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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 156124

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Distribution	Decommissioning Engineering	156120
5. Proj./Prog./Dept./Div.:	**6. Cog. Engr.:**	**7. Purchase Order No.:**
81490	P. W. Griffin	N/A

8. Originator Remarks:
The attached Decommissioning Scoping Document for the dismantlement of the Hanford Generating Plant has incorporated comments per EDT 156120 and is submitted for approval.

9. Equip./Component No.: N/A

10. System/Bldg./Facility: Hanford Generating Plant

11. Receiver Remarks:

12. Major Assm. Dwg. No.: N/A

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14. Required Response Date: June 1, 1992

15. DATA TRANSMITTED

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1	WHC-SD-DD-AP-016		0	Scoping Document for the Hanford Generating Plant in the 100-N Area	4	1		

16. KEY

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
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17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)

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1	1	Cog.Eng. P. W. Griffin	P W Griffin	5/29/92	R2-77	K. S. Pedersen	K S Pedersen	6/1/92	S4-67	1	1
1	1	Cog. Mgr. D. R. Speer	D R Speer	6/1/92	R2-77	R. J. Gimera	R J Gimera	6-1-92	X0-57	1	1
1	1	QA R. G. Dieffenbacher	R G Dieffenbacher	6-1-92	H4-16						
1	1	Safety F. A. Schmorde	F A Schmorde	6/1/92	L6-57						
1	1	Env. K. A. Gano	K A Gano	6-1-92	X0-21						
1	1	M. C. Hughes	M C Hughes	6-2-92	L4-88						
1	2	M. R. Morton	M R Morton	6/1/92	R2-77						

18.	19.	20.	21. DOE APPROVAL (if required) Ltr. No.
P. W. Griffin P W Griffin 5-29-92	R. J. Gimera R J Gimera 6-1-92	D. R. Speer D R Speer 6/2/92	[ ] Approved [ ] Approved w/comments [ ] Disapproved w/comments
Signature of EDT Originator / Date	Authorized Representative for Receiving Organization / Date	Cognizant/Project Engineer's Manager / Date	

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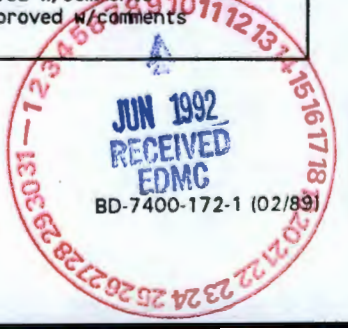

Date Received: 6-2-92	**INFORMATION RELEASE REQUEST**	Reference: WHC-CM-3-4

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- [ ] Software/Database
- [ ] Controlled Document
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ID Number (include revision, volume, etc.): WHC-SD-DD-AP-016, Rev. 0

List attachments: None

Date Release Required:

Title: Scoping Document for the Hanford Generating Plant in the 100-N Area

Unclassified Category: UC-

Impact Level: 3

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Author/Requestor (Printed/Signature) Date: P. W. Griffin P W Griffin 6-1-92

Intended Audience: [ ] Internal [X] Sponsor [ ] External

Responsible Manager (Printed/Signature) Date: D. R. Speer Dwayne Speer 6/2/92

INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP

Stamp is required before release. Release is contingent upon resolution of mandatory comments.

1 JUN 1992
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Date Cancelled:

Date Disapproved:

SUPPORTING DOCUMENT

1. Total Pages 16

2. Title	3. Number	4. Rev No.
Scoping Document for the Hanford Generating Plant in the 100-N Area	WHC-SD-DD-AP-016	0

5. Key Words	6. Author
Scoping Document, Decommissioning Activities, Hanford Generating Plant	Name: P. W. Griffin Signature Organization/Charge Code 81490/E56850

7. Abstract

The scoping document identifies the work activities for decommissioning the Hanford Generating Plant (HGP) in the 100-N Area.

The objective of decommissioning the HGP is to reduce the potential hazards associated with a shutdown and surplus facility along the banks of the Columbia River. This objective will be reached by removing all components from the facility, demolishing the buildings to 5 ft below grade, backfilling the area to the original grade, and planting grasses.

