Well Network and Measurement Schedules for Monitoring Water-Level Changes Beneath the Separations Area of the Hanford Site

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August 1990

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WELL NETWORK AND MEASUREMENT SCHEDULES FOR
MONITORING WATER-LEVEL CHANGES BENEATH
THE SEPARATIONS AREA OF THE HANFORD SITE

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PREFACE

This report was originally drafted in April 1986 for the Basalt Waste Isolation Project (BWIP). Congressional termination of BWIP in 1987 delayed the resolution of comments and suspended funding necessary for final issuance of this report. Because the report contained valuable data on the behavior of the uppermost aquifers, which are of primary concern to environmental studies currently being conducted on the Hanford Site, Westinghouse Hanford Company recently agreed to provide the necessary funding to finalize the report.

Because the report was written in 1986, references are made to activities and/or organizations that were pertinent at the time, but may no longer exist. With the exception of recently resolved comments, the report remains as it was originally written.

The authors wish to thank Westinghouse Hanford Company for providing the funding to publish this report.

SUMMARY

In support of the Basalt Waste Isolation Project, Pacific Northwest Laboratory selected a network of wells and measurement schedules for monitoring water-level changes beneath the Separations Area, which encompasses the 200-East and 200-West Areas of the Hanford Site. The purpose of the water-level monitoring network was to allow collection of basic data that could be used to investigate how changes in wastewater discharges in the Separations Area might affect hydraulic heads in the deeper confined aquifers. Pacific Northwest Laboratory monitored water levels in 78 originally selected wells from May 29, 1984, through September 3, 1985. During this monitoring period, some originally selected wells were found to be unusable, and other wells (or piezometers) were added to the monitoring well network to replace the unusable wells or to increase the amount of data from selected areas. The final monitoring network consisted of 92 wells and piezometers (completed at various intervals in the unconfined and uppermost confined aquifers) and 5 surface-water gaging stations. Completion uncertainties exist for a number of the wells. Recommendations for resolving these uncertainties include surveying, visual inspection via a downhole camera, geophysical logging, and, in some cases, well renovation.

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INTRODUCTION

At the request of the Basalt Waste Isolation Project (BWIP), Pacific Northwest Laboratory (PNL)^(a) monitored ground-water levels in the vicinity of the Hanford Site Separations Area, which encompasses the 200-East and 200-West Areas (Figure 1). Between May 29, 1984, and September 3, 1985, water levels were periodically measured in selected wells and piezometers open to various portions of the Hanford Site's unconfined aquifer and the uppermost confined aquifers. The Separations Area is the site of major wastewater disposal facilities. An "aquifer intercommunication area" is located in the Separations Area between the Hanford Site's unconfined aquifer and the uppermost confined aquifers (Gephart et al. 1976; Strait and Moore 1982; Graham et al. 1984). This intercommunication area is located north of the 200-East Area and between Gable Mountain and Gable Butte (see Figure 1). Here the ancestral Columbia River and postglacial flood waters eroded portions of the Saddle Mountains Basalt, which separates the Hanford Site's unconfined aquifer from the upper-confined aquifers.

The purpose of the water-level monitoring was to collect basic data that could be used to investigate how changes in wastewater discharges in the Separations Area might affect hydraulic heads in the deeper confined aquifers.

This water-level monitoring task had the following objectives:

1. Select and recommend a network of existing wells and a water-level collection schedule for monitoring the water-level changes in the areas of artificial recharge and aquifer intercommunication.
2. Immediately begin and sustain the collection of water-level data until BWIP determined that no further data should be collected.
3. Evaluate uncertainties in the completion of the selected monitoring wells and recommend corrective actions to resolve them.

This report discusses the design and development of the monitoring well network and schedule, and presents the well construction and water-level data collected during this monitoring activity..

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FIGURE 1. Schematic Design of the Ground-Water Level Monitoring Network

BACKGROUND

In December 1983, reprocessing and separation activities [including the restart of the Plutonium Uranium Extraction (PUREX) and Uranium Oxide plants] were resumed at the Hanford Site. This resumption led to increased volumes of industrial liquid waste. The majority of this wastewater is uncontaminated or contaminated at very low levels and is discharged to seepage/evaporation ponds, or, in some cases, to underground tile fields (cribs). These wastewaters percolate downward through the unsaturated zone to the water table and thus artificially recharge the underlying unconfined aquifer.

The return to operational status not only led to a significant increase in artificial recharge but also to a redistribution of the liquid waste discharges. Questions have been raised concerning the potential impact these surface stresses might induce in the confined aquifers of the basalt formations underlying the Hanford Site.

A "potentiometric baseline" is being developed by BWIP for the confined aquifers in the vicinity of the reference repository location (RRL), the area sited for a proposed deep geologic repository for the disposal of high-level nuclear waste. The RRL is located approximately 11 km west of major wastewater disposal areas. A "potentiometric baseline" for a ground-water flow system exists when the data are sufficient to interpret the shape of the potential surfaces at different points in time and when the time-variant behavior of the hydraulic heads is well understood. To reach this understanding, aquifer stress (natural and artificial) must be compared with observed ground-water responses. At the Hanford Site, artificial recharge from wastewater disposal activities [estimated by Graham (1981) to be 10 times the natural recharge] is a dominant force in the unconfined aquifer. As part of the baselining effort, BWIP must determine whether these surface stresses also influence the heads in the underlying confined aquifers.

WATER-LEVEL MONITORING NETWORK

The rationale behind the design of the monitoring network was to collect detailed water-level data near the disposal ponds and the area of aquifer intercommunication near West Lake, and less detailed water-level data between these areas and the RRL (see Figure 1). The network was also designed to provide as much information as possible on the vertical distribution of water levels in these areas. The working concept for the design of the network was to start collecting data immediately and to modify the selection of wells as data were collected and evaluated.

In mid-May 1984, we recommended an initial list of 78 wells (Table 1) for immediate monitoring. Another 10 wells, requiring modifications, were suggested for possible future use. This initial monitoring network (see Figure 1) included wells selected within a 1-mile radius from the center of West Lake and each disposal pond (Gable Mountain Pond, B Pond, and U Pond). This network also included wells located at roughly 1.5-mile increments along transects between these areas and well RRL-2, which is located near the center of the RRL. Two additional lines of wells connected the south and north sides of the RRL, respectively, with the outside edges of the B Pond and West Lake areas. Three wells from outside the study area were also included to provide information on a more regional scale. A preliminary survey of the completion of these wells was made using available drillers' logs. This cursory review was used to select wells with appropriate completion (open) intervals for collection of head measurements with depth.

During collection of the initial water-level measurements, some of the selected wells were found to be unusable because of the following conditions: 1) their location inside radiation zones, 2) the presence of air lines in the well, 3) poorly marked piezometers and/or wells, and 4) flowing wells. Where another well could not take the place of the problem well, the well or measurement procedure was modified (i.e., an electric tape was used instead of a steel tape).

The monitoring well network was further modified after additional research was completed in the following areas: 1) hydrogeologic completion of these wells, 2) availability of other wells, 3) spatial and temporal

TABLE 1. List of Wells Initially Recommended for Monitoring

<u>Well Number</u>	<u>Aquifer</u>
199-B3-2 (P)	Rattlesnake Ridge
199-H4-2	Rattlesnake Ridge
299-E16-1	Elephant Mountain
299-E16-2	Shallow Unconfined
299-E23-1	Shallow Unconfined
299-E25-11	Shallow Unconfined
299-E26-1	Shallow Unconfined
299-E26-4	Shallow Unconfined
299-E26-8	Rattlesnake Ridge
299-E33-12	Rattlesnake Ridge
299-E33-14	Shallow Unconfined
299-W12-1	Shallow Unconfined
299-W19-3	Shallow Unconfined
299-W23-4	Shallow Unconfined
299-W23-11	Shallow Unconfined
299-W18-15 (U-Pond)	Shallow to Intermediate Unconfined
699-14-E6 (Q)	Rattlesnake Ridge
699-32-62	Shallow Unconfined
699-32-70	Shallow Unconfined
699-32-77	Shallow Unconfined
699-34-51	Shallow Unconfined
699-35-78	Shallow Unconfined
699-37-43	Shallow Unconfined
699-37-82A	Shallow Unconfined (1)
B (O)	Shallow Unconfined (2)
(P)	Deep Unconfined (6)
(Q)	Intermediate Unconfined (5)
(R)	Intermediate Unconfined (4)
(S)	Intermediate Unconfined (3)
699-38-70	Shallow Unconfined
699-39-39	Shallow Unconfined
699-39-79 (O)	Shallow Unconfined
699-40-62	Shallow Unconfined
699-42-40A	Intermediate Unconfined
B	Shallow Unconfined
C	Rattlesnake Ridge
699-43-42	Shallow Unconfined
699-44-64	Shallow Unconfined
699-45-42	Shallow Unconfined
699-45-69	Shallow Unconfined
699-47-46	Shallow Unconfined
699-47-50	Rattlesnake Ridge
699-47-60	Shallow Unconfined
699-49-55A	Shallow Unconfined
B	Rattlesnake Ridge
699-50-45	Rattlesnake Ridge
699-50-48	Rattlesnake Ridge
699-50-53	Shallow Unconfined

TABLE 1. (contd)

Well Number		Aquifer
699-50-85		Shallow Unconfined
699-51-46		Rattlesnake Ridge
699-51-63		Shallow Unconfined
699-51-75		Shallow Unconfined
699-52-46A		Rattlesnake Ridge
B	(Dry)	Shallow Unconfined
699-52-48		Rattlesnake Ridge
699-53-47A		Shallow Unconfined
699-53-48B		Shallow Unconfined
699-53-50		Rattlesnake Ridge
699-53-55A (P)		Deep Unconfined (3)
B		Intermediate Unconfined (2)
C		Shallow Unconfined (1)
699-54-45A		Shallow Unconfined
B	(Poor Well)	Rattlesnake Ridge
699-54-48		Shallow Unconfined
699-54-57		Rattlesnake Ridge
699-55-50A (O)		Shallow Unconfined (1)
(P)		Deep Unconfined (3)
(Q)		Intermediate Unconfined (2)
699-55-57		Shallow Unconfined
699-55-60B		Shallow Unconfined
699-55-70		Shallow Unconfined
699-56-53		Rattlesnake Ridge
699-59-55 DH-10		Deep Unconfined
699-59-58		Shallow Unconfined
699-60-57		Shallow Unconfined
699-60-60		Shallow Unconfined
699-61-62		Shallow Unconfined
699-63-58		Shallow Unconfined

distribution of observed water-level changes, and 4) manpower needs for data collection. Changes to the initially selected list of ground-water wells and the rationale for each change are given in Table 2.

The final monitoring network consisted of 92 wells and piezometers and 5 surface-water gaging stations. Eighty-five wells and piezometers were monitored using either steel tape or electric (e-tape) measurement techniques, while seven of them were continuously monitored using Stevens^(a) water-level recorders. The five gaging stations were manually read and recorded.

(a) Stevens is a tradename of Leupold & Stevens, Inc., Beaverton, Oregon 97075.

TABLE 2. Modifications to Initial Monitoring Network

<u>Well Number</u>	<u>Change</u>	<u>Rationale</u>	<u>Aquifer</u>
199-B3-2	Added	Convenient - adds data at depth	Deep unconfined
199-B3-2Q	Added	Convenient - adds data at depth	Deep unconfined
199-H4-2	Dropped	Artesian - BWIP to monitor	Rattlesnake Ridge
216-B-3(GS)	Added	Convenient - adds data on pond	None
216-B-3C(GS)	Added	Convenient - adds data on pond	None
216-B-3A(GS)	Added	Convenient - adds data on pond	None
216-B-3(SG)	Added	Convenient - adds data on pond	None
299-E16-2	Dropped	Inconvenient - in radiation zone	Shallow unconfined
299-E25-1Ø	Added	Replacement - for 299-E16- 2	Shallow unconfined
299-E26-4	Dropped	Inconvenient - in radiation zone	Shallow unconfined
299-W19-1	Added	Spatial improvement	Shallow unconfined
299-W19-10	Added	Adds data at depth	Intermediate unconfined
299-W19-1P	Added	Adds data at depth	Intermediate unconfined
299-W19-3	Dropped	Inconvenient - in radiation zone	Shallow unconfined
299-W19-40	Added	Spatial improvement	Shallow unconfined
299-W19-4P	Added	Adds data at depth	Intermediate unconfined
299-W19-4Q	Added	Adds data at depth	Intermediate unconfined
299-W19-4R	Added	Adds data at depth	Intermediate unconfined
299-W19-4S	Added	Adds data at depth	Intermediate Unconfined
699-14-E6Q	Dropped	Unusable - air line in well	Rattlesnake Ridge
699-14-E6S	Added	Replacement - 699- 14-E6Q	Deep unconfined
699-32-62P	Added	Convenient - adds data at depth	Deep unconfined
699-37-82BØ	Dropped	Not found	Shallow unconfined
699-5Ø-85P	Added	Convenient - adds data at depth	Deep unconfined
699-51-75P	Added	Convenient - adds data at depth	Deep unconfined
699-52-46B	Dropped	Dry	Shallow unconfined
699-53-47B	Added	Convenient - adds data at depth	Shallow unconfined
699-53-48A	Added	Convenient - adds data at depth	Shallow unconfined
699-53-55A	Added	Convenient - adds data at depth	Shallow unconfined
699-55-5ØA	Added	Replacement - 699- 55-5ØAØ	Shallow unconfined
699-55-5ØAØ	Dropped	Not found	Shallow unconfined
699-55-5ØD	Added	Convenient - adds data at depth	Intermediate Unconfined
699-55-7ØP	Added	Convenient - adds data at depth	Deep unconfined
699-6Ø-6ØP	Added	Convenient - adds data at depth	Deep unconfined
West Lake SG	Added	Convenient - adds data on water table	Shallow unconfined

Designation of the aquifer monitored by each well was initially based on the position of the well's open interval relative to the water table and uppermost basalt surface. A recent hydrogeologic study of the supra-basalt sediments has enabled grouping of the open intervals based on preliminary interpretation of their completion in hydrogeologic horizons. The hydrogeologic interpretation through the central portion of the study area is shown in Figure 2. This figure also illustrates the typical relationships between the aquifer monitored and the hydrogeologic horizons. Table 3 lists the number of monitoring points for each of these horizons.

FIGURE 2. Hydrogeologic Cross Section Through the Study Area (See Figure 1 for location. Double lines indicate location of open intervals.)

TABLE 3. Number of Wells and Piezometers in the Final Monitoring Network Open to Selected Hydrogeologic Horizons

<u>Hydrogeologic Horizon</u>	<u>Number of Wells</u>
Hanford formation	26
----- Ringold Formation -----	
Middle Ringold unit	35
Lower Ringold unit	6
Basal Ringold unit	8
----- Saddle Mountains Basalt -----	
Elephant Mountain Member	2
Rattlesnake Ridge Interbed(a)	14
Pomona Member	1

(a) Contained in Ellensburg Formation.

Completion uncertainties exist for some wells. These uncertainties could be reduced by resurveying, visual inspection (via television camera), geophysical logging, or, where necessary, corrective modifications to ensure that the open intervals are adequately isolated. Table 4 lists the wells having completion uncertainties and the actions recommended for resolving the uncertainties.

TABLE 4. Well Completion Uncertainties and Recommended Corrective Actions

<u>Well Number</u>	<u>Uncertainty</u>	<u>Recommended Corrective Action</u>
199-B3-2	Representative head	Clean out piezometer
299-E23-1	Isolation	Examine - (grout and plug)
299-E25-10	Isolation and elevation	Examine and survey - (clean out, grout, and plug)
299-E25-11	Isolation	Examine - (clean out and plug)
299-E26-1	Isolation	Examine - (grout and plug)
299-E33-14	Isolation	Examine - (grout and plug)
299-W12-1	Isolation	Examine - (clean out, grout and plug)
299-W19-1	Isolation	Examine - (pull 0 piezometer, grout, plug, and reinstall 0 piezometer)
299-W19-4	Isolation	Examine - (pull out and reinstall piezometers)
299-W23-4	Isolation	Examine - (grout and plug)
299-W23-11	Isolation	Examine - (plug)
699-32-62	Completion	Examine - (pull out, & reinstall piezometers)
699-34-51	Isolation	Examine - (clean out, grout, and plug)
699-37-43	Representative head	Clean out
699-37-82B	Isolation and completion	Examine - (pull out and reinstall piezometers)
699-43-42A	Isolation and development	Grout, plug, perforate and survey
699-47-46A	Isolation	Examine - (grout and plug)
699-50-45	Isolation	Examine - (grout)
699-50-48	Isolation	Examine - (grout)
699-50-85	Isolation	Examine - (pull out and reinstall piezometer)
699-51-46	Isolation	Examine - (grout)
699-51-75	Isolation	Examine - (pull out and reinstall piezometer)
699-52-46A	Isolation	Examine - (grout)
699-52-48	Isolation	Examine - (grout)
699-53-47A	Isolation	Examine - (grout and plug)
699-53-47B	Elevation	Survey
699-53-48A	Isolation	Examine - (plug)
699-53-50	Isolation	Examine - (grout)
699-53-55A	Isolation	Pull out piezometer, add liner and grout, and reinstall piezometer
699-53-55B	Isolation and elevation	Examine and survey - (grout and plug)
699-53-55C	Elevation	Survey
699-54-45B	Representative head	Clean out and develop - (grout)
699-55-50A	Isolation	Examine - (pull out and reinstall piezometers)
699-55-57	Isolation	Examine - (plug)
699-55-60B	Isolation	Examine - (plug)
699-59-55	Isolation and elevation	Grout, plug, perforate, and survey

MONITORING SCHEDULES

The initial monitoring schedule consisted of weekly to semiweekly water-level measurements at each well. During the initial measurements, a routine was established for collecting the data in a logical and efficient manner so that all measurements would have roughly the same time spacing.

After reviewing early data and manpower costs, continuous recorders were placed on wells near the disposal ponds and manual measurements were done biweekly. The final data collection schedule is presented in Table 5. All steel tape measurements were collected in duplicate according to the procedures presented in Appendix C. For data entry and manipulation, only the first measurement was entered into the interim data base.

Stevens water-level recorders were placed on seven selected wells. These recorders are fitted with floats and 8-day clocks to produce week-long strip chart records. Data from the strip chart records were entered by manually interpreting data from the graph at regular daily increments using the initial steel tape measurements to calibrate the record on the strip chart. The measurement point for these wells is generally above the casing elevation. Table 6 lists the difference between the measurement point and the casing elevation for wells instrumented with Stevens water-level recorders.

TABLE 5. Biweekly Schedule for Manual Measurement of Water Levels^(a)

<u>Monday</u>	<u>Tuesday</u>	<u>Wednesday</u>	<u>Friday</u>
699-14-E6S	299-W23-4	699-37-43	699-63-58
699-37-82A	WLSG	299-E16-1	699-60-57
699-37-82B P	699-59-55	299-E25-11	699-59-58
699-37-82B Q	699-55-57	299-E25-10	699-53-55A
699-37-82B R	699-54-57	299-E26-8	699-53-55A P
699-37-82B S	699-56-53	699-39-39	699-53-55B
699-35-78A	699-55-50D	699-42-40A	699-53-55C
299-W23-11	699-52-48	699-43-42	699-50-45
699-32-77	216-B-3 (GS)	699-45-42	699-51-46
699-32-70B	216-B-3C (GS)	699-47-46	699-55-50A P
699-38-70	216-B-3A (GS)	699-47-50	699-53-50
299-W12-1	216-B-3C	699-50-48	699-55-50A P
299-W19-4 O	699-42-40B	699-50-53	699-55-50A Q
299-W19-4 P	699-42-40C	699-49-55A	699-54-48
299-W19-4 Q		699-49-55B	699-53-48A
299-W19-4 R		699-47-60	699-53-48B
299-W19-4 S		699-51-63	699-53-47A
299-W19-1		699-55-70	699-53-47B
299-W19-1 O		699-55-70 #1	699-52-46A
299-W19-1 P		699-51-75	699-54-45A
299-W18-15		699-51-75 #1	699-54-45B
699-39-79		699-50-85	299-E23-1
699-45-69		699-50-85 #1	299-E26-1
699-44-64		199-B3-2	299-E33-12
699-40-62		199-B3-2 P	299-E33-14
699-32-62		199-B3-2 Q	
699-32-62 #1		699-61-62	
699-34-51		699-60-60	
		699-60-60 #1	
		699-55-60B	

(a) Data were not collected on Thursdays.

TABLE 6. Continuously Monitored Wells (charts are changed weekly)

<u>Well Number</u>	<u>Casing Size (in.)</u>	<u>Stevens Recorder Serial Number</u>	<u>Recorder Type</u>	<u>Recorder Setup</u>	<u>Difference Between, Barrel and Casing (ft)</u>	<u>Owner</u>
299-W23-4	8	61414-73	Electric	Float/Counterweight	1.31	BWIP ^(a)
699-42-40B	8	61408-73	Electric	Float/Counterweight	0.93	RHO ^(b)
699-42-40C	8	101387-81	Electric	Float/Counterweight	0.69	BWIP
699-52-48	8	92655-79	Wind Up	Float/Counterweight	1.98	PNL ^(c)
699-55-50D	8	92653-79	Wind Up	Float/Counterweight	1.11	PNL
699-56-53	8	99994-81	Wind Up	Float/Counterweight	0.99	PNL
699-59-55	8	12476-48	Wind Up	Float/Counterweight	Even	PNL

(a) Basalt Waste Isolation Project.

(b) Rockwell Hanford Operations.

(c) Pacific Northwest Laboratory.

WELL CONSTRUCTION AND WATER-LEVEL DATA

DATA SOURCES

Water-level data from May 29, 1984, to September 3, 1985, were collected by personnel from the Environmental Evaluations Section of PNL's Earth Sciences Department. Water-level data before this date were collected by personnel from the Hydrogeology Unit of Rockwell Hanford Operation's Waste Management Systems Engineering Department.

The location and elevation of each well were taken from McGhan, Mitchell, and Argo (1985). In some cases, accurate locations and/or elevations could not be found and were estimated from U.S. Geological Survey (USGS) 15-min topographic maps of the area.

Information on the construction of each borehole was taken from the existing PNL CIRMIS data base and from existing drillers' logs and other accompanying records maintained by V. L. McGhan of the Environmental Evaluations Section of PNL. Further information was obtained from formal and informal reports, personal records, and/or borehole geophysical logs (Blair, Law, and Lindberg 1981).

DATA LIMITATIONS

The location and elevation of the well casings for the majority of the Hanford Site wells were determined by Kaiser Engineers Hanford. In 1959, a correction in the elevation of a bench mark southeast of the 200-East Area led to revision of ground-water contour data of about 5 ft (Haney 1960). The accuracy of measurements improved as bench marks were added and outdated equipment was replaced. The most current survey measurements are estimated to be vertically accurate to within 0.01 ft and horizontally accurate to within 1.0 ft from the reference bench mark. Some vertical error may also be present where modifications were made to the well after it was surveyed. These errors are estimated to be on the order of 1 to 2 ft vertically.

Discrepancies were noted in information on the borehole completion characteristics and/or the hydrogeologic horizons penetrated by some wells.

Original field data (driller/geologist logs) were used and considered the most reliable source of information wherever a conflict was found.

DATA DESCRIPTION

Between May 29, 1984, and September 3, 1985, water levels were collected biweekly from 92 monitoring wells and 5 surface-water gaging stations located near the major waste disposal facilities, the area of aquifer intercommunication, and BWIP's RRL. Daily water-level measurements were recorded for those wells continuously monitored by Stevens water-level recorders. Previously collected data from June 1, 1982, to June 1, 1984, is also presented.

A summary of the well completion intervals is found in Appendix A. The depth-to-water measurements (from the top of the well casing) are presented in Appendix B, by well number, along with well completion diagrams and hydrographs. The numerical data sheets were generated from the interim data base using software developed by PNL.

