Susquehanna Steam Electric Station
Units 1 & 2

1993
Annual Environmental Operating Report (Nonradiological)

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

prepared by
Environmental Services
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SUSQUEHANNA STEAM ELECTRIC STATION

ANNUAL ENVIRONMENTAL OPERATING REPORT (NONRADIOLOGICAL)

1993

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FOREWORD

The Susquehanna Steam Electric Station (Susquehanna SES) consists of two boiling water reactors, each with a net electrical generating capacity of 1,050 megawatts. The 1,500 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 the Pennsylvania Power and Light Company (Licensee) and 10% by the Allegheny Electric Cooperative, Inc.

The 1993 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, 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, 1993, through December 31, 1993.

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1.0 OBJECTIVES

The Licensee submitted an Environmental Report-Operating License Stage for the Susquehanna SES to the U.S. Nuclear Regulatory Commission (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 Final Environmental Statement (FES) related to the operation of the Susquehanna SES, Unit 1 and 2, NUREG-0564, June 1981. In addition, the Licensee developed procedures and guidelines to ensure that operation of the Susquehanna SES does not adversely affect the environment in the vicinity of the station.

Procedures were developed to allocate responsibilities and interfaces necessary to monitor environmental impacts. These include coordination of NRC requirements and consistency with other federal, state, and local requirements for environmental protection. To keep the NRC informed of other agency activities, copies of environmental correspondence are routinely provided. In addition, this 1993 Annual Environmental Operating Report (Nonradiological) provides a summary of both environmental programs and procedures as required in the FES and Appendix B - Environmental Protection Plans (EPP) to Operating Licenses, No. NPF-14 and No. NPF-22. The 1993 report is the twelfth Annual Environmental Operating Report (Nonradiological) submitted to meet EPP requirements.

2.0 ENVIRONMENTAL ISSUES

2.1 Aquatic Issues

The aquatic monitoring program for operation of the Susquehanna SES is divided into two phases. Phase 1 includes effluent monitoring required by a National Pollutant Discharge Elimination System (NPDES) permit issued by the Pennsylvania Department of Environmental Resources (PaDER). Monthly discharge monitoring reports are submitted to the PaDER as part of the permitting requirements. The station operational NPDES permit No. PA-0047325 was reissued on January 22, 1990, and expires on January 21, 1995. Phase 2 of the aquatic monitoring program deals with programs listed in the FES involving environmental monitoring.

The PaDER in Phase 1 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.

The parameters monitored in the sewage treatment plant effluent limits are as follows:

Flow
pH
Total Suspended Solids (TSS)
Carbonaceous Biochemical Oxygen Demand (CBOD-5)
Fecal Coliforms

In-plant process effluents combine with the cooling tower blowdown before being released to the Susquehanna River. These process effluents are monitored for flow, TSS, and oil and grease. Parameters monitored in the combined cooling tower blowdown to the Susquehanna River are:

Flow
pH
Chromium
Zinc

The parameters monitored in the various low volume waste sumps and drains that discharge to storm sewers leading to Lake Took-a-while are:

Flow
pH
TSS
Oil and Grease

The Licensee has replaced gaseous chlorine at the Susquehanna SES with Betz Clam-Trol CT-1 as a microbiological control treatment. Approval of the use of this product is included in the station's NPDES permit. Also, zinc and sulfuric acid are no longer used for treatment of circulating water.

Phase 2 of aquatic monitoring programs, identified in the FES and Appendix B of the Operating License for the Susquehanna SES, included monitoring algae and benthic macroinvertebrates both above the intake and below the discharge to the Susquehanna River. Requirements for these activities were completed in 1988.

The Susquehanna Anadromous Fish Restoration Committee directed the capture of 13,546 American shad in the two fish lifts below the Conowingo Dam on the Susquehanna River during the spring of 1993. Of these, about 11,200 shad were transported and stocked upstream of all major dams (Ref. 2.1-1).

