

**WASHINGTON STATE
ENERGY FACILITY SITE EVALUATION COUNCIL**

RESOLUTION NO. 278

WHEREAS, The Nuclear Regulatory Commission (NRC) has delegated to Agreement States the authority to regulate disposal of radioactive waste; and

WHEREAS, The State of Washington is an Agreement State pursuant to delegation of authority from the NRC; and

WHEREAS, Efficient cooling and operation of the circulating water system at the Washington Public Power Supply System's (Supply System) Nuclear Plant No. 2 (WNP-2) requires periodic removal of sediment and organic material that accumulates in the cooling towers, pumphouse and associated piping; and

WHEREAS, Analyses have shown that this material often contains radionuclides at concentrations above the lowest level of detection for environmental measurements; and

WHEREAS, Cooling system operation likely concentrates radionuclides contained in the river makeup water and the air drawn through the towers; and

WHEREAS, The current regulatory framework requires that this material be managed as low-level radioactive waste regardless of its source; and

WHEREAS, By letters dated March 14, and April 6, 1995, the Supply System has requested approval and provided a plan for the disposal of sediment cleaned from the cooling towers at WNP-2; and

WHEREAS, The Washington Department of Ecology has found the proposed disposal plan consistent with the solid waste requirements of Washington Administration Code (WAC) 173-304; and

WHEREAS, The Washington Department of Health has found the proposed disposal plan consistent with the radiation protection standards of WAC 246-221-180;

NOW, THEREFORE, BE IT RESOLVED, That the Energy Facility Site Evaluation Council hereby authorizes the onsite disposal of cooling tower sediments containing low levels of radionuclides at the Washington Public Power Supply System Nuclear Plant No. 2 subject to the conditions specified in Attachment I.

Dated this 8th day of May 1995.

Washington State Energy Facility Site Evaluation Council

By: Frederick S. Adair
Frederick S. Adair, Chairman

Attest:
By: Jason J. Zeller
Jason J. Zeller, EFSEC Manager

RESOLUTION NO. 278**ATTACHMENT I**

Resolution No. 278 authorizes the on-site disposal of sediments removed from the cooling tower system containing low levels of radionuclides at the Washington Public Power Supply System (Supply System) Nuclear Plant No. 2 (WNP-2). This authorization is contingent upon compliance with the following conditions:

1. Disposal Area:

Sediment disposal is limited to disposal cells specifically constructed for this purpose. The cells are to be located in an inactive borrow pit located south of the WNP-2 cooling towers. The corners of the disposal area shall be marked with posts and signs erected indicating the dedicated purpose of the area. Interim storage of sediment in containers is allowed.

2. Disposal Area Solid Waste Requirements:

Requirements under Washington Administration Code (WAC) 173-304-405 and -420 must be met. This includes a plan of operation, recordkeeping, reporting and inspections.

3. Disposal Area Dose Limit:

The disposal limits in Section 4 have been established to limit the annual dose directly attributable to this disposal operation to 15 mrem/year. This is the maximum dose above background that an individual would receive after spending 2000 hours at the disposal site. Actual doses are expected to be much lower and should be maintained as low as reasonably achievable.

4. Disposal Limits:

- a. The following individual isotopic limiting concentrations have been established as the maximum values allowed for disposal:

| | |
|--------|----------|
| Co-60 | 5 pCi/g |
| Mn-54 | 30 pCi/g |
| Zn-65 | 50 pCi/g |
| Cs-134 | 10 pCi/g |
| Cs-137 | 20 pCi/g |

- b. Since these radionuclides may not occur alone, the combined concentrations of the radionuclides will also be limited such that the sum of the fractions of maximum concentration for each nuclide does not exceed unity:

$$A + B + C + D + E \leq 1.0$$

A = actual concentration ÷ maximum concentration Co-60 (5 pCi/g)

B = actual concentration ÷ maximum concentration Mn-54 (30 pCi/g)

C = actual concentration ÷ maximum concentration Zn-65 (50 pCi/g)

D = actual concentration ÷ maximum concentration Cs-134 (10 pCi/g)

E = actual concentration ÷ maximum concentration Cs-137 (20 pCi/g)

- c. This will assure that the incremental dose will remain below 15 mrem/yr. If additional radionuclides are detected, individual limiting concentrations will need to be established with concurrence from the state Department of Health prior to disposal.

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5. Sample Analysis and Environmental Monitoring: will be conducted per the Supply System's standard environmental monitoring procedures and practices.
 - a. Pre-Operational Baseline Radiation Measurements:
 1. Direct radiation dose rate - Pressurized Ion Chamber Measurements.
 2. Soil samples - Five (5) composite samples analyzed for radionuclide concentration.
 - b. Pre-Disposal Screening Criteria and Sample Requirements:
 1. If the analysis results of a wet composite sample are less than 20% of the disposal limits listed above for each area to be cleaned and no other man-made radionuclides are found, the sediment may be placed in the disposal cell without further pre-disposal analysis.
 2. If the analysis results of a wet composite sample are equal to or greater than 20% of the disposal limits listed above, the same sample (or a split of the same sample) shall be dried and reanalyzed. If the dry results are less than the disposal limits and no other man-made radionuclides are found, the sediment may be placed in the disposal cell.
 3. If the analysis results of a dried composite sample exceed the disposal limits, the material shall be held for decay before it is disposed onsite or it shall be disposed by other means such as burial in a licensed low-level radioactive waste disposal facility.
 4. Sediment sampling and screening shall be conducted separately for the tower decks and the tower basins (including the associated pumphouse and connecting piping). Wet composite samples shall be taken in sufficient quantity to support additional dry analysis that may be required as described above.
 5. If requested, the Supply System shall provide the state a split of any sample taken for analysis.
 - c. Routine Disposal Cell Monitoring:
 1. Direct Radiation Exposure Rate - Annual Pressurized Ion Chamber Measurements
 2. Direct Radiation Dose Rate - A thermoluminescent dosimeter (TLD) station shall be established in close proximity to the disposal cells. TLDs from this station shall be read quarterly.
 3. Confirmatory Sampling - A dry composite sediment sample shall be taken from the disposal cell within thirty (30) days following each cleaning episode and analyzed to confirm that the disposal criteria has not been exceeded.
 - d. Chemical Sampling:

Metals - Once every five (5) years, the accumulated sediment shall be sampled and analyzed for total copper, zinc, and nickel. Other constituents will be analyzed if requested by the state Department of Ecology.

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6. Disposal Site Closure

Disposal operations are anticipated throughout the operating life of WNP-2. The disposal site shall be closed in accordance with regulations in effect at the time of closure.

7. Notifications:

Information regarding unusual circumstances or testing data that exceeds the specified limits will be reviewed within ten (10) working days with the state.

8. Reporting:

- a. Pre-operational (5.a above) shall be reported to the state upon completion. Pre-disposal (5.b above) sample analysis results shall be maintained on file at the Supply System and available for inspection upon request.
- b. Routine disposal cell monitoring (5.c above) shall be reported annually in the Radiological Environmental Monitoring Program (REMP) report. The report shall also contain the annual quantity or volume and estimated in-place density of sediment, plus the annual quantity of radionuclides placed in the disposal area.
- c. Chemical sampling plans and analytic results shall be provided to the state after each sampling event.
- d. In accordance with solid waste regulations (WAC 173-304-405 (4)), an annual report shall be submitted to EFSEC and the state Department of Ecology by March 1 of each year. The annual report shall cover facility activities during the previous year and must include the following information: Annual quantity or volume and estimated in-place density of solid waste handled.