SITE CERTIFICATION AGREEMENT

BETWEEN

THE STATE OF WASHINGTON

AND

THE WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WNP 1 AND 4

(Executed August 8, 1975)

N-UCLEAR ELECTRIC GENERATING FACILITY
BENTON COUNTY, WASHINGTON

ENERGY FACILITY
SITE EVALUATION
COUNCIL

820 EAST FIFTH AVENUE
OLYMPIA, WASHINGTON

SITE CERTIFICATION AGREEMENT
FOR WPPSS NUCLEAR PROJECTS NO. I AND NO. 4
(WNP 1 AND 4)
BETWEEN
THE STATE OF WASHINGTON
AND
THE WASHINGTON PUBLIC POWER SUPPLY SYSTEM

This certification agreement was made and entered into pursuant to chapter 80.50 of the Revised Code of Washington by and between the State of Washington, acting by and through the Governor of the State of Washington, and the Washington Public Power Supply System ("Supply System"), a municipal corporation and a joint operating agency of the State of Washington organized in January 1957 pursuant to chapter 43.52 of the Revised Code of Washington.

I. SITE CERTIFICATION

A. Site and Projects Description

1. The site at, on and in which the project, identified as WNP 1 and 4, is to be constructed and operated is located in Benton County, Washington. The site is located entirely within the federally-owned area known as the Hanford Operations Area, United States Energy Research and Development Administration, and is adjacent to the Columbia River. The site is described as follows:

A parcel of land lying in Section 4 of Township 11 North, Range 28 East, Willamette Meridian, described as follows:

Beginning at the Southwest corner of Section 11, Township 11 North Range 28 East, W.M., (said corner being located by reference to the Washington State Coordinate System South Zone at coordinates North 408,335.30 and East 2,307,653.50) thence North 65°-17'-03" West 12 113.14 feet to the TRUE POINT OF BEGINNING (said point being located by reference to the Washington State Coordinate System South Zone at coordinates North 413,400.00 and East 2,296,650.00); thence North 01°-01'-28" West 3000.48 feet to a point; thence East 5280.00 feet to a point; thence South 01°-01'-23" East 3000.48 feet to a point; thence West 5280.00 feet more or less to the TRUE POINT OF BEGINNING, containing 363.69 acres more or less, and

A parcel of land lying in Sections 3 and 4 of Township 11 North, Range 28 East, and Section 33 and 3.4 of Township 12 North, Range 28 East, Willamette Meridian, described as follows:

Beginning at the Southwest corner of Section 11, Township 11 North, Range 28 East, W.M., (said corner being located by reference to the Washington State Coordinate System South Zone at coordinates North 408,335.30 and East 2,307,653.50) thence North 50°-42'-00" West 14,311.63 feet to the TRUE POINT OF BEGINNING (said point being located by reference to the Washington State Coordinate System South Zone at coordinates North 417,400.00 and East 2,296,578.57); thence North 01°-01'-23" West 3000.48 feet to a point; thence East 5280.00 feet to a point; thence South 01°-01'-23" East 1200.19 feet to a point; thence East 5973.57 feet to a point; thence South 01°-01'-23" West 1800.29 feet to a point; thence West 11,189.29 feet more or less to the TRUE POINT OF BEGINNING, containing 609.15 acres more or less.

The bearings used herein are Grid Bearings based on the Washington State Coordinate System, South Zone.

B. Site Certification

1. The nuclear electric generating project is authorized to be located, constructed and operated on the site described in Section I.A.1. hereof. The "project" consists of two nuclear generating units. Each of the units includes a water reactor with a maximum rated output of approximately 3779 megawatts (thermal), a turbine generator, a mechanical draft evaporative cooling tower system, a control and recycle facility, pumphouse, associated transmission and service lines and other associated facilities required for the generation and transmission of electric power which are reasonably necessary and economically practicable for achieving a net electric generation capacity of approximately 1267 megawatts.

2. This certification agreement certifies, to the extent authorized by state law, that within and on the above site the Supply System may construct and operate the project subject to the terms and conditions of this certification agreement.

II. GENERAL CONDITIONS

A. Legal Relationship

1. This certification agreement is in lieu of any permit, certificate or similar document required by any department, agency, division, bureau, commission or board of this state.

2. The Supply System agrees to enter into a lease with the State Department of Natural Resources for use of certain public state land needed for this project.

3. This agreement ratifies and incorporates the State of Washington's, acting by and through the Council, certification on May 5, 1975, that the Supply System's discharge from WNP 1 and 4 to navigable waters will comply with the applicable provisions of §§ 1311, 1312, 1316, 1317, Title 33, United States Code.

4. This certification agreement shall bind the applicant and the state or any of its departments, agencies, divisions, bureaus, commissions or boards subject to all the terms and conditions set forth herein.

5. This certification agreement is subject to federal laws and regulations applicable to the project and to the terms and conditions of any permits and licenses which may be issued to the Supply System by pertinent federal agencies.

6. This certification agreement together with those commitments made by the applicant expressed in its application constitute the whole and complete agreement between the parties and supersedes any other negotiations, representations or agreements, either written or oral.

B. Enforcement of Compliance

1. This certification agreement is subject to all the penalties and remedies available at law, or in equity, to any person.

2. This certification agreement may be revoked, suspended or modified pursuant to the provisions of chapter 34.04 RCW for failure to comply with any of the terms and conditions herein, and for violations of chapter 80.50 RCW, regulations issued thereunder, any other applicable state or federal laws or regulations, and any order of the Council.

3. Where approval or agreement of the Council is required by this agreement, the Council may, but is not required to, conduct a hearing pursuant to RCW 34.04.

C. Notices and Filings

1. Filing of any document or notice with the Thermal Power Plant Site Evaluation Council ("Council") shall be deemed to have been duly made when delivered to the Council at the offices of the Council in Olympia, Washington. Notices to be served upon the Supply System shall be deemed to have been duly made when delivered to the office of the Managing Director of the Supply System.

D. Right of Inspection

1. The Supply System shall provide access, subject to applicable health and safety regulations, to designated representatives of the Council in the performance of official duties to the project and all of its environs herein described.

III. CONSTRUCTION OF THE PROJECT

A. Construction Schedule

1. The Supply System agrees to submit quarterly a Summary Construction Progress Report to the Council.

2. The Supply System will (a) notify the Council immediately in the event of any significant change in the construction schedules on file with the Council, and (b) serve copies on the Council of all "Notices to Proceed" which are issued to contractors with respect to contracts requiring work in the Columbia River when issued to such contractors.

B. Access Roads

1. All permanent primary roads constructed by the Supply System or its contractors for servicing the plant's central facilities will be constructed so as to meet or exceed Washington State Standards and U. S. ERDA design guidelines for such roads.

C. Aesthetics and Landscaping

1. The Supply System agrees to construct the project in a manner which is aesthetically compatible with the adjacent area.

2. The Supply System agrees to landscape the project lands within the fenced perimeter in a manner which is compatible with its surroundings.

3. Should any vegetation be disturbed as a direct result of any construction done by the Supply System, the Supply System agrees to restore vegetation insofar as practicable. This will be done by returning the area as nearly as possible to its original topography and topsoil conditions in order to promote revegetation of indigenous plant species.

D. Surface Runoff and Erosion Control

1. During all construction work, the Supply System agrees to require its contractors to employ all reasonable means in order to avoid soil erosion. The Supply System agrees to set forth such conditions for achieving these purposes in its bidding documents.

