

Susquehanna Steam Electric Station  
Units 1 & 2

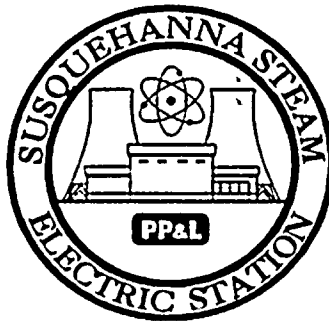
1997  
**ANNUAL ENVIRONMENTAL OPERATING REPORT**  
**(NONRADIOLOGICAL)**



PP&L, Inc.  
Allentown, PA  
April 1998

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Units 1 & 2**

**1997  
ANNUAL ENVIRONMENTAL OPERATING REPORT  
(NONRADIOLOGICAL)**

**Facility Operating License Nos. NPF-14 & NPF-22  
Docket Nos. 50-387 & 50-388**

**prepared by  
Environmental Services  
Operations Technology  
PP&L, Inc.  
Allentown, PA  
April 1998**



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**SUSQUEHANNA STEAM ELECTRIC STATION**  
**ANNUAL ENVIRONMENTAL OPERATING REPORT**  
**(NONRADIOLOGICAL)**

**1997**

Prepared by: *Jerome S. Fields* Date: 4/1/98  
Jerome S. Fields  
Senior Environmental Scientist-Nuclear

Reviewed by: *Curtis H. Saxton* Date: 4/2/98  
Curtis H. Saxton  
(Acting) Supervisor-Effluents Management

Approved by: *Richard L. Doty* Date: 4/6/98  
Richard L. Doty  
Supervisor-Operations Technology



## FOREWORD

The Susquehanna Steam Electric Station (Susquehanna SES) consists of two boiling water reactors, each with a net electrical generating capacity of approximately 1,150 megawatts. The 1,700 acre site is located in Salem Township, Luzerne County, Pennsylvania approximately five miles northeast of Berwick, Pennsylvania. Under terms of an agreement finalized in January 1978, 90% of the Susquehanna SES is owned by PP&L, Inc. (Licensee) and 10% by the Allegheny Electric Cooperative, Inc.

The 1997 Annual Environmental Operating Report (Nonradiological) for Units 1 and 2 describes results of programs necessary to meet requirements of Section 2F of the Operating License, Protection of the Environment, and Appendix B of the Operating License Environmental Protection Plan, as well as commitments in the Final Environmental Statement related to operation (NUREG-0564), June 1981. This report discusses environmental commitments and impacts from January 1, 1997, through December 31, 1997.

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FIGURE

5.1-1 Auditing Organization Chart

## 1.0 OBJECTIVE

The Licensee has developed procedures and guidelines to ensure that operation of Susquehanna SES does not adversely affect the environment in the vicinity of the station. Also, these procedures allocate responsibilities and interfaces necessary to monitor environmental impacts. They include coordination of U.S. Nuclear Regulatory Commission (NRC) requirements and consistency with other federal, state, and local requirements for environmental protection.

The objective of this 1997 Annual Environmental Operating Report (Nonradiological) is to provide a summary of both environmental programs and procedures as required in the Final Environmental Statement (FES) related to the operation of the Susquehanna SES, Unit 1 and 2, NUREG-0564, June 1981, and Appendix B - Environmental Protection Plans (EPP) to Operating Licenses, No. NPF-14 and No. NPF-22. The 1997 report is the 16th Annual Environmental Operating Report (Nonradiological) submitted to meet EPP requirements.

The Licensee submitted an Environmental Report-Operating License Stage for Susquehanna SES to the NRC in May 1978. This report reviewed the results of the preoperational impacts of construction and described the preoperational and proposed operational environmental monitoring programs. The NRC and other agencies reviewed this report and made recommendations for operational environmental monitoring programs which were listed in the FES.