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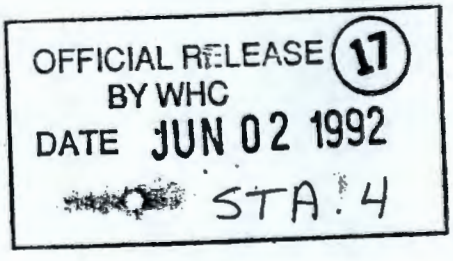
9. Impact Level NDW 3 4

10. RELEASE STAMP



SCOPING DOCUMENT FOR THE HANFORD GENERATING PLANT IN THE 100-N AREA

P. W. Griffin

May 1992

Westinghouse Hanford Company
Post Office Box 1970
Richland, Washington

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SCOPING DOCUMENT FOR THE HANFORD GENERATING PLANT IN THE 100-N AREA

1. BACKGROUND AND STATUS

The Washington Public Power Supply System (WPPSS) financed and built the Hanford Generating Plant (HGP) as authorized by the Atomic Energy Commission on September 26, 1962 to use the 105-N Reactor steam generator steam to produce electricity. Ground breaking for plant construction took place on September 26, 1963 and on April 8, 1966 the first nuclear produced electricity from one of the two 430,000 kW turbines was synchronized with the Northwest Power Pool and sent into the Bonneville Power Administration's transmission grid system. The HGP operated up to January 1987 at which time N-Reactor steam was no longer available.

The HGP is located within the Hanford Site in the 100-N Area on the south bank of the Columbia River at river mile 380, approximately 35 river miles upstream and 32 road miles from the city of Richland, in the southeastern corner of Washington State (Figure 1). The main power plant building is 150 ft wide by 430 ft in length, with a superstructure open crane bay 57 ft high. There are three basement floor levels down to the minus 50-ft level. There are elevators to the basement levels from next to the control room which was primarily for access to the plant operational equipment, and on the northeast end of the building which served the administration offices, water chemistry lab, instrument shop, rest rooms, and machine shop areas. The above grade structure is constructed with a steel beam frame with concrete walls on three sides, and a concrete and transite wall on the control room side of the building. The steel beam superstructure supports a overhead traveling bridge crane with a 125- and a 40-ton hoist (crane girder elevation plus 34 ft-10 in.) that can make lifts through equipment hatches down to the minus 50-ft level with the 40-ton hoist and to the ground floor level with the 125-ton hoist. Both the large turbine-generators and deaerating heater storage tanks are accessible on the ground floor level (Figure 2). The control room, water treatment room containing four mixed resin bed ion exchangers and emergency diesel generator room with a 20,000 gal buried fuel tank are also located on the ground floor level. The minus 16-ft level contains mainly the main steam pipe gallery including the lower section of the turbine-generators, communications room, switchgear room and some electrical lines and components. The below grade space is 30 ft wider than the grade level main bay area. The minus 33-ft level contains condensate heaters, air ejectors, river water buss duct cooler (Phase A transformer contains polychlorinated biphenyl), battery rooms containing 60 large batteries, and a annunciator battery bank and spare part room. The minus 50 ft-level contains the dryers, hydrazine and morpholine station, sump pumps, low pressure heaters, lube oil storage tanks with a 14,000 gal capacity including 2,700 gal of new oil, lube oil filter and oil pumps, feed pumps, condensate pumps, blow down tanks, drain tank, and maintenance and machine shops. The minus 50-ft level floor is located above a 5-ft equipment pumps, sumps, drains, pipe run space.

Figure 1. Hanford Generating Plant (185-N) in the 100-N Area.