2. The Supply System shall put in its present construction contracts the following provisions relative to excavation and erosion control:

    a. Topsoil shall be stripped to a depth of three inches from the areas of the site and shall be removed to the disposal areas.

    b. Topsoil shall be placed in banks not exceeding six feet in height and having side slopes of at least 2:1 (H to V), at the spot in the disposal areas.

    c. The contractor shall provide during the entire construction period dust control for the construction roads, temporary parking lots, spoil areas and disposal areas, as required, by wetting or by using other acceptable methods. Wetting shall be done with water by using sprinkler trucks or other means.

    d. When excavation exposes material likely to ravel, or to result in a dusty condition when exposed to the wind, the contractor shall place a four inch gravel blanket over the area. The gravel blanket shall consist of pit-run gravel, maximum size three inches. The contractor shall also keep slopes and the floor of the excavation watered to alleviate dusting or use other approved methods for dust control.

    e. Slopes of cuts, and other areas covered by this work, where the exposed surface is composed of sand or is otherwise susceptible to wind erosion, shall be stabilized with a four inch layer of pit-run gravel containing gravel no larger than three inches. The stabilization material shall be spread uniformly over areas to be covered and trimmed to the required lines. No additional cutting to care for the gravel blanket is intended.

3. Applicant shall have the hill slope and the pipeline corridor of the intake and discharge pipe returned as near as possible to the original topography, with topsoil replaced so as to encourage the return of natural vegetation.

4. Applicant will include provisions to replace topsoil and grade disturbed areas in such a way as to encourage the return of natural vegetation.

5. Should any unforeseen surface water runoff problems arise during construction of the project, the Supply System agrees to comply with the pertinent industry standards for such control and agrees to take whatever actions are necessary to correct and avoid runoff which detrimentally affects water quality.

E. Transmission Lines

1. Transmission lines for the project to be constructed by the Supply System are those distribution and service lines wholly contained within the site and running from the project to the Howard J. Ashe Substation, U. S. Department of the Interior, Bonneville Power Administration.

2. All transmission and service lines will be constructed so as to comply, insofar as practicable, with the February, 1970, "Environmental Criteria For Electrical Transmission Systems," published by the U. S. Department of the Interior and the U. S. Department of Agriculture.

F. Intake System

1. The Supply System shall be permitted to construct and maintain an intake system on the shoreline of, and in the bed of, the Columbia River as required for construction and operation of the project subject to relevant conditions of this agreement.

2. The Supply System agrees to consult with the Council and its designated representatives in development of plans and bid documents for construction of the intake system.

3. The Supply System further agrees to submit specific location plans, drawings and construction contracts for installation of the intake system to the Council for timely review and study. If the Council does not approve such submittal, it agrees to respond with comments to such proposal of the Supply System within twenty days of receipt of the proposal.

4. The Supply System shall schedule the construction of the intake structure in the portions of the river bed during the period after July 31 and before October 1. Any work at other times directly in the stream bed of the Columbia River shall require specific approval of the Council.

5. The Council agrees to provide a suitable waiver of the turbidity criteria of the water quality standards of the State of Washington, if demonstrated by the Supply System to be necessary, during construction of the water intake system.

6. The Supply System agrees to install the permanent power supply to the river water pump house by means of an underground circuit from the generating plant.

7. The Council may require modification to the intake system if monitoring establishes that the intake system causes fish losses.

G. Discharge System

1. The Supply System shall be permitted to construct, maintain and operate a discharge system on the shoreline of, and on the bed of, the Columbia River within the site as required for operation of the project subject to the related conditions in this agreement.

2. The Supply System agrees to consult with the Council and its designated representatives in the development of plans and bid documents for construction of the discharge system on the shoreline of, and in the bed of, the Columbia River.

3. The Supply System further agrees to submit specific location plans, drawings and construction contracts for installation of the discharge system to the Council for timely review and study. If the Council does not approve such submittal, it agrees to respond with any adverse comments to such proposal of the Supply System within twenty days of receipt of the proposal.

4. The Supply System shall schedule the construction of the discharge structure in the portions of the river bed during the period after July 31 and before October 1. Any work at other times directly in the stream bed of the Columbia River shall require specific approval of the Council.

5. The Council agrees to provide a suitable waiver of the turbidity criteria of the water quality standards of the State of Washington, if demonstrated by the Supply System to be necessary, during construction of the water discharge system.

6. The outfall shall include features as required to achieve the requirements of G.4. of Attachment I hereof.

H. Construction Clean Up

1. The Supply System agrees upon completion of construction to dispose of all temporary structures not required for future use or used timber, brush, refuse or inflammable material resulting from the clearing of lands or from the construction of the project in a manner acceptable to the Council.

I. As-Built Drawings

1. The Supply System agrees to maintain on file as built drawings for the following project components:

   a. water intake system;

   b. water discharge system;

   c. sanitary waste disposal system;

   d. cooling towers and condenser coolant loop;

   e. demineralized water system;

   f. radwaste system;

   g. electrical transmission and service lines;

   h. Ashe Substation;

   i. environmental monitoring installations; and

   j. such other project features as have direct relationship to the project's impact on the environment.

J. Archaeological Site Protection

1. The Supply System agrees to retain the services of a competent archaeologist to inspect the construction site in the course of the construction excavation of the project to determine whether archaeological or historical sites are being invaded or disturbed and to preserve and provide for interpretation of any historical or archaeological artifacts which may be discovered in the course of excavation and/or construction.

2. The Supply System agrees to report to the Council all archaeological findings made during the course of excavation and construction of the project and the transmission lines constructed by the Supply System.

3. The Supply System agrees to consult with the Council to arrange for preservation of artifacts and for interpretation of any archaeological site discovered in the course of construction.

K. Surface Mining

1. If the extent of the construction activities of the Supply System fall within the jurisdiction of the Surface Mining Reclamation Act, the System agrees to comply with the policies and requirements of the Act and to submit a Reclamation Plan to the Council for its approval prior to initiating construction. If the Council does not approve, it agrees to respond with comments to such proposal within twenty days of receipt of the proposal.

IV. OPERATION OF THE PROJECT

A. Water Withdrawal

1. The Supply System is hereby authorized to withdraw a maximum of 72,000,000 gallons per day from the Columbia River and a 30-day average of 55,200,000 gallons per day from the Columbia River for industrial uses.

B. Water Discharge

1. All discharges by the Supply System to the waters of the United States shall be subject to the terms and conditions of the valid National Pollutant Discharge Elimination System permit which is attached hereto as Attachment I and by this reference is incorporated herein.

C. Discharge Into Air

1. The Supply System agrees to construct and operate the project in such a manner as to not discharge nor cause to be discharged into the ambient air materials resulting from the operation of the auxiliary boilers and emergency diesel engines which, measured at the point of discharge, will directly result in:

   a. Nitrous oxides, measured as nitrogen dioxide, in excess of 0.3 lbs/10^6 BTU;
   b. Sulfur dioxide in excess of 0.8 lbs/10^6 BTU; or
   c. Ash in excess of 0.2 lbs/10^6 BTU.

2. The Supply System agrees to incorporate all known, available and reasonable technology in the design of the cooling towers and to operate so as to minimize fogging and icing effects on the surrounding areas.

3. Levels of radioactive discharges to the atmosphere shall be as low as practicable and shall not exceed the applicable federal standards.

D. Ecosystem Replacement

1. The Supply System agrees to provide replacement and/or compensation as found to be necessary by the Council for any wildlife, fish and other aquatic life and ecosystem damage or loss caused by the project construction and operation.

E. Additional Protective Measures

1. The Supply System agrees to provide such additional measures for the protection of wildlife, fish and other aquatic life and the ecology of the area environs, based upon analysis and results of the monitoring programs, as found to be necessary by the Council.

