3rd, including sea level rise, climate change, tritium in groundwater, radioactive releases to the atmosphere.¶ A lot of those issues have been discussed in the Environmental Impact Statement, but dismissed as being small. Small, okay? And, yet, in the Environmental Impact Statement it says that the water withdrawal from the combined two nuclear stations, and Hope Creek, is combined to the total withdrawal of all other industrial, power, and public water uses in the Delaware estuary, in Delaware, New Jersey, and Pennsylvania. ¶ These plants are this single largest user of water in the river system, in three states. Again, their combined use of water exceeds all other industrial uses combined.¶ And I just don't think that that impact can be called small. If that is not large, I don't know what large is. How large does it have to be to be considered a large impact?¶ The comparison in millions of gallons, between Hope Creek and Salem 1 and 2, is orders of magnitude. The numbers are so large that I would have to write them on the board, and I might do that, because I can't even -- you know, is it trillions of billions? I'm not sure.¶

*"The reason for the declining water levels in the upper PRM Aquifer over the last decade cannot be determined from the limited data set, but they could indicate that long term production is resulting in dewatering of the aquifer, which could potentially cause groundwater use conflicts"*

Since the Spring and Summer of 2010 were periods of drought over the State of New Jersey, does the NRC plan on including measurements in 2010 to augment/update its dataset? Levels may have dropped even further due to those drought conditions. The PRM is considered a large aquifer of regional importance for municipal and domestic water supply. The most accurate data is needed in light increasing population.

Hope Creek Generating Station License Renewal Application, Environmental Report

**Comment SHC-W-21:** Pages 2-58 and 3-6. Under Section 2.12.2.1 **Salem Nuclear Generating Station** and Section 3.1.3.2 **Ground Water**. There are conflicting amounts given for the approved ground water diversion for Hope Creek and Salem, 164 billion liters (43.2 billion gallons) vs. 163 million liters (43.2 million gallons) per month.

**Comment SHC-W-22:** Pages 3-7 3-9. In the section on Ground Water Usage they indicate the ground water levels in the PRM aquifer system in the plant area are the result of the pumping centers north of the Chesapeake and Delaware Canal. On page 3.8 they reference USGS (2001b) as the report which "...clearly shows that the pumping centers north of the Chesapeake and Delaware Canal influence the levels in the lower PRM in the Artificial Island vicinity." This report according to their references is Simulation of Ground-Water Flow in the Potomac-Raritan-Magothy Aquifer System Near the Defense Supply Center Philadelphia, and the Point Breeze Refinery, Southern Philadelphia County, Pennsylvania, US Geological Survey Water-Resources Investigations Report 01-4218. The report and model is very specific only to the area around the Philadelphia Navy yard and Camden over 35 miles NNE of Artificial Island. Therefore this report obviously does not indicate the PRM ground water levels are the result of pumping centers north of the canal. Then on page 3-9 they indicate that according to USGS (2009) the Delaware withdrawals have reduced the regional water levels and that the information in the report suggests that the decrease in water levels at Artificial Island in the lower and middle PRM are the result of the regional lowering.

**Comment SHC-W-23:** According to 3-7 and 3-8 and Table 3.1-3 the Salem and Hope Creek wells are in the upper and middle PRM, not the middle and lower PRM as implied on 3-9. Also, if USGS (1983) Plate 1 is examined there is a distinct cone of depression, at the plant site (PW 5), in the lower PRM which according to page 12 of the report "...includes essentially all water-bearing zones within the aquifer system below the upper aquifer." There is no information shown in USGS (1983) for the upper aquifer at the plant site. Table 2 indicates a water level for PW5 in 1978 at -78 feet. The well record for PW5 indicates static water levels of 35' (8/27/74) and 32' (11/4/75). The land surface at the well is about 17' above sea level which would indicate the water levels at Artificial Island in 1974-75 was -18 to -15 feet. Three years after the plant started pumping out of the aquifer the water levels dropped to -78 feet or a decline of 60 feet in three years. That indicates the plant is causing the low levels not a pumping center over 10 miles away. USGS WRI 96-4206 Water levels in, Extent of Freshwater in, and Water Withdrawal from Eight Major Aquifers, New Jersey Coastal Plain, 1993, by Pierre J. Lacombe

and Robert Rosman, 1997, also shows the same cone of depression on Plate 7 of 8, Middle and undifferentiated Potomac-Raritan-Magothy aquifer. This report has separated the PRM into three aquifers. The water level on the plate is PW5 at -75 feet, the same well as in USGS (1983) Plate 1. The USGS reports above and in USGS (2009) show no wells at Artificial Island as being in the upper PRM. In the USGS reports and in their database lists PW5 as middle PRM and PW6 as being in the lower PRM, not upper and middle respectively. Based on the depths of HC-1 and HC-2 would likely be in the middle and lower PRM respectively. Without having the construction of the other wells on Table 3.1-3 the NJGS can't tell which aquifer each is in, but the USGS (2009) shows pumpage from the upper aquifer at the site.

