

START

ENGINEERING CHANGE NOTICE

1. ECN 164716

Proj.
ECN

2. ECN Category (mark one)		Supplemental <input type="checkbox"/>	Change ECN <input type="checkbox"/>	Supersedure <input type="checkbox"/>
Cancel/Void <input type="checkbox"/>	Direct Revision <input checked="" type="checkbox"/>	Temporary <input type="checkbox"/>	Discovery <input type="checkbox"/>	
3. Originator's Name, Organization, MSIN, and Telephone No. K. J. Koegler, Env. Eng. Support Section, H4-55, 6-2877, 81224			4. Date 1-16-92	
5. Project Title/No./Work Order No. Project C-018H; A2CBA, 242A Evaporator/PUREX Plant Condensate Treatment Facility		6. Bldg./Sys./Fac. No. N/A		7. Impact Level 3
8. Document Number Affected (include rev. and sheet no.) WHC-SD-EN-AP-041, Rev. 1a		9. Related ECN No(s). N/A		10. Related PO No. N/A
11a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 11b) <input checked="" type="checkbox"/> No (NA Blks. 11b, 11c, 11d)	11b. Work Package Doc. No. NA	11c. Complete Installation Work NA _____ Cog. Engineer Signature & Date	11d. Complete Restoration (Temp. ECN only) NA _____ Cog. Engineer Signature & Date	
12. Description of Change Page iv, Attachment 2 title; delete the following: "or Job Safety Analysis (Prepared as appropriate)." Page 5, bullet for Attachment 2; replace with the following: "Attachment 2: Hazardous Waste Operations Plan (HWOP). The HWOP addresses safety related conditions and procedures." Page 42, § 5.2.4, ¶ 2; change first 3 sentences to read: "Samples taken for determination of physical properties and for chemical analyses will be obtained by the split-spoon sampling method." Page 43, Figure 5-1; change proposed as-built casing sizes and depths. Page 44, § 5.2.5, ¶ 2, Sentence 3-4; change to read: "...the objective is to obtain a representative sample of each lithology in the vadose zone, and any anomalies in the saturated zone. Since ground water samples will be taken and analyzed that will identify contamination in the saturated zone, soil samples will only be taken in the saturated zone if irregular or abnormal conditions are encountered. Based on current knowledge, approximately 4 cores will be required for samples at sites 1 and 3." Page QAPP-3, Figure 1-1; remove names from chart. Coversheet for Attachment 2; delete "or Job Safety Analysis" and "(This attachment will be accomplished as appropriate)."				
13a. Justification (mark one)		Criteria Change <input type="checkbox"/>	Environmental <input type="checkbox"/>	Facilitate Const. <input type="checkbox"/>
Design Error/Omission <input type="checkbox"/>	Design Improvement <input type="checkbox"/>	As-Found <input checked="" type="checkbox"/>	Const. Error/Omission <input type="checkbox"/>	
13b. Justification Details Miscellaneous minor changes.				
14. Distribution (include name, MSIN, and no. of copies) See attached list.			RELEASE STAMP	
			OFFICIAL RELEASE BY WHC DATE JAN 20 1992 <i>Sta 21</i>	

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15. Design Verification Required

