DISTRIBUTION SHEET

To Distribution	From HA, Planning and Integration	Page 1 of 1
		Date 11/16/94
Project Title/Work Order WHC-SD-W370-FDC-001, REV 0, " 2607-W6 Sanitary Drainfield Replacement"		EDT No. 156846
		ECN No. N/A

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
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CENTRAL FILES (2)	L3-04	X			
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NOV 16 1994

ENGINEERING DATA TRANSMITTAL

Original

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1. EDT

156846

11-16-94

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) HAS, Planning and Integration	4. Related EDT No.: 156846
5. Proj./Prog./Dept./Div.: W-370/HAS/Program Management/Planning and Integration	6. Cog. Engr.: F. M. Simmons	7. Purchase Order No.: N/A
8. Originator Remarks: Functional Design Criteria, WHC-SD-W370-FDC-001, Rev: 0 for signature approval.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: 2607-W6 Septic System
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: May 31, 1994

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Impact Level	Reason for Trans- mittal	Orig- inator Dispo- sition	Receiv- er Dispo- sition
1	WHC-SD-W370-FDC-001		0	2607-W6 Sanitary Drainfield Replacement	E	1		

16. KEY			
Impact Level (F)	Reason for Transmittal (G)		Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)										(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
1	/	Cog. Eng. F. M. Simmons	<i>F. M. Simmons</i>	5/29/94		Engineering R. L. Robertson	<i>R. L. Robertson</i>	5/29/94		1	/
1	/	Cog. Mgr. S. M. Joyce	<i>S. M. Joyce</i>	5/29/94		Engineering L. Goodwin	<i>L. Goodwin</i>	5/23/94		1	/
		QA									
		Safety									
1	/	Env. K. A. Giese	<i>J. S. Hill</i>	5/23/94							
1	/	Landlord D. Danch	<i>D. A. Danch</i>	5/22/94	03-09						
1	/	Operations D. M. Thornton	<i>D. M. Thornton</i>	5/23/94							

18. F. M. Simmons <i>F. M. Simmons</i> 5/29/94 Signature of EDT Originator	19. S. M. Joyce <i>S. M. Joyce</i> 5/29/94 Authorized Representative Date for Receiving Organization	20. S. M. Joyce <i>S. M. Joyce</i> 5/29/94 Cognizant/Project Engineer's Manager	21. DOE APPROVAL (if required) Ltr. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
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RELEASE AUTHORIZATION

Document Number: WHC-SD-W370-FDC-001, REV. 0

Document Title: 2607-W6 Sanitary Drainfield Replacement

Release Date: 11/16/94

This document was reviewed following the
procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

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11/16/94

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SUPPORTING DOCUMENT		1. Total Pages 89 <i>pb</i>
2. Title 2607-W6 SANITARY DRAINFIELD REPLACEMENT	3. Number WHC-SD-W370-FDC-001	4. Rev No. 0
5. Key Words SEPTIC, 222-S, DRAINFIELD, 2607-W6	6. Author Name: F. M. SIMMONS <i>F. M. Simmons</i> Signature Organization/Charge Code 8E210 / J8E02	
7. Abstract <p>The septic 2607-W6 which supports the 222-S complex is operating at 200% capacity. The septic tank has been inspected and found to be sound. Test hole excavations of the existing drainfield indicate that it is disposing of the current waste water effluent load as opposed to treating it. The system is over 40 years old and has not been approved by the Washington State Department of Health. Under the existing operating conditions it is subject to imminent failure. No additional tie-ins or increases in personnel are allowed which will increase the flow to the 2607-W6 system.</p>		
8. RELEASE STAMP <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> OFFICIAL RELEASE BY WHC DATE NOV 16 1994 <i>Sta. 21</i> </div>		

WHC-SD-W370-FDC-001, REV 0

FUNCTIONAL DESIGN CRITERIA
W-370, 2607-W6 Sanitary Drainfield Replacement

Issued by
WESTINGHOUSE HANFORD COMPANY

May 1994

for the
U. S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
RICHLAND, WASHINGTON

PREPARED BY: *F. M. Simmons* 5/25/94
F. M. Simmons, Principal Engineer
Program Management & Integration,
Planning and Integration

WHC APPROVALS:

M. L. Bell 5-27-94
M. L. Bell, Director Date
Analytical Services
Waste & Analytical Environmental Services

W. D. Leggett 5/25/94
W. D. Leggett, Manager Date
Engineering & Technology

R. P. Marshall 5/25/94
R. P. Marshall, Manager Date
Analytical Operations

J. J. Luke 5-26-94
J. J. Luke, Manager Date
Air and Water Permits

DEPARTMENT OF ENERGY APPROVAL:

for *R. P. Carter* 11/9/94
J. M. Hennig, Director Date
Waste Management Division
U. S. Department of Energy