Hydraulic Head Monitoring Procedures are presented in Appendix C. Data tables and hydrographs for the surface water gaging stations are provided in Appendix D.

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APPENDIX A

SUMMARY OF WELL COMPLETION DATA

APPENDIX A

SUMMARY OF WELL COMPLETION DATA

TABLE A.1. Wells Monitoring the Hanford Formation

<u>Well Number</u>	<u>Open Interval (ft)</u>	<u>Approximate Depth to Water (ft)</u>
299-E26-1	217-227	211
299-E33-14	212-227	217
699-32-77	175-222	184
699-47-46A	168-207	174
699-50-53	142-159	152
699-51-63(a)	157-180	165
699-51-75	190-225	190
699-53-47A	22-41	28
699-53-47B	26-46	28
699-53-48A	44-53	36
699-53-48B	20-37	36
699-53-55A	165-260	171
699-53-55B	232-252	172
699-53-55C	197-220	172
699-54-45A	95-105	97
699-54-48	43-63	52
699-55-50A	40-49	38
699-55-50A(P)	96-98	38
699-55-50A(Q)	64-79	38
699-55-50D	33-90	35
699-55-57	139-180	162
699-59-55	150	27
699-59-58	90-110	94
699-60-57	55-75 128-138	65
699-61-62	86-100	94
699-63-58	83-111	89

(a) Open to both Hanford and Middle Ringold Horizons.

FIGURE A.1. Distribution of Wells Monitoring the Hanford Formation
(Cross-hatched areas are basalt above the water table.)

TABLE A.2. Wells Monitoring the Middle Ringold Member

<u>Well Number</u>	<u>Open Interval (ft)</u>	<u>Approximate Depth to Water (ft)</u>
299-E23-1	310-343	305
299-E25-10	226-291	251
299-E25-11	265-335	276
299-W12-1	274-309	272
299-W18-15	170-243	178
299-W19-1	178-209	194
299-W19-1(O)	176-196	194
299-W19-1(P)	228-248	194
299-W19-4(O)	260-280	250
299-W19-4(R)	386-411	250
299-W19-4(S)	345-370	250
299-W23-4	180-296	184
299-W23-11	165-230	188
699-32-62	275-326	277
699-32-70B	207-250	211
699-34-51	328-382	332
699-35-78A	180-232	184
699-37-43	316-334	286
699-37-82A	155-175	163
699-37-82B(Q)	390-410	168
699-37-82B(R)	310-330	165
699-37-82B(S)	242-250	163
699-38-70	255-295	253
699-39-39	110-180	126
699-39-79	195-240	196
699-40-62	335-369	341
699-42-40A	145-171	121
699-42-40B(a)	130-150	123
699-43-42A	154-223	143
699-44-64	316-360	318
699-45-69A	274-311	275
699-47-60	235-277	245
699-49-55A	125-139	125
699-50-85	285-335	282
699-55-60B	230-285	169

(a) Open to both Upper and Middle Ringold Horizons.

FIGURE A.2. Distribution of Wells Monitoring the Middle Ringold Member
(Cross-hatched areas are basalt above the water table.)

TABLE A.3. Wells Monitoring the Lower Ringold Member

<u>Well Number</u>	<u>Open Interval (ft)</u>	<u>Approximate Depth to Water (ft)</u>
699-32-62(P)	490-495	275
699-45-42	158-180	160
699-50-85(P)	520-525	291
699-55-70	136-180	137
699-60-60	100-110	108
699-60-60(P)	120-125	108

FIGURE A.3. Distribution of Wells Monitoring the Lower Ringold Member
(Cross-hatched areas are basalt above the water table.)

TABLE A.4. Wells Monitoring the Basal Ringold Member

<u>Well Number</u>	<u>Open Interval (ft)</u>	<u>Approximate Depth to Water (ft)</u>
199-B3-2	635-645	43
199-B3-2(Q)	632-642	37
299-W19-4(P)	510-535	253
299-W19-4(Q)	456-481	250
699-14-E6(S)	292-302	94
699-37-82B(P)	540-560	162
699-51-75(P)	370-375	191
699-55-70(P)	190-195	137

FIGURE A.4. Distribution of Wells Monitoring the Basal Ringold Member
(Cross-hatched areas are basalt above the water table.)

TABLE A.5. Wells Monitoring the Upper Saddle Mountains

<u>Well Number</u>	<u>Open Interval (ft)</u>	<u>Approximate Depth to Water (ft)</u>	<u>Hydrogeologic Horizon</u>
199-B3-2(P)	758-778	38	Elephant Mountain Flow Bottom
299-E16-1	491-510	288	Elephant Mountain Interflow
299-E26-8	330-396	197	Rattlesnake Ridge
299-E33-12	305-385	218	Rattlesnake Ridge
699-42-40C	317-390	131	Rattlesnake Ridge
699-47-50	260-295	178	Rattlesnake Ridge
699-49-55B	175-226	125	Rattlesnake Ridge
699-50-45	133-178	43	Rattlesnake Ridge
699-50-48	213-250	143	Rattlesnake Ridge
699-51-46	120-163	36	Rattlesnake Ridge
699-52-46A	186-225	47	Rattlesnake Ridge
699-52-48	153-195	58	Rattlesnake Ridge
699-53-50	145-194	38	Rattlesnake Ridge
699-53-55A(P)	330-335	171	Pomona
699-54-45B	305-314	31	Rattlesnake Ridge
699-54-57	245-321	171	Rattlesnake Ridge
699-56-53	190-270	30	Rattlesnake Ridge

FIGURE A.5. Distribution of Wells Monitoring the Upper Saddle Mountains Formation
(Cross-hatched areas are basalt above the water table.)

APPENDIX B

WELL COMPLETION DIAGRAMS, DEPTH-TO-WATER DATA,
AND HYDROGRAPHS BY MONITORING WELL NUMBER

APPENDIX B

WELL COMPLETION DIAGRAMS, DEPTH-TO-WATER DATA, AND HYDROGRAPHS BY MONITORING WELL NUMBER

This appendix presents well-completion diagrams, data tables, and hydrographs for each of the final monitoring wells or nest of wells. The wells are presented in numeric and alpha-numeric order.

The well-completion diagrams and hydrographs are self explanatory. The data tables list the depth-to-water measurements (in feet below the listed casing elevation) by date and time. The date format is indicated in the following example.

<u> Date </u>	<u>Year</u>	<u>Month</u>	<u>Day</u>	<u>Hour</u>	<u>Minute</u>
84.06011003	= 84.	06	01	10	03

Well 199-B3-2

Borehole number: 199-B3-2 (Annulus)
 Casing elevation: 442.59
 Borehole location: N 71752.00 W 78818.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-BASAL GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06011003	42.97	84.06131345	42.95
84.06201411	42.98	84.07111343	42.95
84.07251311	42.99	84.08081321	42.97
84.08221327	42.95	84.09061353	42.92
84.09201217	42.91	84.10031324	42.93
84.10191258	42.96	84.11011354	43.00
84.11211240	43.05	84.12131046	43.08
84.12261057	43.20	85.01101409	43.19
85.01241105	43.19	85.02061119	43.24
85.02211155	43.26	85.03071251	43.27
85.03221558	43.32	85.04031048	43.30
85.04171435	43.32	85.05031338	43.33
85.05151410	43.33	85.05301149	43.34
85.06131355	43.40	85.06271058	43.31
85.07101339	43.37	85.08091331	43.33

Borehole number: 199-B3-2(P)
 Casing elevation: 443.38
 Borehole location: N 71752.00 W 78818.00 (Hanford Coordinates)
 Hydrogeologic unit: ELEPHANT MOUNTAIN FLOW BOTTOM

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06131347	37.90	84.06201414	37.54
84.07111345	38.26	84.07251314	37.18
84.08081324	37.32	84.08221331	37.76
84.09061354	38.07	84.09201219	38.30
84.10031228	37.50	84.10191300	38.36
84.11011356	38.48	84.11211242	38.82
84.12131051	38.20	84.12261105	38.94
85.01101411	37.78	85.01241109	37.66
85.02061122	37.47	85.02211158	37.91
85.03071253	38.08	85.03221600	37.62
85.04031053	38.46	85.04171438	36.63
85.05031341	37.48	85.05151412	36.24
85.05301151	36.48	85.06131357	37.56
85.06271101	38.17	85.07101341	37.79
85.08091333	38.17		

Borehole number: 199-B3-2(Q)
 Casing elevation: 442.81
 Borehole location: N 71752.00 W 78818.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-BASAL GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06131349	37.55	84.06201417	37.25
84.07111347	37.20	84.07251317	36.84
84.08081326	37.06	84.08221332	37.17
84.09061356	37.50	84.09201220	37.92
84.10031331	37.74	84.10191302	38.57
84.11011400	38.28	84.11211246	38.67
84.12131056	38.32	84.12261110	38.37
85.01101413	37.92	85.01241113	37.52
85.02061124	36.98	85.02211201	37.18
85.03071255	37.01	85.03221602	36.98
85.04031057	37.27	85.04171441	37.10
85.05031344	37.55	85.05151414	36.76
85.05301153	36.90	85.06131359	36.99
85.06271105	37.18	85.07101343	37.23
85.08091336	37.93		

WELLS 199-B3-2,(P),(Q)

Well 299-E16-1

Borehole number: 299-E16-1
 Casing elevation: 695.09
 Borehole location: N 38505.00 W 46303.00 (Hanford Coordinates)
 Hydrogeologic unit: ELEPHANT MOUNTAIN INTERFLOW

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0614	290.89	82.0712	289.51
82.0915	290.40	82.1008	290.20
82.1013	290.00	82.1015	290.04
82.1020	291.05	82.1027	290.17
82.1102	290.14	82.1109	290.00
82.1115	289.91	82.1116	289.78
82.1215	289.84	83.0118	289.78
83.0215	289.71	83.0321	289.91
83.0419	289.87	83.0520	289.84
83.0615	289.91	83.0715	289.77
83.0815	289.78	83.0915	289.66
83.1018	289.50	83.1115	289.03
83.1214	288.80	84.06081036	288.19
84.06130855	288.12	84.06200942	288.06
84.06270840	288.11	84.07110925	287.92
84.07250821	287.76	84.08080813	287.75
84.08220852	287.64	84.09060933	287.63
84.09191333	287.58	84.10030843	287.64
84.10190844	288.03	84.11010955	288.06
84.11200926	287.95	84.12121016	287.59
84.12281410	287.53	85.01091331	287.57
85.01231312	287.60	85.02041459	287.69
85.02210842	287.76	85.03070925	287.88
85.03221242	287.90	85.04021615	287.87
85.04170824	287.95	85.05030956	288.01
85.05151036	288.07	85.05271434	287.81
85.06130927	287.82	85.06261543	287.59
85.07100951	287.83	85.08071142	287.39

WELL 299-E16-1

LEGEND

— 299-E16-1

Well 299-E23-1

Borehole number: 299-E23-1
 Casing elevation: 709.65
 Borehole location: N 41131.00 W 52000.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	306.94	83.0615	306.90
83.1215	306.31	84.06061201	305.25
84.06151243	305.23	84.06221254	305.28
84.07131300	305.08	84.07271157	304.94
84.08101201	304.88	84.08241317	304.80
84.09071314	304.81	84.09210939	304.78
84.10051301	304.85	84.10231330	305.03
84.11021245	304.98	84.11211506	305.22
84.12141449	304.72	84.12280854	305.04
85.01111058	304.97	85.01241430	304.89
85.02061417	304.81	85.02221010	305.03
85.03081046	305.13	85.03221851	305.02
85.04031825	304.93	85.04191035	305.02
85.05031520	304.98	85.05171212	304.99
85.05301420	304.99	85.06141316	304.93
85.06271417	304.88	85.07121140	304.98
85.08091618	304.59		

WELL 299-E23-1

Well 299-E25-10

Borehole number: 299-E25-10
 Casing elevation: 655.00
 Borehole location: N 41990.00 W 46790.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.07110952	250.91	84.07250841	250.69
84.08080837	250.72	84.08220914	250.63
84.09060946	250.54	84.09191345	250.58
84.10030902	250.84	84.10190905	251.27
84.11011015	251.28	84.11200943	251.17
84.12121102	250.87	85.01091406	250.70
85.01231330	250.79	85.02041517	250.94
85.02210900	251.07	85.03070942	251.27
85.03221258	251.23	85.04021703	251.19
85.04170850	251.29	85.05031012	251.31
85.05151054	251.28	85.05271452	251.14
85.06130946	251.05	85.06261602	250.86
85.07101007	251.05		

WELL 299-E25-10

LEGEND

— 299-E25-10

Well 299-E25-11

Borehole number: 299-E25-11
 Casing elevation: 681.51
 Borehole location: N 39613.00 W 46124.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	278.92	83.0615	278.66
83.1215	278.03	84.06081043	277.12
84.06130904	277.06	84.06201000	276.82
84.06270854	277.03	84.07110934	276.84
84.07250828	276.66	84.08080823	276.74
84.08220859	276.58	84.09060940	276.59
84.09191339	276.49	84.10030850	276.58
84.10190847	276.84	84.11011003	276.86
84.11200934	276.90	84.12121035	276.70
84.12281420	276.64	85.01091347	276.55
85.01231321	276.58	85.02041510	276.55
85.02210850	276.72	85.03070934	276.89
85.03221250	276.77	85.04021630	276.72
85.04170834	276.87	85.05031003	277.00
85.05151045	276.97	85.05271443	276.76
85.06130935	276.77	85.06261552	276.51
85.07100958	276.85	85.08071150	276.38

WELL 299-E25-11

Well 299-E26-1

Borehole number: 299-E26-1
 Casing elevation: 617.25
 Borehole location: N 44774.00 W 48025.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	214.12	84.06151256	211.99
84.06221310	212.06	84.07131327	211.97
84.07271215	211.57	84.08101211	211.57
84.08241327	211.50	84.09071329	211.44
84.09210950	211.48	84.10051318	211.73
84.10231343	212.14	84.11021305	212.05
84.11211515	212.08	84.12141524	211.68
84.12281010	211.59	85.01111133	211.63
85.01241455	211.68	85.02061438	211.77
85.02221036	211.95	85.03081106	212.09
85.03221908	212.19	85.04031842	212.04
85.04191048	212.10	85.05031530	212.09
85.05171224	212.13	85.05301433	211.94
85.06141330	211.78	85.06271431	211.92
85.07121155	211.85	85.08091628	211.38

WELL 299-E26-1

LEGEND

— 299-E26-1

Well 299-E26-8

Borehole number: 299-E26-8
 Casing elevation: 602.76
 Borehole location: N 43317.00 W 47142.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0614	200.56	82.0730	200.14
82.0807	200.04	82.0914	200.10
82.0915	199.94	82.0921	200.04
82.1015	199.84	82.1104	199.74
82.1112	199.77	82.1116	199.97
82.1119	199.81	82.1129	199.64
82.1215	199.64	83.0118	199.54
83.0215	199.58	83.0321	199.64
83.0419	199.71	83.0520	199.68
83.0615	199.61	83.0715	199.54
83.0815	199.53	83.0915	199.27
83.1018	198.91	83.1115	198.70
83.1214	198.45	83.1215	198.47
84.06081103	197.64	84.06130915	197.56
84.06201025	197.55	84.06270905	197.57
84.071111002	197.33	84.07250849	197.10
84.08080843	197.12	84.08220920	197.05
84.09060951	196.99	84.09191351	196.97
84.10030910	197.22	84.10190912	197.64
84.11011024	197.70	84.11200951	197.58
84.12121117	197.23	84.12281450	197.18
85.01091414	197.10	85.01231338	197.18
85.02041522	197.32	85.02210906	197.42
85.03070947	197.59	85.03221305	197.59
85.04021650	197.55	85.04170858	197.63
85.05031024	197.65	85.05151101	197.70
85.05271459	197.44	85.06130957	197.41
85.06261613	197.24	85.07101014	197.45
85.08071307	196.90		

WELL 299-E26-8

Well 299-E33-12

Borehole number: 299-E33-12
 Casing elevation: 623.01
 Borehole location: N 46436.00 W 52850.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0614	220.11	82.0825	219.95
82.0831	220.15	82.0907	219.98
82.0914	220.11	82.0915	220.24
82.0921	220.01	82.1015	219.88
82.1116	220.01	82.1215	219.65
83.0118	219.56	83.0215	219.62
83.0321	219.62	83.0419	219.59
83.0520	219.24	83.0615	219.54
83.0715	219.46	83.0815	219.45
83.0915	219.33	83.1018	219.30
83.1115	219.23	83.1214	219.11
83.1215	219.11	84.06061232	218.18
84.06151307	218.24	84.06221320	218.30
84.07131337	218.02	84.07271226	218.06
84.08101218	217.95	84.08241337	217.99
84.09071336	218.00	84.09210956	217.94
84.10051330	218.02	84.10231353	218.16
84.11021323	217.90	84.11211523	218.31
84.12141230	217.98	84.12280930	217.96
85.01111108	218.16	85.01241440	217.98
85.02061427	217.86	85.02221023	217.89
85.03081053	218.02	85.03221916	217.95
85.04031856	217.75	85.04191058	217.78
85.05031538	217.62	85.05171536	217.83
85.05301444	217.92	85.06141341	217.80
85.06271441	217.93	85.07121205	218.01
85.08091635	217.85		

WELL 299-E33-12

Well 299-E33-14

Borehole number: 299-E33-14
 Casing elevation: 622.12
 Borehole location: N 46223.00 W 52177.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS/RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	217.56	83.0615	217.27
83.1215	218.38	84.06061247	217.74
84.06151313	217.67	84.06221328	217.73
84.07131344	217.59	84.07271231	217.45
84.08101222	217.38	84.08241343	217.36
84.09071341	217.33	84.09211004	217.32
84.10051338	217.39	84.10231356	217.51
84.11021334	217.45	84.11211529	217.72
84.12141241	217.30	84.12280937	217.46
85.01111114	217.47	85.01241444	217.38
85.02061432	217.30	85.02221027	217.41
85.03081057	217.47	85.03221922	217.16
85.04031910	217.34	85.04191104	217.35
85.05031545	217.32	85.05171541	217.39
85.05301449	217.42	85.06141349	217.28
85.06271451	217.38	85.07121217	217.34
85.08091640	217.13		

WELL 299-E33-14

Well 299-W12-1

Borehole number: 299-W12-1
 Casing elevation: 726.46
 Borehole location: N 45083.00 W 70733.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	273.14	83.0615	272.72
83.1215	273.54	84.06050857	272.51
84.06111129	272.48	84.06181117	272.58
84.06251301	272.58	84.07101107	272.68
84.07231239	272.74	84.08061017	272.84
84.08201110	272.71	84.09051038	272.48
84.09171048	272.71	84.10011133	272.78
84.10171120	272.57	84.10290956	272.92
84.11190946	272.82	84.12101244	272.47
84.12271300	272.18	85.01090950	272.78
85.01231008	272.69	85.02041248	272.72
85.02191020	272.32	85.03050807	272.63
85.03220952	272.43	85.04021025	272.65
85.04160957	272.49	85.05021354	272.22
85.05131004	272.59	85.05271042	272.32
85.06121000	272.32	85.06261400	272.22
85.07091009	272.42	85.08051110	272.53

WELL 299-W12-1

Well 299-W18-15

Borehole number: 299-W18-15
 Casing elevation: 660.96
 Borehole location: N 36990.00 W 77152.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06081322	180.34	84.06111301	175.05
84.06181258	175.08	84.06251353	175.07
84.07101146	175.15	84.07231331	175.17
84.08061120	175.37	84.08201205	175.28
84.09051120	175.25	84.09171154	175.64
84.10011216	175.90	84.10171240	175.98
84.10291054	176.58	84.11191030	176.73
84.12101405	176.78	84.12271452	177.13
85.01091050	177.97	85.01231047	178.22
85.02041339	178.53	85.02191049	178.30
85.03050925	178.95	85.04021215	179.56
85.04161146	179.84	85.05021542	179.95
85.05131216	180.58	85.05271243	180.79
85.06121148	181.16	85.06261110	181.51
85.07091157	181.97	85.08051205	182.72

WELL 299-W18-15

Well 299-W19-1

Borehole number: 299-W19-1
 Casing elevation: 673.77
 Borehole location: N 37613.00 W 75491.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06081315	192.04	84.06111240	191.74
84.06181236	191.77	84.06251334	191.78
84.07101131	191.84	84.07231310	191.84
84.08061100	192.03	84.08201142	191.99
84.09051104	191.97	84.09171125	192.33
84.10011201	192.64	84.10171227	192.75
84.10291038	193.34	84.11191020	193.41
84.12101350	193.33	84.12271422	193.39
85.01091030	194.04	85.01231100	194.17
85.02041319	194.43	85.02191031	194.11
85.03050903	196.27	85.03221027	195.96
85.04021145	195.11	85.04161115	195.37
85.05021520	195.15	85.05131154	195.34
85.05271220	195.36	85.06121120	195.49
85.06261054	195.52	85.07091130	195.77
85.08051148	196.21		

Borehole number: 299-W19-1(0)
 Casing elevation: 674.04
 Borehole location: N 37613.00 W 75491.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	192.99	83.0615	193.32
83.1215	192.33	84.06081307	192.38
84.06111244	192.08	84.0615	192.22
84.06181240	192.14	84.06251338	192.12
84.07101135	192.18	84.07231313	192.20
84.08061104	192.34	84.08201145	192.32
84.09051107	192.31	84.09171131	192.68
84.10011205	192.96	84.10171231	193.09
84.10291043	193.64	84.11191023	193.75
84.12101354	193.65	84.12271430	193.80
85.01091034	194.42	85.01231103	194.27
85.02041324	194.73	85.02191035	194.49
85.03050907	195.03	85.03221034	195.20
85.04021150	195.39	85.04161119	195.54
85.05021524	195.36	85.05131158	195.64
85.05271223	195.68	85.06121124	195.84
85.06261057	195.83	85.07091134	196.10
85.07251534	196.09	85.08051153	196.51

Borehole number: 299-W19-1(P)
 Casing elevation: 674.06
 Borehole location: N 37613.00 W 75491.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06081311	192.12	84.06111247	192.15
84.06181243	192.19	84.06251342	192.20
84.07101138	192.13	84.07231316	192.12
84.08061108	192.13	84.08201148	192.18
84.09051110	192.30	84.09171134	192.42
84.10011208	192.60	84.10171235	192.85
84.10291046	193.00	84.11191026	193.34
84.12101358	193.59	84.12271435	193.78
85.01091038	194.41	85.01231107	194.25
85.02041328	194.41	85.02191039	194.64
85.03050911	194.81	85.03221038	195.12
85.04021202	195.29	85.04161123	195.47
85.05021528	195.66	85.05131202	195.77
85.05271227	195.88	85.06121129	196.12
85.06261100	196.02	85.07091138	196.29
85.08051158	196.66		

WELLS 299-W19-1,(O),(P)

Well 299-W19-4

Borehole number: 299-W19-4(O)
 Casing elevation: 715.26
 Borehole location: N 39000.00 W 71999.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06081240	250.53	84.06111144	250.25
84.06181131	250.31	84.06251309	250.29
84.07101116	250.39	84.07231245	250.37
84.08061033	250.48	84.08201121	250.43
84.09051045	250.09	84.09171058	250.40
84.10011141	250.36	84.10171127	250.18
84.10291007	250.59	84.11190955	250.54
84.12101259	249.89	84.12271338	249.62
85.01091004	250.22	85.01231019	250.20
85.02041259	250.32	85.02191126	249.64
85.03050818	249.87	85.03220959	249.88
85.04021044	250.12	85.04161006	249.74
85.05021406	249.60	85.05131018	250.11
85.05271055	249.84	85.06121013	249.98
85.06261030	250.00	85.07091053	250.19
85.07251555	250.05	85.08051123	250.43