## 2.0 ENVIRONMENTAL ISSUES

### 2.1 Aquatic Issues

The aquatic monitoring program for operation of the Susquehanna SES is divided into two parts. Part 1 includes effluent monitoring required by a National Pollutant Discharge Elimination System (NPDES) permit issued by the Pennsylvania Department of Environmental Protection (PaDEP). Monthly discharge monitoring reports are submitted to the PaDEP as part of the permitting requirements. The station operational NPDES permit No. PA-0047325 was reissued on June 22, 1995, and is to expire on June 21, 2000.

The PaDEP is responsible for regulating the water quality permit for the Susquehanna SES. The NPDES permit deals with discharge parameters for the Susquehanna SES Sewage Treatment Plant, Cooling Tower blowdown, and miscellaneous low volume waste discharges. The Cooling Tower blowdown also includes in-plant process streams which discharge to the Susquehanna River. Various low volume waste sumps discharge to the storm sewers which flow into Lake Took-a-while, and eventually into the Susquehanna River. NPDES permit parameters monitored are listed in the 1995 Annual Environmental Operating Report (Nonradiological).

Part 2 of the aquatic monitoring program deals with programs listed in the FES or recommended by the Pa DEP.

#### Chesapeake Bay Nutrient Reduction Strategy

The Susquehanna SES is voluntarily supporting the Chesapeake Bay Nutrient Reduction Strategy. During the fourth quarter 1997, river intake and blowdown samples were collected and analyzed for Total Nitrogen and Total Phosphorus. Sample data indicated that the differences between blowdown and river intake results were consistent with station Cooling Tower cycles of concentration. The goal of this nutrient reduction strategy is to have a 40% reduction of Total Phosphorus and Total Nitrogen (entering the bay) by the year 2000.

#### American Shad

American Shad continue to be re-introduced into the Susquehanna River. The Susquehanna River Anadromous Fish Restoration Committee administered programs that resulted in the capture of 103,945 American shad (*Alosa sapadissima*) and 477,589 blueback herring (*Alosa aestivalis*)

in the East and West fish lifts below the Conowingo Dam on the Susquehanna River from 7 April through 9 June 1997 (Ref. 2.1-1). Both the shad and blueback catches were the largest ever taken at Conowingo. A total of 10,528 shad, 81% of those captured at the West lift, were transported and stocked upstream of the four major dams. For the first year since the East lift was operated, all fish were allowed to pass into Conowingo Pond. This included 90,971 shad, 344,332 bluebacks, and 284,000 other fishes of 33 taxa. The greatest numbers of shad passed into the Pond from early to mid-May.

At PP&L's Holtwood Dam, the next dam upriver, both the tailrace and spillway lifts were operational from 18 April through 14 June. During this period, 28,063 shad (31% of Conowingo) and 1,024 bluebacks passed over the dam as based on viewing window counts. The peak day of shad passage occurred on 2 May when 2,826 shad utilized the lifts.

The new fish lift at Safe Harbor Dam, the third upriver dam, operated from 21 April to 15 June except for problems with a collapsed attraction water inlet pipe from 29 April through 9 May and 1-2 June. A total of 20,828 shad and 534 bluebacks were counted at the viewing window as they passed over the dam. The Safe Harbor lift passed 74% of the shad counted at Holtwood and 23% of all shad that used the Conowingo East lift.

Results of an American shad population assessment for the upper Chesapeake Bay and the Conowingo tailrace estimated 708,628 and 423,324 shad, respectively - both new records. Age analysis and spawning history showed that most males were ages 3-5 years and females 4-6 years, and that repeat spawning had increased substantially from past years to 25% in males and 29% in females. Otolith analysis of 250 adult shad from the Conowingo West lift revealed that 40% were of hatchery origin and 60% were wild. This was a marked increase in wild fish compared to previous years.

The Pennsylvania Fish and Boat Commission operated a shad culture facility along the Juniata River at the Van Dyke Research Station, near Thompsettown, Pennsylvania, in 1997. From 6 May to 9 June, 22.9 million shad eggs were delivered to the hatchery from the Delaware River (11.8 M) and the Hudson River (11.1M). Viability of these eggs was 46.6% resulting in 9.3 million fry that were stocked in the Susquehanna and Lehigh Rivers. On 23 June, 1.2 million fry were released into the Susquehanna River at the Berwick Boat Club Boat Ramp, located about 8.5 miles downriver from the Susquehanna SES.