- Yes
- No

16. Cost Impact N/A

ENGINEERING

Additional Savings \$ \$

CONSTRUCTION

Additional Savings \$ \$

17. Schedule Impact (days)

N/A

Improvement
Delay

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	<input type="checkbox"/>	Seismic/Stress Analysis	<input type="checkbox"/>	Tank Calibration Manual	<input type="checkbox"/>
Functional Design Criteria	<input type="checkbox"/>	Stress/Design Report	<input type="checkbox"/>	Health Physics Procedure	<input type="checkbox"/>
Operating Specification	<input type="checkbox"/>	Interface Control Drawing	<input type="checkbox"/>	Spares Multiple Unit Listing	<input type="checkbox"/>
Criticality Specification	<input type="checkbox"/>	Calibration Procedure	<input type="checkbox"/>	Test Procedures/Specification	<input type="checkbox"/>
Conceptual Design Report	<input type="checkbox"/>	Installation Procedure	<input type="checkbox"/>	Component Index	<input type="checkbox"/>
Equipment Spec.	<input type="checkbox"/>	Maintenance Procedure	<input type="checkbox"/>	ASME Coded Item	<input type="checkbox"/>
Const. Spec.	<input type="checkbox"/>	Engineering Procedure	<input type="checkbox"/>	Human Factor Consideration	<input type="checkbox"/>
Procurement Spec.	<input type="checkbox"/>	Operating Instruction	<input type="checkbox"/>	Computer Software	<input type="checkbox"/>
Vendor Information	<input type="checkbox"/>	Operating Procedure	<input type="checkbox"/>	Electric Circuit Schedule	<input type="checkbox"/>
OM Manual	<input type="checkbox"/>	Operational Safety Requirement	<input type="checkbox"/>	ICRS Procedure	<input type="checkbox"/>
FSAR/SAR	<input type="checkbox"/>	IEFD Drawing	<input type="checkbox"/>	Process Control Manual/Plan	<input type="checkbox"/>
Safety Equipment List	<input type="checkbox"/>	Cell Arrangement Drawing	<input type="checkbox"/>	Process Flow Chart	<input type="checkbox"/>
Radiation Work Permit	<input type="checkbox"/>	Essential Material Specification	<input type="checkbox"/>	Purchase Requisition	<input type="checkbox"/>
Environmental Impact Statement	<input type="checkbox"/>	Fac. Proc. Samp. Schedule	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<input type="checkbox"/>

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision Document Number/Revision Document Number Revision

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog./Project Engineer <i>[Signature]</i>	6 Jan 92	PE	_____
Cog./Project Engr. Mgr. <i>[Signature]</i>	1/6/92	QA	_____
QA <i>L.W. Vance</i>	1/6/92	Safety	_____
Safety	_____	Design	_____
Security	_____	Other	_____
Proj. Prog./Dept. Mgr.	_____		_____
Def. React. Div.	_____		_____
Chem. Proc. Div.	_____		_____
Def. Wst. Mgmt. Div.	_____	DEPARTMENT OF ENERGY	_____
Adv. React. Dev. Div.	_____		_____
Proj. Dept.	_____		_____
Environ. Div.	_____	ADDITIONAL	_____
IRM Dept.	_____		_____
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Other	_____		_____

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INFORMATION RELEASE REQUEST

References:
WHC-CM-3-4

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	<input type="checkbox"/> Speech or Presentation <input type="checkbox"/> Full Paper <input type="checkbox"/> Summary <input type="checkbox"/> Abstract <input type="checkbox"/> Visual Aid <input type="checkbox"/> Speakers Bureau <input type="checkbox"/> Poster Session <input type="checkbox"/> Videotape	(Check only one suffix) <input checked="" type="checkbox"/> Reference <input checked="" type="checkbox"/> Technical Report <input type="checkbox"/> Thesis or Dissertation <input type="checkbox"/> Manual <input type="checkbox"/> Brochure/Flier <input type="checkbox"/> Software/Database <input type="checkbox"/> Controlled Document <input type="checkbox"/> Other _____	Existing ID Number (include revision, volume, etc.) WHC-SD-EN-AP-041, REV 1B If previously cleared, list ID number. WHC-SD-EN-AP-041, Rev. 1a Date Release Required 1-10-92	
	Title Characterization Work Plan, C-018 H Soil Column Disposal Siting Evaluation		Unclassified Category UC-	Impact Level 3
	Title of Journal _____		Group or Society Sponsoring _____	
Complete for Speech or Presentation	Date(s) of Conference or Meeting _____	City/State _____	Will proceedings be published? <input type="checkbox"/> Yes <input type="checkbox"/> No Will material be handed out? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Title of Conference or Meeting _____			

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Information conforms to all applicable requirements. The above information is certified to be correct.