**Comment SHC-W-24:** Page 4.11, Section 4.5 **Ground-Water Use Conflicts (Plants Using >100 gpm of Ground-Water)**. Here again they indicate PW5 and PW6 are in the upper and middle PRM aquifers, where as the USGS indicates the wells are in the middle and lower PRM. They also indicate the impacts from the pumpage at the current rates at the site are "...SMALL and would not warrant mitigation." Examination of the synoptic data down through the years since PW5 was installed shows the plant has caused a deep cone of depression in the middle PRM which is also now being affected by pumpage from Delaware. If the plant ever pumped at the current diversion approval the affect would be felt in Delaware. The plant is the only diversion within 8 to 10 miles of the plant and yet the water levels in the PMR middle PRM are about -70 feet and the lower PRM are about -45 feet.

Based on the various synoptic water level measurements from 1978 to 2003 the plant has caused significant water level declines which are reaching out an unknown distance from the plant. There needs to be a detailed study much like USGS (2001b) to determine the impacts of all the pumpage in the PRM around Artificial Island with a cluster of observation wells, offsite in each of the PRM aquifers.

**Comment SHC-W-25:** Pages 4-25 and 4-26, Section 4.15 **Public Water Supply**. The analysis is based on the assumption that the pumpage at the site has not affected the water levels off site. Without offsite PRM monitoring wells between the nearby pumping centers and the plant it is not possible to know where the limit of the plant's affect ends and that from the Delaware pumping centers start.

#### Salem Nuclear Generating Station License Renewal Application, Environmental Report

**Comment SHC-W-26:** Pages 3-7 and 3-8, Section 3.1.3.2 **Ground Water**. Comments for this section are the same as for Hope Creek, Section 2.12.2.1 and Section 3.1.3.2 above.

**Comment SHC-W-27:** Pages 4-19, Section 4.5 **Ground-Water Use Conflicts (Plants Using >100 gpm of Ground-Water)**. Comments for this section are the same as for Hope Creek Section 4.5 above.

**Comment SHC-W-28:** Pages 4-34 and 4-35, Section 4.15 **Public Water Supply**. Comments for this section are the same as for Hope Creek, Section 4.5 above.

## **9. Environment Impacts of Refurbishments**

**Comment SHC-W-10:** Environmental Impacts of Refurbishment / Meteorological Tower / Page 3-2. Aside from the Category 1 and Category 2 issues presented in this section on refurbishment, is the cement pad on the meteorological tower intact? A number of years ago there were reports of some cracking or degradation that required maintenance. If the licensee has completed the repairs, could they provide the approximate date and contractor which performed said repairs and inspection?

The meteorological tower is a safety related structure. Meteorological data from the tower is used for dose projection in case of an accident at the facility. The issue becomes more relevant if the Salem and Hope Creek nuclear plants intend on operating for an additional 20 years.

#### **10. Comments concerning Socioeconomics**

**Comment SHC-X-6 :**Page xxiv, Table 1, row labeled "License Renewal", column labeled "Socioeconomics." Table 1 incorrectly states that there would be SMALL to LARGE socioeconomic impacts for license renewal. This impact range is inconsistent with DSEIS Section 4.9, which only identifies SMALL or no impacts for the socioeconomic issues. While the DSEIS identifies SMALL to LARGE cumulative socioeconomic impacts, Table 1 does not address cumulative impacts, but only direct license renewal impacts. Additionally, in PSEG Nuclear recommends that the Executive Summary be modified to clearly summarize only NRC's conclusions regarding direct and indirect impact levels for all environmental resource areas, including socioeconomics. For consistency, and to correct the mistaken impact level, PSEG Nuclear also recommends that the entry in Table 1, row labeled "License Renewal," column labeled "Socioeconomics," on page xxiv be changed to "SMALL"

**Comment SHC-X-7:** Page 8-46, Table 8-5, row labeled "License Renewal", column labeled "Socioeconomics." Table 8-5 incorrectly states that there would be SMALL to LARGE socioeconomic impacts for license renewal. This impact range is inconsistent with DSEIS Section 4.9, which only identifies SMALL or no impacts for the socioeconomic issues. While the DSEIS identifies SMALL to LARGE cumulative socioeconomic impacts, Table 8-5 does not address cumulative impacts, but only direct license renewal impacts. To correct the mistaken impact level, PSEG Nuclear recommends that the entry in Table 8-5, row labeled "License Renewal," column labeled "Socioeconomics," on page 8-46 be changed to "SMALL"

**Comment SHC-X-8:** Page 4-82, lines 39 to 42 and Page 4-83, lines 4 to 5. On page 4-82, lines 39 to 42 (Section 4.11.6), the DSEIS-45 states the following:

"If PSEG decides to proceed and construct a new nuclear power plant unit at the Salem and HCGS site, the cumulative short-term construction-related socioeconomic impacts of this action could be MODERATE to LARGE in counties located in the immediate vicinity of Salem and HCGS."

On page 4-83, lines 4 to 5 (Section 4.11.6), the DSEIS-45 states the following: "The cumulative long-term operations-related socioeconomic impacts of this action during the operation of the new power plant unit would likely be SMALL to MODERATE."