Considerably fewer American shad were captured and transported in 1993 compared to numbers in more recent years. In addition, the capture season was late. These factors indicated that most shad would have spawned near the downriver release site with few fish migrating upriver beyond Sunbury, Pennsylvania, which is located about 45 miles downriver from the Susquehanna SES. Consequently, Mr. Richard St. Pierre, Susquehanna River Coordinator for the U.S. Fish and Wildlife Service, canceled autumn monitoring for impinged juvenile American shad at the intake of the Susquehanna SES (Exhibit 1).

An agreement to return American shad and other migratory fish, including the American eel, to the Susquehanna River by the year 2000 was formalized on June 1, 1993. It stipulates the following:

1. The Pennsylvania Power & Light Company will construct two lifts at the Holtwood Hydroelectric Dam. These lifts are scheduled for

completion by 1996 in time for the spring 1997 migration of American shad.

2. Baltimore Gas & Electric and the Pennsylvania Power & Light Company will complete one lift at Safe Harbor during construction of the Holtwood lifts.

3. Metropolitan Edison will complete one lift at the York Haven Hydroelectric Station by 1999 for service by 2000.

This agreement is part of the largest American shad restoration effort on the east coast. The lifts at Holtwood and Safe Harbor will reopen shad and eel migration to 35 miles of the Susquehanna River within the next five years. The York Haven passage will reopen an additional 200 miles of river for these fishes three years later.

The biofouling mollusk monitoring program continued at the Susquehanna SES in 1993. Though zebra mussels (Dreissena polymorpha) have been found repeatedly in samples near Johnson City, New York, about 150 miles upriver, and Asiatic clams (Corbicula fluminea) have been confirmed 40 miles downriver at Northumberland, Pennsylvania, neither of these species have yet been found in the vicinity of the Susquehanna SES.

The monitoring program currently involves a biweekly schedule of water and artificial and natural substrate sampling in the river in the vicinity of the Susquehanna SES River Intake Structure. In addition, artificial substrates are maintained in side-stream samplers located in the Intake Structure and on the plant site. In 1993, water and substrate samples were collected on 10 dates from May through November. Scuba divers performed inspections of natural substrates on eight dates in May through August, October, and November and inspected the station's discharge diffuser pipe on June 7 and September 13, as well as the Emergency Service Water Spray Pond on December 10.

A survey for Asiatic clams was performed downstream of the Susquehanna SES on December 10 at four select points from Berwick to Catawissa, Pennsylvania. No Asiatic clams were observed at any of these locations.

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 Maintenance of Transmission Line Corridors

During 1993, trees and brush in the transmission line corridors were maintained with herbicides and by manual clearing. The terrestrial monitoring program for the Susquehanna SES transmission lines was initiated in response to commitments in Section 5.3.5 of the FES. Three major transmission lines are associated with the Susquehanna SES: 1) Stanton-Susquehanna No. 2-500 kV line, 2) Sunbury-Susquehanna No. 2-500 kV line and 3) Susquehanna-Wescosville 500 kV line (former Susquehanna-Siegfried line). These lines may be operated at either 230 kV or 500 kV. The maintenance program for transmission line corridors is discussed in detail in subsection 4.2.1 of this report.

The schedule for conducting periodic erosion control inspections of these lines and access roads is based on the age of the line. Susquehanna's transmission lines are inspected twice per year by foot patrols and three times per year by helicopter patrols. A comprehensive overhead inspection is performed once every five years.

In 1993, the three transmission lines and corridors were inspected by helicopter and foot patrols. Areas of minor soil erosion along these corridors identified during these inspections have since been repaired.

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 1993.

REFERENCES

2.1-1 Restoration of American Shad to the Susquehanna River, Annual Progress Report-1993, Susquehanna River Anadromous Fish Restoration Committee, February 1994.

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 1993, there were six proposed activities which the Licensee reviewed as part of the unreviewed environmental question program. None of these six activities were determined to be an unreviewed environmental question. These were:

1. To prevent tools from rusting during their decontamination a product RP813 was evaluated. Use of this 2% potassium-carbonate solution during routine operation (40 gal/week) and outages (200 gal/week) was determined not to increase concentrations of these two chemicals in the Cooling Tower blowdown outfall above that measured in the PaDER, NPDES permit application sampling program.

