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Revision 0

Remedial Investigation/Feasibility Study for the 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units

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Analytical Data

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Terms

AWLN	automated water level network
CVP	Cleanup Verification Package
HEIS	Hanford Environmental Information System
HWIS	Hanford Well Information System
LFI	Limited Field Investigation
MED	Manhattan Engineering District
OU	Operable Unit
QC	quality control
QL	quantitation limit
RI/FS	Remedial Investigation and Feasibility Study
RSVP	Remaining Sites Verification Package
USGS	United States Geological Survey

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D1 Introduction

This appendix summarizes the dataset compiled to support the Integrated 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units (OUs) Remedial Investigation and Feasibility Study (RI/FS). The dataset provides the data and information used to support completion of the RI/FS Report. The dataset includes data from ongoing site programs (e.g., annual groundwater monitoring, waste site remediation), data from previous soil and groundwater investigations conducted in the 100-F/IU-2/IU-6 area, and data collected specifically for the RI/FS as described in *Integrated 100 Area Remedial Investigation/Feasibility Study Work Plan, Addendum 4: 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units* (DOE/RL-2008-46-ADD4) and the companion sampling and analysis plan (*Sampling and Analysis Plan for the 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units Remedial Investigation/Feasibility Study* [DOE/RL-2009-43]). The following is a list of the available data that were compiled for the RI/FS dataset:

- Data collected as part of ongoing site sampling programs or before initiation of the current RI/FS field investigation activities
  - Waste site remediation action soil analytical data (available samples up to March 1, 2012)
  - Field investigation soil analytical data (available samples up to December 31, 2009)
  - Groundwater analytical data (January 1, 2007 to December 31, 2011)
  - Well and borehole drilling and construction information (to July 18, 2010)
  - Fate and transport parameters (e.g., geochemical parameters, hydrogeologic parameters, soil physical properties) (to December 31, 2009)
  - Geologic contact information
  - Groundwater levels and River Stage (to December 31, 2011)
- Data collected during the RI/FS field investigation activities (May 2010 to February 2011) as described in *Integrated 100 Area Remedial Investigation/Feasibility Study Work Plan, Addendum 4: 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units* (DOE/RL-2008-46-ADD4), and *Sampling and Analysis Plan for the 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units Remedial Investigation/Feasibility Study* (DOE/RL-2009-43)
  - Soil analytical data
  - Groundwater analytical data
  - Soil physical properties (grain size, moisture content, and porosity)
  - Hydraulic conductivity
  - Geophysical logging
  - Distribution coefficient data for metals

The data compiled from work performed by other site activities to support the RI/FS are described in Chapter D2. The data compiled for the RI/FS field investigation activities are described in Chapter D3. The data compiled for this RI/FS are recorded on the attached compact disc, unless incorporated by reference as described in this appendix. Table D-1 lists the file names of the electronic files recorded for this appendix and their contents.

Table D-1. Data Files in this Appendix

File Name	Contents
Groundwater	
100FIU_GW_Jan07toDec11	Groundwater data for the period shown.
ECF-100FR3-11-0069	Creation of the 100-F Area plume maps for 2010.
ECF-HANFORD-11-0077_Rev0_IU_Plumes	Creation of the Sitewide plume maps for 2010.
Remedial Investigation	
DURA_19Apr2011	The 2010 risk assessment groundwater data which is a subset of the 100FIU_GW_Jan07toDec11 file.
RI_GW_11Aug2011	Groundwater data from RI wells and boreholes which is a subset of the 100FIU_GW_Jan07toDec11file.
RI_Vadose_11Aug2011	Soil data from RI boreholes and wells.
Vadose Zone	
100-F_UNI-946	Waste site data from several cribs.
WCH_CVP_11Aug2011	Soil data from waste site remediation.
WCH_CVP_Update_to2012Mar01	Additional soil data from waste site remediation.
Groundwater Levels and River Stages	
FIU_Well_Water_Levels	Historical, manual water level data for wells in the 100-F Area and the northern parts of 100-IU-2 and 100-IU-6.
awln_2010-2011	Hourly water-level data from automated water level network for 100-F wells and river stage.
USGS_12472800	Daily discharge data for the Priest Rapids Dam (1917-2009).
Well_Borehole	
100-FIUWellInfo_21Jun2010	Well construction information for 100-F/IU wells installed before 2010.
ECF-100NPL-11-0070, Rev. 2	Elevations of geologic contacts in wells and boreholes throughout the 100 Areas

D2 Summary of the Data Compiled by Site Activities Used to Support the RI/FS

This section describes a series of data files for soil and water. Unless otherwise noted, data were derived from the Hanford Environmental Information System (HEIS) database, which is designated as the central repository for Hanford Site environmental data. Users may access HEIS via the Hanford Site Environmental Dashboard application.

Selected field names (column headers) used in the accompanying data tables are listed below. *HEIS Sample, Result, and Sampling Site Data Dictionary* (HNF-38155) contains a full listing of field names and their meanings.

- EASTING – Geographic east-west coordinates of the sample site in meters (*North American Datum of 1983* [NAD83]).

- LAB_QUALIFIER – A code that qualifies the associated result. These codes are reported by the analytical laboratory. The meaning of many codes depends on the METHOD_CATEGORY. Table D-2 describes laboratory qualifier codes.
- NORTHING – Geographic north-south coordinates of the sample site in meters (*North American Datum of 1983* [NAD83]).
- RESULT_COMMENT – comments about the result record may be entered. Entries into this column are not reported by the laboratories but are added by data reviewers.
- REVIEW_QUALIFIER – A code indicating that the quality of the record has been questioned by the reviewer. Table D-3 defines the codes.
- SAMP_DATE_TIME – Date the sample was collected.
- SAMP_NUM – A unique identifier for a physical sample.
- SAMP_SITE_NAME – Well name, borehole number, or in the case of test pits, waste site name associated with the sample.
- STD_ANAL_UNITS_RPTD – Analytical units for results.
- STD_CON_LONG_NAME – Standardized name of the constituent or property reported.
- STD_COUTING_ERROR – Error value measured by counting disintegrations of radioactive analytes, reported in the same units as the STD_VALUE_REPORTED. This error serves as a lower bound for the uncertainty of the measurement.
- STD_MDA – Minimum detectable activity, typically dependent on the measured instrument background and sample yield, reported in the same units as the STD_VALUE_REPORTED. Generally, it depends on the actual aliquot, count time, yield, efficiency, decay correction, and some measurement of the background. The background might be from associated instrument blanks, reagent blanks, baseline information for the sample, or some combination of these.
- STD_SAMP_INTV_BOT – Depth below land surface of bottom of sampling device, standardized to units of meters.
- STD_SAMP_INTV_TOP – Depth below land surface of top of sampling device, standardized to units of meters.
- STD_TOTAL_ANAL_ERROR – A combination of counting error plus a laboratory-specific estimate dependent on the chosen analysis methods, representing sample-specific error (at 2 sigma) that could possibly be introduced into the analysis while at the laboratory, reported in the same units as the STD_VALUE_REPORTED. For radiological analyses, this is the total propagated uncertainty.
- STD_VALUE_RPTD – The analytical result (e.g. concentration), converted if necessary to standard analytical units.
- VALIDATION_QUALIFIER – codes that are assigned by an individual who validates the result; this validation is performed only at the request of the project management for which the sample was collected. If no VALIDATION_QUALIFIER is recorded, then the validator either did not validate the record or agreed with the value reported and LAB_QUALIFIER code(s). Table D-4 defines the codes.

- WELL_ID – Unique well identification number.
- WELL_NAME – Name of the well or borehole from which the sample was collected. Names beginning with 199-B are located in 100-BC. Names beginning 699- are located outside the former operational error. Temporary boreholes and some aquifer tubes have names identical to the WELL_ID. Other well name formats (e.g., 05-M, AT-B-4-S) are aquifer tubes.

Table D-2. Laboratory Qualifiers

Code	Translations
*	INORGANICS - Duplicate analysis not within control limits.
+	INORGANICS - Correlation coefficient for Method of Standard Additions (MSA) is < 0.995.
>	WETCHEM - Result greater than quantifiable range or greater than upper limit of the analysis range.
A	ORGANICS - Valid for TICs only: The tentatively identified compound (TIC) is a suspected aldolcondensation product.
B	INORGANICS and WETCHEM - The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). ORGANICS - The analyte was detected in both the associated QC blank and in the sample. RADIONUCLIDES - The associated QC sample blank has a result ≥ 2X the MDA and, after corrections, result is ≥ MDA for this sample.
C	INORGANICS/WETCHEM: The analyte was detected in both the sample and the associated QC blank, and the sample concentration was ≤ 5X the blank concentration. ORGANICS (PESTICIDE only) – The identification of a pesticide confirmed by gas chromatograph/mass spectrometer (GC/MS).
D	All - Analyte was reported at a secondary dilution factor, typically DF>1 (i.e., the primary preparation required dilution to either bring the analyte within the calibration range or to minimize interference). Required for organics/wetchem if the sample was diluted.
E	INORGANICS - Reported value is estimated because of interference. See comment on cover page, hardcopy case narrative, or specific inorganic hardcopy data sheet. ORGANICS - Concentration exceeds the calibration range of the GC/MS.
J	ORGANICS - Estimated value; (1) constituent detected at a level less than the RDL or PQL and greater than or equal to the MDL, (2) estimated concentration for TICs. Note - For HEIS data generated before December 1, 2002, laboratories may have applied a “J” qualifier to non-organic results. When applied, application was based primarily on criteria comparable to statement (1) above. Before January, 1998, validation qualifiers (including “J”) were recorded in the LAB_QUALIFIER field without identification as validation qualifiers.
L	MDL ≤ value < CRQL [RETIRED]
M	INORGANICS - Duplicate precision criteria not met.
N	ALL (except GC/MS based analysis) - Spike and/or spike duplicate sample recovery is outside control limits. ORGANICS (GC/MS only) - Presumptive evidence of compound based on mass spectral library search.
P	ORGANICS (PCB only) - Aroclor target analyte with greater than 25% difference between column analyses.
Q	ORGANICS (Dioxins & PCB Congeners only) – Estimated maximum concentration. Used if one of the qualitative identification criteria is not met (e.g., Cl isotopic ratios outside theoretical range.)
S	INORGANICS - Reported value determined by the MSA.

Table D-2. Laboratory Qualifiers

Code	Translations
T	Organics (GC/MS only) - Spike and/or spike duplicate sample recovery is outside control limits.
U	ALL - Analyzed for but not detected above limiting criteria. Limiting criteria may be any of the following: value reported < 0; value reported < counting error ; value reported < total analytical error; value_rptd ≤ contract MDL/IDL/MDA/PQL. Note – When another qualifier accompanies a “U” qualifier the result is always considered non-detected. The qualifier combinations “UJ” and "UL" indicate that the result was non-detected, but the detection limit (i.e., value reported in the VALUE_RPTD or MIN_DETECTABLE_ACTIVITY [rad analysis only] fields was estimated.
W	INORGANICS - Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
X	ALL – The result-specific translation of this qualifier code is provided in the hardcopy data report and/or case narrative. Additional result-specific translation information may also be found in the RESULT_COMMENT field for this record.
Y	Same as X if more than one flag is required. In the process of being retired.
Z	Same as X and Y if more than two flags are required. In the process of being retired.

Table D-3. Review Qualifiers

Code	Translations
F	This code is temporarily assigned while the result is undergoing further review.
G	Record has been reviewed and determined to be correct, or the record has been corrected with laboratory confirmation or other supporting information.
H	Laboratory holding time exceeded before the sample was analyzed.
P	Potential problem. Collection/analysis circumstances makes value questionable.
Q	Associated QC sample is out of limits.
R	Do not use. Further review indicates the result is not valid.
Y	Result suspect. Review - insufficient evidence to show result valid or invalid.
Z	Miscellaneous circumstances exist. Additional information may be found in the RESULT_COMMENT field for this record and/or in the SAMP_COMMENT field of the parent sample record.

Table D-4. Validation Qualifiers

Code	Translations
J	Estimated value: The associated result value may not reflect quantitation/detection levels (if assigned with an associated "U" qualifier) or actual concentrations with the precision/accuracy typically associated with results by this methodology. Result precision/accuracy may have been affected because of minor QC deficiency/s or sample matrix interferences identified during data validation.
R	Rejected value: The value may not reflect true concentrations. The ability to establish detection/non-detection may be questionable. Validation activities identified major quality control deficiency/s or sample matrix interferences. The data should be considered unusable for most purposes. Any use of this data should be undertaken with great care. The data should not be used for certain regulatory decision-making purposes.

Table D-4. Validation Qualifiers

Code	Translations
U	Functional non-detect: The constituent was analyzed for and reported as detected by the laboratory. The constituent has been assigned a non-detect qualifier because of associated low-level analytical batch contamination or other circumstances noted by the validator that indicates that use of the data as detected is inappropriate. Validation may result in a revised reported value. Revised results typically involve substituting the quantitation/reporting limit if greater than the initial laboratory reported value. This qualifier may be assigned along with either, but never both, of the other validation qualifiers. In that case, both definitions apply to the associated result. The data should be considered usable as a non-detect for most decision-making purposes.

D2.1 Soil Analytical Data

Soil analytical data were compiled from waste site remedial actions (e.g., confirmation sampling, waste site excavation) and previous site investigation activities.

D2.1.1 Post-Remedial Action Waste Site Data

Sample numbers and locations used to support approved waste site reclassification within the 100-F/IU-2/IU-6 Area were compiled to March 1, 2012. The data represent soil remaining in place at waste sites that were remediated, interim closed, or required no further action based on sampling and analysis results. Specific details regarding sampling methods and locations are provided in the Cleanup Verification Package (CVP) and Remaining Sites Verification Package (RSVP) reports prepared for each waste site, listed below. These data were extracted from the HEIS database on August 11, 2011 and September 24, 2012.

The following types of data are not included in the waste site post-remedial action soil analytical data:

- Quality control (QC) samples (e.g., equipment blanks and field trip blanks)
- Variance samples
- In-Process samples

The 100-F/IU-2/IU-6 data were compiled based on the following CVP and RSVP reports related to waste site remedial actions:

- CVP-2001-00001, *Cleanup Verification Package for the 100-F-2 Strontium Garden*.
- CVP-2001-00002, *Cleanup Verification Package for the 100-F-19:1 and 100-F-19:3 Reactor Cooling Water Effluent Pipelines, 100-F-34 Biology Facility French Drain, and 116-F-12 French Drain*.
- CVP-2001-00003, *Cleanup Verification Package for the 100-F-19:2 Reactor Cooling Water Effluent Pipeline, 116-F-11 Cushion Corridor French Drain, UPR-100-F-1 Sewer Line Leak, and 100-F-29 Experimental Animal Farm Process Sewer Pipelines*.
- CVP-2001-00005, *Cleanup Verification Package for the 116-F-2, 107-F Liquid Waste Disposal Trench*.
- CVP-2001-00006, *Cleanup Verification Package for the 116-F-4 Pluto Crib*.
- CVP-2001-00007, *Cleanup Verification Package for the 116-F-5 Ball Washer Crib*.

- CVP-2001-00008, *Cleanup Verification Package for the 116-F-9 Animal Waste Leaching Trench*.
- CVP-2001-00009, *Cleanup Verification Package for the 116-F-14 Retention Basin*.
- CVP-2001-00010, *Cleanup Verification Package for the 1607-F6 Septic System and Pipelines*.
- CVP-2001-00011, *Cleanup Verification Package for the UPR-100-F-2 Basin Leak Ditch*.
- CVP-2001-00019, *Cleanup Verification Package for the JA Jones 1 Site*.
- CVP-2001-00020, *Cleanup Verification Package for the 600-23 Dumping Area*.
- CVP-2002-00001, *Cleanup Verification Package for the 100-F-4, 100-F-11, 100-F-15, and 100-F-16 French Drains*.
- CVP-2002-00004, *Cleanup Verification Package for the 126-F-1, 184-F Powerhouse Ash Pit*.
- CVP-2002-00005, *Cleanup Verification Package for the 1607-F2 Septic System*.
- CVP-2002-00007, *Cleanup Verification Package for the 100-F-35 Soil Contamination Site*.
- CVP-2002-00008, *Cleanup Verification Package for the 116-F-3 Fuel Storage Basin Trench*.
- CVP-2002-00009, *Cleanup Verification Package for the 116-F-1 Lewis Canal*.
- CVP-2002-00010, *Cleanup Verification Package for the 116-F-6 Liquid Waste Disposal Trench*.
- CVP-2003-00003, *Cleanup Verification Package for the 116-F-10, 105-F Dummy Decontamination French Drain*.
- CVP-2003-00010, *Cleanup Verification Package for the 100-F-25, 146-FR Drywells and the UPR-100-F-3 Mercury Spill*.
- CVP-2003-00011, *Cleanup Verification Package for the 100-F-23, 141-C Drywell*.
- CVP-2003-00012, *Cleanup Verification Package for the 100-F-24, 145-F Drywell*.
- CVP-2003-00017, *Cleanup Verification Package for the 118-F-8:1, 105-F Reactor Below-Grade Structures and Underlying Soils; the 118-F-8:3, 105-F Fuel Storage Basin Underlying Soils; and the 100-F-10 French Drain*.
- CVP-2006-00007, *Cleanup Verification Package for the 118-F-7, 100-F Miscellaneous Hardware Storage Vault*.
- CVP-2006-00008, *Cleanup Verification Package for the 118-F-3, Minor Construction Burial Ground*.
- CVP-2006-00009, *Cleanup Verification Package for the 100-F-20, Pacific Northwest Laboratory Parallel Pits*.
- CVP-2007-00001, *Cleanup Verification Package for the 118-F-1 Burial Ground*.
- CVP-2007-00002, *Cleanup Verification Package for the 118-F-2 Burial Ground*.
- CVP-2007-00003, *Cleanup Verification Package for the 118-F-5 PNL Sawdust Pit*.

- CVP-2007-00004, *Cleanup Verification Package for the 118-F-8:4 Fuel Storage Basin West Side Adjacent and Side Slope Soils*.
- CVP-2008-00001, *Cleanup Verification Package for the 118-F-6 Burial Ground*.
- WSRF 2004-062, *Waste Site Reclassification Form*, Operable Unit 100-IU-6, Waste Site ID 600-110, with attachment, "Remaining Sites Verification Package for 600-110 Hanford Townsite Landfill."
- WSRF 2004-093, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 100-F-38, with attachment, "Remaining Sites Verification Package for the 100-F-38, Stained Soil Site."
- WSRF 2004-095, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 100-F-37, with attachment, "Remaining Sites Verification Package for the I100-F-37, French Drain Discovered Near Hydrant F-2."
- WSRF 2004-098, *Waste Site Reclassification Form*, Operable Unit 100-IU-6, Waste Site ID 600-98, with attachment, "Remaining Sites Verification Package for 600-98 East White Bluffs City Landfill."
- WSRF 2004-124, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 100-F-7, with attachment, "Remaining Sites Verification Package for the 100-F-7 Underground Fuel Tank for the 1705-F Building."
- WSRF 2004-125, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 100-F-9, with attachment, "Remaining Sites Verification Package for the 100-F-9 French Drain at the East End of the 105-F Storage Room."
- WSRF 2004-126, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 100-F-12, with attachment, "Remaining Sites Verification Package for the 100-F-12 French Drain."
- WSRF 2004-127, *Waste Site Reclassification Form*, Operable Unit 100-FR-2, Waste Site ID 100-F-14, with attachment, "Remaining Sites Verification Package for the 100-F-14, 100-FR-2 Vent Pipe, 100-F Carpenter Shop Vent Pipe."
- WSRF 2004-128, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 116-F-7, Seal Pit Water Crib, with attachment, "Remaining Sites Verification Package for the 116-F-7 Seal Pit Water Crib."
- WSRF 2004-129, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 118-F-4, with attachment, "Remaining Sites Verification Package for the 118-F-4, 115-F Pit."
- WSRF 2004-130, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site Code 1607-F1, with attachment, "Remaining Sites Verification Package for the 1607-F1 Sanitary Sewer System (124-F-1) and the 100-F-26:8 (1607-F1) Sanitary Sewer Pipelines Waste Sites."
- WSRF 2004-131, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site Code 1607-F4, with attachment, "Remaining Sites Verification Package for the 1607-F4 Sanitary Sewer System."
- WSRF 2004-136, *Waste Site Reclassification Form*, Operable Unit 100-IU-2, Waste Site ID 600-129 and 600-191, with attachment, "Remaining Sites Verification Package for the 600-129 and 600-191, White Bluffs Pre-Manhattan Engineering District (MED) Community Dump Sites 1 and 2."

- WSRF 2004-137, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 100-F-18, with attachment, "Remaining Sites Verification Package for the 100-F-18 Condensate Drain Field and Underground Tank."
- WSRF 2005-008 Attachment, *Remaining Sites Verification Package for the 100-F-26:1 North Process Sewer Collection Pipelines*.
- WSRF 2005-025, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 182-F, with attachment, "Remaining Sites Verification Package for the 182-F Reservoir Waste Site."
- WSRF 2005-043, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 132-F-4:2, 116-F Reactor Stack Base Burial.
- WSRF 2005-044, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 116-F-7:2, 117-F Crib Pipeline.
- WSRF 2006-017, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 126-F-2, with attachment, "Remaining Sites Verification Package for the 126-F-2,183-F Clearwells."
- WSRF 2006-021, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 100-F-33, with attachment, "Remaining Sites Verification Package for the 100-F-33, 146-F Aquatic Biology Fish Ponds."
- WSRF 2006-027, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 141-C, with attachment, "Remaining Sites Verification Package for the 141-C Large Animal Barn and Biology Laboratory (Hog Barn)."
- WSRF 2006-029, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 132-F-1, with attachment, "Remaining Sites Verification Package for the 132-F-1, 141-F Chronic Feeding Sheep Barn."
- WSRF 2006-033, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 100-F-31, with attachment, "Remaining Sites Verification Package for the 100-F-31, 144-F Sanitary Sewer System."
- WSRF 2006-038, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 116-F-8, with attachment, "Remaining Sites Verification Package for the 116-F-8, 1904-F Outfall Structure and the 100-F-42, 1904-F Spillway."
- WSRF 2006-038 Attachment, 2006, *Remaining Sites Verification Package for the 116-F-8, 1904-F Outfall Structure and the 100-F-42, 1904-F Spillway*.
- WSRF 2006-039, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 116-F-16, with attachment, "Remaining Sites Verification Package for the 116-F-16, PNL Outfall and the 100-F-43, PNL Outfall Spillway."
- WSRF 2006-039 Attachment, *Remaining Sites Verification Package for the 116-F-16, PNL Outfall and the 100-F-43, PNL Outfall Spillway*.
- WSRF 2006-043, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site ID 1607-F5, with attachment, "Remaining Sites Verification Package for the 1607-F5 Sanitary Sewer System (124-F-5)."

- WSRF 2006-047, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site Code 1607-F3, with attachment, "Remaining Sites Verification Package for the 1607-F3 Sanitary Sewer System."
- WSRF 2007-001, *Waste Site Reclassification Form*, Operable Unit 100-FR-2, Waste Site Code 100-F-50, with attachment, "Remaining Sites Verification Package for the 100-F-50 Stormwater Runoff Culvert."
- WSRF 2007-002, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site Code 100-F-36, with attachment, "Remaining Sites Verification Package for the 100-F-36, 108-F Biological Laboratory, and for the 116-F-15, 108-F Radiation Crib."
- WSRF 2010-055, *Waste Site Reclassification Form*, Operable Unit 100-IU-2, Waste Site Code 600-346, with attachment, "Remaining Sites Verification Package for the 600-346, 100-BC Vicinity Ash and Debris Area."
- WSRF 2010-087, *Waste Site Reclassification Form*, Operable Unit 100-IU-2, Waste Site Code 600-5, with attachment, "Remaining Sites Verification Package for the 600-5, White Bluffs Waste Oil Dump and Asphalt Heliport."
- WSRF 2011-015, *Waste Site Reclassification Form*, Operable Unit 100-IU-2, Waste Site Code 600-296, with attachment, "Remaining Sites Verification Package for the 600-296, White Bluffs Fire Department Septic System."
- WSRF 2011-024, *Waste Site Reclassification Form*, Operable Unit 100-IU-6, Waste Site Code 600-315, with attachment, "Remaining Sites Verification Package for the 600-315, Black Granular Stain."
- WSRF 2011-029, *Waste Site Reclassification Form*, Operable Unit 100-IU-2, Waste Site Code 600-176, with attachment, "Remaining Sites Verification Package for the 600-176, White Bluffs Paint Disposal Area."
- WSRF 2011-030, *Waste Site Reclassification Form*, Operable Unit 100-IU-6, Waste Site Code 600-202, with attachment, "Remaining Sites Verification Package for the 600-202, Hanford Townsite Four Burn and Burial Pits."
- WSRF 2011-031, *Waste Site Reclassification Form*, Operable Unit 100-IU-6, Waste Site Code 600-205, with attachment, "Remaining Sites Verification Package for the 600-205, Hanford Townsite Landfill 2."
- WSRF 2011-051, *Waste Site Reclassification Form*, Operable Unit 100-IU-6, Waste Site Code 600-108/600-257, with attachment, "Remaining Sites Verification Package for the 600-108 and 600-257, 213-K Vault and 213-J Vault."
- WSRF 2011-057, *Waste Site Reclassification Form*, Operable Unit 100-IU-6, Waste Site Code 600-178, with attachment, "Remaining Sites Verification Package for the 600-178, 213-J and 213-K Guard House Toilet Pit."
- WSRF 2011-069, *Waste Site Reclassification Form*, Operable Unit 100-IU-6, Waste Site Code 600-186, with attachment, "Remaining Sites Verification Package for the 600-186, Hanford Construction Came Septic Tanks and Sewage Treatment Plants."

- WSRF 2011-072, *Waste Site Reclassification Form*, Operable Unit 100-IU-6, Waste Site Code 600-3, with attachment, "Remaining Sites Verification Package for the 600-3, Hanford Townsite Excess Material Storage Yard/Paint Pit."
- WSRF 2011-073, *Waste Site Reclassification Form*, Operable Unit 100-IU-6, Waste Site Code 600-350, with attachment, "Remaining Sites Verification Package for the 600-350, PNL Water Catchment Experiment."
- WSRF 2011-083, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site Code 100-F-55, with attachment, "Remaining Sites Verification Package for the 100-F-55, 1607-F7 Contaminated Ash Layer and 100-F-62, Animal Farm Septic Lines."
- WSRF 2011-084, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site Code 100-F-45, with attachment, "Remaining Sites Verification Package for the 100-F-45, Buried River Effluent Pipelines."
- WSRF 2011-085, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site Code 100-F-51, with attachment, "Remaining Sites Verification Package for the 100-F-51, 146-F Fish Laboratory Soil and 100-F-63, Animal Farm Radioactive Effluent Lines."
- WSRF 2011-086, Waste Site Reclassification Form, Operable Unit 100-FR-1, Waste Site Code 100-F-47, with attachment, "Remaining Sites Verification Package for the 100-F-47, 151-F Substation."
- WSRF 2011-087, *Waste Site Reclassification Form*, Operable Unit 100-FR-2, Waste Site Code 600-351, with attachment, "Remaining Sites Verification Package for the 600-351, Stained Areas Outside of 100-F Area."
- WSRF 2011-089, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site Code 100-F-49, with attachment, "Remaining Sites Verification Package for the 100-F-49, 1716-F Maintenance Garage Lubrication Pit."
- WSRF 2011-093, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site Code 100-F-48, with attachment, "Remaining Sites Verification Package for the 100-F-48, 184-F Coal Pit Debris."
- WSRF 2011-097, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site Code 100-F-63, with attachment, "Remaining Sites Verification Package for the 100-F-51, 146-F Fish Laboratory Soil and 100-F-63, Animal Farm Radioactive Effluent Lines."
- WSRF 2011-103, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site Code 100-F-61, with attachment, "Remaining Sites Verification Package for the 100-F-61, Stained Soil Near 100-F-12 Waste Sites."
- WSRF 2011-104, *Waste Site Reclassification Form*, Operable Unit 100-FR-1, Waste Site Code 100-F-62, with attachment, "Remaining Sites Verification Package for the 100-F-55, 1607-F7 Contaminated Ash Layer and 100-F-62, Animal Farm Septic Lines."

D2.1.2 Historical Remedial Investigation Data

Soil analytical data from Limited Field Investigation (LFI) reports and other investigation activities not directly related to waste site remediation were compiled.

Available soil analytical data to December 31, 2009, in HEIS were exported from HEIS on February 11, 2010. The following references provided Sample IDs for data within the 100-F/IU-2/IU-6 Area:

- DOE/RL-93-82, *Limited Field Investigation Report for the 100-FR-1 Operable Unit*.
- DOE/RL-93-83, *Limited Field Investigation Report for the 100-FR-3 Operable Unit*.
- UNI-946, *Radiological Characterization of the Retired 100 Areas*.

D2.2 Groundwater Analytical Data

Electronically available groundwater analytical data for the 100-F/IU-2/IU-6 area in support of the RI/FS were compiled from available sampling locations (including existing wells and aquifer tubes). The data were compiled from January 1, 2007, to December 31, 2011, to cover the last 5 years of sampling data. The files were downloaded from the Hanford Virtual Library (portal to HEIS) on May 22, 2012, and included all available sampling locations and analytical constituents within the 100-F/IU-2/IU-6 Area.

D2.3 Well and Borehole Information

Well and borehole information includes horizontal coordinates, drill date, well status (e.g., in use or decommissioned), total depth, and well screen information, where available. The data were compiled from information available in the Hanford Well Information System and the Hanford QMAP geospatial map portal Waste Information Data System and Wells mapping application on June 18, 2010.

D2.4 Fate and Transport Parameters

Data and information to support fate and transport evaluations for the RI/FS consisted of the following parameters:

- Contaminant distribution coefficients
- Dispersivity
- Hydraulic conductivity
- Bulk density

Data related to these parameters are available in the following reports:

- PNL-10886, *Development of a Three Dimensional Ground Water Model of the Hanford Site Unconfined Aquifer System: FY 1995 Status Report*.
- PNNL-14702, *Vadose Zone Hydrogeology Data Package for Hanford Assessments*.
- SGW-47040, *Geohydrologic Data Package in Support of 100-FR-3 Modeling*.
- WHC-SD-EN-TI-221, *Geology of the 100-FR-3 Operable Unit, Hanford Site, South-Central Washington*.

D2.5 Geologic Information

Geologic contact information between major units was compiled for the 100-F/IU-2/IU-6 Area. Geologic contact information is presented for 100-F/IU-2/IU-6 in included in *100 Area Stratigraphic Database Development* (ECF-100NPL-11-0070).

D2.6 Groundwater Levels and River Stage

Data for groundwater depths and elevations and river stage elevations were compiled for the 100-F/IU-2/IU-6 Area.

D2.6.1 Groundwater Levels

Groundwater elevation data (manual measurements) for 100-F/IU-2/IU-6 wells were extracted from HEIS for the period 1950 through 2011.

The text below explains field codes that are specific to water-level data. Other field codes are explained in the preceding sections.

- HYD_DATE_TIME_PST – Date of measurement
- HYD_HEAD_METERS_NAVD88 – Water level elevation in meters above *North American Vertical Datum of 1988* (NAVD88)
- DEPTH_TO_WATER_MP – Measured depth below measuring point
- DEPTH_TO_WATER_MP_UNITS – Units in which original measurement made
- RP_ELEV_METERS_NAVD88 – Elevation of reference point in meters above *North American Vertical Datum of 1988* (NAVD88)
- MP_MINUS_RP – Difference in elevation between measuring point and reference point
- MP_MINUS_RP_UNITS – Units of depth
- DEPTH_TO_WATER_RP – Depth below reference point
- DEPTH_TO_WATER_RP_UNITS -- Depth units
- REVIEW_QUALIFIER – Indicator code that the quality of the data point is questioned, assigned by the data owners. Table D-3 explains the qualifier codes.

Selected wells in 100-F are part of the automated water level network (AWLN); hourly data are provided for those wells in the file "awln_2010-2011."

D2.6.2 River Stage

The AWLN database also contains river stage elevations from a network of river stage monitors along the Hanford Site. Data from a 100-F river gauge are included for 2010 and 2011.

Additional river stage data were downloaded from the United States Geological Survey (USGS) site for the Priest Rapids Dam gauge (the Columbia River dam nearest to the Hanford Site) on May 10, 2010. The website address is http://waterdata.usgs.gov/wa/nwis/uv?site_no=12472800. Priest Rapids Dam is located approximately 13 km (8 miles) upstream of 100-F. Daily discharge information for the gauge was available from October 1, 1917, to December 31, 2009. Daily gauge height information was available from October 3, 1992, to December 3, 2009.

D3 Summary of the RI/FS Field Investigation Activities Data Compilation

Samples for the 100-F/IU-2/IU-6 RI/FS were collected per *Sampling and Analysis Plan for the 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units Remedial Investigation/Feasibility Study* (DOE/RL-2009-43). According to the sampling and analysis plan (SAP) (DOE/RL-2009-43), soil and

water samples were collected from new boreholes and wells and included soil contaminant analytical data, soil physical properties (grain size, porosity, and moisture content), soil distribution coefficient data, and groundwater contaminant analytical data.

D3.1 Sample Summary for RI Boreholes and Wells

The following boreholes and wells were drilled to support the 100-F/IU-2/IU-6 RI/FS process (as described in Chapter 3 and the SAP [DOE/RL-2009-43]): C7790, C7791, C7792, C7970, C7971, and C7972. Soil and groundwater Sample IDs associated with these boreholes are presented in Table D-5.

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7790	199-F5-52	B26T51	GW
C7790	199-F5-52	B26T52	GW
C7790	199-F5-52	B26T53	GW
C7790	199-F5-52	B26T54	GW
C7790	199-F5-52	B26T55	GW
C7790	199-F5-52	B26T56	GW
C7790	199-F5-52	B26T57	GW
C7790	199-F5-52	B26T58	GW
C7790	199-F5-52	B26T71	GW
C7790	199-F5-52	B26T72	GW
C7790	199-F5-52	B26T73	GW
C7790	199-F5-52	B26T74	GW
C7790	199-F5-52	B26W67	GW
C7790	199-F5-52	B26W68	GW
C7790	199-F5-52	B26T46	GW
C7790	199-F5-52	B26T48	GW
C7790	199-F5-52	B26TB3	SO
C7790	199-F5-52	B26TB4	SO
C7790	199-F5-52	B26TB7	SO
C7790	199-F5-52	B26TB8	SO
C7790	199-F5-52	B26TC1	SO
C7790	199-F5-52	B26TC2	SO
C7790	199-F5-52	B26RY4	SO
C7790	199-F5-52	B26RY5	SO
C7790	199-F5-52	B26RY7	SO
C7790	199-F5-52	B26T04	SO

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7790	199-F5-52	B26T05	SO
C7790	199-F5-52	B26T06	SO
C7790	199-F5-52	B26T07	SO
C7790	199-F5-52	B26T10	SO
C7790	199-F5-52	B26T11	SO
C7790	199-F5-52	B26T12	SO
C7790	199-F5-52	B26T17	SO
C7790	199-F5-52	B26T18	SO
C7790	199-F5-52	B26T20	SO
C7790	199-F5-52	B26T22	SO
C7790	199-F5-52	B26T25	SO
C7790	199-F5-52	B26T30	SO
C7790	199-F5-52	B26T32	SO
C7790	199-F5-52	B26T34	SO
C7790	199-F5-52	B26T44	SO
C7790	199-F5-52	B26T19-1	SO
C7790	199-F5-52	B26T19-2	SO
C7790	199-F5-52	B26T19-3	SO
C7790	199-F5-52	B26T19-4	SO
C7790	199-F5-52	B26T19-A1	SO
C7790	199-F5-52	B26T19-A2	SO
C7790	199-F5-52	B26T19-B1	SO
C7790	199-F5-52	B26T19-C1	SO
C7790	199-F5-52	B26T21-1	SO
C7790	199-F5-52	B26T21-2	SO
C7790	199-F5-52	B26T21-3	SO
C7790	199-F5-52	B26T21-4	SO
C7790	199-F5-52	B26T21-A1	SO
C7790	199-F5-52	B26T21-A2	SO
C7790	199-F5-52	B26T21-B1	SO
C7790	199-F5-52	B26T21-C1	SO
C7790	199-F5-52	B26T23-1	SO
C7790	199-F5-52	B26T23-2	SO

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7790	199-F5-52	B26T23-3	SO
C7790	199-F5-52	B26T23-4	SO
C7790	199-F5-52	B26T23-A1	SO
C7790	199-F5-52	B26T23-B1	SO
C7790	199-F5-52	B26T23-B2	SO
C7790	199-F5-52	B26T23-C1	SO
C7790	199-F5-52	B26T31-1	SO
C7790	199-F5-52	B26T31-2	SO
C7790	199-F5-52	B26T31-3	SO
C7790	199-F5-52	B26T31-4	SO
C7790	199-F5-52	B26T31-A1	SO
C7790	199-F5-52	B26T31-B1	SO
C7790	199-F5-52	B26T31-C1	SO
C7790	199-F5-52	B26T31-C2	SO
C7790	199-F5-52	B26T33-1	SO
C7790	199-F5-52	B26T33-2	SO
C7790	199-F5-52	B26T33-3	SO
C7790	199-F5-52	B26T33-4	SO
C7790	199-F5-52	B26T33-A1	SO
C7790	199-F5-52	B26T33-B1	SO
C7790	199-F5-52	B26T33-C1	SO
C7790	199-F5-52	B26T33-C2	SO
C7790	199-F5-52	B26T45-1	SO
C7790	199-F5-52	B26T45-2	SO
C7790	199-F5-52	B26T45-3	SO
C7790	199-F5-52	B26T45-4	SO
C7790	199-F5-52	B26T45-A1	SO
C7790	199-F5-52	B26T45-B1	SO
C7790	199-F5-52	B26T45-C1	SO
C7790	199-F5-52	B26T45-C2	SO
C7791	199-F5-53	B273B9	GW
C7791	199-F5-53	B273C0	GW
C7791	199-F5-53	B273C2	GW

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7791	199-F5-53	B273C7	GW
C7791	199-F5-53	B273C8	GW
C7791	199-F5-53	B273C9	GW
C7791	199-F5-53	B273D1	GW
C7791	199-F5-53	B273D6	GW
C7791	199-F5-53	B273D7	GW
C7791	199-F5-53	B273B0	GW
C7791	199-F5-53	B273B1	GW
C7791	199-F5-53	B273B2	SO
C7791	199-F5-53	B273B3	SO
C7791	199-F5-53	B273B4	SO
C7791	199-F5-53	B273B5	SO
C7791	199-F5-53	B273B6	SO
C7791	199-F5-53	B27360	SO
C7791	199-F5-53	B27369	SO
C7791	199-F5-53	B27370	SO
C7791	199-F5-53	B27372	SO
C7791	199-F5-53	B27374	SO
C7791	199-F5-53	B27375	SO
C7791	199-F5-53	B27381	SO
C7791	199-F5-53	B27382	SO
C7791	199-F5-53	B27383	SO
C7791	199-F5-53	B27385	SO
C7791	199-F5-53	B27386	SO
C7791	199-F5-53	B27387	SO
C7791	199-F5-53	B27388	SO
C7791	199-F5-53	B27394	SO
C7791	199-F5-53	B27395	SO
C7791	199-F5-53	B27396	SO
C7791	199-F5-53	B27397	SO
C7791	199-F5-53	B28MY9	SO
C7791	199-F5-53	B28N00	SO
C7791	199-F5-53	B28N01	SO

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7791	199-F5-53	B28N02	SO
C7791	199-F5-53	B28N03	SO
C7791	199-F5-53	B28N12	SO
C7791	199-F5-53	B27356-1	SO
C7791	199-F5-53	B27356-2	SO
C7791	199-F5-53	B27356-3	SO
C7791	199-F5-53	B27356-4	SO
C7791	199-F5-53	B27356-A1	SO
C7791	199-F5-53	B27356-B1	SO
C7791	199-F5-53	B27356-C1	SO
C7791	199-F5-53	B27356-C2	SO
C7791	199-F5-53	B27357-1	SO
C7791	199-F5-53	B27357-2	SO
C7791	199-F5-53	B27357-3	SO
C7791	199-F5-53	B27357-4	SO
C7791	199-F5-53	B27357-A1	SO
C7791	199-F5-53	B27357-B1	SO
C7791	199-F5-53	B27357-B2	SO
C7791	199-F5-53	B27357-C1	SO
C7791	199-F5-53	B27359-1	SO
C7791	199-F5-53	B27359-2	SO
C7791	199-F5-53	B27359-3	SO
C7791	199-F5-53	B27359-4	SO
C7791	199-F5-53	B27359-A1	SO
C7791	199-F5-53	B27359-B1	SO
C7791	199-F5-53	B27359-B2	SO
C7791	199-F5-53	B27359-C1	SO
C7791	199-F5-53	B27361-1	SO
C7791	199-F5-53	B27361-2	SO
C7791	199-F5-53	B27361-3	SO
C7791	199-F5-53	B27361-4	SO
C7791	199-F5-53	B27361-A1	SO
C7791	199-F5-53	B27361-B1	SO