Author/Requestor (Printed/Signature) <i>[Signature]</i> K.J. KOEGIER	Date 1/9/92
Responsible Manager (Printed/Signature) T. Woolard / <i>[Signature]</i>	Date 1/9/92
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INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP

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

Date Received 1/9/92 UPB

SUPPORTING DOCUMENT

1. Total Pages 296

2. Title

Characterization Work Plan, C-018H Soil Column Disposal Siting Evaluation

3. Number

WHC-SD-EN-AP-041

4. Rev No.

1b

5. Key Words

Characterization Work Plan, Soil Column, Disposal Site, 242-A Evaporator, PUREX, Siting Evaluation

6. Author

Name: K. J. Koegler/S. P. Reidel

K. J. Koegler *S. P. Reidel*
Signature

Organization/Charge Code W 81224 EE&G/A2CBA

7. Abstract

The purpose of this work plan is to guide the field activities involved in the characterization of candidate sites for a new soil column disposal site in support of the 242-A Evaporator/PUREX Plant Condensate Treatment Facility, project C-018H. The work plan consists of an initial evaluation of the sites to be characterized, the work plan rationale including data needs and characterization methods, and characterization tasks. Characterization tasks include an evaluation of existing data, vadose and saturated zone soils sampling and analysis, core archival, and ground water investigation. The work plan also discusses hydrologic modeling associated with characterization. Appendices to the work plan include site background and physical setting, a report of completed hydrologic modeling, ground water quality data, biotic survey and cultural resources review of the candidate sites.

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9. Impact Level 3

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RECORD OF REVISION

(1) Document Number

WHC-SD-EN-AP-041

Page A

(2) Title
 CHARACTERIZATION WORK PLAN, C-018H SOIL COLUMN DISPOSAL SITING.
 EVALUATION

CHANGE CONTROL RECORD

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release		
		(5) Cog./Proj. Engr.	(6) Cog./Proj. Mgr.	Date
1 RS	(1) Complete document Revision	x <i>K.J. Keogh</i>	x <i>J.G. Woolard</i> J.G. WOOLARD	6/13/91
1a RS	REPLACE PAGE 27; REPLACE PAGE 48; REPLACE PAGES 52-53.	<i>K.J. Keogh</i> K.J. Keogh	<i>J.G. Woolard</i> J.G. Woolard	9/26/91
1b <u>RS</u>	Replace Page iv; Replace Page 5; Replace Pages 42-44; Replace QAPP Page 3; Replace Coversheet for Attachment Z	<i>K.J. Keogh</i> K.J. Keogh	J.G. Woolard <i>J.G. Woolard</i>	1/4/92

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2. HAZARDOUS WASTE OPERATIONS PLAN C-018H SOIL COLUMN DISPOSAL SITE EVALUATION	HWOP-1