Borehole number: 299-W19-4(P)
 Casing elevation: 715.52
 Borehole location: N 39000.00 W 71999.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-BASAL GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06081245	253.63	84.06111147	253.67
84.06181134	253.73	84.06251314	253.73
84.07101119	253.65	84.07231249	253.67
84.08061038	253.65	84.08201125	253.65
84.09051049	253.66	84.09171103	253.68
84.10011144	253.71	84.10171131	253.63
84.10291011	253.62	84.11191000	253.67
84.12101310	253.58	84.12271347	253.41
85.01091008	253.57	85.01231025	253.48
85.02041302	253.41	85.02191130	253.41
85.03050822	253.28	85.03221002	253.29
85.04021052	253.32	85.04161012	253.26
85.05021410	253.25	85.05131022	253.29
85.05271059	253.24	85.06121017	253.39
85.06261034	253.19	85.07091057	253.40
85.08051128	253.51		

Borehole number: 299-W19-4(Q)
 Casing elevation: 715.52
 Borehole location: N 39000.00 W 71999.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-BASAL GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06081252	250.58	84.06111151	250.29
84.06181138	250.39	84.06251319	250.34
84.07101121	250.34	84.07231253	250.42
84.08061043	250.54	84.08201129	250.43
84.09051053	250.13	84.09171106	250.44
84.10011148	250.43	84.10171134	250.22
84.10291015	250.62	84.11191004	250.56
84.12101320	249.90	84.12271354	249.63
85.01091012	250.22	85.01231029	250.19
85.02041306	250.31	85.02191136	249.64
85.03050826	249.87	85.03221005	249.88
85.04021100	250.14	85.04161018	249.75
85.05021414	249.63	85.05131026	250.12
85.05271103	249.84	85.06121021	250.01
85.06261039	250.03	85.07091102	250.23
85.08051133	250.44		

Borehole number: 299-W19-4(R)
 Casing elevation: 715.52
 Borehole location: N 39000.00 W 71999.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06081255	250.39	84.06111153	250.41
84.06181142	250.42	84.06251323	250.44
84.07101124	250.41	84.07231258	250.42
84.08061047	250.40	84.08201132	250.39
84.09051056	250.40	84.09171110	250.40
84.10011152	250.41	84.10171138	250.37
84.10291019	250.38	84.11191008	250.39
84.12101329	250.36	84.12271400	250.24
85.01091016	250.30	85.01231033	250.27
85.02041310	250.22	85.02191142	250.19
85.03050830	250.12	85.03221009	250.10
85.04021112	250.08	85.04161025	250.05
85.05021419	250.02	85.05131030	250.04
85.05271108	250.02	85.06121025	250.08
85.06261043	249.93	85.07091106	250.15
85.08051137	250.23		

Borehole number: 299-W19-4(S)
 Casing elevation: 715.52
 Borehole location: N 39000.00 W 71999.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06081300	250.56	84.06111155	250.26
84.06181146	250.06	84.06251326	250.29
84.07101127	250.37	84.07231302	250.38
84.08061051	250.49	84.08201137	250.42
84.09051059	250.08	84.09171115	250.40
84.10011156	250.38	84.10171142	250.18
84.10291022	250.59	84.11191011	250.53
84.12101339	249.88	84.12271407	249.61
85.01091020	250.21	85.01231037	250.19
85.02041314	250.31	85.02191146	249.65
85.03050834	249.88	85.03221013	249.88
85.04021118	250.11	85.04161030	249.74
85.05021423	249.59	85.05131035	250.09
85.05271112	249.83	85.06121030	249.96
85.06261047	250.01	85.07091111	250.18
85.08051141	250.43		

WELLS 299-W19-4(O),(P),(Q),(R),(S)

Well 299-W23-4

Borehole number: 299-W23-4
 Casing elevation: 662.82
 Borehole location: N 35861.00 W 76335.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	182.72	83.0615	182.23
83.1215	183.41	84.06050919	180.96
84.06111254	180.83	84.06181250	180.86
84.06251346	180.94	84.07101141	180.06
84.07231324	180.90	84.08061113	181.08
84.08201156	180.95	84.09051115	180.86
84.09171145	181.28	84.10011211	181.51
84.10091003	181.52	84.10101003	181.26
84.10111003	181.53	84.10121003	181.68
84.10131003	181.85	84.10141003	181.78
84.10151003	181.84	84.10160943	181.50
84.10170943	181.52	84.10180943	181.93
84.10190943	181.72	84.10200943	181.77
84.10210943	181.89	84.10220943	181.97
84.10230933	181.92	84.10240933	181.83
84.10250933	181.35	84.10260933	181.44
84.10270933	181.92	84.10280933	181.81
84.10290933	182.15	84.10300917	181.86
84.10310917	182.35	84.11010917	181.97
84.11020917	181.24	84.11030917	181.95
84.11040917	182.37	84.11070914	182.14
84.11080914	181.98	84.11090914	182.46
84.11100914	182.01	84.11110914	182.12
84.11201309	182.29	84.11211309	182.57
84.12110910	182.58	84.12120910	182.27
84.12130910	182.90	84.12181020	183.22
84.12260935	182.72	84.12270935	182.60
84.12280935	183.04	84.12290935	183.14
84.12300935	183.42	85.01021140	183.37
85.01081011	183.19	85.01150818	183.48
85.01160818	183.53	85.01170818	183.35
85.01180818	183.26	85.01190818	183.42
85.01200818	183.40	85.01210818	183.52
85.01221430	183.58	85.01231430	183.58
85.01241430	183.63	85.01251430	183.73
85.01290901	183.83	85.01300901	184.15
85.01310901	184.05	85.02010901	183.57
85.02020901	183.97	85.02051355	184.15
85.02061355	184.26	85.02071355	184.16
85.02081355	184.24	85.02120803	184.85
85.02130803	184.93	85.02140803	184.64
85.02150803	184.61	85.02160803	184.70
85.02170803	184.78	85.02180803	184.79
85.02191100	184.42	85.02201100	184.79
85.02211100	184.88	85.02221100	184.98

Borehole number 299-W23-4 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.02231100	185.05	85.02241100	184.80
85.02251100	185.25	85.02261104	185.10
85.02271104	185.13	85.02281104	184.92
85.03011104	184.98	85.03021104	185.17
85.03031104	185.19	85.03041104	184.93
85.03050945	185.20	85.03060945	185.18
85.03070945	185.43	85.03080945	185.68
85.03090945	185.42	85.03100945	185.33
85.03110945	185.47	85.03120945	185.51
85.03130850	185.57	85.03140850	185.43
85.03150850	185.55	85.03160850	185.51
85.03170850	185.57	85.03180850	185.60
85.03190850	185.61	85.03200914	185.65
85.03210914	185.57	85.03260815	185.30
85.03270815	185.28	85.03280815	185.81
85.03290815	186.00	85.03300815	185.78
85.03310815	185.91	85.04010815	185.86
85.04021230	185.90	85.04031230	185.84
85.04041230	185.95	85.04051230	185.93
85.04061230	186.07	85.04071230	186.10
85.04081230	186.06	85.04091238	185.96
85.04101238	185.83	85.04111238	186.14
85.04121238	186.36	85.04131238	186.13
85.04141238	185.95	85.04151238	185.85
85.04161215	186.17	85.04171215	186.26
85.04181215	186.26	85.04201215	186.25
85.04211215	186.21	85.04240935	186.67
85.04250935	186.55	85.04260935	186.41
85.04270935	186.31	85.04280935	186.45
85.04290935	186.73	85.04300935	186.60
85.05011142	186.40	85.05021142	186.35
85.05031142	186.61	85.05041142	186.71
85.05051142	186.57	85.05061142	186.53
85.05070817	186.65	85.05080817	186.71
85.05090817	186.71	85.05100817	186.61
85.05110817	186.89	85.05120817	186.93
85.05130817	186.84	85.05140852	186.85
85.05150852	186.90	85.05160852	186.90
85.05170852	186.90	85.05180852	186.90
85.05190852	186.90	85.05200852	186.92
85.05211327	187.05	85.05221327	187.04
85.05231327	187.04	85.05241327	187.04
85.05251327	187.04	85.05261327	186.97
85.05271327	186.98	85.05280823	187.06
85.05290823	187.06	85.05300823	187.16
85.05310823	187.13	85.06010823	187.13
85.06020823	187.23	85.06030823	187.23

Borehole number 299-W23-4 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.06040823	187.20	85.06050852	187.17
85.06060852	187.17	85.06070852	187.15
85.06080852	187.56	85.06090852	187.36
85.06100852	187.36	85.06111059	187.32
85.06121059	187.21	85.06131059	187.29
85.06141059	187.29	85.06151059	187.40
85.06161059	187.52	85.06171059	187.45
85.06181059	187.37	85.06191143	187.29
85.06201143	187.43	85.06211143	187.57
85.06221143	187.57	85.06231143	187.65
85.06241143	187.69	85.06250824	187.69
85.06260824	187.67	85.06270824	187.67
85.06280824	187.66	85.06290824	187.50
85.06300824	187.72	85.07011141	187.77
85.07021141	187.69	85.07031141	187.69
85.07041141	187.65	85.07051141	187.80
85.07061141	187.76	85.07071141	187.75
85.07081141	187.83	85.07091146	187.79
85.07101146	187.85	85.07111146	187.84
85.07121146	187.83	85.07131146	187.92
85.07141146	187.88	85.07151146	187.88
85.07160925	187.87	85.07170925	187.95
85.07180925	188.00	85.07190925	187.98
85.07200925	187.96	85.07210925	187.95
85.07220925	187.97	85.07230925	188.07
85.07250830	188.22	85.07260830	188.22
85.07270830	188.22	85.07280830	188.21
85.07290830	188.19	85.07300830	188.19
85.07310830	188.42	85.08010940	188.32
85.08020940	188.35	85.08030940	188.30
85.08040940	188.20	85.08050940	188.30
85.08061443	188.21	85.08071443	188.25
85.08081443	188.38	85.08091443	188.32
85.08101443	188.36	85.08111443	188.32
85.08121443	188.27	85.08130938	188.64
85.08140938	188.47	85.08150938	188.35
85.08160938	188.56	85.08170938	188.51
85.08180938	188.54	85.08190938	188.57
85.08200938	188.65	85.08211101	188.68
85.08221011	188.71	85.08231011	188.65
85.08241011	188.55	85.08251011	188.56
85.08261011	188.64	85.08270842	188.67
85.08280842	188.71	85.08290842	188.66
85.08300842	188.77	85.08310842	188.88
85.09010842	188.68	85.09020842	188.76
85.09031349	188.65		

WELL 299-W23-4

Well 299-W23-11

Borehole number: 299-W23-11
 Casing elevation: 664.14
 Borehole location: N 35560.00 W 76725.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	186.75	83.0615	185.64
83.1215	187.41	84.06061049	184.71
84.06111049	184.73	84.06181032	184.75
84.06251127	184.73	84.07101035	184.78
84.07231117	184.78	84.08060936	184.88
84.08201034	184.78	84.09051001	184.68
84.09171017	185.07	84.10011105	185.26
84.10171030	185.23	84.10290927	185.87
84.11190920	186.08	84.12101127	186.03
84.12271144	186.21	85.01081513	186.62
85.01230928	187.18	85.02041220	187.56
85.02190954	187.32	85.03051256	187.79
85.03220925	188.13	85.04020935	188.47
85.04160925	188.59	85.05021310	188.79
85.05130920	189.25	85.05270959	189.32
85.06120918	189.56	85.06260945	189.82
85.07090930	190.19	85.08051035	190.76

WELL 299-W23-11

Casing Elevation 457.77 ft

1.5-in. Casing

Sand

270 ft

290 ft

292 ft

302 ft

Cement Plug

Gravel

Not to Scale

B.53

Borehole number: 699-14-E6(S)
 Casing elevation: 457.77
 Borehole location: N 13830.00 W -5506.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-BASAL GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06081200	94.13	84.06110931	94.02
84.06180910	94.21	84.06251018	94.32
84.07100930	94.42	84.07231011	94.51
84.08060823	94.64	84.0820	94.36
84.09050900	93.71	84.09170905	94.25
84.10011000	94.31	84.10170904	94.33
84.10290809	94.49	84.11190815	93.93
84.12100909	93.72	84.12270922	93.96
85.01081610	93.80	85.01230806	93.99
85.02041559	93.97	85.02210726	93.95
85.03051440	95.96	85.03220815	93.68
85.04020724	93.85	85.04160813	93.98
85.05021030	94.08	85.05130758	94.09
85.05270845	94.02	85.06120801	94.09
85.06251122	94.10	85.06260829	94.43
85.07090815	94.55	85.08050920	94.41

WELL 699-14-E6(S)

The diagram illustrates a vertical well casing and two piezometers, labeled P and Q. The casing is shown with a series of horizontal lines representing perforations. Key elevations are marked on the left side: 326 ft, 365 ft, 370 ft, 490 ft, 495 ft, and 501 ft. A bracket on the left indicates the 'Perforations 275 ft - 500 ft' range. A 'Cement Plug' is shown at the 326 ft elevation. The top of the casing is labeled 'Casing and Piezometer Elevation 707.09 ft'. The diagram is labeled 'Not to Scale' at the bottom right.

B.56

Borehole number: 699-32-62
 Casing elevation: 707.09
 Borehole location: N 31974.00 W 61980.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	277.44	83.0615	277.21
83.1215	277.74	84.06111427	277.13
84.0615	277.41	84.06181410	277.18
84.06251455	277.18	84.07101336	277.30
84.07231444	277.34	84.08061335	277.48
84.08201406	277.31	84.09051324	277.00
84.09171338	277.33	84.10011354	277.32
84.10171345	277.19	84.10291243	277.59
84.11191140	277.54	84.12101529	276.99
84.12271615	276.79	85.01091228	277.31
85.01231239	277.30	85.02041434	277.42
85.02210803	277.26	85.03051358	277.04
85.03221155	277.13	85.04021450	277.23
85.04161401	277.06	85.05030917	277.30
85.05131341	277.38	85.05271408	277.06
85.06121320	277.07	85.06261506	277.08
85.07100930	277.53	85.08051331	277.40

Borehole number: 699-32-62(P)
 Casing elevation: 707.09
 Borehole location: N 31974.00 W 61980.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-LOWER CLAYS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06111419	275.45	84.06181417	275.50
84.06251501	275.56	84.07101345	275.58
84.07231450	275.51	84.08061340	275.50
84.08201411	275.65	84.09051331	275.68
84.09171342	275.70	84.10011358	275.60
84.10171349	275.68	84.10291253	275.65
84.11191146	275.66	84.12101533	275.73
84.12271626	275.60	85.01091233	275.76
85.01231242	275.73	85.02041438	275.70
85.02210807	275.63	85.03051402	275.65
85.03221201	275.72	85.04021500	275.80
85.04161405	275.70	85.05030922	275.73
85.05131347	275.77	85.05271412	275.70
85.06121326	275.81	85.06261511	275.65
85.07100934	275.84	85.08051334	275.89

Note: (Q) piezometer is dry.

WELLS 699-32-62,(P)

Well 699-32-70B

Not to Scale

Borehole number: 699-32-70B
 Casing elevation: 666.68
 Borehole location: N 32085.00 W 70345.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	211.03	83.0615	211.07
83.1215	211.59	84.05291337	210.73
84.06111111	210.99	84.0615	211.10
84.06181051	211.08	84.06251148	211.01
84.07101050	211.09	84.07231137	211.09
84.08060956	211.18	84.08201051	211.13
84.09051020	210.77	84.09171028	211.08
84.10011115	210.98	84.10171044	210.84
84.10290937	211.11	84.11190930	211.22
84.12101152	210.56	84.12271236	210.28
85.01081530	210.73	85.01230943	211.11
85.02041231	211.27	85.02191002	210.72
85.03051306	210.70	85.03220936	210.94
85.04020955	211.39	85.04160940	210.84
85.05021338	210.85	85.05130944	211.41
85.05271021	211.04	85.06120938	211.23
85.06261005	211.27	85.07090949	211.30
85.08051055	211.58		

WELL 699-32-70B

Well 699-32-77

Not to Scale

Borehole number: 699-32-77
 Casing elevation: 653.74
 Borehole location: N 31812.00 W 77032.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	184.75	83.0615	184.29
83.1215	184.52	84.05291323	183.46
84.06111059	183.61	84.0615	183.70
84.06181042	183.68	84.06251136	183.65
84.07101042	183.77	84.07231124	183.68
84.08060944	183.81	84.08201040	183.67
84.09051008	183.34	85.05021326	184.49
85.05130929	185.10	85.05271012	184.90
85.06120928	185.07	85.06260955	185.19
85.07090938	185.42	85.08051045	185.71

WELL 699-32-77

Well 699-34-51

Borehole number: 699-34-51
 Casing elevation: 736.76
 Borehole location: N 33873.00 W 51282.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06041012	332.29	84.06111450	332.33
84.0615	332.30	84.06181430	332.27
84.06251515	332.28	84.07101359	332.35
84.07231521	332.19	84.08061358	332.58
84.08201430	331.96	84.09051344	331.68
84.09171358	331.86	84.10011410	331.98
84.10171410	332.05	84.10291310	332.59
84.11191200	332.28	84.12101607	332.12
84.12281349	332.17	85.01091308	332.08
85.01231257	331.92	85.02041451	331.92
85.02210822	332.07	85.03051415	331.96
85.03221217	331.96	85.04021535	331.90
85.04161423	332.20	85.05030934	332.37
85.05131406	331.94	85.06261400	332.03

WELL 699-34-51

LEGEND

— 699-34-51

Well 699-35-78A

Not to Scale

Borehole number: 699-35-78A
 Casing elevation: 660.65
 Borehole location: N 35478.00 W 78190.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	184.26	83.0615	183.87
83.1215	183.41	84.05291313	182.43
84.06111041	182.52	84.0615	182.59
84.06181024	182.59	84.06251119	182.58
84.07101027	182.68	84.07231110	182.63
84.08060925	182.78	84.08201026	182.69
84.09050956	182.52	84.09171007	182.88
84.10011055	183.02	84.10171024	182.96
84.10290919	183.57	84.11190913	183.69
84.12101109	183.50	84.12271130	183.55
85.01081503	184.02	85.01230920	184.48
85.02041214	184.82	85.02190947	184.42
85.03051252	184.87	85.03220918	185.18
85.04020923	185.68	85.04160919	185.45
85.05021300	185.52	85.05130911	186.04
85.05270952	186.07	85.06120907	186.26
85.06260939	186.49	85.07090923	186.80
85.08051031	187.26		

WELL 699-35-78A

Well 699-37-43

Borehole number: 699-37-43
 Casing elevation: 690.17
 Borehole location: N 37063.00 W 42874.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	290.20	83.0615	287.68
83.1215	287.22	84.05311011	286.66
84.06130843	286.59	84.0615	286.60
84.06200935	286.58	84.06270829	286.56
84.07110912	286.53	84.07250813	286.36
84.08080807	286.45	84.08220845	286.33
84.09060925	286.30	84.09191326	286.18
84.10030835	286.08	84.10190830	286.15
84.11010943	286.10	84.11200913	286.14
84.12120945	286.07	84.12281501	286.02
85.01091317	285.95	85.01231500	285.95
85.02041537	285.90	85.02210833	285.93
85.03070919	286.01	85.03221233	285.97
85.04021555	285.93	85.04170815	286.04
85.05030949	286.09	85.05151025	286.03
85.05271530	285.93	85.06130915	285.98
85.06261530	285.71	85.07100830	286.00
85.08071133	285.85		

WELL 699-37-43

Well 699-37-82A

Borehole number: 699-37-82A
 Casing elevation: 636.75
 Borehole location: N 37018.00 W 81988.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	163.49	83.0615	163.75
83.1215	163.59	84.05291200	162.75
84.06111018	162.86	84.0615	162.97
84.06181003	162.95	84.06251055	162.90
84.07101007	163.03	84.07231052	162.97
84.08060857	163.07	84.0820	162.99
84.09050935	162.66	84.09170945	162.94
84.10011037	162.89	84.10170955	162.69
84.10290845	163.13	84.11190850	163.15
84.12101041	162.64	84.12271030	162.48
85.01081424	162.87	85.01230850	163.26
85.02041140	163.51	85.02190916	162.93
85.03051219	163.09	85.03220854	163.33
85.04020810	163.65	85.04160853	163.32
85.05021120	163.35	85.05130835	163.88
85.05270925	163.62	85.06120840	163.77
85.06260911	163.89	85.07090855	164.04
85.08050958	164.30		

Well 699-37-82B

Not to Scale

Borehole number: 699-37-82B(P)
 Casing elevation: 636.32
 Borehole location: N 37000.00 W 81999.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-BASAL GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06111022	162.33	84.06181007	162.37
84.06251059	162.28	84.07101011	162.18
84.07231055	162.34	84.08060903	162.44
84.0820	162.45	84.09050938	162.07
84.09170948	162.33	84.10011040	162.22
84.10170959	162.08	84.10290850	162.43
84.11190854	162.57	84.12101047	162.03
84.12271045	161.92	85.01081440	162.31
85.01230854	162.73	85.02041144	162.98
85.02190920	162.63	85.03051224	162.54
85.03220858	162.89	85.04020823	163.09
85.04160858	162.59	85.05021125	162.84
85.05130845	163.33	85.05270929	163.05
85.06120844	163.18	85.06260913	163.54
85.07090859	163.44	85.08051002	163.61

Borehole number: 699-37-82B(Q)
 Casing elevation: 636.30
 Borehole location: N 37000.00 W 81999.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06111031	168.05	84.06181010	168.13
84.06251103	168.08	84.07101014	168.04
84.07231058	168.06	84.08060909	168.09
84.08201012	168.13	84.09050941	168.12
84.09170952	168.05	84.10011043	168.09
84.10171003	168.18	84.10290857	168.19
84.11190858	168.25	84.12101052	168.25
84.12271055	168.23	85.01081444	168.26
85.01230858	168.40	85.02041148	169.53
85.03051228	168.40	85.03220902	168.52
85.04020835	168.50	85.04160903	168.55
85.05021135	168.59	85.05130852	167.21
85.05270934	166.72	85.06120849	166.71
85.06260916	167.30	85.07090904	166.74
85.08051007	166.85		

Borehole number: 699-37-82B(R)
 Casing elevation: 636.30
 Borehole location: N 37000.00 W 81999.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06111025	165.13	84.06181013	165.15
84.06251107	165.14	84.07101016	165.09
84.07231101	165.13	84.08060910	165.12
84.08201017	165.23	84.09050943	165.19
84.09170956	165.27	84.10011045	165.27
84.10171005	165.30	84.10290903	165.22
84.11190901	165.39	84.12101055	165.34
84.12271059	165.26	85.01081448	165.54
85.01230902	165.70	85.02041152	165.73
85.02190928	165.79	85.03051232	165.62
85.03220905	165.82	85.04020850	166.08
85.04160905	165.62	85.05021147	165.85
85.05130856	165.61	85.05270936	165.53
85.06120852	165.77	85.06260919	165.70
85.07090907	165.86	85.08051010	166.10

Borehole number: 699-37-82B(S)
 Casing elevation: 636.30
 Borehole location: N 37000.00 W 81999.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06111027	162.55	84.06181017	162.64
84.06251111	162.59	84.07101020	162.68
84.07231104	162.63	84.08060914	162.77
84.08201021	162.68	84.09050942	162.35
84.09170959	165.63	84.10011049	162.57
84.10171008	162.38	84.10290908	162.83
84.11190904	162.87	84.12101059	162.32
84.12271106	162.14	85.01081452	162.58
85.01230906	162.98	85.02041156	163.21
85.02190932	162.43	85.03051236	162.78
85.03220909	163.03	85.04020855	163.32
85.04160909	162.93	85.05021207	162.98
85.05130902	163.52	85.05270940	163.25
85.06120857	163.40	85.06260922	163.31
85.07090912	163.68	85.08051015	163.89

WELLS 699-37-82A,B(P),(Q),(R),(S)