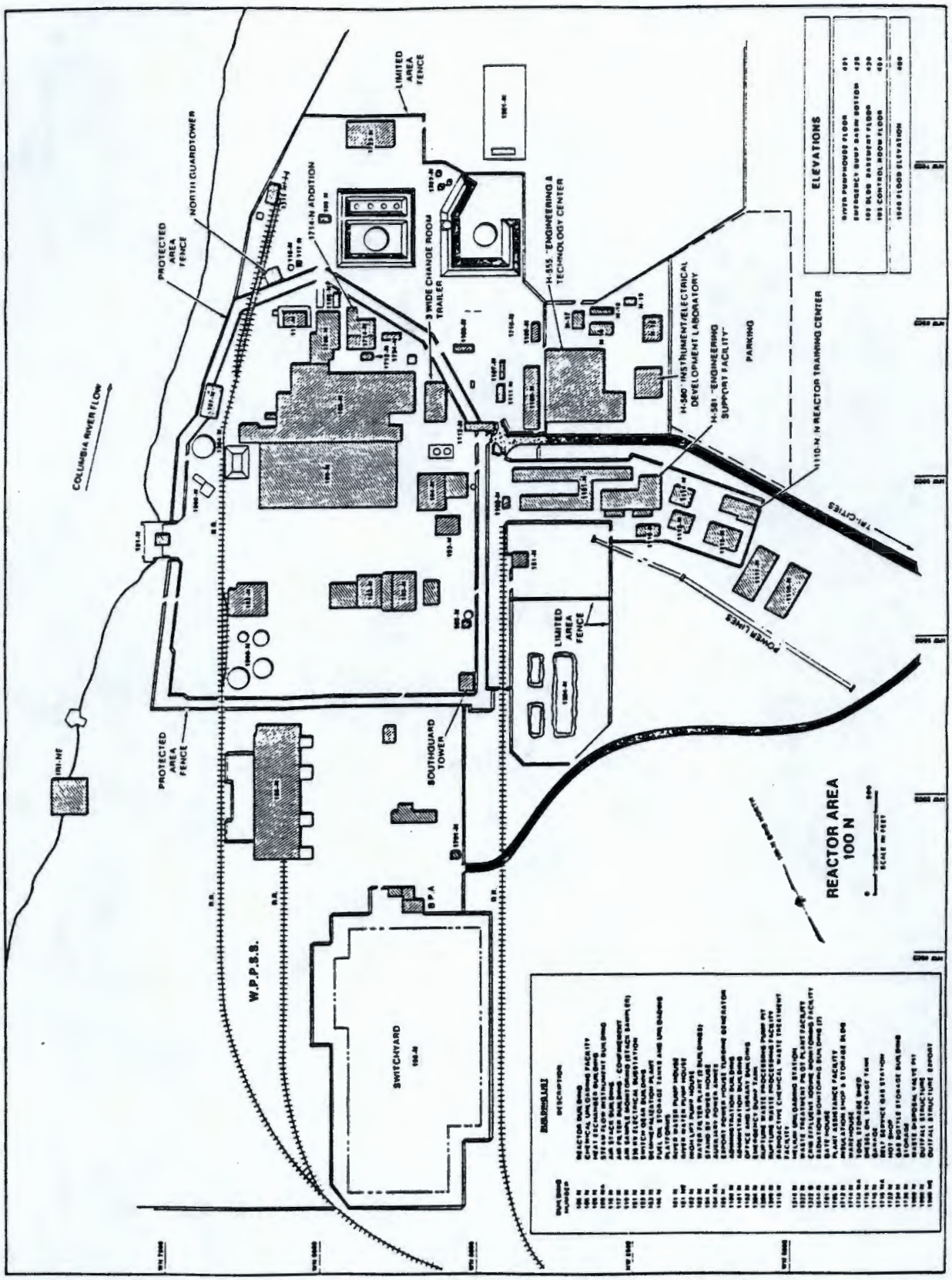