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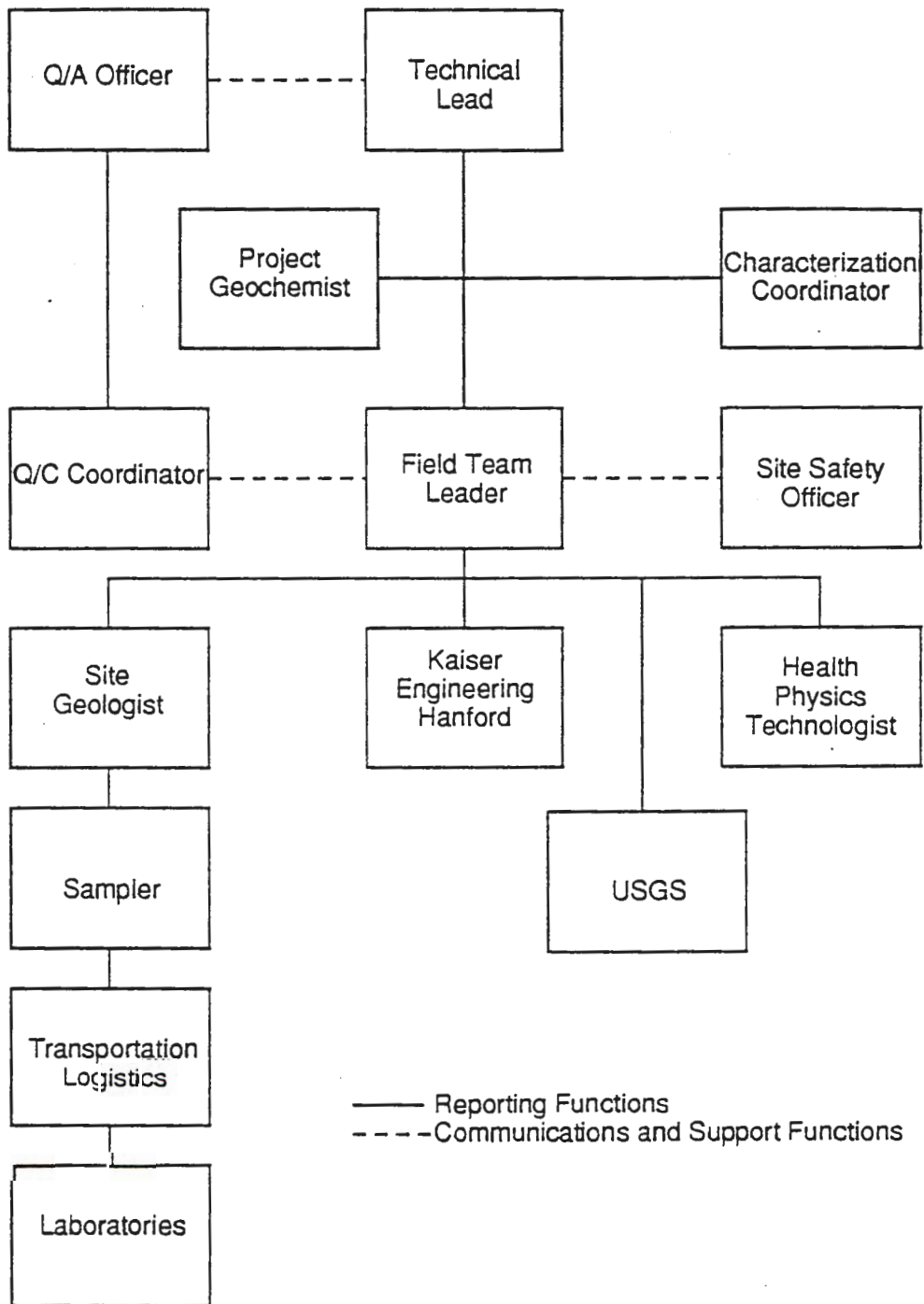


Figure 1-1. Project Organizational Chart.

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Attachments to this work plan include supporting documents that are necessary to conduct the project. These documents include the following:

- Attachment 1: Quality Assurance Project Plan (QAPP). The QAPP addresses the following:
 - Project organization and responsibilities
 - Quality assurance objectives
 - Well drilling procedures
 - Sampling procedures
 - Calibration procedures
 - Analytical procedures
 - Data reduction, validation, and reporting
 - Internal quality control
 - Performance and system audits
 - Preventive maintenance
 - Data assessment procedures
 - Corrective action
 - Quality assurance reports.
- Attachment 2: Hazardous Waste Operations Plan (HWOP). The HWOP addresses safety related conditions and procedures.

1.6 QUALITY ASSURANCE

The basic objective of the work plan and attachments is to ensure that the data and results or findings obtained are sufficiently accurate and reliable to support decisions associated with the siting evaluation and regulatory requirements. All work on the Hanford Site is subject to the requirements of DOE-RL Order 5700.1A, *Quality Assurance* (DOE-RL 1983), which establishes broadly applicable quality assurance (QA) program requirements in compliance with American Society for Mechanical Engineers QA guidelines (ASME 1989). All project activities conducted on the Hanford Site are also to comply with the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1989; as amended in 1990) QA program requirements.

Each sample will be labeled with respect to its geologic characteristics in accordance with EII 5.10. The designation of samples will be formatted as follows: borehole number-geologic description-depth (in feet). Geologic descriptors are: SG = sandy gravel; GS = gravelly sand; S = sand; SL = silt. An example is 699-xxxx-yyyy-SG-110.

This designation represents a sample taken from the 600 Area (at xxxx North and yyyy West); the sample is sandy gravel and was collected at a depth of 110 ft.

5.2.4 Sampling Equipment and Procedures

Cable-tool drilling techniques are planned for each boring (also see Section 5.4.3, Drilling and Well Installation). Before the drilling occurs, a reevaluation of drilling techniques will be made. If new and tested drilling techniques or modifications are identified that are superior for attaining the objectives of this task, in accordance with applicable procedures, then consideration will be given to using them instead of cable-tool methods. For these boreholes the casing shall be in accordance with WHC-S-014, Section 4.1. Proposed casing as-builts are depicted in Figures 5-1 and 5-2.