Well 699-38-70

Not to Scale

Borehole number: 699-38-70
 Casing elevation: 710.67
 Borehole location: N 38142.00 W 70226.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	253.65	83.0615	253.52
83.1215	254.15	84.05311347	253.26
84.06111119	253.53	84.0615	253.56
84.06181102	253.54	84.06251157	253.54
84.07101055	253.66	84.07231144	253.54
84.08061004	253.67	84.08201057	253.58
84.09051027	253.21	84.09171037	253.53
84.10011126	253.44	84.10171100	253.28
84.10290947	253.60	84.11190937	253.66
84.12101214	252.98	84.12271250	252.70
85.01081537	253.12	85.01231000	253.46
85.02041238	253.61	85.02191011	253.00
85.03051315	253.02	85.03220943	253.22
85.04021010	253.61	85.04160948	253.04
85.05021345	253.00	85.05130954	253.57
85.05271031	253.19	85.06120948	253.36
85.06261012	253.37	85.07091000	253.51
85.08051100	253.71		

WELL 699-38-70

LEGEND
— 699-38-70

Well 699-39-39

Borehole number: 699-39-39
 Casing elevation: 536.65
 Borehole location: N 39044.00 W 38851.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	129.34	83.0615	129.37
83.1215	127.50	84.05311047	127.53
84.06130928	127.49	84.0615	127.27
84.06201036	127.26	84.06270917	127.38
84.07111013	127.23	84.07250905	127.07
84.08080854	126.96	84.08220932	126.87
84.09061004	126.77	84.09191400	126.74
84.10030924	126.85	84.10190921	127.09
84.11011036	127.14	84.11201003	126.98
84.12121158	126.54	84.12280846	126.31
85.01091434	126.37	85.01231351	126.36
85.02060824	126.40	85.02210921	126.43
85.03070959	126.47	85.03221318	126.61
85.04021820	126.65	85.04170911	126.66
85.05151111	126.76	85.05271511	126.64
85.06131010	126.40	85.06261627	126.27
85.07101023	126.36	85.08071240	125.95

WELL 699-39-39

Well 699-39-79

Borehole number: 699-39-79
 Casing elevation: 673.52
 Borehole location: N 39198.00 W 78751.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	196.40	84.06050949	195.21
84.06151339	195.25	84.06181306	195.27
84.06251400	195.24	84.07101152	195.36
84.07231344	195.34	84.08061126	195.48
84.08201210	195.33	84.09051127	195.15
84.09171159	195.48	84.10011223	195.60
84.10171246	195.54	84.10291104	196.05
84.11191038	196.05	84.12101417	195.77
84.12271517	195.74	85.01091118	196.40
85.01231116	196.55	85.02041344	196.80
85.02191055	196.39	85.03050935	196.85
85.03221051	197.06	85.04021300	197.27
85.04161155	197.31	85.05021548	197.31
85.05131224	197.81	85.05271251	197.83
85.06121157	198.04	85.06261415	198.16
85.07091203	198.57	85.08051214	199.02

WELL 699-39-79

Well 699-40-62

Borehole number: 699-40-62
 Casing elevation: 747.78
 Borehole location: N 40300.00 W 61500.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	342.67	83.0615	342.47
83.1215	342.50	84.06041034	341.31
84.06111351	341.45	84.0615	341.39
84.06181356	341.36	84.06251436	341.37
84.07101320	341.40	84.07231433	341.37
84.08061317	341.49	84.08201344	341.18
84.09051314	340.98	84.09171326	341.13
84.10011341	341.14	84.10171330	341.16
84.10291157	341.40	84.11191123	341.39
84.12101509	341.00	84.12271540	340.87
85.01091210	341.19	85.01231220	341.03
85.02041421	341.05	85.02191256	340.63
85.03051345	340.93	85.03221140	340.88
85.04021420	340.93	85.04161345	340.98
85.05030902	341.13	85.05131323	340.88
85.05271352	340.88	85.06121307	340.87
85.06261452	340.90	85.07100915	341.18
85.08051310	341.16		

WELL 699-40-62

Well 699-42-40A

Not to Scale

Well 699-42-40B

Well 699-42-40C

Borehole number: 699-42-40A
 Casing elevation: 545.53
 Borehole location: N 42420.00 W 40205.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
83.0615	129.83	83.1215	123.10
84.05311110	122.37	84.06130948	122.53
84.0615	122.58	84.06201054	122.57
84.06270937	122.49	84.07111032	121.94
84.07250925	120.51	84.08080919	122.46
84.08220955	121.08	84.09061022	121.04
84.09191417	122.18	84.10030947	123.85
84.10190945	124.47	84.11011053	123.22
84.11201034	120.72	84.12121246	119.94
84.12261647	119.78	85.01091459	119.78
85.01231417	121.02	85.02060911	121.57
85.02210938	122.22	85.03071014	122.52
85.03221336	122.63	85.04021805	122.89
85.04170937	123.17	85.05031047	123.67
85.05151120	123.31	85.05281054	119.48
85.06131022	122.58	85.06261635	122.49
85.07101031	120.89	85.08071251	121.10

Borehole number: 699-42-40B
 Casing elevation: 546.46
 Borehole location: N 42400.00 W 40200.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-UPPER SILTS/MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
83.0615	130.78	83.1215	124.19
84.053111107	124.00	84.06130953	123.99
84.0615	123.99	84.06201057	123.97
84.06270942	123.98	84.07111037	123.38
84.07250930	122.33	84.0806	123.49
84.08080918	123.49	84.08221000	122.46
84.09061024	122.57	84.09191420	123.36
84.10030950	124.54	84.10091328	125.48
84.10101328	125.53	84.10111328	125.70
84.10121328	125.76	84.10131328	125.96
84.10141328	125.94	84.10151328	126.06
84.10161141	125.81	84.10171141	125.60
84.10181141	125.76	84.10191141	125.48
84.10201141	125.40	84.10211141	125.41
84.10221141	125.40	84.10231300	125.19
84.10241300	125.06	84.10251300	124.52
84.10261300	124.57	84.10271300	124.74
84.10281300	124.66	84.10291300	124.94
84.10301133	124.65	84.10311133	125.04

Borehole number 699-42-40B (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.11011133	124.65	84.11021133	124.13
84.11031133	124.54	84.11041133	124.77
84.11051133	124.52	84.11061133	124.23
84.11071325	124.45	84.11081325	124.33
84.11091325	124.65	84.11101325	124.28
84.11111325	124.30	84.11121325	124.15
84.11131325	123.87	84.11141325	124.20
84.11151325	123.73	84.11201046	122.55
84.11211046	122.72	84.11221046	122.75
84.11231046	122.40	84.11241046	122.59
84.11251046	122.92	84.11261046	123.19
84.11271046	122.62	84.12111530	121.61
84.12121530	121.55	84.12131530	121.79
84.12141530	121.15	84.12151530	121.29
84.12161530	121.47	84.12171530	121.60
84.12181510	121.77	84.12191510	121.68
84.12201510	121.43	84.12211510	121.56
84.12221510	121.39	84.12231510	121.52
84.12241510	121.50	84.12251510	121.21
84.12261610	121.20	84.12271610	121.09
84.12281610	121.35	84.12291610	121.37
84.12301610	121.54	84.12311610	121.65
85.01011610	121.50	85.01021510	121.43
85.01031510	121.30	85.01041510	121.14
85.01051510	121.02	85.01061510	120.96
85.01071510	120.93	85.01081317	121.06
85.01091317	121.27	85.01101317	121.50
85.01111317	121.69	85.01121317	121.56
85.01131317	121.55	85.01141317	121.50
85.01151030	121.78	85.01161030	121.94
85.01171030	121.91	85.01181030	121.94
85.01191030	122.15	85.01201030	122.23
85.01211030	122.41	85.01221337	122.44
85.01231337	122.49	85.01241337	122.53
85.01251337	122.57	85.01261337	122.58
85.01271337	122.49	85.01281337	122.53
85.01291225	122.63	85.01301225	122.77
85.01311225	122.76	85.02011225	122.42
85.02021225	122.68	85.02031225	122.88
85.02041225	123.00	85.02051225	122.85
85.02060852	122.95	85.02070852	122.79
85.02080852	122.90	85.02090852	123.05
85.02100852	123.24	85.02110852	123.09
85.02121234	123.41	85.02131234	123.39
85.02141234	123.16	85.02151234	123.21
85.02161234	123.25	85.02171234	123.36
85.02181234	123.39	85.02191530	123.14
85.02201530	123.51	85.02211530	123.55

Borehole number 699-42-40B (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.02221530	123.71	85.02231530	123.72
85.02241530	123.70	85.02251530	123.82
85.02261307	123.69	85.02271307	123.66
85.02281307	123.54	85.03011307	123.61
85.03021307	123.77	85.03031307	123.79
85.03041307	123.70	85.03051131	123.86
85.03061131	123.86	85.03071131	124.03
85.03081131	124.23	85.03091131	124.12
85.03101131	124.09	85.03111131	124.17
85.03121131	124.24	85.03131020	124.25
85.03141020	124.12	85.03151020	124.13
85.03161020	124.04	85.03171020	124.03
85.03181020	124.00	85.03191020	123.99
85.03201157	123.97	85.03211157	123.96
85.03221157	123.98	85.03231157	123.91
85.03241157	124.07	85.03251157	124.16
85.03261137	123.87	85.03271137	123.96
85.03281137	124.32	85.03291137	124.48
85.03301137	124.34	85.03311137	124.52
85.04011137	124.45	85.04021137	124.35
85.04031730	124.22	85.04041730	124.29
85.04051730	124.30	85.04061730	124.37
85.04071730	124.41	85.04081730	124.36
85.04091452	124.28	85.04101452	124.23
85.04111452	124.53	85.04121452	124.67
85.04131452	124.50	85.04141452	124.35
85.04151452	124.27	85.04161452	124.41
85.04170945	124.55	85.04180945	124.55
85.04190945	124.62	85.04200945	124.59
85.04210945	124.57	85.04220945	124.79
85.04230945	124.90	85.04241215	125.00
85.04250015	124.97	85.04260015	124.92
85.04270015	124.74	85.04280015	124.73
85.04290015	124.97	85.04300015	124.95
85.05011410	124.77	85.05021410	124.75
85.05031410	124.97	85.05041410	125.08
85.05051410	124.98	85.05061410	124.98
85.05071840	125.07	85.05081840	125.11
85.05091840	125.00	85.05101840	124.98
85.05111840	125.12	85.05121840	125.08
85.05131840	124.92	85.05141118	125.01
85.05151118	124.91	85.05161118	124.77
85.05171118	124.73	85.05181118	124.64
85.05191118	124.60	85.05201118	124.73
85.05211134	124.81	85.05221134	124.60
85.05231134	123.44	85.05241134	122.89
85.05251134	122.40	85.05261134	122.05
85.05271134	121.80	85.05281038	121.80

Borehole number 699-42-40B (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.05291038	121.72	85.05301038	121.80
85.05311038	121.66	85.06011038	121.80
85.06021038	122.16	85.06031038	122.38
85.06041038	122.78	85.06051111	122.85
85.06061111	122.85	85.06071111	122.85
85.06081111	123.39	85.06091111	123.46
85.06101111	123.72	85.06110826	123.88
85.06120826	123.75	85.06130826	123.75
85.06140826	123.66	85.06150826	123.65
85.06160826	123.79	85.06170826	123.78
85.06180826	123.52	85.06190915	123.50
85.06200915	123.61	85.06210915	123.71
85.06220915	123.56	85.06230915	123.69
85.06240915	123.88	85.06251042	123.99
85.06261042	124.00	85.06271042	123.85
85.06281042	123.84	85.06291042	123.53
85.06301042	123.79	85.07010845	123.74
85.07020845	123.47	85.07030845	123.29
85.07040845	123.02	85.07050845	122.98
85.07060845	122.81	85.07070845	122.74
85.07080845	122.77	85.07091426	122.57
85.07101426	122.55	85.07111426	122.43
85.07121426	122.33	85.07131426	122.36
85.07141426	122.27	85.07151426	122.20
85.07161321	122.22	85.07171321	122.30
85.07181321	122.35	85.07191321	122.31
85.07201321	122.28	85.07211321	122.27
85.07221321	122.29	85.07231321	122.32
85.07251130	122.37	85.07261130	122.37
85.07271130	122.45	85.07281130	122.54
85.07291130	122.62	85.07301130	122.59
85.07311130	122.65	85.08011335	122.65
85.08021335	122.73	85.08031335	122.69
85.08041335	122.61	85.08051335	122.62
85.08061623	122.44	85.08071623	122.47
85.08081623	122.50	85.08091623	122.28
85.08101623	122.32	85.08111623	122.24
85.08121623	122.21	85.08131140	122.44
85.08141140	122.35	85.08151140	122.30
85.08161140	122.49	85.08171140	122.47
85.08181140	122.52	85.08191140	122.56
85.08201140	122.64	85.08211342	122.66
85.08221342	122.68	85.08231342	122.63
85.08241342	122.57	85.08251342	122.58
85.08261342	122.62	85.08271110	122.66
85.08281110	122.67	85.08291110	122.55

Borehole number 699-42-40B (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.08301110	122.63	85.08311110	122.68
85.09011110	122.48	85.09021110	122.53
85.09031528	122.35		

Borehole number: 699-42-40C
 Casing elevation: 546.16
 Borehole location: N 42414.00 W 40181.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0519	136.86	82.0614	137.05
82.0824	136.66	82.0831	136.72
82.0907	136.63	82.0914	136.76
82.0915	136.59	82.1015	136.53
82.1116	136.26	82.1215	136.33
83.0118	136.36	83.0215	136.56
83.0321	136.53	83.0419	136.49
83.0520	136.63	83.0615	136.56
83.0715	136.47	83.0815	136.46
83.0915	136.42	83.1018	136.22
83.1115	135.67	83.1214	135.15
83.1215	135.14	84.05311101	133.27
84.06130956	133.08	84.06201100	133.01
84.06270947	133.03	84.07111042	132.69
84.07191035	132.56	84.07240902	132.49
84.07250902	132.36	84.07260902	132.36
84.07270902	132.31	84.07280902	132.29
84.07290902	132.31	84.07300902	132.28
84.07311031	132.25	84.08011031	132.18
84.08021031	132.24	84.08031031	132.27
84.08041031	132.22	84.08051031	132.14
84.08061031	132.32	84.08071126	132.35
84.08081126	132.29	84.08091126	132.19
84.08101126	132.16	84.08111126	132.23
84.08121126	132.25	84.08131126	132.35
84.08141120	132.28	84.08151120	132.21
84.08161120	132.19	84.08171120	132.20
84.08181120	132.16	84.08191120	132.15
84.08201120	132.11	84.08211415	132.09
84.08221415	132.04	84.08231415	132.03
84.08241415	132.02	84.08251415	132.05
84.08261415	131.98	84.08271415	131.96
84.08280834	132.13	84.08290834	132.11
84.08300834	132.04	84.08310834	131.93
84.09010834	132.05	84.09020834	132.05
84.09030834	131.97	84.09040834	131.92

Borehole number 699-42-40C (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.09051406	131.82	84.09061406	131.93
84.09071406	131.96	84.09081406	131.92
84.09091406	131.91	84.09101406	131.84
84.09111408	131.75	84.09121408	131.94
84.09131408	132.04	84.09141408	131.95
84.09151408	131.83	84.09161408	131.87
84.09171408	131.89	84.09181123	131.96
84.09191123	131.98	84.09201123	131.84
84.09211123	131.93	84.09221123	131.89
84.09231123	132.05	84.09241123	132.20
84.09251123	132.17	84.09260924	132.12
84.09270924	132.23	84.09280924	132.23
84.09290924	132.21	84.09300924	132.07
84.10010924	132.16	84.10020924	132.23
84.10030959	132.20	84.10040959	132.19
84.10050959	132.34	84.10060959	132.41
84.10070959	132.48	84.10080959	132.40
84.10091303	132.34	84.10101303	132.25
84.10111303	132.34	84.10121303	132.46
84.10131303	132.61	84.10141303	132.68
84.10151303	132.71	84.10161155	132.57
84.10171155	132.55	84.10181155	132.75
84.10191155	132.70	84.10201155	132.75
84.10211155	132.82	84.10221155	132.91
84.10231308	132.89	84.10241308	132.85
84.10251308	132.53	84.10261308	132.52
84.10271308	132.65	84.10281308	132.62
84.10291308	132.81	84.10301140	132.71
84.10311140	132.94	84.11011140	132.78
84.11021140	132.39	84.11031140	132.62
84.11041140	132.87	84.11051140	132.82
84.11061140	132.58	84.11071338	132.71
84.11081338	132.63	84.11091338	132.86
84.11101338	132.65	84.11111338	132.65
84.11121338	132.54	84.11131338	132.48
84.11141338	132.89	84.11201055	132.49
84.11211055	132.60	84.11221055	132.58
84.11231055	132.21	84.11241055	132.16
84.11251055	132.27	84.11261055	132.43
84.11271055	131.99	84.11281055	131.98
84.12111538	131.85	84.12121538	131.75
84.12131538	131.94	84.12141538	131.55
84.12151538	131.61	84.12161538	131.75
84.12171538	131.82	84.12181525	131.85
84.12191525	131.73	84.12201525	131.53
84.12211525	131.65	84.12221525	131.56
84.12231525	131.57	84.12241525	131.57
84.12251525	131.36	84.12261630	131.38

Borehole number 699-42-40C (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.12271630	131.24	84.12281630	131.42
84.12291630	131.49	84.12301630	131.66
84.12311630	131.82	85.01011630	131.78
85.01021525	131.68	85.01031525	131.61
85.01041525	131.49	85.01051525	131.38
85.01061525	131.28	85.01071525	131.16
85.01081325	131.29	85.01091325	131.37
85.01101325	131.47	85.01111325	131.57
85.01121325	131.48	85.01131325	131.41
85.01141325	131.29	85.01151037	131.44
85.01161037	131.50	85.01171037	131.41
85.01181037	131.34	85.01191037	131.40
85.01201037	131.38	85.01211037	131.48
85.01221342	131.43	85.01231342	131.45
85.01241342	131.48	85.01251342	131.53
85.01261342	131.53	85.01271342	131.43
85.01281342	131.40	85.01291238	131.45
85.01301238	131.57	85.01311238	131.57
85.02011238	131.32	85.02021238	131.45
85.02031238	131.57	85.02041238	131.68
85.02051238	131.55	85.02060902	131.55
85.02070902	131.33	85.02080902	131.30
85.02090902	131.49	85.02100902	131.65
85.02110902	131.59	85.02121243	131.76
85.02131243	131.85	85.02141243	131.74
85.02151243	131.73	85.02161243	131.74
85.02171243	131.77	85.02181243	131.76
85.02191537	131.56	85.02201537	131.73
85.02211537	131.75	85.02221537	131.84
85.02231537	131.88	85.02241537	131.86
85.02251537	132.02	85.02261315	131.89
85.02271315	131.92	85.02281315	131.78
85.03011315	131.74	85.03021315	131.80
85.03031315	131.80	85.03041315	131.61
85.03051139	131.76	85.03061139	131.78
85.03071139	131.90	85.03081139	132.10
85.03091139	132.03	85.03101139	131.97
85.03111139	132.02	85.03121139	132.04
85.03131027	132.04	85.03141027	131.98
85.03151027	132.03	85.03161027	132.02
85.03171027	132.05	85.03181027	132.06
85.03191027	132.06	85.03201207	132.06
85.03211207	132.00	85.03221207	132.04
85.03231207	131.95	85.03241207	131.95
85.03251207	132.02	85.03261206	131.93
85.03271206	131.89	85.03281206	132.16
85.03291206	132.32	85.03301206	132.27
85.03311206	132.38	85.04011206	132.40

Borehole number 699-42-40C (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.04021206	132.35	85.04031715	132.21
85.04041715	132.25	85.04051715	132.24
85.04061715	132.32	85.04071715	132.37
85.04081715	132.38	85.04091501	132.37
85.04101501	132.24	85.04111501	132.46
85.04121501	132.57	85.04131501	132.42
85.04141501	132.28	85.04151501	132.18
85.04161501	132.24	85.04170955	132.29
85.04180955	132.28	85.04190955	132.32
85.04200955	132.33	85.04210955	132.26
85.04220955	132.36	85.04230955	132.41
85.04241228	132.55	85.04251228	132.55
85.04261228	132.48	85.04271228	132.38
85.04281228	132.42	85.04291228	132.59
85.04301228	132.59	85.05011419	132.45
85.05021419	132.39	85.05031419	132.49
85.05041419	132.61	85.05051419	132.56
85.05061419	132.51	85.05071853	132.44
85.05081853	132.45	85.05091853	132.43
85.05101853	132.40	85.05111853	132.57
85.05121853	132.63	85.05131853	132.55
85.05141125	132.62	85.05151125	132.65
85.05161125	132.56	85.05171125	132.53
85.05181125	132.47	85.05191125	132.45
85.05201125	132.53	85.05211148	132.63
85.05221148	132.52	85.05231148	132.50
85.05241148	132.51	85.05251148	132.48
85.05261148	132.36	85.05271148	132.23
85.05281046	132.15	85.05291046	132.06
85.05301046	132.02	85.05311046	131.85
85.06011046	131.76	85.06021046	131.74
85.06031046	131.67	85.06041046	131.59
85.06051124	131.72	85.06061124	131.70
85.06071124	131.63	85.06081124	131.90
85.06091124	131.83	85.06101124	131.84
85.06110836	131.86	85.06120836	131.76
85.06130836	131.79	85.06140836	131.80
85.06150836	131.88	85.06160836	131.96
85.06170836	131.96	85.06180836	131.90
85.06190926	131.81	85.06200926	131.79
85.06210926	131.88	85.06220926	131.88
85.06230926	131.93	85.06240926	131.98
85.06251049	131.99	85.06261049	131.97
85.06271049	131.91	85.06281049	131.95
85.06291049	131.83	85.06301049	131.99
85.07010855	132.02	85.07020855	131.95
85.07030855	131.89	85.07040855	131.80
85.07050855	131.85	85.07060855	131.79

Borehole number 699-42-40C (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.07070855	131.72	85.07080855	131.74
85.07091435	131.71	85.07101435	131.72
85.07111435	131.67	85.07121435	131.59
85.07131435	131.60	85.07141435	131.53
85.07151435	131.43	85.07161331	131.37
85.07171331	131.38	85.07181331	131.39
85.07191331	131.35	85.07201331	131.28
85.07211331	131.22	85.07221331	131.17
85.07231331	131.20	85.07251145	131.36
85.07261145	131.34	85.07271145	131.31
85.07281145	131.26	85.07291145	131.21
85.07301145	131.15	85.07311145	131.26
85.08011343	131.31	85.08021343	131.35
85.08031343	131.31	85.08041343	131.21
85.08051343	131.23	85.08061631	131.16
85.08071631	131.13	85.08081631	131.20
85.08091631	131.15	85.08101631	131.17
85.08111631	131.10	85.08121631	131.04
85.08131147	131.17	85.08141147	131.09
85.08151147	130.95	85.08161147	131.03
85.08171147	130.97	85.08181147	130.97
85.08191147	130.97	85.08201147	131.01
85.08211350	131.08	85.08221350	131.12
85.08231350	131.08	85.08241350	130.99
85.08251350	130.96	85.08261350	130.98
85.08271117	131.03	85.08281117	131.03
85.08291117	130.97	85.08301117	131.00
85.08311117	131.07	85.09011117	130.96
85.09021117	130.97	85.09031535	130.85