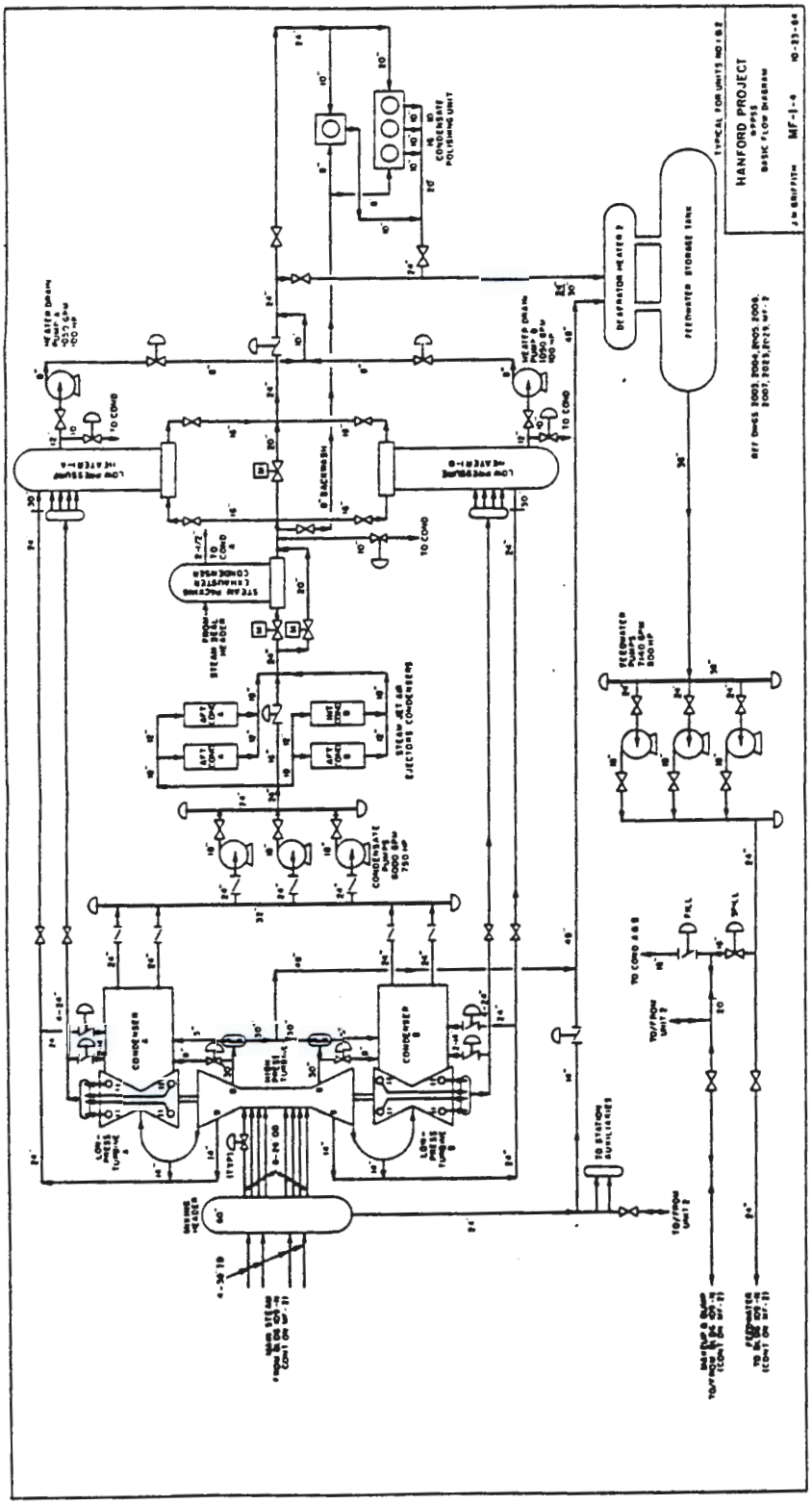