V. PUBLIC AND ENVIRONMENT PROTECTION

A. Emergency Plan

1. The Supply System will develop an Emergency Plan in accordance with 10 CFR 50.34a and 10 CFR 50 Appendix E. In preparing that plan the Supply System shall in addition:

   a. Coordinate such development with local, state and federal agencies directly involved in implementing such plan.

   b. Include detailed provisions in the Emergency Plan for the health and safety of the people, emergency treatment, special training programs and prevention of property damage.

   c. Comply with relevant obligations which are applicable and as set forth in the Washington State Department of Emergency Services' Radiological Emergency Response Plan.

   d. Periodically contact the Council as to provide the Council with current lists of responsible individuals, communication channels and procedures.

2. Should any portion of the Supply System's Emergency Plan be dependent upon any program which is currently conducted by the United States Energy Research and Development Administration and/or another nuclear operator in the Hanford Operations Area and such other program is terminated, then the Supply System agrees to re-activate such portion of the program as is appropriate and necessary.

B. Security Plan

1. The Supply System will submit a comprehensive physical Security Plan for the protection of the project against acts of industrial sabotage in accordance with the Nuclear Regulatory Commission as a part of the USNRC's operating licensing process.

2. A short description of the Security Plan will be published in Section 13.7 of the Final Safety Analysis Report, which will be available for public review; however, the actual Security Plan will be withheld from public disclosure pursuant to 10 CFR 2.790d.

C. Monitoring Program

1. The Supply System agrees to initiate and maintain Environmental Monitoring Programs as described in Attachment II of this agreement. The programs shall be developed and implemented in close consultation with the Council and reasonable modifications shall be made, with concurrence of the Council, when these are necessary to achieve the purposes of the programs. The Supply System agrees to begin the Meteorological and Environmental Surveillance Programs no later than two years prior to fuel loading and to begin intake monitoring no later than intake pump startup.

2. The Radiological Monitoring Program shall be designed and maintained to provide for measurement of radioactive releases from the facility and to provide for a reliable assessment and record of their distribution and retention in the environment within the area as described in Attachment II.

3. The Supply System may retain or employ a qualified consultant or firm of consultants to carry out all or any portion of the environmental monitoring studies required to effect the Monitoring Program set forth in Attachment II hereof. The Supply System agrees to submit the requirements for the consultant's qualifications to the Council for comment prior to solicitation of proposals from any such consultant.

4. The Supply System agrees to provide the Council full access to information and data recorded by the Supply System's Monitoring Program for the purpose of assuring the Supply System's continued compliance with the conditions of this certification agreement. The Project Monitoring Program will be coordinated with the Monitoring Program of WPPSS Nuclear Project No. 2 inasmuch as the programs are the same in purpose, design and monitoring area.

5. The Supply System agrees to submit to the Council, upon request, a copy or copies of reports and data from the Monitoring Programs required to be filed by the Nuclear Regulatory Commission's construction permit, operating license or other regulations at the time as when submitted to the Nuclear Regulatory Commission.

6. In carrying out the Monitoring Programs described in Attachment II of this agreement, the Supply System will establish sampling locations on the project site and within present or future regions of high population density located within a ten-mile radius of the project's reactor building so as to provide a representative sampling of environmental effects in the surrounding area.

7. Should any element of the Supply System's Monitoring Program be terminated, the Supply System agrees to report such termination to the Council and to re-activate so much of any such program as is appropriate and necessary as determined by the Council.

8. Requirements of the Monitoring Program may be changed upon a showing by the Supply System or the Council that the degree of off-site monitoring is not commensurate with the results of such efforts. Such changes shall be effected by mutual agreement of the Council and the Supply System. Such changes shall be governed by the procedures in this paragraph and shall not be subject to the modification procedures specified in Section VI.C. hereof.

9. At the time of start up of WNP 2, a report shall be prepared summarizing all pre-operational monitoring data and establishing baseline reference values for all parameters. This report shall be submitted to the Council within 90 days after start up of WNP 2. Annual reports shall be submitted thereafter summarizing operational data, anomalies therein and comparisons to previously established baseline data. These annual reports shall be on a calendar year basis and shall be submitted by March 31 of each year.

VI. MISCELLANEOUS PROVISIONS

A. Project Visitation and Recreation

1. The Supply System agrees to provide visitor information facilities to serve WNP 1 and 4. At this time, a visitor information center to serve WNP 1 and 4 and WNP 2 is planned to be located in the City of Richland.

2. The Supply System agrees to provide replacement of recreational opportunities which are shown to be adversely affected as a direct consequence of project activity when found necessary by the Council.

3. If the Hanford Operations Area should be opened to the public by ERDA, access by the public to any rights-of-way outside the project security area would be permitted subject to security regulations and such limitations as the Supply System deems reasonably necessary for the health, safety and welfare of the public and for protection of the facility.

B. Social and Economic Impacts

1. The Supply System agrees to undertake a supplemental Socioeconomic Impact Study beginning at the time of initial construction and to be completed within three years from the date of the execution of this agreement.

2. The Supply System agrees to evaluate, negotiate in good faith, and to honor those claims by counties, school districts and other taxing districts for compensation due to an increased financial burden where such claim is demonstrated to be caused by the construction of the project.

3. It is mutually agreed that any dispute arising out of this section VI.B. shall be determined by a hearing before the Thermal Power Plant Site Evaluation Council pursuant to RCW 34.04 and Administrative Regulations adopted pursuant thereto.

C. Modification of Agreement

1. This certification agreement may be amended by initiation of either the Council or the Supply System. Such amendatory activity shall be accomplished pursuant to Council rules and procedures then in effect in a like manner as the development of this original certification agreement, including, but not limited to, the obtaining of the approval of the Governor. Any such amendments to this agreement shall be made in writing.

2. In certain circumstances where a dangerous degree of impact on the environment exists or is imminent, the Council may impose specific conditions or requirements upon the applicant in addition to the terms and conditions of the certification agreement as a consequence of any said emergency situation. The Administrative Procedures Act in RCW 34.04.170(2) contains authority for the Council to find that the public health, safety or welfare may imperatively require such emergency action.

Attachments (2)
I - NPDES Permit
II - Environmental Monitoring Program

Dated at Olympia, Washington, this 8th day of August 1975.

FOR THE STATE OF WASHINGTON

Governor

Daniel J Evans

FOR THE WASHINGTON PUBLIC POWER SUPPLY SYSTEM

J. J. Stein, Managing Director

Approved as to form this 8th day of August 1975

Darrel **L. Peeples**

Assistant Attorney General

Issuance Date: **August 8, 1975**
Expiration Date: **August 8, 1980**

ATTACHMENT I

NATIONAL POLLUTANT DISCHARGE ELIMINATION
SYSTEM WASTE DISCHARGE PERMIT

State of Washington
Thermal Power Plant Site Evaluation Council
Olympia, Washington 98504

In Compliance With the Provisions of
Chapter 155, Laws of 1973, (RCW 90.48) as amended

and

The Federal Water Pollution Control Act Amendment of 1972,
Public Law 92-500

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
3000 George Washington Way
Richland, Washington 99352

Plant Location:
Section 3, 4, T.11N; Secs. 33,
34, T12N: R28E W.M.
North of Richland
Benton County, Washington

Industry Type: Nuclear Steam
Electric Generating Plant
(WPPSS Nos. 1 & 4)

Receiving Water:
Columbia River

Discharge location:
Outfall 001 0
Latitude: 46° 28'23"
Longitude: 119° 5'50"
Water Segment No.:
26-03-00

is authorized to discharge in accordance with the special and general conditions which follow.

Approved: April 28, 1975

Amended: July 14, 1975

Acting Chairman
Thermal Power Plant Site
Evaluation Council

SPECIAL CONDITIONS

S.1 EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning with the issuance of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge effluents from outfall discharge Serial Number 001 subject to the following limitations and monitoring requirements:

A. LOW VOLUME WASTE SOURCES PORTION OF DISCHARGE SERIAL NUMBER 001 PER UNIT

PARAMETER	EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS [2]	
	Daily Maximum	Daily Average		Minimum Frequency	Sample Type
Total suspended Solids (lb/day)	102.5	24.5		3 times per week	Grab
PH	Between 6.5 and 8.5 at all times			3 times per week	Grab
Oil and Grease (lb/day)	20.5	12.25		Weekly	Grab
Flow (GPD) [3]	1.23×10^5	0.98×10^5		Log tank contents[1] prior to discharge	N/A

Note (1) Permittee shall discharge from this source on an intermittent basis.