WELLS 699-42-40A,B,C

Well 699-43-42A

Borehole number: 699-43-42A
 Casing elevation: 566.38
 Borehole location: N 43049.00 W 41716.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	148.00	83.0615	147.67
83.1215	142.88	84.06010851	142.22
84.06130940	142.06	84.0615	142.62
84.06201047	142.60	84.06270928	142.45
84.07111023	141.78	84.07250917	142.13
84.08080908	143.58	84.08220948	142.79
84.09061016	142.90	84.09191411	143.72
84.10030938	143.37	84.10190941	144.86
84.11011046	144.60	84.11201020	142.92
84.12121230	142.57	84.12280903	142.52
85.01091449	142.62	85.01231402	143.76
85.02060840	144.15	85.02210930	144.63
85.03071007	144.92	85.03221329	144.83
85.04021750	145.00	85.04170925	145.18
85.05031054	145.48	85.05151129	145.37
85.05281113	143.27	85.06131034	145.08
85.06261653	144.72	85.07101038	143.87
85.08071258	143.00		

WELL 699-43-42A

Well 699-44-64

Borehole number: 699-44-64
 Casing elevation: 725.60
 Borehole location: N 44053.00 W 63751.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	319.41	83.0615	319.14
83.1215	319.47	84.06041102	318.34
84.06111338	318.39	84.0615	318.32
84.06181344	318.32	84.06251424	318.41
84.07101309	318.37	84.07231417	318.33
84.08061302	318.35	84.09051256	318.04
84.10011326	318.20	84.10171322	318.17
84.10291143	318.34	84.11191105	318.19
84.12101450	318.09	84.12271527	318.02
85.01091158	318.19	85.01231208	318.07
85.02041411	318.04	85.02191246	317.79
85.03051338	317.96	85.03221125	317.90
85.04021358	317.90	85.04161334	318.02
85.05030847	318.13	85.05131311	317.95
85.05271339	317.87	85.06121254	317.89
85.06261440	318.01	85.07100901	318.13
85.08051300	318.05		

WELL 699-44-64

Well 699-45-42

Borehole number: 699-45-42
 Casing elevation: 577.33
 Borehole location: N 45274.00 W 42099.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-LOWER CLAYS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
83.1215	160.80	84.05311144	159.90
84.06131006	159.68	84.0615	159.69
84.06201113	159.67	84.06271000	159.70
84.07111054	159.39	84.07250941	159.29
84.08080928	159.53	84.08221010	159.45
84.09061034	159.50	84.09191427	159.52
84.10031012	159.65	84.10190955	160.17
84.11011104	160.19	84.11201109	160.03
84.12121307	159.40	84.12280922	159.22
85.01091510	159.23	85.01231436	159.25
85.02060922	159.24	85.02210946	159.44
85.03071026	159.64	85.03221346	159.67
85.04021735	159.79	85.04171011	159.96
85.05031102	160.15	85.05151137	160.38
85.05281131	160.07	85.06131041	160.01
85.06270832	159.98	85.07101049	159.97
85.08071317	159.25		

WELL 699-45-42

Well 699-45-69A

Not to Scale

Borehole number: 699-45-69A
 Casing elevation: 725.46
 Borehole location: N 45003.00 W 69428.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	276.82	83.0615	275.74
83.1215	275.80	84.05291404	275.35
84.06111323	275.59	84.0615	275.70
84.06181317	275.68	84.06251412	275.64
84.07101247	275.69	84.07231401	275.60
84.08061247	275.80	84.08201315	275.69
84.09051243	275.51	84.09171309	275.68
84.10011315	275.79	84.10171309	275.69
84.10291116	275.94	84.11191054	275.75
84.12101433	275.57	84.12271542	275.33
85.01091127	275.64	85.01231130	275.75
85.02041358	275.74	85.02191221	275.30
85.03051323	275.45	85.03221113	275.49
85.04021325	275.61	85.04161319	275.48
85.05030835	275.73	85.05131300	275.53
85.05271325	275.36	85.06121242	275.41
85.06261430	275.14	85.07100848	275.68
85.08051245	275.62		

WELL 699-45-69A

Well 699-47-46A

Borehole number: 699-47-46A
 Casing elevation: 580.14
 Borehole location: N 47039.00 W 45994.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	177.63	83.0615	176.48
83.1215	175.50	84.05311133	174.70
84.06131021	174.57	84.0615	174.81
84.06201121	174.80	84.06271011	174.50
84.07111108	174.37	84.07250955	174.15
84.08080943	174.11	84.08221022	174.08
84.09061046	174.06	84.09191437	173.92
84.10031021	174.06	84.10191012	174.32
84.11011115	174.39	84.11201124	174.52
84.12121336	174.35	84.12280938	174.20
85.01091520	174.17	85.01231445	174.12
85.02060930	174.13	85.02210955	174.24
85.03071035	174.36	85.03221357	174.34
85.04021720	174.33	85.04171023	174.41
85.05031111	174.45	85.05151147	174.50
85.05281143	174.44	85.06131050	174.40
85.06270845	174.32	85.07101058	174.40
85.08071325	174.02		

WELL 699-47-46A

Well 699-47-50

Borehole number: 699-47-50
 Casing elevation: 583.87
 Borehole location: N 47266.00 W 49508.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0614	179.36	82.0824	179.32
82.0915	179.26	82.0921	179.26
82.0928	179.26	82.1005	179.26
82.1011	179.26	82.1015	179.26
82.1018	179.26	82.1116	179.29
82.1215	179.13	83.0118	179.03
83.0215	178.99	83.0321	178.99
83.0419	178.99	83.0520	179.03
83.0615	178.99	83.0715	178.89
83.0815	178.92	83.0915	178.84
83.1018	178.74	83.1115	178.59
83.1214	178.44	83.1215	178.45
84.05311204	177.71	84.06131039	177.60
84.06201137	177.59	84.06271027	177.53
84.07111122	177.42	84.07251018	177.35
84.08080959	177.21	84.08221036	177.10
84.09061102	177.08	84.09191453	176.98
84.10031034	176.99	84.10191021	177.02
84.11011124	177.08	84.11201135	177.21
84.12121419	177.22	84.12280951	177.15
85.01091531	177.13	85.01240912	177.08
85.02060936	177.05	85.02211003	177.04
85.03071041	177.06	85.03221404	177.11
85.04030725	177.12	85.04171032	177.13
85.05031118	177.14	85.05151153	177.17
85.05281151	177.18	85.06131100	177.22
85.06270856	177.13	85.07101106	177.22
85.08071334	177.38		

WELL 699-47-50

Well 699-47-60

Borehole number: 699-47-60 .
 Casing elevation: 649.84
 Borehole location: N 47137.00 W 60286.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	247.22	83.0615	246.99
83.1215	246.70	84.05291432	245.78
84.06131129	245.75	84.0615	245.75
84.06201303	245.74	84.07111146	245.63
84.07251052	245.64	84.08081030	245.61
84.08221110	245.62	84.09051129	245.68
84.09200821	245.60	84.10031101	245.64
84.10191058	245.71	84.11011236	245.73
84.11201237	245.81	84.12121550	245.79
84.12281058	245.70	85.01101251	245.74
85.01240955	245.59	85.02061010	245.45
85.02211040	245.34	85.03071112	245.34
85.03221440	245.26	85.04030820	245.20
85.04171315	245.10	85.05031154	245.17
85.05151230	245.27	85.05301013	245.40
85.06131144	245.52	85.06270941	245.52
85.07101145	245.62	85.08091153	245.53

WELL 699-47-60

Well 699-49-55A

Well 699-49-55B

Borehole number: 699-49-55A
 Casing elevation: 530.14
 Borehole location: N 48805.00 W 54926.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	127.50	83.0615	127.34
83.1215	126.81	84.05311258	126.05
84.06131104	125.96	84.0615	125.96
84.06201249	125.95	84.06271047	125.94
84.07111135	125.82	84.07251035	125.75
84.08081017	125.69	84.08221057	125.70
84.09061118	125.70	84.09200809	125.51
84.10031050	125.66	84.10191041	125.76
84.11011149	125.77	84.11201158	125.91
84.12121525	125.89	84.12281033	125.80
85.01101240	125.79	85.01240939	125.70
85.02060955	125.60	85.02211023	125.57
85.03071100	125.60	85.03221425	125.51
85.04030801	125.52	85.04171255	125.40
85.05031141	125.45	85.05151218	125.45
85.05300957	125.59	85.06131130	125.61
85.06270927	125.58	85.07101130	125.69
85.08091141	125.52		

Borehole number: 699-49-55B
 Casing elevation: 530.33
 Borehole location: N 48803.00 W 54951.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0525	127.92	82.0614	128.15
82.0824	127.72	82.0831	127.75
82.0915	127.65	82.1015	127.59
82.1018	127.32	82.1025	127.55
82.1116	127.42	82.1215	127.46
83.0118	127.29	83.0215	127.26
83.0321	127.23	83.0419	127.36
83.0520	127.32	83.0615	127.32
83.0715	127.20	83.0815	127.19
83.0915	127.08	83.1018	127.01
83.1115	127.00	83.1214	126.89
83.1215	126.91	84.05311300	126.14
84.06131111	126.07	84.06201253	126.02
84.07111138	125.95	84.07251039	125.89
84.08081021	125.88	84.08221100	125.84
84.09051122	125.86	84.09200814	125.75
84.10031053	125.81	84.10191045	125.90
84.11011152	125.93	84.11201201	126.00
84.12121530	125.96	84.12281039	125.89

Borehole number 699-49-55B (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.01101243	125.94	85.01240943	125.81
85.02060959	125.71	85.02211027	125.64
85.03071104	125.64	85.03221427	125.55
85.04030805	125.50	85.04171258	125.44
85.05031145	125.49	85.05151220	125.54
85.05300959	125.66	85.06131133	125.71
85.06270930	125.69	85.07101134	125.79
85.08091143	125.69		

WELLS 699-49-55A,B

Well 699-50-45

Borehole number: 699-50-45
 Casing elevation: 451.41
 Borehole location: N 50150.00 W 44992.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0614	44.43	82.0622	44.40
82.0712	44.40	82.0722	44.57
82.0915	44.47	82.1015	44.57
82.1116	44.24	82.1215	44.30
83.0118	44.14	83.0215	44.24
83.0321	44.11	83.0419	44.07
83.0520	44.24	83.0615	44.17
83.0715	44.10	83.0815	44.08
83.0915	44.05	83.1018	44.07
83.1115	43.98	83.1214	43.93
83.1215	43.93	84.06041128	42.91
84.06150949	43.09	84.06201028	43.28
84.07131020	42.96	84.07270959	42.90
84.08100957	42.89	84.08241122	42.85
84.09071009	42.87	84.09201326	42.73
84.10051046	42.90	84.10231037	43.06
84.11021034	42.62	84.11211351	43.06
84.12131422	42.99	84.12281311	42.75
85.01110839	43.13	85.01241300	42.92
85.02061255	42.75	85.02220850	42.57
85.03080935	42.66	85.03221728	42.49
85.04031610	42.50	85.04190904	42.42
85.05031601	42.41	85.05171015	42.44
85.05311045	42.41	85.06141046	42.50
85.06271247	42.53	85.07120950	42.56
85.08091500	42.51		

WELL 699-50-45

Well 699-50-48

Borehole number: 699-50-48
 Casing elevation: 550.39
 Borehole location: N 49980.00 W 47588.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0614	144.30	82.0730	144.17
82.0805	144.10	82.0915	144.04
82.1015	143.64	82.1022	143.71
82.1029	143.81	82.1116	144.46
82.1215	143.97	83.0118	143.74
83.0215	143.64	83.0321	143.91
83.0419	143.68	83.0520	143.58
83.0615	143.51	83.0715	143.35
83.0815	143.31	83.0915	143.16
83.1018	143.09	83.1115	143.08
83.1214	143.02	83.1215	143.02
84.06131030	142.35	84.06201129	142.49
84.06271019	142.46	84.07111116	142.31
84.07251005	142.26	84.08080951	142.33
84.08221030	142.31	84.09061055	142.43
84.09191447	142.35	84.10031029	142.48
84.10191026	142.62	84.11011131	142.66
84.11201143	142.57	84.12130855	142.70
84.12281003	142.50	85.01091539	142.54
85.01240924	142.40	85.02060943	142.20
85.02211008	142.12	85.03071046	142.19
85.03221411	142.07	85.04030740	141.97
85.04171041	141.93	85.05031126	142.01
85.05151159	142.24	85.05281159	142.17
85.06131108	142.38	85.06270909	142.27
85.07101113	142.29	85.08071345	142.20

WELL 699-50-48

Well 699-50-53

Borehole number: 699-50-53
 Casing elevation: 556.30
 Borehole location: N 49840.00 W 53267.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	153.81	83.0615	153.55
83.1215	153.19	84.05311249	153.36
84.06131050	152.31	84.0615	152.40
84.06201242	152.30	84.06271038	152.30
84.07111128	152.24	84.07251028	152.21
84.08081009	152.16	84.08221046	152.12
84.09061111	152.10	84.09200801	152.06
84.10031042	152.05	84.10191035	152.07
84.11011139	152.13	84.11201150	152.19
84.12121511	152.17	84.12281019	152.12
85.01091546	152.13	85.01240931	152.09
85.02060950	152.05	85.02211016	151.98
85.03071054	151.91	85.03221418	151.88
85.04030750	151.85	85.04171245	151.77
85.05031133	151.72	85.05151209	151.70
85.05300945	151.77	85.06131119	151.88
85.06270917	151.84	85.07101120	151.94
85.08091130	151.94		

WELL 699-50-53

Well 699-50-85

Borehole number: 699-50-85
 Casing elevation: 739.35
 Borehole location: N 49873.00 W 84505.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	282.26	83.0615	282.33
83.1215	282.66	84.05311408	282.52
84.06131325	282.31	84.0615	282.23
84.06201354	282.23	84.07111326	282.19
84.07251249	282.16	84.08081126	282.38
84.08221309	282.20	84.09061337	282.39
84.09201158	282.00	84.10031304	282.15
84.10191244	282.32	84.11211145	282.65
84.12131020	282.69	84.12281243	282.18
85.01101349	282.62	85.01241044	282.47
85.02061104	282.23	85.03221540	282.25
85.04031010	282.32	85.04171412	282.58
85.05031315	282.94	85.05151345	282.41
85.05301115	282.32	85.06131334	282.34
85.06271035	282.25	85.07101308	282.61
85.08091310	282.47		

Borehole number: 699-50-85(P)
 Casing elevation: 739.35
 Borehole location: N 49873.00 W 84505.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-LOWER CLAYS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06131334	281.80	84.06201359	280.15
84.07111331	280.20	84.07251255	280.31
84.08081139	291.90	84.08221314	291.81
84.09061344	291.82	84.09201202	291.75
84.10031312	291.79	84.10191299	291.81
84.11211150	291.95	84.12131004	291.90
84.12281252	291.64	85.01101354	292.00
85.01241050	291.93	85.02061111	291.80
85.02211138	291.76	85.03071242	291.68
85.03221545	291.67	85.04031023	291.75
85.04171420	291.63	85.05031322	291.73
85.05151351	291.86	85.05301130	291.79
85.06131340	291.81	85.06271040	291.78
85.07101323	291.81	85.08091320	291.80

WELLS 699-50-85,(P)

Well 699-51-46

Borehole number: 699-51-46
 Casing elevation: 444.63
 Borehole location: N 50915.00 W 46414.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0614	37.92	82.0618	38.25
82.0915	38.28	82.1015	38.21
82.1022	38.15	82.1116	38.02
82.1215	38.02	83.0118	37.88
83.0215	37.95	83.0321	37.95
83.0419	37.88	83.0520	37.92
83.0615	37.88	83.0715	37.75
83.0815	37.76	83.0915	37.68
83.1018	37.66	83.1115	37.59
83.1214	37.53	83.1215	37.53
84.06041328	36.46	84.06150955	36.54
84.06201031	36.59	84.07111025	36.41
84.07271003	36.40	84.08101011	36.36
84.08241128	36.24	84.09071013	36.50
84.09201330	36.42	84.10051051	36.62
84.10191043	36.75	84.11021042	36.49
84.11211355	36.76	84.12131410	36.75
84.12281320	36.58	85.01110850	36.80
85.01241306	36.59	85.02061300	36.40
85.02220856	36.29	85.03080939	36.38
85.03221731	36.20	85.04031620	36.14
85.04190909	36.05	85.05031606	36.12
85.05171022	36.25	85.05311052	36.22
85.06141053	36.34	85.06271253	36.36
85.07121029	36.33	85.08091505	36.28

WELL 699-51-46

Well 699-51-63

Borehole number: 699-51-63
 Casing elevation: 571.84
 Borehole location: N 51449.00 W 63060.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	168.12	83.0615	166.90
83.1215	166.71	84.05311309	166.02
84.06131139	165.98	84.0615	166.02
84.06201311	166.00	84.07111155	165.92
84.07251103	165.90	84.08081045	165.89
84.08221125	165.86	84.09061141	165.88
84.09200830	165.84	84.10031113	165.83
84.10191108	165.80	84.11011250	165.80
84.11201252	165.77	84.12121611	165.80
84.12281114	165.75	85.01101259	165.83
85.01241006	165.75	85.02061019	165.72
85.02211049	165.62	85.03071121	165.57
85.03221450	165.54	85.04030838	165.51
85.04171331	165.45	85.05031206	165.44
85.05151238	165.46	85.05301025	165.52
85.06131158	165.60	85.06270951	165.56
85.07101156	165.63	85.08091205	165.62

WELL 699-51-63

Well 699-51-75

Borehole number: 699-51-75
 Casing elevation: 641.51
 Borehole location: N 50667.00 W 75151.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS/RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
83.0615	193.87	83.1215	191.18
84.05311345	190.96	84.06131308	190.88
84.0615	190.95	84.06201340	190.84
84.07111309	190.64	84.07251232	190.71
84.08081113	190.86	84.08221257	190.79
84.09061320	190.98	84.09200855	190.67
84.10031248	190.75	84.10191230	190.86
84.11211128	191.08	84.12130919	191.10
84.12281215	190.80	85.01101335	191.05
85.01241029	190.93	85.02211114	190.81
85.03071210	190.85	85.03221515	190.68
85.04030924	190.87	85.04171400	190.68
85.05031250	190.79	85.05151312	190.76
85.05301054	190.75	85.06131317	190.85
85.06271019	190.71	85.07101254	190.81
85.08091245	190.73		

Borehole number: 699-51-75(P)
 Casing elevation: 641.51
 Borehole location: N 50667.00 W 75151.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-BASAL GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06131314	190.65	84.06201343	190.96
84.07111314	190.96	84.07251236	190.94
84.08081118	191.04	84.08221300	190.97
84.09061327	191.03	84.09200901	190.84
84.10031252	190.90	84.10191234	191.03
84.11211132	191.27	84.12130926	191.29
84.12281223	190.95	85.01101339	191.24
85.01241033	191.12	85.02211118	191.00
85.03071214	191.03	85.03221518	190.80
85.04030933	191.03	85.04171404	190.83
85.05031254	190.97	85.05151317	190.91
85.05301058	190.92	85.06131321	190.94
85.06271024	190.89	85.07101258	190.93
85.08091249	190.90		

WELLS 699-51-75,(P)

Well 699-52-46A

Borehole number: 699-52-46A
 Casing elevation: 455.61
 Borehole location: N 52196.00 W 45706.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0614	48.37	82.0915	48.37
82.1015	48.54	82.1116	48.18
82.1215	48.24	83.0118	48.08
83.0215	48.14	83.0321	48.08
83.0419	48.04	83.0520	48.18
83.0615	48.14	83.0715	48.04
83.0815	48.06	83.0915	48.00
83.1018	48.06	83.1115	47.99
83.1214	47.96	83.1215	47.97
84.06041244	46.97	84.06151128	47.09
84.06221119	47.27	84.07131118	47.12
84.07271050	47.05	84.08101044	46.98
84.08241248	47.03	84.09071059	47.08
84.09201403	46.95	84.10051142	47.12
84.10231226	47.25	84.11021137	46.80
84.11211437	47.24	84.12131625	47.19
84.12281331	46.95	85.01111014	47.33
85.01241400	47.11	85.02061349	46.91
85.02220942	46.82	85.03081019	46.90
85.03221817	46.69	85.04031543	46.65
85.04191003	46.62	85.05031708	46.62
85.05031708	46.62	85.05171125	46.67
85.05311139	46.59	85.06141142	46.69
85.06271341	46.69	85.07121100	46.73
85.08091550	46.71		

WELL 699-52-46A

Well 699-52-48

Borehole number: 699-52-48
 Casing elevation: 466.06
 Borehole location: N 51556.00 W 48076.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0614	60.13	82.0621	60.13
82.0722	60.13	82.0729	60.10
82.0915	60.13	82.1015	60.10
82.1116	58.99	82.1215	59.97
83.0118	59.81	83.0215	59.77
83.0321	59.77	83.0419	59.74
83.0520	59.68	83.0615	59.68
83.0715	59.57	83.0815	59.55
83.0915	59.43	83.1018	59.40
83.1115	59.41	83.1214	59.40
83.1215	59.42	84.06011330	58.48
84.06151003	58.38	84.06201034	58.43
84.07131030	58.33	84.07171205	58.28
84.07191205	58.25	84.07201205	58.25
84.07211205	58.23	84.07221205	58.24
84.07231205	58.23	84.07250928	58.35
84.07260928	58.33	84.07270928	58.34
84.07280928	58.33	84.07290928	58.31
84.07300928	58.32	84.07311105	58.33
84.08011105	58.33	84.08021105	58.36
84.08031105	58.37	84.08041105	58.36
84.08051105	58.35	84.08061105	58.39
84.08071328	58.37	84.08081328	58.35
84.08091328	58.34	84.08101328	58.34
84.08111328	58.34	84.08121328	58.36
84.08131328	58.38	84.08141227	58.39
84.08151227	58.39	84.08161227	58.40
84.08171227	58.40	84.08181227	58.41
84.08191227	58.42	84.08201227	58.42
84.08211430	58.40	84.08221430	58.41
84.08231430	58.42	84.08241430	58.43
84.08251430	58.44	84.08261430	58.43
84.08271430	58.45	84.08280851	58.50
84.08290851	58.50	84.08300851	58.49
84.08310851	58.47	84.09010851	58.51
84.09020851	58.51	84.09030851	58.50
84.09040851	58.49	84.09051424	58.46
84.09061424	58.50	84.09071424	58.51
84.09081424	58.50	84.09091424	58.50
84.09101424	58.48	84.09111353	58.49
84.09121353	58.54	84.09131353	58.56
84.09141353	58.52	84.09151353	58.51
84.09161353	58.52	84.09171353	58.52
84.09181156	58.55	84.09191156	58.56
84.09201156	58.52	84.09211156	58.55

Borehole number 699-52-48 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.09221156	58.54	84.09231156	58.58
84.09241156	58.61	84.09251156	58.59
84.09260945	58.60	84.09270945	58.63
84.09280945	58.64	84.09290945	58.61
84.09300945	58.58	84.10010945	58.62
84.10020945	58.63	84.10031522	58.58
84.10041522	58.61	84.10051522	58.63
84.10061522	58.65	84.10071522	58.63
84.10081522	58.60	84.10091236	58.60
84.10101236	58.56	84.10111236	58.61
84.10121236	58.61	84.10131236	58.65
84.10141236	58.64	84.10151236	58.66
84.10161126	58.64	84.10171126	58.65
84.10181126	58.69	84.10191126	58.68
84.10201126	58.69	84.10211126	58.71
84.10221126	58.72	84.10231048	58.71
84.10241048	58.71	84.10251048	58.64
84.10261048	58.65	84.10271048	58.69
84.10281048	58.68	84.10291048	58.73
84.10301110	58.70	84.11071248	58.76
84.11201448	58.74	84.11211448	58.77
84.11221448	58.76	84.11231448	58.69
84.11241448	58.72	84.11251448	58.77
84.11261448	58.79	84.11271448	58.68
84.12111506	58.77	84.12121506	58.77
84.12131506	58.81	84.12141506	58.71
84.12151506	58.75	84.12161506	58.79
84.12171506	58.80	84.12181420	58.82
84.12191420	58.80	84.12201420	58.76
84.12261535	58.70	84.12271535	58.69
84.12281535	58.74	84.12291535	58.76
84.12301535	58.80	84.12311535	58.83
85.01011535	58.81	85.01021435	58.86
85.01031435	58.85	85.01041435	58.82
85.01051435	58.81	85.01061435	58.79
85.01071435	58.77	85.01081244	58.79
85.01091244	58.81	85.01101244	58.83
85.01111244	58.85	85.01121244	58.82
85.01131244	58.80	85.01141244	58.77
85.01151010	58.80	85.01161010	58.81
85.01171010	58.78	85.01181010	58.76
85.01191010	58.77	85.01201010	58.76
85.01211010	58.77	85.01221257	58.75
85.01231257	58.75	85.01241257	58.75
85.01251257	58.74	85.01261257	58.73
85.01271257	58.70	85.01281257	58.69
85.01291144	58.71	85.01301144	58.72