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7791	199-F5-53	B27361-C1	SO
C7791	199-F5-53	B27361-C2	SO
C7791	199-F5-53	B27362-1	SO
C7791	199-F5-53	B27362-2	SO
C7791	199-F5-53	B27362-3	SO
C7791	199-F5-53	B27362-4	SO
C7791	199-F5-53	B27362-A1	SO
C7791	199-F5-53	B27362-B1	SO
C7791	199-F5-53	B27362-C1	SO
C7791	199-F5-53	B27362-C2	SO
C7791	199-F5-53	B27368-1	SO
C7791	199-F5-53	B27368-2	SO
C7791	199-F5-53	B27368-3	SO
C7791	199-F5-53	B27368-4	SO
C7791	199-F5-53	B27368-A1	SO
C7791	199-F5-53	B27368-A2	SO
C7791	199-F5-53	B27368-B1	SO
C7791	199-F5-53	B27368-C1	SO
C7792	199-F5-54	B26YX7	GW
C7792	199-F5-54	B26YX8	GW
C7792	199-F5-54	B26YX9	GW
C7792	199-F5-54	B26YY0	GW
C7792	199-F5-54	B26YY1	GW
C7792	199-F5-54	B26YY2	GW
C7792	199-F5-54	B26YY5	GW
C7792	199-F5-54	B26YY6	GW
C7792	199-F5-54	B26YY7	GW
C7792	199-F5-54	B26YY8	GW
C7792	199-F5-54	B26YY9	GW
C7792	199-F5-54	B27000	GW
C7792	199-F5-54	B26Y99	GW
C7792	199-F5-54	B26YB0	GW
C7792	199-F5-54	B26YX1	SO

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7792	199-F5-54	B26YX3	SO
C7792	199-F5-54	B273B7	SO
C7792	199-F5-54	B273B8	SO
C7792	199-F5-54	B274K6	SO
C7792	199-F5-54	B274K7	SO
C7792	199-F5-54	B27PX9	SO
C7792	199-F5-54	B27PY0	SO
C7792	199-F5-54	B27PY1	SO
C7792	199-F5-54	B26Y55	SO
C7792	199-F5-54	B26Y56	SO
C7792	199-F5-54	B26Y57	SO
C7792	199-F5-54	B26Y58	SO
C7792	199-F5-54	B26Y60	SO
C7792	199-F5-54	B26Y61	SO
C7792	199-F5-54	B26Y62	SO
C7792	199-F5-54	B26Y63	SO
C7792	199-F5-54	B26Y64	SO
C7792	199-F5-54	B26Y65	SO
C7792	199-F5-54	B26Y67	SO
C7792	199-F5-54	B26Y68	SO
C7792	199-F5-54	B26Y69	SO
C7792	199-F5-54	B26Y73	SO
C7792	199-F5-54	B26Y74	SO
C7792	199-F5-54	B26Y75	SO
C7792	199-F5-54	B26Y76	SO
C7792	199-F5-54	B26Y77	SO
C7792	199-F5-54	B26Y78	SO
C7792	199-F5-54	B26Y80	SO
C7792	199-F5-54	B26Y81	SO
C7792	199-F5-54	B26Y82	SO
C7792	199-F5-54	B26Y86-1	SO
C7792	199-F5-54	B26Y86-2	SO
C7792	199-F5-54	B26Y86-3	SO

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7792	199-F5-54	B26Y86-4	SO
C7792	199-F5-54	B26Y86-A1	SO
C7792	199-F5-54	B26Y86-A2	SO
C7792	199-F5-54	B26Y86-B1	SO
C7792	199-F5-54	B26Y86-C1	SO
C7792	199-F5-54	B26Y88-1	SO
C7792	199-F5-54	B26Y88-2	SO
C7792	199-F5-54	B26Y88-3	SO
C7792	199-F5-54	B26Y88-4	SO
C7792	199-F5-54	B26Y88-A1	SO
C7792	199-F5-54	B26Y88-B1	SO
C7792	199-F5-54	B26Y88-B2	SO
C7792	199-F5-54	B26Y88-C1	SO
C7792	199-F5-54	B26Y89-1	SO
C7792	199-F5-54	B26Y89-2	SO
C7792	199-F5-54	B26Y89-3	SO
C7792	199-F5-54	B26Y89-4	SO
C7792	199-F5-54	B26Y89-A1	SO
C7792	199-F5-54	B26Y89-A2	SO
C7792	199-F5-54	B26Y89-B1	SO
C7792	199-F5-54	B26Y89-C1	SO
C7792	199-F5-54	B26Y90-1	SO
C7792	199-F5-54	B26Y90-2	SO
C7792	199-F5-54	B26Y90-3	SO
C7792	199-F5-54	B26Y90-4	SO
C7792	199-F5-54	B26Y90-A1	SO
C7792	199-F5-54	B26Y90-B1	SO
C7792	199-F5-54	B26Y90-B2	SO
C7792	199-F5-54	B26Y90-C1	SO
C7792	199-F5-54	B26Y91-1	SO
C7792	199-F5-54	B26Y91-2	SO
C7792	199-F5-54	B26Y91-3	SO
C7792	199-F5-54	B26Y91-4	SO

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7792	199-F5-54	B26Y91-A1	SO
C7792	199-F5-54	B26Y91-A2	SO
C7792	199-F5-54	B26Y91-B1	SO
C7792	199-F5-54	B26Y91-C1	SO
C7792	199-F5-54	B26Y93-1	SO
C7792	199-F5-54	B26Y93-2	SO
C7792	199-F5-54	B26Y93-3	SO
C7792	199-F5-54	B26Y93-4	SO
C7792	199-F5-54	B26Y93-A1	SO
C7792	199-F5-54	B26Y93-B1	SO
C7792	199-F5-54	B26Y93-B2	SO
C7792	199-F5-54	B26Y93-C1	SO
C7792	199-F5-54	B26Y94-1	SO
C7792	199-F5-54	B26Y94-2	SO
C7792	199-F5-54	B26Y94-3	SO
C7792	199-F5-54	B26Y94-4	SO
C7792	199-F5-54	B26Y94-A1	SO
C7792	199-F5-54	B26Y94-B1	SO
C7792	199-F5-54	B26Y94-C1	SO
C7792	199-F5-54	B26Y94-C2	SO
C7792	199-F5-54	B26Y95-1	SO
C7792	199-F5-54	B26Y95-2	SO
C7792	199-F5-54	B26Y95-3	SO
C7792	199-F5-54	B26Y95-4	SO
C7792	199-F5-54	B26Y95-A1	SO
C7792	199-F5-54	B26Y95-B1	SO
C7792	199-F5-54	B26Y95-C1	SO
C7792	199-F5-54	B26Y95-C2	SO
C7970	199-F5-55	B2C687	GW
C7970	199-F5-55	B2C688	GW
C7970	199-F5-55	B2C689	GW
C7970	199-F5-55	B28NX3	GW
C7970	199-F5-55	B28NX4	GW

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7970	199-F5-55	B28NX5	GW
C7970	199-F5-55	B28NX6	GW
C7970	199-F5-55	B28NX7	GW
C7970	199-F5-55	B28NX8	GW
C7970	199-F5-55	B28NM6	SO
C7970	199-F5-55	B28NM7	SO
C7970	199-F5-55	B28NM8	SO
C7970	199-F5-55	B28NM9	SO
C7970	199-F5-55	B28NN0	SO
C7970	199-F5-55	B28NN1	SO
C7970	199-F5-55	B28NN2	SO
C7970	199-F5-55	B28NN3	SO
C7970	199-F5-55	B28NN9	SO
C7970	199-F5-55	B28NR3	SO
C7970	199-F5-55	B28NR4	SO
C7970	199-F5-55	B28NR5	SO
C7970	199-F5-55	B28NR6	SO
C7970	199-F5-55	B28NR7	SO
C7970	199-F5-55	B28NR8	SO
C7970	199-F5-55	B28NR9	SO
C7970	199-F5-55	B28NT5	SO
C7970	199-F5-55	B28NT6	SO
C7970	199-F5-55	B28NT7	SO
C7970	199-F5-55	B28NT8	SO
C7970	199-F5-55	B28NT9	SO
C7970	199-F5-55	B28NV0	SO
C7970	199-F5-55	B28NV1	SO
C7970	199-F5-55	B28NV2	SO
C7970	199-F5-55	B28NV8	SO
C7970	199-F5-55	B28NV9	SO
C7970	199-F5-55	B28NW0	SO
C7970	199-F5-55	B28NW1	SO
C7970	199-F5-55	B28NW2	SO

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7970	199-F5-55	B28NW9	SO
C7970	199-F5-55	B28NX0	SO
C7970	199-F5-55	B28NX1	SO
C7970	199-F5-55	B28NX2	SO
C7970	199-F5-55	B2BXR1	SO
C7970	199-F5-55	B28NP0-1	SO
C7970	199-F5-55	B28NP0-2	SO
C7970	199-F5-55	B28NP0-3	SO
C7970	199-F5-55	B28NP0-4	SO
C7970	199-F5-55	B28NP0-A1	SO
C7970	199-F5-55	B28NP0-A2	SO
C7970	199-F5-55	B28NP0-B1	SO
C7970	199-F5-55	B28NP0-C1	SO
C7970	199-F5-55	B28NP1-1	SO
C7970	199-F5-55	B28NP1-2	SO
C7970	199-F5-55	B28NP1-3	SO
C7970	199-F5-55	B28NP1-4	SO
C7970	199-F5-55	B28NP1-A1	SO
C7970	199-F5-55	B28NP1-B1	SO
C7970	199-F5-55	B28NP1-B2	SO
C7970	199-F5-55	B28NP1-C1	SO
C7970	199-F5-55	B28NP2-1	SO
C7970	199-F5-55	B28NP2-2	SO
C7970	199-F5-55	B28NP2-3	SO
C7970	199-F5-55	B28NP2-4	SO
C7970	199-F5-55	B28NP2-A1	SO
C7970	199-F5-55	B28NP2-B1	SO
C7970	199-F5-55	B28NP2-B2	SO
C7970	199-F5-55	B28NP2-C1	SO
C7970	199-F5-55	B28NP3-1	SO
C7970	199-F5-55	B28NP3-2	SO
C7970	199-F5-55	B28NP3-3	SO
C7970	199-F5-55	B28NP3-4	SO

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7970	199-F5-55	B28NP3-A1	SO
C7970	199-F5-55	B28NP3-B1	SO
C7970	199-F5-55	B28NP3-C1	SO
C7970	199-F5-55	B28NP3-C2	SO
C7970	199-F5-55	B28NP4-1	SO
C7970	199-F5-55	B28NP4-2	SO
C7970	199-F5-55	B28NP4-3	SO
C7970	199-F5-55	B28NP4-4	SO
C7970	199-F5-55	B28NP4-A1	SO
C7970	199-F5-55	B28NP4-A2	SO
C7970	199-F5-55	B28NP4-B1	SO
C7970	199-F5-55	B28NP4-C1	SO
C7970	199-F5-55	B28NP5-1	SO
C7970	199-F5-55	B28NP5-2	SO
C7970	199-F5-55	B28NP5-3	SO
C7970	199-F5-55	B28NP5-4	SO
C7970	199-F5-55	B28NP5-A1	SO
C7970	199-F5-55	B28NP5-B1	SO
C7970	199-F5-55	B28NP5-B2	SO
C7970	199-F5-55	B28NP5-C1	SO
C7970	199-F5-55	B28NP6-1	SO
C7970	199-F5-55	B28NP6-2	SO
C7970	199-F5-55	B28NP6-3	SO
C7970	199-F5-55	B28NP6-4	SO
C7970	199-F5-55	B28NP6-A1	SO
C7970	199-F5-55	B28NP6-B1	SO
C7970	199-F5-55	B28NP6-B2	SO
C7970	199-F5-55	B28NP6-C1	SO
C7970	199-F5-55	B28NR2-1	SO
C7970	199-F5-55	B28NR2-2	SO
C7970	199-F5-55	B28NR2-3	SO
C7970	199-F5-55	B28NR2-4	SO
C7970	199-F5-55	B28NR2-A1	SO

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7970	199-F5-55	B28NR2-B1	SO
C7970	199-F5-55	B28NR2-B2	SO
C7970	199-F5-55	B28NR2-C1	SO
C7971	C7971	B28VV8	GW
C7971	C7971	B28VV9	GW
C7971	C7971	B28VW0	GW
C7971	C7971	B28VW1	GW
C7971	C7971	B28VW2	GW
C7971	C7971	B28VW3	GW
C7971	C7971	B28VL5	SO
C7971	C7971	B28VL6	SO
C7971	C7971	B28VL7	SO
C7971	C7971	B28VL9	SO
C7971	C7971	B28VM1	SO
C7971	C7971	B28VM2	SO
C7971	C7971	B28VM4	SO
C7971	C7971	B28VM5	SO
C7971	C7971	B28VM6	SO
C7971	C7971	B28VM7	SO
C7971	C7971	B28VN1	SO
C7971	C7971	B28VN2	SO
C7971	C7971	B28VN3	SO
C7971	C7971	B28VN5	SO
C7971	C7971	B28VT9	SO
C7971	C7971	B28VV0	SO
C7971	C7971	B28VV1	SO
C7971	C7971	B28VV3	SO
C7971	C7971	B28VV4	SO
C7971	C7971	B2B6M3	SO
C7971	C7971	B28VL8-1	SO
C7971	C7971	B28VL8-2	SO
C7971	C7971	B28VL8-3	SO
C7971	C7971	B28VL8-4	SO

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7971	C7971	B28VL8-A1	SO
C7971	C7971	B28VL8-A2	SO
C7971	C7971	B28VL8-B1	SO
C7971	C7971	B28VL8-C1	SO
C7971	C7971	B28VM3-1	SO
C7971	C7971	B28VM3-2	SO
C7971	C7971	B28VM3-3	SO
C7971	C7971	B28VM3-4	SO
C7971	C7971	B28VM3-A1	SO
C7971	C7971	B28VM3-B1	SO
C7971	C7971	B28VM3-B2	SO
C7971	C7971	B28VM3-C1	SO
C7971	C7971	B28VN4-1	SO
C7971	C7971	B28VN4-2	SO
C7971	C7971	B28VN4-3	SO
C7971	C7971	B28VN4-4	SO
C7971	C7971	B28VN4-A1	SO
C7971	C7971	B28VN4-B1	SO
C7971	C7971	B28VN4-C1	SO
C7971	C7971	B28VN4-C2	SO
C7971	C7971	B28VV2-1	SO
C7971	C7971	B28VV2-2	SO
C7971	C7971	B28VV2-3	SO
C7971	C7971	B28VV2-4	SO
C7971	C7971	B28VV2-A1	SO
C7971	C7971	B28VV2-B1	SO
C7971	C7971	B28VV2-B2	SO
C7971	C7971	B28VV2-C1	SO
C7972	199-F5-56	B2C6R7	GW
C7972	199-F5-56	B2C6R8	GW
C7972	199-F5-56	B2C6R9	GW
C7972	199-F5-56	B293J0	GW
C7972	199-F5-56	B293J1	GW

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7972	199-F5-56	B293J2	GW
C7972	199-F5-56	B293J3	GW
C7972	199-F5-56	B293J4	GW
C7972	199-F5-56	B293J5	GW
C7972	199-F5-56	B29386	SO
C7972	199-F5-56	B29387	SO
C7972	199-F5-56	B29388	SO
C7972	199-F5-56	B29390	SO
C7972	199-F5-56	B29391	SO
C7972	199-F5-56	B29392	SO
C7972	199-F5-56	B29394	SO
C7972	199-F5-56	B29396	SO
C7972	199-F5-56	B29397	SO
C7972	199-F5-56	B29398	SO
C7972	199-F5-56	B293B0	SO
C7972	199-F5-56	B293B1	SO
C7972	199-F5-56	B293B2	SO
C7972	199-F5-56	B293B7	SO
C7972	199-F5-56	B293B8	SO
C7972	199-F5-56	B293C0	SO
C7972	199-F5-56	B293C1	SO
C7972	199-F5-56	B293C2	SO
C7972	199-F5-56	B293C3	SO
C7972	199-F5-56	B293C5	SO
C7972	199-F5-56	B293C6	SO
C7972	199-F5-56	B293C9	SO
C7972	199-F5-56	B293D0	SO
C7972	199-F5-56	B293D2	SO
C7972	199-F5-56	B293D9	SO
C7972	199-F5-56	B293F0	SO
C7972	199-F5-56	B293F2	SO
C7972	199-F5-56	B293H8	SO
C7972	199-F5-56	B293H9	SO

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7972	199-F5-56	B293P4	SO
C7972	199-F5-56	B29389-1	SO
C7972	199-F5-56	B29389-2	SO
C7972	199-F5-56	B29389-3	SO
C7972	199-F5-56	B29389-4	SO
C7972	199-F5-56	B29389-A1	SO
C7972	199-F5-56	B29389-A2	SO
C7972	199-F5-56	B29389-B1	SO
C7972	199-F5-56	B29389-C1	SO
C7972	199-F5-56	B29393-1	SO
C7972	199-F5-56	B29393-2	SO
C7972	199-F5-56	B29393-3	SO
C7972	199-F5-56	B29393-4	SO
C7972	199-F5-56	B29393-A1	SO
C7972	199-F5-56	B29393-B1	SO
C7972	199-F5-56	B29393-B2	SO
C7972	199-F5-56	B29393-C1	SO
C7972	199-F5-56	B29399-1	SO
C7972	199-F5-56	B29399-2	SO
C7972	199-F5-56	B29399-3	SO
C7972	199-F5-56	B29399-4	SO
C7972	199-F5-56	B29399-A1	SO
C7972	199-F5-56	B29399-B1	SO
C7972	199-F5-56	B29399-C1	SO
C7972	199-F5-56	B29399-C2	SO
C7972	199-F5-56	B293B9-1	SO
C7972	199-F5-56	B293B9-2	SO
C7972	199-F5-56	B293B9-3	SO
C7972	199-F5-56	B293B9-4	SO
C7972	199-F5-56	B293B9-A1	SO
C7972	199-F5-56	B293B9-A2	SO
C7972	199-F5-56	B293B9-B1	SO
C7972	199-F5-56	B293B9-C1	SO

Table D-5. Groundwater and Soil Samples Collected during RI Borehole and Well Drilling

Well ID	Well Name	Sample Number	Media
C7972	199-F5-56	B293C4-1	SO
C7972	199-F5-56	B293C4-2	SO
C7972	199-F5-56	B293C4-3	SO
C7972	199-F5-56	B293C4-4	SO
C7972	199-F5-56	B293C4-A1	SO
C7972	199-F5-56	B293C4-B1	SO
C7972	199-F5-56	B293C4-B2	SO
C7972	199-F5-56	B293C4-C1	SO
C7972	199-F5-56	B293C8-1	SO
C7972	199-F5-56	B293C8-2	SO
C7972	199-F5-56	B293C8-3	SO
C7972	199-F5-56	B293C8-4	SO
C7972	199-F5-56	B293C8-A1	SO
C7972	199-F5-56	B293C8-B1	SO
C7972	199-F5-56	B293C8-C1	SO
C7972	199-F5-56	B293C8-C2	SO
C7972	199-F5-56	B293F1-1	SO
C7972	199-F5-56	B293F1-2	SO
C7972	199-F5-56	B293F1-3	SO
C7972	199-F5-56	B293F1-4	SO
C7972	199-F5-56	B293F1-A1	SO
C7972	199-F5-56	B293F1-B1	SO
C7972	199-F5-56	B293F1-B2	SO
C7972	199-F5-56	B293F1-C1	SO

D3.1.1 RI Soil Samples Collected During Drilling

Data for soil samples (listed in Table D-5) collected during drilling of RI/FS boreholes and wells were extracted from HEIS on August 11, 2011. Some data for batch leach testing to calculate distribution coefficient analysis were not loaded into HEIS because of format issues. These data are available in *Report for Batch Leach Analyses on Sediments at 100-FR-3 Operable Unit, Boreholes C7790, C7791, and C7792* (PNNL-20311).

The following types of data are not included in the soil analytical data provided in this appendix:

- Quality control samples (e.g., equipment blanks and field trip blanks)

- Parent sample IDs for batch leach testing and soil physical properties for which no analysis was performed and therefore no data were returned to HEIS

D3.1.2 RI Groundwater Samples Collected During Drilling

Data for groundwater samples collected during drilling of RI/FS boreholes and wells were extracted from HEIS on August 11, 2011, for the samples listed in Table D-5.

D3.1.3 Geophysical Logging

Geophysical logging was performed in all of the RI boreholes. The geophysical logging results are available in the borehole summary reports.

D3.2 Spatial and Temporal Uncertainty Groundwater Samples

Samples from groundwater monitoring wells were collected as part of the RI to support evaluation of spatial and temporal uncertainty in groundwater concentrations. Three rounds of groundwater samples were collected from the following wells (Table D-6). Sample IDs associated with each well and sampling event are provided in Table D-7.

Table D-6. Wells for Spatial/Temporal Analysis

Wells			
699-10-54A	699-43-89	699-70-68	199-F5-45
699-14-38	699-46-21B	699-71-30	199-F5-46
699-17-5	699-50-28B	699-72-92	199-F5-48
699-20-20	699-53-35	699-74-44	199-F5-6
699-20-E5A	699-54-45A	699-77-54	199-F6-1
699-26-15A	699-55-76	699-8-25	199-F7-1
699-29-4	699-55-89	699-89-35	199-F7-2
699-31-11	699-60-32	699-S3-25	199-F7-3
699-32-22A	699-61-66	199-F1-2	199-F8-2
699-34-88	699-62-43F	199-F5-1	199-F8-3
699-35-9	699-63-25A	199-F5-4	199-F8-4
699-38-15	699-65-50	199-F5-42	199-F8-7
699-41-23	699-65-72	199-F5-43A	699-77-36
699-42-12A	699-66-58	199-F5-44	

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
199-F1-2	5/5/2010	B25911
199-F1-2	5/5/2010	B25912
199-F1-2	5/5/2010	B25913
199-F1-2	5/5/2010	B25914
199-F1-2	5/5/2010	B25915
199-F1-2	5/5/2010	B25B04
199-F1-2	5/5/2010	B25B45
199-F1-2	5/5/2010	B25B46
199-F1-2	7/8/2010	B264C2
199-F1-2	7/8/2010	B264C3
199-F1-2	7/8/2010	B264C4
199-F1-2	7/8/2010	B264C5
199-F1-2	7/8/2010	B264C6
199-F1-2	7/8/2010	B26513
199-F1-2	7/8/2010	B26583
199-F1-2	7/8/2010	B26584
199-F1-2	9/26/2010	B27T04
199-F1-2	9/26/2010	B27T05
199-F1-2	9/26/2010	B27T07
199-F1-2	9/26/2010	B27T08
199-F1-2	9/26/2010	B28321
199-F1-2	9/26/2010	B28322
199-F1-2	9/26/2010	B284L2
199-F1-2	9/26/2010	B284L3
199-F1-2	9/26/2010	B285M4
199-F5-1	5/5/2010	B25916
199-F5-1	5/5/2010	B25917
199-F5-1	5/5/2010	B25918
199-F5-1	5/5/2010	B25919
199-F5-1	5/5/2010	B25920
199-F5-1	5/5/2010	B25B05
199-F5-1	5/5/2010	B25B47
199-F5-1	5/5/2010	B25B48

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
199-F5-1	7/13/2010	B264D0
199-F5-1	7/13/2010	B264D2
199-F5-1	7/13/2010	B264D3
199-F5-1	7/13/2010	B264D4
199-F5-1	7/13/2010	B26515
199-F5-1	7/13/2010	B26587
199-F5-1	7/13/2010	B26588
199-F5-1	7/13/2010	B264D5
199-F5-1	9/26/2010	B27T09
199-F5-1	9/26/2010	B27T10
199-F5-1	9/26/2010	B27T12
199-F5-1	9/26/2010	B27T13
199-F5-1	9/26/2010	B28323
199-F5-1	9/26/2010	B28324
199-F5-1	9/26/2010	B284L5
199-F5-1	9/26/2010	B284L6
199-F5-1	9/26/2010	B285M5
199-F5-4	5/5/2010	B25B07
199-F5-4	5/5/2010	B258M8
199-F5-4	5/5/2010	B258M9
199-F5-4	5/5/2010	B258N0
199-F5-4	5/5/2010	B258N1
199-F5-4	5/5/2010	B258N2
199-F5-4	5/5/2010	B258N3
199-F5-4	5/5/2010	B258N4
199-F5-4	5/5/2010	B258N5
199-F5-4	5/5/2010	B258N6
199-F5-4	5/5/2010	B25B06
199-F5-4	5/5/2010	B25B49
199-F5-4	5/5/2010	B25B50
199-F5-4	5/5/2010	B25B51
199-F5-4	5/5/2010	B25B52
199-F5-4	7/8/2010	B264F3

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
199-F5-4	7/8/2010	B264F4
199-F5-4	7/8/2010	B264F5
199-F5-4	7/8/2010	B264F6
199-F5-4	7/8/2010	B264F7
199-F5-4	7/8/2010	B26516
199-F5-4	7/8/2010	B26589
199-F5-4	7/8/2010	B26590
199-F5-4	7/8/2010	B26825
199-F5-4	7/8/2010	B26826
199-F5-4	7/8/2010	B26827
199-F5-4	9/26/2010	B27T14
199-F5-4	9/26/2010	B27T15
199-F5-4	9/26/2010	B27T17
199-F5-4	9/26/2010	B27T18
199-F5-4	9/26/2010	B28325
199-F5-4	9/26/2010	B28326
199-F5-4	9/26/2010	B284L8
199-F5-4	9/26/2010	B284L9
199-F5-4	9/26/2010	B285M6
199-F5-42	5/5/2010	B258N7
199-F5-42	5/5/2010	B258N8
199-F5-42	5/5/2010	B258N9
199-F5-42	5/5/2010	B258P0
199-F5-42	5/5/2010	B258P1
199-F5-42	5/5/2010	B25B08
199-F5-42	5/5/2010	B25B53
199-F5-42	5/5/2010	B25B54
199-F5-42	7/8/2010	B264H2
199-F5-42	7/8/2010	B264H3
199-F5-42	7/8/2010	B264H4
199-F5-42	7/8/2010	B264H5
199-F5-42	7/8/2010	B264H6
199-F5-42	7/8/2010	B26517

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
199-F5-42	7/8/2010	B26591
199-F5-42	7/8/2010	B26592
199-F5-42	11/11/2010	B27T19
199-F5-42	11/11/2010	B27T20
199-F5-42	11/11/2010	B27T22
199-F5-42	11/11/2010	B27T23
199-F5-42	11/11/2010	B28327
199-F5-42	11/11/2010	B28328
199-F5-42	11/11/2010	B284M1
199-F5-42	11/11/2010	B284M2
199-F5-42	11/11/2010	B285M7
199-F5-43A	5/5/2010	B258P2
199-F5-43A	5/5/2010	B258P3
199-F5-43A	5/5/2010	B258P4
199-F5-43A	5/5/2010	B258P5
199-F5-43A	5/5/2010	B258P6
199-F5-43A	5/5/2010	B25B09
199-F5-43A	5/5/2010	B25B55
199-F5-43A	5/5/2010	B25B56
199-F5-43A	7/8/2010	B264H7
199-F5-43A	7/8/2010	B264H8
199-F5-43A	7/8/2010	B264H9
199-F5-43A	7/8/2010	B264J0
199-F5-43A	7/8/2010	B264J1
199-F5-43A	7/8/2010	B26518
199-F5-43A	7/8/2010	B26593
199-F5-43A	7/8/2010	B26594
199-F5-43A	9/26/2010	B27T24
199-F5-43A	9/26/2010	B27T25
199-F5-43A	9/26/2010	B27T27
199-F5-43A	9/26/2010	B27T28
199-F5-43A	9/26/2010	B28329
199-F5-43A	9/26/2010	B28330

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
199-F5-43A	9/26/2010	B28367
199-F5-44	5/5/2010	B258P7
199-F5-44	5/5/2010	B258P8
199-F5-44	5/5/2010	B258P9
199-F5-44	5/5/2010	B258R0
199-F5-44	5/5/2010	B258R1
199-F5-44	5/5/2010	B25B10
199-F5-44	5/5/2010	B25B57
199-F5-44	5/5/2010	B25B58
199-F5-44	7/8/2010	B264J2
199-F5-44	7/8/2010	B264J3
199-F5-44	7/8/2010	B264J4
199-F5-44	7/8/2010	B264J5
199-F5-44	7/8/2010	B264J6
199-F5-44	7/8/2010	B26519
199-F5-44	7/8/2010	B26595
199-F5-44	7/8/2010	B26596
199-F5-44	11/11/2010	B27T29
199-F5-44	11/11/2010	B27T30
199-F5-44	11/11/2010	B27T32
199-F5-44	11/11/2010	B27T33
199-F5-44	11/11/2010	B28331
199-F5-44	11/11/2010	B28332
199-F5-44	11/11/2010	B28368
199-F5-45	5/5/2010	B258R2
199-F5-45	5/5/2010	B258R3
199-F5-45	5/5/2010	B258R4
199-F5-45	5/5/2010	B258R5
199-F5-45	5/5/2010	B258R6
199-F5-45	5/5/2010	B25B11
199-F5-45	5/5/2010	B25B59
199-F5-45	5/5/2010	B25B60
199-F5-45	7/8/2010	B264J7

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
199-F5-45	7/8/2010	B264J8
199-F5-45	7/8/2010	B264J9
199-F5-45	7/8/2010	B264K1
199-F5-45	7/8/2010	B26520
199-F5-45	7/8/2010	B26597
199-F5-45	7/8/2010	B26598
199-F5-45	7/8/2010	B264K0
199-F5-45	9/26/2010	B27T34
199-F5-45	9/26/2010	B27T35
199-F5-45	9/26/2010	B27T37
199-F5-45	9/26/2010	B27T38
199-F5-45	9/26/2010	B28333
199-F5-45	9/26/2010	B28334
199-F5-45	9/26/2010	B284M4
199-F5-45	9/26/2010	B284M5
199-F5-45	9/26/2010	B285M8
199-F5-46	5/5/2010	B258R7
199-F5-46	5/5/2010	B258R8
199-F5-46	5/5/2010	B258R9
199-F5-46	5/5/2010	B258T0
199-F5-46	5/5/2010	B258T1
199-F5-46	5/5/2010	B25B12
199-F5-46	5/5/2010	B25B61
199-F5-46	5/5/2010	B25B62
199-F5-46	7/8/2010	B264K2
199-F5-46	7/8/2010	B264K3
199-F5-46	7/8/2010	B264K4
199-F5-46	7/8/2010	B264K5
199-F5-46	7/8/2010	B264K6
199-F5-46	7/8/2010	B264K7
199-F5-46	7/8/2010	B264K8
199-F5-46	7/8/2010	B26521
199-F5-46	7/8/2010	B26532

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
199-F5-46	7/8/2010	B26599
199-F5-46	7/8/2010	B265B0
199-F5-46	7/8/2010	B265D1
199-F5-46	7/8/2010	B265D2
199-F5-46	7/8/2010	B26828
199-F5-46	11/11/2010	B27T39
199-F5-46	11/11/2010	B27T40
199-F5-46	11/11/2010	B27T42
199-F5-46	11/11/2010	B27T43
199-F5-46	11/11/2010	B28335
199-F5-46	11/11/2010	B28336
199-F5-46	11/11/2010	B28341
199-F5-46	11/11/2010	B28342
199-F5-46	11/11/2010	B28369
199-F5-46	11/11/2010	B284M8
199-F5-48	5/5/2010	B258T2
199-F5-48	5/5/2010	B258T3
199-F5-48	5/5/2010	B258T4
199-F5-48	5/5/2010	B258T5
199-F5-48	5/5/2010	B258T6
199-F5-48	5/5/2010	B25B13
199-F5-48	5/5/2010	B25B63
199-F5-48	5/5/2010	B25B64
199-F5-48	7/8/2010	B264K9
199-F5-48	7/8/2010	B264L0
199-F5-48	7/8/2010	B264L1
199-F5-48	7/8/2010	B264L2
199-F5-48	7/8/2010	B264L3
199-F5-48	7/8/2010	B26522
199-F5-48	7/8/2010	B265B1
199-F5-48	7/8/2010	B265B2
199-F5-48	9/26/2010	B27T44
199-F5-48	9/26/2010	B27T45

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
199-F5-48	9/26/2010	B27T46
199-F5-48	9/26/2010	B27T47
199-F5-48	9/26/2010	B27T48
199-F5-48	9/26/2010	B27T49
199-F5-48	9/26/2010	B27T50
199-F5-48	9/26/2010	B27T51
199-F5-48	9/26/2010	B28337
199-F5-48	9/26/2010	B28338
199-F5-48	9/26/2010	B28339
199-F5-48	9/26/2010	B28340
199-F5-48	9/26/2010	B284M9
199-F5-48	9/26/2010	B284N0
199-F5-48	9/26/2010	B284N1
199-F5-48	9/26/2010	B284N2
199-F5-48	9/26/2010	B285M9
199-F5-48	9/26/2010	B285N0
199-F5-6	5/5/2010	B258T7
199-F5-6	5/5/2010	B258T8
199-F5-6	5/5/2010	B258T9
199-F5-6	5/5/2010	B258V0
199-F5-6	5/5/2010	B258V1
199-F5-6	5/5/2010	B25B14
199-F5-6	5/5/2010	B25B65
199-F5-6	5/5/2010	B25B66
199-F5-6	7/13/2010	B264L4
199-F5-6	7/13/2010	B264L5
199-F5-6	7/13/2010	B264L6
199-F5-6	7/13/2010	B264L7
199-F5-6	7/13/2010	B264L8
199-F5-6	7/13/2010	B26523
199-F5-6	7/13/2010	B265B3
199-F5-6	7/13/2010	B265B4
199-F5-6	11/10/2010	B27T53

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
199-F5-6	11/10/2010	B27T54
199-F5-6	11/10/2010	B27T56
199-F5-6	11/10/2010	B27T57
199-F5-6	11/10/2010	B28378
199-F5-6	11/10/2010	B28379
199-F5-6	11/10/2010	B284N4
199-F5-6	11/10/2010	B284N5
199-F5-6	11/10/2010	B285N1
199-F6-1	5/17/2010	B258V2
199-F6-1	5/17/2010	B258V3
199-F6-1	5/17/2010	B258V4
199-F6-1	5/17/2010	B258V5
199-F6-1	5/17/2010	B258V6
199-F6-1	5/17/2010	B25B15
199-F6-1	5/17/2010	B25B67
199-F6-1	5/17/2010	B25B68
199-F6-1	7/8/2010	B264L9
199-F6-1	7/8/2010	B264M0
199-F6-1	7/8/2010	B264M1
199-F6-1	7/8/2010	B264M2
199-F6-1	7/8/2010	B264M3
199-F6-1	7/8/2010	B26524
199-F6-1	7/8/2010	B265B5
199-F6-1	7/8/2010	B265B6
199-F6-1	9/26/2010	B27T58
199-F6-1	9/26/2010	B27T59
199-F6-1	9/26/2010	B27T61
199-F6-1	9/26/2010	B27T62
199-F6-1	9/26/2010	B28343
199-F6-1	9/26/2010	B28344
199-F6-1	9/26/2010	B284N7
199-F6-1	9/26/2010	B284N8
199-F6-1	9/26/2010	B285N2

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
199-F7-1	5/5/2010	B258V7
199-F7-1	5/5/2010	B258V8
199-F7-1	5/5/2010	B258V9
199-F7-1	5/5/2010	B258W0
199-F7-1	5/5/2010	B258W1
199-F7-1	5/5/2010	B25B16
199-F7-1	5/5/2010	B25B69
199-F7-1	5/5/2010	B25B70
199-F7-1	7/8/2010	B264M4
199-F7-1	7/8/2010	B264M5
199-F7-1	7/8/2010	B264M6
199-F7-1	7/8/2010	B264M7
199-F7-1	7/8/2010	B264M8
199-F7-1	7/8/2010	B26525
199-F7-1	7/8/2010	B265B7
199-F7-1	7/8/2010	B265B8
199-F7-1	9/26/2010	B27T63
199-F7-1	9/26/2010	B27T64
199-F7-1	9/26/2010	B27T66
199-F7-1	9/26/2010	B27T67
199-F7-1	9/26/2010	B28345
199-F7-1	9/26/2010	B28346
199-F7-1	9/26/2010	B284P1
199-F7-2	5/5/2010	B258W2
199-F7-2	5/5/2010	B258W3
199-F7-2	5/5/2010	B258W4
199-F7-2	5/5/2010	B258W5
199-F7-2	5/5/2010	B258W6
199-F7-2	5/5/2010	B25B17
199-F7-2	5/5/2010	B25B71
199-F7-2	5/5/2010	B25B72
199-F7-2	7/8/2010	B264M9
199-F7-2	7/8/2010	B264N0

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
199-F7-2	7/8/2010	B264N1
199-F7-2	7/8/2010	B264N2
199-F7-2	7/8/2010	B264N3
199-F7-2	7/8/2010	B26526
199-F7-2	7/8/2010	B265B9
199-F7-2	7/8/2010	B265C0
199-F7-2	11/10/2010	B27T68
199-F7-2	11/10/2010	B27T69
199-F7-2	11/10/2010	B27T71
199-F7-2	11/10/2010	B27T72
199-F7-2	11/10/2010	B28347
199-F7-2	11/10/2010	B28348
199-F7-2	11/10/2010	B28370
199-F7-3	5/5/2010	B258W7
199-F7-3	5/5/2010	B258W8
199-F7-3	5/5/2010	B258W9
199-F7-3	5/5/2010	B258X1
199-F7-3	5/5/2010	B258X5
199-F7-3	5/5/2010	B25B18
199-F7-3	5/5/2010	B25B73
199-F7-3	5/5/2010	B25B74
199-F7-3	7/8/2010	B264N4
199-F7-3	7/8/2010	B264N5
199-F7-3	7/8/2010	B264N6
199-F7-3	7/8/2010	B264N7
199-F7-3	7/8/2010	B264N8
199-F7-3	7/8/2010	B26527
199-F7-3	7/8/2010	B265C1
199-F7-3	7/8/2010	B265C2
199-F7-3	9/26/2010	B284P3
199-F7-3	9/26/2010	B285T2
199-F7-3	9/26/2010	B285T3
199-F7-3	9/26/2010	B285T4

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
199-F7-3	9/26/2010	B285T5
199-F7-3	9/26/2010	B285T6
199-F7-3	9/26/2010	B285T7
199-F7-3	9/26/2010	B285T8
199-F8-2	5/6/2010	B258X6
199-F8-2	5/6/2010	B258X7
199-F8-2	5/6/2010	B258X8
199-F8-2	5/6/2010	B258X9
199-F8-2	5/6/2010	B258Y0
199-F8-2	5/6/2010	B25B20
199-F8-2	5/6/2010	B25B77
199-F8-2	5/6/2010	B25B78
199-F8-2	7/13/2010	B26487
199-F8-2	7/13/2010	B26488
199-F8-2	7/13/2010	B26489
199-F8-2	7/13/2010	B26490
199-F8-2	7/13/2010	B26491
199-F8-2	7/13/2010	B26528
199-F8-2	7/13/2010	B265C3
199-F8-2	7/13/2010	B265C4
199-F8-2	11/14/2010	B27T73
199-F8-2	11/14/2010	B27T74
199-F8-2	11/14/2010	B27T76
199-F8-2	11/14/2010	B27T77
199-F8-2	11/14/2010	B28349
199-F8-2	11/14/2010	B28350
199-F8-2	11/14/2010	B284P4
199-F8-2	11/14/2010	B284P5
199-F8-2	11/14/2010	B285N3
199-F8-3	5/5/2010	B258Y1
199-F8-3	5/5/2010	B258Y2
199-F8-3	5/5/2010	B258Y3
199-F8-3	5/5/2010	B258Y4

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
199-F8-3	5/5/2010	B258Y5
199-F8-3	5/5/2010	B25B21
199-F8-3	5/5/2010	B25B79
199-F8-3	5/5/2010	B25B80
199-F8-3	7/13/2010	B26492
199-F8-3	7/13/2010	B26493
199-F8-3	7/13/2010	B26494
199-F8-3	7/13/2010	B26495
199-F8-3	7/13/2010	B26496
199-F8-3	7/13/2010	B26529
199-F8-3	7/13/2010	B265C5
199-F8-3	7/13/2010	B265C6
199-F8-3	9/26/2010	B28351
199-F8-3	9/26/2010	B28352
199-F8-3	9/26/2010	B27T78
199-F8-3	9/26/2010	B27T79
199-F8-3	9/26/2010	B27T81
199-F8-3	9/26/2010	B27T82
199-F8-3	9/26/2010	B28371
199-F8-4	5/5/2010	B258Y6
199-F8-4	5/5/2010	B258Y7
199-F8-4	5/5/2010	B258Y8
199-F8-4	5/5/2010	B258Y9
199-F8-4	5/5/2010	B25900
199-F8-4	5/5/2010	B25B22
199-F8-4	5/5/2010	B25B81
199-F8-4	5/5/2010	B25B82
199-F8-4	7/8/2010	B26497
199-F8-4	7/8/2010	B26498
199-F8-4	7/8/2010	B26499
199-F8-4	7/8/2010	B264B0
199-F8-4	7/8/2010	B264B1
199-F8-4	7/8/2010	B26530