2. An environmental evaluation of a MSA Cleaner (Sanitzer II) used to decontaminate respirators was conducted. The proposed amount of Sanitzer II discharged will not exceed a biocide concentration for alkyldimethylbenzylammonium chloride (Quat) of 0.02 mg/l. This is consistent with our NPDES permit which established an average biocide (Clam-Trol CT-1) concentration of <0.2 mg/l.

3. A modification to cross-tie the liquid radioactive Waste Evaporator Distillate Sample Tank with the Evaporator Concentrate Tank was evaluated. This modification directs liquid discharges to the environment through NPDES Outfall 171, Liquid Radwaste. We expect to meet our NPDES permit limits for Total Suspended Solids (30 mg/l) and Oil and Grease (15 mg/l) with this modification.

4. An environmental evaluation of using Coil-Rite, a low-foaming cleaner and degreaser, to clean Heating Ventilation and Air Conditioning (HVAC) systems indicated that there would be no changes in station effluents. A dilute solution of Coil-Rite which is non-toxic and 100% biodegradable is sprayed under high pressure to clean the HVAC coils. There should not be any adverse environmental impacts from this activity.

5. Construction of a 230KV Switchyard located on the previously disturbed site West laydown area was evaluated. This project being less than 25 acres did not require a PaDER Erosion and Sedimentation Control Plan/Permit, however, an erosion control plan was prepared. No adverse impacts were observed from this activity.

6. A review of the use of clean fill onsite for erosion control activities was conducted. It was determined that these activities would not increase environmental impacts previously evaluated and would actually be a benefit.

3.2 Reporting Related to NPDES Permits and State Certifications

All reports and information required by the NPDES Permit were submitted to both the NRC and PaDER. 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

During 1993, three air quality control permits were renewed. These permits are:

Renewals - Air Quality	Permit No.	Expiration Date
Air Blasting Operation	40-399-024	9-30-98
Four Diesel Generators (5,580 Horsepower Each)	40-306-005	9-30-98
Diesel Generator (6,948 Horsepower)	40-306-004	9-30-98

It should be noted that there are visible emission concerns associated with monthly start-up testing for Permit No. 40-306-004. Condition No. 6 of this permit requires compliance by June 30, 1995. PP&L and the PaDER are working together to resolve this issue.

4.0 ENVIRONMENTAL CONDITIONS

4.1 Unusual or Important Environmental Events

During 1993, one operating occurrence was reviewed as part of the potentially significant environmental event evaluation. This event was not reportable to the NRC since there were no adverse environmental effects from these activities.

This event was as follows:

1. Clarified water being supplied to hydrolazing equipment was discharged to a nearby storm drain due to the lifting of a pressure relief valve in the supply line. Analysis for free available chlorine in the Clarified Water Storage Tank indicated a level 0.22 mg/l. Since the storage tank contained chlorine additional water samples were collected from the storm drain system at the Peach Stand Pond and at Lake Took-a-while. Free available chlorine levels were not detectable at these two locations. The Pennsylvania Department of Environmental Resources was notified of this discharge and concurred that there was no adverse environmental impacts from this release.

4.2 Environmental Monitoring

4.2.1 Maintenance of Transmission Line Corridors

4.2.1.1 Herbicides Used

All herbicides utilized to control undesirable vegetation within the Susquehanna SES transmission line corridors are approved for use by the U. S. Environmental Protection Agency. In addition, all major manufacturers or formulators have had these products registered for distribution by the Commonwealth of Pennsylvania under the authority of the Pennsylvania Pesticide Control Act of 1973.

The following herbicides are specified for use in the Licensee's programs and are applied according to the instructions on the label.