Note (2) Permittee shall monitor the effluent from the non-radwaste water treatment and liquid radwaste treatment system prior to confluence with cooling tower blowdown.

Note (3) Permittee is allowed on an intermittent basis to discharge subject to the provisions of G5. herein to a maximum of 108,000 GPD additional flow originating from the liquid radwaste treatment systems.

B. RECIRCULATED COOLING WATER BLOWDOWN PORTION OF OUTFALL DISCHARGE SERIAL NUMBER 001 PER UNIT

PARAMETER	EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
	Daily Maximum	Daily Average		Minimum Frequency	Sample Type
Temperature	Note [3]			Continuous	Instantaneous
Total Residual	Note [2]			Continuous [4]	Grab
Chlorine (mg/l)	0.1 mg/l				
pH	Between 6.5 and 8.5 at all times			Continuous [1]	Instantaneous
Flow (GPD)	1.08×10^7	5.47×10^6		Continuous	Instantaneous

Note (1) Permittee shall include an alarm system for the pH control to provide an indication of any variance from established limits.

Note (2) Upon initiating chlorination of a unit, permittee shall terminate all discharges from the recirculating water system to the receiving water from the unit and not discharge from that unit until the total residual chlorine concentration has been at or below 0.1 mg/l for 15 minutes. For compliance chlorine will be measured at and will be characteristic of the unit being chlorinated.

Note (3) The temperature of the recirculated cooling water blowdown shall not exceed, at any time, the lowest temperature of the recirculated cooling water prior to the addition of the makeup water.

Note (4) Continuous recording of total residual chlorine during periods of active chlorination and for 2 hours after recommencing discharge or until chlorine residual reaches an undetectable level.

C. METAL CLEANING WASTES PORTION OF DISCHARGE SERIAL NUMBER 001 PER UNIT

PARAMETER	EFFLUENT LIMITATIONS [1]		MONITORING REQUIREMENTS [2]	
	Daily Maximum	Daily Average	Minimum Frequency	Sample Type
Total Iron (lb/day)	2.4	0.84	3 times per day when discharging	Grab
Total Copper (lb/day)	2.4	0.84	3 times per day when discharging	Grab
Total Suspended Solids (lb/day)	240	25	3 times per day when discharging	Grab
pH	Between 6.5 and 8.5 at all times		3 times per day when discharging	Grab
Oil and Grease (lb/day)	48	12.6	3 times per day when discharging	Grab
Flow (GPD)	2.9×10^5	1×10^5	Calculated total volume	N/A

Note (1) The daily maximum values indicated are permitted for one time only and the discharges are limited to one unit at a time.

Note (2) Permittee shall monitor the metal cleaning wastes prior to their confluence with cooling tower blowdown.

D. BOILER BLOWDOWN OF DISCHARGE SERIAL NUMBER 001 PER UNIT

PARAMETER	EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS [2]	
	Daily Maximum	Daily Average		Minimum Frequency	Sample Type
Total Iron (lb/day)	2.1×10^{-4}	2.1×10^{-4}		When discharging	Grab
Total Copper (lb/day)	2.1×10^{-4}	2.1×10^{-4}		When discharging	Grab
Total Suspended Solids (lb/day)	2.1×10^{-2}	6.3×10^{-3}		When discharging	Grab
pH	Between 6.5 and 8.5 at all times			When discharging	Grab
Oil and Grease (lb/day)	4.2×10^{-3}	3.2×10^{-3}		When discharging	Grab
Flow (GPD)	25 [1]	25		Once a week during plant shutdown	Grab

Note (1) Intermittent discharge contribution during startup, a 30 second discharge once a week at a flow of 50 gpm

Note (2) Permittee shall monitor boiler blowdown wastes prior to their confluence with cooling tower blowdown.

GENERAL CONDITIONS

GI. No discharge of polychlorinated biphenyl, such as transformer fluid, is permitted. No discharge of materials added for corrosion inhibition including but not limited to zinc, chromium, phosphorous.

G2. All discharges and activities authorized herein shall be consistent with the terms and conditions of this permit. Permittee is authorized to discharge those pollutants which are: (1) contained in the raw water supply, (2) entrained from the atmosphere, or (3) quantitatively and qualitatively identified in the permit application; except as modified or limited by the special or general conditions of this permit. However, the effluent concentrations in permittee's waste water shall be determined on a gross basis and the effluent limitations in this permit mean gross concentrations and not net addition of pollutants. The discharge of any pollutant more frequently than or at a level in excess of that authorized by this permit shall constitute a violation of the terms and conditions of this permit.

G3. The effluent limitation for the total combined flow discharged from outfall No. 001 for any particular pollutant, excluding pH, shall be the sum of the amounts for each contributing inplant stream as authorized by the special or general conditions of this permit.

G4. Permittee shall not discharge any effluent which shall cause a violation of any applicable State of Washington Water Quality Criteria or standards contained in WAC 173-201, as they exist now or hereafter are amended, outside the mixing zone whose boundaries shall be:

a. The boundaries in the vertical plane shall extend from the receiving water surface to the riverbed;

b. The upstream and downstream boundaries shall be 50 feet and 300 feet, respectively, from the center line of the outfall; and

c. The lateral boundaries shall be separated by 100 feet.

G5. Excess process water shall not be discharged to the river unless sampling and analysis has demonstrated that the water complies with the applicable regulations on liquid radioactive discharges. Excess process water not meeting these conditions shall be processed in the liquid radwaste treatment system prior to discharge to the river. The liquid radwaste treatment system shall **provide facilities with 24-hour retention capabilities and liquids may be discharged only after** sampling and analysis demonstrate that all applicable regulations are complied with. No other liquid red waste shall be discharged at the holding facilities.

G6. The permittee shall provide an adequate operating staff which is qualified and shall carry out the operation, maintenance, and testing activities required to insure compliance with the conditions of this permit.

G7. Permittee shall handle and dispose of all solid waste material from any waste retention basins or any other source in such a manner as to prevent their pollution of any ground or surface water body. Further, permittee shall not permit leachate from such solid waste material to cause adverse effect on ground or surface water quality.

G8. Whenever a facility expansion, production increase, or process modification is anticipated which will result in a new or increased discharge, or which will cause any of the conditions of this permit to be exceeded, a new NPDES application must be submitted together with the necessary reports and engineering plans for the proposed changes. No change shall be made until plans have been approved and a new permit or permit modification has been issued. If such changes will not violate the effluent limitations specified in this permit, permittee shall notify the Council of such changes prior to such facility expansion, production increase or process modification.

G9. If the toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307 (a) of the Federal Act for a toxic pollutant which is present in the permittee's discharge and such standard or prohibition is more stringent than any limitation upon such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee shall be so notified.

G10. If, for any reason, the permittee does not comply with or will not be able to comply with, any daily maximum effluent limitation specified in this permit, the permittee shall provide the Council with the following information, in writing, within five (5) days of becoming aware of such condition:

a. A description of the discharge and cause of noncompliance; and

b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non compliance is expected to continue and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

G11. The permittee shall at all times maintain in good working order and efficiently operate all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

G12. The diversion from or bypass of any discharge from facilities utilized by the permittee to maintain compliance with the terms and conditions of this permit is prohibited, except (a) where unavoidable to prevent loss of life or severe property damage, or (b) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the terms and conditions of this permit. The permittee shall promptly notify the Council in writing of each such diversion or bypass in accordance with the procedure specified in condition G13.