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Well Name	Sample Date	Sample Number
199-F8-4	7/8/2010	B265C7
199-F8-4	7/8/2010	B265C8
199-F8-4	9/26/2010	B27T83
199-F8-4	9/26/2010	B27T84
199-F8-4	9/26/2010	B27T86
199-F8-4	9/26/2010	B27T87
199-F8-4	9/26/2010	B28353
199-F8-4	9/26/2010	B28354
199-F8-4	9/26/2010	B28372
199-F8-7	5/5/2010	B254J7
199-F8-7	5/5/2010	B254J8
199-F8-7	5/5/2010	B254V2
199-F8-7	5/5/2010	B254V3
199-F8-7	5/5/2010	B25901
199-F8-7	5/5/2010	B25902
199-F8-7	5/5/2010	B25903
199-F8-7	5/5/2010	B25904
199-F8-7	5/5/2010	B25905
199-F8-7	5/5/2010	B25B23
199-F8-7	7/13/2010	B264B2
199-F8-7	7/13/2010	B264B3
199-F8-7	7/13/2010	B264B4
199-F8-7	7/13/2010	B264B5
199-F8-7	7/13/2010	B264B6
199-F8-7	7/13/2010	B26531
199-F8-7	7/13/2010	B265C9
199-F8-7	7/13/2010	B265D0
199-F8-7	9/26/2010	B27T88
199-F8-7	9/26/2010	B27T89
199-F8-7	9/26/2010	B27T91
199-F8-7	9/26/2010	B27T92
199-F8-7	9/26/2010	B28355
199-F8-7	9/26/2010	B28356

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Well Name	Sample Date	Sample Number
199-F8-7	9/26/2010	B284P7
199-F8-7	9/26/2010	B284P8
199-F8-7	9/26/2010	B285N4
699-10-54A	4/12/2010	B24LH8
699-10-54A	4/12/2010	B24LH9
699-10-54A	4/12/2010	B24LJ0
699-10-54A	4/12/2010	B24LJ1
699-10-54A	4/12/2010	B24M48
699-10-54A	4/12/2010	B24N08
699-10-54A	4/12/2010	B24N09
699-10-54A	4/12/2010	B24N11
699-10-54A	4/12/2010	B24N12
699-10-54A	4/12/2010	B24NN6
699-10-54A	4/12/2010	B24P45
699-10-54A	4/12/2010	B24P46
699-10-54A	4/12/2010	B25025
699-10-54A	9/1/2010	B26533
699-10-54A	9/1/2010	B26534
699-10-54A	9/1/2010	B26535
699-10-54A	9/1/2010	B26536
699-10-54A	9/1/2010	B26537
699-10-54A	9/1/2010	B26538
699-10-54A	9/1/2010	B26655
699-10-54A	9/1/2010	B26692
699-10-54A	9/1/2010	B26693
699-10-54A	12/7/2010	B27WL4
699-10-54A	12/7/2010	B27WL5
699-10-54A	12/7/2010	B27WL6
699-10-54A	12/7/2010	B27WL7
699-10-54A	12/7/2010	B27WL8
699-10-54A	12/7/2010	B27WL9
699-10-54A	12/7/2010	B28JT8
699-10-54A	12/7/2010	B28JX6

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-10-54A	12/7/2010	B28JX9
699-14-38	4/26/2010	B24LJ2
699-14-38	4/26/2010	B24LJ3
699-14-38	4/26/2010	B24LJ4
699-14-38	4/26/2010	B24LJ5
699-14-38	4/26/2010	B24LJ6
699-14-38	4/26/2010	B24M49
699-14-38	4/26/2010	B24N14
699-14-38	4/26/2010	B24P47
699-14-38	4/26/2010	B24P48
699-14-38	8/26/2010	B26539
699-14-38	8/26/2010	B26540
699-14-38	8/26/2010	B26541
699-14-38	8/26/2010	B26542
699-14-38	8/26/2010	B26543
699-14-38	8/26/2010	B26544
699-14-38	8/26/2010	B26656
699-14-38	8/26/2010	B26694
699-14-38	8/26/2010	B26695
699-14-38	12/17/2010	B27WM0
699-14-38	12/17/2010	B27WM1
699-14-38	12/17/2010	B27WM2
699-14-38	12/17/2010	B27WM3
699-14-38	12/17/2010	B27WM4
699-14-38	12/17/2010	B27WM5
699-14-38	12/17/2010	B28JT9
699-14-38	12/17/2010	B28JY0
699-14-38	12/17/2010	B28JY1
699-17-5	5/20/2010	B24LJ7
699-17-5	5/20/2010	B24LJ8
699-17-5	5/20/2010	B24LJ9
699-17-5	5/20/2010	B24LK0
699-17-5	5/20/2010	B24M50

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-17-5	5/20/2010	B24N16
699-17-5	5/20/2010	B24N17
699-17-5	5/20/2010	B24NN8
699-17-5	5/20/2010	B24P49
699-17-5	5/20/2010	B24P50
699-17-5	5/20/2010	B25026
699-17-5	7/16/2010	B26545
699-17-5	7/16/2010	B26546
699-17-5	7/16/2010	B26547
699-17-5	7/16/2010	B26549
699-17-5	7/16/2010	B26551
699-17-5	7/16/2010	B26555
699-17-5	7/16/2010	B26657
699-17-5	7/16/2010	B26696
699-17-5	7/16/2010	B26697
699-17-5	12/7/2010	B27WM6
699-17-5	12/7/2010	B27WM7
699-17-5	12/7/2010	B27WM8
699-17-5	12/7/2010	B27WM9
699-17-5	12/7/2010	B27WN0
699-17-5	12/7/2010	B27WN1
699-17-5	12/7/2010	B28JV0
699-17-5	12/7/2010	B28JY2
699-17-5	12/7/2010	B28JY3
699-20-20	4/12/2010	B24LK1
699-20-20	4/12/2010	B24LK2
699-20-20	4/12/2010	B24LK3
699-20-20	4/12/2010	B24LK4
699-20-20	4/12/2010	B24M51
699-20-20	4/12/2010	B24N19
699-20-20	4/12/2010	B24N20
699-20-20	4/12/2010	B24NN7
699-20-20	4/12/2010	B24P51

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-20-20	4/12/2010	B24P52
699-20-20	4/12/2010	B25031
699-20-20	7/14/2010	B26556
699-20-20	7/14/2010	B26557
699-20-20	7/14/2010	B26558
699-20-20	7/14/2010	B26559
699-20-20	7/14/2010	B26560
699-20-20	7/14/2010	B26561
699-20-20	7/14/2010	B26659
699-20-20	7/14/2010	B266B0
699-20-20	7/14/2010	B266B1
699-20-20	12/5/2010	B27WN2
699-20-20	12/5/2010	B27WN3
699-20-20	12/5/2010	B27WN4
699-20-20	12/5/2010	B27WN5
699-20-20	12/5/2010	B27WN6
699-20-20	12/5/2010	B27WN7
699-20-20	12/5/2010	B28JV1
699-20-20	12/5/2010	B28JY4
699-20-20	12/5/2010	B28JY5
699-20-E5A	4/27/2010	B24N22
699-20-E5A	4/27/2010	B24NN9
699-20-E5A	4/27/2010	B25018
699-20-E5A	4/27/2010	B25019
699-20-E5A	4/27/2010	B25020
699-20-E5A	4/27/2010	B25021
699-20-E5A	4/27/2010	B25022
699-20-E5A	4/27/2010	B25027
699-20-E5A	4/27/2010	B25028
699-20-E5A	4/27/2010	B25029
699-20-E5A	4/27/2010	B25030
699-20-E5A	6/10/2010	B25FJ7
699-20-E5A	6/10/2010	B25FJ8

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-20-E5A	6/10/2010	B25M49
699-20-E5A	6/10/2010	B25M50
699-20-E5A	6/10/2010	B25M51
699-20-E5A	6/10/2010	B25M52
699-20-E5A	6/10/2010	B25M53
699-20-E5A	6/10/2010	B25M97
699-20-E5A	6/10/2010	B25NF5
699-20-E5A	6/10/2010	B25NF6
699-20-E5A	6/10/2010	B25NF7
699-20-E5A	6/10/2010	B25NF8
699-20-E5A	9/1/2010	B26M14
699-20-E5A	9/1/2010	B26M15
699-20-E5A	9/1/2010	B26M16
699-20-E5A	9/1/2010	B26M17
699-20-E5A	9/1/2010	B26M18
699-20-E5A	9/1/2010	B26MF8
699-20-E5A	9/1/2010	B26MF9
699-20-E5A	9/1/2010	B26NF1
699-20-E5A	9/1/2010	B26NF5
699-20-E5A	9/1/2010	B26NF6
699-26-15A	4/12/2010	B24LK5
699-26-15A	4/12/2010	B24LK6
699-26-15A	4/12/2010	B24LK7
699-26-15A	4/12/2010	B24LK8
699-26-15A	4/12/2010	B24M52
699-26-15A	4/12/2010	B24N24
699-26-15A	4/12/2010	B24N25
699-26-15A	4/12/2010	B24NP0
699-26-15A	4/12/2010	B24P53
699-26-15A	4/12/2010	B24P54
699-26-15A	4/12/2010	B25032
699-26-15A	8/29/2010	B26562
699-26-15A	8/29/2010	B26563

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-26-15A	8/29/2010	B26564
699-26-15A	8/29/2010	B26565
699-26-15A	8/29/2010	B26566
699-26-15A	8/29/2010	B26567
699-26-15A	8/29/2010	B26660
699-26-15A	8/29/2010	B266B2
699-26-15A	8/29/2010	B266B3
699-26-15A	12/5/2010	B27WP3
699-26-15A	12/5/2010	B27WP4
699-26-15A	12/5/2010	B27WP5
699-26-15A	12/5/2010	B27WP6
699-26-15A	12/5/2010	B27WP7
699-26-15A	12/5/2010	B27WP8
699-26-15A	12/5/2010	B28JV2
699-26-15A	12/5/2010	B28JY8
699-26-15A	12/5/2010	B28JY9
699-29-4	4/12/2010	B24LK9
699-29-4	4/12/2010	B24LL0
699-29-4	4/12/2010	B24LL1
699-29-4	4/12/2010	B24LL2
699-29-4	4/12/2010	B24M53
699-29-4	4/12/2010	B24N27
699-29-4	4/12/2010	B24N28
699-29-4	4/12/2010	B24NP1
699-29-4	4/12/2010	B24P55
699-29-4	4/12/2010	B24P56
699-29-4	4/12/2010	B25033
699-29-4	7/16/2010	B26570
699-29-4	7/16/2010	B26568
699-29-4	7/16/2010	B26569
699-29-4	7/16/2010	B26571
699-29-4	7/16/2010	B26572
699-29-4	7/16/2010	B26573

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-29-4	7/16/2010	B26661
699-29-4	7/16/2010	B266B4
699-29-4	7/16/2010	B266B5
699-29-4	12/5/2010	B27WP9
699-29-4	12/5/2010	B27WR0
699-29-4	12/5/2010	B27WR1
699-29-4	12/5/2010	B27WR2
699-29-4	12/5/2010	B27WR3
699-29-4	12/5/2010	B27WR4
699-29-4	12/5/2010	B28JV3
699-29-4	12/5/2010	B28K00
699-29-4	12/5/2010	B28K01
699-31-11	4/12/2010	B24LL3
699-31-11	4/12/2010	B24LL4
699-31-11	4/12/2010	B24LL5
699-31-11	4/12/2010	B24LL6
699-31-11	4/12/2010	B24M54
699-31-11	4/12/2010	B24N30
699-31-11	4/12/2010	B24N31
699-31-11	4/12/2010	B24NP2
699-31-11	4/12/2010	B24P57
699-31-11	4/12/2010	B24P58
699-31-11	4/12/2010	B25034
699-31-11	7/14/2010	B26574
699-31-11	7/14/2010	B26575
699-31-11	7/14/2010	B26576
699-31-11	7/14/2010	B26577
699-31-11	7/14/2010	B26578
699-31-11	7/14/2010	B26579
699-31-11	7/14/2010	B26662
699-31-11	7/14/2010	B266B6
699-31-11	7/14/2010	B266B7
699-31-11	12/5/2010	B27WR5

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-31-11	12/5/2010	B27WR6
699-31-11	12/5/2010	B27WR7
699-31-11	12/5/2010	B27WR9
699-31-11	12/5/2010	B27WT1
699-31-11	12/5/2010	B27WT5
699-31-11	12/5/2010	B28JV4
699-31-11	12/5/2010	B28K02
699-31-11	12/5/2010	B28K03
699-32-22A	4/11/2010	B24LL7
699-32-22A	4/11/2010	B24LL8
699-32-22A	4/11/2010	B24LL9
699-32-22A	4/11/2010	B24LM0
699-32-22A	4/11/2010	B24M55
699-32-22A	4/11/2010	B24N34
699-32-22A	4/11/2010	B24NP3
699-32-22A	4/11/2010	B24P59
699-32-22A	4/11/2010	B24P60
699-32-22A	4/11/2010	B24TB7
699-32-22A	4/11/2010	B25035
699-32-22A	7/14/2010	B26580
699-32-22A	7/14/2010	B26581
699-32-22A	7/14/2010	B265J8
699-32-22A	7/14/2010	B265J9
699-32-22A	7/14/2010	B265K0
699-32-22A	7/14/2010	B26663
699-32-22A	7/14/2010	B266B8
699-32-22A	7/14/2010	B266B9
699-32-22A	7/14/2010	B26858
699-32-22A	12/5/2010	B27WT6
699-32-22A	12/5/2010	B27WT7
699-32-22A	12/5/2010	B27WT8
699-32-22A	12/5/2010	B27WT9
699-32-22A	12/5/2010	B27WV0

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-32-22A	12/5/2010	B27WV1
699-32-22A	12/5/2010	B27WV2
699-32-22A	12/5/2010	B27WV3
699-32-22A	12/5/2010	B27WV4
699-32-22A	12/5/2010	B27WV5
699-32-22A	12/5/2010	B27WV6
699-32-22A	12/5/2010	B284F5
699-32-22A	12/5/2010	B284F6
699-32-22A	12/5/2010	B284F7
699-32-22A	12/5/2010	B284F8
699-32-22A	12/5/2010	B284F9
699-32-22A	12/5/2010	B284H0
699-32-22A	12/5/2010	B28627
699-32-22A	12/5/2010	B28628
699-32-22A	12/5/2010	B28JV6
699-32-22A	12/5/2010	B28JV7
699-32-22A	12/5/2010	B28K06
699-32-22A	12/5/2010	B28K07
699-32-22A	12/5/2010	B28K08
699-32-22A	12/5/2010	B28K09
699-34-88	4/11/2010	B24LM1
699-34-88	4/11/2010	B24LM2
699-34-88	4/11/2010	B24LM3
699-34-88	4/11/2010	B24LM5
699-34-88	4/11/2010	B24LM9
699-34-88	4/11/2010	B24M56
699-34-88	4/11/2010	B24P61
699-34-88	4/11/2010	B24P62
699-34-88	4/11/2010	B25037
699-34-88	7/26/2010	B265K1
699-34-88	7/26/2010	B265K2
699-34-88	7/26/2010	B265K3
699-34-88	7/26/2010	B265K4

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-34-88	7/26/2010	B265K5
699-34-88	7/26/2010	B265K6
699-34-88	7/26/2010	B26664
699-34-88	7/26/2010	B266C0
699-34-88	7/26/2010	B266C1
699-34-88	12/5/2010	B27WV7
699-34-88	12/5/2010	B27WV8
699-34-88	12/5/2010	B27WV9
699-34-88	12/5/2010	B27WW0
699-34-88	12/5/2010	B27WW1
699-34-88	12/5/2010	B27WW2
699-34-88	12/5/2010	B28K10
699-34-88	12/5/2010	B28K11
699-34-88	12/5/2010	B28K66
699-35-9	4/11/2010	B24LN0
699-35-9	4/11/2010	B24LN1
699-35-9	4/11/2010	B24LN2
699-35-9	4/11/2010	B24LN3
699-35-9	4/11/2010	B24M58
699-35-9	4/11/2010	B24N36
699-35-9	4/11/2010	B24N37
699-35-9	4/11/2010	B24NP4
699-35-9	4/11/2010	B24P65
699-35-9	4/11/2010	B24P66
699-35-9	4/11/2010	B25039
699-35-9	7/16/2010	B265K7
699-35-9	7/16/2010	B265K8
699-35-9	7/16/2010	B265K9
699-35-9	7/16/2010	B265L0
699-35-9	7/16/2010	B265L1
699-35-9	7/16/2010	B265L2
699-35-9	7/16/2010	B26665
699-35-9	7/16/2010	B266C2

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-35-9	7/16/2010	B266C3
699-35-9	12/5/2010	B27WW3
699-35-9	12/5/2010	B27WW4
699-35-9	12/5/2010	B27WW5
699-35-9	12/5/2010	B27WW7
699-35-9	12/5/2010	B27WW9
699-35-9	12/5/2010	B27WX3
699-35-9	12/5/2010	B28JV8
699-35-9	12/5/2010	B28K12
699-35-9	12/5/2010	B28K13
699-38-15	4/11/2010	B24LN4
699-38-15	4/11/2010	B24LN5
699-38-15	4/11/2010	B24LN6
699-38-15	4/11/2010	B24LN7
699-38-15	4/11/2010	B24N42
699-38-15	4/11/2010	B24N43
699-38-15	4/11/2010	B24NV0
699-38-15	4/11/2010	B24P67
699-38-15	4/11/2010	B24P68
699-38-15	4/11/2010	B25040
699-38-15	4/11/2010	B25041
699-38-15	7/14/2010	B265L3
699-38-15	7/14/2010	B265L4
699-38-15	7/14/2010	B265L5
699-38-15	7/14/2010	B265L6
699-38-15	7/14/2010	B265L7
699-38-15	7/14/2010	B265L8
699-38-15	7/14/2010	B26666
699-38-15	7/14/2010	B266C4
699-38-15	7/14/2010	B266C5
699-38-15	12/5/2010	B27WX4
699-38-15	12/5/2010	B27WX5
699-38-15	12/5/2010	B27WX6

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-38-15	12/5/2010	B27WX7
699-38-15	12/5/2010	B27WX8
699-38-15	12/5/2010	B27WX9
699-38-15	12/5/2010	B28JV9
699-38-15	12/5/2010	B28K16
699-38-15	12/5/2010	B28K17
699-41-23	4/9/2010	B24LN8
699-41-23	4/9/2010	B24LN9
699-41-23	4/9/2010	B24LP0
699-41-23	4/9/2010	B24LP1
699-41-23	4/9/2010	B24N45
699-41-23	4/9/2010	B24N46
699-41-23	4/9/2010	B24NV1
699-41-23	4/9/2010	B24P69
699-41-23	4/9/2010	B24P70
699-41-23	4/9/2010	B25042
699-41-23	4/9/2010	B25043
699-41-23	7/15/2010	B265L9
699-41-23	7/15/2010	B265M0
699-41-23	7/15/2010	B265M1
699-41-23	7/15/2010	B265M2
699-41-23	7/15/2010	B265M3
699-41-23	7/15/2010	B265M4
699-41-23	7/15/2010	B26667
699-41-23	7/15/2010	B266C6
699-41-23	7/15/2010	B266C7
699-41-23	12/7/2010	B27WY0
699-41-23	12/7/2010	B27WY1
699-41-23	12/7/2010	B27WY2
699-41-23	12/7/2010	B27WY4
699-41-23	12/7/2010	B27WY6
699-41-23	12/7/2010	B27X00
699-41-23	12/7/2010	B28JW0

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-41-23	12/7/2010	B28K18
699-41-23	12/7/2010	B28K19
699-42-12A	4/26/2010	B24LP2
699-42-12A	4/26/2010	B24LP3
699-42-12A	4/26/2010	B24LP4
699-42-12A	4/26/2010	B24LP5
699-42-12A	4/26/2010	B24N48
699-42-12A	4/26/2010	B24N49
699-42-12A	4/26/2010	B24NV2
699-42-12A	4/26/2010	B24P71
699-42-12A	4/26/2010	B24P72
699-42-12A	4/26/2010	B25044
699-42-12A	4/26/2010	B25045
699-42-12A	7/14/2010	B265M5
699-42-12A	7/14/2010	B265M6
699-42-12A	7/14/2010	B265M7
699-42-12A	7/14/2010	B265M8
699-42-12A	7/14/2010	B265M9
699-42-12A	7/14/2010	B265N0
699-42-12A	7/14/2010	B26668
699-42-12A	7/14/2010	B266C8
699-42-12A	7/14/2010	B266C9
699-42-12A	11/14/2010	B27X01
699-42-12A	11/14/2010	B27X02
699-42-12A	11/14/2010	B27X03
699-42-12A	11/14/2010	B27X04
699-42-12A	11/14/2010	B27X05
699-42-12A	11/14/2010	B27X06
699-42-12A	11/14/2010	B28JW2
699-42-12A	11/14/2010	B28K22
699-42-12A	11/14/2010	B28K23
699-43-89	4/9/2010	B24LP6
699-43-89	4/9/2010	B24LP7

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-43-89	4/9/2010	B24LP8
699-43-89	4/9/2010	B24LP9
699-43-89	4/9/2010	B24LR0
699-43-89	4/9/2010	B24LR1
699-43-89	4/9/2010	B24LR2
699-43-89	4/9/2010	B24LR3
699-43-89	4/9/2010	B24LR4
699-43-89	4/9/2010	B24M59
699-43-89	4/9/2010	B24M60
699-43-89	4/9/2010	B24P73
699-43-89	4/9/2010	B24P74
699-43-89	4/9/2010	B24P75
699-43-89	4/9/2010	B24P76
699-43-89	4/9/2010	B25046
699-43-89	4/9/2010	B25047
699-43-89	7/16/2010	B265N1
699-43-89	7/16/2010	B265N2
699-43-89	7/16/2010	B265N3
699-43-89	7/16/2010	B265N4
699-43-89	7/16/2010	B265N5
699-43-89	7/16/2010	B265N6
699-43-89	7/16/2010	B26669
699-43-89	7/16/2010	B266D0
699-43-89	7/16/2010	B266D1
699-43-89	12/1/2010	B27PV4
699-43-89	12/1/2010	B27PV5
699-43-89	12/1/2010	B27PV6
699-43-89	12/1/2010	B27PV7
699-43-89	12/1/2010	B27PV8
699-43-89	12/1/2010	B27PV9
699-43-89	12/1/2010	B27RW9
699-43-89	12/1/2010	B27RX0
699-43-89	12/1/2010	B27X07

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-43-89	12/1/2010	B27X08
699-43-89	12/1/2010	B27X09
699-43-89	12/1/2010	B27X10
699-43-89	12/1/2010	B27X11
699-43-89	12/1/2010	B27X12
699-43-89	12/1/2010	B27X13
699-43-89	12/1/2010	B27X14
699-43-89	12/1/2010	B27X15
699-43-89	12/1/2010	B27X16
699-43-89	12/1/2010	B27X17
699-43-89	12/1/2010	B28K24
699-43-89	12/1/2010	B28K25
699-43-89	12/1/2010	B28K26
699-43-89	12/1/2010	B28K27
699-46-21B	4/9/2010	B24LR5
699-46-21B	4/9/2010	B24LR6
699-46-21B	4/9/2010	B24LR7
699-46-21B	4/9/2010	B24LR8
699-46-21B	4/9/2010	B24N51
699-46-21B	4/9/2010	B24N52
699-46-21B	4/9/2010	B24NV3
699-46-21B	4/9/2010	B24P77
699-46-21B	4/9/2010	B24P78
699-46-21B	4/9/2010	B25048
699-46-21B	4/9/2010	B25049
699-46-21B	7/15/2010	B265N7
699-46-21B	7/15/2010	B265N8
699-46-21B	7/15/2010	B265N9
699-46-21B	7/15/2010	B265P0
699-46-21B	7/15/2010	B265P1
699-46-21B	7/15/2010	B265P2
699-46-21B	7/15/2010	B26670
699-46-21B	7/15/2010	B266D2

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-46-21B	7/15/2010	B266D3
699-46-21B	11/29/2010	B27X18
699-46-21B	11/29/2010	B27X19
699-46-21B	11/29/2010	B27X20
699-46-21B	11/29/2010	B27X21
699-46-21B	11/29/2010	B27X22
699-46-21B	11/29/2010	B27X23
699-46-21B	11/29/2010	B28JW3
699-46-21B	11/29/2010	B28K28
699-46-21B	11/29/2010	B28K29
699-50-28B	4/26/2010	B24LR9
699-50-28B	4/26/2010	B24LT0
699-50-28B	4/26/2010	B24LT1
699-50-28B	4/26/2010	B24LT2
699-50-28B	4/26/2010	B24N63
699-50-28B	4/26/2010	B24N64
699-50-28B	4/26/2010	B24NV4
699-50-28B	4/26/2010	B24P79
699-50-28B	4/26/2010	B24P80
699-50-28B	4/26/2010	B25050
699-50-28B	4/26/2010	B25051
699-50-28B	7/14/2010	B265P3
699-50-28B	7/14/2010	B265P4
699-50-28B	7/14/2010	B265P5
699-50-28B	7/14/2010	B265P6
699-50-28B	7/14/2010	B265P7
699-50-28B	7/14/2010	B265P8
699-50-28B	7/14/2010	B26671
699-50-28B	7/14/2010	B266D4
699-50-28B	7/14/2010	B266D5
699-50-28B	11/29/2010	B27X24
699-50-28B	11/29/2010	B27X25
699-50-28B	11/29/2010	B27X26

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-50-28B	11/29/2010	B27X27
699-50-28B	11/29/2010	B27X28
699-50-28B	11/29/2010	B27X29
699-50-28B	11/29/2010	B28JW4
699-50-28B	11/29/2010	B28K30
699-50-28B	11/29/2010	B28K31
699-53-35	4/27/2010	B24LT3
699-53-35	4/27/2010	B24LT4
699-53-35	4/27/2010	B24LT5
699-53-35	4/27/2010	B24LT6
699-53-35	4/27/2010	B24LT7
699-53-35	4/27/2010	B24M61
699-53-35	4/27/2010	B24P81
699-53-35	4/27/2010	B24P82
699-53-35	4/27/2010	B25052
699-53-35	7/14/2010	B265P9
699-53-35	7/14/2010	B265R0
699-53-35	7/14/2010	B265R1
699-53-35	7/14/2010	B265R2
699-53-35	7/14/2010	B265R3
699-53-35	7/14/2010	B265R4
699-53-35	7/14/2010	B26672
699-53-35	7/14/2010	B266D6
699-53-35	7/14/2010	B266D7
699-53-35	11/29/2010	B27X30
699-53-35	11/29/2010	B27X31
699-53-35	11/29/2010	B27X32
699-53-35	11/29/2010	B27X33
699-53-35	11/29/2010	B27X34
699-53-35	11/29/2010	B27X35
699-53-35	11/29/2010	B28JW5
699-53-35	11/29/2010	B28K32
699-53-35	11/29/2010	B28K33

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-54-45A	4/28/2010	B25053
699-54-45A	4/29/2010	B24LT8
699-54-45A	4/29/2010	B24LT9
699-54-45A	4/29/2010	B24LV0
699-54-45A	4/29/2010	B24LV1
699-54-45A	4/29/2010	B24LV2
699-54-45A	4/29/2010	B24M77
699-54-45A	4/29/2010	B24P83
699-54-45A	4/29/2010	B24P84
699-54-45A	7/27/2010	B265R5
699-54-45A	7/27/2010	B265R6
699-54-45A	7/27/2010	B265R7
699-54-45A	7/27/2010	B265R8
699-54-45A	7/27/2010	B265R9
699-54-45A	7/27/2010	B265T0
699-54-45A	7/27/2010	B26673
699-54-45A	7/27/2010	B266D8
699-54-45A	7/27/2010	B266D9
699-54-45A	12/15/2010	B27X36
699-54-45A	12/15/2010	B27X37
699-54-45A	12/15/2010	B27X38
699-54-45A	12/15/2010	B27X39
699-54-45A	12/15/2010	B27X40
699-54-45A	12/15/2010	B27X41
699-54-45A	12/15/2010	B28JW6
699-54-45A	12/15/2010	B28K34
699-54-45A	12/15/2010	B28K35
699-55-76	4/11/2010	B24LV3
699-55-76	4/11/2010	B24LV4
699-55-76	4/11/2010	B24LV5
699-55-76	4/11/2010	B24LV6
699-55-76	4/11/2010	B24LV7
699-55-76	4/11/2010	B24M62

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-55-76	4/11/2010	B24P85
699-55-76	4/11/2010	B24P86
699-55-76	4/11/2010	B25054
699-55-76	7/13/2010	B265T1
699-55-76	7/13/2010	B265T2
699-55-76	7/13/2010	B265T3
699-55-76	7/13/2010	B265T4
699-55-76	7/13/2010	B265T5
699-55-76	7/13/2010	B265T6
699-55-76	7/13/2010	B26674
699-55-76	7/13/2010	B266F0
699-55-76	7/13/2010	B266F1
699-55-76	11/30/2010	B27X42
699-55-76	11/30/2010	B27X43
699-55-76	11/30/2010	B27X44
699-55-76	11/30/2010	B27X45
699-55-76	11/30/2010	B27X46
699-55-76	11/30/2010	B27X47
699-55-76	11/30/2010	B28JW7
699-55-76	11/30/2010	B28K36
699-55-76	11/30/2010	B28K37
699-55-89	4/11/2010	B24LV8
699-55-89	4/11/2010	B24LV9
699-55-89	4/11/2010	B24LW0
699-55-89	4/11/2010	B24LW1
699-55-89	4/11/2010	B24LW2
699-55-89	4/11/2010	B24M63
699-55-89	4/11/2010	B24P87
699-55-89	4/11/2010	B24P88
699-55-89	4/11/2010	B25055
699-55-89	7/13/2010	B265T7
699-55-89	7/13/2010	B265T8
699-55-89	7/13/2010	B265T9

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-55-89	7/13/2010	B265V0
699-55-89	7/13/2010	B265V1
699-55-89	7/13/2010	B265V2
699-55-89	7/13/2010	B26675
699-55-89	7/13/2010	B266F2
699-55-89	7/13/2010	B266F3
699-55-89	12/1/2010	B27X48
699-55-89	12/1/2010	B27X49
699-55-89	12/1/2010	B27X50
699-55-89	12/1/2010	B27X51
699-55-89	12/1/2010	B27X52
699-55-89	12/1/2010	B27X53
699-55-89	12/1/2010	B28JW8
699-55-89	12/1/2010	B28K38
699-55-89	12/1/2010	B28K39
699-60-32	4/11/2010	B24LW3
699-60-32	4/11/2010	B24LW4
699-60-32	4/11/2010	B24LW5
699-60-32	4/11/2010	B24LW6
699-60-32	4/11/2010	B24LW7
699-60-32	4/11/2010	B24M64
699-60-32	4/11/2010	B24P89
699-60-32	4/11/2010	B24P90
699-60-32	4/11/2010	B25056
699-60-32	8/29/2010	B265V3
699-60-32	8/29/2010	B265V4
699-60-32	8/29/2010	B265V5
699-60-32	8/29/2010	B265V6
699-60-32	8/29/2010	B265V7
699-60-32	8/29/2010	B265V8
699-60-32	8/29/2010	B26676
699-60-32	8/29/2010	B266F4
699-60-32	8/29/2010	B266F5

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-60-32	12/5/2010	B27X54
699-60-32	12/5/2010	B27X55
699-60-32	12/5/2010	B27X56
699-60-32	12/5/2010	B27X58
699-60-32	12/5/2010	B27X59
699-60-32	12/5/2010	B284R0
699-60-32	12/5/2010	B284R1
699-60-32	12/5/2010	B284R2
699-60-32	12/5/2010	B28645
699-60-32	12/5/2010	B28K40
699-60-32	12/5/2010	B28K41
699-61-66	4/11/2010	B24LW8
699-61-66	4/11/2010	B24LW9
699-61-66	4/11/2010	B24LX0
699-61-66	4/11/2010	B24LX1
699-61-66	4/11/2010	B24NB9
699-61-66	4/11/2010	B24NC0
699-61-66	4/11/2010	B24P91
699-61-66	4/11/2010	B24P92
699-61-66	4/11/2010	B24TF1
699-61-66	4/11/2010	B25062
699-61-66	4/11/2010	B25063
699-61-66	7/15/2010	B265V9
699-61-66	7/15/2010	B265W0
699-61-66	7/15/2010	B265W1
699-61-66	7/15/2010	B265W2
699-61-66	7/15/2010	B265W3
699-61-66	7/15/2010	B265W4
699-61-66	7/15/2010	B26677
699-61-66	7/15/2010	B266F6
699-61-66	7/15/2010	B266F7
699-61-66	12/5/2010	B27X60
699-61-66	12/5/2010	B27X61

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Well Name	Sample Date	Sample Number
699-61-66	12/5/2010	B27X62
699-61-66	12/5/2010	B27X63
699-61-66	12/5/2010	B27X64
699-61-66	12/5/2010	B27X65
699-61-66	12/5/2010	B28JW9
699-61-66	12/5/2010	B28K42
699-61-66	12/5/2010	B28K43
699-62-43F	4/11/2010	B24LX2
699-62-43F	4/11/2010	B24LX3
699-62-43F	4/11/2010	B24LX4
699-62-43F	4/11/2010	B24LX5
699-62-43F	4/11/2010	B24LX6
699-62-43F	4/11/2010	B24LX7
699-62-43F	4/11/2010	B24LX8
699-62-43F	4/11/2010	B24LX9
699-62-43F	4/11/2010	B24LY0
699-62-43F	4/11/2010	B24M65
699-62-43F	4/11/2010	B24M66
699-62-43F	4/11/2010	B24P93
699-62-43F	4/11/2010	B24P94
699-62-43F	4/11/2010	B24P95
699-62-43F	4/11/2010	B24P96
699-62-43F	4/11/2010	B25064
699-62-43F	4/11/2010	B25065
699-62-43F	7/15/2010	B265W5
699-62-43F	7/15/2010	B265W6
699-62-43F	7/15/2010	B265W7
699-62-43F	7/15/2010	B265W8
699-62-43F	7/15/2010	B265W9
699-62-43F	7/15/2010	B265X0
699-62-43F	7/15/2010	B26678
699-62-43F	7/15/2010	B26690
699-62-43F	7/15/2010	B266F8

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-62-43F	7/15/2010	B266F9
699-62-43F	7/15/2010	B268P1
699-62-43F	7/15/2010	B269K7
699-62-43F	12/17/2010	B27X66
699-62-43F	12/17/2010	B27X67
699-62-43F	12/17/2010	B27X68
699-62-43F	12/17/2010	B27X69
699-62-43F	12/17/2010	B27X70
699-62-43F	12/17/2010	B27X71
699-62-43F	12/17/2010	B28JX0
699-62-43F	12/17/2010	B28K44
699-62-43F	12/17/2010	B28K45
699-63-25A	4/21/2010	B24PB9
699-63-25A	4/21/2010	B24PC0
699-63-25A	4/21/2010	B24PC1
699-63-25A	4/21/2010	B24PC2
699-63-25A	4/21/2010	B24PC3
699-63-25A	4/21/2010	B24PC4
699-63-25A	4/21/2010	B24PC5
699-63-25A	4/21/2010	B24PC6
699-63-25A	4/21/2010	B25066
699-63-25A	7/26/2010	B265X1
699-63-25A	7/26/2010	B265X2
699-63-25A	7/26/2010	B265X3
699-63-25A	7/26/2010	B265X4
699-63-25A	7/26/2010	B265X5
699-63-25A	7/26/2010	B265X6
699-63-25A	7/26/2010	B26679
699-63-25A	7/26/2010	B266H0
699-63-25A	7/26/2010	B266H1
699-63-25A	12/5/2010	B27X72
699-63-25A	12/5/2010	B27X73
699-63-25A	12/5/2010	B27X74

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Well Name	Sample Date	Sample Number
699-63-25A	12/5/2010	B27X76
699-63-25A	12/5/2010	B27X77
699-63-25A	12/5/2010	B284R6
699-63-25A	12/5/2010	B284R7
699-63-25A	12/5/2010	B284R8
699-63-25A	12/5/2010	B28655
699-63-25A	12/5/2010	B28K46
699-63-25A	12/5/2010	B28K47
699-65-50	5/4/2010	B24LY1
699-65-50	5/4/2010	B24LY2
699-65-50	5/4/2010	B24LY3
699-65-50	5/4/2010	B24LY4
699-65-50	5/4/2010	B24LY5
699-65-50	5/4/2010	B24M67
699-65-50	5/4/2010	B24NC6
699-65-50	5/4/2010	B24P97
699-65-50	5/4/2010	B24P98
699-65-50	5/4/2010	B25067
699-65-50	7/16/2010	B265X7
699-65-50	7/16/2010	B265X8
699-65-50	7/16/2010	B265X9
699-65-50	7/16/2010	B265Y0
699-65-50	7/16/2010	B265Y1
699-65-50	7/16/2010	B265Y2
699-65-50	7/16/2010	B26680
699-65-50	7/16/2010	B266H2
699-65-50	7/16/2010	B266H3
699-65-50	12/14/2010	B27X78
699-65-50	12/14/2010	B27X79
699-65-50	12/14/2010	B27X80
699-65-50	12/14/2010	B27X81
699-65-50	12/14/2010	B27X82
699-65-50	12/14/2010	B27X83

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Well Name	Sample Date	Sample Number
699-65-50	12/14/2010	B28JX1
699-65-50	12/14/2010	B28K48
699-65-50	12/14/2010	B28K49
699-65-72	5/17/2010	B259D3
699-65-72	5/17/2010	B259D4
699-65-72	5/17/2010	B259D5
699-65-72	5/17/2010	B259D6
699-65-72	5/17/2010	B259D7
699-65-72	5/17/2010	B259D8
699-65-72	5/17/2010	B259L4
699-65-72	5/17/2010	B259L5
699-65-72	5/17/2010	B259L6
699-65-72	5/17/2010	B25CC6
699-65-72	8/12/2010	B26M22
699-65-72	8/12/2010	B26M23
699-65-72	8/12/2010	B26M24
699-65-72	8/12/2010	B26M25
699-65-72	8/12/2010	B26N01
699-65-72	8/12/2010	B26N03
699-65-72	8/12/2010	B26N05
699-65-72	8/12/2010	B26NF0
699-65-72	8/12/2010	B26NF3
699-65-72	8/12/2010	B26NF4
699-65-72	9/2/2010	B27557
699-65-72	9/2/2010	B27619
699-65-72	9/2/2010	B27620
699-65-72	9/2/2010	B27621
699-65-72	9/2/2010	B27622
699-65-72	9/2/2010	B27623
699-65-72	9/2/2010	B27624
699-65-72	9/2/2010	B27625
699-65-72	9/2/2010	B27626
699-65-72	9/2/2010	B27627

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Well Name	Sample Date	Sample Number
699-66-58	4/11/2010	B24LY6
699-66-58	4/11/2010	B24LY7
699-66-58	4/11/2010	B24LY8
699-66-58	4/11/2010	B24LY9
699-66-58	4/11/2010	B24M00
699-66-58	4/11/2010	B24M68
699-66-58	4/11/2010	B24NC8
699-66-58	4/11/2010	B24P99
699-66-58	4/11/2010	B24PB0
699-66-58	4/11/2010	B25068
699-66-58	7/15/2010	B265Y3
699-66-58	7/15/2010	B265Y4
699-66-58	7/15/2010	B265Y5
699-66-58	7/15/2010	B265Y6
699-66-58	7/15/2010	B265Y7
699-66-58	7/15/2010	B265Y8
699-66-58	7/15/2010	B265Y9
699-66-58	7/15/2010	B26600
699-66-58	7/15/2010	B26601
699-66-58	7/15/2010	B26602
699-66-58	7/15/2010	B26603
699-66-58	7/15/2010	B26681
699-66-58	7/15/2010	B26682
699-66-58	7/15/2010	B266H4
699-66-58	7/15/2010	B266H5
699-66-58	7/15/2010	B266H6
699-66-58	7/15/2010	B266H7
699-66-58	12/5/2010	B27X84
699-66-58	12/5/2010	B27X85
699-66-58	12/5/2010	B27X86
699-66-58	12/5/2010	B27X87
699-66-58	12/5/2010	B27X88
699-66-58	12/5/2010	B27X89

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Well Name	Sample Date	Sample Number
699-66-58	12/5/2010	B28JX2
699-66-58	12/5/2010	B28K50
699-66-58	12/5/2010	B28K51
699-70-68	4/9/2010	B24M01
699-70-68	4/9/2010	B24M02
699-70-68	4/9/2010	B24M03
699-70-68	4/9/2010	B24M05
699-70-68	4/9/2010	B24M09
699-70-68	4/9/2010	B24M69
699-70-68	4/9/2010	B24ND1
699-70-68	4/9/2010	B24PB1
699-70-68	4/9/2010	B24PB2
699-70-68	4/9/2010	B25069
699-70-68	7/13/2010	B26604
699-70-68	7/13/2010	B26605
699-70-68	7/13/2010	B26606
699-70-68	7/13/2010	B26608
699-70-68	7/13/2010	B26610
699-70-68	7/13/2010	B26614
699-70-68	7/13/2010	B26684
699-70-68	7/13/2010	B266H8
699-70-68	7/13/2010	B266H9
699-70-68	11/29/2010	B27X90
699-70-68	11/29/2010	B27X91
699-70-68	11/29/2010	B27X92
699-70-68	11/29/2010	B27X93
699-70-68	11/29/2010	B27X94
699-70-68	11/29/2010	B27X95
699-70-68	11/29/2010	B282R4
699-70-68	11/29/2010	B28DB1
699-70-68	11/29/2010	B28K52
699-70-68	11/29/2010	B28K53
699-71-30	4/15/2010	B24M10