Monitoring for impinged juvenile American shad was not conducted on the

intake screen of the Susquehanna SES in the fall of 1997. Mr. Richard St. Pierre, Susquehanna River Coordinator for the Fish and Wildlife Service, felt that such a monitoring effort would not be productive because significant spawning probably did not occur near Berwick. (Exhibit 1)

Finally, General Public Utilities owns and operates the York Haven Dam which is the last major blockage to shad migration on Susquehanna River. They are constructing a conventional fish ladder at the East Channel Dam of York Haven which is scheduled to be operational by April 2000.

#### Biofouling Mollusk Monitoring

The biofouling mollusks monitoring program was continued at the Susquehanna SES in 1997. Though zebra mussels (*Dreissena polymorpha*) have been found in past years in samples near Johnson City, New York, about 150 miles upriver, and Asiatic clams (*Corbicula fluminea*) were confirmed 40 miles downriver at Northumberland, Pennsylvania, neither of these species has yet been found in the vicinity of the Susquehanna SES.

The monitoring program currently involves a biweekly schedule of artificial substrate sampling in the river near the Susquehanna SES from May through November. Artificial substrates are also maintained in side-stream samplers located in the Intake Structure and on the plant site. In addition, monthly inspections of natural substrates were performed in the river and in the Emergency Service Water Spray Pond.

## 2.2 Terrestrial Issues

### 2.2.1 Studies Previously Completed

Terrestrial environmental studies completed prior to 1989 included Cooling Tower bird impaction and sound level surveys.

### 2.2.2 Sound Level Survey

An increase in station power generation of 5% was completed during spring 1995. A power uprate sound level survey was conducted in June 1995.

### 2.2.3 Maintenance of Transmission Line Corridors

Transmission line corridor maintenance and inspection records will be maintained by the Power Delivery group and are available upon request. Records will be maintained for five years.

### 2.3 Cultural Resources Issues

Environmental Protection Plan actions required to satisfy Title 36, Code of Federal Regulations Part 800, relating to archeological sites, were completed in 1987. The Advisory Council on Historic Preservation (ACHP), in accordance with 36 CFR 800.6 (a)(1), approved the NRC's determination of "no adverse effect" for archeological sites SES-3, SES-6, SES-8, and SES-11 located on the Licensee's property (NRC letter dated October 28, 1987, to ACHP).

As part of the determination of effect process, the Licensee committed to and is taking appropriate measures to mitigate impacts from plant maintenance and operation to sites SES-3, SES-6, SES-8 and SES-11. There was no impact to these sites from plant maintenance and operation in 1997.

## REFERENCES

- 2.1-1 Restoration of American Shad to the Susquehanna River, Annual Progress Report-1997, Susquehanna River Anadromous Fish Restoration Committee, February 1998.

### 3.0 CONSISTENCY REQUIREMENTS

#### 3.1 Plant Design and Operation

In accordance with the Environmental Protection Plan (EPP), the Licensee shall prepare and record an environmental evaluation of proposed changes in plant design, operation, or performance of any test or experiment which may significantly affect the environment. Before initiating such activities, the Licensee shall provide a written evaluation and obtain prior approval from the Director, Office of Nuclear Reactor Regulation. Criteria for the need to perform an environmental evaluation include: (1) a significant increase in any adverse environmental impact previously evaluated by the NRC or Atomic Safety and Licensing Board, (2) a significant change in effluent or power level, or (3) a matter not previously evaluated which may have a significant adverse environmental impact.

The EPP requires that if an activity meets any of the criteria to perform an environmental evaluation, the NRC will be notified. If the change, test, or experiment does not meet any of these criteria, the Licensee will document the evaluation and allow the activity to occur.