The conclusions quoted above regarding socioeconomic impacts from construction and operation of a new nuclear plant are based on high-level, qualitative assumptions. However, in May 2010, PSEG Nuclear filed an application with the NRC for an early site permit (ESP) for a new nuclear plant site located adjacent to the existing Salem and HCGS plants. Sections 4.4 and 5.8 in the ESP application provide, respectively, assessments of direct and indirect impacts from construction and operation of a new plant on the proposed site. Sections 10.5.1.4 and 10.5.2.4 provide, respectively, assessments of cumulative impacts from new plant construction and operation. As reported in the ESP, all socioeconomic impacts (direct, indirect, and cumulative) associated with a new nuclear plant located adjacent to the Salem and HCGS plants would be SMALL, or can be mitigated. PSEG Nuclear recommends that Section 4.11.6 in DSEIS-45 be modified to account for the site-specific information now available in its ESP application. PSEG Nuclear further recommends that the revised Section 4.11.6 in DSEIS-45 identify and consider positive socioeconomic effects as well as negative effects. Examples of such positive effects are increased property tax revenues for local taxing jurisdiction, increased purchases of local and regional goods and services, and increased local and regional direct and indirect employment. Additional information and suggestions for specific text revisions in section 4.11.6 are provided below.

**Comment SHC-X-9:** Pages 4-82, lines 39 to 42.

Based on site-specific information from PSEG Nuclear's ESP Environmental Report, pertinent excerpts from which are provided in Attachment A to this comment package, PSEG Nuclear recommends that the text on page 4-82, lines 39 to 42 (Section 4.11.6) in DSEIS-45 be revised as follows:

"If PSEG decides to proceed and construct a new nuclear power plant unit at the Salem and HCGS site, the cumulative short-term construction-related socioeconomic impacts of this action could be SMALL to MODERATE in counties located in the immediate vicinity of Salem and HCGS."

DSEIS-45 attributes the MODERATE to LARGE short-term construction-related socioeconomic impacts primarily to short-term increased demand for rental housing and other commercial and public services and a "noticeable increase" in the number and volume of construction vehicles on roads in the immediate vicinity of the site. In contrast, the impact assessment in Section 10.5.1.4 in PSEG Nuclear's ESP Environmental Report concludes that within a Region of Influence consisting of Salem, Cumberland, or Gloucester counties in New Jersey, and New Castle County in Delaware, the construction-related population increase associated with new plant construction at a site adjacent to Salem and HCGS would result in short-term SMALL cumulative impacts to housing markets and community support services such as public water supply, wastewater treatment, and fire and police protection. Regarding traffic impacts, the ESP Environmental Report concludes that cumulative impacts from new plant construction would be MODERATE, but can be mitigated.

**Comment SHC-X-10:** Page 4-83, lines 4 to 5. Based on site-specific information from PSEG Nuclear's ESP Environmental Report, PSEG Nuclear recommends that the text on page 4-83, lines 4 to 5 (Section 4.11.6) in DSEIS-45 be revised as follows, "The cumulative long-term operations-related socioeconomic impacts of this action during the operation of the new power plant unit would likely be SMALL."

**Comment SHC-X-11:** Pages 4-83, lines 11 to 14. Based on site-specific information from PSEG Nuclear's ESP Environmental Report, PSEG Nuclear recommends that the text on page 4-83, lines 11 to 14 (Section 4.11.6) in DSEIS-45 be revised as follows:

"Since Although Salem County has less housing and public services available to handle the influx of construction workers in comparison to New Castle, Gloucester, and Cumberland Counties, the cumulative short-term construction-related socioeconomic impacts on Salem County would likely be SMALL to MODERATE to LARGE. because (1) cumulative temporary population increases during new plant construction represents no more than 5 percent of the Salem County population, (2) Salem County has a well established pattern of development and established public services to support and guide land use changes, (3) there is currently enough housing in the four-county region of influence to accommodate the cumulative new construction-related families and other temporary workers expected in Salem County if the type of housing sought by these families is not available in Salem County, (4) construction-related population increases would cause negligible changes in demands on public water supply, wastewater treatment, police and fire protection services, (5) traffic impacts, while potentially moderate, can be mitigated, and (6) tax revenues resulting from the presence of the construction workforce would provide noticeable but small positive impacts in Salem County."

The analysis of socioeconomic impacts performed in the ESP Environmental Report for construction-related population growth (Section 4.4) and construction-related cumulative impacts (Section 10.5.1.4) supports the above-suggested justifications for characterizing cumulative short-term construction-related socioeconomic impacts on Salem County as SMALL to MODERATE rather than SMALL to LARGE.

**Comment SHC-X-12:** Page 4-83, lines 14 to 18. Based on site-specific information from PSEG Nuclear's ESP Environmental Report, PSEG Nuclear recommends that the text on page 4-83, lines 14 to 18 (Section 4.11.6) in DSEIS-45 be revised as follows:

"Over the long term, cumulative operations impacts on Salem County would likely be SMALL."

The analysis performed in the ESP Environmental Report for operation-related population growth (Section 5.8.2) and operation-related cumulative impacts (Section 10.5.2.4) supports the above-suggested conclusion that cumulative long-term operation-related socioeconomic impacts on Salem County would be SMALL rather than SMALL to MODERATE. As the ESP Environmental Report indicates, cumulative operation-related population increases during new plant operation would represent no more than 5 percent of the Salem County population, Salem County has a well established pattern of development and established public services to support and guide land use changes, there is currently enough housing in the four-county region of influence to accommodate the cumulative new operation-related families expected in Salem County if the type of housing sought by these families is not available in Salem County, operation-related population increases would cause negligible changes in demands on public water supply, wastewater treatment, police and fire protection services, mitigation measures used to offset construction-related impacts would be sufficient to offset operational impacts on traffic, and tax revenues resulting from the presence of the operational workforce would provide noticeable but small positive impacts in Salem County.