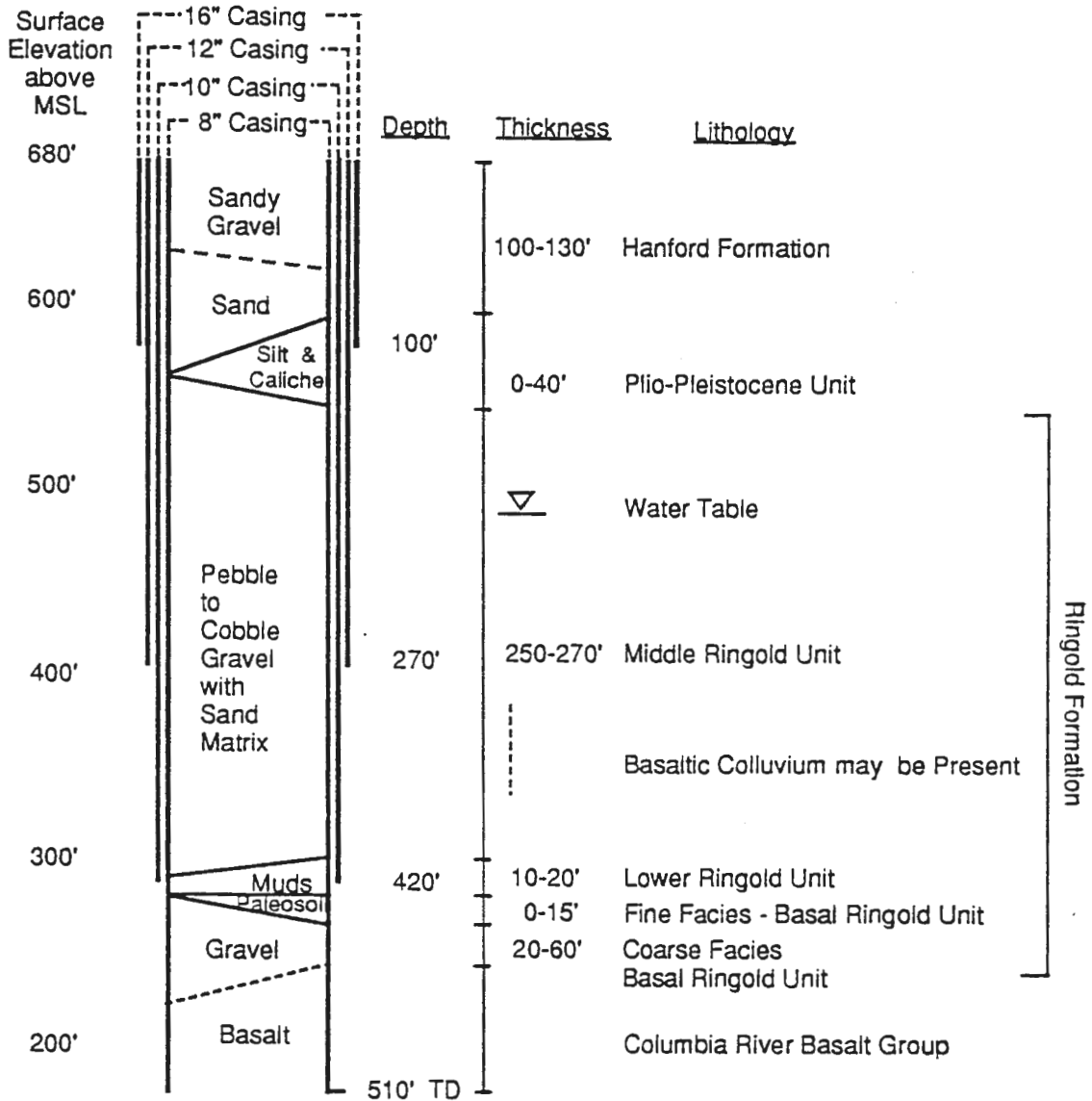
Samples taken for determination of physical properties and for chemical analyses will be obtained by the split-spoon sampling method. The stainless steel split-spoon sampler shall have a minimum internal diameter of 4 in. and will incorporate four stainless steel liners, each 6-in. in length.