During operation of the Susquehanna SES in 1997, there were five proposed activities which the Licensee reviewed as part of the unreviewed environmental question program. None of these five activities was determined to be an unreviewed environmental question. These activities were:

1. An evaluation was performed on the discharge of about 10 to 20 gallons per minute of water from a hydrolaser pressure relief line to an outside sump. This sump discharged to the storm sewer. The hydrolaser water contained no hazardous substances or conventional pollutants other than perhaps a small amount of oil and grease from the hydrolasing equipment. Since the sump is equipped with an operating oil separator, this activity was considered to be of negligible environmental impact and was approved.
2. The discharge of gaseous nitrogen to the atmosphere was evaluated. The nitrogen had to be drained from a cryogenic tank in order to allow the repair of a valve. The amount of nitrogen to be discharged was the equivalent of about 260 gallons of liquid nitrogen. There are no regulations restricting the release of nitrogen, and the release was deemed to be of negligible environmental impact.



3. The demolition of two support buildings and ensuing construction of a new office building were evaluated. Local permits were obtained for the demolition and construction activities. Both activities were to occur on land that had been previously disturbed. The construction and demolition were determined to be of negligible adverse environmental impact.
4. An evaluation was performed on the construction of two prefabricated buildings adjacent to the warehouse. The construction is to occur in a previously disturbed area and will be of negligible adverse environmental impact.
5. An evaluation was performed on the use of calcium chloride for snow management on the roads at the Susquehanna SES. There are no state or federal limits on either the discharge of calcium chloride or on the application of road salt for snow removal. Therefore, this activity was determined to be of no significant environmental impact. However, chloride concentrations will be monitored in the well water that supplies the plant, to ensure that water quality is not adversely affected by this practice.

None of these five events caused significant increases or changes as listed in the first paragraph of this section.

### 3.2 Reporting Related to NPDES Permits and State Certifications

Reports and information required by the EPP concerning the NPDES Permit are to be submitted to both the NRC and PaDEP. These include violations and changes and additions to the permit. In 1997 there were no violations, changes or additions to this permit. Therefore, only monthly Discharge Monitoring Reports were submitted to the PaDEP. Pennsylvania is a NPDES Permitting Agreement State with the U.S. Environmental Protection Agency; therefore, state certification pursuant to Section 401 of the Clean Water Act is not required.

### 3.3 Changes Required for Compliance with Other Environmental Regulations

Permits received for the Susquehanna SES in 1997 were:

PERMIT

NEW/RENEWAL

Air Blasting Operation Air Quality Permit  
No. 40-399-024 (PaDEP)

Renewal

Diesel Generator (E) Air Quality Permit  
No. 40-306-004 (PaDEP)

Renewal

Diesel Generators (A-D) Air Quality Permit  
No. 40-306-005 (PaDEP)

Renewal



## 4.0 ENVIRONMENTAL CONDITIONS

### 4.1 Unusual or Important Environmental Events

During 1997, four operating occurrences were reviewed as part of the significant environmental event evaluation. There were no adverse environmental effects caused by these occurrences. The NRC was not notified of any of these events since there were no EPP noncompliances in 1997. Also, there were no non-routine reports submitted in 1997.

These events were as follows:

1. A sewer line blocked, which caused a manhole to overflow gray water and sanitary waste onto about 20 square feet of the surrounding soil. The event was not reportable and the blockage was promptly cleared.
2. Approximately 100 gallons of sodium bisulfite solution leaked onto the ground from a pipe in the circulating water chemical injection system. This amount is <10% of the reportable quantity (1,100 lbs.). The release was therefore not reportable, the spill was cleaned up, and the pipe was repaired.
3. Approximately 225 pounds of refrigerant HCFC-22 was released from a leaking valve on a cooling unit. There was no regulatory reportability requirement for this release. The faulty valve and several smaller leaks were repaired and the system was recharged.
4. About 2,000 gallons of rainwater was pumped from two transformer berms directly to the storm sewer, rather than to a low volume waste sump with an oil separator, as required by station procedure. When station personnel realized the error, the discharge was stopped and the berm water was sampled for compliance with the facility's NPDES permit. Samples collected from these discharges were within NPDES permit limits. The Department of Environmental Protection was notified of the event via the monthly discharge monitoring report. To prevent a recurrence of the event, personnel were retrained on the proper procedure for pumping transformer sumps.