**Comment SHC-X-13:** Page 4-83, between lines 25 and 26. PSEG Nuclear recommends that between lines 25 and 26 on page 4-83, in Section 4.11.6 in DSEIS-45, the NRC insert the following paragraph identifying and considering positive socioeconomic effects such as increased property tax revenues for local taxing jurisdictions, increased purchases of local and regional goods and services, and increased local and regional direct and indirect employment

"Tax revenues associated with a new plant adjacent to Salem and HCGS would include payroll taxes on wages and salaries of the construction work force, corporate income tax on taxable income from operation of the new plant, sales and use taxes on purchases made by PSEG and the operations workforce, property taxes related to the building of new nuclear plants, and property taxes on owned real property. Additional tax revenues would be generated by economic activity resulting from the multiplier effect. Increased taxes collected are viewed as a benefit to the state and local jurisdictions in the region."

In support of the DSEIS revision suggested above, the NRC is referenced to Sections 5.8.2.2.1 through 5.8.2.2.3 in the ESP Environmental Report.

**Comment SHC-X-14:** Page 4-83, lines 34 to 36, Page 4-85, Table 4-24, row labeled "Socioeconomics," column labeled "Summary." Based on site-specific information from PSEG Nuclear's ESP Environmental Report, PSEG Nuclear recommends that the text on page 4-83, lines 34 to 36 (Section 4.11.7) in DSEIS-45 be revised as follows :

"The preliminary determination is that the potential cumulative impacts resulting from Salem and HCGS operation during the period of extended operation would be range from SMALL. Table 4-24 summarizes the cumulative impact by resource area."

For consistency with the text on page 4-83, lines 34 to 36, Table 4-24, row labeled "Socioeconomics," column labeled "Summary" on page 4-85 in DSEIS-45 should be

## **11. Comments Concerning Transmission Lines**

**Comment SHC-X-15:** Pages 2-17 to 2-19, and 2-21 – General. The text in section 2.1.5 (Power Transmission System) on pages 2-17 to 2-19 and Table 2-1 on page 2-21 in DSEIS-45 describes the transmission line system that connects Salem and HCGS to the regional transmission grid. However, as written, some of the text and table entries are misleading or inaccurate. Accordingly, PSEG Nuclear recommends the revisions expressed in the following specific comments. These suggested modifications are based on the information provided to the NRC by Section 3.1.6 in both the Salem and the HCGS License Renewal Environmental Reports and by the response to Post-Audit Environmental RAI questions ENV-94C and ENV-104A [PSEG Letter from P. Davison to NRC (Document Control Desk) regarding "Response to NRC Request for Additional Information dated April 16, 2010," dated April 29, 2010].

**Comment SHC-X-16:** Page 2-17, lines 14 to 20. The paragraph on page 2-17, lines 14 to 20, in DSEIS-45 does not accurately convey the configuration of the transmission lines built to deliver electricity generated at HCGS and Salem to the regional transmission grid. Accordingly, PSEG Nuclear suggests that the paragraph be revised as follows:

Three right-of-way (ROW) corridors containing four 500-kilovolt (kV) transmission lines connect Salem and HCGS to the regional electric grid. The four transmission lines are referred to in this supplemental environmental impact statement (EIS) as follows: HCGS-New Freedom; Salem-New Freedom North; Salem-Keeney (consisting of the Salem-Red Lion and Red Lion-Keeney segments); and Salem-New Freedom South. The HCGS-New Freedom and Salem-New Freedom North lines share a single ROW corridor. Public Service Electric and Gas Company (PSE&G) (a subsidiary of Public Service Enterprise Group, which also owns PSEG Nuclear) owns and maintains the transmission lines in all three ROW corridors except the portion of the Salem-Keeney line that extends into Delaware. That portion of the Salem-Keeney line is owned and maintained by and a subsidiary of Pepco Holdings Inc. (PHI). Each of the three ROW corridors is 350 ft (107 m) wide, with the exception of two-thirds of the corridor containing the Salem-Keeney line, which narrows to 200 ft (61 m) wide. Unless otherwise noted, the discussion of the power transmission system is adapted from the applicant's environmental reports (ERs) (PSEG 2009a; 2009b) or information gathered at the NRC's environmental site audit.

**Comment SHC-X-19:** Page 2-17, lines 34 to 37. Because Pepco is not the PHI subsidiary that owns and maintains the Red Lion-Keeney segment of the Salem-Keeney line and to improve accuracy and clarity, PSEG Nuclear suggests that the sentences on page 2-17, lines 34 to 37, be modified to read as follows:

Consequently, these two segments are now referred to in this supplemental EIS as Salem-Red Lion segment and Red Lion-Keeney segment. The portion of the Salem-Keeney line located entirely within Delaware, Red Lion-Keeney segment, is owned and maintained by a subsidiary of.

**Comment SHC-X-18:** Page 2-18, lines 7 to 11. To improve accuracy and clarity, PSEG Nuclear suggests that the sentences on page 2-18, lines 7 to 11 be modified to read as follows:

"Transmission lines considered in-scope for license renewal are those constructed specifically to connect the Salem and HCGS facilities to the transmission system (10 CFR 51.53(c)(3)(ii)(H)); therefore, the Salem-New Freedom North, Salem-Keeney (including Salem-Red Lion and Red Lion-Keeney, segments), Salem-New Freedom South, and HCGS-New Freedom, are considered in-scope for this supplemental environmental impact statement (SEIS) and are discussed in detail below. Because the HCGS-Salem tie line, which is also considered in-scope, does not pass beyond the site boundary and does not cross undisturbed areas, it is not discussed further."