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Well Name	Sample Date	Sample Number
699-71-30	4/15/2010	B24M11
699-71-30	4/15/2010	B24M12
699-71-30	4/15/2010	B24M13
699-71-30	4/15/2010	B24M14
699-71-30	4/15/2010	B24M71
699-71-30	4/15/2010	B24PB5
699-71-30	4/15/2010	B24PB6
699-71-30	4/15/2010	B25071
699-71-30	7/13/2010	B26615
699-71-30	7/13/2010	B26616
699-71-30	7/13/2010	B26617
699-71-30	7/13/2010	B26618
699-71-30	7/13/2010	B26619
699-71-30	7/13/2010	B26620
699-71-30	7/13/2010	B26685
699-71-30	7/13/2010	B266J2
699-71-30	7/13/2010	B266J3
699-71-30	11/29/2010	B27X96
699-71-30	11/29/2010	B27X97
699-71-30	11/29/2010	B27X98
699-71-30	11/29/2010	B27XB0
699-71-30	11/29/2010	B27XB1
699-71-30	11/29/2010	B284T5
699-71-30	11/29/2010	B284T6
699-71-30	11/29/2010	B284T7
699-71-30	11/29/2010	B28656
699-71-30	11/29/2010	B28K54
699-71-30	11/29/2010	B28K55
699-72-92	4/9/2010	B24M15
699-72-92	4/9/2010	B24M16
699-72-92	4/9/2010	B24M17
699-72-92	4/9/2010	B24M18
699-72-92	4/9/2010	B24M19

Table D-7. List of Sample IDs

Well Name	Sample Date	Sample Number
699-72-92	4/9/2010	B24M72
699-72-92	4/9/2010	B24PB7
699-72-92	4/9/2010	B24PB8
699-72-92	4/9/2010	B25072
699-72-92	7/13/2010	B26621
699-72-92	7/13/2010	B26622
699-72-92	7/13/2010	B26623
699-72-92	7/13/2010	B26624
699-72-92	7/13/2010	B26625
699-72-92	7/13/2010	B26626
699-72-92	7/13/2010	B26686
699-72-92	7/13/2010	B266J4
699-72-92	7/13/2010	B266J5
699-72-92	12/1/2010	B27XB2
699-72-92	12/1/2010	B27XB3
699-72-92	12/1/2010	B27XB4
699-72-92	12/1/2010	B27XB5
699-72-92	12/1/2010	B27XB6
699-72-92	12/1/2010	B27XB7
699-72-92	12/1/2010	B284K9
699-72-92	12/1/2010	B284L0
699-72-92	12/1/2010	B28657
699-72-92	12/1/2010	B28K56
699-72-92	12/1/2010	B28K57
699-74-44	4/21/2010	B24M20
699-74-44	4/21/2010	B24M21
699-74-44	4/21/2010	B24M22
699-74-44	4/21/2010	B24M23
699-74-44	4/21/2010	B24M24
699-74-44	4/21/2010	B24M73
699-74-44	4/21/2010	B24PC7
699-74-44	4/21/2010	B24PC8
699-74-44	4/21/2010	B25073

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Well Name	Sample Date	Sample Number
699-74-44	7/15/2010	B26627
699-74-44	7/15/2010	B26628
699-74-44	7/15/2010	B26629
699-74-44	7/15/2010	B26630
699-74-44	7/15/2010	B26631
699-74-44	7/15/2010	B26632
699-74-44	7/15/2010	B26687
699-74-44	7/15/2010	B266J6
699-74-44	7/15/2010	B266J7
699-74-44	11/29/2010	B27XB8
699-74-44	11/29/2010	B27XB9
699-74-44	11/29/2010	B27XC0
699-74-44	11/29/2010	B27XC2
699-74-44	11/29/2010	B27XC3
699-74-44	11/29/2010	B284T8
699-74-44	11/29/2010	B284T9
699-74-44	11/29/2010	B284V0
699-74-44	11/29/2010	B28658
699-74-44	11/29/2010	B28K58
699-74-44	11/29/2010	B28K59
699-77-36	5/17/2010	B25906
699-77-36	5/17/2010	B25907
699-77-36	5/17/2010	B25908
699-77-36	5/17/2010	B25909
699-77-36	5/17/2010	B25910
699-77-36	5/17/2010	B25B24
699-77-36	5/17/2010	B25B83
699-77-36	5/17/2010	B25B84
699-77-36	7/26/2010	B264B7
699-77-36	7/26/2010	B264B8
699-77-36	7/26/2010	B264B9
699-77-36	7/26/2010	B264C0
699-77-36	7/26/2010	B264C1

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Well Name	Sample Date	Sample Number
699-77-36	7/26/2010	B26582
699-77-36	7/26/2010	B26651
699-77-36	7/26/2010	B26652
699-77-36	11/29/2010	B27T93
699-77-36	11/29/2010	B27T94
699-77-36	11/29/2010	B27T96
699-77-36	11/29/2010	B27T97
699-77-36	11/29/2010	B28357
699-77-36	11/29/2010	B28358
699-77-36	11/29/2010	B28373
699-77-54	4/9/2010	B24M25
699-77-54	4/9/2010	B24M26
699-77-54	4/9/2010	B24M27
699-77-54	4/9/2010	B24M28
699-77-54	4/9/2010	B24M29
699-77-54	4/9/2010	B24M74
699-77-54	4/9/2010	B24PC9
699-77-54	4/9/2010	B24PD0
699-77-54	4/9/2010	B25074
699-77-54	6/18/2010	B25FK1
699-77-54	6/18/2010	B25K93
699-77-54	6/18/2010	B25K94
699-77-54	6/18/2010	B25K95
699-77-54	6/18/2010	B25K96
699-77-54	6/18/2010	B25K97
699-77-54	6/18/2010	B25KF2
699-77-54	6/18/2010	B25KF3
699-77-54	6/18/2010	B25KK0
699-77-54	6/18/2010	B25NF3
699-77-54	6/18/2010	B25NF4
699-77-54	9/19/2010	B27558
699-77-54	9/19/2010	B27559
699-77-54	9/19/2010	B27560

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Well Name	Sample Date	Sample Number
699-77-54	9/19/2010	B27562
699-77-54	9/19/2010	B27563
699-77-54	9/19/2010	B27564
699-77-54	9/19/2010	B277Y1
699-77-54	9/19/2010	B277Y2
699-77-54	9/19/2010	B278K7
699-77-54	9/19/2010	B278K8
699-77-54	9/19/2010	B278K9
699-77-54	9/19/2010	B27949
699-8-25	4/27/2010	B24M30
699-8-25	4/27/2010	B24M31
699-8-25	4/27/2010	B24M32
699-8-25	4/27/2010	B24M33
699-8-25	4/27/2010	B24ND5
699-8-25	4/27/2010	B24ND6
699-8-25	4/27/2010	B24NV5
699-8-25	4/27/2010	B24PD1
699-8-25	4/27/2010	B24PD2
699-8-25	4/27/2010	B25023
699-8-25	4/27/2010	B25024
699-8-25	7/20/2010	B26633
699-8-25	7/20/2010	B26634
699-8-25	7/20/2010	B26635
699-8-25	7/20/2010	B26636
699-8-25	7/20/2010	B26637
699-8-25	7/20/2010	B26638
699-8-25	7/20/2010	B26688
699-8-25	7/20/2010	B266J8
699-8-25	7/20/2010	B266J9
699-8-25	12/9/2010	B27XC4
699-8-25	12/9/2010	B27XC5
699-8-25	12/9/2010	B27XC6
699-8-25	12/9/2010	B27XC7

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Well Name	Sample Date	Sample Number
699-8-25	12/9/2010	B27XC8
699-8-25	12/9/2010	B27XC9
699-8-25	12/9/2010	B28JX3
699-8-25	12/9/2010	B28K60
699-8-25	12/9/2010	B28K61
699-89-35	4/15/2010	B24M34
699-89-35	4/15/2010	B24M35
699-89-35	4/15/2010	B24M36
699-89-35	4/15/2010	B24M38
699-89-35	4/15/2010	B24M42
699-89-35	4/15/2010	B24M75
699-89-35	4/15/2010	B24PD3
699-89-35	4/15/2010	B24PD4
699-89-35	4/15/2010	B25075
699-89-35	7/15/2010	B26639
699-89-35	7/15/2010	B26640
699-89-35	7/15/2010	B26641
699-89-35	7/15/2010	B26642
699-89-35	7/15/2010	B26643
699-89-35	7/15/2010	B26644
699-89-35	7/15/2010	B26689
699-89-35	7/15/2010	B266K0
699-89-35	7/15/2010	B266K1
699-89-35	11/29/2010	B27XD0
699-89-35	11/29/2010	B27XD1
699-89-35	11/29/2010	B27XD2
699-89-35	11/29/2010	B27XD3
699-89-35	11/29/2010	B27XD4
699-89-35	11/29/2010	B27XD5
699-89-35	11/29/2010	B28JX4
699-89-35	11/29/2010	B28K62
699-89-35	11/29/2010	B28K63
699-S3-25	4/26/2010	B24M43

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Well Name	Sample Date	Sample Number
699-S3-25	4/26/2010	B24M44
699-S3-25	4/26/2010	B24M45
699-S3-25	4/26/2010	B24M46
699-S3-25	4/26/2010	B24M47
699-S3-25	4/26/2010	B24M76
699-S3-25	4/26/2010	B24NF7
699-S3-25	4/26/2010	B24NV6
699-S3-25	4/26/2010	B24PD7
699-S3-25	4/26/2010	B24PD8
699-S3-25	4/26/2010	B25077
699-S3-25	7/23/2010	B26645
699-S3-25	7/23/2010	B26646
699-S3-25	7/23/2010	B26647
699-S3-25	7/23/2010	B26648
699-S3-25	7/23/2010	B26649
699-S3-25	7/23/2010	B26691
699-S3-25	7/23/2010	B266K2
699-S3-25	7/23/2010	B269K8
699-S3-25	7/23/2010	B26650
699-S3-25	12/7/2010	B27XD6
699-S3-25	12/7/2010	B27XD7
699-S3-25	12/7/2010	B27XF1
699-S3-25	12/7/2010	B27XD8
699-S3-25	12/7/2010	B27XD9
699-S3-25	12/7/2010	B27XF0
699-S3-25	12/7/2010	B28JX5
699-S3-25	12/7/2010	B28K64
699-S3-25	12/7/2010	B28K65

D3.3 Data Verification and Validation

Data collected for the RI/FS were verified and validated. Verification is the process of evaluating the completeness, correctness, and conformance/compliance of the data against the method, procedural, or contractual requirements for the laboratory.

The purpose of the data validation is to determine, through the evaluation of supporting documentation, whether data meet precision and accuracy requirements of an analytical method and whether the data quality goals established during the planning phase have been achieved. The results of project data validation are summarized in the Data Quality Assessment.

D3.4 Data Quality Assessment

Data collected for the RI/FS were verified and validated.

The results of project data validation are summarized in the Data Quality Assessments: *100-F and 100-IU-2/6 Remedial Investigation/ Feasibility Study Data Quality Assessment Repor*t (WCH-521) for the vadose zone and *Data Quality Assessment for the 100-FR-1,100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units Remedial Investigation/Feasibility Study* (DOE/RL-2012-66) for groundwater and aquifer sediments.

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CH2MHILL Plateau Remediation Company

Environmental Calculation Cover Page

Part 1: Completed by the Responsible Manager

Project: Soil and Groundwater Remediation Project **Date: 25 April, 2011**

Calculation Title & Description: 100-F Plume Maps for Spring and Fall 2010

Preparer: MJ Hartman	**Basis of Qualification: 100-F Technical Lead**
Checker: JA Eluskie	**Basis of Qualification: 100-DH Technical Lead**
Senior Reviewer: NA Bowles	**Basis of Qualification: 100-F Project Manager**

Part 2: Completed by Preparer

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Part 3: Document Review & Approval:

Preparer:	**MJ Hartman / Senior Scientist** NAME/POSITION Mary J Hartman SIGNATURE	25 April 2011 DATE
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Terms

CHPRC	CH2M HILL Plateau Remediation Company
GIS	Geographical Information System
HEIS	Hanford Environmental Information System
R	rejected
RI	remedial investigation
TCE	trichloroethene
Y	suspected errors

1 Purpose

The purpose of this environmental calculation is to document the process of constructing groundwater contaminant plume maps for 100-F. The maps will be used in the 100-F remedial investigation (RI) report, and may be used for other purposes (e.g., sitewide groundwater annual report).

2 Methodology

2.1 Data Selection

The following points summarize the process. Chapters 3 through 5 provide additional detail.

- Contaminants: hexavalent chromium, nitrate, strontium-90, and trichloroethene (TCE)
- Sampling date: May 2010 for spring; September-November 2010 for fall
- Exclusions: data flagged as rejected (R) or suspected errors (Y)
- Replicates: If more than one data point was available from the sampling window, then the highest concentration was used.
- The primary data set included data from completed, developed monitoring wells that were screened in the unconfined aquifer.
- Supplemental data included the following:
  - Characterization data (groundwater sampled during drilling) for new wells and boreholes installed for the RI
  - Data from outside the sampling window dates (but within calendar year 2010)

2.2 Map Construction

The following points summarize how maps were constructed. Chapter 5 provides additional detail.

- The project's Geographic Information Systems (GIS) team plotted the contaminant concentrations on a 100-F base map.
- The 100-F Technical Lead drew contours manually.
- Supplemental data (characterization samples) are illustrated with a distinct symbol to distinguish them from completed, developed wells.
- Data from dates outside the sampling windows were noted on the maps.

3 Assumptions and Inputs

The groundwater data were retrieved from a subset of Hanford Environmental Information System (HEIS) that is maintained by the Remedy Selection group of CH2M HILL Plateau Remediation Company (CHPRC) for the purposes of the 100-F Remedial Investigation. The 100-F RI database was retrieved from HEIS on January 26, 2011 for data collected through December 31, 2010. It includes any wells or

boreholes within the 100-F geographic region, as defined by the *Integrated 100 Area Remedial Investigation/Feasibility Study Work Plan* (DOE/RL-2008-46).

4 Software Applications

Microsoft Access®[1] is used to retrieve the data from the database and to exclude certain data from the input dataset.

A Microsoft Excel®[2] spreadsheet was used to transmit data to the GIS team and the Technical Lead.

5 Calculation

The following steps describe the process for creating 100-F plume maps.

1. Queried the 100-F RI database for the following contaminants:
   a. Hexavalent chromium
   b. Nitrate
   c. Strontium-90
   d. Trichloroethene (TCE)
2. Queried for sample dates in May 2010 for spring and September through November 2010 for fall.
3. Queried to remove any data with a review qualifier of “R” or “Y” (data identified in HEIS as reject or suspect).
4. Queried to remove data associated with characterization or vertical profiling. This was accomplished by excluding data with an associated “sample interval bottom” (some of these data were used to supplement the primary data set, as explained below).
5. Contaminant concentrations for each well were rounded to two significant digits.
6. The 100-F Technical Lead reviewed the resultant data set (Excel file) and specified which data points to use on the map, based on the following criteria:
   a. Filtered samples: If both filtered and unfiltered results were available, then selected the unfiltered result.
   b. Replicates: If more than one data point was available from the sampling window, then selected the highest concentration.
   c. Supplemental data:
      – Added characterization data (groundwater sampled during drilling) for new wells and boreholes installed for the RI, if no routine data were available

[1] Microsoft Access is a registered product of the Microsoft Corporation.
[2] Microsoft Excel is a registered product of the Microsoft Corporation.

- Added data from outside the sampling window dates (but within calendar year 2010), if no data were available from a well within the window
- The same supplemental data set was used for the spring and fall maps

7. GIS staff posted the data on a 100-F base map. Where a constituent was below the laboratory's reporting limit a "U" qualifier was appended to the result. Additional laboratory qualifiers (J, T, and B) were added for TCE as specified by the Technical Lead and listed in Tables 1 through 3.
8. The Technical Lead reviewed the maps and specified:
   a. Sample dates if not in the designated sampling window
   b. Characterization data
9. The Technical Lead drew concentration contours based on the posted data and professional judgment. Additional factors used to guide the interpretation included aquifer tube data from 2009, previous plume interpretations, waste site locations, and direction of groundwater flow.
10. All of the wells in the data set monitor the unconfined aquifer.

6 Results

Figures 1 through 4 are the contaminant plume maps. Figure 5 shows the well names and locations. Tables 1 through 3 list the data and provide a rationale for selection of supplemental data.

7 References

DOE/RL-2008-46, 2010, *Integrated 100 Area Remedial Investigation/Feasibility Study Work Plan*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington. Available at: http://www5.hanford.gov/arpir/?content=findpage&AKey=1002260412.

Table 1. May 2010 Groundwater Data from Routine Samples

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Collection Purpose	Use for Plume	Comment
Hexavalent Chromium	199-F1-2	5/5/2010	2.5	µg/L	N	B		R	Y	
Hexavalent Chromium	199-F1-2	5/5/2010	2.7	µg/L	Y	B		R		
Hexavalent Chromium	199-F5-1	5/5/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F5-1	5/5/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F5-4	5/5/2010	6.5	µg/L	N			R	Y	
Hexavalent Chromium	199-F5-4	5/5/2010	6.5	µg/L	N			R		
Hexavalent Chromium	199-F5-4	5/5/2010	7.3	µg/L	Y			R		
Hexavalent Chromium	199-F5-4	5/5/2010	6.8	µg/L	Y			R		
Hexavalent Chromium	199-F5-42	5/5/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F5-42	5/5/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F5-43A	5/5/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F5-43A	5/5/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F5-44	5/5/2010	8.8	µg/L	N			R	Y	
Hexavalent Chromium	199-F5-44	5/5/2010	10.1	µg/L	Y			R		
Hexavalent Chromium	199-F5-45	5/5/2010	20.9	µg/L	N			R	Y	
Hexavalent Chromium	199-F5-45	5/5/2010	20.4	µg/L	Y			R		
Hexavalent Chromium	199-F5-46	5/5/2010	91.9	µg/L	N			R	Y	
Hexavalent Chromium	199-F5-46	5/5/2010	92.9	µg/L	Y			R		
Hexavalent Chromium	199-F5-48	5/5/2010	13.9	µg/L	N			R	Y	
Hexavalent Chromium	199-F5-48	5/5/2010	15.6	µg/L	Y			R		
Hexavalent Chromium	199-F5-6	5/5/2010	60.5	µg/L	N			R	Y	
Hexavalent Chromium	199-F5-6	5/5/2010	59.8	µg/L	Y			R		

Table 1. May 2010 Groundwater Data from Routine Samples

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Collection Purpose	Use for Plume	Comment
Hexavalent Chromium	199-F6-1	5/17/2010	2.6	µg/L	N	B		R	Y	
Hexavalent Chromium	199-F6-1	5/17/2010	2.4	µg/L	Y	B		R		
Hexavalent Chromium	199-F7-1	5/5/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F7-1	5/5/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F7-2	5/5/2010	2.9	µg/L	N	B		R	Y	
Hexavalent Chromium	199-F7-2	5/5/2010	3.4	µg/L	Y	B		R		
Hexavalent Chromium	199-F7-3	5/5/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F7-3	5/5/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F8-2	5/6/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F8-2	5/6/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F8-3	5/5/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F8-3	5/5/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F8-4	5/5/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F8-4	5/5/2010	2.2	µg/L	Y	B		R		
Hexavalent Chromium	199-F8-7	5/5/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F8-7	5/5/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	699-17-5	5/20/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	699-17-5	5/20/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	699-65-50	5/4/2010	9.7	µg/L	N			R	Y	
Hexavalent Chromium	699-65-50	5/4/2010	9.6	µg/L	Y			R		
Hexavalent Chromium	699-65-72	5/17/2010	2.8	µg/L	N	B		R	Y	
Hexavalent Chromium	699-65-72	5/17/2010	2.4	µg/L	Y	B		R		

Table 1. May 2010 Groundwater Data from Routine Samples

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Collection Purpose	Use for Plume	Comment
Hexavalent Chromium	699-65-83	5/17/2010	9.3	µg/L	N			R	Y	
Hexavalent Chromium	699-65-83	5/17/2010	8.6	µg/L	N			R		
Hexavalent Chromium	699-67-86	5/18/2010	4.4	µg/L	N	B		R	Y	
Hexavalent Chromium	699-67-86	5/18/2010	4.3	µg/L	N	B		R		
Hexavalent Chromium	699-77-36	5/17/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	699-77-36	5/17/2010	2	µg/L	Y	U		R		
Nitrate	199-F1-2	5/5/2010	25.5	mg/L	N	D		R	Y	
Nitrate	199-F5-1	5/5/2010	8.41	mg/L	N	D		R	Y	
Nitrate	199-F5-4	5/5/2010	126	mg/L	N	D		R	Y	
Nitrate	199-F5-4	5/5/2010	124	mg/L	N	D		R		
Nitrate	199-F5-42	5/5/2010	1.93	mg/L	N	D		R	Y	
Nitrate	199-F5-43A	5/5/2010	1.95	mg/L	N	D		R	Y	
Nitrate	199-F5-44	5/5/2010	9.12	mg/L	N	D		R	Y	
Nitrate	199-F5-45	5/5/2010	99.2	mg/L	N	D		R	Y	
Nitrate	199-F5-46	5/5/2010	40.3	mg/L	N	D		R	Y	
Nitrate	199-F5-48	5/5/2010	108	mg/L	N	D		R	Y	
Nitrate	199-F5-6	5/5/2010	30.7	mg/L	N	D		R	Y	
Nitrate	199-F6-1	5/17/2010	5.44	mg/L	N	D		R	Y	
Nitrate	199-F7-1	5/5/2010	54.4	mg/L	N	D		R	Y	
Nitrate	199-F7-2	5/5/2010	65.1	mg/L	N	D		R	Y	
Nitrate	199-F7-3	5/5/2010	89	mg/L	N	D		R	Y	
Nitrate	199-F8-2	5/6/2010	73.9	mg/L	N	D		R	Y	

Table 1. May 2010 Groundwater Data from Routine Samples

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Collection Purpose	Use for Plume	Comment
Nitrate	199-F8-3	5/5/2010	90.3	mg/L	N	D		R	Y	
Nitrate	199-F8-4	5/5/2010	62.4	mg/L	N	D		R	Y	
Nitrate	199-F8-7	5/5/2010	91.6	mg/L	N	D		R	Y	
Nitrate	699-17-5	5/20/2010	32.4	mg/L	N	D		R	Y	
Nitrate	699-65-50	5/4/2010	13.9	mg/L	N	D		R	Y	
Nitrate	699-65-72	5/17/2010	2.26	mg/L	N	D		R	Y	
Nitrate	699-65-83	5/17/2010	4.65	mg/L	N	D		R	Y	
Nitrate	699-67-86	5/18/2010	3.48	mg/L	N	D		R	Y	
Nitrate	699-77-36	5/17/2010	30.9	mg/L	N	D		R	Y	
Strontium-90	199-F1-2	5/5/2010	-4.3	pCi/L	N	U		R	Y	
Strontium-90	199-F5-1	5/5/2010	19	pCi/L	N			R	Y	
Strontium-90	199-F5-4	5/5/2010	-2.3	pCi/L	N	U		R	Y	
Strontium-90	199-F5-4	5/5/2010	-3.6	pCi/L	N	U		R		
Strontium-90	199-F5-42	5/5/2010	0.47	pCi/L	N	U	G	R	Y	
Strontium-90	199-F5-43A	5/5/2010	-0.8	pCi/L	N	U	G	R	Y	
Strontium-90	199-F5-44	5/5/2010	0.5	pCi/L	N	U	G	R	Y	
Strontium-90	199-F5-45	5/5/2010	-4.4	pCi/L	N	U	G	R	Y	
Strontium-90	199-F5-46	5/5/2010	0.99	pCi/L	N	U	G	R	Y	
Strontium-90	199-F5-48	5/5/2010	-0.14	pCi/L	N	U		R	Y	
Strontium-90	199-F5-6	5/5/2010	-0.7	pCi/L	N	U	G	R	Y	
Strontium-90	199-F6-1	5/17/2010	-3	pCi/L	N	U		R	Y	
Strontium-90	199-F7-1	5/5/2010	-3.2	pCi/L	N	U		R	Y	

Table 1. May 2010 Groundwater Data from Routine Samples

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Collection Purpose	Use for Plume	Comment
Strontium-90	199-F7-2	5/5/2010	-6.2	pCi/L	N	U		R	Y	
Strontium-90	199-F7-3	5/5/2010	-5.2	pCi/L	N	U		R	Y	
Strontium-90	199-F8-2	5/6/2010	-0.25	pCi/L	N	U		R	Y	
Strontium-90	199-F8-3	5/5/2010	-3.5	pCi/L	N	U		R	Y	
Strontium-90	199-F8-4	5/5/2010	-5.5	pCi/L	N	U		R	Y	
Strontium-90	199-F8-7	5/5/2010	3	pCi/L	N			R	Y	
Strontium-90	699-17-5	5/20/2010	0.63	pCi/L	N	U		R	Y	
Strontium-90	699-61-62	5/4/2010	-1.8	pCi/L	N	U		R	Y	
Strontium-90	699-65-50	5/4/2010	-3.4	pCi/L	N	U		R	Y	
Strontium-90	699-65-72	5/17/2010	-7.3	pCi/L	N	U		R	Y	
Strontium-90	699-65-83	5/17/2010	-8.4	pCi/L	N	U		R	Y	
Strontium-90	699-67-86	5/18/2010	-6.1	pCi/L	N	U		R	Y	
Strontium-90	699-77-36	5/17/2010	-5.2	pCi/L	N	U		R	Y	
Trichloroethene	199-F1-2	5/5/2010	0.21	µg/L	N	UT		R	Y	
Trichloroethene	199-F5-1	5/5/2010	0.21	µg/L	N	UT		R	Y	
Trichloroethene	199-F5-4	5/5/2010	1.3	µg/L	N	T		R		
Trichloroethene	199-F5-4	5/5/2010	1.4	µg/L	N	T		R	Y	
Trichloroethene	199-F5-42	5/5/2010	0.21	µg/L	N	UT		R	Y	
Trichloroethene	199-F5-43A	5/5/2010	0.21	µg/L	N	UT		R	Y	
Trichloroethene	199-F5-44	5/5/2010	0.21	µg/L	N	UT		R	Y	
Trichloroethene	199-F5-45	5/5/2010	3.4	µg/L	N	T		R	Y	
Trichloroethene	199-F5-46	5/5/2010	2.6	µg/L	N	T		R	Y	

Table 1. May 2010 Groundwater Data from Routine Samples

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Collection Purpose	Use for Plume	Comment
Trichloroethene	199-F5-48	5/5/2010	1.7	µg/L	N	T		R	Y	
Trichloroethene	199-F5-6	5/5/2010	0.25	µg/L	N	JT		R	Y	
Trichloroethene	199-F6-1	5/17/2010	0.21	µg/L	N	U		R	Y	
Trichloroethene	199-F7-1	5/5/2010	20	µg/L	N	T		R	Y	
Trichloroethene	199-F7-2	5/5/2010	5.5	µg/L	N	T		R	Y	
Trichloroethene	199-F7-3	5/5/2010	10	µg/L	N	T		R	Y	
Trichloroethene	199-F8-2	5/6/2010	0.21	µg/L	N	UT		R	Y	
Trichloroethene	199-F8-3	5/5/2010	0.21	µg/L	N	UT		R	Y	
Trichloroethene	199-F8-4	5/5/2010	1	µg/L	N	T		R	Y	
Trichloroethene	199-F8-7	5/5/2010	0.21	µg/L	N	UT		R	Y	
Trichloroethene	699-17-5	5/20/2010	0.21	µg/L	N	U		R	Y	
Trichloroethene	699-49-100C	5/26/2010	0.21	µg/L	N	U		R	Y	Same lab as other TCE; lower DL than split
Trichloroethene	699-49-100C	5/26/2010	1	µg/L	N	U		R		
Trichloroethene	699-65-50	5/4/2010	0.21	µg/L	N	UT		R	Y	
Trichloroethene	699-65-72	5/17/2010	1.3	µg/L	N			R	Y	
Trichloroethene	699-65-83	5/17/2010	0.21	µg/L	N	U		R	Y	
Trichloroethene	699-67-86	5/18/2010	0.21	µg/L	N	U		R	Y	
Trichloroethene	699-77-36	5/17/2010	12	µg/L	N			R	Y	

Table 1. May 2010 Groundwater Data from Routine Samples

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Collection Purpose	Use for Plume	Comment

Filt.: N = unfiltered; Y = filtered

LabQ (laboratory data qualifiers): B = estimated (below contractually required detection limit but above method detection limit); D = analyzed at secondary dilution factor; T = spike recovery outside control limits; U = undetected

RvwQ (review qualifier): G = data review has been completed and data point was found to be valid

Collection purpose: R = routine

Use for plume: Y = yes (blank = no)

Table 2. Fall 2010 Groundwater Data from Routine Samples

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Collection Purpose	Use for Plume	Comment
Hexavalent Chromium	199-F1-2	9/26/2010	3	µg/L	N	B		R	Y	
Hexavalent Chromium	199-F1-2	9/26/2010	2.9	µg/L	Y	B		R		
Hexavalent Chromium	199-F5-1	9/26/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F5-1	9/26/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F5-4	9/26/2010	6.6	µg/L	N			R	Y	
Hexavalent Chromium	199-F5-4	9/26/2010	6.8	µg/L	Y			R		
Hexavalent Chromium	199-F5-42	11/11/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F5-42	11/11/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F5-43A	9/26/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F5-43A	9/26/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F5-44	11/11/2010	10.4	µg/L	N			R	Y	
Hexavalent Chromium	199-F5-44	11/11/2010	10.6	µg/L	Y			R		
Hexavalent Chromium	199-F5-45	9/26/2010	9	µg/L	N			R	Y	
Hexavalent Chromium	199-F5-45	9/26/2010	9.3	µg/L	Y			R		
Hexavalent Chromium	199-F5-46	11/11/2010	20	µg/L	N			R	Y	
Hexavalent Chromium	199-F5-46	11/11/2010	20.9	µg/L	Y			R		
Hexavalent Chromium	199-F5-48	9/26/2010	13.8	µg/L	N			R	Y	
Hexavalent Chromium	199-F5-48	9/26/2010	13.8	µg/L	N			R		
Hexavalent Chromium	199-F5-48	9/26/2010	14.6	µg/L	Y			R		
Hexavalent Chromium	199-F5-48	9/26/2010	14.3	µg/L	Y			R		
Hexavalent Chromium	199-F5-53	11/5/2010	13	µg/L	N			C		Grab sample from borehole
Hexavalent Chromium	199-F5-6	11/10/2010	25.7	µg/L	N			R	Y	

Table 2. Fall 2010 Groundwater Data from Routine Samples

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Collection Purpose	Use for Plume	Comment
Hexavalent Chromium	199-F5-6	11/10/2010	25.5	µg/L	Y			R		
Hexavalent Chromium	199-F6-1	9/26/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F6-1	9/26/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F7-1	9/26/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F7-1	9/26/2010	2	µg/L	N	U		R		
Hexavalent Chromium	199-F7-1	9/26/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F7-2	11/10/2010	2.8	µg/L	N	B		R	Y	
Hexavalent Chromium	199-F7-2	11/10/2010	2.7	µg/L	Y	B		R		
Hexavalent Chromium	199-F7-3	9/26/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F7-3	9/26/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F8-2	11/14/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F8-2	11/14/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F8-3	9/26/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F8-3	9/26/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F8-4	9/26/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F8-4	9/26/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	199-F8-7	9/26/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	199-F8-7	9/26/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	699-71-30	11/29/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	699-71-30	11/29/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	699-74-44	11/29/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	699-74-44	11/29/2010	2	µg/L	Y	U		R		

Table 2. Fall 2010 Groundwater Data from Routine Samples

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Collection Purpose	Use for Plume	Comment
Hexavalent Chromium	699-77-36	11/29/2010	2	µg/L	N	U		R	Y	
Hexavalent Chromium	699-77-36	11/29/2010	2	µg/L	Y	U		R		
Hexavalent Chromium	699-77-54	9/19/2010	21.2	µg/L	N			R	Y	
Hexavalent Chromium	699-77-54	9/19/2010	21.2	µg/L	Y			R		
Nitrate	199-F1-2	9/26/2010	27,000	µg/L	N	D		R	Y	
Nitrate	199-F5-1	9/26/2010	7,300	µg/L	N	D		R	Y	
Nitrate	199-F5-4	9/26/2010	13,3000	µg/L	N	D		R	Y	
Nitrate	199-F5-6	11/10/2010	21,900	µg/L	N	D		R	Y	
Nitrate	199-F5-42	11/11/2010	1,580	µg/L	N	D		R	Y	
Nitrate	199-F5-43A	9/26/2010	4,060	µg/L	N	D		R	Y	
Nitrate	199-F5-44	11/11/2010	11,400	µg/L	N	D		R	Y	
Nitrate	199-F5-45	9/26/2010	94,700	µg/L	N	D		R	Y	
Nitrate	199-F5-46	11/11/2010	58,000	µg/L	N	D		R	Y	
Nitrate	199-F5-48	9/26/2010	110,000	µg/L	N	D		R		
Nitrate	199-F5-48	9/26/2010	111,000	µg/L	N	D		R	Y	
Nitrate	199-F6-1	9/26/2010	3,990	µg/L	N	D		R	Y	
Nitrate	199-F7-1	9/26/2010	55,300	µg/L	N	D		R	Y	
Nitrate	199-F7-2	11/10/2010	62,900	µg/L	N	D		R	Y	
Nitrate	199-F7-3	9/26/2010	85,000	µg/L	N	D		R	Y	
Nitrate	199-F7-3	9/26/2010	85,000	µg/L	N	D		R		
Nitrate	199-F8-2	11/14/2010	68,200	µg/L	N	D		R	Y	
Nitrate	199-F8-3	9/26/2010	88,100	µg/L	N	D		R	Y	

Table 2. Fall 2010 Groundwater Data from Routine Samples

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Collection Purpose	Use for Plume	Comment
Nitrate	199-F8-4	9/26/2010	73,900	µg/L	N	D		R	Y	
Nitrate	199-F8-7	9/26/2010	98,300	µg/L	N	D		R	Y	
Nitrate	699-62-31	11/17/2010	85,400	µg/L	N	D		R	Y	
Nitrate	699-63-55	11/17/2010	13,500	µg/L	N	D		R	Y	
Nitrate	699-67-51	11/17/2010	17,100	µg/L	N	D		R	Y	
Nitrate	699-67-86	9/2/2010	3,520	µg/L	N	D		R	Y	
Nitrate	699-71-30	11/29/2010	100,000	µg/L	N	D		R	Y	
Nitrate	699-74-44	11/29/2010	1,000	µg/L	N	D		R	Y	
Nitrate	699-77-36	11/29/2010	33,100	µg/L	N	D		R	Y	
Nitrate	699-77-54	9/19/2010	10,800	µg/L	N	D		R	Y	
Strontium-90	199-F1-2	9/26/2010	-7.6	pCi/L	N	U		R	Y	
Strontium-90	199-F5-1	9/26/2010	15	pCi/L	N			R	Y	
Strontium-90	199-F5-4	9/26/2010	-7.3	pCi/L	N	U		R	Y	
Strontium-90	199-F5-6	11/10/2010	-1.2	pCi/L	N	U		R	Y	
Strontium-90	199-F5-42	11/11/2010	-1.3	pCi/L	N	U		R	Y	
Strontium-90	199-F5-43A	9/26/2010	-4	pCi/L	N	U		R	Y	
Strontium-90	199-F5-44	11/11/2010	2.9	pCi/L	N			R	Y	
Strontium-90	199-F5-45	9/26/2010	-7.9	pCi/L	N	U		R	Y	
Strontium-90	199-F5-46	11/11/2010	3.6	pCi/L	N			R	Y	
Strontium-90	199-F5-48	9/26/2010	-3.5	pCi/L	N	U		R	Y	
Strontium-90	199-F5-48	9/26/2010	-8.1	pCi/L	N	U		R		
Strontium-90	199-F6-1	9/26/2010	-4.8	pCi/L	N	U		R	Y	

Table 2. Fall 2010 Groundwater Data from Routine Samples

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Collection Purpose	Use for Plume	Comment
Strontium-90	199-F7-1	9/26/2010	-2.2	pCi/L	N	U		R	Y	
Strontium-90	199-F7-2	11/10/2010	-6.9	pCi/L	N	U		R	Y	
Strontium-90	199-F7-3	9/26/2010	-8.4	pCi/L	N	U		R	Y	
Strontium-90	199-F8-2	11/14/2010	-7	pCi/L	N	U		R	Y	
Strontium-90	199-F8-3	9/26/2010	-6.7	pCi/L	N	U		R	Y	
Strontium-90	199-F8-4	9/26/2010	-1.8	pCi/L	N	U		R	Y	
Strontium-90	199-F8-7	9/26/2010	-5.1	pCi/L	N	U		R	Y	
Trichloroethene	199-F1-2	9/26/2010	0.25	µg/L	N	U		R	Y	
Trichloroethene	199-F5-1	9/26/2010	0.25	µg/L	N	U		R	Y	
Trichloroethene	199-F5-4	9/26/2010	1	µg/L	N	U		R		
Trichloroethene	199-F5-4	9/26/2010	1.6	µg/L	N			R	Y	
Trichloroethene	199-F5-6	11/10/2010	0.25	µg/L	N	U		R	Y	
Trichloroethene	199-F5-42	11/11/2010	0.25	µg/L	N	U		R	Y	
Trichloroethene	199-F5-43A	9/26/2010	0.25	µg/L	N	U		R	Y	
Trichloroethene	199-F5-44	11/11/2010	0.25	µg/L	N	U		R	Y	
Trichloroethene	199-F5-45	9/26/2010	5.2	µg/L	N			R	Y	
Trichloroethene	199-F5-45	9/26/2010	1	µg/L	N	U	F	R		
Trichloroethene	199-F5-46	11/11/2010	4.2	µg/L	N			R	Y	
Trichloroethene	199-F5-48	9/26/2010	2.1	µg/L	N			R		
Trichloroethene	199-F5-48	9/26/2010	2.2	µg/L	N			R	Y	
Trichloroethene	199-F6-1	9/26/2010	0.25	µg/L	N	U		R	Y	
Trichloroethene	199-F7-1	9/26/2010	16	µg/L	N			R	Y	

Table 2. Fall 2010 Groundwater Data from Routine Samples

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Collection Purpose	Use for Plume	Comment
Trichloroethene	199-F7-2	11/10/2010	4.3	µg/L	N			R	Y	
Trichloroethene	199-F7-3	9/26/2010	8.9	µg/L	N			R	Y	
Trichloroethene	199-F8-2	11/14/2010	0.25	µg/L	N	U		R	Y	
Trichloroethene	199-F8-3	9/26/2010	0.25	µg/L	N	U		R	Y	
Trichloroethene	199-F8-4	9/26/2010	1.3	µg/L	N			R	Y	
Trichloroethene	199-F8-7	9/26/2010	0.25	µg/L	N	U		R	Y	
Trichloroethene	699-65-72	9/2/2010	1.3	µg/L	N	B		R	Y	
Trichloroethene	699-70-68	11/29/2010	1.7	µg/L	N	B		R	Y	
Trichloroethene	699-71-30	11/29/2010	1.4	µg/L	N	B		R	Y	
Trichloroethene	699-74-44	11/29/2010	0.44	µg/L	N	JB		R	Y	
Trichloroethene	699-77-36	11/29/2010	13	µg/L	N	B		R	Y	
Trichloroethene	699-77-54	9/19/2010	8.9	µg/L	N			R	Y	

Filt.: N = unfiltered; Y = filtered

LabQ (laboratory data qualifiers): B = estimated (below contractually required detection limit but above method detection limit); D = analyzed at secondary dilution factor; J = estimated (below contractually required detection limit but above method detection limit); U = undetected

RvwQ (review qualifier): F = suspected error; data review requested (later corrected to 4.2 J)

Collection purpose: R = routine

Use for plume: Y = yes (blank = no)