Borehole number 699-52-48 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.01311144	58.71	85.02011144	58.63
85.02021144	58.67	85.02051710	58.69
85.02061710	58.65	85.02071710	58.60
85.02081710	58.66	85.02091710	58.69
85.02101710	58.70	85.02111710	58.65
85.02121205	58.69	85.02131205	58.69
85.02141205	58.64	85.02151205	58.64
85.02161205	58.63	85.02171205	58.63
85.02181205	58.62	85.02191512	58.55
85.02201512	58.60	85.02211512	58.59
85.02221512	58.61	85.02231512	58.60
85.02241512	58.62	85.02251512	58.63
85.02261247	58.60	85.02271247	58.59
85.02281247	58.57	85.03011247	58.57
85.03021247	58.59	85.03031247	58.58
85.03041247	58.55	85.03051110	58.57
85.03061110	58.57	85.03071110	58.60
85.03081110	58.62	85.03091110	58.59
85.03101110	58.58	85.03111110	58.57
85.03121110	58.58	85.03130956	58.57
85.03140956	58.54	85.03150956	58.55
85.03160956	58.54	85.03170956	58.53
85.03180956	58.53	85.03190956	58.52
85.03201129	58.52	85.03211129	58.51
85.03221129	58.50	85.03231129	58.48
85.03241129	58.49	85.03251129	58.50
85.03261053	58.43	85.03271053	58.45
85.03281053	58.52	85.03291053	58.53
85.03301053	58.48	85.03311053	58.51
85.04011053	58.50	85.04021053	58.48
85.04031630	58.44	85.04041630	58.45
85.04051630	58.44	85.04061630	58.45
85.04071630	58.45	85.04081630	58.44
85.04091424	58.41	85.04101424	58.41
85.04111424	58.44	85.04121424	58.45
85.04131424	58.41	85.04141424	58.38
85.04151424	58.35	85.04161424	58.38
85.04171048	58.39	85.04181048	58.39
85.04191048	58.40	85.04201048	58.38
85.04211048	58.37	85.04221048	58.40
85.04231048	58.44	85.04241131	58.43
85.04251131	58.42	85.04261131	58.39
85.04271131	58.38	85.04281131	58.39
85.04291131	58.43	85.04301131	58.41
85.05011343	58.39	85.05021343	58.41
85.05031343	58.45	85.05041343	58.46
85.05051343	58.42	85.05061343	58.43

Borehole number 699-52-48 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.05071800	58.44	85.05081800	58.46
85.05091800	58.45	85.05101800	58.45
85.05111800	58.49	85.05121800	58.50
85.05131800	58.48	85.05141002	58.52
85.05151002	58.53	85.05161002	58.51
85.05171002	58.51	85.05181002	58.50
85.05191002	58.50	85.05201002	58.53
85.05211112	58.54	85.05221112	58.53
85.05231112	58.51	85.05241112	58.51
85.05251112	58.50	85.05261112	58.48
85.05281009	58.52	85.05291009	58.52
85.05301009	58.53	85.05311009	58.52
85.06011009	58.53	85.06021009	58.55
85.06031009	58.54	85.06041009	58.54
85.06051038	58.52	85.06061038	58.52
85.06071038	58.51	85.06081038	58.60
85.06091038	58.57	85.06101038	58.57
85.06110919	58.58	85.06120919	58.56
85.06130919	58.57	85.06140919	58.57
85.06150919	58.59	85.06160919	58.61
85.06170919	58.60	85.06180919	58.58
85.06190947	58.58	85.06200947	58.59
85.06210947	58.61	85.06220947	58.61
85.06230947	58.63	85.06240947	58.63
85.06251007	58.66	85.06261007	58.66
85.06271007	58.64	85.06281007	58.65
85.06291007	58.62	85.06301007	58.67
85.07010928	58.63	85.07020928	58.61
85.07030928	58.60	85.07040928	58.59
85.07050928	58.60	85.07060928	58.59
85.07070928	58.58	85.07080928	58.59
85.07091402	58.59	85.07101402	58.60
85.07111402	58.60	85.07121402	58.59
85.07131402	58.61	85.07141402	58.59
85.07151402	58.58	85.07161148	58.60
85.07171148	58.61	85.07181148	58.62
85.07191148	58.61	85.07201148	58.60
85.07211148	58.60	85.07221148	58.60
85.07231148	58.60	85.07251050	58.62
85.07261050	58.62	85.07271050	58.62
85.07281050	58.62	85.07291050	58.61
85.07301050	58.61	85.08011307	58.67
85.08021307	58.68	85.08031307	58.68
85.08041307	58.66	85.08051307	58.68
85.08061603	58.64	85.08071603	58.65
85.08081603	58.67	85.08091603	58.66
85.08101603	58.68	85.08111603	58.66

Borehole number 699-52-48 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.08121603.	58.66	85.08131116	58.70
85.08211315	58.73	85.08221315	58.73
85.08231315	58.73	85.08241315	58.71
85.08251315	58.71	85.08261315	58.72
85.08271048	58.73	85.08281048	58.73
85.08291048	58.72	85.08301048	58.74
85.08311048	58.75	85.09011048	58.73
85.09021048	58.74	85.09031502	58.68

WELL 699-52-48

LEGEND

— 699-52-48

Well 699-53-47A

Well 699-53-47B

Borehole number: 699-53-47A
 Casing elevation: 438.28
 Borehole location: N 52518.00 W 47463.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	27.13	83.0615	26.12
83.1215	26.74	84.06151110	25.90
84.06221111	25.88	84.07131113	26.00
84.07271041	26.66	84.08101035	27.45
84.08241239	28.47	84.09071053	28.66
84.09201359	28.77	84.10051133	29.26
84.10231218	29.47	84.11021125	29.38
84.11211428	28.97	84.12131605	29.20
84.12281458	29.40	85.01110941	29.00
85.01241343	28.67	85.02061336	28.35
85.02220931	28.30	85.03081015	28.45
85.03221808	27.94	85.04031528	27.69
85.04190954	27.72	85.05031701	28.24
85.05031701	28.24	85.05171111	29.01
85.05311132	28.58	85.06141134	29.08
85.06271332	28.92	85.07121048	29.13
85.08091541	28.71		

Borehole number: 699-53-47B
 Casing elevation: 438.58
 Borehole location: N 52505.00 W 47468.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06011342	26.78	84.06151112	26.50
84.06221113	26.93	84.07131114	26.98
84.07271043	26.74	84.08101038	27.57
84.08241242	28.59	84.09071055	28.84
84.09201400	28.94	84.10051136	29.45
84.10231220	29.66	84.11021128	29.58
84.11211430	29.14	84.12131610	29.40
84.12281503	29.62	85.01110945	29.19
85.01241347	28.88	85.02061338	28.55
85.02220933	28.46	85.03071017	28.62
85.03221810	28.11	85.04031533	27.88
85.04190956	27.92	85.05031703	28.11
85.05031703	28.11	85.05171114	29.23
85.05311134	28.79	85.06141136	29.32
85.06271335	29.13	85.07121051	28.48
85.08091543	28.97		

WELLS 699-53-47A,B

Well 699-53-48A

Well 699-53-48B

Borehole number: 699-53-48A
 Casing elevation: 442.45
 Borehole location: N 52862.00 W 47721.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06151056	35.95	84.06221106	36.16
84.07131108	36.03	84.07271035	36.69
84.08101029	36.92	84.08241232	36.94
84.09071040	36.84	84.09201350	36.62
84.10051122	36.73	84.10231212	36.65
84.11021117	36.58	84.11211422	36.65
84.12131532	36.61	84.12281446	36.59
85.01110934	36.56	85.01241332	36.53
85.02061329	36.17	85.02220926	35.83
85.03081008	36.12	85.03221800	35.54
85.04031505	35.33	85.04190946	35.09
85.05031653	35.64	85.05031653	35.64
85.05171101	36.39	85.05311124	36.16
85.06141125	36.43	85.06271324	36.20
85.07121038	36.38	85.08091535	36.17

Borehole number: 699-53-48B
 Casing elevation: 442.71
 Borehole location: N 52868.00 W 47729.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06011347	36.25	84.06151058	35.56
84.06221108	36.62	84.07131109	36.42
84.07271037	36.72	84.08101031	36.79
84.08241234	36.86	84.09071049	38.76
84.09201353	36.87	84.10051126	38.70
84.10231215	37.02	84.11021119	36.88
84.11211424	36.92	84.12131536	36.89
84.12281450	36.79	85.01110938	36.90
85.01241337	37.09	85.02061332	36.69
85.02220928	36.65	85.03081012	36.71
85.03221802	36.19	85.04031510	35.99
85.04190949	35.83	85.05031656	36.39
85.05031656	36.39	85.05171104	36.74
85.05311126	36.70	85.06271327	36.95
85.08091537	36.98		

WELLS 699-53-48A,B

Well 699-53-50

Borehole number: 699-53-50
 Casing elevation: 444.21
 Borehole location: N 53219.00 W 50196.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0614	39.96	82.0621	39.93
82.0915	39.83	82.1015	39.70
82.1022	39.66	82.1029	39.66
82.1116	39.53	82.1215	39.50
83.0118	39.30	83.0215	39.47
83.0321	39.43	83.0419	39.47
83.0520	39.37	83.0615	39.47
83.0715	39.33	83.0819	39.31
83.0915	39.19	83.1018	39.23
83.1115	39.21	83.1214	39.14
83.1215	39.14	84.06011318	38.45
84.06151009	38.26	84.06201039	38.33
84.07131036	38.19	84.07271010	38.19
84.08101009	38.15	84.08241135	38.25
84.09071017	38.30	84.09201335	38.14
84.10051057	38.37	84.10231055	38.48
84.11021048	38.17	84.11211401	38.47
84.12141101	38.26	84.12261411	38.21
85.01110901	38.47	85.01241313	38.21
85.02061305	38.00	85.02220904	37.96
85.03080945	38.04	85.03221739	37.75
85.04031356	37.69	85.04190917	37.72
85.05031617	37.77	85.05171030	37.92
85.05311100	37.95	85.06141100	38.05
85.06271300	38.08	85.07121022	38.14
85.08091511	38.07		

WELL 699-53-50

Well 699-53-55A

Well 699-53-55B

Well 699-53-55C

Borehole number: 699-53-55A
 Casing elevation: 575.60
 Borehole location: N 53006.00 W 55014.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06150926	171.74	84.06201010	171.78
84.07130955	171.68	84.07270938	171.76
84.08100934	171.76	84.08240957	171.81
84.09070950	171.83	84.09201308	171.81
84.10051022	171.87	84.10191348	171.88
84.11021008	171.86	84.11211330	171.97
84.12131314	171.98	84.12261334	171.85
85.01110805	171.88	85.01241234	171.76
85.02061229	171.09	85.02220825	171.36
85.03080914	171.34	85.03221704	171.20
85.04031323	171.09	85.04190840	170.97
85.05031442	171.03	85.05170949	171.24
85.05301349	171.34	85.06141021	171.44
85.06271219	171.58	85.07120915	171.66
85.08091430	171.62		

Borehole number: 699-53-55A(P)
 Casing elevation: 575.60
 Borehole location: N 53006.00 W 55014.00 (Hanford Coordinates)
 Hydrogeologic unit: POMONA MEMBER

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06041357	171.29	84.06150930	171.36
84.06201014	171.04	84.07130958	171.32
84.07270941	171.31	84.08100938	171.26
84.08241001	171.33	84.09070953	171.36
84.09201312	171.22	84.10051028	171.38
84.10191352	171.36	84.11021012	171.21
84.11211334	171.51	84.12131324	171.53
84.12261342	171.26	85.01110809	171.48
85.01241238	171.26	85.02061233	171.05
85.02220829	170.95	85.03080918	171.04
85.03221709	170.77	85.04031328	170.71
85.04190844	170.70	85.05031446	170.71
85.05170953	170.89	85.05301353	171.00
85.06141025	171.03	85.06271224	171.12
85.07120919	170.94	85.08091434	171.04

Borehole number: 699-53-55B
 Casing elevation: 576.13
 Borehole location: N 52979.00 W 55030.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	173.89	83.0615	173.70
83.1215	173.50	84.06041410	172.62
84.06150934	172.57	84.06201019	172.61
84.07131001	172.51	84.07270944	172.60
84.08100942	172.60	84.08241004	172.66
84.09070956	172.70	84.09201316	172.66
84.10051032	172.74	84.10191356	172.72
84.11021015	172.73	84.11211338	172.80
84.12131330	172.79	84.12261346	172.71
85.01110814	172.76	85.01241242	172.60
85.02061237	172.40	85.02220833	172.19
85.03080922	172.16	85.03221714	172.03
85.04031336	171.90	85.04190848	171.80
85.05031449	171.84	85.05170957	172.05
85.05301357	172.16	85.06141029	172.27
85.06271229	172.43	85.07120924	172.53
85.08091439	172.52		

Borehole number: 699-53-55C
 Casing elevation: 576.05
 Borehole location: N 52976.00 W 55015.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06041405	172.28	84.06150937	172.24
84.06201023	172.27	84.07131004	172.19
84.07270947	172.24	84.08100946	172.27
84.08241008	172.30	84.09070959	172.35
84.09201319	172.33	84.10051035	172.39
84.10191400	172.37	84.11021019	172.37
84.11211341	172.44	84.12131341	172.53
84.12261355	172.37	85.01110819	172.41
85.01241246	172.25	85.02061241	172.19
85.02220837	171.85	85.03080926	171.82
85.03221718	171.69	85.04031343	171.61
85.04190852	171.47	85.05031453	171.50
85.05171001	171.72	85.05301402	171.83
85.06141033	171.93	85.06271232	172.10
85.07120928	172.18	85.08091444	172.16

WELLS 699-53-55A,A(P),B,C

Well 699-54-45A

Well 699-54-45B

Borehole number: 699-54-45A
 Casing elevation: 494.29
 Borehole location: N 54203.00 W 44506.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06041308	96.83	84.06151138	97.14
84.06221130	97.28	84.07131125	97.19
84.07271057	97.13	84.08101050	97.02
84.08241255	97.14	84.09071105	97.19
84.09201412	96.96	84.10051149	97.23
84.10231236	97.38	84.11021148	96.68
84.11211444	97.36	84.12131645	97.33
84.12281345	96.99	85.01111020	97.46
85.01241405	97.21	85.02061353	97.05
85.02220955	97.12	85.03081023	97.30
85.03221824	97.02	85.04031555	97.06
85.04191011	97.05	85.05031715	97.10
85.05031715	97.10	85.05171135	97.04
85.05311150	97.02	85.06141154	97.08
85.06271349	97.07	85.07121110	97.15
85.08091600	97.19		

Borehole number: 699-54-45B
 Casing elevation: 492.94
 Borehole location: N 54250.00 W 44510.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06041313	30.05	84.06151143	30.11
84.06221134	30.14	84.07131128	30.24
84.07271059	30.29	84.08101052	30.35
84.08241257	30.41	84.09071108	30.49
84.09201417	30.52	84.10051153	30.58
84.10231241	30.62	84.11021152	30.68
84.11211447	30.75	84.12131652	30.85
84.12281351	30.89	85.01111024	30.95
85.01241409	31.00	85.02061356	31.05
85.02220959	31.10	85.03081025	31.16
85.03221826	31.25	85.04031600	31.27
85.04191014	31.33	85.05031718	31.37
85.05031718	31.37	85.05171138	31.40
85.05311153	31.42	85.06141156	31.48
85.06271351	31.50	85.07121113	31.60
85.08091602	31.65		

WELLS 699-54-45A,B

Well 699-54-48

Borehole number: 699-54-48
 Casing elevation: 457.02
 Borehole location: N 53607.00 W 47656.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06011352	52.49	84.06151050	52.23
84.06221102	52.56	84.07131100	52.31
84.07271031	52.63	84.08101026	52.79
84.08241150	52.91	84.09071036	51.99
84.09201347	53.01	84.10051117	53.05
84.10231134	53.07	84.11021110	53.12
84.11211416	52.93	84.12131545	53.01
84.12281438	53.01	85.01110924	52.79
85.01241340	52.42	85.02061326	51.92
85.02220923	51.65	85.03081004	51.74
85.03221755	51.23	85.04031516	51.03
85.04190941	51.03	85.05031648	51.51
85.05171054	52.22	85.05311119	52.13
85.06141119	52.57	85.06271318	52.70
85.07121000	52.56	85.08091530	52.72

WELL 699-54-48

Well 699-54-57

Borehole number: 699-54-57
 Casing elevation: 575.58
 Borehole location: N 54311.00 W 56639.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0517	173.10	82.0614	172.44
82.0722	173.40	82.0729	173.40
82.0915	173.17	82.1015	173.17
82.1116	173.07	82.1123	173.10
82.1129	173.00	82.1207	173.10
82.1215	172.97	83.0118	172.74
83.0215	172.74	83.0321	172.80
83.0323	172.87	83.0419	172.87
83.0520	172.64	83.0615	172.77
83.0715	172.63	83.0815	172.59
83.0915	172.47	83.1018	172.53
83.1115	172.57	83.1214	172.51
83.1215	172.51	84.06011308	171.68
84.06150915	171.59	84.06200957	171.65
84.07130944	171.54	84.07270931	171.59
84.08100925	171.56	84.08240948	171.64
84.09070944	171.68	84.09141405	171.53
84.09181219	171.56	84.09191219	171.56
84.09201219	171.59	84.09211219	171.58
84.09221219	171.59	84.09231219	171.56
84.09241219	171.53	84.09251219	171.54
84.09261117	171.69	84.09271415	171.69
84.10031443	171.62	84.10091126	171.63
84.10161046	171.63	84.10231029	171.65
84.10301022	171.72	84.11201403	171.75
84.12111428	171.75	84.12181254	171.78
84.12261320	171.65	85.01021322	171.73
85.01081134	171.68	85.01150916	171.65
85.01221210	171.55	85.01291100	171.45
85.02051630	171.32	85.02121056	171.34
85.02191440	171.08	85.02261212	171.16
85.03051032	171.12	85.03130911	171.11
85.03201016	171.03	85.04031311	170.91
85.04091336	170.85	85.04171148	170.84
85.04241039	170.90	85.05011238	170.85
85.05071610	170.96	85.05141054	171.10
85.05211025	171.26	85.05280916	171.23
85.06050953	171.28	85.06111039	171.32
85.06191124	171.40	85.06250920	171.49
85.07011008	171.51	85.07091320	171.48
85.07161105	171.50	85.07250940	171.49
85.08011134	171.50	85.08061527	171.45
85.08131040	171.54	85.08211149	171.49
85.08270944	171.48	85.09031418	171.32

WELL 699-54-57

Well 699-55-50A

Not to Scale

Well 699-55-50D

Borehole number: 699-55-50A
 Casing elevation: 442.81
 Borehole location: N 55006.00 W 49999.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06011401	38.11	84.06151029	38.10
84.06221051	38.12	84.07131050	38.11
84.07271016	38.28	84.08101017	38.28
84.08241141	38.33	84.09071025	38.38
84.09201339	38.43	84.10051103	38.47
84.10231118	38.52	84.11021058	38.56
84.11211406	38.68	84.12131459	38.66
84.12281406	38.71	85.01110911	38.74
85.01241319	38.71	85.02061313	38.62
85.02220910	38.42	85.03080952	38.42
85.03221746	38.24	85.04031430	38.01
85.04190926	37.77	85.05031630	37.67
85.05171040	37.68	85.05311108	37.69
85.06141109	37.75	85.06271308	37.95
85.07121010	38.05	85.08091516	38.08

Borehole number: 699-55-50A(P)
 Casing elevation: 443.01
 Borehole location: N 55006.00 W 49999.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06011402	38.68	84.06151032	38.46
84.06221053	38.60	84.07131051	38.54
84.07271019	38.76	84.08101018	38.89
84.08241143	39.00	84.09071026	39.03
84.09201341	39.07	84.10051107	39.08
84.10231120	39.13	84.11021101	39.17
84.11211408	38.90	84.12131507	39.05
84.12281412	39.07	85.01110915	38.79
85.01241323	38.37	85.02061316	37.95
85.02220912	37.76	85.03080956	37.77
85.03221748	37.29	85.04031434	37.05
85.04190929	37.22	85.05031632	37.60
85.05171042	38.32	85.05311110	38.26
85.06141111	38.63	85.06271310	38.74
85.07121012	38.54	85.08091519	38.73

Borehole number: 699-55-50A(Q)
 Casing elevation: 443.03
 Borehole location: N 55006.00 W 49999.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06011403	38.67	84.06151034	38.48
84.06221056	38.64	84.07131053	38.55
84.07271022	38.79	84.08101020	38.90
84.08241145	39.00	84.09071027	39.06
84.09201343	39.08	84.10051110	39.09
84.10231022	39.14	84.11021104	39.17
84.11211410	38.92	84.12131512	39.06
84.12281418	39.08	85.01110919	38.79
85.01241327	38.40	85.02061318	37.97
85.02220914	37.78	85.03081000	37.79
85.03221750	37.31	85.04031437	37.07
85.04190931	37.24	85.05031634	37.61
85.05171045	38.33	85.05311112	38.26
85.06141113	38.64	85.06271312	38.74
85.07121015	38.55	85.08091521	38.74

Borehole number: 699-55-50D
 Casing elevation: 440.44
 Borehole location: N 55017.00 W 50150.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.10031504	36.53	84.10041504	36.53
84.10051504	36.53	84.10061504	36.53
84.10071504	36.54	84.10081504	36.54
84.10091221	36.54	84.10101221	36.54
84.10111221	36.54	84.10121221	36.55
84.10131221	36.56	84.10141221	36.57
84.10151221	36.57	84.10161112	36.54
84.10171112	36.53	84.10181112	36.53
84.10191112	36.52	84.10201112	36.52
84.10211112	36.53	84.10221112	36.54
84.10231113	36.54	84.10241113	36.54
84.10251113	36.53	84.10261113	36.54
84.10271113	36.55	84.10281113	36.56
84.10291113	36.57	84.10301052	36.57
84.10311052	36.59	84.11011052	36.59
84.11021052	36.58	84.11031052	36.59
84.11041052	36.59	84.11051052	36.58
84.11061052	36.56	84.11071151	36.58
84.11081151	36.57	84.11091151	36.56
84.11101151	36.54	84.11111151	36.51
84.11121151	36.45	84.11131151	36.39