**Comment SHC-X-19:** Page 2-18, lines 12 to 13. To improve accuracy and clarity, PSEG Nuclear suggests that the sentences on page 2-18, lines 12 to 13 be modified to read as follows

"Figure 2-8 illustrates the Salem and HCGS transmission system. The four transmission lines are described below within the designated ROW corridors (see Table 2-1)."

**Comment SHC-X-20:** Page 2-18, lines 14 to 21. To improve accuracy and clarity, PSEG Nuclear suggests that the text on page 2-18, lines 14 to 21 be modified to read as follows:

#### 2.1.5.1 North Corridor to New Freedom

- Salem-New Freedom North – This 500-kV line, which is operated by PSE&G, runs northeast from HCGS for 44 mi (71 km) within a 350-ft (107-m) wide corridor to the New Freedom switching substation north of Williamstown, NJ. This line shares the North corridor with the 500-kV HCGS-New Freedom line.”

- HCGS-New Freedom – This 500-kV line, which is operated by PSE&G, extends northeast from Salem for 43 mi (69 km) within the shared North corridor to the New Freedom substation, 4 mi (6 km) north-northeast ...”

**Comment SHC-X-22:** Page 2-18, lines 29 and 34. To improve accuracy and clarity, PSEG Nuclear suggests that the text on page 2-18, line 29 be modified to read as follows

“2.1.5.2 South Corridor to New Freedom”

To improve accuracy and clarity, PSEG Nuclear suggests that the text on page 2-18, line 34 be modified to read as follows

“...to the North corridor to New Freedom.

**Comment SHC-X-23:** Page 2-18, lines 35 to 39. To improve accuracy and clarity, PSEG Nuclear suggests that the text on page 2-18, lines 35 to 39 be modified to read as follows

#### 2.1.5.3 Corridor to Keeney

- Salem-Red Lion segment – This 500-kV line segment extends north from HCGS for 13 mi (21 km) and then crosses over the New Jersey-Delaware State line. It continues west over the Delaware River about 4 mi (6 km) to the Red Lion substation. In New Jersey, the line is operated by PSE&G, and in Delaware it is operated by a subsidiary of PHI.”

**Comment SHC-X-24:** Page 2-19, lines 3 to 6. To improve accuracy and clarity, PSEG Nuclear suggests that the text on page 2-19, lines 3 to 6 be modified to read as follows:

- Red Lion-Keeney segment – This 500-kV line segment, which is operated by a subsidiary of PHI, extends from the Red Lion substation 8 mi (13 km) northwest to the Keeney substation. Two thirds of the corridor is 200 ft (61 m) wide, and the remainder is 350 ft (107 m) wide.

**Comment SHC-X-25:** Page 2-19, lines 7 to 10 To improve accuracy and clarity, PSEG Nuclear suggests that the sentence on page 2-19, lines 7 to 10 be modified to read as follows:

The ROW corridors comprise approximately 149111 mi (179 km) and 4,220 ac (1,789 ha). The four lines cross within Camden, Gloucester, and Salem counties in New Jersey, and the Salem-Keeney line extends into New Castle County in Delaware.”

**Comment SHC-X-26:** Page 2-19, lines 12 to 18. To improve accuracy and clarity, PSEG Nuclear suggests that the paragraph on page 2-19, lines 12 to 18 be modified to read as follows

All transmission lines were designed and built in accordance with industry standards in place at the time of construction. All transmission lines will remain a permanent part of the transmission system and will be maintained by PSE&G and PHI (for its portion of the Salem-Keeney line) even if the operating licenses for Salem and Hope Creek are not renewed (PSEG, 2009a; 2009b).

**Comment SHC-X-27:** Page 2-19, lines 19 to 22. To improve accuracy and clarity, PSEG Nuclear suggests that the text on page 2-19, lines 19 to 22 be modified to read as follows,

Four 500-kV transmission lines connect electricity from Salem and HCGS to the regional electric transmission system via three ROW corridors outside the property boundary. The HCGS-Salem 500-kV tie-line, which connects the HCGS and Salem switch yards, spans approximately 2,000 ft (610 m). However, because this tie line does not pass beyond the site boundary and does not cross undisturbed land, it is not discussed further.

**Comment SHC-X-28:** Page 2-21, Table 2-1 For consistency with the changes we are recommending to the text on pages 2-17 to 2-19 (see comments above), PSEG Nuclear suggests that Table 2-1 be modified

## 12. Suggested Changes to DSEIS

**Comment SHC-W-29:** Page 1-13, NJPDES Permit NJ0025411 (Responsible Agency – NJDEP) should be included in the list of permits. This permit is referenced elsewhere in the document.

**Comment SHC-W-30:** Page 2-37, there are other regulatory sources besides the DRBC Stream Quality Objectives used in establishing effluent limits. As such, this language should be clarified as follows; The NJPDES Regulations at N.J.A.C. 7:14A-1 et seq. and the DRBC Stream Quality Objectives are used by the NJDEP to establish effluent discharge limits for discharges within the basin.

**Comment SHC-W-31:** Page, 2-38, effluent is discharged through the discharge structure, not the intake. Suggested change;

The once-through cooling water, service water, non-radiological liquid waste, radiological liquid waste, and other effluents are discharged through the cooling water system ~~intake~~ discharge.