Commercial Name	Active Ingredients	EPA Registration Number
Krenite UT	Fosamine Ammonium	352-395
Tordon 101	2, 4-D, Picloram	464-306
Pathway	2, 4-D, Picloram	62719-31
Garlon 3A	Triclopyr	62719-37
Access	Triclopyr, Picloram	464-576
Garlon 4	Triclopyr	464-554
Accord	Glyphosate	524-326-AA
Escort	Metsulfuron Methyl	352-439

Additional herbicides may be needed if the level of control (i.e., new/different species, sudden increases, resistance to established chemicals) changes.

4.2.1.2 Records

Records of herbicide use are maintained for a period of at least five years in appropriate Division Offices of the Licensee. These records include the following:

1. Copies of labels of specified herbicides which designate commercial names, active ingredients, rates of application, warnings, and storage and handling requirements

2. Concentrations of active ingredient formulations diluted for field use

3. Diluting substances (carriers)

4. Rates of application

5. Methods of application

6. Locations and dates of application

4.2.1.3 Types of Maintenance Reported

A. Selective Herbicide Applications

In 1993, herbicides were applied on the Sunbury-Susquehanna No. 2 line. Herbicides used, their active ingredient, acid equivalent, amount of concentrate in a designated carrier, drift retardant, and wetting agents are summarized in Table 4.2-1.

Application data for this line are presented by number of acres on which herbicides were applied, total amount of solution used, rate of application in gallons per acre, total amount of concentrate used, average gallons of concentrate applied per acre, total pounds of acid equivalent, and average pounds per acre applied. Dates and locations by grid number of all applications are listed with the title of the responsible Division Manager, the phone number, and the mailing address.

B. Vegetation Maintenance by Manual Methods

Maintenance of Transmission Line Corridors, Table 4.2-2, summarizes vegetation maintenance activities other than the utilization of herbicides. The manual activities used in 1993 were as follows:

1. Selective Reclearing - cutting incompatible vegetation where herbicide applications are restricted.

2. Screen trimming - trimming of trees, left intentionally on the right-of-way for aesthetic purposes or otherwise, in order to maintain safe clearances to the line conductors.

3. Top/Side Trimming - trimming of trees on the edge of or within the right-of-way which through yearly growth encroach on the conductors.

4.2.2 Aquatic Programs

The aquatic monitoring requirements, identified in the FES and Appendix B of the operating license for the Susquehanna SES, have been completed and confirm that effects on aquatic biota and water quality due to plant operation were no greater than predicted.

TABLE 4.2

SUSQUEHANNA SES
Maintenance of Transmission Line Corridors
Selective Herbicide Application

Year	Line Names	Division
1993	Sunbury-Susquehanna #2	Susquehanna

Herbicides					Additives		Carrier	
Alt. No.	Commercial Name	Active Ingredient	Acid Equiv.	Spec. Amt. Per 100 Gal Solution	Commercial Name	Spec. Amt. Per 100 Gal Solution	Name	Spec. Amt. Per 100 Gal Solution
4(L/V)	Accord	Glyphosate	3#/Gal.	5 Gal.	Clean Cut	0.5 Gal.	Water	94.5 Gal.

Application Data

Alt. No.	No. of Acres	Total Gallons(*) Solution	Application Rate Gal./A	Total Gallons Concentrate	Rate Gal./A	Total Pounds Acid Equivalent	Pounds Per Acre
4(L/V)	6.75	72	10.67	3.60	.53	10.80	1.60

Alt. No.	Application Date		Location By Grid No.	
	From	To	From	To
4(L/V)	6/15/93	6/15/93	25480 N 24446	25793 N 24176

Title	Phone	Address
Distribution Forester	717-368-5219	P.O. Box 158, Montoursville, PA 17754

Table 4-2

SUSQUEHANNA SES
MAINTENANCE OF TRANSMISSION LINE CORRIDORS

Year	Line Names	Division
1993	Susquehanna-Wescosville	Lehigh

Selective Reclearing

Dates From	Dates To	Grid Location From	Grid Location To	Acres

Top/Side Trimming

Dates From	Dates To	Grid Location From	Grid Location To	Trees

Danger Tree Removals

Dates From	Dates To	Grid Location From	Grid Location To	Trees

Screen Trimming

Dates From	Dates To	Grid Location From	Grid Location To	Trees
4/6/93	4/8/93	60780S47042	60811S46918	56