Figure 2. Steam Flow Diagram for One-Half of the Generating Plant.



Some of the components, such as the steam drain traps and sump pumps, have fixed fission product contamination at levels from 200 counts per minute (cpm) to 700 cpm. Current information is that there is no detectable activity downstream of the Main Steam Isolation Valves. The only piping that is contaminated, or suspect, is upstream of this point.

The HGP is responsible for the large pipe trestle, the eight 38-in. inside dimension (ID) main steam lines, eight 38-in. ID condensate lines, and two smaller lines from the 105-N security fence on the east and north to the main plant.

There are six large facility transformers next to the main plant and a single large yard transformer with power lines and towers which provided electrical power to the HGP 500 kV Switch Yard. The power transformers and towers are located on the west side of the HGP building. The HGP facilities 4160 V service power is provided by buried lines from the 100-N Area switchgear. The HGP is currently receiving power from the 100-N switchgear through one of the two small transformers on the west side of the HGP building. The other small transformer was used for feeding back service power when the plant was operating.

The river water pump facility is located on the south bank of the Columbia River approximately 800 ft west of the HGP building. The facility pump was capable of withdrawing as much as 1,260 ft^3/s. The intake screen maximum velocity was 0.89 ft/s. Located on top of the pump station concrete monolithic intake structure, 20 to 30 ft above the river are:

- four 564,000 gal/min (combined capacity) / 2250 hp vertical river water pumps,
- three fire hydrant pumps (with emergency diesel generator with a 280-gal above ground fuel tank),
- six traveling screens and power components,
- two gantry cranes,
- two substations,
- motor control cabinets,
- two buildings (one metal butler and one original construction building) and their associated equipment.

The HGP building roof drains, floor drains, and other exterior areas drain into a pond located between the river water pump station and the effluent outfall structure. The drain pond is roped off and designated as a radiological contaminated area. A surface survey of the dry pond showed less than 200 cpm to 1,000 cpm of contaminated soil.

The effluent is transported in a large diameter, steel pipe from the plant to a large, concrete multi-chambered outfall structure with top side gantry crane service which then outflows into a river line that discharges through four nozzles 1,040 ft into the Columbia River's main channel.

2. OBJECTIVE

The objective of decommissioning the HGP is to reduce the potential hazards associated with a shutdown and surplus facility along the banks of the Columbia River. This objective will be reached by removing all components from the facility, demolishing the buildings to 5 ft below grade, backfilling the area to the original grade, and planting grasses. This includes the removal of:

- 1,344 yd^3 of asbestos,
- eight 38-in. ID main steam lines including the other trestle lines and the pipe trestle from the 105-N security fence to the main plant,
- two 60-in.-diameter mixing headers,
- sixteen 26-in. outside dimension (OD) steam lines to the high pressure turbines,
- four moisture separators,
- two high and four low pressure turbines with their 430,000 kW generators (each turbine-generator weighs 3,150,000 lb, exclusive of the condenser),
- condensers and their 14-in.-, 24-in.-, 30-in.-, 48-in.-, etc., diameter associated steam, drain, and/or water lines and valves,
- six 6,000 gal/min / 750 hp condensate pumps,
- eight steam jet air ejector condensers,
- steam packing exhauster condenser,
- four low pressure heaters,
- four 1,050 gal/min / 100 hp heater drain pumps,
- eight condensate polishing units,
- deaerator heater and feedwater storage tank,
- lube oil tanks and pumps,
- six 7,140 gal/min / 800 hp feedwater pumps,
- two battery rooms equipment,
- control room panels,
- electrical cable and trays,

- machine and maintenance shops,
- overhead traveling bridge crane with 125- and 40-ton hoists,
- steel decking and steel beams,
- six large facility transformers,
- four 564,000 gal/min (combined capacity)/ 2250 hp vertical river water pumps, three fire hydrant pumps, six traveling screens, components, and the gantry cranes,
- one yard transformer and power lines, and towers and their associated equipment, and
- 1,113 ft of 11-ft-diameter riverline which extends 1,040 ft into the river.

In addition, 1,000 ft of 9-ft-diameter steel pipe between the river water station and the main plant and 1,000 ft of 10-ft-diameter pipe from the plant to the river outfall will be filled with grout.

The main plant, the river pump house, and the outfall structure will be demolished to 5 ft below grade and backfilled. The only exception to this is the river pump house headwall which will be demolished to the river level only.

3. SCOPE OF WORK AND PHYSICAL LIMITS

The magnitude of decommissioning the HGP is formidable. Therefore the project should be planned and managed in accordance with a well established system such as the Project Management System defined in U.S. Department of Energy (DOE) Order 4700.1. In doing this we can be better assured that the project execution will meet the needs and objectives of WPPSS and/or DOE. Use of the Project Management system will also aid in accomplishing the work on schedule and within cost while maintaining the scope as originally intended.