**Comment SHC-W-32:** Page 2-49, NJDEP's findings are being cited in a PSEG document and it is unlikely that NJDEP determined that benthic invertebrates would not be substantially affected. We would prefer that this language be changed as follows;

Deleted: H

As a result of the PSEG studies, NJDEP determined that benthic invertebrates ~~would not be substantially affected by plant operations, and these organisms were no longer needed to be sampled~~ as part of the monitoring effort (PSEG, 1984).

**Comment SHC-W-33:** Page 2-49, NJDEP's findings are being cited in a PSEG document. Also, it is unlikely that NJDEP determined that such species are "unaffected" by the facility. We would prefer that this language be changed as follows;

These species were selected as target species during PSEG's early ecological studies with respect to the operation of Salem Units 1 and 2, but NJDEP and PSEG later determined that there was no need for them to continue to be that they were unaffected by the facility and they were no longer specifically monitored (PSEG, 1999)

**Comment SHC-W-34:** Page 2-53, there is no permitting rule at this time for Section 316(b) as noted on page 4-7. Rather it is the 1977 draft EPA Development Document (originally issued to provide guidance for the 1976 EPA Section 316(b) Final Regulations) which sets forth the representative species methodology. Therefore, this language should be modified as follows:

The 1977 EPA Draft Development Document permitting rule for Section 316(b) of the CWA included a provision to select representative species (RS) to focus such investigations...

**Comment SHC-W-35:** Page 4-9, there is no permitting rule at this time for Section 316(b) as noted on page 4-7. Rather it is the 1977 draft EPA Development Document which sets forth the representative important species methodology. Therefore, this language should be modified as follows:

The 1977 EPA Draft Development Document 316(b) rule for Section 316(b) of the CWA included a provision to select Representative Important Species (RIS) to focus the investigations, and previous demonstrations.....

**Comment SHC-W-36:** Page 4-9, there is no permitting rule at this time for Section 316(b). Therefore, this language should be modified as follows:

The 2006 CDS used the term Representative Species (RS) to comprise both RIS and target species and to be consistent with the then effective published Phase II Rule.....

**Comment SHC-W-37:** Page 4-34, year is cited incorrectly; PSEG (1999a) reports estimates of impingement mortality with the modified screens were....

**Comment SHC-W-38:** Page 4-46, because EPA delegated the NPDES permit program to NJDEP, NJDEP makes the best professional judgment determination for Section 316(b) of the Clean Water Act. This should be changed as follows:

EPA's Phase II Rule has been suspended, and compliance with CWA Section 316(b) is presently based on NJDEP's EPA's best professional judgment.

**Comment SHC-X-1:** On pages xviii, line 14 to xxi, line 41, the DSEIS-45 Executive Summary reports the potential environmental impacts of Salem and HCGS during the period of extended operation on the following environmental resources: land use; air quality; groundwater use and quality; surface water use and quality; aquatic resources; terrestrial resources; threatened and endangered species; human health; and socioeconomics.

PSEG Nuclear notes that for the following resource areas the Executive Summary begins each discussion with and limits it to NRC's conclusion regarding the level of direct and indirect impacts: land use; air quality; groundwater use and quality; surface water use and quality; threatened and endangered species; and human health. For aquatic resources, terrestrial resources, and socioeconomics, however, the Executive Summary begins each discussion with and incorporates into it NRC's conclusion regarding the level of cumulative impacts. Because the authority of the applicant and Staff to mitigate impacts may be very different for cumulative impacts than for direct and indirect impacts, PSEG Nuclear believes this inconsistent presentation in the Executive Summary is confusing. Therefore, we recommend that the Executive Summary be modified to clearly summarize only NRC's conclusions regarding direct and indirect impact levels for all environmental resource areas.

If NRC includes conclusions about cumulative impacts in the DSEIS-45 Executive Summary, we recommend that such conclusions be presented separately from conclusions about direct and indirect impacts, and that a clear explanation be provided of the

**Comment SHC-X-2:** On page xix, lines 21 to 23 (Executive Summary), DSEIS-45 states the following conclusion:

"Based on this assessment, the Staff concludes that cumulative impacts during the relicensing period from past, present, and future stressors affecting aquatic resources in the Delaware Estuary would range from SMALL to MODERATE." The above-quoted statement is inconsistent with the following conclusion quoted from page 4-77, lines 39 to 42 (Section 4.11.2) in the DSEIS-45:

"Based on the assessment, the Staff concludes that cumulative impacts during the relicensing period from past, present, and future stressors affecting aquatic resources in the Delaware Estuary would range from MODERATE to LARGE."