FUNCTIONAL DESIGN CRITERIA
2607-W6 EMERGENCY DRAINFIELD REPLACEMENT, 200 WEST AREA 95G-EWW-370

1.0 INTRODUCTION

1.1 BACKGROUND

On February of 1993, septic tank 2607-W6, and Subsurface Soil Absorption System (SSAS) were analyzed to determine the extent of modifications required to bring it into compliance with current Washington State Department of Health (WSDOH) requirements as set forth in Washington Administration Code (WAC) 246-272. The system is currently disposing of a daily flow of approximately 5,200 gallons. The system serves 202-S, 222-S, 222-S Annex, 222-SA, 2704-S, MO-037, MO-030, MO-028, MO-346, MO-924, and MO-936. The system is approximately 40 years old and has never been approved by WSDOH. The U.S. Department of Energy, Richland Operations Office (RL) has committed to upgrading and obtaining approval for all existing sanitary wastewater systems as soon as it is practical. Modifications to the system are prudent to allow for an increase in capacity of the system to 14,500 gallons per day. The need to increase capacity is due to the siting of temporary modular office facilities nearby to meet office space requirements at the 222-S complex to support the Hanford Waste Management and Environmental Restoration Mission.

The 2607-W6 system consists of a two compartment septic tank and the herring bone style drain field located south of 222-S. The system is designed for a maximum flow rate of 2,600 gallons per day (GPD) and is currently operating at 5,200 GPD.

Test hole excavations of the existing drainfield indicate that it is disposing of the current waste water effluent load as opposed to treating it biologically as it is allowed to percolate through the soil. This is a violation of WAC 246-272 for disposal of waste water effluent. The underlying soils are predominantly slightly compact fine sandy loam above a caliche layer at varying depths of 5.5' to 7.0'. (Lisa Brown Letter May 11, 1993, #9300974). The drainfield is currently operating at 200% capacity (WHC-SD-LL-ES-020). The existing septic tank is functioning as originally designed. It is a two compartment tank with a liquid capacity of 20,000 gallons. The tank is structurally sound and could continue to be used for the life of the project with minor upgrades. However, WAC 246-272 requires the addition of a separate dosing tank in order to be in compliance. This requirement will be met by adding a separate dosing tank to bring the maximum daily operating capacity up to 14,500 gallons.

A Letter Report (WHC-SD-W370-ER-001) identifies four proposed solutions for modification to the SSAS to allow for an increased capacity. The preferred alternative is to modify the existing septic tank with the addition of a dosing tank and construction of a new drainfield in accordance with WSDOH requirements.

1.2 JUSTIFICATION

The 222-S sanitary sewer requires upgrading because of the following:

- . The existing system (2607-W6) is not in compliance with current Washington State Department of Health (WSDOH) requirements, specifically Washington Administration Code (WAC) 246-272.
- . The existing drain field is operating at 200% capacity (WHC-SD-LL-ES-020).
- . The existing drain field is allowed to operate without upgrades as long as the headcount is not increased or new projects are not added which will increase the flow to the system (2607-W6). Additional office facilities and staff increases are planned at the 222-S complex.
- . The existing system is over 40 years old and subject to imminent failure.

The system is currently handling existing flows. There is no apparent subsurface failure, but very high potential for failure due to the age and capacity of the system.

1.3 SCOPE

This project will construct a new SSAS to serve the existing buildings, modular office facilities, and facilities to be located in the area. See Appendix A for a site plan of the proposed project. With minor modifications, the existing septic tank will be used as a primary chamber. A second tank with approximately 8,000 gallon liquid capacity, will be added in series to provide the necessary liquid capacity and the required two compartments. This dosing chamber will be added as a separate tank. The dosing chamber size and location will be determined during definitive design. A new pressure drainfield, meeting WSDOH requirements, will be installed adjacent to the existing drainfield. The existing drainfield will be abandoned in place with the effluent line permanently capped.

2.0 FUNCTIONS

2.1 FUNCTIONAL REQUIREMENTS

This project will construct a replacement SSAS meeting WAC 246-272, "On Site Waste Water Treatment and Disposal," to serve the following existing facilities:

FACILITY	OCCUPANT LOAD	GALS/PERSON	GAL/DAY
222-SA	7	15	105
222-S	147	15	2205
2704-S	54	15	810
MO-037	29	15	435
MO-039	12	15	180
MO-028	19	15	285
MO-346	14	15	210
222-S ANNEX	24	15	360
MO-924	14	15	210
MO-291	80	15	1200
MO-936	9	15	135
Shower Adj.	65	15	975
Sub- total	474		7110
Reserve Capacity	399		7390
Total			14500

The reserve capacity will be utilized for short term office space, as well as for long term office facilities to support Analytical Laboratories. The shortage of office space is documented by an ES, WHC-SD-WM-ES-233, Rev. 0, "222-S/WSCF Support Buildings".

2.2 DESIGN REQUIREMENTS

The facility design shall conform to U.S. Department of Energy (DOE) Order 6430.1A, "General Design Criteria." Division 13 and Section 99 of DOE Order 6430.1A do not apply. The following criteria shall apply to the system:

2.2.1 Electrical

The design of the electrical system shall conform to the National Electrical Code (National Fire Protection Association 70).