Title	Phone	Address
Distribution Forester	610-774-3258	P.O. Box 3500, Allentown, PA 18106-0500

Table 4[illegible]2

SUSQUEHANNA SES
MAINTENANCE OF TRANSMISSION LINE CORRIDORS

Year	Line Names	Division
1993	Sunbury-Susquehanna #2	Susquehanna

Selective Reclearing

Dates From	Dates To	Grid Location From	Grid Location To	Acres
9/21/93	9/21/93	38356N30303	38226N30228	.14

Top/Side Trimming

Dates From	Dates To	Grid Location From	Grid Location To	Trees

Danger Tree Removals

Dates From	Dates To	Grid Location From	Grid Location To	Trees

Screen Trimming

Dates From	Dates To	Grid Location From	Grid Location To

Title	Phone	Address
Distribution Forester	717-368-5219	P.O. Box 158, Montoursville, PA 17754

Table [illegible].2-2

SUSQUEHANNA SES
MAINTENANCE OF TRANSMISSION LINE CORRIDORS

Year	Line Names	Division
1993	Stanton-Susquehanna #2	Susquehanna

Selective Reclearing

Dates From	Dates To	Grid Location From	Grid Location To	Acres
6/29/93	6/29/93	43894N34600	43839N34741	1.61

Top/Side Trimming

Dates From	Dates To	Grid Location From	Grid Location To	Trees
6/29/93	6/29/93	43894N34600	43839N34741	1

Danger Tree Removals

Dates From	Dates To	Grid Location From	Grid Location To	Trees

Screen Trimming

Dates From	Dates To	Grid Location From	Grid Location To	Trees

Title	Phone	Address
Distribution Forester	717-368-5219	P.O. Box 158, Montoursville, PA 17754

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 Environmental Management Division (EMD) and Nuclear Quality Assurance. The Auditing Organizational Chart (Fig. 5.1-1) lists the various groups utilized in environmental reviewing and auditing of the Susquehanna SES environmental monitoring programs. The Manager-Nuclear Technology is responsible for off-site environmental monitoring and for providing any related support concerning licensing. The Vice President - Nuclear Operations is responsible for on-site environmental matters. The Manager-Nuclear Quality Assurance with support from the Manager-Environmental Management Division of the System Power and Engineering Department is responsible for verifying compliance with the EPP. Additional Nuclear Department responsible positions are also included in Figure 5.1-1.

Audits of the EPP are conducted every other year. There was an audit of the EPP in 1993 and the next audit will be conducted in 1995. There were no findings during the 1993 audit, however, there were three recommendations to improve performance. These recommendations are being implemented.

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 1993.