3.1. PRE-PROJECT

- Program Business Management and Program Manager will establish funding and schedule for accomplishing the project. Operations and Activity Engineer prepare preliminary Cost Account Authorization (CAA)/Cost Account Plan (CAP).
- Engineering will continue to gather preliminary information for developing radiological and nonradiological hazardous waste sampling/characterization plan and work procedures. Engineering will also request for determination of the National Environmental Policy Act (NEPA), the Floodplain/Wetlands Assessment, the Shoreline

Management Act, the Corps of Engineers Notification, the Hydraulics Project Permit, the Hanford Reach Notification, and the Safety Hazard Analysis requirements.

NOTE: The 500 kV switch yard is not part of this project and will remain as is.

3.2. PREREQUISITE (After securing project funding)

- Program Manager and Cost Account Manager issue the CAA and approve the CAPs.

- Decommissioning Engineering (DE) issues and implements the sampling/ characterization plan.

- Health Physics provides the initial equipment survey, follow-on work activities coverage, and Radiation Work Permits.

- Engineering, Hanford Field Operation (HFO), and Health Physics inspect the work areas for taking samples per the plan. HFO obtains (liquid and solid) samples for transmittal for laboratory analysis. Most generally, the internal surveys will be performed during the component dismantlement for removal to provide data in preparing shipping and disposal records. Assess all liquid systems for presence of liquid and estimate volume and method of venting and draining.

- DE will utilize the construction management methodology in the initial predesign phases through to project completion because of the project complexity and size. DE will prepare a functional design criteria letter of instruction which will form the design basis for the project. DE will utilize an Architect-Engineer in the preparation of a Decommissioning Conceptual Study (DCS) (a combined preliminary engineering study and conceptual engineering design) which will form the basis for the project definitive design. Westinghouse Hanford Company will provide overall project management.

  NOTE: This scoping document and associated cost estimate are preliminary documents and will be replaced by the DCS and cost estimate for the project baseline control.

- Engineering shall prepare the necessary documents (Project Plan [or utilize HFO prepared Project Management Plan], special procedures, decommissioning work plans, Job Safety Analyses, Hazardous Waste Operating Permits and Decommissioning Readiness Review, etc.) to accomplish the work. Request the preparation of the appropriate NEPA, Safety Analysis documentation, and Quality Assurance Plan.

3.3. ENGINEERING (dismantlement activities)

3.3.1. 185-N Turbine Generator Building

3.3.1.1. Prepare instructions to erect a greenhouse one at each level, for asbestos removal, with an exhaust system for air exchange.

3.3.1.2 Prepare a sample plan, to guide sampling and sample analysis.

3.3.1.3 Prepare the required documents for asbestos removal in conjunction with Plant Operating Procedure DD-026-016, "Remove Asbestos."

3.3.1.4. Prepare Engineering instructions for the building dismantling, demolition, and disposal.

3.3.1.5. Prepare Engineering instruction for the reinforced concrete demolition, removal, and disposal.

3.3.1.6. Prepared Engineering instructions to fill and grade the below grade structure, to match the surrounding terrain.

3.3.2. 185-N Utilities

3.3.2.1. Prepare Engineering instruction for utility isolation.

3.3.2.2. Prepare Engineering instruction for equipment removal and disposal.

3.3.3. 185-N Exterior Structures/Towers/Trestles

3.3.3.1. Prepare Engineering instructions for the exterior towers (microwave roof tower, power transmission towers, steam/water line trestles, etc.) and other structures surrounding the generating plant for removal and disposal.

3.3.4. 181-NE River Water Pump House

3.3.4.1. Prepare Engineering instructions to pump grout for reduction of the internal void spaces in the 9-ft-diameter pump house pipe from the 185-N Building to the pump station (approximately 1,000 ft in length).

3.3.4.2. Prepare Engineering instructions to remove the river pump house equipment.

3.3.4.3. Prepare Engineering instruction to demolish, remove and dispose of the river pump house structure.

3.3.5. 185-N Septic Tank

3.3.5.1. Prepare Engineering instruction to cleanup the septic tank, the associated tile field, and drain line.

3.3.6. 1908-NE Effluent Outfall/Pipes

3.3.6.1. Prepare Engineering instruction to pump grout for reduction of the internal void spaces in the 10-ft -diameter effluent pipe from the 185-N Building to the outfall (approximately 1,000 ft in length).