Borehole number 699-55-50D (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.11141151	36.36	84.11151151	36.33
84.11201434	36.24	84.11211434	36.26
84.11221434	36.27	84.11231434	36.28
84.11241434	36.30	84.11251434	36.33
84.11261434	36.36	84.12111451	36.47
84.12181350	36.43	84.12191350	36.44
84.12201350	36.44	84.12211350	36.46
84.12221350	36.46	84.12231350	36.47
84.12241350	36.49	84.12251350	36.49
84.12261505	36.48	84.12271505	36.48
84.12281505	36.49	84.12291505	36.49
84.12301505	36.49	84.12311505	36.49
85.01011505	36.47	85.01021400	36.45
85.01031400	36.43	85.01041400	36.40
85.01051400	36.38	85.01061400	36.35
85.01071400	36.31	85.01081225	36.34
85.01091225	36.30	85.01101225	36.25
85.01111225	36.21	85.01121225	36.19
85.01131225	36.18	85.01141225	36.18
85.01150951	36.16	85.01160951	36.12
85.01170951	36.08	85.01180951	36.05
85.01190951	36.02	85.01200951	35.99
85.01210951	35.95	85.01221237	35.90
85.01231237	35.82	85.01241237	35.73
85.01251237	35.62	85.01261237	35.52
85.01271237	35.43	85.01281237	35.37
85.01291127	35.48	85.01301127	35.46
85.01311127	35.42	85.02011127	35.36
85.02021127	35.34	85.02031127	35.37
85.02041127	35.38	85.02051655	35.39
85.02061655	35.35	85.02071655	35.32
85.02081655	35.32	85.02091655	35.35
85.02101655	35.37	85.02111655	35.34
85.02121123	35.33	85.02131123	35.28
85.02141123	35.22	85.02151123	35.18
85.02161123	35.11	85.02171123	35.05
85.02181123	34.98	85.02191459	35.00
85.02201459	35.07	85.02211459	35.15
85.02221459	35.24	85.02231459	35.30
85.02241459	35.36	85.02251459	35.42
85.02261235	35.37	85.02271235	35.38
85.02281235	35.35	85.03011235	35.31
85.03021235	35.29	85.03031235	35.26
85.03041235	35.24	85.03051055	35.25
85.03061055	35.21	85.03071055	35.17
85.03081055	35.12	85.03091055	35.06
85.03101055	34.98	85.03111055	34.89
85.03121055	34.82	85.03130940	34.89

Borehole number 699-55-50D (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.03140940	34.85	85.03150940	34.83
85.03160940	34.80	85.03170940	34.77
85.03180940	34.73	85.03190940	34.69
85.03201107	34.68	85.03211107	34.68
85.03221107	34.67	85.03231107	34.66
85.03241107	34.64	85.03251107	34.61
85.03261034	34.58	85.03271034	34.60
85.03281034	34.64	85.03291034	34.62
85.03301034	34.59	85.03311034	34.57
85.04011034	34.55	85.04021034	34.48
85.04031445	34.47	85.04041445	34.48
85.04051445	34.47	85.04061445	34.44
85.04071445	34.42	85.04091408	34.49
85.04101408	34.46	85.04111408	34.44
85.04121408	34.44	85.04131408	34.42
85.04141408	34.39	85.04151408	34.34
85.04161408	34.36	85.04171102	34.45
85.04181102	34.56	85.04191102	34.67
85.04201102	34.77	85.04211102	34.84
85.04221102	34.86	85.04231102	34.81
85.04241117	34.73	85.04251117	34.74
85.04261117	34.77	85.04271117	34.82
85.04281117	34.87	85.04291117	34.92
85.04301117	34.96	85.05011320	34.97
85.05021320	34.99	85.05031320	35.03
85.05041320	35.09	85.05051320	35.14
85.05061320	35.25	85.05071649	35.27
85.05081649	35.33	85.05091649	35.40
85.05101649	35.47	85.05111649	35.54
85.05121649	35.60	85.05131649	35.66
85.05141020	35.64	85.05151020	35.67
85.05161020	35.73	85.05171020	35.77
85.05181020	35.81	85.05191020	35.82
85.05201020	35.81	85.05211055	35.76
85.05221055	35.68	85.05231055	35.60
85.05241055	35.55	85.05251055	35.52
85.05261055	35.51	85.05280952	35.59
85.05290952	35.61	85.05300952	35.67
85.05310952	35.73	85.06010952	35.78
85.06020952	35.81	85.06030952	35.85
85.06040952	35.88	85.06051021	35.84
85.06061021	35.87	85.06071021	35.90
85.06081021	35.94	85.06091021	35.97
85.06101021	36.00	85.06110944	36.00
85.06120944	36.01	85.06130944	36.05
85.06140944	36.07	85.06150944	36.08
85.06160944	36.10	85.06170944	36.11
85.06180944	36.13	85.06191004	36.13

Borehole number 699-55-50D (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.06201004	36.14	85.06211004	36.14
85.06221004	36.15	85.06231004	36.16
85.06241004	36.16	85.06250950	36.17
85.06260950	36.18	85.06270950	36.17
85.06280950	36.17	85.06290950	36.14
85.06300950	36.13	85.07010945	36.10
85.07020945	36.09	85.07030945	36.04
85.07040945	36.01	85.07050945	35.99
85.07060945	35.97	85.07070945	35.96
85.07080945	35.94	85.07091346	36.00
85.07101346	36.00	85.07111346	35.99
85.07121346	35.99	85.07131346	35.98
85.07141346	35.97	85.07151346	35.97
85.07161132	35.99	85.07171132	36.00
85.07181132	36.00	85.07191132	36.00
85.07201132	36.01	85.07211132	36.01
85.07221132	36.02	85.07251030	36.03
85.07261030	36.04	85.07271030	36.05
85.07281030	36.05	85.07291030	36.07
85.07301030	36.08	85.08011252	36.14
85.08021252	36.15	85.08031252	36.16
85.08041252	36.17	85.08051252	36.18
85.08061551	36.19	85.08071551	36.19
85.08081551	36.20	85.08091551	36.20
85.08101551	36.19	85.08131104	36.17
85.08141104	36.17	85.08151104	36.16
85.08161104	36.16	85.08171104	36.17
85.08181104	36.16	85.08211300	36.20
85.08271032	36.16	85.09031452	36.15

WELLS 699-55-50A,A(P),A(Q),D

Well 699-55-57

Borehole number: 699-55-57
 Casing elevation: 566.66
 Borehole location: N 54608.00 W 57208.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06011302	162.92	84.06150905	162.80
84.06200951	162.85	84.07130939	162.75
84.07270927	162.82	84.08100919	162.82
84.08240942	162.86	84.09070940	162.86
84.09201302	163.07	84.09271307	162.91
84.10031437	162.89	84.10161041	162.92
84.10231022	162.98	84.10301015	162.99
84.11201358	163.00	84.12111421	162.99
84.12181242	163.00	84.12261310	162.94
85.01021314	162.98	85.01081128	162.96
85.01150910	162.90	85.01221206	162.82
85.01291056	162.72	85.02051626	162.61
85.02121052	162.54	85.02191436	162.40
85.02261208	162.39	85.03051028	162.38
85.03130907	162.35	85.03201009	162.27
85.04031303	162.16	85.04091329	162.09
85.04171143	162.05	85.04241029	162.09
85.05011230	162.09	85.05071604	162.18
85.05141050	162.32	85.05211018	162.44
85.05280907	162.47	85.06050940	162.47
85.06111032	162.54	85.06191117	162.65
85.06250913	162.70	85.07011012	162.71
85.07091309	162.71	85.07161058	162.71
85.07250931	162.70	85.08011126	162.73
85.08061520	162.69	85.08131033	162.73
85.08211142	162.72	85.08270938	162.71
85.09031411	162.57		

WELL 699-55-57

LEGEND

— 699-55-57

Well 699-55-60B

Borehole number: 699-55-60B
Casing elevation: 573.68
Borehole location: N 55425.00 W 60140.00 (Hanford Coordinates)
Hydrogeologic unit: RINGOLD-MIDDLE GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.11211321	169.97	84.12131250	169.96
84.12261258	169.90	85.01101446	169.88
85.01241223	169.71	85.02061222	169.51
85.02220811	169.33	85.03080904	169.33
85.03221653	169.21	85.04031249	169.12
85.04171512	169.02	85.05031430	169.12
85.05151456	169.30	85.05301339	169.43
85.06131430	169.58	85.06271204	169.67
85.07101425	169.71	85.08091420	169.65

WELL 699-55-60B

Well 699-50-70

Borehole number: 699-55-70
 Casing elevation: 569.03
 Borehole location: N 55326.00 W 69955.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-LOWER CLAYS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	137.41	83.0615	137.34
83.1215	137.70	84.06131250	137.16
84.0615	137.11	84.06201324	137.10
84.07111247	137.05	84.07251218	137.06
84.08081057	137.23	84.08221239	137.07
84.09061258	137.11	84.09200838	136.91
84.10031133	137.03	84.10191120	137.20
84.11011307	137.10	84.11211112	137.43
84.12121640	136.92	84.12281133	136.85
85.01101320	137.47	85.01241019	137.29
85.02061051	137.05	85.02211102	137.03
85.03071131	136.98	85.03221502	136.86
85.04030858	137.00	85.04171346	136.77
85.05031235	136.88	85.05151258	137.04
85.05301038	136.92	85.06131231	137.00
85.06271005	136.88	85.07101240	137.02
85.08091230	137.04		

Borehole number: 699-55-70(P)
 Casing elevation: 569.03
 Borehole location: N 55326.00 W 69955.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-BASAL GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.05311325	137.38	84.06131257	137.17
84.06201327	137.08	84.07111255	137.03
84.07251222	137.04	84.08081100	137.19
84.08221244	137.02	84.09061310	137.06
84.09200846	136.87	84.10031138	137.00
84.10191128	137.18	84.11011311	137.05
84.11211115	137.42	84.12121648	136.92
84.12281138	136.85	85.01101325	137.45
85.01241023	137.27	85.02061056	137.03
85.02211106	137.01	85.03071135	136.96
85.03221504	136.81	85.04030905	136.98
85.04171349	136.73	85.05031239	136.86
85.05151302	137.01	85.05301041	136.88
85.06131234	136.93	85.06271008	136.87
85.07101243	136.98	85.08091234	136.96

WELLS 699-55-70,(P)

Well 699-56-53

Borehole number: 699-56-53
 Casing elevation: 434.34
 Borehole location: N 56343.00 W 52779.00 (Hanford Coordinates)
 Hydrogeologic unit: RATTLESNAKE RIDGE INTERBED

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.0603	32.06	82.0614	32.02
82.0915	31.76	82.1005	31.76
82.1011	31.79	82.1015	31.79
82.1018	31.83	82.1022	31.70
82.1116	31.53	82.1215	31.47
83.0118	31.27	83.0215	31.30
83.0321	31.37	83.0419	31.40
83.0520	31.24	83.0615	31.27
83.0715	31.15	83.0815	31.09
83.0915	30.95	83.1018	31.02
83.1115	31.10	83.1214	31.05
83.1215	31.04	84.06011147	30.03
84.06151017	30.08	84.06221045	30.15
84.07131043	30.00	84.07171256	29.98
84.07181256	30.00	84.07191256	30.04
84.07201256	30.02	84.07211256	30.05
84.07221256	30.03	84.07231256	30.06
84.07240954	30.05	84.07250954	30.00
84.07260954	30.03	84.07270954	30.02
84.07280954	30.03	84.07290954	30.05
84.07300954	30.05	84.07311125	30.03
84.08011125	30.02	84.08021125	30.06
84.08031125	30.07	84.08041125	30.04
84.08051125	30.03	84.08061125	30.10
84.08071311	30.09	84.08081311	30.04
84.08091311	30.00	84.08101311	30.01
84.08111311	30.04	84.08121311	30.05
84.08131311	30.08	84.08141243	30.07
84.08151243	30.06	84.08161243	30.07
84.08171243	30.08	84.08181243	30.07
84.08191243	30.09	84.08201243	30.08
84.08211442	30.09	84.08221442	30.09
84.08231442	30.10	84.08241442	30.11
84.08251442	30.13	84.08261442	30.10
84.08271442	30.12	84.08280909	30.13
84.08290909	30.12	84.08300909	30.08
84.08310909	30.05	84.09010909	30.12
84.09020909	30.12	84.09030909	30.09
84.09040909	30.08	84.09051438	30.05
84.09061438	30.13	84.09071438	30.15
84.09081438	30.13	84.09091438	30.13
84.09101438	30.09	84.09111341	30.10
84.09121341	30.20	84.09131341	30.23
84.09141341	30.15	84.09151341	30.11
84.09161341	30.14	84.09171341	30.14

Borehole number 699-56-53 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.09181206	30.17	84.09191206	30.16
84.09201206	30.08	84.09211206	30.14
84.09221206	30.12	84.09231206	30.19
84.09241206	30.23	84.09251206	30.18
84.09261000	30.18	84.09271000	30.25
84.09281000	30.24	84.09291000	30.17
84.09301000	30.11	84.10011000	30.19
84.10021000	30.20	84.10031452	30.11
84.10041452	30.15	84.10051452	30.19
84.10061452	30.21	84.10071452	30.19
84.10081452	30.12	84.10091137	30.17
84.10101137	30.09	84.10111137	30.16
84.10121137	30.19	84.10131137	30.24
84.10141137	30.24	84.10151137	30.27
84.10161059	30.15	84.10171059	30.16
84.10181059	30.26	84.10191059	30.21
84.10201059	30.22	84.10211059	30.26
84.10221095	30.28	84.10231101	30.26
84.10241101	30.24	84.10251101	30.09
84.10261101	30.12	84.10271011	30.21
84.10281011	30.18	84.10291011	30.28
84.10301039	30.20	84.10311039	30.35
84.11011039	30.24	84.11021039	30.09
84.11031039	30.26	84.11041039	30.34
84.11051039	30.30	84.11061039	30.19
84.11071135	30.26	84.11081135	30.21
84.11091135	30.33	84.11101135	30.21
84.11111135	30.23	84.11121135	30.19
84.11131135	30.15	84.11141135	30.37
84.11151135	30.31	84.11201419	30.13
84.11211419	30.20	84.11221419	30.18
84.11231419	30.02	84.11241419	30.07
84.11251419	30.16	84.11261419	30.22
84.11271419	29.97	84.12111442	30.15
84.12121442	30.13	84.12131442	30.24
84.12141442	30.04	84.12151442	30.11
84.12161442	30.17	84.12171442	30.22
84.12181320	30.24	84.12191320	30.19
84.12201320	30.10	84.12211320	30.20
84.12221320	30.15	84.12231320	30.13
84.12241320	30.20	84.12261430	30.07
84.12271430	30.02	84.12281430	30.13
84.12291430	30.17	84.12301430	30.23
84.12311430	30.30	85.01011430	30.27
85.01021340	30.26	85.01031340	30.22
85.01041340	30.18	85.01051340	30.13
85.01061340	30.10	85.01071340	30.06

Borehole number 699-56-53 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.01081151	30.08	85.01091151	30.12
85.01101151	30.15	85.01111151	30.19
85.01121151	30.12	85.01131151	30.09
85.01141151	30.03	85.01150930	30.08
85.01160930	30.08	85.01170930	30.02
85.01180930	29.98	85.01190930	30.00
85.01200930	29.97	85.01210930	30.00
85.01221220	29.97	85.01231220	29.96
85.01241220	29.95	85.01251220	29.95
85.01261220	29.92	85.01271220	29.85
85.01281220	29.83	85.01291113	29.84
85.01301113	29.86	85.01311113	29.83
85.02011113	29.66	85.02021113	29.75
85.02031113	29.79	85.02041113	29.81
85.02051641	29.70	85.02061641	29.66
85.02071641	29.56	85.02081641	29.62
85.02091641	29.68	85.02101641	29.70
85.02111641	29.61	85.02121109	29.73
85.02131109	29.72	85.02141109	29.63
85.02151109	29.62	85.02161109	29.61
85.02171109	29.60	85.02181109	29.58
85.02191448	29.42	85.02201448	29.52
85.02211448	29.50	85.02221448	29.54
85.02231448	29.53	85.02241448	29.55
85.02251448	29.60	85.02261223	29.59
85.02271223	29.57	85.02281223	29.51
85.03011223	29.52	85.03021223	29.55
85.03031223	29.52	85.03041223	29.45
85.03051045	29.51	85.03061045	29.50
85.03071045	29.56	85.03081045	29.63
85.03091045	29.56	85.03101045	29.52
85.03111045	29.54	85.03121045	29.53
85.03130925	29.53	85.03140925	29.47
85.03150925	29.48	85.03160925	29.45
85.03170925	29.45	85.03180925	29.44
85.03190925	29.43	85.03201041	29.39
85.03211041	29.36	85.03221041	29.34
85.03231041	29.29	85.03241041	29.32
85.03251041	29.34	85.03261016	29.21
85.03271016	29.22	85.03281016	29.35
85.03291016	29.39	85.03301016	29.31
85.03311016	29.37	85.04011016	29.34
85.04021016	29.30	85.04031415	29.23
85.04041415	29.25	85.04051415	29.23
85.04061415	29.26	85.04071415	29.26
85.04081415	29.24	85.04091352	29.18
85.04101352	29.13	85.04111352	29.22

Borehole number 699-56-53 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.04121352	29.26	85.04131352	29.18
85.04141352	29.12	85.04151352	29.06
85.04161352	29.10	85.04171114	29.14
85.04181114	29.14	85.04191114	29.17
85.04201114	29.15	85.04211114	29.13
85.04221114	29.21	85.04231114	29.23
85.04241055	29.25	85.04251055	29.23
85.04261055	29.18	85.04271055	29.14
85.04281055	29.18	85.04291055	29.26
85.04301055	29.25	85.05011249	29.18
85.05021249	29.17	85.05031249	29.25
85.05041249	29.30	85.05051249	29.27
85.05061249	29.26	85.05071625	29.30
85.05081625	29.33	85.05091625	29.30
85.05101625	29.31	85.05111625	29.41
85.05121625	29.43	85.05131625	29.38
85.05141035	29.49	85.05151035	29.51
85.05161035	29.49	85.05171035	29.50
85.05181035	29.49	85.05191035	29.51
85.05201035	29.57	85.05211038	29.59
85.05221038	29.56	85.05231038	29.54
85.05241038	29.55	85.05251038	29.55
85.05261038	29.54	85.05271038	29.54
85.05280934	29.59	85.05290934	29.60
85.05300934	29.64	85.05310934	29.62
85.06010934	29.63	85.06020934	29.68
85.06030934	29.68	85.06040934	29.67
85.06051006	29.65	85.06061006	29.65
85.06071006	29.62	85.06081006	29.77
85.06091006	29.71	85.06101006	29.73
85.06110959	29.74	85.06120959	29.70
85.06130959	29.73	85.06140959	29.73
85.06150959	29.77	85.06191023	29.74
85.06201023	29.76	85.06211023	29.81
85.06221023	29.82	85.06231023	29.84
85.06241023	29.87	85.06250937	29.87
85.06260937	29.87	85.06270937	29.84
85.06280937	29.87	85.06290937	29.80
85.06300937	29.90	85.07010956	29.88
85.07020956	29.84	85.07030956	29.82
85.07040956	29.79	85.07050956	29.84
85.07060956	29.80	85.07070956	29.80
85.07080956	29.83	85.07091332	29.81
85.07101332	29.83	85.07111332	29.83
85.07121332	29.81	85.07131332	29.84
85.07141332	29.83	85.07151332	29.80
85.07161119	29.82	85.07171119	29.84

Borehole number 699-56-53 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.07181119	29.85	85.07191119	29.83
85.07201119	29.81	85.07211119	29.80
85.07221119	29.79	85.07231119	29.83
85.07251000	29.91	85.08011238	29.89
85.08061539	29.82	85.08071539	29.83
85.08081539	29.87	85.08091539	29.84
85.08101539	29.87	85.08111539	29.84
85.08121539	29.82	85.08131052	29.92
85.08141052	29.87	85.08151052	29.81
85.08161052	29.86	85.08171052	29.83
85.08181052	29.83	85.08191052	29.84
85.08201052	29.86	85.08211248	29.89
85.08271019	29.88	85.09031447	29.78

WELL 699-56-53

Well 699-59-55

Borehole number: 699-59-55
 Casing elevation: 431.88
 Borehole location: N 59282.00 W 55205.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06011241	28.04	84.06150857	27.92
84.06200946	27.96	84.07130931	27.95
84.07251342	27.94	84.07261342	27.94
84.07271342	27.94	84.07281342	27.94
84.07291342	27.94	84.07301342	27.94
84.07311255	27.94	84.08021335	27.95
84.08031335	27.95	84.08041335	27.96
84.08051335	27.95	84.08061335	27.96
84.08071254	27.97	84.08081254	27.97
84.08091254	27.97	84.08101254	27.96
84.08111254	27.96	84.08121254	27.96
84.08131254	27.96	84.08141305	27.96
84.08151305	27.95	84.08161305	27.95
84.08171305	27.96	84.08181305	27.96
84.08191305	27.96	84.08201305	27.96
84.08211455	27.97	84.08221455	27.98
84.08231455	27.98	84.08241455	27.99
84.08251455	27.99	84.08261455	27.99
84.08271455	28.00	84.08280926	28.02
84.08290926	28.02	84.08300926	28.02
84.08310926	28.02	84.09010926	28.02
84.09020926	28.02	84.09030926	28.02
84.09040926	28.02	84.09051455	28.02
84.09061455	28.03	84.09071455	28.03
84.09081455	28.03	84.09091455	28.03
84.09101455	28.03	84.09111320	28.02
84.09121320	28.04	84.09131320	28.04
84.09141320	28.03	84.09151320	28.03
84.09161320	28.03	84.09171320	28.03
84.09181234	28.02	84.09191234	28.03
84.09201234	28.03	84.09211234	28.04
84.09221234	28.04	84.09231234	28.04
84.09241234	28.04	84.09251234	28.04
84.09261020	28.04	84.09271020	28.05
84.09281020	28.05	84.09291020	28.05
84.09301020	28.04	84.10011020	28.04
84.10021020	28.04	84.10031415	28.04
84.10041415	28.04	84.10051415	28.05
84.10061415	28.05	84.10071415	28.05
84.10081415	28.04	84.10091107	28.03
84.10101107	28.02	84.10111107	28.03
84.10121107	28.04	84.10131107	28.05
84.10141107	28.06	84.10151107	28.06
84.10161024	28.06	84.10171024	28.05
84.10181024	28.06	84.10191024	28.06

Borehole number 699-59-55 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.10201024	28.06	84.10211024	28.07
84.10221024	28.08	84.10231011	28.09
84.10241011	28.09	84.10251011	28.08
84.10261011	28.08	84.10271011	28.09
84.10281011	28.09	84.10291011	28.11
84.10301001	28.10	84.10311001	28.12
84.11011001	28.12	84.11021001	28.11
84.11031001	28.13	84.11041001	28.14
84.11051001	28.14	84.11061001	28.13
84.11071051	28.14	84.11081051	28.13
84.11091051	28.14	84.11101051	28.13
84.11111051	28.13	84.11121051	28.12
84.11131051	28.11	84.11201347	28.10
84.11211347	28.10	84.11221347	28.10
84.11231347	28.09	84.11241347	28.09
84.11251347	28.10	84.11261347	28.11
84.11271347	28.09	84.11281347	28.10
84.12111411	28.11	84.12181210	28.11
84.12191210	28.10	84.12201210	28.09
84.12211210	28.09	84.12221210	28.08
84.12261210	28.07	84.12271210	28.06
84.12281210	28.07	84.12291210	28.08
84.12301210	28.09	85.01021250	28.11
85.01031250	28.11	85.01041250	28.11
85.01051250	28.11	85.01061250	28.10
85.01071250	28.08	85.01081108	28.06
85.01091108	28.06	85.01101108	28.05
85.01111108	28.04	85.01121108	28.04
85.01131108	28.01	85.01150853	27.99
85.01160853	27.98	85.01170853	27.96
85.01180853	27.95	85.01190853	27.94
85.01200853	27.93	85.01210853	27.92
85.01221147	27.90	85.01231147	27.89
85.01241147	27.87	85.01251147	27.85
85.01261147	27.83	85.01271147	27.80
85.01281147	27.78	85.01291044	27.73
85.01301044	27.71	85.01311044	27.70
85.02011044	27.67	85.02021044	27.66
85.02031044	27.65	85.02041044	27.64
85.02051612	27.61	85.02061612	27.60
85.02071612	27.57	85.02081612	27.56
85.02091612	27.56	85.02101612	27.55
85.02111612	27.54	85.02121034	27.56
85.02131034	27.56	85.02141034	27.53
85.02151034	27.52	85.02161034	27.50
85.02171034	27.49	85.02181034	27.47
85.02191425	27.42	85.02191425	27.42