Table 3. Supplemental Groundwater Data for Spring and Fall Plume Maps

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Use for Plume	Comment
Hexavalent Chromium	199-F5-52	8/6/2010	2	µg/L	N	U		Y	Max of drilling characterization samples
Hexavalent Chromium	199-F5-52	8/6/2010	3.7	µg/L	N	U			
Hexavalent Chromium	199-F5-52	8/9/2010	2	µg/L	N	U			
Hexavalent Chromium	199-F5-52	8/10/2010	2	µg/L	N	U			
Hexavalent Chromium	199-F5-52	8/10/2010	2	µg/L	N	U			
Hexavalent Chromium	199-F5-52	8/13/2010	2	µg/L	N	U			
Hexavalent Chromium	199-F5-53	11/5/2010	15.8	µg/L	N			Y	Max of drilling characterization samples
Hexavalent Chromium	199-F5-53	11/5/2010	13	µg/L	N				
Hexavalent Chromium	199-F5-53	11/8/2010	3.7	µg/L	N	U			
Hexavalent Chromium	199-F5-53	11/8/2010	2	µg/L	N	U			
Hexavalent Chromium	199-F5-53	12/1/2010	2	µg/L	N	U			Char. during drilling; from RUM
Hexavalent Chromium	199-F5-53	12/1/2010	2	µg/L	N	U			Char. during drilling; from RUM
Hexavalent Chromium	199-F5-54	8/24/2010	3.7	µg/L	N	U		Y	Max of drilling characterization samples
Hexavalent Chromium	199-F5-54	8/24/2010	2	µg/L	Y	U			
Hexavalent Chromium	199-F5-54	8/25/2010	2	µg/L	N	U			
Hexavalent Chromium	199-F5-54	8/25/2010	2	µg/L	N	U			
Hexavalent Chromium	199-F5-54	8/26/2010	2	µg/L	N	U			
Hexavalent Chromium	199-F5-54	8/27/2010	2	µg/L	N	U	Y		
Hexavalent Chromium	199-F5-54	8/31/2010	2	µg/L	N	U			
Nitrate	199-F5-52	8/6/2010	28,200	µg/L	N	D			
Nitrate	199-F5-52	8/9/2010	34,200	µg/L	N	D		Y	Max of drilling char samples
Nitrate	199-F5-52	8/10/2010	31,900	µg/L	N	D			

Table 3. Supplemental Groundwater Data for Spring and Fall Plume Maps

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Use for Plume	Comment
Nitrate	199-F5-52	8/10/2010	31,800	µg/L	N	D			
Nitrate	199-F5-52	8/13/2010	27,800	µg/L	N	D			
Nitrate	199-F5-53	11/5/2010	20,000	µg/L	N	D			
Nitrate	199-F5-53	11/8/2010	31,700	µg/L	N	D		Y	Max of drilling char sampled (Hanford fm)
Nitrate	199-F5-53	11/8/2010	30,500	µg/L	N	D			
Nitrate	199-F5-53	12/1/2010	235	µg/L	N	BD			Char. during drilling; from RUM
Nitrate	199-F5-53	12/1/2010	215	µg/L	N	BD			Char. during drilling; from RUM
Nitrate	199-F5-54	8/24/2010	151,000	µg/L	Y	D			
Nitrate	199-F5-54	8/25/2010	151,000	µg/L	N	D			
Nitrate	199-F5-54	8/25/2010	152,000	µg/L	N	D		Y	Max of drilling char samples
Nitrate	199-F5-54	8/26/2010	150,000	µg/L	N	D			
Nitrate	199-F5-54	8/27/2010	96,900	µg/L	N	D			
Nitrate	199-F5-54	8/31/2010	63,300	µg/L	N	D			
Strontium-90	199-F5-52	8/6/2010	-6.5	pCi/L	N	U			
Strontium-90	199-F5-52	8/9/2010	-1.6	pCi/L	N	U			
Strontium-90	199-F5-52	8/10/2010	-4.7	pCi/L	N	U			
Strontium-90	199-F5-52	8/10/2010	-1.5	pCi/L	N	U		Y	Max of drilling characterization samples
Strontium-90	199-F5-52	8/13/2010	-3.4	pCi/L	N	U			
Strontium-90	199-F5-53	11/5/2010	-1.8	pCi/L	N	U			
Strontium-90	199-F5-53	11/8/2010	1.16	pCi/L	N			Y	Max of drilling char sampled (Hanford fm)
Strontium-90	199-F5-53	11/8/2010	-4.6	pCi/L	N	U			

Table 3. Supplemental Groundwater Data for Spring and Fall Plume Maps

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Use for Plume	Comment
Strontium-90	199-F5-53	12/1/2010	-1.1	pCi/L	N	U			Char. during drilling; from RUM
Strontium-90	199-F5-53	12/1/2010	-5.5	pCi/L	N	U			Char. during drilling; from RUM
Strontium-90	199-F5-54	8/24/2010	-2.9	pCi/L	Y	U		Y	Characterization during drilling
Strontium-90	199-F5-54	8/25/2010	-10	pCi/L	N	U			
Strontium-90	199-F5-54	8/25/2010	-3.1	pCi/L	N	U			
Strontium-90	199-F5-54	8/26/2010	-4.8	pCi/L	N	U			
Strontium-90	199-F5-54	8/27/2010	-6	pCi/L	N	U			
Strontium-90	199-F5-54	8/31/2010	-6.9	pCi/L	N	U			
Trichloroethene	199-F5-52	8/6/2010	1	µg/L	N	U		Y	Characterization during drilling
Trichloroethene	199-F5-52	8/9/2010	1	µg/L	N	U			
Trichloroethene	199-F5-52	8/10/2010	1	µg/L	N	U			
Trichloroethene	199-F5-52	8/10/2010	1	µg/L	N	U			
Trichloroethene	199-F5-52	8/13/2010	1	µg/L	N	U			
Trichloroethene	199-F5-53	11/5/2010	1	µg/L	N	U		Y	Characterization during drilling
Trichloroethene	199-F5-53	11/8/2010	0.25	µg/L	N	U			
Trichloroethene	199-F5-53	11/8/2010	1	µg/L	N	U			
Trichloroethene	199-F5-53	12/1/2010	1	µg/L	N	U			Char. during drilling; from RUM
Trichloroethene	199-F5-53	12/1/2010	1	µg/L	N	U			Char. during drilling; from RUM
Trichloroethene	199-F5-54	8/24/2010	1	µg/L	Y	U		Y	Characterization during drilling
Trichloroethene	199-F5-54	8/25/2010	1	µg/L	N	U			
Trichloroethene	199-F5-54	8/25/2010	1	µg/L	N	U			
Trichloroethene	199-F5-54	8/26/2010	1	µg/L	N	U			

Table 3. Supplemental Groundwater Data for Spring and Fall Plume Maps

Constituent	Well	Date	Result	Units	Filt.	LabQ	RvwQ	Use for Plume	Comment
Trichloroethene	199-F5-54	8/27/2010	1	µg/L	N	U			
Trichloroethene	199-F5-54	8/31/2010	1	µg/L	N	U			

Filt.: N = unfiltered; Y = filtered

LabQ (laboratory data qualifiers): B = estimated (below contractually required detection limit but above method detection limit); D = analyzed at secondary dilution factor; U = undetected

RvwQ (review qualifier): F = suspected error; data review requested

Collection purpose: R = routine

Use for plume: Y = yes (blank = no)

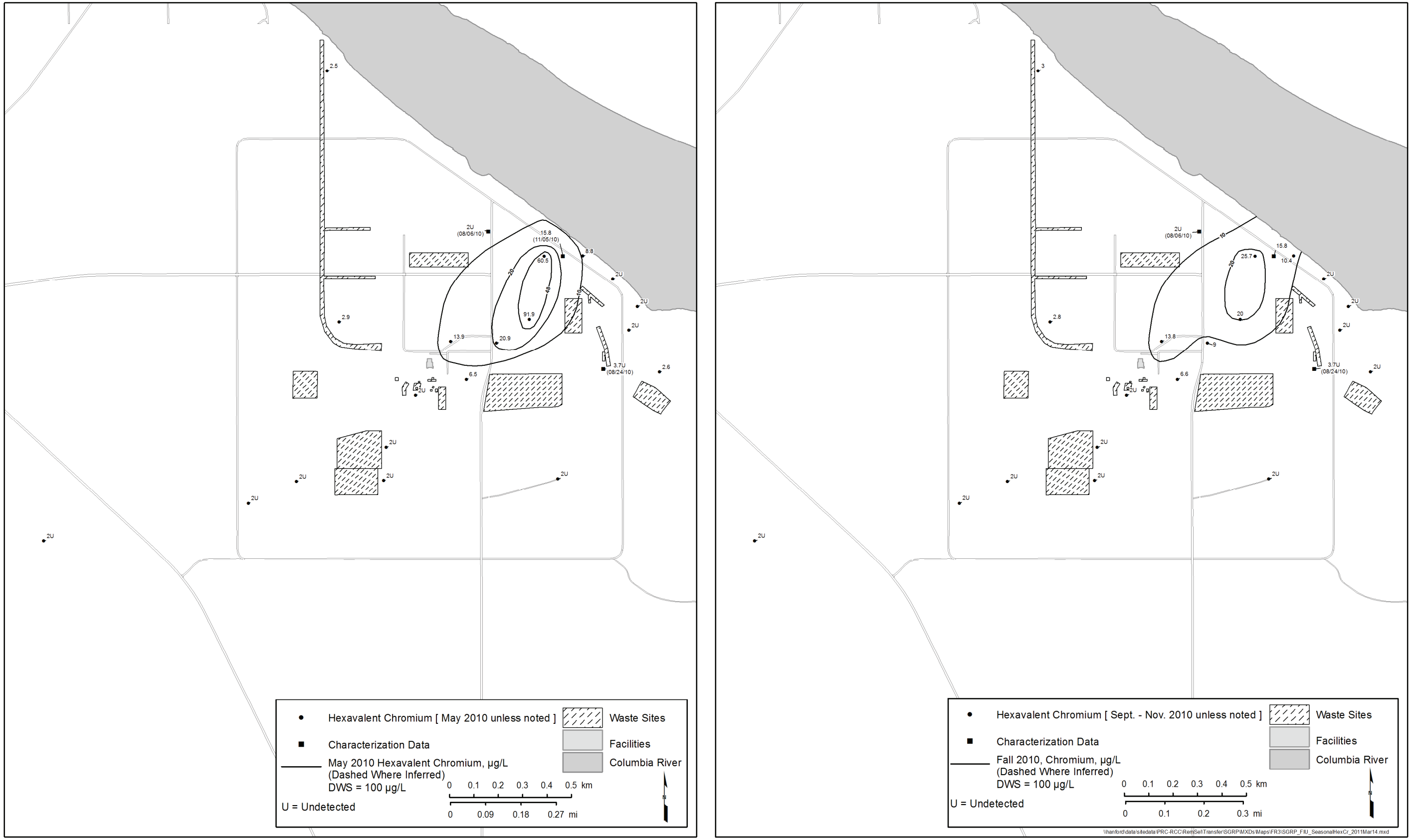


Figure 1. Hexavalent Chromium in the Unconfined Aquifer, 100-F

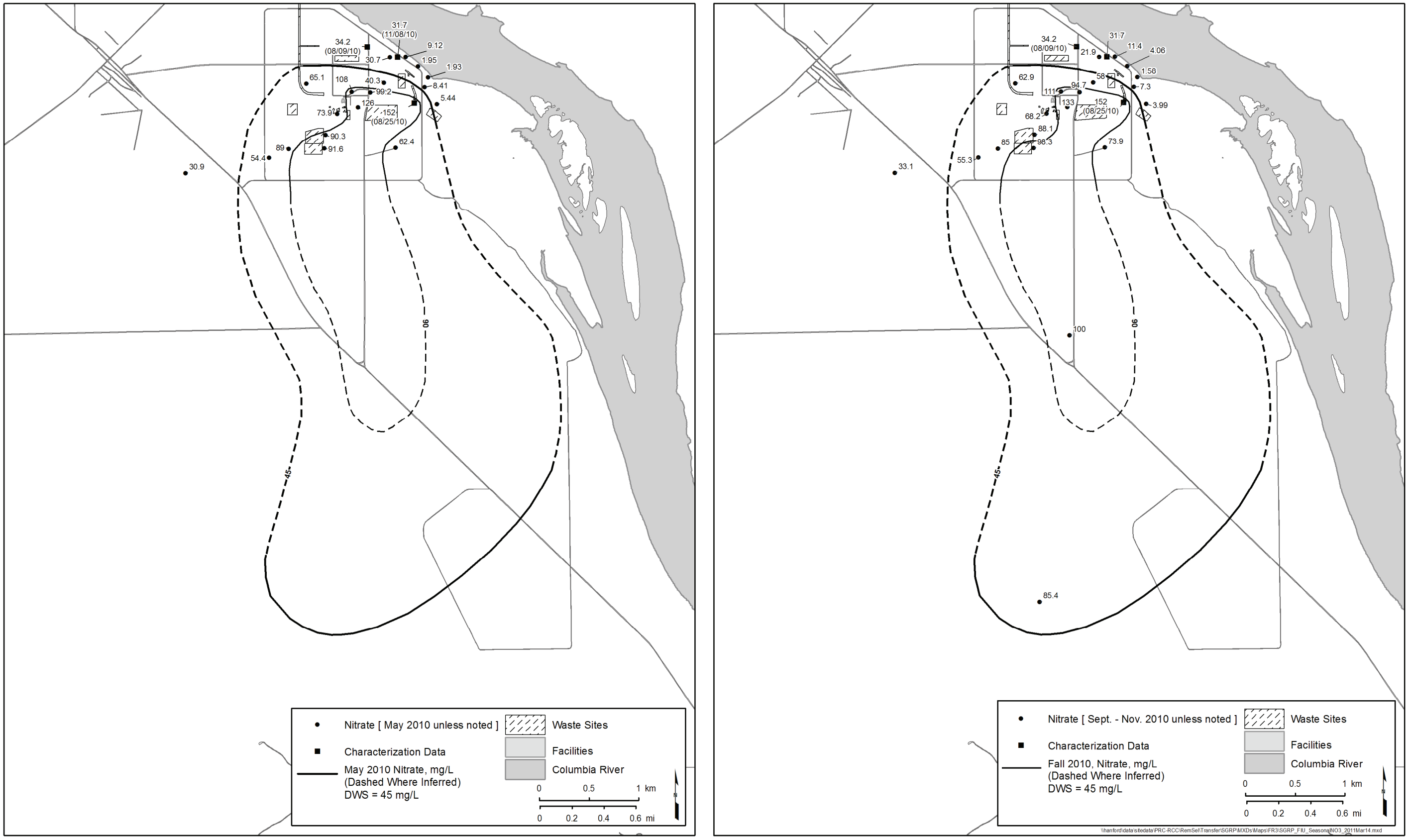


Figure 2. Nitrate in the Unconfined Aquifer, 100-F

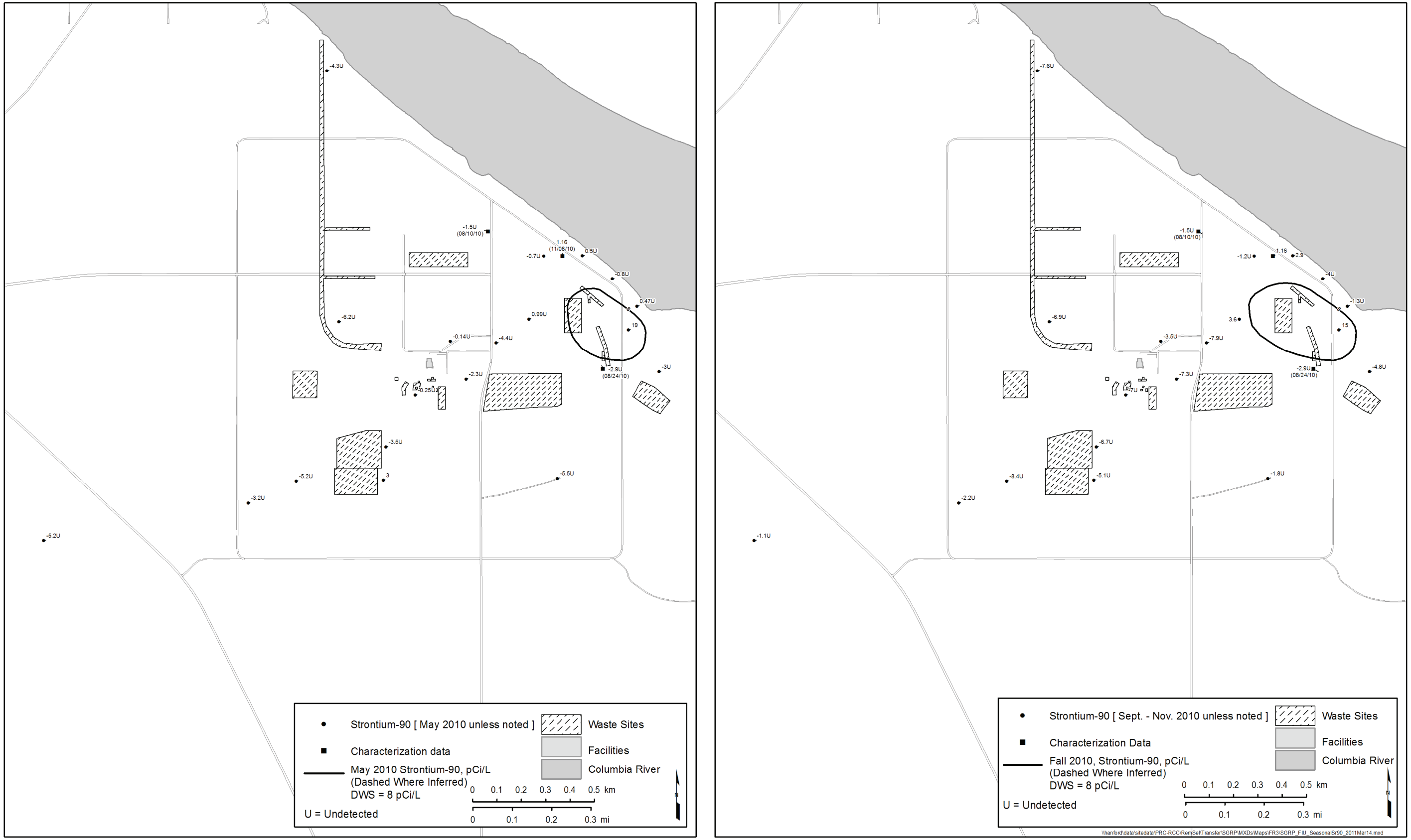
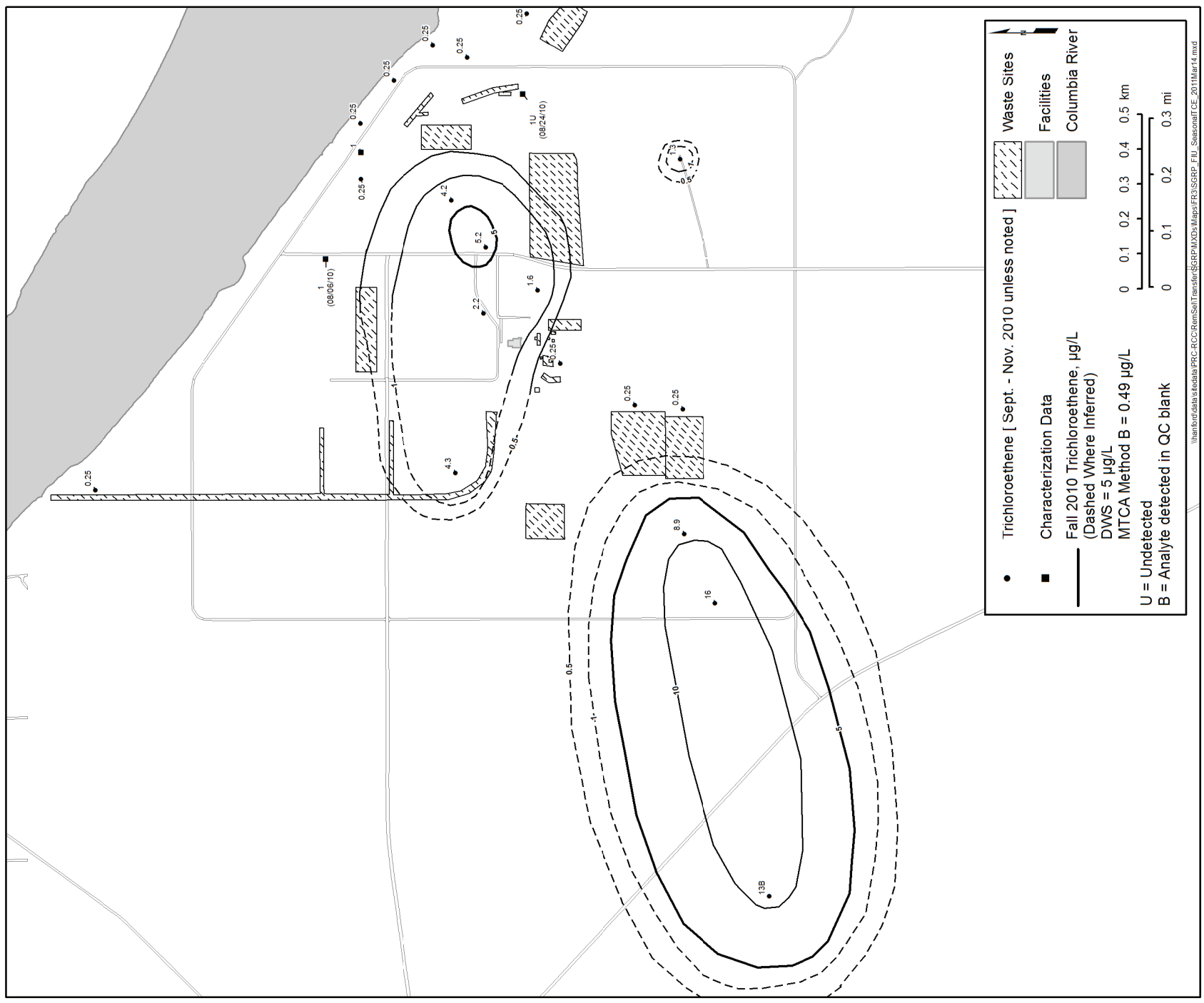


Figure 3. Strontium-90 in the Unconfined Aquifer, 100-F



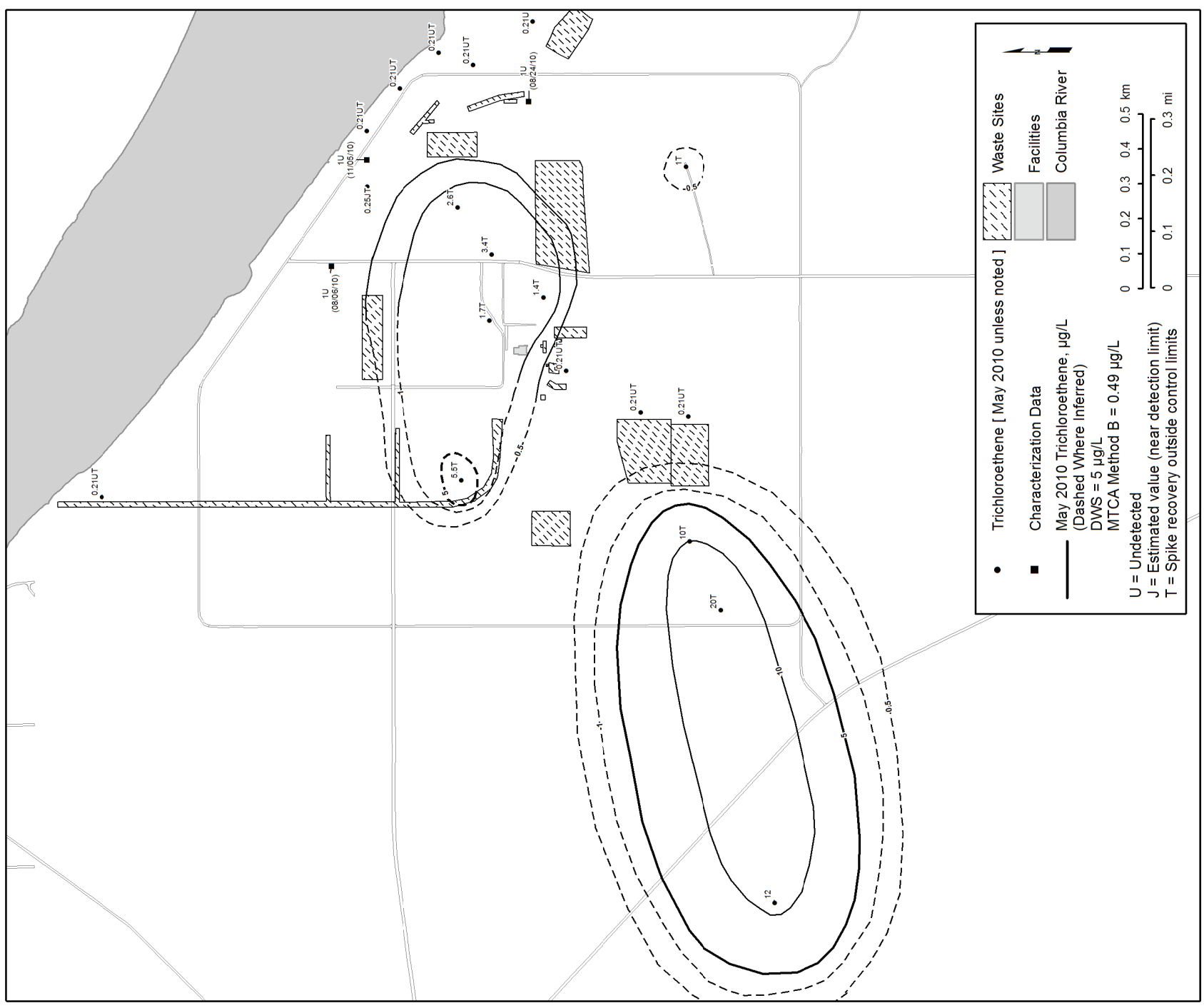


Figure 4. Trichloroethene in Unconfined Aquifer, 100-F

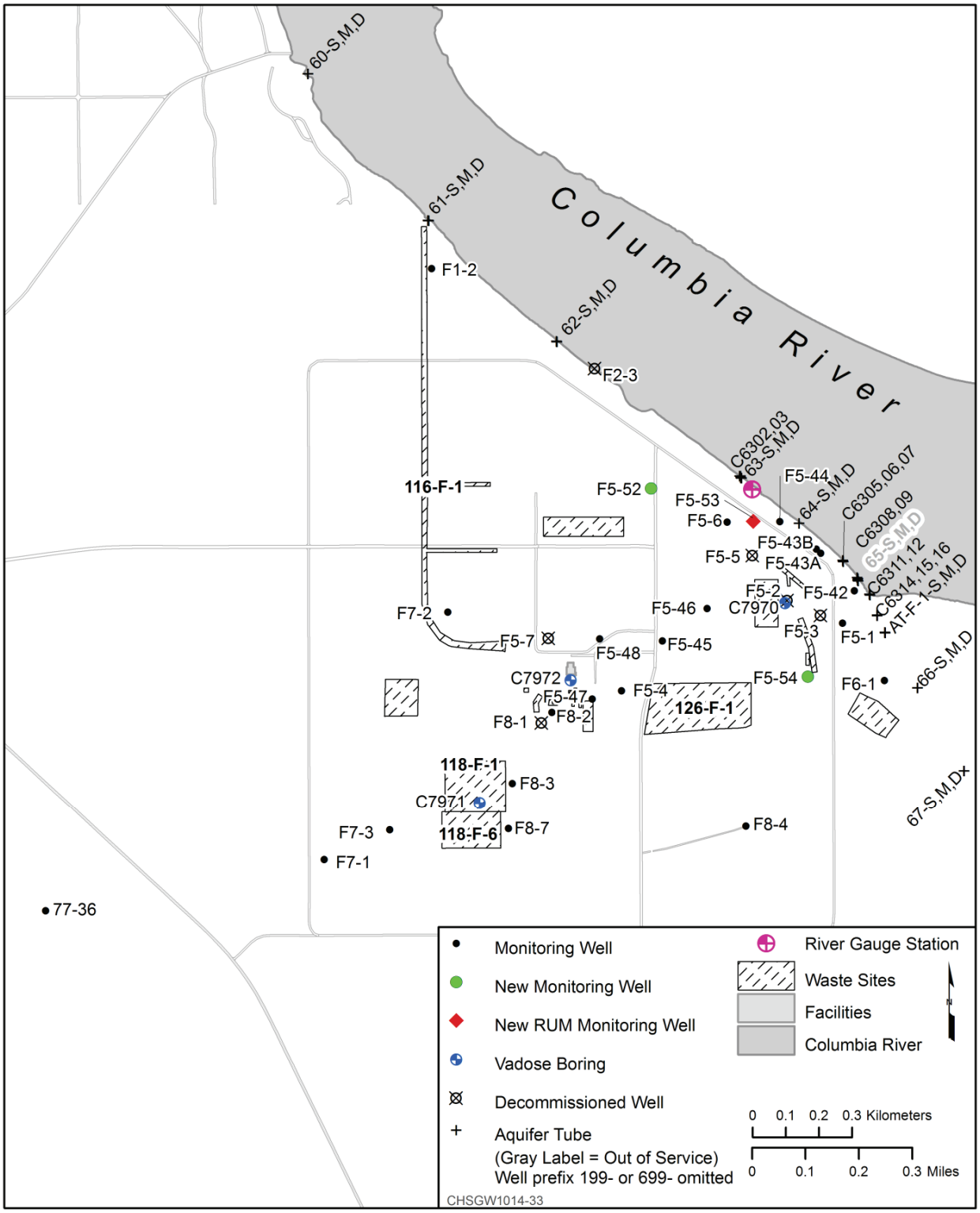


Figure 5. Well Names and Locations in 100-F

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DOCUMENT TITLE:	**OWNING ORGANIZATION/FACILITY:**
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Date: Monday, September 17, 2012 1:59:29 PM
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Revision 2

100 Area Stratigraphic Database Development

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

CH2MHILL
Plateau Remediation Company

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100 Area Stratigraphic Database Development

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Prepared for the U.S. Department of Energy
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Contractor for the U.S. Department of Energy
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Environmental Calculation Cover Page

Part 1: Completed by the Responsible Manager

Project: Soil & Groundwater Remediation Project **Date: 29 August, 2012**

Calculation Title & Description: 100 Area Stratigraphic Database Development

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Revision No.	Description	Date	Affected Pages
0	Initial Issue	8/4/2011	All
1	Revised Hanford/Ringold contacts in 199-B3-52 and C7842. Added wells 199-K-198 and -199.	11/3/2011	Table A-1
2	Corrected some surface elevation errors; revised contact depths for several wells; added about 40 wells. Added more explanation of the software applications and calculations.	8/29/2012	All

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Terms

GPS	Global Positioning System
Hf	Hanford formation
NAVD88	North American Vertical Datum of 1988
NDE	Not deep enough
NP	Not present
RE or Re	Ringold formation unit E
RPGW	Resource protection well structure field inspection report
RUM	Ringold formation upper mud unit
SU	Casing stickup (above ground surface)
TOC	Top of casing elevation
WCSR	well construction summary report
WIDL	Well Information Data Lookup (database)
WSS	well summary sheet

1 Purpose

The purpose of this environmental calculation brief is to document the process for determining elevations of geologic contacts based on data from wells in the 100 Area of the Hanford Site. The end result is a set of data that can be used to construct geologic maps and cross sections of the region north of Gable Mountain and Gable Butte and south of the Columbia River.

2 Methodology

This section provides the steps and associated calculation approach.

2.1 Compile Land Surface Elevations

The first step was to compile a listing of the elevation of land surface at each well location, in meters above the North American Vertical Datum of 1988 (NAVD88). These data are stored in an Excel spreadsheet. These elevations were derived from data in the Well Information Data Lookup (WIDL) database, in the order of preference listed below, and the type of land surface elevation is recorded in the spreadsheet.

a) Surveyed marker on the well pad ("Disc Z")
b) Global Positioning System (GPS) elevation of land surface
c) Surveyed top of casing elevation minus measured casing stickup height (with a preference for information from 1) as-built, 2) inspection report, or 3) other documentation that was closest to the original construction date and/or consistent through time)
d) Surveyed top of casing elevation minus assumed 0.914 m (3-ft) assumed casing stickup height

2.2 Identify Elevations of Geologic Contacts

Geologic data for Hanford Site wells are available from a variety of sources (Section 3.0). Using available data, staff compiled a list of depths to geologic contacts in the Excel spreadsheet. These depths were available in feet below land surface.

The geologic contact between gravels of the Hanford formation and Ringold unit E is often difficult to distinguish. Some geologist's borehole logs, and most older driller's logs, do not allow for a contact determination. Staff used the following characteristics to pick contacts, where data allowed:

- Higher basalt content (i.e., > 60% basalt gravel and sand) in Hanford formation
- Less coarse sand/granules in Ringold unit E
- Ringold gravels generally more oxidized and reddish brown to yellow-brown in color, compared to Hanford formation's gray or salt-and-pepper
- Open framework gravels in Hanford formation
- Ringold unit E may be cemented and more consolidated (slower drilling rates) than Hanford formation
- Increases in borehole geophysical total gamma log, corresponding to increases in silt/clay, and or felsic rich minerals, sometime can be used to identify Ringold E.
- In saturated sediment, aquifer testing results sometimes can be helpful in differentiating Hanford from Ringold gravel.

"Mud" (silt and clay) units in the Ringold Formation are easier to distinguish in geologic logs, geophysical logs, and in many driller's logs. The shallowest mud unit in the Ringold Formation is informally called the Ringold upper mud (RUM).

Virtually all of the wells drilled to deeper horizons (e.g., Ringold lower mud unit; basalt and interbeds) are decades old, and their borehole logs lack detail. The logs were re-examined and contacts picked out, where possible.

Where the rationale for identifying a geologic contact is not obvious, the geologist makes a note in a "comments" column of the spreadsheet.

The Excel spreadsheet was set up to convert depths in feet to depths in meters, and then subtract the depths from the surface elevations to yield elevations of geologic contacts.

3 Assumptions and Inputs

Input to this calculation included the following.

- Borehole geologic logs
- Borehole geophysical logs
- Driller's logs
- Survey information from WIDL
- Well construction reports, well summary sheets, and well inspection sheets from WIDL
- Aquifer testing results

4 Software Applications

A Microsoft Excel 2007®[1] spreadsheet was used to store data and perform calculations described in Section 2, using the default calculation formulae available in that software..

4.1 Description

Software Title: Microsoft® Excel 2007

Software Version: 2007

Hanford Information System Number: 1915

Workstation Type and property number: HLAN Standard Workstation #WC96718

4.2 Software Installation and Checkout

Calculations are presented and discussed in Section 5. The Microsoft® Excel 2007 spreadsheet is attached in Appendix A. Inclusion of the calculation spreadsheet files in their complete configuration is exempt from the validation and verification requirements of PRC-PRO-IRM-309.

4.3 Statement of Valid Software Application

Microsoft® Excel 2007 is approved software for use in performing calculations at Hanford and the calculations were performed within the limitations of the software as approved, and consistent with the requirements of PRC-PRO-IRM-309.

[1] Microsoft Excel is a registered product of the Microsoft Corporation.

5 Calculation

Table 1 shows a portion of the spreadsheet with formulae visible, as an example of how calculations were performed.

Well name, well identification number, surface elevation, elevation control, and reference for the source of casing stickup information are input to columns A through E. Drill depth in feet is input to column F and the spreadsheet converts depth to meters (column G) and calculates the elevation of the bottom of the borehole (column H). This elevation is rounded for use in another column.

For boreholes where the available information allows identification of the top of Ringold formation unit E, the depth to the geologic contact in feet is input to column I. Notes on the source of the identification are recorded in column L. The spreadsheet converts depth to units of meters in column J and calculates elevation in column K.

For boreholes where the available information allows identification of the Ringold upper mud unit, the depth in feet is input to column M and the source noted in column P. The spreadsheet converts depth to units of meters in column N and calculates elevation in column O.

If the depth to Ringold unit E or the Ringold upper mud is unknown, one of the following are input to the appropriate columns:

- X = not enough information to identify the contact
- NP = the geologic unit is known to be not present at that location
- NDE = the borehole was not deep enough to reach the geologic contact

In cases where a borehole is not deep enough to indentify a contact, a value of “less than the elevation of the bottom of the borehole” is inserted (e.g., Cell O3).

Appendix A lists wells, surface elevations, depths and elevations of geologic contacts, and comments.

6 Results/Conclusions

Appendix A presents results of this calculation. These data will be used to construct maps and cross sections of 100 Area geology.

7 References

PRC-PRO-IRM-309, Rev. 1, Change 0, 11/29/2010, “Controlled Software Management,” CH2M HILL Plateau Remediation Company, Richland, Washington.

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Table 1. Example of Calculation Spreadsheet

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**Well Name**	**Well ID**	**Surface Elev. (m)**	**Elevation Control**	**Reference**	**Drill Depth (ft)**	**Drill Depth (m)**	**Bottom Elev. (m)**	**Depth to RE (ft)**	**Depth to RE (m)**	**Hf/Re Elev. (m)**	**Ringold E Depth Data Source**	**Depth to RUM (ft)**	**Depth to RUM (m)**	**RUM Elev. (m)**	**RUM Depth Data Source**	**Notes**
2	199-B2-12	A4550	133.93	Disc Z		178.8	=CONVERT(F2,"ft","m")	=ROUND((C2-G2),1)	12.5	=CONVERT(I2,"ft","m")	=C2-J2	borehole log (GRAM)	149.5	=CONVERT(M2,"ft","m")	=C2-N2	borehole log (GRAM)	RUM depth reinterpreted; RE uncertain
3	199-B2-13	A4551	127.69	Disc Z		40	=CONVERT(F3,"ft","m")	=ROUND((C3-G3),1)	X	X	X	N/A	NDE	NDE	="<"&H3	N/A	
4	199-B2-14	C7665	134.30	Disc Z		152.3	=CONVERT(F4,"ft","m")	=ROUND((C4-G4),1)	33	=CONVERT(I4,"ft","m")	=C4-J4	borehole and geophysical logs (Williams)	143.7	=CONVERT(M4,"ft","m")	=C4-N4	borehole log (GRAM)	
5	199-B2-15	C7783	134.27	Disc Z		193.8	=CONVERT(F5,"ft","m")	=ROUND((C5-G5),1)	30	=CONVERT(I5,"ft","m")	=C5-J5	borehole and geophysical logs (Williams)	143.7	=CONVERT(M5,"ft","m")	=C5-N5		
6	199-B2-16	C7784	133.37	Disc Z		155.2	=CONVERT(F6,"ft","m")	=ROUND((C6-G6),1)	32	=CONVERT(I6,"ft","m")	=C6-J6	borehole and geophysical logs (Williams)	147	=CONVERT(M6,"ft","m")	=C6-N6		
7	199-B3-1	A4552	134.58	TOC (134.882 m) - 0.98 ft SU	1991 RPGW	63	=CONVERT(F7,"ft","m")	=ROUND((C7-G7),1)	X	X	X	N/A	NDE	NDE	="<"&H7	N/A	Cursory log shows undifferentiated sediments; RE pick in SGW-44022 does not appear to be support by log
8	199-B3-2	A9505	135.43	TOC (135.905 m) - 1.55 ft SU		790	=CONVERT(F8,"ft","m")	=ROUND((C8-G8),1)	X	X	X	N/A	153	=CONVERT(M8,"ft","m")	=C8-N8	SGW-44022	Basalt at 656 ft. Appears to be nothing in the cursory log to support the RE pick in SGW-44022.

Abbreviations defined in Appendix A

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Appendix A

Stratigraphic Information for Hanford Site 100 Area Wells

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Appendix A
Stratigraphic Information for Hanford Site 100 Area Wells

Table A-1 lists over 800 wells in the 100 Area and the 600 Area north of Gable Mountain and Gable Butte. The table provides elevations of geologic contacts. Wells are sorted by well name.

A.1 Explanation of Table A-1

Well Name -- These are the common well names used at Hanford. Well names beginning 199-BX-YY are located in the 100-B/C Area, 199-K-X in the 100-K Area, etc. Well names 699-xx-yy are in the 600 Area, xx indicates relative north coordinate, and yy indicates relative west coordinate.

Well ID – Unique well identification number

Surface Elevation is the elevation of land surface in meters above the NAVD88.

Elevation Control provides information on the source of the Surface Elevation number. In nearly all cases these values were derived from the Well Information Data Lookup (WIDL) database. Notations in this column include the following:

- Brass survey marker – GPS survey of brass cap (disc z not available in WIDL)
- Disc z – WIDL field corresponding to surveyed elevation of the brass disc in the concrete well pad
- Ground surface – survey elevation converted from National Geodetic Vertical Datum of 1929 to NAVD88.
- Staking survey – approximate elevation when well location was determined.
- "TOC – xx ft SU" – Top of casing elevation (as surveyed; data in WIDL) minus casing stickup (SU).
- Well survey report – in a few cases the elevation was not listed in WIDL vertical elevation query, but a well survey report was available

Reference – This field provides additional information on the source of the ground surface elevation

- RPGW – Resource protection well structure field inspection report
- WCSR – well construction summary report
- WSS – well summary sheet

Drill Depth – Total depth of borehole at time of drilling. Drilling records provide this in feet. Converted to meters using the Excel "CONVERT()" function.

Depth to RE – Depth below surface to top of Ringold unit E.

- NDE = Borehole not deep enough to reach contact
- X = Not determined (insufficient data)

Hf/Re Elev. – Elevation of geologic contact between Hanford and Ringold unit E in meters NAVD88.

Ringold E Depth Data Source – Comment on how the contact was determined

- Borehole log (GRAM) or (Freestone), etc. – Interpretation of the borehole log by staff from GRAM, Inc. or Freestone Environmental Services
- N/A = not applicable (contact not determined)
- WCS = well construction summary
- Entries in this column also include document references. See Appendix A reference list

Depth to RUM -- Depth below surface to top of Ringold upper mud unit (i.e., shallowest silt/clay)

RUM Elev. – Elevation of top of shallowest mud (silt/clay) in the Ringold Formation, in meters NAVD88.