G13. In the event the permittee is unable to comply with any of the conditions of this permit because of a breakdown of waste treatment, equipment or facilities, an accident caused by human error or negligence, electrical power failure, or any other cause, including acts of nature, the permittee shall:

a. Immediately take action to stop, contain, and clean up the unauthorized discharge and correct the problems.

b. As soon as reasonably practicable notify the Council so that an investigation can be made to evaluate the impact and the corrective actions taken and determine additional action that must be taken.

c. Promptly submit detailed written report to the Council describing the breakdown, the actual quantity and quality of resulting waste discharges, corrective action taken, steps taken to prevent a recurrence, and any other pertinent information.

Compliance with these requirements does not relieve the permittee from responsibility to maintain continuous compliance with the conditions of this permit or the resulting liability for failure to comply.

G14. Permittee shall install an alternative electric power source capable of operating any electrically powered pollution control facilities; or, alternatively, permittee shall certify to the Council that the terms and conditions of this permit will be met in case of a loss of primary power to the pollution control equipment by controlling production.

Monitoring

G15. Permittee shall comply with the Monitoring Program requirements set forth herein.

Monitoring results for the previous quarter shall be summarized on a monthly basis and reported on a Discharge Monitoring Report Form (EPA 3320-1), postmarked no later than the 28th day of the month following the end of the quarter. The first report is due by the 28th day of the first month following the end of the quarter in which the first discharge under this permit occurs. Duplicate signed copies of these, and all other reports required herein, shall be submitted to EPA and the Council at the following addresses:

U.S. EPA Region X
1200 6th Avenue
Seattle, WA 98101
Attention:
Permits Branch M/S 521

TPPSEC
Attention:
Executive Secretary
820 East 5th Avenue
Olympia, WA98504

G16. The permittee shall retain for a minimum of three years all records of monitoring activities and results, including all reports of recordings from continuous monitoring instrumentations, record of analysis performed and calibration and maintenance of instrumentation. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the Council. All samples and measurements made under said program shall be representative of the volume and nature of the monitored discharge.

G17. The permittee shall record each measurement or sample taken pursuant to the requirements of this permit for the following information: (1) the date, place, and time of sampling; (2) the dates the analyses were performed; (3) who performed the analyses: (4) the analytical techniques or methods used; and (5) the results of the analyses.

G18. As used in this permit, the following terms are as defined herein:

a. The "daily maximum" discharge means the total discharge by weight during any calendar day.

b. The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the respective discharges occur. Where less than daily sampling is required by the permit, the daily average discharge shall be determined by the summation of the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

c. "Composite sample" is a sample consisting of a minimum of six grab samples collected at regular intervals over a normal operating day and combined proportional to flow, or a sample continuously collected proportional to flow over a normal operating day.

d. "Grab sample" is an individual sample collected in a period of less than 15 minutes.

G19. All sampling and analytical methods used to meet the monitoring requirements specified in this permit shall conform to regulations published pursuant to Section 304g of the Federal Act, or if there is no applicable procedure, shall conform to the latest edition of the following references:

a. American Public Health Association, Standard Methods for the Examination of Water and Wastewaters.

b. American Society for Testing and Materials, A.S.T.M.Standards, part 23, Water, Atmospheric Analysis.

c. Environmental Protection Agency, Water Quality Office Analytical Control Laboratory, Methods for Chemicals Analysis of Water and Wastes.

Alternative methods may be utilized if approved pursuant to 40 CFR 136 or as amended is received by permittee. The Council shall be notified of each such alternative method approved for use.

G20. Except for data determined confidential under Section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Council and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making a false statement on any such report may result in the imposition of criminal penalties as provided in Section 309 of the Act.

Other Provisions

G21. After notice and opportunity for a hearing this permit may be modified, suspended or revoked in whole or in part during its term for cause including but not limited to the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.

G22. The permittee shall, at all reasonable times, allow authorized representatives of the Council upon the presentation of credentials:

a. To enter upon the permittee's premises for the purpose of inspecting and investigating conditions relating to the pollution of, or possible pollution of any of the waters of the State, or for the purpose of investigating compliance with any of the terms of this permit;

b. To have access to and copy any records required to be kept under the terms and conditions of this permit;

c. To inspect any monitoring equipment or monitoring method required by this permit; or

d. To sample any discharge of pollutants.

G23. Nothing in this permit shall be construed as excusing the permittee from compliance with any applicable Federal, State or local statutes, ordinances, or regulations.

G24. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject.

G25. Results of the chlorination study at WPPSS Nuclear Project No. 2 will be evaluated for possible inclusion in this permit.

ATTACHMENT II
WNP 1 AND WNP 4 SITE CERTIFICATION AGREEMENT
ENVIRONMENTAL MONITORING PROGRAM

I. GENERAL DESCRIPTION

The Environmental Monitoring Program established by the Supply System will have as its objective the determination of the effects of the project's operation on the environment. The monitored items will include the physical effects on land, adjacent water and effects on terrestrial and aquatic ecosystems. The program will provide an environmental measurement history for evaluation by the Supply System and the Council. Such a program will use reasonable and available methods and techniques and be maintained at the necessary level throughout the life of the project.

The Environmental Monitoring Program will be flexible and may be modified with concurrence of the Council as detailed information is acquired from the program. Any modifications will be based upon:

a. project effects, if any, on the terrestrial and aquatic ecology including the wildlife, fish and other aquatic life in the project influence area,

b. informational inputs obtained during the preoperational monitoring,

c. siting by others of nuclear or other facilities in areas surrounding the site,

d. technological developments in the field of environmental monitoring,

e. changes in type and abundance of natural vegetation, and

f. changes in conditions which relate to the pathways which lead to human radiation exposure.

The Environmental Monitoring Program is actually a part of a single comprehensive integrated program for monitoring preoperational, construction and operational phases of all three nuclear power stations (WNP 2 and WNP 1 and 4) presently planned for the site. The overlap of the monitoring programs for the three plants is illustrated in Figure 1. The intensity of effort on the monitoring program will vary as the different plants come into operation with increasing activity immediately before and after each initial operation.

The Monitoring Program shall be governed by the following gradient concept to avoid nondiscovery of excessive variance in values of the parameters monitored. The frequency of data collection and reporting shall be increased according to the following schedule when

a. limits exist for monitored parameter and the last value approaches a limiting value by more than 50% of the difference between the limiting value and the preceding value, or

b. no limits exist for monitored parameter and the difference between the last value and the preceding value exceeds 150% of the difference between the preceding value and the next preceding value when both differences are in the same direction or 200% if in a contrary direction.

Changes, supplements or revisions to the Environmental Monitoring Program will be submitted to the Council for its review and concurrence.

II. ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM

A. Program Elements

1. Air sampling locations will be established onsite and within present or future regions of high population density within a ten-mile radius of WNP 1, WNP 2 and WNP 4. Special attention will be given to location of air samplers within five miles of the plant. The zone five to ten miles from the site is emphasized where populations are more concentrated.

2. In the terrestrial monitoring part of this program (vegetation, soil, farm products), the area within a ten-mile radius of the site will be of primary concern. The predominant use of this area is for agriculture in the Franklin County area where the major crops are wheat, alfalfa hay, sugar beets, and potatoes, and the major livestock forms are beef cattle, hogs and sheep.

Particular emphasis will be placed on the collection of those primary foodchain components which lead to man. Soil samples, native and cultivated vegetation, and dairy and poultry products (milk and eggs) will be sampled. Also sampled will be the fleshy portions (meat) of domestic animals normally consumed by man such as chickens, beef cattle and hogs, and of wildlife such as deer and pheasants (if available).