## 4.2 Environmental Monitoring

### 4.2.1 General Monitoring

With the exception of aquatic monitoring discussed in Section 2.1 of this report all other monitoring of station operational impacts on aquatic and terrestrial biota listed in the FES and Appendix B of the operating license has been completed.

### 4.2.2 Maintenance of Transmission Line Corridors

Transmission line maintenance and inspection records are maintained by the Power Delivery group.

## 5.0 ENVIRONMENTAL PROTECTION PLAN REPORTING REQUIREMENTS

### 5.1 Review and Audit

The Licensee has established procedures for an independent group to review and audit compliance with the EPP. Audits of EPP compliance are conducted by Nuclear Assessment Services. The Manager-Nuclear Assessment Services with support, as needed, from the Manager-Environmental Management Division is responsible for verifying compliance with the EPP. The Manager-Nuclear Technology is responsible for off-site environmental monitoring and for providing any related support concerning licensing. The General Manager - SSES is responsible for on-site environmental matters. The Auditing Chart (Fig. 5.1-1) lists the groups utilized in environmental reviewing and auditing of the Susquehanna SES environmental monitoring programs as well as those responsible for managing these programs.

There will be periodic audits of this report. An audit of the EPP was conducted in 1997. There were no findings or observations/ recommendations.

### 5.2 Records Retention

Records and logs relative to environmental aspects of plant operation and audit activities are retained in the Nuclear Records System. This system provides for a convenient review and inspection of environmental documents which are available to the NRC upon request.

All records concerning modifications of plant structures, systems and components which are determined to potentially affect the continued protection of the environment, shall be retained for the life of the plant. All other records, data, and logs relating to the environmental programs and monitoring shall be retained for at least five years or, where applicable, in accordance with the requirements of other agencies.

### 5.3 Changes in Environmental Protection Plan

There were no requests for changes in the EPP during 1997.

## 5.4 Plant Reporting Requirements

### 5.4.1 Routine Reports

This Annual Environmental Operating Report (Nonradiological) was prepared to meet routine reporting requirements of the EPP for 1997. It provides summaries and analyses of environmental protection activities required in Subsection 4.2 of the EPP for the reporting period.

### 5.4.2 Nonroutine Reports

There were no Unusual or Important Environmental Events as identified in the Environmental Protection Plan that required a nonroutine report in 1997.

**SUSQUEHANNA RIVER ANADROMOUS FISH  
RESTORATION COOPERATIVE**

**Members**

Maryland Department of Natural Resources  
National Marine Fisheries Service  
New York Division of Fish and Wildlife  
Pennsylvania Fish and Boat Commission  
Susquehanna River Basin Commission  
United States Fish and Wildlife Service

**Secretary**

Susquehanna River Coordinator  
U. S. Fish and Wildlife Service  
1721 N. Front Street, Rm 105  
Harrisburg, PA 17102  
Telephone: 717-238-6425  
Fax: 717-238-0495

September 2, 1997

**MEMORANDUM**

**TO:** Jerome Fields, PP&L, Allentown, PA  
**FROM:** Dick St. Pierre, USFWS, Harrisburg, PA  
**SUBJECT:** Juvenile Shad Monitoring at Susquehanna SES

Although we had a record return of shad to the Susquehanna River in 1997 most used fish passage facilities at the three downstream dams. Only 10,700 adult shad were trapped at Conowingo and trucked to waters above York Haven Dam. That project is scheduled to have operational fish passage by spring 2000.

We received reports from successful catch-and-release shad anglers as far upstream as Sunbury on the mainstem and Lewistown on the Juniata. Nevertheless, because the number of shad available to migrate past Sunbury was so small, it is doubtful that significant spawning could have occurred near Berwick. Therefore, I do not recommend sampling for juvenile shad at the Susquehanna SES cooling water intake in 1997. Please call if you wish to discuss this further.

*Dick*

cc: Ted Jacobsen





# FIGURE 5.1-1 AUDITING CHART