3.3.6.2. Prepare the Engineering instruction to remove the effluent pipe 11-ft ID river line (wall 3/4 in. to 13/16 in. thick) from the outfall to approximately 1,040 ft into the river.

3.3.6.3. Prepare Engineering instruction to remove gantry crane and equipment, and demolish and dispose of the effluent outfall structure.

3.3.7. 185-N Drain Pond

3.3.7.1. Prepare Engineering instruction to decontaminate the 185-N facility exterior drain pond site.

3.3.8. Engineering Documentation

3.3.8.1. Ensure all decommissioning engineering documentation necessary to decommission the HGP and ancillary facilities is in place prior to start of decommissioning readiness review.

3.3.8.2. Provide Engineering support during decommissioning.

3.3.8.3. After the completion of decommissioning, prepare a final decommissioning report.

- HFO shall prepare a Project Management Plan and provide facility support services (e.g., lighting and electrical, water, work area prep, ventilation, rest room, etc.), purchase orders, and/or work orders for the procurement of any specialized services, equipment (or equipment fabrication), and sample analyses services, and sampling team members.

  The HFO Project Analyst will assure that support personnel that are needed to accomplish the project are scheduled and briefed, as required, on specific tasks to be performed to support this activity and provide any other coordinating activities necessary to accomplish this activity.

  The HFO personnel will perform those tasks assigned to them by the HFO person in charge.

3.4. SITE PREPARATION WORK

3.4.1. 185-N Turbine Generator Building

3.4.1.1. Rope off and post the asbestos work areas and the decommissioning work areas.

3.4.1.2. Erect the green houses in the designated locations and install the air exchange system.

3.4.1.3. Setup showers for asbestos removal.

3.4.1.4. Setup rest rooms, lunchrooms, etc., for workers.

3.4.1.5. Mobilize equipment and manpower.

3.5. DECOMMISSIONING WORK

3.5.1. 185-N Turbine Generator Building

3.5.1.1. Glove bag and plastic wrap the steam line in preparation for removal of the steam line in sections with the asbestos intact.

3.5.1.2. Move the plastic wrapped pipe into the green house, remove and package the asbestos for disposal, and survey the pipe for asbestos free disposal.

3.5.1.3. Isolate and de-energize utilities for motors, pumps, switch gear, etc., so they may be safely dismantled.

3.5.1.4. Start dismantling and removing equipment and continue until all equipment is removed and disposed of it.

3.5.1.5. Remove all copper cable from the cable trays and dispose of it.

3.5.1.6. Remove the electric cable trays and dispose of them.

3.5.1.7. Remove all the tanks, including the buried emergency generator diesel fuel tank, from the facility and dispose of them.

3.5.1.8. Remove the fire alarm piping system and dispose of it.

NOTE: The floor tile in the control room, communication room, offices, etc., will be removed and disposed of as asbestos waste, if the sample analyses designates the composition as asbestos.

3.5.1.9. Remove the transite air duct and dispose of it.

3.5.1.10. Remove all metal air ducts and dispose of them.

3.5.1.11. Remove the steel grating from all floor levels and dispose of it.

3.5.1.12. Remove all the overhead cranes and dispose of them.

3.5.1.13. Remove the tar, tar paper, and gravel from the roof and dispose of them.

3.5.1.14. Remove the transite concrete roof panels and dispose of them.

3.5.1.15. Remove the exterior corrugated transite wall panels and dispose of them.

3.5.1.16. Remove the exterior wall masonry block and dispose of it.

3.5.1.17. Dismantle and remove the roof trusses and dispose of them.

3.5.1.18. Dismantled the structural steel framing and dispose of it.

3.5.1.19. Demolish the reinforced concrete floors and foundation and dispose of them.

3.5.1.20. Fill and grade the demolition area to match the surrounding area.

3.5.2. 181-NE River Water Pump House

3.5.2.1. Isolate and de-energize utilities to pump station.

3.5.2.2. Remove the pumps and associated equipment.

3.5.2.3. Dismantle, remove, and dispose of the above grade structures.

3.5.2.4. Demolish the reinforced concrete floor foundation and dispose of the rubble.

3.5.2.5. Fill and grade the demolition area.

3.5.3. 185-N Septic Tank and Tile Fields

3.5.3.1. Obtain samples and characterize.

3.5.3.2. Remove and properly dispose of contents.

3.5.3.3. Sand fill the septic tank.

NOTE: The septic system and/or constituents will be removed and disposed of as hazardous waste, if the sample analyses designates the contents as hazardous material.