Cores and samples will be screened, as appropriate, by scintillation detector and by organic vapor flame ionization device. Specific requirements and procedures for screening will be specified in the Radiation Work Permit and HWOP.

Sampling activities will be administered in accordance with applicable EIIs in WHC-CM-7-7, *Environmental Investigations and Site Characterization Manual* (WHC 1989c).

5.2.5 Sampling Locations and Frequency

Chip samples (cuttings) will be collected at 5-ft intervals for geologic logging and archiving in the Hanford Geologic Sample Library. These samples will provide a record of the stratigraphy at the well site for future reference. Chip samples from the top of basalt will be analyzed by x-ray fluorescence to determine which basalt flow is present. If erosion has occurred such that a basalt flow other than the Elephant Mountain Member is present, then the potential for aquifer inter-communication must be considered.



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Figure 5-1. Proposed Casing As-built and Anticipated Lithology for Boreholes at Sites 1 and 3.

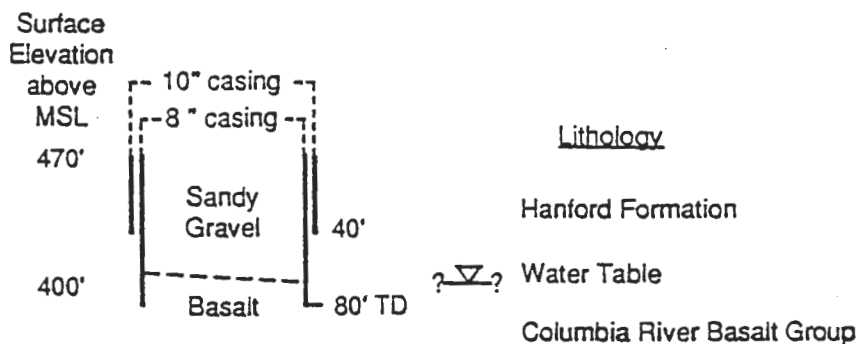


Figure 5-2. Proposed Casing As-built and Anticipated Lithology for Boreholes at Site 2.

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Cores will be taken to provide samples for physical properties tests and chemical analyses. Chip samples will be monitored by the well-site geologist to ensure that all lithologies are cored and to determine from which cores the samples will be taken for physical properties tests and chemical analyses. The primary criterion for determining which cores are sampled will be change in lithology; the objective is to obtain a representative sample of each lithology in the vadose zone and any anomalies in the saturated zone. Since ground water samples will be taken and analyzed that will identify contamination in the saturated zone, soil samples will only be taken in the saturated zone if irregular or abnormal conditions are encountered. Based on current knowledge, approximately 4 cores will be required for samples at sites 1 and 3. With no anticipated changes in lithology at site 2, approximately 3 cores for samples will be taken for representativeness. Anticipated lithologies for each site are shown in Figures 5-1 and 5-2. Cores will be taken at each lithology until sampling and archival needs are met. If a stratum is encountered for which cores are not retrievable, then circumstances will be entered into the log book and drilling will proceed.

The site geologist may select additional cores for analysis of any parameter of interest based on the nature of the sediments encountered during drilling. For example, if a stratum that could perch infiltrating effluents or impact aquifer conditions is identified, a sample of the core representing the interface of the confining stratum and the overlying soils will be sent for testing and/or analysis. Also, if possible continuous core samples will be obtained from the Plio-Pleistocene unit (see Figure 5-1).

After drilling has been completed, the project geologist may select additional samples from archived cores (see Task 3) for test and/or analysis as needed to provide additional information to resolve uncertainties. These additional samples will be subject to holding times and any other constraint on the quality of the analysis.

When possible, cores will be collected to support a U.S. Department of Energy-funded U.S. Geological Survey (USGS) study of ground water recharge at the Hanford Site. This activity will be done in a manner that will not interfere with the primary goal of sampling for characterization of the

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ATTACHMENT 2

HAZARDOUS WASTE OPERATIONS PLAN
C-018H SOIL COLUMN DISPOSAL SITE EVALUATION

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