3. In the aquatic program, sampling will include groundwater samples and surface-water samples from the Columbia River. One of the sources of the municipal water supply for the City of Richland is the Columbia River; the intake for this supply, approximately eleven miles downstream from the site, will be one of the Columbia River sample stations.

   The aquatic food chain constituents included in this program will be taken from the Columbia River and will include the collection of bottom sediments and organisms, plankton, periphyton and fish.

   Sampling frequencies will depend upon weather, growing season, animal and fish activity and other considerations deemed appropriate in each case.

B. Surveillance Levels

The radiological monitoring program outlined in Table 1 represents the level of surveillance during the pre-operational phase (two years) and for one year of the operational phase.

Radiochemical analyses will be performed using accepted analytical procedures such as those recommended by the U. S. Public Health Service in "Radioassay Procedures for Environmental Samples," January 1967.

TABLE 1

SAMPLING SUMMARY				
	(Ref. SSA Table 150(3)-1)			
Sample Type	Stations		Sampling Frequency	Analysis
1. Background				
a. Gamma Sensitive Detector	3		Continuous Recording	Background Gamma
b. TLD Dosimeters	13		Monthly - Quarterly Annually	Readout and Record at Noted Frequency
2. Air				
a. Particulates	10		Weekly	Gross Alpha
				Gross Beta
				Gamma Scan
b. Iodine	10		Weekly	Radio Iodine
3. Plant Discharge Water	1 (Per Unit)		Continuously	Gamma Activity
	1 (Per Unit)		Weekly	Suspended Gross Alpha
				Gross Beta
				Dissolved Gross Alpha
				Gross Beta
				Gamma Scan & Tritium
4. River Water Includes Richland Water Plant Intake	8		Monthly	Suspended Gross Alpha
				Gross Beta
				Dissolved Gross Alpha
				Gross Beta
				Gamma Scan & Tritium
5. Groundwater and	6		Semiannually	Gross Alpha
Rainwater (As Available)	3		Monthly	Gross Beta
				Gamma Scan & Tritium
6. Vegetation & Livestock				
a. Natural Vegetation	10		3 Samples Annually During	Gross Beta

			Growing Season	
				90Sr
b. Food & Feed Crops	10		During Growing Season	137Cs
				131I
c. Food Animals	5		During Growing Season	Gamma Scan
7. Soil	13		Quarterly	Gross Alpha
				Gross Beta
				9OSr
				137Cs
				Gamma Scan
8. Sediment	5		Quarterly	Gross Alpha
				Gross Beta
				90Sr
				Gamma Scan
9. Milk	4		Monthly	131I
				90Sr
				137Cs
				Elemental Calcium
10. Aquatic Biota				
a. Animal	3		Semiannually	Gross Beta
				40K
b. Vegetation	3		Semiannually	90Sr
				Gamma Scan
11. Wildlife				
a. Rabbits or Substitute	5		Annually	Thyroid - 1311
				Femur - 90Sr
b. Waterfowl	5		Annually	Gamma Scan
				Muscle 32p 65Sr

The Supply System will furnish the Council or its designated representatives, upon request, half samples of specimens for their evaluation and analysis.

Sample stations are described in the following discussion of sample types and are located approximately in Figure 2.

1. Atmosphere

a. Gamma Detectors: (Δ in Figure 2).

The atmosphere will be continuously monitored and recorded for gamma radiation. These stations will be at three positions on the site boundary. These locations shown on the map in Figure 2 are tentative and subject to modification in the future depending on data on prevailing wind directions.

b. TLD Dosimeters: (Δ, O in Figure 2).

Background levels of external radiation will be established by exposing thermoluminescent dosimeters (TLD) for various periods in time at thirteen locations, twelve within a ten-mile radius of the site and a control located at Sunnyside, Washington. Four dosimeters will be maintained at each station: one dosimeter is changed and read monthly, one dosimeter is changed and read quarterly, while the other dosimeters are changed and read annually. The dosimeters will be located at each air sampling station.

2. Airborne Particulates and Iodine (Δ, O in Figure 2).

Airborne particulates will be collected on a weekly basis at ten of the TLD stations. The filters will be changed weekly. The filter housings will be located 6-8 feet above ground level to reduce dust loading of the filters and minimize the influence on sample activity of radon and its daughters emanating from the soil.

3. Plant Discharge Water

Water will be monitored continuously for gamma activity for each plant. A weekly sample will be taken for more detailed analysis and for calibration of the continuous gamma monitor.

4. River Water: (◯ in Figure 2).

Sampling of the Columbia River will be performed on a monthly basis from eight locations extending from about five miles above the plant intake to 15 miles below the plant. The intake to the Richland water plant is sampled at Station 7.

5. Groundwater and Rainwater

a. Groundwater:

Sampling of groundwater will be performed semiannually from wells near the station. The wells are identified by the following numbers: 15-15, 27-8, 24-1, 20-E12, 10-E12, and S6-E14.

b. Rainwater: (Δ in Figure 2).

Sampling of rainwater will be performed monthly or as possible at these locations. These stations are located on the site boundaries, and are common to the continuous gamma monitors and recorders as well as air samplers.

6. Vegetation and Livestock Sampling

a. Natural Vegetation at Air Sampling Stations

Samples of the leafy portions of natural vegetation available at ten TLD stations will be collected annually. Samples will be taken throughout the growing season with the predominant vegetation at the station being the sample collected.

b. Food and Feed Crops

Edible portions of food and feed crops will be sampled at ten locations within a ten-mile radius of the station. Four of the TLD will be used along with the milk stations, and three other samples will be collected at random within the ten mile radius. These samples should be collected throughout the growing season.

c. Food Animal Samples

Food animal samples will be collected near five TLD stations. These food samples need only be a small portion of a large animal and can be obtained from farmers and ranchers as incidental to their personal or commercial butchering.

7. Soil

Soil samples will be collected quarterly at the TLD locations 4, 5, 9, 10 and milk stations M-2, and at eight other locations.

8. Sediment samples

Samples of the Columbia River bottom sediment will be collected quarterly at or near the five Columbia River water collection stations and at other such plant locations as may be required by plant design.

9. Milk Samples (M-1, M-2, M-3 and M-C in Figure 2).

Milk will be sampled monthly from the bulk cooling tanks of three milk producers within ten miles of the plant. In the selection of milk sample locations, an attempt will be made to select established milk producers who are likely to remain in the business of milk production during succeeding years of plant operation. Information regarding source of feed must be included with milk sample results. A control station at Sunnyside will also be sampled monthly.

10. Aquatic Biota

a. Animals

Aquatic animals will be collected semiannually from the Columbia River at three locations, river water sampling stations 1, 3, and 8, (Figure 2) and at such plant effluent locations as may be required by plant design.

b. Vegetation

Rooted aquatic plants and slime growths on submerged surfaces in littoral locations will be collected semiannually.

11. Wildlife

a. Five rabbits will be collected annually from land adjacent to the site. An effort will be made to take these animals from different locations.

b. Five waterfowl will be collected annually near the site. It is desirable to obtain resident birds, so the collection should be made when migrations are not underway.

III. METEOROLOGICAL PROGRAM AND AIR QUALITY

A. Pre-Operational Onsite Meteorological Program

In support of the Nuclear Regulatory Commission's -nuclear generating plant licensing requirements, the Supply System will maintain a meteorological tower to establish meteorological characteristics of WNP 2 over a period of at least two years prior to start up. This data is in addition to the data available for the Hanford Reservation. Detailed measurements of wind speed, direction, low level stability and humidity will be gathered. Following this intensive two-year data collection period, the Supply System will maintain wind speed and direction instrumentation.

B. Operational Meteorological Monitoring Program

The WNP 1 and 4 operational meteorological monitoring programs will utilize data collected at the WNP 2 meteorological tower. This data will be recorded in the control rooms of both the WNP I and 4 Projects and will be collected and analyzed so as to meet the requirements of U. S. Nuclear Regulatory Commission's Regulatory Guide 1.21.