2.2.2 Plumbing

Ground fault protection shall be provided per National Electrical Code and Uniform Plumbing Code. The system constructed by this project is a replacement drainfield with upgrades in the septic tank collection system. It shall be constructed to meet WAC 246-272, "On Site Waste Water Treatment and Disposal."

3.0 DESIGN PARAMETERS

3.1 OPERATING PERSONNEL

No additional operating personnel shall be required as a result of this project.

3.2 SAFETY

Normal construction safety rules shall apply and be used during construction of this project. Design shall consider the limitations of the project equipment and modifications related to fire, explosion, hazardous materials, and industrial safety including hazards from the proposed project. This project is designated a Hazard Type - Normal Public Risk (NPR). Formal safety analysis and evaluation is not required. Safety reviews performed during the normal planning, design, and execution of the project will mitigate identified hazards associated with construction and operations.

3.3 UTILITIES

The project is a utilities project consisting of a sanitary sewer system. All required utilities to support it shall be extended from the nearest existing, suitable source. Design and construction planning shall include provisions to minimize power and sewer outages and meet energy conservation goals at Hanford.

3.4 MAINTENANCE AND OPERATIONS REQUIREMENTS

The system design shall provide adequate access to the system and installed equipment to permit routine testing, maintenance, repair, and replacement. The design shall provide for the safety of maintenance personnel. The system and equipment shall be designed or selected to perform their respective functions with minimum maintenance.

3.5 ENVIRONMENTAL PROTECTION

This project shall be designed to minimize the impact on the environment in accordance with WHC-CM-7-5, "Environmental Compliance," Section 9, "New and Modified Facilities."

3.6 SITE LOCATION

Siting requirements will be determined in accordance with DOE-RL 4320.2C, "Site Selection." Siting shall be in accordance with Site Evaluation letter (SER) 8E210-94-001, 05/09/94.

3.7 DECONTAMINATION AND DECOMMISSIONING (D&D)

This project has no Decontamination & Decommissioning requirements. The existing drainfield will be abandoned in place. Future reclamation of the drainfields will be determined upon consideration of the following:

- 1) the aerobic actions of trapped solids have been completed
- 2) future utilization of the drainfield site

3.8 SPECIAL REQUIREMENTS

The design life of the septic system shall be not less than 35 years.

4.0 CODES AND STANDARDS

The DOE order 6430.1A, "General Design Criteria," and DOE-RL Order RLIP 4700.1A, "Project Management System," contain conclusive listings of DOE and DOE-RL Orders, codes and standards with which this project shall comply. The WAC 246-272, "On site Waste Water Treatment and Disposal," governs the siting and installation of this system. The planned system shall be permitted under WAC 246-272.

5.0 SAFETY RELATED EQUIPMENT/SYSTEMS

Safety classifications of systems, components, and structures are as identified and defined in the Westinghouse Hanford Company (WHC), "Management Requirements and Procedures Manual," WHC-CM-1-3, Management Requirement Procedure (MRP) 5.46. Westinghouse Hanford Company safety Class 3 is the highest classification anticipated for any system, or component which will be applied to this project. The failure of equipment and systems provided by this project would not adversely effect the environment or safety and health of the public or groups of personnel within plant and/or plant boundaries. This project has no impact on the 222-S Safety Analysis Report.

Quality Assurance (QA) activities for all contractors involved in design procurement, construction, and testing of the project shall be formulated and executed through the use of the Project Specific Quality Assurance Program Plan (QAPP). The QAPP will establish QA program requirements, which are use to formulate verification, inspection, and testing activities on projects. The QA program requirements will be in accordance with DOE-RL 5700.6C, "Quality Assurance."

6.0 REFERENCES

Washington Administrative Code 246-272, "On-Site Sewage Systems"

Brown, L, 1993, "Project W370 Soil Investigation," Incoming # 9300974, Department of Health, Spokane, Washington.

WHC, 1993, "200 Areas Sanitary Waste Management Study," WHC-SD-LL-ES-020, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC, 1994, "Modification Recommendations for Sanitary Waste Water System 2707-W6, 200-West Area, Project W370," WHC-SD-W370-ER-001, Westinghouse Hanford Company, Richland, Washington.

WHC, 1992, "222-S/WSCF Support Buildings", Engineering Study WHC-SD-WM-ES-223, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

DOE, 1989, "General Design Criteria," DOE 6430.1A, U.S. Department of Energy, Washington, D. C.

WHC, 1993, "Environmental Compliance Manual," WHC-CM-7-5, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

DOE, "Site Selection," DOE-RL-4320.2C, U.S. Department of Energy, Washington, D. C.

WHC, 1991, "Management Requirements and Procedures - Safety Classification of Systems, Components, and Structures," WHC-CM-1-3, Rev. 4, Section 5.46, Westinghouse Hanford Company, Richland, Washington.

DOE, "Quality Assurance" DOE-RL-5700.6C, U.S. Department of Energy, Washington, D. C.