As indicated in above, PSEG Nuclear does not favor retaining statements about cumulative impacts in the Executive Summary. Therefore, we recommend that NRC resolve the inconsistency between pages xix and 4-77 by making the following changes on page xix

- Change paragraph header in line 10 to "SMALL "
- Delete sentences in lines 21-23

**Comment SHC-X-3:** PSEG Nuclear submits that the conclusion in DSEIS-45 on page 4-77, lines 27 to 44 that cumulative impacts to aquatic resources during the periods of extended operation for Salem and HCGS would be SMALL to LARGE is misleading. As the information in the bulleted list below indicates, except for possible impacts associated with climate change, there is no reason to believe that cumulative impacts during the periods of extended operation for Salem and HCGS would be anything other than SMALL. However, considering that cumulative impacts from climate change would occur, if at all, at unknown future times, which may not coincide with the periods of extended operation for Salem and HCGS, and that the level of such impacts, if they occurred, are not quantifiable, PSEG Nuclear submits that it would be misleading to represent such cumulative impacts as having potential to be LARGE during the

Salem and HCGS periods of extended operation. Accordingly, PSEG Nuclear recommends that NRC acknowledge the possibility for mitigation and management of impacts from climate change and revise the conclusion on page 4-77, lines 39 to 42 to read as follows

"Even so, NRC acknowledges that methods for mitigation and management of anthropogenic environmental stressors such as climate change are being investigated and may serve to reduce future cumulative impact levels. Based on the assessment, the Staff concludes that cumulative impacts during the relicensing period from past, present, and future stressors affecting aquatic resources in the Delaware Estuary during the relicensing period would range from SMALL to MODERATE."

It should be noted that the change suggested above would also resolve an inconsistency between the existing text on page 4-77 and the entry on page 4-84 in Table 4-24 (Summary of Cumulative Impacts on Resource Areas), row labeled "Aquatic Resources," column labeled "Impact," which already reads "SMALL to MODERATE."

**Comment SHC-X-4:** On page xix, lines 25 to 31 (Executive Summary), DSEIS-45 states the following conclusion:

"SMALL to MODERATE. With regard to operation of Salem and HCGS during the license renewal term, the NRC did not identify any Category 2 issues for terrestrial resources, nor did the staff identify any new or significant information during the environmental review; therefore, there are no impacts beyond those discussed in the GEIS. However, while the level of impact due to direct and indirect impacts of Salem and HCGS on terrestrial communities is SMALL, the cumulative impact when combined with all other sources, even if Salem and HCGS were excluded, would be MODERATE."

PSEG Nuclear recommends that the Executive Summary be modified to clearly summarize only NRC's conclusions regarding direct and indirect impact levels for all environmental resource areas. Accordingly, PSEG Nuclear recommends changing the above-quoted text on page xix, lines 25 to 31 to read as:

"SMALL. The staff did not identify any Category 2 impact issues for terrestrial resources, nor did the staff identify any new or significant information during the environmental review; therefore, there would be no impacts beyond those discussed in the GEIS."

If NRC includes conclusions about cumulative impacts in the DSEIS-45 Executive Summary at all, we recommend that such conclusions be presented separately from conclusions about direct and indirect impacts, and that a clear explanation be provided of the significance of conclusions about cumulative impacts to license renewal decision making.

**Comment SHC-X-5:** On page xxi, lines 33 to 41 (Executive Summary), DSEIS-45 states the following conclusion: "Based on this information, the Staff concludes that the potential direct and indirect impacts to socioeconomics from continued operation of the Salem and HCGS would be SMALL. However, if PSEG decides to proceed with the construction of a new nuclear plant at the Salem and HCGS site, the cumulative impacts to socioeconomics could be SMALL to LARGE. This specific impact would depend on the actual design, characteristics and construction practices proposed by the applicant for the new nuclear plant. If a combined

license application is submitted to the NRC, the detailed socioeconomic impacts would be analyzed and addressed in a separate NEPA document that would be prepared by the NRC."

PSEG Nuclear recommends that the Executive Summary be modified to clearly summarize only NRC's conclusions regarding direct and indirect impact levels for all environmental resource areas. Accordingly, PSEG Nuclear recommends changing the above-quoted text on page xxi, lines 33 to 41 to read as follows:

"Based on this information, the Staff concludes that the potential direct and indirect impacts to socioeconomics from continued operation of the Salem and HCGS would be SMALL.

A corresponding change is recommended for the paragraph header on page xx, line 33, as follows; "SMALL."

If NRC includes conclusions about cumulative impacts in the DSEIS-45 Executive Summary at all, we recommend that such conclusions be presented separately from conclusions about direct and indirect impacts, and that a clear explanation be provided of the significance of conclusions about cumulative impacts to license renewal decision making.

### **13. Comments concerning Energy Alternatives**

**Comment SHC-A-2:** The Environmental Federation believes that conservation, efficiency, and sustainable energy sources, such as wind power, solar power, and wave power, should be invested in, rather than federally subsidizing nuclear energy and fossil fuels.

America will never wean itself from unsustainable coal, nuclear, and natural gas energy, until alternatives are aggressively supported. If the playing field were leveled, whether by eliminating all subsidies, or providing equal subsidy, wind, solar, and efficiency would out-compete nuclear and coal plants every time.

Governor Christie has committed to much more aggressive implementation of the strong goals contained in the 2007 Global Warming Response Act, and the 2008 Energy Master Plan.

For example, 25 percent renewable by 2025, a renewable portfolio standard, and 20 percent by 2020 energy efficiency portfolio standard. These efforts provide the path to a safe, clean, reliable green energy future, and a fourth plant at Salem is not part of that path.

**Comment SHC-T-2:** We have available, we are moving in the direction of developing alternative renewable energy that is risk-free, safer, cleaner, and has less impact, certainly solar and wind.

There are countries in the world now where 20 percent of their energy comes from those sources. We should be moving in that direction, and the need for nuclear power should gradually be reduced over time.

**Comment SHC-T-3:** there are the recently reported, and I'm no expert on the operation and maintenance of nuclear facilities, but the news reports were troubling, concerning the maintenance of the concrete containment, spalling and deterioration of that.