C. Air Quality Monitoring Program

Stack monitoring will be conducted when the diesel generators or auxiliary boilers are being operated.

IV. AQUATIC MONITORING PROGRAM

The aquatic monitoring program will be an integrated program for monitoring pre-operational, construction a-ad operational phases of WNP 2 and WNP 1 and 4 phases of the site. The relationship of these monitoring programs will be as illustrated in Figure 1. The intensity of effort on the monitoring program will vary as the different plants come into operation with increasing activity immediately before and after the initial operation of each project. Continuous evaluation of monitoring data will be accomplished to produce a more efficient environmental surveillance program. Portions of the program may be adjusted depending upon an evaluation of program results.

A. Pre-Operational Aquatic Monitoring Program

The pre-operational monitoring program for WNP 1 and 4 will consist of that data collected for the pre-operational program for WNP 2 as specified in the "Site Certification Agreement Between the State of Washington and the Washington Public Power Supply System for Hanford No. 2" as amended, and such data as is available from the operational monitoring program for the WNP 2 Project.

As a minimum, sampling will be conducted prior to the operation of each project as follows:

1. For fish and plankton at two locations--above the intake and downstream of the mixing zone.

2. For benthos at three locations--above the intake, at the discharge just outside the mixing zone, and downstream of the mixing zone.

B. Operational Aquatic Monitoring

The operational aquatic monitoring program will be a continuation of the pre-operational preliminary sampling program. The scope of the operational aquatic monitoring program will be determined as the results of the preliminary survey are developed. This program will be developed by the Supply System and concurred in by the Council.

V. WATER QUALITY MONITORING PROGRAM

This program will be established to monitor water quality parameters. Data obtained by this program will also supply necessary information to the study of the aquatic life in the river.

A. Pre-Operational Survey

1. Surface Water

Since WNP I and 4 have been placed on the same site as WNP 2, the water quality monitoring program established for WNP 2 will provide the basic necessary information required for WNP 1 and WNP 4.

Measurements of suspended sediment concentrations and turbidity will be performed at river cross-sections 300 feet downstream of the outfall structures. The measurements will be conducted weekly during construction of the river bank facilities. The sampling areas and frequency may be modified according to the sampling results. Sediment concentrations will be measured by a conventional suspended sediment sampler.

2. Ground Water

Extensive environmental monitoring programs concerning the physical, chemical and radiological characteristics of groundwater have been conducted under ERDA auspices. It is expected that these monitoring programs will be continued routinely as a part of the ERDA program. The applicant, however, will undertake a limited groundwater monitoring program in the vicinity of the site as described above in the Radiological Monitoring Program.

B. Operational Monitoring

The pre-operational program discussed above will serve as the basis for the operational program.

1. Chemical Effluent Monitoring

Water quality parameters, locations, and frequencies of measurements are shown in Table 2. The measuring locations are also shown in Figure 3.

Periodic samples collected at points where effluent concentrations in the river are expected to be higher, will be compared with samples collected concurrently at points unaffected by the project. Comparisons of samples will provide a basis for distinguishing any measurable impacts on the environment. The program will be subject to future modification to place greater emphasis on potential problem areas and decreased emphasis on non-problem areas according to the sampling results.

2. Thermal Effluent Monitoring

Temperature of the river, makeup, blowdown, and groundwaters will be monitored at various locations and intervals. Frequency and locations of these measurements are presented in Table 2.

TABLE 2

		SURFACE WATER MONITORING PROGRAMS			
Measured Items		WNP 1 & 4 Intake System Location 3	WNP 1 & 4 Discharge System Location 4	WNP 2 Intake System Location 3	WNP 2 Discharge System Location 4
Quantity		C	C	C	C
Water Table Elevation					
Temperature		C	C	C	C

Dissolved Oxygen		D	D	D	D
Total Dissolved Gas		D	D	D	D
Ph		C	C	C	C
Turbidity		C	C	C	C
Chlorine		C	C	C	C
Coliform Bacteria		W	W	W	W
Total Alkalinity		W	W	W	W
Dissolved Solid		W	W	W	W
BOD					
Conductivity					
Mg					
Fe					
Cu					
Ca					
S04					
Si					
N2					
NH4					
N02					
N03					
P04					
C-Continuous		M-Monthly			
D-Daily		Q- Quarterly			
W-Weekly		A-Annually			

Measured Items	1-mile upstream of project site Location 2	300 ft downstream of WNP 1 discharge Location 5	300 ft downstream of WNP 4 discharge Location 3	Richland Location 7	Wells in vicinity of the Plant site
Quantity					
Water Table Elevation					A
Temperature	M	M	M	M	A
Dissolved Oxygen	M	M	M	M	
Total Dissolved Gas	M	M	M	M	
Ph	M	M	M	M	A
Turbidity	M	M	M	M	
Chlorine	M	M	M	M	A
Coliform Bacteria	M	M	M	M	A
Total Alkalinity	M	M	M	M	
Dissolved Solid	M	M	M	M	
BOD	M	M	M	M	
Conductivity	M	M	M	M	
Mg	Q	Q	Q	Q	
Fe	Q	Q	Q	Q	
Cu	Q	Q	Q	Q	
Ca	Q	Q	Q	Q	
S04	Q	Q	Q	Q	
Si	Q	Q	Q	Q	
N2	Q	Q	Q	Q	
NH4	Q	Q	Q	Q	
N02	Q	Q	Q	Q	
N03	M	M	M	M	
P04	Q	Q	Q	Q	

C-Continuous	M-Monthly				
D-Daily	Q- Quarterly				
W-Weekly	A-Annually				

VI. TERRESTRIAL LIFE PROGRAM

The terrestrial ecology monitoring program for WNP I and WNP 4 is part of an integrated monitoring program for the pre-operational, construction and operational phases of all three nuclear power plants presently planned for the Hanford area. The terrestrial monitoring program includes a preliminary pre-operational survey now being conducted and a monitoring program, outlined below, which is descriptive of both the pre-operational and operational phases.

A. Vegetation Studies

The purpose of vegetation studies will be to identify the impact of cooling tower operation upon plant communities through pre- and post-operational field studies. Parameters to be measured are changes in species composition, changes in primary productivity and changes in mineral content of plant tissues and soil.

1. Aerial Photography

Aerial photographs in natural color and false color infrared of the site and adjacent area will be made to provide a basis for mapping the extent of changes in existing plant communities between the plant site and the Columbia River. These photographs will be taken twice in the first year; once in spring when plants are at peak growth and once in fall when plants are dormant. Future photography will depend on the utility of the photographs.

2. Identification of Major Plant Communities

Study plots will then be established in each major plant community to provide a record of the plant species that comprise each community. A measure of the relative abundance of each species will be made using conventional field ecology methods of determining density and/or canopy cover for each species encountered in the study plots at appropriate seasons of the year.

3. Identification of Forage

Plant species that are potentially important as forage for wildlife or domestic livestock will be specified. The expected pattern for secondary plant succession following the destruction of existing vegetation by fire or mechanical means will also be described.

4. Soil Analysis

The chemical and physical properties of a representative soil profile will be analyzed to provide a basis for recommending the kinds of plants that would be useful in re-vegetating soils disturbed by construction activities.

During the pre-operational survey vegetational analyses will be conducted with the aim of making objective assessments of the environmental impacts of operation of the nuclear power stations. The major impact upon vegetation is likely to be the accumulation of salts in the soil and on vegetative surfaces derived from cooling tower drift.

5. Ground Cover Analysis

The amount of ground cover provided by herbaceous species will be estimated each year at peak yield.