RUM Depth Data Source – Comment on how the contact was determined

Notes – Additional supporting information

A.2 References

BHI-00953, 1996, *Well Summary Report: 100-HR-3 and 100-KR-4 Interim Remedial Action Wells*, Bechtel Hanford, Inc., Richland, Washington.

DOE/RL-93-37, 1994, *Limited field investigation report for the 100-BC-5 Operable Unit*, U.S. Department of Energy, Richland, Washington.

DOE/RL-93-43, 1994, *Limited Field Investigation Report for the 100-HR-3 Operable Unit*, U.S. Department of Energy, Richland, Washington.

DOE/RL-2008-42, 2009, *Hydrogeological Summary Report for 600 Area Between 100-D and 100-H for the 100-HR-3 Groundwater Operable Unit.* U.S. Department of Energy, Richland, Washington.

PNL-6728, 1988, *Geohydrologic Characterization of the Area Surrounding the 183-H Solar Evaporation Basins*, Pacific Northwest Laboratory, Richland, Washington.

SGW-40781, 2009, *100-HR-3 Remedial Process Optimization Modeling Data Package*, CH2M HILL Plateau Remediation Company, Richland, Washington.

SGW-44022, 2010, *Geohydrologic Data Package in Support of 100-BC-5 Modeling*, CH2M HILL Plateau Remediation Company, Richland, Washington.

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
199-B2-12	A4550	133.93	Disc Z		178.8	54.5	79.4	12.5	3.8	130.1	borehole log (GRAM)	149.5	45.6	88.4	borehole log (GRAM)	RUM depth reinterpreted; RE uncertain
199-B2-13	A4551	127.69	Disc Z		40	12.2	115.5	X	X	X	N/A	NDE	NDE	<115.5	N/A	
199-B2-14	C7665	134.30	Disc Z		152.3	46.4	87.9	33	10.1	124.2	borehole and geophysical logs (Williams)	143.7	43.8	90.5	borehole log (GRAM)	
199-B2-15	C7783	134.27	Disc Z		193.8	59.1	75.2	30	9.1	125.1	borehole and geophysical logs (Williams)	143.7	43.8	90.5	borehole log (GRAM)	
199-B2-16	C7784	133.37	Disc Z		155.2	47.3	86.1	32	9.8	123.6	borehole and geophysical logs (Williams)	147	44.8	88.6	borehole log (GRAM)	
199-B3-1	A4552	134.58	TOC (134.882 (m) - 0.98 ft SU	Based on 1991 RPGW	63	19.2	115.4	X	X	X	N/A	NDE	NDE	<114.8	N/A	Cursory log shows undifferentiated sediments; revised depth takes assumed stickup into account, RE pick in SGW-44022 does not appear to be support by log
199-B3-2	A9505	135.43	TOC (135.905 (m) - 1.55 ft SU		790	240.8	-105.4	X	X	X	N/A	153	46.6	88.8	SGW-44022	Basalt at 656 ft. Appears to be nothing in the cursory log to support the RE pick in SGW-44022, elevation takes stickup into account
199-B3-46	A4553	134.73	Disc Z		66.77	20.4	114.4	50	15.2	119.5	borehole log (GRAM)	NDE	NDE	<114.4	N/A	Hf/RE contact not well defined in borehole log, fewer basalt cobbles at 50 ft bgs
199-B3-47	A4554	133.85	Disc Z		61	18.6	115.3	X	X	X	N/A	NDE	NDE	<115.3	N/A	
199-B3-50	C7506	143.02	Disc Z		183.3	55.9	87.2	91	27.7	115.3	borehole log (GRAM)	177	53.9	89.1	borehole log (GRAM)	
199-B3-51	C7785	134.04	Disc Z		156.2	47.6	86.4	13	4.0	130.1	borehole log (GRAM)	149.5	45.6	88.5	borehole log (GRAM)	
199-B3-52	C7843	134.66	Disc Z		60	18.3	116.4	27	8.2	126.4	borehole and geophysical logs (Williams)	NDE	NDE	<116.4	borehole log (GRAM)	100-BC vadose borehole completed as temporary well. RE pick uncertain.
199-B4-1	A4555	141.20	TOC (141.6 (m) - 1.3 ft SU		90	27.4	113.8	X	X	X	N/A	NDE	NDE	<113.8	N/A	well did not reach RUM, cursory log shows undifferentiated sediments, elevation takes stickup into account
199-B4-10	A5542	144.69	Disc Z		23.5	7.2	137.5	X	X	X	N/A	NDE	NDE	<137.5	N/A	
199-B4-14	C7786	144.97	Disc Z		95.8	29.2	115.8	NDE	NDE	<115.8	N/A	NDE	NDE	<115.8	N/A	
199-B4-15	C7846	144.26	Disc Z		84.3	25.7	118.6	NDE	NDE	<118.6	N/A	NDE	NDE	<118.6	N/A	100-BC vadose borehole completed as temporary well
199-B4-2	A5539	141.35	TOC (141.653 (m) - 1.0 ft SU		90	27.4	113.9	X	X	X	N/A	NDE	NDE	<113.9	N/A	Cursory log shows undifferentiated sediments, elevation takes stickup into account
199-B4-3	A4556	141.31	TOC (141.758 (m) - 1.46 ft SU		91	27.7	113.6	X	X	X	N/A	NDE	NDE	<113.6	N/A	Cursory log shows undifferentiated sediments, elevation takes stickup into account
199-B4-4	A4557	144.63	TOC (145.365 (m) - 2.4 ft SU		105	32.0	112.6	X	X	X	N/A	NDE	NDE	<112.6	N/A	Hf/RE not identified in cursory log, undifferentiated sediments, elevation takes stickup into account
199-B4-5	A5540	147.06	Disc Z		97.17	29.6	117.4	X	X	X	N/A	NDE	NDE	<117.4	N/A	Cursory log shows undifferentiated sediments
199-B4-6	A4558	147.02	Disc Z		97.41	29.7	117.3	X	X	X	N/A	NDE	NDE	<117.3	N/A	Cursory log shows undifferentiated sediments
199-B4-7	A5541	147.07	Disc Z		96.52	29.4	117.7	X	X	X	N/A	NDE	NDE	<117.7	N/A	Cursory log shows undifferentiated sediments
199-B4-8	A4559	144.46	Disc Z		90.4	27.6	116.9	88	26.8	117.6	borehole log (GRAM)	NDE	NDE	<116.9	N/A	RE interpreted to be 8 ft deeper than shown in SGW-44022, pronounced lithologic change at 88 ft bgs
199-B4-9	A4560	143.81	Disc Z		92.8	28.3	115.5	X	X	X	N/A	NDE	NDE	<115.5	N/A	RE contact not identified in borehole log
199-B5-1	A4561	139.16	TOC (139.892 (m) - 2.4 ft SU		151	46.0	93.1	X	X	X	N/A	NDE	NDE	<93.0	N/A	Hf/RE not identified in cursory log in well construction and completion summary, elevation takes stickup into account
199-B5-2	A4562	139.80	Disc Z		75	22.9	116.9	NDE	NDE	<116.9	N/A	NDE	NDE	<116.9	N/A	
199-B5-5	C7505	135.42	Disc Z		214.8	65.5	69.9	53	16.2	119.3	borehole log (GRAM)	205	62.5	72.9	borehole log (GRAM)	
199-B5-6	C7507	144.97	Disc Z		195.5	59.6	85.4	93	28.3	116.6	borehole log (GRAM)	191	58.2	86.8	borehole log (GRAM)	
199-B5-8	C8244	153.93	Disc Z		230.6	70.3	83.6	196	59.7	94.2	borehole and geophysical logs (Williams)	222.5	67.8	86.1	borehole log	
199-B8-6	A4563	145.02	Disc Z		91	27.7	117.3	NDE	NDE	<117.3	borehole and geophysical logs (Williams)	NDE	NDE	<117.3	N/A	Basalt dominated sediments to TD. SGW-44022 shows RE at 78 ft bgs but that seems unlikely
199-B8-9	C7508	150.99	Disc Z		219.5	66.9	84.1	115	35.1	115.9	borehole log (GRAM)	211.5	64.5	86.5	borehole log (GRAM)	Hf/RE not identified in log
199-B9-1	A4564	151.37	TOC (152.253 (m) - 2.9 ft SU		117	35.7	115.7	X	X	X	N/A	NDE	NDE	<115.7	N/A	SGW-44022 shows RE at 88 ft; does not appear to supported by driller's log; elevation takes stickup into account
199-B9-2	A4565	151.73	Disc Z		118	36.0	115.8	NDE	NDE	<115.8	borehole log (GRAM). See note	NDE	NDE	<115.8	N/A	RE interpretation in SGW-44022 (from DOE/RL-93-37) unlikely as sediments from 88 ft bgs to TD described in borehole log as 80 - 90% basalt cobbles (more likely Hanford fm). SGW-44022 interpretation not based on slug test as proposed depth is above water table, no discontinuities in gross gamma log at proposed depth
199-B9-3	A4566	150.41	Disc Z		109	33.2	117.2	NDE	NDE	<117.2	borehole log (GRAM). See note	NDE	NDE	<117.2	N/A	RE interpretation in SGW-44022 (from DOE/RL-93-37) unlikely as sediments from 88 ft bgs to TD described in borehole log as 80% basalt cobbles (more likely Hanford fm), no discontinuity in gross gamma log at interpreted depth
199-D2-10	C7089	120.30	Disc Z		31	9.4	110.8	NP	NP	NP	N/A	26.0	7.9	112.4	borehole log (GRAM)	Hf/RE not identified in log, appears to transition from Hf directly to RUM
199-D2-11	C5394	143.45	Disc Z		114	34.7	108.7	90.1	27.5	116.0	SGW-40781	110.0	33.5	109.9	SGW-40781	
199-D2-12	C7090	120.57	Disc Z		34	10.4	110.2	NP	NP	NP	N/A	28.2	8.6	112.0	borehole log (GRAM)	
199-D2-5	A4567	140.51	TOC (141.303 (m) - 2.6 ft SU		95	29.0	111.6	X	X	X	N/A	90.0	27.4	113.1	drillers log (GRAM)	
199-D2-6	A4568	143.36	Disc Z		110.7	33.7	109.6	75.0	22.9	120.5	borehole log (GRAM)	102.9	31.4	112.0	borehole log (GRAM)	
199-D2-8	C3040	143.61	Disc Z		100.9	30.8	112.9	50.5	15.4	128.2	borehole log (Freestone)	NDE	NDE	<112.9	N/A	minor disrepancy with SGW-40781 interpretation of RE elevation of 128.1
199-D3-3	C3312	143.20	Disc Z		114	34.7	108.5	64.0	19.5	123.7	SGW-40781	113.5	34.6	108.6	SGW-40781	
199-D3-4	C3314	143.25	Disc Z		114.2	34.8	108.4	67.6	20.6	122.6	SGW-40781	113.0	34.4	108.8	SGW-40781	
199-D3-5	C7620	144.05	Disc Z		112.2	34.2	109.9	87.0	26.5	117.5	borehole log (GRAM)	104.0	31.7	112.4	borehole log (GRAM)	
199-D4-1	B2895	143.25	Disc Z		105	32.0	111.2	55.0	16.8	126.5	borehole log (GRAM)	98.0	29.9	113.4	borehole log (GRAM)	
199-D4-10	B8068	143.44	Disc Z		97.9	29.8	113.6	54.0	16.5	127.0	borehole log (GRAM)	97.0	29.6	113.9	borehole log (GRAM)	
199-D4-101	C7580	143.61	Disc Z		109.9	33.5	110.1	63	19.2	124.4	borehole log (GRAM)	105	32.0	111.6	borehole log (GRAM)	
199-D4-11	B8069	143.38	Disc Z		97.1	29.6	113.8	56.0	17.1	126.3	borehole log (GRAM)	95.5	29.1	114.3	borehole log (GRAM)	
199-D4-12	B8070	143.50	Disc Z		98.7	30.1	113.4	60.0	18.3	125.2	borehole log (GRAM)	97.0	29.6	113.9	borehole log (GRAM)	
199-D4-13	B8071	142.94	Disc Z		101	30.8	112.2	51.0	15.5	127.4	borehole log (GRAM)	91.0	27.7	115.2	borehole log (GRAM)	
199-D4-14	B8072	143.47	Disc Z		101.9	31.1	112.4	43.0	13.1	130.4	borehole log (GRAM)	97.0	29.6	113.9	borehole log (GRAM)	
199-D4-15	B8073	143.66	Disc Z		105	32.0	111.7	50.0	15.2	128.4	borehole log (GRAM)	100.0	30.5	113.2	borehole log (GRAM)	
199-D4-16	B8110	143.43	Disc Z		101.7	31.0	112.4	56.0	17.1	126.4	borehole log (GRAM)	97.9	29.8	113.6	borehole log (GRAM)	
199-D4-17	B8459	143.37	Disc Z		102.9	31.4	112.0	58.0	17.7	125.7	borehole log (GRAM)	97.0	29.6	113.8	borehole log (GRAM)	
199-D4-18	B8460	142.98	Disc Z		101.9	31.1	111.9	15.0	4.6	138.4	borehole log (GRAM)	95.5	29.1	113.9	borehole log (GRAM)	
199-D4-19	B8746	143.12	Disc Z		110.5	33.7	109.4	61.5	18.7	124.4	borehole log	110.0	33.5	109.6	SGW-40781	
199-D4-2	B8058	143.75	Disc Z		100	30.5	113.3	X	X	X	N/A	97.5	29.7	114.0	borehole log (GRAM)	Hf/RE not identified in log

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
199-D4-20	B8750	143.56	Disc Z		107.5	32.8	110.8	63.0	19.2	124.4	SGW-40781	105.0	32.0	111.6	SGW-40781	
199-D4-21	B8755	143.65	Disc Z		99	30.2	113.5	49.0	14.9	128.7	SGW-40781	97.5	29.7	113.9	SGW-40781	
199-D4-22	B8778	144.03	Disc Z		101	30.8	113.2	58.0	17.7	126.4	borehole log (GRAM)	98.0	29.9	114.2	borehole log (GRAM)	
199-D4-23	B8779	140.39	Disc Z		88	26.8	113.6	45.0	13.7	126.7	borehole log (GRAM)	83.0	25.3	115.1	borehole log (GRAM)	
199-D4-24	B8975	143.20	Disc Z		101	30.8	112.4	44.0	13.4	129.8	borehole log (GRAM)	98.5	30.0	113.2	borehole log (GRAM)	
199-D4-25	B8976	143.51	Disc Z		106	32.3	111.2	51.5	15.7	127.8	borehole log (GRAM)	101.5	30.9	112.6	borehole log (GRAM)	
199-D4-26	B8977	143.46	Disc Z		105	32.0	111.5	59.0	18.0	125.5	borehole log (GRAM)	101.0	30.8	112.7	borehole log (GRAM)	
199-D4-27	B8978	143.63	Disc Z		105	32.0	111.6	56.0	17.1	126.6	borehole log (GRAM)	101.0	30.8	112.8	borehole log (GRAM)	
199-D4-28	B8979	143.52	Disc Z		102	31.1	112.4	56.0	17.1	126.5	borehole log (GRAM)	98.5	30.0	113.5	borehole log (GRAM)	
199-D4-29	B8980	143.81	Disc Z		102	31.1	112.7	58.0	17.7	126.1	borehole log (GRAM)	98.0	29.9	113.9	borehole log (GRAM)	
199-D4-3	B8059	143.67	Disc Z		102	31.1	112.6	57.0	17.4	126.3	borehole log (GRAM)	98.0	29.9	113.8	borehole log (GRAM)	
199-D4-30	B8981	143.82	Disc Z		97	29.6	114.3	54.0	16.5	127.4	borehole log (GRAM)	97.0	29.6	114.3	borehole log (GRAM)	
199-D4-31	B8982	143.88	Disc Z		98	29.9	114.0	54.0	16.5	127.4	borehole log (GRAM)	97.0	29.6	114.3	borehole log (GRAM)	
199-D4-32	B8983	143.68	Disc Z		101	30.8	112.9	52.0	15.8	127.8	borehole log (GRAM)	98.0	29.9	113.8	borehole log (GRAM)	
199-D4-33	B8984	143.71	Disc Z		103	31.4	112.3	50.0	15.2	128.5	borehole log (GRAM)	99.5	30.3	113.4	borehole log (GRAM)	
199-D4-34	B8985	143.58	Disc Z		104	31.7	111.9	56.0	17.1	126.5	borehole log (GRAM)	99.5	30.3	113.2	borehole log (GRAM)	
199-D4-35	B8986	143.52	Disc Z		102	31.1	112.4	58.0	17.7	125.8	borehole log (GRAM)	97.0	29.6	114.0	borehole log (GRAM)	
199-D4-36	B8987	143.52	Disc Z		102	31.1	112.4	47.0	14.3	129.2	borehole log (GRAM)	98.0	29.9	113.6	borehole log (GRAM)	
199-D4-37	B8988	143.52	Disc Z		102	31.1	112.4	55.0	16.8	126.8	borehole log (GRAM)	98.0	29.9	113.6	borehole log (GRAM)	
199-D4-38	B8989	142.81	Disc Z		102	31.1	111.7	54.5	16.6	126.2	borehole log (GRAM)	98.0	29.9	112.9	borehole log (GRAM)	
199-D4-39	B8990	143.19	Disc Z		102	31.1	112.1	50.0	15.2	127.9	borehole log (GRAM)	97.5	29.7	113.5	borehole log (GRAM)	
199-D4-4	B8060	143.42	Disc Z		106	32.3	111.1	56.8	17.3	126.1	borehole log (GRAM)	97.5	29.7	113.7	borehole log (GRAM)	
199-D4-40	C3270	143.57	Disc Z		100.6	30.7	112.9	54.0	16.5	127.1	borehole log (GRAM)	98.0	29.9	113.7	borehole log (GRAM)	
199-D4-41	C3271	143.48	Disc Z		101	30.8	112.7	54.0	16.5	127.0	borehole log (GRAM)	98.6	30.1	113.4	borehole log (GRAM)	
199-D4-42	C3272	143.51	Disc Z		104.83	32.0	111.6	47.0	14.3	129.2	borehole log (GRAM)	100.5	30.6	112.9	borehole log (GRAM)	
199-D4-43	C3273	143.46	Disc Z		102	31.1	112.4	54.0	16.5	127.0	borehole log (GRAM)	100.0	30.5	113.0	borehole log (GRAM)	
199-D4-44	C3274	143.34	Disc Z		103	31.4	111.9	56.0	17.1	126.3	borehole log (GRAM)	100.5	30.6	112.7	borehole log (GRAM)	
199-D4-45	C3275	143.28	Disc Z		106	32.3	111.0	55.0	16.8	126.5	borehole log (GRAM)	97.0	29.6	113.7	borehole log (GRAM)	
199-D4-46	C3276	143.17	Disc Z		104	31.7	111.5	53.0	16.2	127.0	borehole log (GRAM)	101.0	30.8	112.4	borehole log (GRAM)	
199-D4-47	C3277	143.16	Disc Z		102.2	31.2	112.0	56.0	17.1	126.1	borehole log (GRAM)	98.0	29.9	113.3	borehole log (GRAM)	
199-D4-48	C3278	143.00	Disc Z		108	32.9	110.1	57.0	17.4	125.6	borehole log (GRAM)	104.0	31.7	111.3	borehole log (GRAM)	
199-D4-49	C3279	143.24	Disc Z		100.1	30.5	112.7	58.0	17.7	125.6	borehole log (GRAM)	98.0	29.9	113.4	borehole log (GRAM)	
199-D4-5	B8061	143.31	Disc Z		101	30.8	112.5	57.0	17.4	125.9	borehole log (GRAM)	96.2	29.3	114.0	borehole log (GRAM)	
199-D4-50	C3280	143.12	Disc Z		98.1	29.9	113.2	57.0	17.4	125.7	borehole log (GRAM)	97.5	29.7	113.4	borehole log (GRAM)	
199-D4-51	C3281	143.15	Disc Z		99.7	30.4	112.8	60.0	18.3	124.9	borehole log (GRAM)	98.0	29.9	113.3	borehole log (GRAM)	
199-D4-52	C3282	143.17	Disc Z		99.7	30.4	112.8	59.5	18.1	125.0	borehole log (GRAM)	98.0	29.9	113.3	borehole log (GRAM)	
199-D4-53	C3283	143.14	Disc Z		97.3	29.7	113.5	54.0	16.5	126.7	borehole log (GRAM)	97.0	29.6	113.6	borehole log (GRAM)	
199-D4-54	C3284	143.17	Disc Z		98.3	30.0	113.2	59.0	18.0	125.2	borehole log (GRAM)	97.5	29.7	113.5	borehole log (GRAM)	
199-D4-55	C3285	143.19	Disc Z		99.5	30.3	112.9	61.0	18.6	124.6	borehole log (GRAM)	98.0	29.9	113.3	borehole log (GRAM)	
199-D4-56	C3286	143.10	Disc Z		97.5	29.7	113.4	53.0	16.2	126.9	borehole log (GRAM)	97.2	29.6	113.5	borehole log (GRAM)	
199-D4-57	C3287	143.16	Disc Z		98.15	29.9	113.2	X	X	X	N/A	98.2	29.9	113.2	borehole log (GRAM)	Hf/RE not identified in log
199-D4-58	C3288	143.34	Disc Z		106.69	32.5	110.8	X	X	X	N/A	102.7	31.3	112.0	borehole log (GRAM)	Hf/RE not identified in log
199-D4-59	C3289	143.22	Disc Z		102.2	31.2	112.1	X	X	X	N/A	100.0	30.5	112.7	borehole log (GRAM)	Hf/RE not identified in log
199-D4-6	B8064	143.28	Disc Z		101	30.8	112.5	53.5	16.3	127.0	borehole log (GRAM)	96.0	29.3	114.0	borehole log (GRAM)	
199-D4-60	C3290	143.18	Disc Z		101	30.8	112.4	62.0	18.9	124.3	borehole log (GRAM)	101.0	30.8	112.4	borehole log (GRAM)	
199-D4-61	C3291	143.10	Disc Z		102	31.1	112.0	62.0	18.9	124.2	borehole log (GRAM)	102.0	31.1	112.0	borehole log (GRAM)	
199-D4-62	C3292	143.19	Disc Z		109.7	33.4	109.8	61.0	18.6	124.6	borehole log (GRAM)	109.0	33.2	110.0	borehole log (GRAM)	
199-D4-63	C3293	143.29	Disc Z		111.2	33.9	109.4	61.0	18.6	124.7	borehole log (GRAM)	110.0	33.5	109.8	borehole log (GRAM)	
199-D4-64	C3294	143.32	Disc Z		111	33.8	109.5	65.0	19.8	123.5	borehole log (GRAM)	110.5	33.7	109.6	borehole log (GRAM)	
199-D4-65	C3295	143.32	Disc Z		112	34.1	109.2	62.0	18.9	124.4	borehole log (GRAM)	111.0	33.8	109.5	borehole log (GRAM)	
199-D4-66	C3296	143.33	Disc Z		110.2	33.6	109.7	62.5	19.1	124.3	borehole log (GRAM)	110.6	33.7	109.6	borehole log (GRAM)	
199-D4-67	C3297	143.28	Disc Z		111	33.8	109.4	61.0	18.6	124.7	borehole log (GRAM)	111.0	33.8	109.4	borehole log (GRAM)	
199-D4-68	C3298	143.07	Disc Z		110.55	33.7	109.4	60.0	18.3	124.8	SGW-40781	112.0	34.1	108.9	SGW-40781	
199-D4-69	C3299	143.08	Disc Z		108.24	33.0	110.1	59.0	18.0	125.1	SGW-40781	110.0	33.5	109.6	SGW-40781	
199-D4-7	B8065	143.36	Disc Z		96.0	29.3	114.1	56.0	17.1	126.3	borehole log	NDE	NDE	<114.1	N/A	
199-D4-70	C3300	143.13	Disc Z		106.93	32.6	110.5	61.0	18.6	124.5	SGW-40781	110.5	33.7	109.5	SGW-40781	
199-D4-71	C3301	143.12	Disc Z		109.41	33.3	109.8	60.0	18.3	124.8	SGW-40781	110.5	33.7	109.4	SGW-40781	
199-D4-72	C3302	143.00	Disc Z		109.95	33.5	109.5	59.0	18.0	125.0	SGW-40781	111.0	33.8	109.2	SGW-40781	
199-D4-73	C3303	143.15	Disc Z		110.5	33.7	109.5	60.5	18.4	124.7	SGW-40781	111.5	34.0	109.2	SGW-40781	
199-D4-74	C3304	142.90	Disc Z		110.94	33.8	109.1	60.0	18.3	124.6	SGW-40781	111.5	34.0	108.9	SGW-40781	
199-D4-75	C3305	143.07	Disc Z		111.7	34.0	109.0	59.5	18.1	124.9	SGW-40781	113.5	34.6	108.5	SGW-40781	
199-D4-76	C3306	142.97	Disc Z		111.15	33.9	109.1	60.5	18.4	124.5	SGW-40781	112.5	34.3	108.7	SGW-40781	
199-D4-77	C3307	142.93	Disc Z		110.01	33.5	109.4	60.5	18.4	124.5	SGW-40781	111.0	33.8	109.1	SGW-40781	
199-D4-78	C3308	142.98	Disc Z		113	34.4	108.5	61.0	18.6	124.4	SGW-40781	112.0	34.1	108.8	SGW-40781	
199-D4-79	C3309	143.63	Disc Z		115.1	35.1	108.5	63.0	19.2	124.4	SGW-40781	113.0	34.4	109.2	SGW-40781	
199-D4-8	B8066	143.34	Disc Z		99	30.2	113.2	55.5	16.9	126.4	borehole log (GRAM)	96.0	29.3	114.1	borehole log (GRAM)	
199-D4-80	C3310	143.43	Disc Z		113	34.4	109.0	61.0	18.6	124.8	SGW-40781	112.8	34.4	109.0	SGW-40781	
199-D4-81	C3311	143.33	Disc Z		112.8	34.4	108.9	61.5	18.7	124.6	SGW-40781	112.5	34.3	109.1	SGW-40781	
199-D4-82	C3313	143.23	Disc Z		115	35.1	108.2	65.0	19.8	123.4	SGW-40781	113.5	34.6	108.6	SGW-40781	
199-D4-83	C3315	142.89	Disc Z		98	29.9	113.0	X	X	X	N/A	97.0	29.6	113.3	borehole log (GRAM)	Hf/RE not identified in log
199-D4-84	C3316	143.63	Disc Z		103.5	31.5	112.1	58.0	17.7	125.9	borehole log (GRAM)	101.5	30.9	112.7	borehole log (GRAM)	
199-D4-85	C3317	143.31	Disc Z		115	35.1	108.3	X	X	X	N/A	111.0	33.8	109.5	borehole log (GRAM)	Hf/RE not identified in log
199-D4-86	C3318	142.60	Disc Z		112.5	34.3	108.3	97.0	29.6	113.0	borehole log (GRAM)	110.0	33.5	109.1	borehole log (GRAM)	
199-D4-87	C3799	143.44	Disc Z		89.54	27.3	116.2	X	X	X	N/A	97.2	29.6	113.8	SGW-40781	Hf/RE not identified in log
199-D4-88	C3800	143.40	Disc Z		98.0	29.9	113.5	X	X	X	N/A	NDE	NDE	<113.5	N/A	
199-D4-89	C3801	143.53	Disc Z		95.42	29.1	114.4	65.0	19.8	123.7	SGW-40781	97.0	29.6	114.0	SGW-40781	
199-D4-9	B8067	143.60	Disc Z		97.5	29.7	113.9	57.0	17.4	126.2	borehole log (GRAM)	96.5	29.4	114.2	borehole log (GRAM)	
199-D4-90	C4686	143.45	Disc Z		101.5	30.9	112.5	57.0	17.4	126.1	borehole log	99.0	30.2	113.3	borehole log	
199-D4-91	C4687	143.45	Disc Z		99.7	30.4	113.1	56.2	17.1	126.3	borehole log	97.3	29.6	113.8	borehole log	
199-D4-92	C4688	143.52	Disc Z		106.6	32.5	111.0	56.7	17.3	126.2	borehole log	102.5	31.2	112.3	borehole log	
199-D4-93	C4689	143.33	Disc Z		105.3	32.1	111.2	51.0	15.5	127.8	borehole log	101.8	31.0	112.3	borehole log	
199-D4-94	C7075	143.33	Brass Survey Marker		102.7	31.3	112.0	57.0	17.4	126.0	borehole log (GRAM)	98.5	30.0	113.3	borehole log (GRAM)	
199-D4-95	C7083	143.37	Disc Z		121.4	37.0	106.4	67	20.4	122.9	borehole log (GRAM)	115.5	35.2	108.2	borehole log (GRAM)	
199-D4-96	C7084	144.20	Disc Z		106.5	32.5	111.7	59	18.0	126.2	borehole log (GRAM)	100	30.5	113.7	borehole log (GRAM)	
199-D4-97	C7085	143.87	Disc Z		110	33.5	110.3	60	18.3	125.6	borehole log (GRAM)	104.5	31.9	112.0	borehole log (GRAM)	
199-D4-98	C7086	143.10	Disc Z		111	33.8	109.3	59	18.0	125.1	borehole log (GRAM)	102.8	31.3	111.8	borehole log (GRAM)	
199-D4-99	C7087	143.20	Disc Z		116.2	35.4	107.8	61	18.6	124.6	borehole log (GRAM)	109.5	33.4	109.8	borehole log (GRAM)	

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
199-D5-100	C7516	143.47	Brass Survey Marker - Final Survey Report		28.6	8.7	134.8	NDE	NDE	<134.6	N/A	NDE	NDE	<134.6	N/A	Abandoned horizontal well reached 28.6 vertical ft depth
199-D5-101	C7583	143.83	Disc Z		114.3	34.8	109.0	X	X	X	N/A	108	32.9	110.9	borehole log (GRAM)	
199-D5-102	C5398	143.81	Disc Z		113.5	34.6	109.2	48.5	14.8	129.0	borehole log (GRAM)	108.0	32.9	110.9	SGW-40781	
199-D5-103	C5399	143.61	Disc Z		117	35.7	107.9	60.0	18.3	125.3	SGW-40781	110.7	33.7	109.9	SGW-40781	
199-D5-104	C5400	144.05	Disc Z		116	35.4	108.7	X	X	X	N/A	110.3	33.6	110.4	SGW-40781	Hf/RE not identified in log
199-D5-106	C5511	143.67	Disc Z		107.2	32.7	111.0	50.0	15.2	128.4	SGW-40781	NDE	NDE	<111.0	N/A	
199-D5-107	C5577	144.09	Disc Z		104	31.7	112.4	X	X	X	N/A	101.0	30.8	113.3	borehole log (GRAM)	Hf/RE not identified in log
199-D5-108	C5578	144.38	Disc Z		106	32.3	112.1	75.0	22.9	121.5	N/A	103.0	31.4	113.0	N/A	
199-D5-109	C5579	144.02	Disc Z		104.1	31.7	112.3	73.0	22.3	121.8	SGW-40781	104.1	31.7	112.3	SGW-40781	
199-D5-110	C5580	144.12	Disc Z		102.5	31.2	112.9	68.0	20.7	123.4	SGW-40781	100.5	30.6	113.5	SGW-40781	
199-D5-111	C5581	144.11	Disc Z		101.7	31.0	113.1	70.0	21.3	122.8	SGW-40781	100.0	30.5	113.6	SGW-40781	
199-D5-112	C5582	143.99	Disc Z		93.85	28.6	115.4	68.0	20.7	123.3	SGW-40781	NDE	NDE	<115.4	N/A	SGW-40781 RUM elev. in m amsl is in error (should be >28.6)
199-D5-113	C5583	143.99	Disc Z		102	31.1	112.9	68.0	20.7	123.3	SGW-40781	100.5	30.6	113.4	SGW-40781	
199-D5-114	C5584	144.36	Disc Z		104.3	31.8	112.6	73.0	22.3	122.1	SGW-40781	104.3	31.8	112.6	SGW-40781	
199-D5-115	C5585	144.39	Disc Z		105	32.0	112.4	73.0	22.3	122.1	SGW-40781	104.0	31.7	112.7	SGW-40781	
199-D5-116	C5586	144.42	Disc Z		104.5	31.9	112.6	74.0	22.6	121.9	SGW-40781	104.0	31.7	112.7	SGW-40781	
199-D5-117	C5587	144.39	Disc Z		91.6	27.9	116.5	73.5	22.4	122.0	SGW-40781	NDE	NDE	<116.5	N/A	
199-D5-118	C5588	144.37	Disc Z		104.5	31.9	112.5	73.5	22.4	122.0	SGW-40781	104.0	31.7	112.7	SGW-40781	
199-D5-119	C5933	144.01	Disc Z		113.6	34.6	109.4	74.0	22.6	121.5	borehole log (GRAM)	110.0	33.5	110.5	borehole log (GRAM)	
199-D5-12	A4569	143.74	TOC (144.168 (m) - 1.4 ft SU		91	27.7	116.0	48.0	14.6	129.1	SGW-40781	89.0	27.1	116.6	SGW-40781	RE depth may not be accurate (from driller's log)
199-D5-120	C5934	143.66	Disc Z		112.4	34.3	109.4	53.0	16.2	127.5	borehole log (GRAM)	108.0	32.9	110.7	borehole log (GRAM)	
199-D5-121	C5935	143.77	Disc Z		111.8	34.1	109.7	63.0	19.2	124.6	borehole log (GRAM)	107.0	32.6	111.2	borehole log (GRAM)	
199-D5-122	C5936	143.67	Disc Z		112.3	34.2	109.4	74.0	22.6	121.1	borehole log (GRAM)	107.7	32.8	110.8	borehole log (GRAM)	
199-D5-123	C6387	144.17	Disc Z		123.7	37.7	106.5	X	X	X	N/A	120.0	36.6	107.6	borehole log	
199-D5-125	C6389	143.99	Disc Z		111.8	34.1	109.9	75.0	22.9	121.1	borehole log (GRAM)	106.8	32.6	111.4	borehole log (GRAM)	
199-D5-126	C6390	143.63	Disc Z		114.1	34.8	108.8	X	X	X	N/A	110.0	33.5	110.1	borehole log	
199-D5-127	C7591	143.83	Disc Z		109	33.2	110.6	64	19.5	124.3	borehole log (GRAM)	106	32.3	111.5	borehole log (GRAM)	
199-D5-128	C7612	143.15	Disc Z		106.6	32.5	110.7	62	18.9	124.3	borehole log (GRAM)	99	30.2	113.0	borehole log (GRAM)	
199-D5-129	C7600	143.34	Disc Z		113.5	34.6	108.7	60	18.3	125.1	borehole log (GRAM)	105.5	32.2	111.2	borehole log (GRAM)	
199-D5-13	A4570	143.65	Disc Z		97.3	29.7	114.0	51.0	15.5	128.1	borehole log	91.0	27.7	115.9	borehole log	
199-D5-130	C7590	142.40	Disc Z		101.4	30.9	111.5	48	14.6	127.8	borehole log (GRAM)	95	29.0	113.4	borehole log (GRAM)	
199-D5-131	C7601	143.75	Disc Z		116.4	35.5	108.3	55	16.8	127.0	borehole log (GRAM)	109	33.2	110.5	borehole log (GRAM)	
199-D5-132	C7622	144.36	Disc Z		112	34.1	110.2	51	15.5	128.8	borehole log (GRAM)	106	32.3	112.1	Geologic & geophysical logs (Williams)	
199-D5-133	C7621	143.44	Disc Z		112	34.1	109.3	53.0	16.2	127.3	borehole log (GRAM)	104	31.7	111.7	geophysical log (Williams)	
199-D5-134	C7624	143.68	Disc Z		270	82.3	61.4	53.0	16.2	127.5	borehole log (Williams)	108.5	33.1	110.6	borehole log (Williams)	
199-D5-14	A4571	143.85	Disc Z		101.0	30.8	113.1	X	X	X	N/A	NDE	NDE	<113.1	N/A	
199-D5-140	C7866	143.95	Disc Z		112.9	34.4	109.5	48	14.6	129.3	borehole log (GRAM)	108	32.9	111.0	borehole log (GRAM)	
199-D5-141	C7625	144.21	Disc Z		316.7	96.5	47.7	59	18.0	126.2	borehole log (Williams)	112	34.1	110.1	borehole log (Williams)	
199-D5-142	C7857	143.16	Disc Z		89.8	27.4	115.8	45	13.7	129.4	borehole log (Williams)	NDE	NDE	<115.8	borehole log (Williams)	
199-D5-143	C8375	143.71	Disc Z		118	36.0	107.7	57	17.4	126.3	borehole log (Williams)	105	32.0	111.7	borehole and geophysical logs (Williams)	
199-D5-144	C8668	143.77	Disc Z		115.6	35.2	108.5	75	22.9	120.9	borehole and geophysical logs (Williams)	108.5	33.1	110.7	borehole log	
199-D5-15	A4572	143.90	Disc Z		101.8	31.0	112.9	46.0	14.0	129.9	borehole log (GRAM)	101.0	30.8	113.1	borehole log (GRAM)	
199-D5-16	A4573	144.45	Disc Z		98.0	29.9	114.6	X	X	X	N/A	NDE	NDE	<114.6	N/A	
199-D5-17	A4574	143.26	Disc Z		115	35.1	108.2	X	X	X	N/A	103.5	31.5	111.7	borehole log (GRAM)	Hf/RE not identified in log
199-D5-18	A4575	142.58	Disc Z		100.5	30.6	111.9	X	X	X	N/A	99.0	30.2	112.4	SGW-40781	
199-D5-19	A4576	141.99	Disc Z		95	29.0	113.0	72.0	21.9	120.0	borehole and geophysical logs (Williams)	94.5	28.8	113.2	SGW-40781	Hf/RE contact is questionable
199-D5-20	A4577	142.97	Disc Z		103.3	31.5	111.5	X	X	X	N/A	101.0	30.8	112.2	SGW-40781	
199-D5-32	C4185	143.14	Disc Z		105.78	32.2	110.9	X	X	X	N/A	105.0	32.0	111.1	SGW-40781	
199-D5-33	C4186	143.41	Disc Z		104.18	31.8	111.7	55.0	16.8	126.6	SGW-40781	103.0	31.4	112.0	SGW-40781	
199-D5-34	C4187	144.52	Disc Z		107.45	32.8	111.8	54.0	16.5	128.1	SGW-40781	105.0	32.0	112.5	SGW-40781	
199-D5-36	B8744	143.12	Disc Z		103	31.4	111.7	47.0	14.3	128.8	SGW-40781	98.0	29.9	113.2	SGW-40781	
199-D5-37	B8745	143.07	Disc Z		99.5	30.3	112.7	46.0	14.0	129.0	SGW-40781	94.5	28.8	114.3	SGW-40781	
199-D5-38	B8747	143.96	Disc Z		110	33.5	110.4	54.0	16.5	127.5	SGW-40781	105.0	32.0	112.0	SGW-40781	
199-D5-39	B8748	143.98	Disc Z		108	32.9	111.1	50.0	15.2	128.7	Borehole log	103.0	31.4	112.6	SGW-40781	some uncertainty in Hf/RE contact
199-D5-40	B8749	143.98	Disc Z		109.5	33.4	110.6	74.0	22.6	121.4	SGW-40781	106.0	32.3	111.7	SGW-40781	
199-D5-41	B8751	143.43	Disc Z		109.5	33.4	110.1	50.0	15.2	128.2	SGW-40781	104.5	31.9	111.6	SGW-40781	
199-D5-42	B8752	143.85	Disc Z		109.5	33.4	110.5	48.0	14.6	129.2	SGW-40781	106.0	32.3	111.5	SGW-40781	
199-D5-43	B8753	143.84	Disc Z		112.5	34.3	109.6	66.0	20.1	123.7	borehole log (GRAM)	107.0	32.6	111.2	SGW-40781	
199-D5-44	B8754	142.66	Disc Z		100	30.5	112.2	47.5	14.5	128.2	SGW-40781	95.2	29.0	113.6	SGW-40781	
199-D5-92	C4583	142.48	Disc Z		99.1	30.2	112.3	55.0	16.8	125.7	borehole log (GRAM)	98.0	29.9	112.6	borehole log (GRAM)	
199-D5-93	C4672	143.61	Disc Z		109	33.2	110.4	X	X	X	N/A	109.0	33.2	110.4	SGW-40781	Hf/RE not identified in log
199-D5-97	C5390	143.72	Disc Z		113.5	34.6	109.1	X	X	X	N/A	109.0	33.2	110.5	SGW-40781	Hf/RE not identified in log
199-D5-98	C5391	142.97	Disc Z		113.4	34.6	108.4	57.0	17.4	125.6	SGW-40781	108.0	32.9	110.1	SGW-40781	
199-D5-99	C5392	143.99	Disc Z		115	35.1	108.9	X	X	X	N/A	109.5	33.4	110.6	SGW-40781	Hf/RE not identified in log
199-D6-1	C7592	144.22	Disc Z		107	32.6	111.6	62	18.9	125.3	borehole log (GRAM)	101	30.8	113.4	borehole log (GRAM)	
199-D6-2	C7607	133.72	Disc Z		80.4	24.5	109.2	44	13.4	120.3	borehole log (GRAM)	77	23.5	110.3	borehole log (GRAM)	
199-D6-3	C7623	143.93	Brass Survey Marker		110.5	33.7	110.2	60	18.3	125.6	borehole log (GRAM)	101.6	31.0	113.0	borehole log (GRAM)	
199-D7-3	C7599	135.38	Disc Z		89.3	27.2	108.2	NP	NP	NP	N/A	84	25.6	109.8	borehole log (GRAM)	RE not present
199-D7-4	C7594	133.76	Disc Z		77.5	23.6	110.1	44	13.4	120.3	borehole log (GRAM)	74	22.6	111.2	borehole log (GRAM)	
199-D7-5	C7608	131.43	Disc Z		63.5	19.4	112.1	NP	NP	NP	N/A	54	16.5	115.0	borehole log (GRAM)	
199-D7-6	C7611	125.01	Disc Z		43.8	13.4	111.7	30	9.1	115.9	N/A	36.5	11.1	113.9	borehole log (GRAM)	
199-D8-101	C7852	136.38	Disc Z		72	21.9	114.4	X	X	X	N/A	NDE	NDE	<114.4	N/A	RE not determinable
199-D8-4	A4579	143.22	Disc Z		103.4	31.5	111.7	X	X	X	N/A	103.4	31.5	111.7	SGW-40781	Hf/RE not identified in log
199-D8-5	A4580	138.17	Disc Z		87.2	26.6	111.6	44.4	13.5	124.6	borehole log (GRAM)	83.0	25.3	112.9	borehole log (GRAM)	
199-D8-53	A4581	132.89	Disc Z		69.44	21.2	111.7	40.0	12.2	120.7	borehole log (GRAM)	69.0	21.0	111.9	SGW-40781	
199-D8-54A	A4582	134.93	Disc Z		78	23.8	111.2	65.0	19.8	115.1	borehole log (GRAM)	76.0	23.2	111.8	SGW-40781	
199-D8-54B	A4583	134.92	Disc Z		144	43.9	91.0	35.0	10.7	124.3	borehole log (GRAM)	76.0	23.2	111.8	SGW-40781	
199-D8-55	A4584	135.60	Disc Z		74	22.6	113.0	35.0	10.7	124.9	SGW-40781	69.0	21.0	114.6	SGW-40781	
199-D8-68	B2772	134.82	Disc Z - Final Survey		80	24.4	110.4	NP	NP	NP	N/A	75.0	22.9	112.0	SGW-40781	RE not present
199-D8-69	B2773	130.53	Disc Z		62	18.9	111.6	NP	NP	NP	N/A	57.5	17.5	113.0	SGW-40781	RE not present
199-D8-70	B2774	131.95	Disc Z		74	22.6	109.4	NP	NP	NP	N/A	71.0	21.6	110.3	SGW-40781	RE not present
199-D8-71	B2775	133.72	Disc Z		81	24.7	109.0	NP	NP	NP	N/A	77.0	23.5	110.2	SGW-40781	RE not present