3.5.4. 1908-NE Effluent Outfall/Pipes

3.5.4.1. Obtain pipe samples and characterize.

3.5.4.2. Section and remove the section of effluent pipe (11-ft ID with 3/4-in. to 13/16-in. wall thickness) extending 1,040 ft out into the river.

3.5.4.3. Grout fill the effluent pipe (10-ft-diameter by approximately 1,000 ft length) from the 185-N Building to the 1908-NE Outfall.

3.5.4.4. Obtain 1908-NE Outfall samples and characterize.

3.5.4.5. Outfall gantry crane dismantlement, structure demolition, and material disposal.

3.5.4.6. Backfill and grade the outfall demolition area.

3.5.5. 185-N Exterior Structures and Components

3.5.5.1. Isolate and de-energize all the electrical transmission lines on the steel towers and buried lines providing power to the 185-N Building and the ancillary facilities.

3.5.5.2. Dismantle the steel towers and transport to excess.

3.5.5.3. Remove the transformers and transport to excess.

3.5.5.4. Remove the asbestos insulation from the exterior asbestos wrapped steam lines package and dispose of it.

3.5.5.5. Remove the trestle pipes and trestle and transport to excess for disposal.

3.5.5.6. Demolish the transformer concrete pads and shields, and stockpile the concrete rubble for disposal in the below grade in the 185-N site.

3.5.6. 185-N Drain Pond

3.5.6.1. Obtain soil samples and characterize.

3.5.6.2. Remove an estimated 2,500 ft^3 of radiologically contaminated soil for disposal in the 200 Areas.

3.5.6.3. Backfill, grade, and seed excavation area.

4. ASSUMPTIONS

- It is assumed that no or very little nonradioactive hazardous material will require disposal and the majority of the asbestos can be buried in the 200 Area central landfill. It is assumed that the lab analyses for the herbicide treated areas and the septic system will show the soil to not require remediation to remove hazardous contaminants.

- It is assumed that the dismantlement work will be scheduled so that the existing facility equipment (power, cranes, lighting, ventilation, etc.) can be utilized to the fullest extent possible prior to removal.

- It is assumed that the preferred method of decommissioning the effluent river line is by removal because of the river current lateral loading, scouring, and undermining actions. Also, it is assumed that the river lines are considered attractive nuisances in an area of public domain. It is assumed that a barge crane similar to the ones Lampson constructed for Johnson Bros. for Interstate I-182 twin bridge construction with a 150-ton capacity or for the Rocky Reach Dam with a 300-ton stator crane barge would be utilized. Several local and Seattle firms are capable of making barge crane lifts. The underwater river work requiring divers will be performed by offsite professional divers.

- It is assumed that the appropriate NEPA documentation required will be an Environmental Impact Statement (EIS)/Record of Decision because of the magnitude of the estimated project cost.

- It is assumed that nonradioactive and/or nonhazardous structural concrete and rebar, dry wall, wood, etc., rubble will be accommodated in the below grade spaces of the facility and only the structural metallic components, asbestos, equipment and components, etc., will require out-of-the-area transport for disposal.

- It is assumed that all equipment, piping, copper cable, structural steel framing, etc., can be excessed. An option will be pursued by engineering for equipment removal by contracting equipment vendors interested in obtaining the turbine generating equipment, diesel generators, pumps, etc., for reuse if it is cost effective.

- It is assumed that the buried gasoline fuel storage tank removal is not part of this project.

- It is assumed that the grout void reduction for the large buried pipe will be used similar to the method used in the Surplus Production Reactor Decommissioning EIS (draft DOE/EIS-0119D, dated March 1989).

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Scoping Document for the Hanford Gneerating Plant in the 100-N Area
(WHC-SD-DD-AP-016 Rev. 0)

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