5.4 Plant Reporting Requirements

5.4.1 Routine Reports

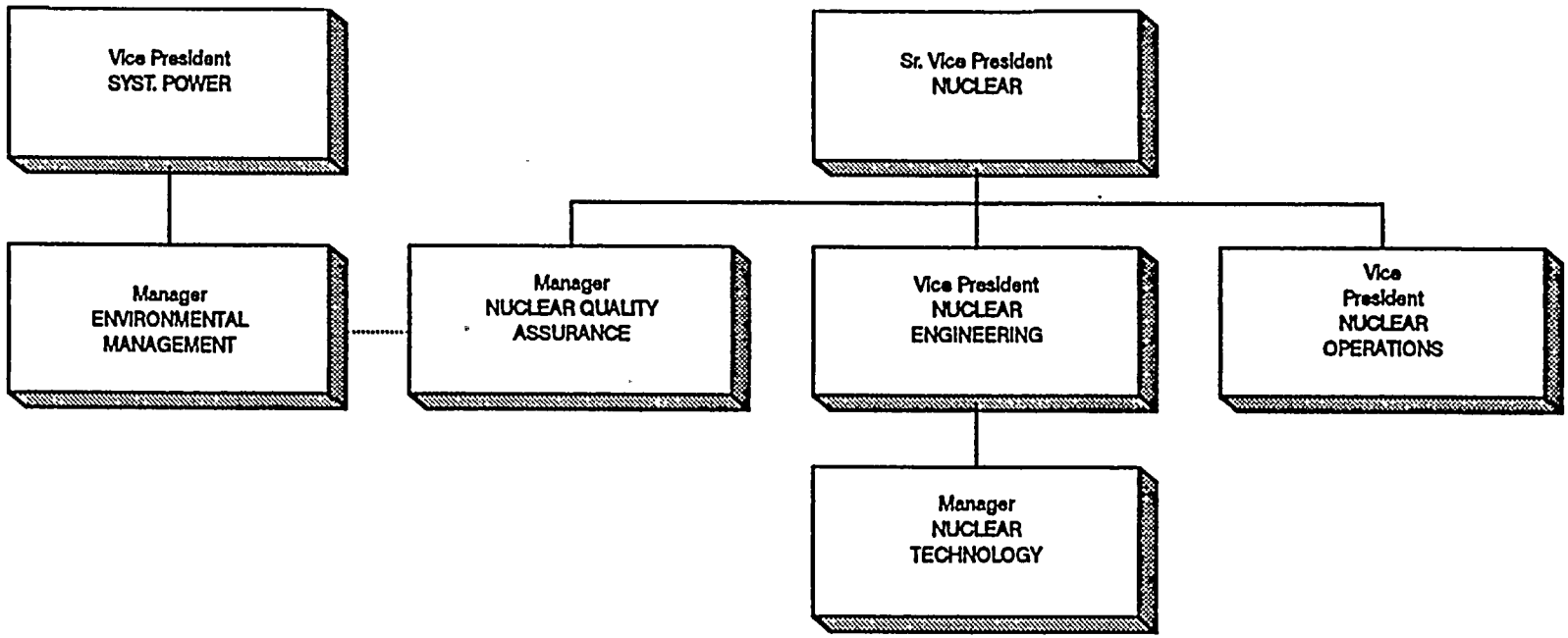
This Annual Environmental Operating Report (Nonradiological) was prepared to meet routine reporting requirements of the EPP for 1993. It provides summaries and analyses of environmental protection activities required in Subsection 4.2 of the EPP for the reporting period.

5.4.2 Nonroutine Reports

There were no nonroutine events in 1993.

Figure 5.1-1

AUDITING ORGANIZATION CHART



Key: ------ Support

SUSQUEHANNA RIVER
ANADROMOUS FISH RESTORATION COMMITTEE

Members
Maryland Department of Natural Resources
New York Division of Fish and Wildlife
Pennsylvania Fish and Boat Commission
Pennsylvania Power & Light Company
Philadelphia Electric Company
Safe Harbor Water Power Commission
Susquehanna River Basin Commission
United States Fish and Wildlife Service
York Haven Power Company

Secretary
Susquehanna River Fisheries Coordinator
U.S. Fish and Wildlife Service
1721 North Front Street. Suite 105
Harrisburg, PA 17102
Telephone: 717-238-6425
FAX: 717-238-0495

August 24, 1993

Jerry Fields
PA Power & Light Company
Two North Ninth Street
Allentown, PA 18101

Dear Mr. Fields,

SRAFRC contractors collected about 13,400 American shad at Conowingo Dam during May 4 - June 15, 1993. Of these, about 11,400 were transported and released above all dams at Middletown, PA. Based on early season juvenile collections in the lower river, we expect that most spawning occurred in the river reach from Columbia to Harrisburg, PA. Interestingly, spawning schools were observed in the Juniata River in late June.

Because of the late capture season and relatively small number of adult shad released above dams in 1993, I would not expect that substantial numbers of spawning fish migrated beyond Sunbury. Therefore, it is not necessary for PP&L to monitor intake screens at Susquehanna SES for juvenile shad this fall. If your consultants do collect any juvenile shad in the North Branch during routine surveys, I would appreciate having them frozen for otolith analysis.

Sincerely,

Richard St. Pierre
Susquehanna River Coordinator