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
199-D8-72	C3829	140.75	Disc Z		95.02	29.0	111.8	51.5	15.7	125.0	borehole log (GRAM)	93.5	28.5	112.2	borehole log (GRAM)	
199-D8-73	C4474	141.79	Disc Z		92.62	28.2	113.6	52.5	16.0	125.8	borehole log (GRAM)	89.5	27.3	114.5	borehole log (GRAM)	
199-D8-88	C4536	141.10	Disc Z		97.87	29.8	111.3	52.0	15.8	125.2	borehole log (GRAM)	96.0	29.3	111.8	borehole log (GRAM)	
199-D8-89	C7091	138.09	Disc Z		84.8	25.8	112.2	52	15.8	122.2	borehole log (GRAM)	78	23.8	114.3	borehole log (GRAM)	
199-D8-90	C7092	125.96	Disc Z		56.4	17.2	108.8	NP	NP	NP	N/A	51	15.5	110.4	borehole log (GRAM)	RE not present
199-D8-91	C7093	123.74	Disc Z		46.5	14.2	109.6	NP	NP	NP	N/A	42	12.8	110.9	borehole log (GRAM)	RE not present
199-D8-93	C7095	120.40	Disc Z		21	6.4	114.0	X	X	X	N/A	16	4.9	115.5	borehole log (GRAM)	Hf/RE not identified in log
199-D8-94	C7096	120.29	Disc Z		31.3	9.5	110.7	X	X	X	N/A	26.3	8.0	112.3	borehole log (GRAM)	Hf/RE not identified in log
199-D8-95	C7589	141.81	Disc Z		104.4	31.8	110.0	58	17.7	124.1	borehole log (GRAM)	97	29.6	112.2	borehole log (GRAM)	
199-D8-96	C7603	140.48	Disc Z		101.5	30.9	109.5	65	19.8	120.7	borehole log (GRAM)	97	29.6	110.9	borehole log (GRAM)	
199-D8-97	C7582	140.85	Disc Z		104.3	31.8	109.1	X	X	X	N/A	92.5	28.2	112.7	borehole log (GRAM)	
199-D8-98	C7602	138.03	Disc Z		91.4	27.9	110.2	NP	NP	NP	N/A	85	25.9	112.1	borehole log (GRAM)	RE not present
199-D8-99	C7593	136.54	Disc Z		88.9	27.1	109.4	57	17.4	119.2	borehole log (GRAM)	84	25.6	110.9	borehole log (GRAM)	
199-F1-2	A4586	121.47	Disc Z		37.5	11.4	110.0	NP	NP	NP	N/A	35.0	10.7	110.8	borehole log (GRAM)	RE not present
199-F2-3	A5642	121.84	TOC (122.753 (m) - 3.0 ft SU Assumed		48	14.6	107.2	X	X	X	N/A	46.7	14.2	107.6	well summary sheet (GRAM)	Hf/RE not identified in log
199-F5-1	A4587	124.27	TOC (124.574 (m) - 1.0 ft SU		67	20.4	103.8	X	X	X	N/A	62.0	18.9	105.4	well summary sheet (GRAM)	Hf/RE not identified in log
199-F5-2	A4588	126.47	TOC (126.895 (m) - 1.4 ft SU		100	30.5	96.0	75.0	22.9	103.6	As-built (GRAM)	76.0	23.2	103.3	well summary sheet (GRAM)	Possible remnant of RE
199-F5-3	A4589	125.13	TOC (125.56 (m) - 1.4 ft SU		90	27.4	97.7	NP	NP	NP	N/A	65	19.8	105.3	well summary sheet (M. Hartman)	
199-F5-4	A4590	126.47	TOC (126.642 (m) - 0.55 ft SU		115	35.1	91.4	X	X	X	N/A	50.0	15.2	111.2	well summary sheet (M. Hartman)	Hf/RE not identified in log
199-F5-43A	A4592	120.61	Disc Z		49.7	15.1	105.5	X	X	X	N/A	47.5	14.5	106.1	borehole log (GRAM)	Hf/RE not identified in log
199-F5-43B	A4593	120.43	Disc Z		190	57.9	62.5	X	X	X	N/A	43	13.1	107.3	well summary sheet (M. Hartman)	Hf/RE not identified in log
199-F5-45	A4595	126.37	Disc Z		52.6	16.0	110.3	X	X	X	N/A	51.5	15.7	110.7	borehole log (GRAM)	Hf/RE not identified in log
199-F5-46	A4596	127.19	Disc Z		57	17.4	109.8	X	X	X	N/A	56.5	17.2	110.0	borehole log (GRAM)	Hf/RE not identified in log
199-F5-47	A4597	127.84	Disc Z		63.5	19.4	108.5	X	X	X	N/A	62.5	19.1	108.8	borehole log (GRAM)	Hf/RE not identified in log
199-F5-48	A4598	127.29	Disc Z		55	16.8	110.5	18.0	5.5	121.8	borehole log (GRAM)	52.0	15.8	111.4	borehole log (GRAM)	Possible remnant of RE
199-F5-49	A5680	126.42	Disc Z		35.7	10.9	115.5	x	x	x	Borehole log, GRAM, Inc. interpretation	NDE	NDE	NDE	Borehole log, GRAM, Inc. interpretation	Possible remnant of Ringold unit E.
199-F5-5	A4599	125.88	TOC - 3 ft SU	assumed stickup	100	30.5	95.4	X	X	X	N/A	72	21.9	103.9	drillers log (M. Hartman)	Hf/RE not identified in log
199-F5-52	C7790	127.62	Disc Z		73.8	22.5	105.1	NP	NP	NP	N/A	66	20.1	107.5	borehole log (GRAM)	RE not present
199-F5-53	C7791	125.11	Disc Z		116	35.4	89.7	NP	NP	NP	N/A	54.5	16.6	108.5	borehole log (GRAM)	RE not present
199-F5-54	C7792	126.62	Disc Z		77.4	23.6	103.0	NP	NP	NP	N/A	69.8	21.3	105.3	borehole log (GRAM)	RE not present
199-F5-55	C7970	126.81	Disc Z		50	15.2	111.6	X	X	X	N/A	NDE	NDE	<111.6	N/A	Hf/RE not identified in log
199-F5-56	C7972	127.22	Disc Z		50.9	15.5	111.7	X	X	X		NDE	NDE	<111.7	N/A	Hf/RE not identified in log
199-F5-6	A4600	126.55	TOC (127.036 (m) - 1.6 ft SU	Based on 1997 RPGW	192	58.5	68.0	X	X	X	N/A	69.0	21.0	105.5	well summary sheet (M. Hartman)	Hf/RE not identified in log
199-F6-1	A4602	123.60	Disc Z		53	16.2	107.4	X	X	X	N/A	50.0	15.2	108.4	borehole log (GRAM)	Hf/RE not identified in log
199-F7-1	A4603	118.66	TOC (119.349 (m) - 2.27 ft SU	Based on 1997 RPGW	150	45.7	72.9	X	X	X	N/A	30.0	9.1	109.5	well summary sheet (M. Hartman)	Hf/RE not identified in log
199-F7-3	A4605	120.49	Disc Z		33	10.1	110.4	17.0	5.2	115.3	borehole log (GRAM)	29.0	8.8	111.7	borehole log (GRAM)	Possible remnant of Ringold Unit E
199-F8-1	A4606	124.06	TOC (124.729 (m) - 2.2 ft SU		57	17.4	106.7	25.0	7.6	116.4	borehole log (GRAM)	45.0	13.7	110.3	well summary sheet (M. Hartman)	Possible remnant of Ringold Unit E
199-F8-2	A4607	125.45	TOC (126.22 (m) - 2.54 ft SU	Based on 1994 RPGW	55	16.8	108.7	X	X	X	N/A	54.0	16.5	109.0	well summary sheet (M. Hartman)	Hf/RE not identified in log
199-F8-3	A4608	121.95	Disc Z		34	10.4	111.6	X	X	X	N/A	30.0	9.1	112.8	borehole log (GRAM)	Hf/RE not identified in log
199-F8-4	A4609	125.37	Disc Z		47.5	14.5	110.9	X	X	X	N/A	46.5	14.2	111.2	borehole log (GRAM)	Hf/RE not identified in log
199-F8-7	C6834	123.17	Disc Z		35	10.7	112.5	X	X	X	N/A	32.0	9.8	113.4	borehole log (GRAM)	Hf/RE not identified in log
199-H1-1	C7585	123.52	Disc Z		41.1	12.5	111.0	NP	NP	NP	N/A	33.8	10.3	113.2	borehole log (GRAM)	RE not present
199-H1-2	C7584	128.13	Disc Z		54.5	16.6	111.5	NP	NP	NP	N/A	45.6	13.9	114.2	borehole log (GRAM)	RE not present
199-H1-20	C7113	121.11	Disc Z		57.7	17.6	103.5	NP	NP	NP	N/A	38	11.6	109.5	borehole log (GRAM)	RE not present
199-H1-21	C7111	121.38	Disc Z		39.8	12.1	109.3	16.0	4.9	116.5	borehole log (GRAM)	33	10.1	111.3	borehole log (GRAM)	
199-H1-25	C7478	122.96	Disc Z		39.5	12.0	110.9	X	X	X	N/A	32	9.8	113.2	borehole log (GRAM)	
199-H1-27	C7480	123.57	Disc Z		41.2	12.6	111.0	NP	NP	NP	N/A	35	10.7	112.9	borehole log (GRAM)	RE not present
199-H1-3	C7581	128.56	Disc Z		48.5	14.8	113.8	X	X	X	N/A	42	12.8	115.8	borehole log (GRAM)	
199-H1-32	C7100	127.46	Disc Z		51.4	15.7	111.8	X	X	X	N/A	43	13.1	114.4	borehole log (GRAM)	
199-H1-33	C7105	126.09	Disc Z		45	13.7	112.4	X	X	X	N/A	39	11.9	114.2	borehole log (GRAM)	
199-H1-34	C7108	125.36	Disc Z		44.9	13.7	111.7	X	X	X	N/A	38	11.6	113.8	borehole log (GRAM)	
199-H1-35	C7106	125.57	Disc Z		48	14.6	110.9	X	X	X	N/A	41	12.5	113.1	borehole log (GRAM)	
199-H1-36	C7102	125.46	Disc Z		46.5	14.2	111.3	X	X	X	N/A	39	11.9	113.6	borehole log (GRAM)	
199-H1-37	C7099	126.05	Disc Z		46.4	14.1	111.9	NP	NP	NP	N/A	46.4	14.1	111.9	borehole log (GRAM)	RE not present
199-H1-38	C7098	126.24	Disc Z		47.5	14.5	111.8	NP	NP	NP	N/A	42	12.8	113.4	borehole log (GRAM)	RE not present
199-H1-39	C7109	125.57	Disc Z		44	13.4	112.2	NP	NP	NP	N/A	38	11.6	114.0	borehole log (GRAM)	RE not present
199-H1-4	C7604	127.88	Disc Z		48.5	14.8	113.1	NP	NP	NP	N/A	41	12.5	115.4	borehole log (GRAM)	RE not present
199-H1-40	C7104	125.95	Disc Z		44.4	13.5	112.4	NP	NP	NP	N/A	39.5	12.0	113.9	borehole log (GRAM)	RE not present
199-H1-42	C7107	124.62	Disc Z		44	13.4	111.2	NP	NP	NP	N/A	41	12.5	112.1	borehole log (GRAM)	RE not present
199-H1-43	C7492	125.35	Disc Z		49	14.9	110.4	NP	NP	NP	N/A	43	13.1	112.2	borehole log (GRAM)	RE not present
199-H1-45	C7477	127.90	Disc Z		61.08	18.6	109.3	X	X	X	borehole log (GRAM)	56	17.1	110.8	borehole log (GRAM)	Well data not conclusive. Adjacent well 699-97-41 detected no RE. Both wells had minimal drawdown on development
199-H1-5	C7610	123.99	Disc Z		46.5	14.2	109.8	15	4.6	119.4	borehole log (GRAM)	42.5	13.0	111.0	borehole log (GRAM)	
199-H1-6	C7606	125.44	Disc Z		47	14.3	111.1	NP	NP	NP	borehole log (GRAM)	36.5	11.1	114.3	borehole log (GRAM)	RE not present
199-H1-7	C7630	124.80	Disc Z		37	11.3	113.5	NP	NP	NP	borehole log (GRAM)	31.5	9.6	115.2	borehole log (GRAM)	RE not present
199-H2-1	C7631	123.35	Disc Z		189	57.6	65.7	NP	NP	NP	borehole log (Williams)	35	10.7	112.7	borehole log (Williams)	RE not present
199-H3-1	A4610	129.13	TOC (129.648 (m) - 1.7 ft SU		75	22.9	106.3	NP	NP	NP	N/A	56.0	17.1	112.1	Drill log; PNL-6728	Hf/RE not identified in log
199-H3-10	C7640	128.25	Disc Z		230.8	70.3	57.9	NP	NP	NP	N/A	55.0	16.8	111.5	borehole log (Williams)	
199-H3-11	C7863	130.21	Disc Z		54.6	16.6	113.6	NP	NP	NP	borehole log (GRAM)	NDE	NDE	<113.4	N/A	RE not present
199-H3-25	C7110	127.79	Disc Z		61.3	18.7	109.1	NP	NP	NP	N/A	56	17.1	110.7	borehole log (GRAM)	RE not present
199-H3-26	C7115	127.30	Disc Z		56.3	17.2	110.1	NP	NP	NP	borehole log (GRAM)	NDE	NDE	<110.1	N/A	RE not present
199-H3-27	C7114	128.36	Disc Z		61.9	18.9	109.5	NP	NP	NP	N/A	57	17.4	111.0	borehole log (GRAM)	RE not present
199-H3-2A	A4611	128.05	Disc Z		56	17.1	111.0	NP	NP	NP	N/A	54.0	16.5	111.6	Geo log; PNL-6728	Hf/RE not identified in log
199-H3-2B	A4612	128.01	TOC (128.716 (m) - 2.3 ft SU		58	17.7	110.3	NP	NP	NP	N/A	57.0	17.4	110.6	Geo log; PNL-6728	Hf/RE not identified in log
199-H3-2C	A4613	128.02	TOC (128.662 (m) - 2.1 ft SU		155	47.2	80.8	NP	NP	NP	N/A	55.0	16.8	111.3	Geo log; PNL-6728	Hf/RE not identified in log
199-H3-3	B2778	128.05	Disc Z		53.6	16.3	111.7	NP	NP	NP	N/A	49.0	14.9	113.1	Mehlhorn; BHI-00953	RE not present
199-H3-4	B2779	126.46	Disc Z		49	14.9	111.5	NP	NP	NP	N/A	45.0	13.7	112.7	Mehlhorn; BHI-00953	RE not present
199-H3-5	B2780	126.29	Disc Z		49.9	15.2	111.1	NP	NP	NP	N/A	45.5	13.9	112.4	Mehlhorn; BHI-00953	RE not present

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
199-H3-6	C7626	128.53	Disc Z		61.6	18.8	109.8	NP	NP	NP	N/A	54.5	16.6	111.9	borehole log (GRAM)	RE not present
199-H3-7	C7627	129.07	Brass Survey Marker		59	18.0	111.1	NP	NP	NP	N/A	52.5	16.0	113.1	borehole log (GRAM)	RE not present
199-H3-9	C7639	126.36	Disc Z		218.1	66.5	59.9	NP	NP	NP	N/A	50.0	15.2	111.1	borehole log (GRAM)	RE not present
199-H4-1	A5685	128.48	TOC - 3 ft SU	assumed stickup	75	22.9	105.6	X	X	X	N/A	55.0	16.8	111.7	Geo log; PNL-6728	Hf/RE not identified in log
199-H4-10	A4614	123.70	TOC (124.462 (m) - 2.5 ft SU		38	11.6	112.1	X	X	X	N/A	38.0	11.6	112.1	Geo log; PNL-6728	Hf/RE not identified in log
199-H4-11	A4615	127.68	Disc Z		53	16.2	111.5	X	X	X	N/A	59.0	18.0	109.7	Geo log; PNL-6728	Hf/RE not identified in log
199-H4-12A	A4616	126.47	Disc Z		48	14.6	111.8	X	X	X	N/A	51.0	15.5	110.9	Geo log; PNL-6728	Hf/RE not identified in log
199-H4-12B	A4617	126.46	TOC (127.223 (m) - 2.5 ft SU		51	15.5	110.9	X	X	X	N/A	50.5	15.4	111.1	Geo log; PNL-6728	Hf/RE not identified in log
199-H4-12C	A4618	126.34	TOC (127.226 (m) - 2.9 ft SU		220	67.1	59.3	X	X	X	N/A	50.0	15.2	111.1	Geo log; PNL-6728	Hf/RE not identified in log
199-H4-13	A4619	127.98	TOC (128.65 (m) - 2.2 ft SU	WHC-SD-ER-TI-006	61	18.6	109.4	X	X	X	N/A	59.0	18.0	110.0	Geo log; PNL-6728	Hf/RE not identified in log
199-H4-14	A4620	128.61	TOC (129.376 (m) - 2.5 ft SU		53	16.2	112.5	X	X	X	N/A	59.0	18.0	110.6	Geo log; PNL-6728	Hf/RE not identified in log
199-H4-15A	A4621	124.63	TOC (125.302 (m) - 2.2 ft SU		46	14.0	110.6	X	X	X	N/A	44.0	13.4	111.2	Geo log; PNL-6728	Hf/RE not identified in log
199-H4-15B	A4622	124.54	TOC (125.212 (m) - 2.2 ft SU		44	13.4	111.1	X	X	X	N/A	43.0	13.1	111.4	Geo log; PNL-6728	Hf/RE not identified in log
199-H4-15C	A5689	124.64	TOC (125.215 (m) - 1.9 ft SU		330	100.6	24.1	X	X	X	N/A	46.0	14.0	110.6	Geo log; PNL-6728	Hf/RE not identified in log
199-H4-16	A4626	129.82	TOC (130.491 (m) - 2.2 ft SU		61	18.6	111.2	NP	NP	NP	Drill/Borehole Log (PNNL)	61	18.6	111.2	Drill/Borehole Log (PNNL)	Log describes all cuttings as mostly basaltic gravel, bottom assumed to be RUM, RE in other boreholes doesn't contain clay
199-H4-17	A4627	128.34	TOC (128.922 (m) - 1.9 ft SU		41.5	12.6	115.7	NP	NP	NP	Drill/Borehole Log (PNNL)	45	13.7	114.6	Drill/Borehole Log (PNNL)	Log describes all sand and gravel as predominantly basalt. Clay balls in last foot of hard tool drilling indicates RUM near bottom of borehole. RE in other boreholes does not contain clay.
199-H4-18	A4628	129.10	Disc Z		51	15.5	113.6	NP	NP	NP	Drill/Borehole Log (PNNL)	50	15.2	113.9	Drill/Borehole Log (PNNL)	Log describes all sand and gravel as predominantly basalt. Clay balls in last foot of hard tool drilling indicates RUM near bottom of borehole. RE in other boreholes does not contain clay.
199-H4-2	A5686	128.21	TOC (130.491 (m) - 2.2 ft SU		386	117.7	10.6	X	X	X	N/A	65.0	19.8	108.4	Drill log; PNL-6728	Hf/RE not identified in log
199-H4-3	A4629	128.48	TOC (129.299 (m) - 2.7 ft SU		57.7	17.6	110.9	50.0	15.2	113.2	N/A	NDE	NDE	<110.9	Drill log; PNL-6728	Uncertain whether contact identified as "Ringold" is RE or RUM. since "caliche" identifed deeper, assumed to be RE
199-H4-46	A4632	129.38	Disc Z		61.5	18.7	110.6	X	X	X	N/A	61.0	18.6	110.8	Lindemann; log/DOE/RL-93-43	Hf/RE not identified in log
199-H4-48	A4634	129.97	Disc Z		62	18.9	111.1	40.0	12.2	117.8	well summary sheet (GRAM)	62.0	18.9	111.1	Lindemann; log/DOE/RL-93-43	Hf/RE contact uncertain
199-H4-49	A4635	129.62	Disc Z		60	18.3	111.3	X	X	X	N/A	55.0	16.8	112.9	Lindemann; log/DOE/RL-93-43	Hf/RE not identified in log
199-H4-5	A4636	127.33	TOC (128.058 (m) - 2.4 ft SU		60	18.3	109.0	X	X	X	N/A	48.0	14.6	112.7	Drill log; PNL-6728	Hf/RE not identified in log
199-H4-6	A4637	128.67	TOC (129.069 (m) - 1.3 ft SU		55	16.8	111.9	X	X	X	N/A	NDE	NDE	<111.9	Drill log; PNL-6728	
199-H4-63	B2776	127.60	Disc Z		63.9	19.5	108.1	X	X	X	N/A	57.0	17.4	110.2	well summary sheet (GRAM)	Hf/RE not identified in log
199-H4-64	B2777	125.29	Disc Z		56.5	17.2	108.1	35.0	10.7	114.6	well summary sheet (GRAM)	48.0	14.6	110.7	well summary sheet (GRAM)	
199-H4-65	B8759	128.82	Disc Z		53	16.2	112.7	X	X	X	N/A	50.0	15.2	113.6	well summary sheet (GRAM)	Hf/RE not identified in log
199-H4-69	C7485	129.39	Disc Z		63.83	19.5	109.9	NP	NP	NP	N/A	60	18.3	111.1	borehole log (GRAM)	RE not present
199-H4-7	A4638	128.76	Disc Z		55	16.8	112.0	X	X	X	N/A	54.0	16.5	112.3	Geo log; PNL-6728	Hf/RE not identified in log
199-H4-70	C7483	129.60	Disc Z		61.4	18.7	110.9	NP	NP	NP	N/A	56	17.1	112.5	borehole log (GRAM)	RE not present
199-H4-71	C7487	129.78	Disc Z		71	21.6	108.1	NP	NP	NP	N/A	62	18.9	110.9	borehole log (GRAM)	RE not present
199-H4-72	C7488	128.39	Disc Z		61.25	18.7	109.7	NP	NP	NP	N/A	56	17.1	111.3	borehole log (GRAM)	RE not present
199-H4-73	C7484	129.31	Disc Z		71	21.6	107.7	NP	NP	NP	N/A	64.5	19.7	109.7	borehole log (GRAM)	RE not present
199-H4-74	C7598	125.36	Disc Z		46	14.0	111.3	30	9.1	116.2	borehole log (GRAM)	38	11.6	113.8	borehole log (GRAM)	
199-H4-75	C7597	128.54	Disc Z		59.2	18.0	110.5	40	12.2	116.4	borehole log (GRAM)	50	15.2	113.3	borehole log (GRAM)	
199-H4-76	C7587	129.66	Disc Z		56.4	17.2	112.5	X	X	X	N/A	47.5	14.5	115.2	borehole log (GRAM)	Hf/RE not identified in log
199-H4-77	C7605	127.89	Disc Z		51	15.5	112.3	NP	NP	NP	N/A	42.5	13.0	114.9	borehole log (GRAM)	RE not present
199-H4-78	C7588	129.54	Disc Z		64.1	19.5	110.0	8.5	2.6	127.0	borehole log (GRAM)	59.5	18.1	111.4	borehole log (GRAM)	
199-H4-79	C7586	131.30	Disc Z		65	19.8	111.5	48	14.6	116.7	borehole log (GRAM)	59.5	18.1	113.2	borehole log (GRAM)	
199-H4-8	A4639	128.60	TOC (129.206 (m) - 2.0 ft SU		55	16.8	111.8	X	X	X	N/A	48.0	14.6	114.0	Geo log; PNL-6728	Hf/RE not identified in log
199-H4-80	C7595	129.34	Disc Z		74.3	22.6	106.7	40	12.2	117.2	borehole log (GRAM)	67	20.4	108.9	borehole log (GRAM)	
199-H4-81	C7596	124.79	Disc Z		44.4	13.5	111.3	NP	NP	NP	N/A	39	11.9	112.9	borehole log (GRAM)	RE not present
199-H4-82	C7609	129.60	Disc Z		59.1	18.0	111.6	NP	NP	NP	N/A	53	16.2	113.4	borehole log (GRAM)	RE not present
199-H4-83	C7861	126.48	Disc Z		48.6	14.8	111.7	NP	NP	NP	N/A	NDE	NDE	<111.7	N/A	RE not present
199-H4-84	C7860	128.66	Disc Z		42.3	12.9	115.8	NP	NP	NP	N/A	NDE	NDE	<115.8	N/A	RE not present
199-H4-9	A4640	128.28	TOC (128.615 (m) - 1.1 ft SU		51	15.5	112.7	X	X	X	N/A	46.5	14.2	114.1	Geo log; PNL-6728	Hf/RE not identified in log
199-H5-1A	A4641	128.17	Disc Z		57	17.4	110.8	X	X	X	N/A	52.0	15.8	112.3	Geo log; DOE/RL-93-43	Hf/RE not identified in log
199-H6-2	C7489	129.02	Disc Z		60.7	18.5	110.5	NP	NP	NP	N/A	50	15.2	113.8	borehole log (GRAM)	RE not present
199-H6-3	C7628	128.40	Brass Survey Marker		67.4	20.5	107.9	NP	NP	NP	N/A	60	18.3	110.1	borehole log (GRAM)	RE not present; RUM contact transitional
199-H6-4	C7629	127.46	Brass Survey Marker		63	19.2	108.3	X	X	X	N/A	55.5	16.9	110.5	geophysical logs (Williams)	RE not determinable, but possibly present
199-K-10	A5738	142.63	TOC (142.787 (m) - 0.5 ft SU	WHC-SD-ER-TI-006	171	52.1	90.5	X	X	X	N/A	164	50.0	92.6	well summary sheet (GRAM)	Hf/RE not identified in cursory log in WCS
199-K-106A	A9842	142.55	Disc Z		190	57.9	84.6	21.0	6.4	136.1	borehole log (Freestone)	162.5	49.5	93.0	borehole log (GRAM)	
199-K-107A	A9843	142.63	Disc Z		**95.2**	29.0	113.6	19.0	5.8	136.8	borehole log (Freestone)	NDE	NDE	<113.6	N/A	
199-K-108A	A9844	142.77	Disc Z		**93.5**	28.5	114.3	30.0	9.1	133.6	borehole log (Freestone)	NDE	NDE	<114.3	N/A	
199-K-109A	A9828	142.81	Disc Z		165.9	50.6	92.2	38.5	11.7	131.1	borehole log (Freestone)	155	47.2	95.6	borehole log (GRAM)	
199-K-11	A4643	142.71	TOC (143.224 (m) - 1.7 ft SU		170	51.8	90.9	45.0	13.7	129.0	borehole log (Freestone)	165	50.3	92.4	borehole log (GRAM)	35 ft could be Hf/RE contact
199-K-110A	A9829	142.97	Disc Z		93.1	28.4	114.6	40.0	12.2	130.8	Based on lithology in drive sample (Freestone)	NDE	NDE	<114.6	N/A	35.5 ft also possible Hf/Re contact if fill/native material contact
199-K-111A	A9830	140.97	Disc Z		185	56.4	84.6	26.0	7.9	133.0	borehole log (Freestone)	155.3	47.3	93.6	borehole log (GRAM)	
199-K-112A	B2799	126.49	Disc Z		54	16.5	110.0	12.0	3.7	122.8	borehole log (Freestone)	48	14.6	111.9	borehole log (GRAM)	Top of RE based on lith of sand fraction
199-K-113A	B2800	125.94	Disc Z		48	14.6	111.3	22.0	6.7	119.2	borehole log (Freestone)	41	12.5	113.4	borehole log (GRAM)	Hf/RE contact based on low basalt content below 22 ft
199-K-114A	B2801	125.73	Disc Z		51	15.5	110.2	24.0	7.3	118.4	borehole log (Freestone)	41	12.5	113.2	borehole log (GRAM)	Hf/RE contact based on low basalt below 24 ft
199-K-115A	B2802	126.58	Disc Z		61	18.6	108.0	16.0	4.9	121.7	borehole log (Freestone)	54	16.5	110.1	borehole log (GRAM)	
199-K-116A	B2803	129.94	Disc Z		92.6	28.2	101.7	14.0	4.3	125.7	borehole log (Freestone)	87	26.5	103.4	borehole log (GRAM)	
199-K-117A	B2804	127.08	Disc Z		73	22.3	104.8	14.0	4.3	122.8	borehole log (Freestone)	68	20.7	106.4	borehole log (GRAM)	
199-K-118A	B2805	130.06	Disc Z		81	24.7	105.4	19.0	5.8	124.3	borehole log (Freestone)	75.5	23.0	107.1	borehole log (GRAM)	Hf/RE contact based on 15% mafics in sand below 19 ft
199-K-119A	B2806	132.57	Disc Z		92	28.0	104.5	16.0	4.9	127.7	borehole log (Freestone)	89	27.1	105.4	borehole log (GRAM)	
199-K-120A	B2807	125.21	Disc Z		101	30.8	94.4	3.0	0.9	124.3	borehole log (Freestone)	96	29.3	95.9	borehole log (GRAM)	
199-K-121A	B2808	142.15	Disc Z		98.65	30.1	112.1	54.0	16.5	125.7	borehole log (Freestone)	96	29.3	112.9	borehole log (GRAM)	Hf/RE contact based on 15% mafics in sand below 54 ft
199-K-122A	B2809	142.43	Disc Z		101	30.8	111.6	39.0	11.9	130.5	borehole log (Freestone)	100	30.5	112.0	borehole log (GRAM)	
199-K-123A	B2810	142.84	Disc Z		98	29.9	113.0	38.0	11.6	131.3	borehole log (Freestone)	NDE	NDE	<113.0	N/A	
199-K-124A	B2811	143.02	Disc Z		100.91	30.8	112.3	65.0	19.8	123.2	borehole log (Freestone)	NDE	NDE	<112.3	N/A	
199-K-125A	B8559	130.17	Disc Z		78	23.8	106.4	29.0	8.8	121.3	borehole log (Freestone)	75	22.9	107.3	borehole log (GRAM)	
199-K-126	B8760	139.73	Disc Z		90	27.4	112.3	52.0	15.8	123.9	borehole log (Freestone)	NDE	NDE	<112.3	N/A	
199-K-127	C3662	132.17	Disc Z		103	31.4	100.8	15.0	4.6	127.6	borehole log (Freestone)	NDE	NDE	<100.8	N/A	missing page from borehole log, uncertain RE elevation
199-K-128	C3663	143.60	Disc Z		93.4	28.5	115.1	45.0	13.7	129.9	borehole log (Freestone)	97.9	29.8	113.8	borehole log (GRAM)	
199-K-129	C4117	126.59	Disc Z		49.5	15.1	111.5	24.0	7.3	119.3	borehole log (Freestone)	48	14.6	112.0	borehole log (GRAM)	Hf/RE contact based on mention of quartzite below 24 ft
199-K-130	C4120	133.66	Disc Z		78.9	24.0	109.6	28.0	8.5	125.1	borehole log (Freestone)	NDE	NDE	<109.6	N/A	
199-K-131	C4561	134.41	Disc Z		99.3	30.3	104.1	30.0	9.1	125.3	borehole log (Weekes)	98	29.9	104.5	borehole log (Weekes)	

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
199-K-132	C4670	135.96	Disc Z		88	26.8	109.1	27.0	8.2	127.7	borehole log (Freestone)	NDE	NDE	<109.1	N/A	
199-K-133	C4734	139.54	Disc Z		99	30.2	109.4	51.5	15.7	123.8	borehole log (Freestone)	NDE	NDE	<109.4	N/A	
199-K-134	C4735	140.17	Disc Z		99	30.2	110.0	60.0	18.3	121.9	borehole log (Freestone)	NDE	NDE	<110.0	N/A	
199-K-135	C4736	140.09	Disc Z		113.4	34.6	105.5	50.0	15.2	124.9	borehole log (Freestone)	113.4	34.6	105.5	borehole log (GRAM)	
199-K-136	C4737	139.74	Disc Z		104	31.7	108.0	50.0	15.2	124.5	borehole log (Freestone)	NDE	NDE	<108.0	N/A	
199-K-137	C5112	142.40	Disc Z		107.95	32.9	109.5	23.0	7.0	135.4	borehole log (Freestone)	NDE	NDE	<109.5	N/A	
199-K-138	C5113	134.22	Disc Z		98	29.9	104.4	30.0	9.1	125.1	borehole log (Freestone)	NDE	NDE	<104.4	N/A	
199-K-139	C5114	142.81	Disc Z		108.4	33.0	109.8	43.0	13.1	129.7	borehole log (Freestone)	NDE	NDE	<109.8	N/A	Hf/RE contact based on color and felsic content of sand below 33 ft
199-K-140	C5115	142.56	Disc Z		108	32.9	109.6	40.0	12.2	130.4	borehole log (Freestone)	NDE	NDE	<109.6	N/A	Hf/RE contact based on low maphic content in sands of 50 ft sample
199-K-141	C5303	141.57	Disc Z		113.8	34.7	106.9	40.0	12.2	129.4	borehole log (Freestone)	NDE	NDE	<106.9	N/A	Hf/RE contact based on low maphic content in sands below 40 ft
199-K-142	C5304	141.79	Disc Z		115.7	35.3	106.5	38.0	11.6	130.2	borehole log (Freestone)	NDE	NDE	<106.5	N/A	Difficult pick for Hf/RE contact
199-K-143	C5305	135.74	Disc Z		95	29.0	106.8	50.0	15.2	120.5	borehole log (Freestone)	NDE	NDE	<106.8	N/A	difficult pick, could be 27 ft for Hf/RE contact
199-K-144	C5360	126.40	Disc Z		107.1	32.6	93.8	11.0	3.4	123.0	borehole log (Freestone)	97	29.6	96.8	borehole log (Freestone)	Hf/RE contact based on lith, color
199-K-145	C5361	125.51	Disc Z		123.7	37.7	87.8	4.0	1.2	124.3	borehole log (Freestone)	118	36.0	89.5	borehole log (GRAM)	Hf/RE contact based on lith, color
199-K-146	C5362	128.42	Disc Z		57.9	17.6	110.8	17.0	5.2	123.2	borehole log (Freestone)	53	16.2	112.3	borehole log (GRAM)	Hf/RE contact based on sand content; alternative interpretation is no Hf exists here
199-K-147	C5363	135.07	Disc Z		84.1	25.6	109.4	27.0	8.2	126.8	borehole log (Freestone)	79	24.1	111.0	borehole log (GRAM)	
199-K-148	C5364	138.12	Disc Z		108.8	33.2	105.0	50.0	15.2	122.9	borehole log (Freestone)	100	30.5	107.6	borehole log (GRAM)	Hf/RE contact based on sand lithology
199-K-149	C5365	139.98	Disc Z		113.2	34.5	105.5	X	X	X	N/A	106	32.3	107.7	borehole log (Cabbage)	Nf/RE contact not identified
199-K-150	C5366	139.38	Disc Z		117.5	35.8	103.6	54.0	16.5	122.9	borehole log (Freestone)	112.0	34.1	105.2	borehole log (GRAM)	Difficult pick for Hf/RE contact, 54 ft chosen based on color change and lith change
199-K-151	C5367	139.81	Disc Z		118.8	36.2	103.6	55.0	16.8	123.0	borehole log (Freestone)	115.0	35.1	104.8	borehole log (GRAM)	sand fraction lithology below 55 ft changed from 60% basalt sands to 10% basalt sands
199-K-152	C5368	140.25	Disc Z		118.6	36.1	104.1	45.0	13.7	126.5	borehole log (Freestone)	116	35.4	104.9	borehole log (GRAM)	
199-K-153	C5369	137.41	Disc Z		104.6	31.9	105.5	40.0	12.2	125.2	borehole log (Freestone)	100	30.5	106.9	borehole log (GRAM)	Hf/RE contact based on low basalt content for sand beginning with 40' grab sample
199-K-154	C5370	137.20	Disc Z		107.9	32.9	104.3	40.0	12.2	125.0	borehole log (Freestone)	102	31.1	106.1	borehole log (GRAM)	
199-K-155	C5371	137.84	Staking Survey	Well survey report	32.6	9.9	127.9	NDE	NDE	NDE	N/A	NDE	NDE	NDE	N/A	
199-K-156	C5372	140.48	Disc Z		172.2	52.5	88.0	30.0	9.1	131.3	borehole log (Freestone)	166	50.6	89.9	borehole log (GRAM)	
199-K-157	C5373	138.84	Disc Z		143.3	43.7	95.2	30.0	9.1	129.7	borehole log (Freestone)	139	42.4	96.5	borehole log (GRAM)	
199-K-158	C5484	145.50	Disc Z		115.5	35.2	110.3	41.0	12.5	133.0	borehole log (Freestone)	NDE	NDE	<110.3	N/A	
199-K-159	C5937	138.95	Disc Z		117	35.7	103.3	60	18.3	120.7	borehole log (Freestone)	110.0	33.5	105.4	borehole log (GRAM)	Hf/RE contact based on color and lith change in log
199-K-160	C5938	139.22	Disc Z		118	36.0	103.3	55	16.8	122.5	borehole log (Freestone)	113.0	34.4	104.8	borehole log (Freestone)	Difficult pick for Hf/RE contact, chosen based on color and lith change for gravel, low on detail
199-K-161	C5939	126.48	Disc Z - Final Survey		56.5	17.2	109.3	28.0	8.5	117.9	borehole log (Freestone)	51	15.5	110.9	borehole log (GRAM)	Hf/RE contact based on geo note in log
199-K-162	C5940	125.42	Disc Z		133.6	40.7	84.7	10.0	3.0	122.4	borehole log (Freestone)	128	39.0	86.4	borehole log (GRAM)	Hf/RE based on sand lith; alternative contact could be 30 ft
199-K-163	C6172	137.95	Disc Z		113.7	34.7	103.3	40.0	12.2	125.8	borehole log (Freestone)	110	33.5	104.4	borehole log (GRAM)	
199-K-164	C6386	141.34	Disc Z		119	36.3	105.1	39.0	11.9	129.5	borehole log (Freestone)	112	34.1	107.2	borehole log (Freestone)	Hf/RE based on drilling rate change and low mafics percent below 40'
199-K-165	C6451	145.46	Disc Z		180.2	54.9	90.5	28.8	8.8	136.7	borehole log (Freestone)	176	53.6	91.8	borehole log (GRAM)	
199-K-166	C6452	144.54	Disc Z		170.65	52.0	92.5	26.9	8.2	136.3	borehole log (Freestone)	168.25	51.3	93.3	borehole log (GRAM)	
199-K-167	C6453	145.47	Brass Survey Marker - Final Survey Report		37	11.3	134.2	NDE	NDE	<134.2	N/A	NDE	NDE	<134.2	N/A	borehole did not reach RE contact
199-K-168	C6454	142.59	Disc Z		166.8	50.8	91.8	43.0	13.1	129.5	borehole log (Freestone)	160	48.8	93.8	borehole log (GRAM)	Hf/RE based on geo notes, lower mafics in sand below 43ft
199-K-169	C6744	141.86	Disc Z		142	43.3	98.6	70.0	21.3	120.5	borehole log (Freestone)	132	40.2	101.6	borehole log (GRAM)	borehole log indicated RE at 45 ft bgs, does not agree with lithologic description, however
199-K-170	C6745	142.03	Brass Survey Marker - Final Survey Report		151	46.0	96.0	45.0	13.7	128.3	borehole log (Freestone)	149	45.4	96.6	borehole log (GRAM)	
199-K-171	C6746	144.22	Disc Z		153.6	46.8	97.4	60.0	18.3	125.9	borehole log (Freestone)	148	45.1	99.1	borehole log (GRAM)	
199-K-172	C6747	144.26	Disc Z		140	42.7	101.6	60.0	18.3	126.0	borehole log (Freestone)	132	40.2	104.0	borehole log (GRAM)	
199-K-173	C7016	145.63	Disc Z		181	55.2	90.5	35.0	10.7	135.0	borehole log (Freestone)	174.5	53.2	92.4	borehole log (GRAM)	
199-K-174	C7061	148.19	Disc Z		132.5	40.4	107.8	50.0	15.2	132.9	borehole log (Freestone)	NDE	NDE	<108.5	borehole log (Freestone)	
199-K-175	C7062	153.25	Disc Z		148.5	45.3	108.0	60.0	18.3	135.0	borehole log (Freestone)	NDE	NDE	<108.0	borehole log (Freestone)	
199-K-178	C7149	136.40	Disc Z		133.6	40.7	95.7	30.0	9.1	127.3	borehole log (Freestone)	129	39.3	97.1	borehole log (Freestone)	
199-K-179	C7150	140.24	Disc Z		146	44.5	95.7	40.0	12.2	128.1	borehole log (Freestone)	141	43.0	97.3	borehole log (Freestone)	
199-K-180	C7151	146.98	Disc Z		154.5	47.1	99.9	65.0	19.8	127.2	borehole log (Freestone)	152	46.3	100.6	borehole log (Freestone)	Hf/RE contact based on geologist comment
199-K-181	C7464	135.98	Disc Z		136	41.5	94.5	20.0	6.1	129.9	borehole log (Freestone)	131	39.9	96.1	borehole log (Freestone)	Hf/RE contact based on sand lith beginning 20 ft
199-K-182	C7476	142.45	Disc Z		127	38.7	103.7	50	15.2	127.2	borehole log (Freestone)	123	37.5	105.0	geophysical logs (GRAM, Inc.)	Hf/RE contact in geo notes, based on lith of gravels
199-K-183	C7683	140.33	Brass Survey Marker - Final Survey Report		152.5	46.5	93.8	21	6.4	133.9	Geologic & geophysical logs (Williams)	147.5	45.0	95.4	borehole log (Freestone)	
199-K-184	C7684	142.84	Disc Z - Final Survey		216.1	65.9	77.0	55	16.8	126.1	Geologic & geophysical logs (Williams)	162.8	49.6	93.2	borehole log (GRAM)	Hf/RE contact uncertain
199-K-185	C7685	134.62	Brass Survey Marker - Final Survey Report		138.5	42.2	92.4	27	8.2	126.4	borehole log (Freestone)	133.5	40.7	93.9	borehole log (Freestone)	Carbonate cement in places
199-K-186	C7686	145.45	Disc Z - Final Survey		167	50.9	94.5	46.5	14.2	131.3	Geologic & geophysical logs (Williams)	162	49.4	96.1		
199-K-187	C7687	155.38	Brass Survey Marker - Final Survey Report		202.4	61.7	93.7	68.5	20.9	134.5	borehole log (Freestone)	197.5	60.2	95.2	borehole log (Freestone)	
199-K-188	C7688	151.07	Disc Z - Final Survey		235	71.6	79.4	60	18.3	132.8	borehole log (GRAM)	183	55.8	95.3		
199-K-189	C7689	142.23	Brass Survey Marker - Final Survey Report		159	48.5	93.8	37	11.3	130.9	Geologic & geophysical logs (Williams)	154	46.9	95.3	borehole log (Freestone)	RE contact transitional gravels
199-K-190	C7690	135.39	Brass Survey Marker - Final Survey Report		138	42.1	93.3	33	10.1	125.3	Geologic & geophysical logs (Williams)	133	40.5	94.9	borehole log (Freestone)	Hf/RE contact uncertain
199-K-191	C7691	143.86	Brass Survey Marker - Final Survey Report		158	48.2	95.7	40	12.2	131.7	Geologic & geophysical logs (Williams)	153.3	46.7	97.1	borehole log (Freestone)	Hf/RE contact transitional gravels
199-K-192	C7692	134.06	Disc Z		192.9	58.8	75.3	22	6.7	127.3	Geologic & geophysical logs (Williams)	142	43.3	90.8	Geologic & geophysical logs (Williams)	Hf/RE contact uncertain
199-K-193	C7693	144.88	Disc Z - Final Survey		166	50.6	94.3	46	14.0	130.9	borehole log (GRAM)	161	49.1	95.8	borehole log (GRAM)	Hf/RE contact transitional gravels
199-K-194	C7694	146.48	Disc Z - Final Survey		147.3	44.9	101.6	65	19.8	126.7	borehole log (GRAM)	141.4	43.1	103.4	borehole log (GRAM)	
199-K-195	C7695	146.87	Disc Z - Final Survey		230.5	70.3	76.6	48	14.6	132.2	Geologic & geophysical logs (Williams)	178.2	54.3	92.6	borehole log (GRAM)	
199-K-196	C7696	133.96	Disc Z		139.8	42.6	91.3	36.0	11.0	123.0	borehole log (Lewallen)	132.5	40.4	93.6	borehole log (Lewallen)	
199-K-197	C7697	125.14	Disc Z		108.3	33.0	92.1	3.3	1.0	124.1	borehole log (Lewallen)	101	30.8	94.4	borehole log (Lewallen)	
199-K-198	C7698	123.93	Disc Z		101.5	30.9	93.0	X	X	X	N/A	93.6	28.5	95.4	borehole log (Erb)	Hf/RE contact not identifiable from log
199-K-199	C7699	124.94	Disc Z		103.1	31.4	93.5	X	X	X	N/A	95	29.0	96.0	Geologic & geophysical logs (Williams)	Hf/RE contact possibly 30 to 50 ft; gradational contact
199-K-200	C7831	135.91	Disc Z		59.3	18.1	117.8	27	8.2	127.7	Geologic & geophysical logs (Williams)	NDE	NDE	<117.8	borehole log (GRAM)	Hf/RE contact transitional gravels
199-K-201	C7832	133.36	Disc Z		60.4	18.4	115.0	26	7.9	125.4	borehole log (GRAM)	NDE	NDE	<115.0	borehole log (GRAM)	