The piping that is part of the steam generator tube, corrosion in the steel liner, underground walls with evidence of groundwater penetration. These have all been covered, recently, in the news.

And I assume that these are issues that can all be addressed. But, certainly, probably relate to the age and presence of high, fairly high concentration of salt water and its corrosive effect on the facility.

So, you know, I see a future, a sustainable future that is less dependent on nuclear power, and moves us more into cleaner and safer renewables.

#### **14. Comments Out of Scope of License Renewal**

**Comment SHC-W-1:** The Draft Supplemental Environmental Impact Statement for Hope Creek does mention a discussion of the amendment to PSEG's license allowing the pilot program to produce Cobalt-60 prior to use on a production basis. While the pilot program was approved in October of 2010, following the NRC's evaluation of plant operations and accident scenarios, should the pilot move into production mode various impacts of ongoing production should be evaluated and discussed. This would include an assessment of radioactive emissions (the contribution of Cobalt-60 to dose received by offsite members of the public) and future evaluations of the production impacts on plant structure and operation (i.e., the spent fuel pool). The Bureau of Nuclear Engineering (BNE) expects that this would be included in a future license amendment should the decision be made to produce Cobalt-60 and that the license amendment would include an environmental impact statement.

**Comment SHC-W-12:** As it relates to the ESP and proposed additional unit at Hope Creek, how does the trend of declining water levels in the upper PRM affect the potential water use with the proposed new unit? Will there need to be deeper wells in the mid-levels of the PRM?

## EPA December 16, 2010 letter with comment on Salem-Hope Creek dSEIS

EPA comment: "... internal and external processes and the waste streams that would be candidates for pollution prevention (P2) technologies.

NRC Response: In chapter 2 of the Salem and HCGS SEISs, the staff provided a discussion of the nonradiological waste processing programs at Salem and HCGS. The discussion included several sections addressing nonradiological waste including: compliance with EPA and State of New Jersey waste requirements, types and amounts of waste generated, waste processing, and pollution prevention and waste minimization programs. A discussion of the internal and external processes and waste streams that would be candidates for pollution prevention technologies and recommendations to further reduce the environmental impacts is beyond the scope of the staff's license renewal process. This is because nonradiological waste is a Category 1 issue that has been thoroughly evaluated and generically resolved in the GEIS for license renewal. The GEIS concluded that, for all plants, the impacts associated with nonradiological waste are small. During its evaluation of the environmental impacts associated with Salem and HCGS, the staff did not identify any new and significant information during the scoping process, the review of the Salem and HCGS environmental reports, and the Staff's site visit that contradict the GEIS's findings. Therefore, there are no impacts beyond those identified and evaluated in the GEIS.

No changes will be made to the SEIS based on the comment.

## State of New Jersey comments

Comment SHC-W-13: Radiological Impacts of Normal Operation / Radioactive Effluent Release Program / Page 4-56 ...

Response: As discussed in the SEIS, both facilities discharge radioactive liquid effluents into the Delaware Estuary in accordance with NRC requirements. Once the effluent is released into the estuary, it will be dispersed and move with the tide. Therefore, it is possible that debris in the water could be exposed to the radioactive material and be pulled into the cooling water intake. However, as discussed in section 2.1.6.1 of the SEIS, both facilities are equipped with several features to prevent intake of debris and biota into the lines. Any debris and biota that pass through the coarse-grid trash racks on the intake line will be picked up on the vertical traveling screens. The traveling screens are washed and the contents of both fish and debris are released back into the estuary. The NRC requires that Salem and HCGS conduct a radiological environmental monitoring program (REMP) that obtains samples of environmental media outside of the plant boundary to determine if radioactivity released from the facility is impacting the public and the environment. Section 4.8, "Human Health" of the SEIS contains a discussion of the radiological impacts of radioactive effluents released by Salem and HCGS. The REMP is not required to sample the fish and debris collected by the traveling screens and returned to the estuary. The staff's review of the REMP and dose data from radioactive gaseous and liquid effluents from Salem and HCGS found no adverse impact to the public or the environment from. The radioactivity in the environmental samples was low, below NRC reporting criteria and the doses were below NRC dose limits in 10 CFR Part 20 and Appendix I to 10 CFR Part 50. Based on that information, it is unlikely that debris that may have been briefly exposed to radioactive material in the estuary would contain a measurable amount of radioactivity.

No changes will be made to the SEIS based on the comment.

Comment SHC-W-20: on exposure to electric and magnetic fields...

Response: The NRC staff evaluated the significance of the electric shock potential from the transmission lines from Salem and HCGS in section 4.8.4 of the SEIS. The staff concluded that the electric shock potential from the transmission lines from Salem and HCGS was small because the lines were below the applicable National Electric Safety Code criteria of 5 millamperes.

The comments provided by the State regarding electric shock and magnetic fields guidelines are noted.

No changes will be made to the SEIS based on the comment.

Comment SHC-W-4: Mixed waste comment...

Response: The staff acknowledges the comment that although there are currently no processes at Salem and HCGS that produce mixed wastes; it is possible that due to human error and inadvertent mixing of wastes may result in the generation of mixed waste at Salem and HCGS. If mixed waste is produced, it will be safely handled and processed in accordance with plant procedures to comply with regulatory requirements.

No changes will be made to the SEIS based on the comment.