Borehole number 699-59-55 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.02201425	27.41	85.02211425	27.40
85.02221425	27.40	85.02231425	27.41
85.02241425	27.41	85.02251425	27.42
85.02261138	27.44	85.02271138	27.44
85.02281138	27.44	85.03011138	27.42
85.03021138	27.42	85.03031138	27.42
85.03041138	27.41	85.03051015	27.41
85.03061015	27.41	85.03071015	27.40
85.03081015	27.40	85.03091015	27.39
85.03101015	27.39	85.03111015	27.38
85.03121015	27.35	85.03130836	27.35
85.03140836	27.34	85.03150836	27.32
85.03160836	27.31	85.03170836	27.30
85.03180836	27.29	85.03190836	27.28
85.03200946	27.26	85.03210946	27.25
85.03220946	27.24	85.03230946	27.23
85.03240946	27.22	85.03250946	27.22
85.03260915	27.20	85.03270915	27.19
85.03280915	27.19	85.03290915	27.19
85.03300915	27.19	85.03310915	27.18
85.04010915	27.18	85.04020915	27.16
85.04031225	27.13	85.04041225	27.12
85.04051225	27.12	85.04061225	27.12
85.04071225	27.10	85.04081225	27.10
85.04091306	27.08	85.04101306	27.07
85.04111306	27.10	85.04121306	27.09
85.04131306	27.07	85.04141306	27.05
85.04151306	27.03	85.04161306	27.02
85.04171130	27.01	85.04181130	27.01
85.04191130	27.03	85.04201130	27.04
85.04211130	27.05	85.04221130	27.07
85.04231130	27.08	85.04241015	27.08
85.04251015	27.08	85.04261015	27.08
85.04271015	27.08	85.04281015	27.08
85.04291015	27.10	85.04301015	27.10
85.05011218	27.12	85.05021218	27.13
85.05031218	27.14	85.05041218	27.16
85.05051218	27.18	85.05061218	27.19
85.05071545	27.20	85.05081545	27.22
85.05091545	27.23	85.05101545	27.25
85.05111545	27.28	85.05121545	27.31
85.05131545	27.32	85.05140920	27.38
85.05150920	27.40	85.05160920	27.42
85.05170920	27.43	85.05180920	27.45
85.05190920	27.46	85.05200920	27.48
85.05211000	27.49	85.05221000	27.49
85.05231000	27.49	85.05241000	27.49

Borehole number 699-59-55 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
85.05251000	27.48	85.05261000	27.48
85.05271000	27.48	85.05280853	27.52
85.05290853	27.52	85.05300853	27.53
85.05310853	27.54	85.06010853	27.55
85.06020853	27.56	85.06030853	27.58
85.06040853	27.59	85.06050923	27.56
85.06060923	27.57	85.06070923	27.58
85.06080923	27.60	85.06090923	27.61
85.06100923	27.62	85.06111019	27.64
85.06121019	27.64	85.06131019	27.65
85.06141019	27.66	85.06151019	27.67
85.06161019	27.68	85.06171019	27.69
85.06181019	27.70	85.06191041	27.72
85.06201041	27.73	85.06211041	27.74
85.06221041	27.75	85.06231041	27.76
85.06241041	27.77	85.06250857	27.78
85.06260857	27.78	85.06270857	27.79
85.06280857	27.79	85.06290857	27.79
85.06300857	27.80	85.07011020	27.75
85.07021020	27.75	85.07031020	27.74
85.07041020	27.74	85.07051020	27.73
85.07061020	27.73	85.07071020	27.72
85.07081020	27.72	85.07091252	27.76
85.07101252	27.76	85.07111252	27.76
85.07121252	27.75	85.07131252	27.75
85.07141252	27.75	85.07151252	27.74
85.07161045	27.77	85.07171045	27.77
85.07181045	27.77	85.07191045	27.77
85.07201045	27.77	85.07211045	27.76
85.07221045	27.76	85.07231045	27.76
85.07250915	27.74	85.07260915	27.74
85.07270915	27.74	85.07280915	27.74
85.07290915	27.74	85.07300915	27.74
85.07310915	27.75	85.08011111	27.76
85.08021111	27.76	85.08031111	27.76
85.08041111	27.76	85.08051111	27.77
85.08061508	27.77	85.08071508	27.77
85.08081508	27.77	85.08091508	27.77
85.08101508	27.77	85.08111508	27.77
85.08121508	27.77	85.08131023	27.79
85.08141023	27.78	85.08151023	27.77
85.08161023	27.78	85.08171023	27.77
85.08181023	27.77	85.08191023	27.77
85.08201023	27.77	85.08211202	27.79
85.08270959	27.78	85.09031436	27.72

WELL 699-59-55

Well 699-59-58

Not to Scale

Borehole number: 699-59-58
 Casing elevation: 497.77
 Borehole location: N 58859.00 W 57763.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06011230	94.88	84.06150852	94.76
84.06200939	94.83	84.07130925	94.62
84.07270921	94.79	84.08100910	94.80
84.08240937	94.18	84.09070933	94.86
84.09201257	94.85	84.10051011	94.90
84.10191331	94.92	84.11020951	94.97
84.11211314	94.94	84.12131202	94.98
84.12261155	94.92	85.01110754	94.90
85.01241215	94.71	85.02061214	94.49
85.02220805	94.29	85.03080854	94.28
85.03221643	94.15	85.04031238	94.02
85.04190829	93.94	85.05031423	94.02
85.05170936	94.28	85.05301326	94.35
85.06141006	94.51	85.06271153	94.64
85.07120904	94.65	85.08091411	94.68

WELL 699-59-58

Well 699-60-57

Borehole number: 699-60-57
 Casing elevation: 469.64
 Borehole location: N 60350.00 W 56612.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06011224	65.72	84.06150842	65.63
84.06200933	65.69	84.07130916	65.57
84.07270916	65.65	84.08100904	65.65
84.08161324	65.65	84.08171324	65.65
84.08181324	65.65	84.08191324	65.65
84.08201324	65.65	84.08211509	65.69
84.08221509	65.70	84.08231509	65.71
84.08241509	65.71	84.08251509	65.71
84.08261509	65.71	84.08271509	65.71
84.08280950	65.72	84.08290950	65.71
84.08300950	65.72	84.08310950	65.72
84.09010950	65.72	84.09020950	65.73
84.09030950	65.73	84.09040950	65.73
84.09051508	65.72	84.09061508	65.76
84.09071508	65.76	84.09081508	65.76
84.09091508	65.76	84.09101508	65.75
84.09111310	65.74	84.09121310	65.75
84.09131310	65.75	84.09141310	65.76
84.09151310	65.75	84.09161310	65.75
84.09171310	65.75	84.09181245	65.73
84.09191245	65.73	84.09201245	65.72
84.09211245	65.72	84.09221245	65.72
84.09231245	65.72	84.09241245	65.73
84.09251245	65.73	84.09261033	65.77
84.09271033	65.79	84.09281033	65.79
84.09291033	65.79	84.09301033	65.78
84.10011033	65.78	84.10021033	65.79
84.10031403	65.77	84.10041403	65.77
84.10051403	65.78	84.10061403	65.78
84.10071403	65.78	84.10081403	65.78
84.10091052	65.75	84.10101052	65.74
84.10111052	65.75	84.10121052	65.76
84.10131052	65.76	84.10141052	65.78
84.10151052	65.78	84.10161011	65.77
84.10171011	65.77	84.10181011	65.78
84.10191011	65.78	84.10201011	65.78
84.10211011	65.80	84.10221011	65.80
84.10230958	65.82	84.10240958	65.82
84.10250958	65.81	84.10260958	65.81
84.10270958	65.82	84.10280958	65.83
84.10290958	65.84	84.10300945	65.84
84.10310945	65.86	84.11010945	65.86
84.11020945	65.84	84.11030945	65.85
84.11040945	65.86	84.11050945	65.88
84.11060945	65.86	84.11071032	65.87

Borehole number 699-60-57 (contd)

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.11081032	65.87	84.11091032	65.88
84.11101032	65.87	84.11111032	65.87
84.11121032	65.86	84.11131032	65.85
84.11141032	65.86	84.11151032	65.86
84.11201332	65.83	84.11211332	65.84
84.11221332	65.85	84.11231332	65.83
84.11241332	65.83	84.11251332	65.83
84.11261332	65.84	84.11271332	65.83
84.12111340	65.84	84.12121340	65.84
84.12131340	65.85	84.12141340	65.82
84.12151340	65.82	84.12161340	65.82
84.12171340	65.83	84.12181115	65.85
84.12191115	65.86	84.12201115	65.85
84.12211115	65.85	84.12221115	65.84
84.12231115	65.83	84.12241115	65.84
84.12251115	65.83	84.12261016	65.80
84.12271016	65.80	84.12281016	65.80
84.12291016	65.80	84.12301016	65.82
84.12311016	65.85	85.01011016	65.85
85.01021215	65.83	85.01031215	65.83
85.01041215	65.82	85.01051148	65.81
85.01081058	65.78	85.01241210	65.57
85.02061208	65.35	85.02220756	65.13
85.03080849	65.13	85.03221636	64.98
85.04031148	64.88	85.04190821	64.77
85.05031417	64.86	85.05170925	65.14
85.05301319	65.21	85.06140958	65.38
85.06271145	65.49	85.07120854	65.51
85.08091405	65.51		

WELL 699-60-57

Casing and Piezometer
Elevation 512.03 ft

8-in. Casing

1.50-in. Piezometer

Perforations
100 ft - 127 ft

110 ft

115 ft

120 ft

125 ft

128 ft

Cement Plug

Backfill

60 Slot Screen

Not to Scale

B.226

Borehole number: 699-60-60
 Casing elevation: 512.03
 Borehole location: N 60030.00 W 59964.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-LOWER CLAYS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	111.16	83.0615	110.24
83.1215	109.19	84.06131413	108.44
84.0615	108.47	84.06201436	108.45
84.06271353	108.08	84.07111406	108.33
84.07251332	108.41	84.08081344	108.42
84.08221350	108.39	84.09061410	108.48
84.09201233	108.49	84.10031348	108.50
84.10191317	108.54	84.11011418	108.61
84.11211301	108.59	84.12131131	108.61
84.12261139	108.57	85.01101431	108.56
85.01241126	108.41	85.02061151	108.21
85.02211243	108.02	85.03071317	107.99
85.03221621	107.89	85.04031120	107.79
85.04171500	107.68	85.05031401	107.75
85.05151442	107.92	85.05301258	108.03
85.06131416	108.12	85.06271124	108.28
85.07101409	108.32	85.08091351	108.29

Borehole number: 699-60-60(P)
 Casing elevation: 512.03
 Borehole location: N 60030.00 W 59964.00 (Hanford Coordinates)
 Hydrogeologic unit: RINGOLD-LOWER CLAYS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
84.06011212	108.51	84.06131417	108.26
84.06201440	108.29	84.06271405	108.24
84.07111410	108.35	84.07251335	108.43
84.08081348	108.43	84.08221354	108.44
84.09061413	108.48	84.09201237	108.47
84.10031353	108.49	84.11011422	108.59
84.11211304	108.60	84.12131136	108.61
84.12261143	108.57	85.01101434	108.57
85.01241130	108.42	85.02061155	108.21
85.02211245	108.01	85.03071321	107.99
85.03221624	107.89	85.04031123	107.79
85.04171502	107.67	85.05031404	107.74
85.05151445	107.90	85.05301302	108.04
85.06131418	108.13	85.06271127	108.25
85.07101413	108.26	85.08091353	108.28

WELLS 699-60-60,(P)

Well 699-61-62

Borehole number: 699-61-62
 Casing elevation: 497.51
 Borehole location: N 60532.00 W 62217.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
83.0615	95.28	83.1215	94.89
84.06011206	94.11	84.06131405	94.05
84.0615	94.07	84.06201428	94.05
84.06271344	94.03	84.07111400	93.96
84.07251326	93.98	84.08081339	93.99
84.08221344	94.00	84.09061405	94.04
84.09201228	94.04	84.10031342	94.08
84.10191312	94.09	84.11011411	94.20
84.11211256	94.18	84.12131118	94.20
84.12261129	94.15	85.01101425	92.14
85.01241122	94.02	85.02061145	93.84
85.02211238	93.65	85.03071311	93.61
85.03221615	93.54	85.04031112	93.42
85.04171453	93.33	85.05031355	93.37
85.05151432	93.51	85.05301245	93.63
85.06131411	93.74	85.06271116	93.83
85.07101358	93.90	85.08091345	93.88

WELL 699-61-62

LEGEND

— 699-61-62

Well 699-63-58

Borehole number: 699-63-58
 Casing elevation: 491.90
 Borehole location: N 62691.00 W 57789.00 (Hanford Coordinates)
 Hydrogeologic unit: HANFORD-PASCO GRAVELS

<u>Date</u>	<u>Depth</u>	<u>Date</u>	<u>Depth</u>
82.1215	92.23	83.0615	90.62
83.1215	90.23	84.06011217	89.93
84.06150834	89.89	84.06200925	89.85
84.07130909	89.80	84.07270908	89.80
84.08100857	89.79	84.08240931	89.79
84.09070926	89.80	84.09201247	89.78
84.10051004	89.84	84.10191327	89.82
84.11020941	89.88	84.11211309	89.99
84.12131150	89.97	84.12261035	89.95
85.01110745	89.99	85.01241204	89.91
85.02061203	89.83	85.02220748	89.67
85.03080844	89.62	85.03221630	89.54
85.04031136	89.45	85.04190810	89.36
85.05031410	89.32	85.05170914	89.41
85.05301312	89.43	85.06140950	89.49
85.06271137	89.51	85.07120845	89.63
85.08091359	89.60		

WELL 699-63-58

APPENDIX C

HYDRAULIC HEAD MONITORING PROCEDURES

PNL TEST PROCEDURE FOR GRP

TITLE: TP-O&EP-39-1 HYDRAULIC HEAD MONITORING PROCEDURE

1.0 OBJECTIVE

This procedure provides standardized methods for taking hydraulic head measurements in support of the Basalt Waste Isolation Project (BWIP). Hydraulic head measurements are fundamental to ground-water studies. The collection and recording of this data is required to:

- determine the direction of ground-water flow
- identify areas of recharge and discharge
- evaluate the effects of engineered and natural stresses on the ground-water system
- define the hydraulic characteristics of aquifers
- evaluate stream-aquifer relations.

2.0 APPLICABILITY

This procedure applies to the primary collection and recording of hydraulic head data by PNL personnel in support of the BWIP.

3.0 DEFINITIONS

3.1 Datum

A point of known elevation to which a water level measurement is referenced.

3.2 Hold Point

The graduation on a steel tape to which a depth to water measurement is made.

3.3 Hydraulic Head

The height of the free surface of a body of water above a given sub-surface point.

Approved (Project Manager) <i>John R. Raymond</i> G. R. Raymond 11/6/85		Approved (Section Manager) <i>P. E. Bramson</i> P. E. Bramson 11-13-85	
Prepared by <i>T. L. Liskala</i> T. L. Liskala 11-6-85	Technical Review <i>P. A. Eddy</i> P. A. Eddy 11-6-85	QAQ Review <i>S. D. Harris</i> S. D. Harris 11-14-85	
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PNL TEST PROCEDURE FOR GRP

3.4 Measuring Point

The point from which the water in a borehole is measured, generally a point on the top of the well casing.

4.0 RESPONSIBILITIES

4.1 Project Manager

- Review and cosign data
- Correlate data
- Submit reports to sponsor.

4.2 Cognizant Scientist/Engineer

- Perform measurements and enter data

5.0 PROCEDURE

5.1 Nonflowing Boreholes

A graduated steel tape or electric tape is used to manually measure the depth to water in nonflowing boreholes. At selected sites, a water stage recorder is used to continuously monitor the depth to water. Each method of measurement is defined below:

5.1.1 Graduated Steel Tape Method

1. Record the date and well number in the field log book.
2. Chalk the one-foot section of steel tape below the zero graduation.
3. Determine the hold point from the initial depth to water listed in Hanford Wells (McGhan et al. 1985).
4. Lower the steel tape into the borehole to the hold point, such that the graduation is at the measuring point.
5. Remove the steel tape and check the wetted portion below the zero graduation.
6. Add the unwetted length of the chalked portion of tape to the hold point to obtain the depth to water measurement.

PNL TEST PROCEDURE FOR GRP

7. Repeat the procedure until two steel tape measurements agree within ± 0.05 feet.
8. Record the depth to water measurements, time of measurements, measuring device, and initials of the person taking the measurements in the field log book.
9. Transcribe the time and date of measurements, hold points, cuts, depth to water measurements, measuring device, and initials of the person taking the measurement into the Laboratory Record Book.

5.1.2 Electric Tape Method

1. Record the date and well number in the field log book.
2. Lower the electric tape from the measuring point into the borehole until the water indicator sounds.
3. Mark the electric tape at the measuring point and identify the nearest graduation on the electric tape.
4. If the water level is deeper than the nearest graduation marked on the tape, the difference is added to the depth identified to obtain the true depth to water.
5. If the water level is shallower than the nearest graduation marked on the tape, the difference is subtracted from the depth identified to obtain the true depth to water.
6. Repeat the procedure until two electric tape measurements agree within ± 0.1 feet.
7. Record the depth to water measurements, time of measurements, measuring device, and initials of the person taking the measurements in the field log book.
8. Transcribe the time and date of measurements, hold points, cuts, depth to water measurements, measuring device, and initials of the person taking the measurement into the Laboratory Record Book.

5.1.3 Continuous Water-Level Monitoring

1. Set up the water stage recorder as shown in Exhibit 1.

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2. Make a depth to water measurement by the graduated steel tape method.
3. Mark the well number, time increment, depth increment, date, time, measuring device, initials of person taking the measurement, and depth to water measurement on the graph paper.
4. Set the pen on the graph paper such that it is at the current depth to water measurement and time increment.
5. Start the clock.
6. Repeat this procedure each time a piece of graph paper is removed.
7. Unusual occurrences (i.e., clock stopped) will be noted on the graph paper, in the field log book, and in the Laboratory Record Book.
8. Record the well number, depth to water measurement, time and date of measurement, measuring device, and initials of the person taking the measurement, in the field log book.
9. Transcribe the time and date of measurement, hold point, cut, depth to water measurement, measuring device, and initials of the person taking the measurement into the Laboratory Record Book.

5.2 Data Management

Depth to water data are to be recorded in a field log book. Data to be recorded in the field log book are: well number, date and time of measurement, depth to water measurement, measuring device, and the person taking the measurement.

The data shall then be transcribed from the field log book into a Laboratory Record Book. The Laboratory Record Book shall be kept in a lockable storage cabinet and will not be used in the field. Data to be transcribed into the Laboratory Record Book are: date and time of measurement, hold point, cut, depth to water measurement, measuring device, and initials of the person taking the measurement.

Laboratory Record Book pages shall be filled out in numerical order by well number. Each well shall have two consecutive pages on which to record data. Data on each page shall be entered in chronological

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PNL TEST PROCEDURE FOR GRP

order according to date and time. If the two consecutive pages become full, the data shall be continued in another Laboratory Record Book. A cross reference shall be included at the bottom of each page, indicating Laboratory Record Book number and page number of continued entries. In addition, a block shall be stamped in ink at the top of each page. The block shall provide the following information: well number, casing elevation, casing size, drilled depth, depth to bottom, perforations, aquifer, and remarks. Any pages left incomplete or blank at the closing of the Laboratory Record Book shall have a diagonal line drawn through the unused space.

The data in the Laboratory Record Books shall be reviewed and cosigned by the project Manager or his designee. The data will then be evaluated, summarized, and reported by the Project Manager.

6.0 QUALITY ASSURANCE

PNL-MA-60, PNL Quality Assurance Manual for License-Related Programs, as interpreted in Project QA Plan ENV-110, Revision 0, is applicable to this procedure.

7.0 APPLICABLE DOCUMENTS

- PNL-MA-60, PNL Quality Assurance Manual for License-Related Programs
- Project QA Plan, ENV-110.

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APPENDIX D

DATA TABLES AND HYDROGRAPHS FOR THE SURFACE WATER GAGING STATIONS

APPENDIX D

DATA TABLES AND HYDROGRAPHS FOR THE SURFACE WATER GAGING STATIONS

Gaging station no.: 216-B-3

Surface water body: B POND

<u>Date</u>	<u>Reading</u>	<u>Date</u>	<u>Reading</u>
84.11201011	2.40	84.12111516	2.40
84.12181450	2.50	84.12261556	2.50
85.01021455	2.50	85.01081304	2.60
85.01151023	2.60	85.01221321	2.50
85.01291158	2.50	85.02060834	2.40
85.02121222	2.40	85.02191524	2.40
85.02261300	2.40	85.03051124	2.40
85.03131009	2.40	85.03201142	2.40
85.03261126	2.40	85.04031652	2.50
85.04091441	2.50	85.04170920	2.40
85.04241149	2.65	85.05011356	2.40
85.05071825	2.50	85.05141107	2.35
85.05211124	2.40	85.05281025	2.30
85.06051051	2.00	85.06110903	2.10
85.06190859	2.25	85.06251028	2.30
85.06261657	2.40	85.07010821	2.40
85.07091412	2.45	85.07161308	2.30
85.07251109	2.40	85.08011321	2.30
85.08061613	2.50		

B POND

LEGEND

— 216-B-352

Gaging station no.: 216-B-3A
Surface water body: B POND EXPANSION -- FIRST LOBE

<u>Date</u>	<u>Reading</u>	<u>Date</u>	<u>Reading</u>
84.11201025	2.80	84.12111520	3.00
84.12181454	3.00	84.12261600	3.00
85.01021500	3.00	85.01081306	3.10
85.01151025	3.20	85.01221323	2.80
85.01291220	2.80	85.02060843	2.70
85.02121224	2.70	85.02191526	2.70
85.02261302	2.60	85.03051126	2.70
85.03131011	2.70	85.03201145	2.70
85.03261129	2.70	85.04031656	2.70
85.04091445	2.60	85.04170930	2.60
85.04241153	2.80	85.05011400	2.55
85.05071828	2.70	85.05141110	2.70
85.05211127	2.55	85.05281030	2.50
85.06051055	2.55	85.06110859	2.05
85.06190903	2.10	85.06251032	2.00
85.06261645	2.20	85.07010824	2.30
85.07091416	2.00	85.07161312	2.10
85.07251112	2.00	85.08011327	1.80
85.08061617	1.90		

B POND EXPANSION -- FIRST LOBE

D.4

Gaging station no: 216-B-3C(GS)
Surface water body: B POND EXPANSION -- THIRD LOBE

<u>Date</u>	<u>Reading</u>	<u>Date</u>	<u>Reading</u>
85.05281028	2.35	85.06051053	2.50
85.06110857	2.00	85.06190905	2.00
85.06251031	2.00	85.07091415	2.00
85.07161311	2.05	85.07251110	2.00
85.08011323	1.75	85.08061615	1.85

Gaging station no.: 216-B-3C(SG)
Surface water body: B POND EXPANSION -- THIRD LOBE

<u>Date</u>	<u>Reading</u>	<u>Date</u>	<u>Reading</u>
85.06051058	0.00	85.06110855	0.00
85.06190907	0.00	85.06251035	0.00
85.07091419	0.00	85.07161314	0.00
85.07251115	0.00	85.08011329	0.00
85.08061618			

B POND EXPANSION -- THIRD LOBE

Gaging station no.: WEST LAKE
Surface water body: WEST LAKE

<u>Date</u>	<u>Reading</u>	<u>Date</u>	<u>Reading</u>
85.06250850	0.53	85.07091245	0.28
85.07161039	0.11	85.07250900	-0.12
85.08011058	0.00	85.08061503	0.00

WEST LAKE

LEGEND

— WEST LAKE

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