B. Animal Studies

The purpose of animal studies is to identify the impact of cooling tower operation upon animal communities through pre- and post-operational field studies. Parameters to be measured are changes in species composition, changes in biomass and seasonal patterns of activity.

1. Pocket Mouse

Detailed studies of the pocket mouse population will be made during all phases of the monitoring program. A free living population will be studied in the zone of expected heavy drift deposition and compared with a population outside the drift zone.

2. Large Mammals

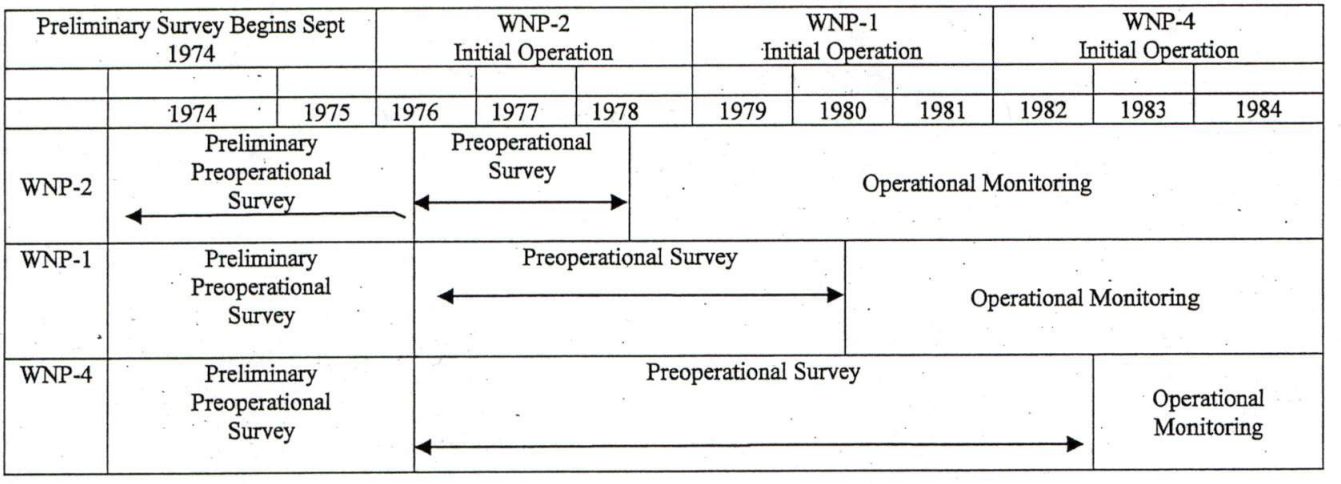
An aerial census of the large mammals, i.e., deer and coyote, will be made twice each year to obtain an estimate of the use of the local areas made by these kinds of animals. In addition, mule deer fecal pellet transects will be made in a study area adjacent to the site.

3. Birds

A census of bird populations will be made by walking along prearranged transect lines and counting birds with the aid of binoculars. Special attention will be paid to the birds that use the local plant communities as nesting habitat and birds that are ordinarily hunted as game or are regarded as being in danger of extinction.

4. Other Vertebrates

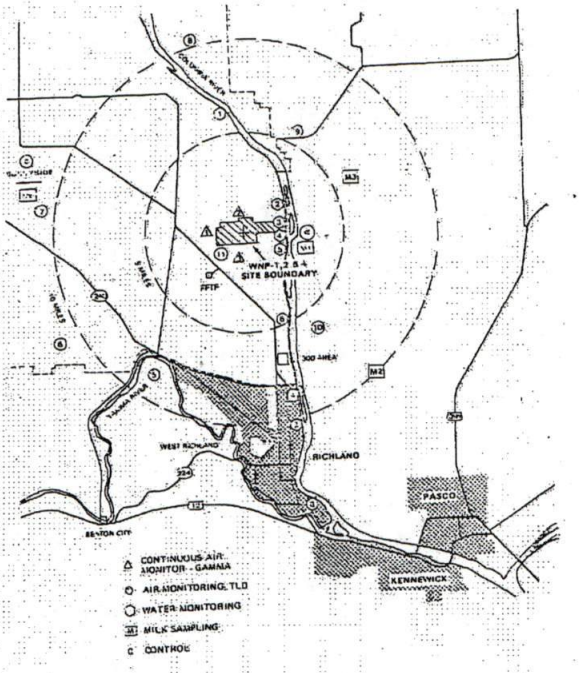
Observations will be made as to the abundance of other species of vertebrate animals, especially jackrabbits, lizards, snakes, and the occurrence of important invertebrates, such as ground-dwelling darkling beetles and grasshoppers that are important items in food chains.



OVERLAP OF WNP-2, WNP-1, AND WNP-4

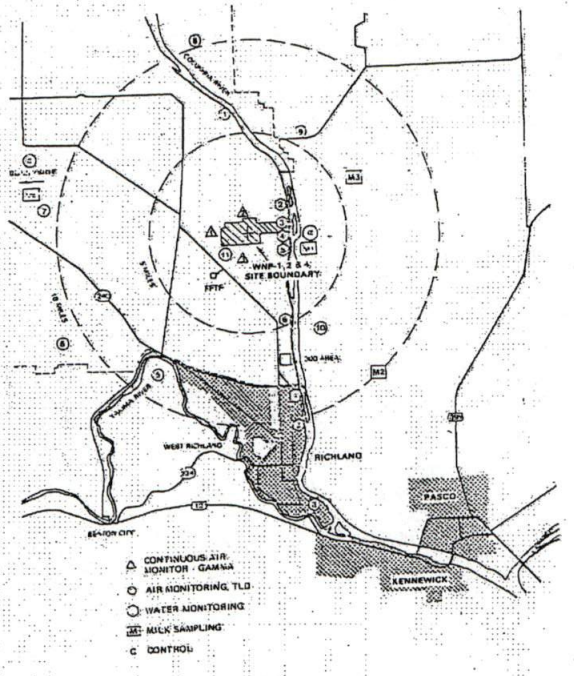
MONITORING PROGRAMS

Figure 1



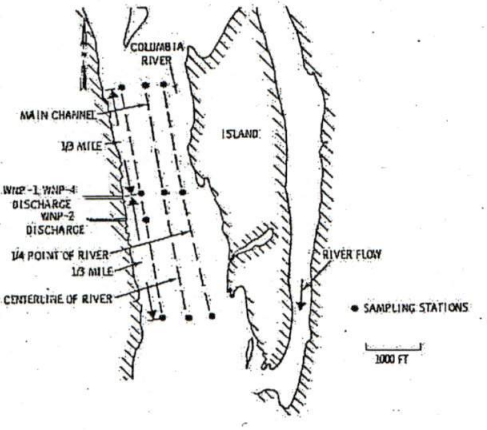
SAMPLE STATIONS
FOR RADIOLOGICAL MONITORING

FIGURE 2



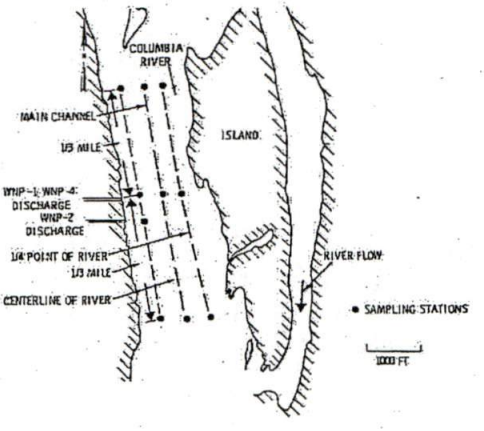
SAMPLE STATIONS
FOR RADIOLOGICAL MONITORING

FIGURE 2



SAMPLING STATIONS IN THE COLUMBIA RIVER

FIGURE 3



SAMPLING STATIONS IN THE COLUMBIA RIVER

FIGURE 3