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
199-K-21	A4650	129.07	TOC (129.561 (m) - 1.6 ft SU		50	15.2	113.8	25	7.6	121.5	1955 log (Freestone)	NDE	NDE	<113.8	borehole log (Freestone)	Hf/RE contact based on limited description
199-K-22	A4651	129.55	TOC (130.408 (m) - 2.8 ft SU		50	15.2	114.3	23	7.0	122.5	borehole log (Freestone)	NDE	NDE	<114.3	borehole log (Freestone)	Hf/RE contact based on middle of 5 ft "non documented" zone between boulder-rich and "cobbles, fine sand" units
199-K-25	A5743	144.07	TOC (145.229 (m) - 3.8 ft SU	Based on 1995 RPGW	76	23.2	120.9	25	7.6	136.5	N/A	NDE	NDE	<121.2	N/A	Hf/RE contact based on limited detail in 1953 well log
199-K-27	A4653	142.60	TOC (143.274 (m) - 2.2 ft SU	Based on 1994 WCSR	90	27.4	115.2	67	20.4	122.2	geophysical logs (GRAM, Inc.)	NDE	NDE	<114.9	N/A	neutron density log shows distinct anomaly at 67 ft
199-K-28	A4654	142.33	TOC (143.062 (m) - 2.4 ft SU	WCH-SD-ER-TI-006	90	27.4	114.9	65	19.8	122.5	geophysical logs (GRAM, Inc.)	NDE	NDE	<114.7	N/A	cemented gravel at 65 ft bgs assumed to be RE
199-K-29	A5480	142.52	TOC (143.493 (m) - 3.2 ft SU	WCH-SD-ER-TI-006	90	27.4	115.1	40	12.2	130.3	borehole log (Freestone)	NDE	NDE	<115.1	N/A	"tight sand, gravel cobbles" interp as RE - lack of detail in log
199-K-30	A4655	142.34	TOC (143.132 (m) - 2.6 ft SU	WCH-SD-ER-TI-006	90	27.4	114.9	40	12.2	130.1	borehole log (Freestone)	NDE	NDE	<114.8	N/A	lack of boulders below 40 ft indicate possible Hf/RE contact - lack of detail in log
199-K-32A	A4657	135.47	Disc Z		69	21.0	114.4	27.0	8.2	127.2	borehole log (Freestone)	NDE	NDE	<114.4	N/A	
199-K-32B	A4658	135.84	Disc Z		176	53.6	82.2	36.0	11.0	124.9	borehole log (Freestone)	136	41.5	94.4	geophysical logs (GRAM, Inc.)	based on detailed geo log contacts
199-K-33	A4659	135.33	Disc Z		66.6	20.3	115.0	X	X	X	N/A	NDE	NDE	<115.0	N/A	Hf/RE not identified in log
199-K-34	A4660	142.75	Disc Z		90.6	27.6	115.1	22.0	6.7	136.0	borehole log (Freestone)	NDE	NDE	<115.1	N/A	
199-K-35	A4661	150.84	Disc Z		117	35.7	115.2	45.0	13.7	137.1	borehole log (Freestone)	NDE	NDE	<115.2	N/A	
199-K-36	A4662	150.79	Disc Z - Original Survey		90.6	27.6	123.2	62.0	18.9	131.9	borehole log (Freestone)	NDE	NDE	<123.2	N/A	Hf/RE contact based on chg from sandy to silty gravel - poor log
199-K-37	A4663	134.76	Disc Z		69.3	21.1	113.6	30.5	9.3	125.5	borehole log (Freestone)	NDE	NDE	<113.6	N/A	
199-N-103A	A9988	140.32	Disc Z		105	32.0	108.3	59.0	18.0	122.3	borehole and geophysical logs (Williams)	102.0	31.1	109.2	#REF!	qualitative RE pick based on geo and geophysical logs
199-N-104A	A9989	141.34	Disc Z		91.5	27.9	113.5	57	17.4	124.0	borehole log (GRAM)	NDE	NDE	<113.5	N/A	
199-N-105A	B2408	139.62	Disc Z		98	29.9	109.8	43.0	13.1	126.5	borehole log (GRAM)	96.0	29.3	110.4	borehole log (GRAM)	
199-N-106A	B2538	144.63	Disc Z		121	36.9	107.7	58.0	17.7	126.9	borehole log (GRAM)	119.0	36.3	108.4	borehole log (GRAM)	
199-N-107A	B2536	141.26	Brass Survey Marker	1996 WCSR	76	23.2	118.1	44	13.4	127.8	borehole log (GRAM)	NDE	NDE	<117.1	N/A	Hf/RE not identified in log
199-N-108A	B2537	140.25	Disc Z		72.5	11.9	128.4	39	11.9	128.4	Geologic Borehole Log (Williams)	NDE	NDE	NDE	N/A	
199-N-121	C4473	122.38	Disc Z		42.5	13.0	109.4	8.0	2.4	119.9	borehole log (GRAM)	41.0	12.5	109.9	borehole log (GRAM)	
199-N-122	C4954	122.33	Disc Z		48	14.6	107.7	14.0	4.3	118.1	borehole log (GRAM)	44.5	13.6	108.8	borehole log (GRAM)	
199-N-123	C4955	123.10	Disc Z		54	16.5	106.6	11.5	3.5	119.6	borehole log (GRAM)	52.8	16.1	107.0	borehole log (GRAM)	
199-N-136	C5042	122.06	Brass Survey Marker - Final Survey Report		25.8	7.9	114.2	12	3.7	118.4	borehole log (GRAM)	NDE	NDE	<114.2	N/A	Hf/RE not identified in log
199-N-137	C5043	122.00	Brass Survey Marker - Final Survey Report		25.8	7.9	114.1	16	4.9	117.1	borehole log (GRAM)	NDE	NDE	<114.1	N/A	Hf/RE not identified in log
199-N-142	C5048	122.20	Brass Survey Marker - Final Survey Report		25.5	7.8	114.4	14	4.3	117.9	borehole log (GRAM)	NDE	NDE	<114.4	N/A	
199-N-143	C5049	122.26	Brass Survey Marker - Final Survey Report		25.8	7.9	114.4	14	4.3	118.0	borehole log (GRAM)	NDE	NDE	<114.4	N/A	
199-N-144	C5050	122.25	Brass Survey Marker - Final Survey Report		25.7	7.8	114.4	14	4.3	118.0	borehole log (GRAM)	NDE	NDE	<114.4	N/A	
199-N-145	C5051	122.08	Brass Survey Marker - Final Survey Report		26	7.9	114.2	10	3.0	119.0	borehole log (GRAM)	NDE	NDE	<114.2	N/A	
199-N-160	C6178	122.08	Brass Survey Marker - Final Survey Report		26	7.9	114.2	15	4.6	117.5	borehole log (GRAM)	NDE	NDE	<114.4	N/A	
199-N-161	C6179	122.13	Brass Survey Marker - Final Survey Report		25.2	7.7	114.4	12	3.7	118.5	borehole log (GRAM)	NDE	NDE	<114.3	N/A	
199-N-162	C6180	122.24	Brass Survey Marker - Final Survey Report		26	7.9	114.3	11	3.4	118.9	borehole log (GRAM)	NDE	NDE	<114.3	N/A	
199-N-163	C6181	122.22	Brass Survey Marker - Final Survey Report		26	7.9	114.3	14	4.3	118.0	borehole log (GRAM)	NDE	NDE	<114.3	N/A	
199-N-164	C6182	122.18	Brass Survey Marker - Final Survey Report		25.4	7.7	114.4	13	4.0	118.2	borehole log (GRAM)	NDE	NDE	<114.4	N/A	
199-N-167	C7032	140.70	Brass Survey Marker - Final Survey Report		83	25.3	115.4	49.0	14.9	125.8	borehole log (GRAM)	NDE	NDE	<115.4	N/A	
199-N-169	C7034	140.76	Brass Survey Marker - Final Survey Report		83	25.3	115.5	43.0	13.1	127.7	borehole log (GRAM)	NDE	NDE	<115.5	N/A	
199-N-170	C7035	140.79	Brass Survey Marker - Final Survey Report		83.5	25.5	115.3	42.0	12.8	128.0	borehole log (GRAM)	NDE	NDE	<115.3	N/A	
199-N-171	C7036	140.96	Brass Survey Marker - Final Survey Report		84	25.6	115.4	50.5	15.4	125.6	borehole log (GRAM)	NDE	NDE	<115.4	N/A	
199-N-172	C7037	140.56	Brass Survey Marker - Final Survey Report		82	25.0	115.6	44.0	13.4	127.1	borehole log (GRAM)	NDE	NDE	<115.6	N/A	
199-N-173	C7038	123.46	Brass Survey Marker - Final Survey Report		45.2	13.8	109.7	9.0	2.7	120.7	borehole log (GRAM)	45	13.7	109.7	borehole log (GRAM)	
199-N-174	C7039	122.07	Brass Survey Marker		20.8	6.3	115.7	14.0	4.3	117.8	borehole log (GRAM)	NDE	NDE	<115.7	N/A	
199-N-176	C7041	121.96	TOC - 0.6 ft SU	Based on 2009 WSS	18.6	5.7	116.3	16.00	4.9	117.1	borehole log (GRAM)	NDE	NDE	<116.3	N/A	
199-N-177	C7042	121.91	Brass Survey Marker		18.4	5.6	116.3	14.50	4.4	117.5	borehole log (GRAM)	NDE	NDE	<116.3	N/A	
199-N-178	C7043	122.07	Brass Survey Marker		18.7	5.7	116.4	16.00	4.9	117.2	borehole log (GRAM)	NDE	NDE	<116.4	N/A	
199-N-179	C7044	122.03	Brass Survey Marker		20	6.1	115.9	NDE	NDE	<115.9	N/A	NDE	NDE	<115.9	N/A	
199-N-180	C7045	122.00	TOC - 0.6 ft SU	Based on 2009 WSS	18.8	5.7	116.3	15.50	4.7	117.3	borehole log (GRAM)	NDE	NDE	<116.3	N/A	
199-N-181	C7046	121.95	Brass Survey Marker		19.3	5.9	116.1	15.00	4.6	117.4	borehole log (GRAM)	NDE	NDE	<116.1	N/A	
199-N-182	C8184	140.52	Disc Z		154	46.9	93.6	57.00	17.4	123.1	Borehole/Geophysical Logs	102	31.1	109.4	Borehole/Geophysical Logs	Rfwie pick complicated by Hf/RF transitional character
199-N-183	C8185	140.24	Disc Z		117.4	35.8	104.5	57.00	17.4	122.9	Borehole/Geophysical Logs	109	33.2	107.0	Borehole/Geophysical Logs	Rfwie pick complicated by Hf/RF transitional character
199-N-184	C8186	140.53	Disc Z		108	32.9	107.6	60.50	18.4	122.1	Borehole/Geophysical Logs	100.5	30.6	109.9	Borehole/Geophysical Logs	Rfwie pick complicated by Hf/RF transitional character
199-N-185	C8187	122.07	Disc Z		92.5	28.2	93.9	23.00	7.0	115.1	Borehole/Geophysical Logs	40	12.2	109.9	Borehole/Geophysical Logs	Rfwie pick complicated by Hf/RF transitional character
199-N-186	C8188	141.39	Disc Z		97.3	29.7	111.7	53.50	16.3	125.1	Borehole/Geophysical Logs	94.5	28.8	112.6	Borehole/Geophysical Logs	Rfwie pick complicated by Hf/RF transitional character/Questional RUM contact (NDE)?
199-N-187	C8189	141.25	Disc Z		94.5	28.8	112.4	40.00	12.2	129.1	Borehole/Geophysical Logs	NDE	NDE	<110.5	Borehole/Geophysical Logs	Rfwie pick complicated by Hf/RF transitional character
199-N-188	C8190	139.31	Disc Z		90	27.4	111.9	43.50	13.3	126.1	Borehole/Geophysical Logs	NDE	NDE	<111.9	Borehole/Geophysical Logs	Rfwie pick complicated by Hf/RF transitional character
199-N-189	C8191	143.64	Disc Z		117.3	35.8	107.9	59.00	18.0	125.7	Borehole/Geophysical Logs	107	32.6	111.0	Borehole/Geophysical Logs	Rfwie pick complicated by Hf/RF transitional character
199-N-2	A4669	140.55	TOC (141.161 (m) - 2.0 ft SU		125	38.1	102.5	X	X	X	N/A	105.0	32.0	108.6	borehole log (GRAM)	Hf/RE not identified in log
199-N-200	C7327	123.44	Brass Survey Marker - Final Survey Report		18.0	5.5	117.9	0.5	0.2	123.3	borehole log (GRAM)	NDE	NDE	<117.9	N/A	
199-N-201	C7326	123.48	Brass Survey Marker - Final Survey Report		26.4	8.1	115.4	NDE	NDE	<115.4	N/A	NDE	NDE	<115.4	N/A	
199-N-202	C7325	123.51	Brass Survey Marker - Final Survey Report		17.1	5.2	118.3	NDE	NDE	<118.3	N/A	NDE	NDE	<118.3	N/A	

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
199-N-203	C7324	123.50	Brass Survey Marker - Final Survey Report		27.1	8.3	115.2	10.0	3.0	120.4	borehole log (GRAM)	NDE	NDE	<115.2	N/A	
199-N-204	C7323	123.49	Brass Survey Marker - Final Survey Report		16.1	4.9	118.6	NDE	NDE	<118.5	N/A	NDE	NDE	<118.5	N/A	
199-N-205	C7322	123.44	Brass Survey Marker - Final Survey Report		26.2	8.0	115.5	7.5	2.3	121.2	borehole log (GRAM)	NDE	NDE	<115.4	N/A	
199-N-206	C7321	123.38	Brass Survey Marker - Final Survey Report		17.6	5.4	118.0	7.0	2.1	121.2	borehole log (GRAM)	NDE	NDE	<118.0	N/A	
199-N-207	C7320	123.37	Brass Survey Marker - Final Survey Report		27.0	8.2	115.1	0.5	0.2	123.2	borehole log (GRAM)	NDE	NDE	<115.1	N/A	
199-N-208	C7319	123.42	Brass Survey Marker - Final Survey Report		16.2	4.9	118.5	8.0	2.4	121.0	borehole log (GRAM)	NDE	NDE	<118.4	N/A	
199-N-209	C7318	123.44	Brass Survey Marker - Final Survey Report		26.3	8.0	115.4	8.5	2.6	120.9	borehole log (GRAM)	NDE	NDE	<115.4	N/A	
199-N-210	C7317	123.46	Brass Survey Marker - Final Survey Report		16.5	5.0	118.4	2.0	0.6	122.9	borehole log (GRAM)	NDE	NDE	<118.4	N/A	
199-N-211	C7316	123.47	Brass Survey Marker - Final Survey Report		26.2	8.0	115.5	6.0	1.8	121.6	borehole log (GRAM)	NDE	NDE	<115.5	N/A	
199-N-212	C7315	123.44	Brass Survey Marker - Final Survey Report		16.0	4.9	118.6	7.0	2.1	121.3	borehole log (GRAM)	NDE	NDE	<118.5	N/A	
199-N-213	C7314	123.40	Brass Survey Marker - Final Survey Report		26.2	8.0	115.4	10.0	3.0	120.4	borehole log (GRAM)	NDE	NDE	<115.4	N/A	
199-N-214	C7313	123.32	Brass Survey Marker - Final Survey Report		16.0	4.9	118.4	NDE	NDE	<118.4	N/A	NDE	NDE	<118.4	N/A	
199-N-215	C7312	123.25	Brass Survey Marker - Final Survey Report		27.2	8.3	115.0	1.0	0.3	122.9	borehole log (GRAM)	NDE	NDE	<114.9	N/A	
199-N-216	C7311	123.23	Brass Survey Marker - Final Survey Report		16.3	5.0	118.3	12.0	3.7	119.6	borehole log (GRAM)	NDE	NDE	<118.2	N/A	
199-N-217	C7310	123.14	Disc Z		26.7	8.1	115.0	16.0	4.9	118.3	borehole log (GRAM)	NDE	NDE	<115.0	N/A	
199-N-218	C7309	123.16	Brass Survey Marker - Final Survey Report		17.1	5.2	117.9	NDE	NDE	<117.9	N/A	NDE	NDE	<117.9	N/A	
199-N-219	C7308	123.25	Brass Survey Marker - Final Survey Report		27.5	8.4	114.9	NDE	NDE	<114.7	N/A	NDE	NDE	<114.7	N/A	
199-N-220	C7307	123.23	Brass Survey Marker - Final Survey Report		26.2	8.0	115.2	NDE	NDE	<115.2	N/A	NDE	NDE	<115.2	N/A	
199-N-221	C7306	123.30	Brass Survey Marker - Final Survey Report		26.9	8.2	115.1	12.0	3.7	119.6	borehole log (GRAM)	NDE	NDE	<115.0	N/A	
199-N-222	C7305	123.13	Brass Survey Marker - Final Survey Report		17.4	5.3	117.8	NDE	NDE	<117.9	N/A	NDE	NDE	<117.9	N/A	
199-N-223	C7304	123.17	Brass Survey Marker - Final Survey Report		26.7	8.1	115.0	14.0	4.3	118.9	borehole log (GRAM)	NDE	NDE	<115.1	N/A	
199-N-224	C7303	123.26	Brass Survey Marker - Final Survey Report		17.5	5.3	117.9	6.0	1.8	121.4	borehole log (GRAM)	NDE	NDE	<118.0	N/A	
199-N-225	C7302	123.40	Brass Survey Marker - Final Survey Report		26.8	8.2	115.2	6.0	1.8	121.6	borehole log (GRAM)	NDE	NDE	<115.2	N/A	
199-N-226	C7301	123.35	Brass Survey Marker - Final Survey Report		16.0	4.9	118.5	0.0	0.0	123.3	borehole log (GRAM)	NDE	NDE	<118.4	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-227	C7300	123.31	Brass Survey Marker - Final Survey Report		27.5	8.4	114.9	2.0	0.6	122.7	borehole log (GRAM)	NDE	NDE	<114.8	N/A	
199-N-228	C7299	123.23	Brass Survey Marker - Final Survey Report		16.1	4.9	118.3	9.0	2.7	120.5	borehole log (GRAM)	NDE	NDE	<118.3	N/A	
199-N-229	C7298	123.21	Brass Survey Marker - Final Survey Report		26.5	8.1	115.1	NDE	NDE	<115.1	N/A	NDE	NDE	<115.1	N/A	
199-N-230	C7297	123.17	Brass Survey Marker - Final Survey Report		15.8	4.8	118.4	NDE	NDE	<118.3	N/A	NDE	NDE	<118.3	N/A	
199-N-231	C7296	123.09	Brass Survey Marker - Final Survey Report		26.2	8.0	115.1	6.0	1.8	121.3	borehole log (GRAM)	NDE	NDE	<115.0	N/A	
199-N-232	C7295	123.07	Brass Survey Marker - Final Survey Report		16.3	5.0	118.1	10.0	3.0	120.0	borehole log (GRAM)	NDE	NDE	<118.1	N/A	
199-N-233	C7294	123.12	Brass Survey Marker - Final Survey Report		27.3	8.3	114.8	NDE	NDE	<114.8	N/A	NDE	NDE	<114.8	N/A	
199-N-234	C7293	123.21	Brass Survey Marker - Final Survey Report		16.8	5.1	118.1	8.0	2.4	120.8	borehole log (GRAM)	NDE	NDE	<118.0	N/A	
199-N-235	C7328	121.94	Brass Survey Marker - Final Survey Report		16.2	4.9	117.0	9.0	2.7	119.2	borehole log (GRAM)	NDE	NDE	<117.0	N/A	
199-N-236	C7329	121.97	Brass Survey Marker - Final Survey Report		26.6	8.1	113.9	13.0	4.0	118.0	borehole log (GRAM)	NDE	NDE	<113.8	N/A	
199-N-237	C7330	122.07	Brass Survey Marker - Final Survey Report		16.8	5.1	116.9	NDE	NDE	<116.9	N/A	NDE	NDE	<116.9	N/A	
199-N-238	C7331	122.12	Brass Survey Marker - Final Survey Report		26.7	8.1	114.0	16.0	4.9	117.2	borehole log (GRAM)	NDE	NDE	<113.9	N/A	
199-N-239	C7332	122.17	Brass Survey Marker - Final Survey Report		16.9	5.2	117.0	10.0	3.0	119.1	borehole log (GRAM)	NDE	NDE	<117.0	N/A	
199-N-240	C7333	122.22	Brass Survey Marker - Final Survey Report		26.4	8.0	114.2	2.0	0.6	121.6	borehole log (GRAM)	NDE	NDE	<114.1	N/A	
199-N-241	C7334	122.25	Brass Survey Marker - Final Survey Report		16.4	5.0	117.2	NDE	NDE	<117.2	N/A	NDE	NDE	<117.2	N/A	
199-N-242	C7335	122.24	Brass Survey Marker - Final Survey Report		14.5	4.4	117.8	3.0	0.9	121.3	borehole log (GRAM)	NDE	NDE	<117.8	N/A	
199-N-243	C7336	122.28	Brass Survey Marker - Final Survey Report		16.9	5.2	117.1	NDE	NDE	<117.1	N/A	NDE	NDE	<117.1	N/A	
199-N-244	C7337	122.28	Brass Survey Marker - Final Survey Report		26.2	8.0	114.3	4.0	1.2	121.1	borehole log (GRAM)	NDE	NDE	<114.3	N/A	
199-N-245	C7338	122.27	Brass Survey Marker - Final Survey Report		17.3	5.3	117.0	3.0	0.9	121.4	borehole log (GRAM)	NDE	NDE	<117.0	N/A	
199-N-246	C7339	122.28	Brass Survey Marker - Final Survey Report		27.0	8.2	114.0	10.0	3.0	119.2	borehole log (GRAM)	NDE	NDE	<114.0	N/A	
199-N-247	C7340	122.26	Brass Survey Marker - Final Survey Report		18.0	5.5	116.8	5.0	1.5	120.7	borehole log (GRAM)	NDE	NDE	<116.7	N/A	

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
199-N-248	C7341	122.22	Brass Survey Marker - Final Survey Report		26.8	8.2	114.0	6.0	1.8	120.4	borehole log (GRAM)	NDE	NDE	<114.0	N/A	
199-N-249	C7342	122.17	Brass Survey Marker - Final Survey Report		17.1	5.2	117.0	2.0	0.6	121.6	borehole log (GRAM)	NDE	NDE	<116.9	N/A	
199-N-250	C7343	122.14	Brass Survey Marker - Final Survey Report		27.0	8.2	113.9	2.0	0.6	121.5	borehole log (GRAM)	NDE	NDE	<113.8	N/A	
199-N-251	C7344	122.11	Disc Z		17.0	5.2	116.9	0.0	0.0	122.1	borehole log (GRAM)	NDE	NDE	<116.9	N/A	
199-N-252	C7345	122.08	Disc Z		26.5	8.1	114.0	6.0	1.8	120.2	borehole log (GRAM)	NDE	NDE	<114.0	N/A	
199-N-253	C7346	122.03	Disc Z		17.2	5.2	116.8	0.0	0.0	122.0	borehole log (GRAM)	NDE	NDE	<116.7	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-254	C7347	121.93	Disc Z		26.5	8.1	113.9	2.0	0.6	121.3	borehole log (GRAM)	NDE	NDE	<113.7	N/A	
199-N-255	C7348	121.90	Disc Z		17.2	5.2	116.7	2.0	0.6	121.3	borehole log (GRAM)	NDE	NDE	<116.5	N/A	
199-N-256	C7349	121.84	Disc Z		27.1	8.3	113.6	2.0	0.6	121.2	borehole log (GRAM)	NDE	NDE	<113.4	N/A	
199-N-257	C7350	121.82	Disc Z		17.0	5.2	116.6	0.0	0.0	121.8	borehole log (GRAM)	NDE	NDE	<116.5	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-258	C7351	121.78	Disc Z		26.6	8.1	113.7	0.0	0.0	121.8	borehole log (GRAM)	NDE	NDE	<113.6	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-259	C7352	121.82	Disc Z		17.2	5.2	116.6	0.0	0.0	121.8	borehole log (GRAM)	NDE	NDE	<116.5	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-260	C7353	121.82	Disc Z		26.4	8.0	113.8	2.0	0.6	121.2	borehole log (GRAM)	NDE	NDE	<113.7	N/A	
199-N-261	C7354	121.86	Disc Z		17.7	5.4	116.5	0.0	0.0	121.9	borehole log (GRAM)	NDE	NDE	<116.4	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-262	C7355	121.88	Disc Z		26.3	8.0	113.9	2.0	0.6	121.3	borehole log (GRAM)	NDE	NDE	<113.8	N/A	
199-N-263	C7356	121.88	Disc Z		17.7	5.4	116.5	2.0	0.6	121.3	borehole log (GRAM)	NDE	NDE	<116.4	N/A	
199-N-264	C7357	121.86	Disc Z		26.6	8.1	113.8	2.0	0.6	121.3	borehole log (GRAM)	NDE	NDE	<113.7	N/A	
199-N-265	C7358	121.87	Disc Z		17.3	5.3	116.6	0.0	0.0	121.9	borehole log (GRAM)	NDE	NDE	<116.5	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-266	C7359	121.87	Disc Z		26.9	8.2	113.7	1.0	0.3	121.6	borehole log (GRAM)	NDE	NDE	<113.5	N/A	
199-N-267	C7360	121.86	Disc Z		17.1	5.2	116.6	1.0	0.3	121.6	borehole log (GRAM)	NDE	NDE	<116.6	N/A	
199-N-268	C7361	121.87	Disc Z		26.9	8.2	113.7	2.0	0.6	121.3	borehole log (GRAM)	NDE	NDE	<113.6	N/A	
199-N-269	C7362	121.84	Disc Z		17.5	5.3	116.5	0.0	0.0	121.8	borehole log (GRAM)	NDE	NDE	<116.4	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-270	C7363	121.81	Disc Z		26.5	8.1	113.7	0.0	0.0	121.8	borehole log (GRAM)	NDE	NDE	<113.7	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-271	C7364	121.85	Disc Z - Final Survey		18.0	5.5	116.4	0.0	0.0	121.8	borehole log (GRAM)	NDE	NDE	<116.3	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-272	C7365	121.90	Disc Z		26.8	8.2	113.7	0.0	0.0	121.9	borehole log (GRAM)	NDE	NDE	<113.6	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-273	C7366	121.93	Disc Z		17.7	5.4	116.5	2.0	0.6	121.3	borehole log (GRAM)	NDE	NDE	<116.4	N/A	
199-N-274	C7367	121.94	Disc Z		26.0	7.9	114.0	NDE	NDE	<113.9	N/A	NDE	NDE	<113.9	N/A	
199-N-275	C7368	121.95	Disc Z		17.5	5.3	116.6	3.0	0.9	121.0	borehole log (GRAM)	NDE	NDE	<116.5	N/A	
199-N-276	C7369	121.93	Disc Z - Final Survey		26.3	8.0	113.9	NDE	NDE	<113.8	N/A	NDE	NDE	<113.8	N/A	
199-N-277	C7370	121.83	Disc Z		17.9	5.5	116.4	2.0	0.6	121.2	borehole log (GRAM)	NDE	NDE	<116.3	N/A	
199-N-278	C7371	121.76	Disc Z - Final Survey		26.4	8.0	113.7	2.0	0.6	121.2	borehole log (GRAM)	NDE	NDE	<113.6	N/A	
199-N-279	C7372	121.73	Disc Z		17.7	5.4	116.3	1.0	0.3	121.4	borehole log (GRAM)	NDE	NDE	<116.4	N/A	
199-N-280	C7373	121.69	Disc Z		27.0	8.2	113.5	NDE	NDE	<113.4	N/A	NDE	NDE	<113.4	N/A	
199-N-281	C7374	121.66	Disc Z		18.1	5.5	116.1	4.0	1.2	120.4	borehole log (GRAM)	NDE	NDE	<166.1	N/A	
199-N-282	C7375	121.67	Disc Z		26.8	8.2	113.5	4.0	1.2	120.4	borehole log (GRAM)	NDE	NDE	<113.4	N/A	
199-N-283	C7376	121.62	Disc Z		17.7	5.4	116.2	4.5	1.4	120.2	borehole log (GRAM)	NDE	NDE	<116.2	N/A	
199-N-284	C7377	121.61	Disc Z		25.9	7.9	113.7	4.0	1.2	120.4	borehole log (GRAM)	NDE	NDE	<113.7	N/A	
199-N-285	C7378	121.65	Brass Survey Marker - Final Survey Report		17.7	5.4	116.3	3.0	0.9	120.7	borehole log (GRAM)	NDE	NDE	<116.2	N/A	
199-N-286	C7379	121.68	Brass Survey Marker - Final Survey Report		27.4	8.4	113.3	5.0	1.5	120.2	borehole log (GRAM)	NDE	NDE	<113.3	N/A	
199-N-287	C7380	121.65	Brass Survey Marker - Final Survey Report		17.6	5.4	116.3	4.0	1.2	120.4	borehole log (GRAM)	NDE	NDE	<116.3	N/A	
199-N-288	C7381	121.67	Brass Survey Marker - Final Survey Report		27.1	8.3	113.4	4.5	1.4	120.3	borehole log (GRAM)	NDE	NDE	<113.4	N/A	
199-N-289	C7382	121.74	Brass Survey Marker - Final Survey Report		17.0	5.2	116.6	3.0	0.9	120.8	borehole log (GRAM)	NDE	NDE	<116.5	N/A	
199-N-290	C7383	121.79	Brass Survey Marker - Final Survey Report		27.5	8.4	113.4	2.0	0.6	121.2	borehole log (GRAM)	NDE	NDE	<113.3	N/A	
199-N-291	C7384	121.77	Brass Survey Marker - Final Survey Report		17.3	5.3	116.5	0.0	0.0	121.8	borehole log (GRAM)	NDE	NDE	<116.4	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-292	C7385	121.81	Brass Survey Marker - Final Survey Report		27.5	8.4	113.4	4.0	1.2	120.6	borehole log (GRAM)	NDE	NDE	<113.4	N/A	
199-N-293	C7386	121.80	Brass Survey Marker - Final Survey Report		17.6	5.4	116.4	5.0	1.5	120.3	borehole log (GRAM)	NDE	NDE	<116.3	N/A	
199-N-294	C7387	121.86	Brass Survey Marker - Final Survey Report		27.1	8.3	113.6	6.0	1.8	120.0	borehole log (GRAM)	NDE	NDE	<113.5	N/A	
199-N-295	C7388	121.92	Brass Survey Marker - Final Survey Report		17.9	5.5	116.5	6.0	1.8	120.1	borehole log (GRAM)	NDE	NDE	<116.4	N/A	
199-N-296	C7389	121.93	Brass Survey Marker - Final Survey Report		27.2	8.3	113.6	16.0	4.9	117.1	borehole log (GRAM)	NDE	NDE	<113.6	N/A	
199-N-297	C7390	121.95	Brass Survey Marker - Final Survey Report		17.9	5.5	116.5	7.0	2.1	119.8	borehole log (GRAM)	NDE	NDE	<116.4	N/A	
199-N-298	C7391	121.97	Brass Survey Marker - Final Survey Report		27.4	8.4	113.6	5.0	1.5	120.4	borehole log (GRAM)	NDE	NDE	<113.6	N/A	
199-N-299	C7392	121.97	Brass Survey Marker - Final Survey Report		18.0	5.5	116.5	6.0	1.8	120.1	borehole log (GRAM)	NDE	NDE	<116.4	N/A	
199-N-300	C7393	121.96	Brass Survey Marker - Final Survey Report		27.2	8.3	113.7	16.0	4.9	117.1	borehole log (GRAM)	NDE	NDE	<113.6	N/A	
199-N-301	C7394	121.98	Brass Survey Marker - Final Survey Report		17.5	5.3	116.6	NDE	NDE	<116.6	N/A	NDE	NDE	<116.6	N/A	
199-N-302	C7395	121.99	Brass Survey Marker - Final Survey Report		27.1	8.3	113.7	18.0	5.5	116.5	borehole log (GRAM)	NDE	NDE	<113.7	N/A	
199-N-303	C7396	122.00	Brass Survey Marker - Final Survey Report		16.9	5.2	116.8	3.0	0.9	121.1	borehole log (GRAM)	NDE	NDE	<116.8	N/A	

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
199-N-304	C7397	121.98	Brass Survey Marker - Final Survey Report		27.9	8.5	113.5	NDE	NDE	<113.5	N/A	NDE	NDE	<113.5	N/A	
199-N-305	C7398	121.99	Brass Survey Marker - Final Survey Report		17.9	5.5	116.5	6.0	1.8	120.2	borehole log (GRAM)	NDE	NDE	<116.5	N/A	
199-N-306	C7399	121.95	Brass Survey Marker - Final Survey Report		27.6	8.4	113.5	5.0	1.5	120.4	borehole log (GRAM)	NDE	NDE	<113.4	N/A	
199-N-307	C7400	121.95	Brass Survey Marker - Final Survey Report		17.1	5.2	116.7	3.0	0.9	121.0	borehole log (GRAM)	NDE	NDE	<116.7	N/A	
199-N-308	C7401	121.97	Brass Survey Marker - Final Survey Report		26.9	8.2	113.8	3.0	0.9	121.1	borehole log (GRAM)	NDE	NDE	<113.7	N/A	
199-N-309	C7402	122.00	Brass Survey Marker - Final Survey Report		17.8	5.4	116.6	2.0	0.6	121.4	borehole log (GRAM)	NDE	NDE	<116.5	N/A	
199-N-310	C7403	121.99	Brass Survey Marker - Final Survey Report		27.5	8.4	113.6	10.0	3.0	118.9	borehole log (GRAM)	NDE	NDE	<113.6	N/A	
199-N-311	C7404	121.94	Brass Survey Marker - Final Survey Report		17.6	5.4	116.6	3.0	0.9	121.0	borehole log (GRAM)	NDE	NDE	<116.5	N/A	
199-N-312	C7405	121.89	Brass Survey Marker - Final Survey Report		28.0	8.5	113.4	6.0	1.8	120.1	borehole log (GRAM)	NDE	NDE	<113.3	N/A	
199-N-313	C7406	121.85	Brass Survey Marker - Final Survey Report		17.2	5.2	116.6	2.0	0.6	121.2	borehole log (GRAM)	NDE	NDE	<116.6	N/A	
199-N-314	C7407	121.87	Brass Survey Marker - Final Survey Report		26.7	8.1	113.7	4.0	1.2	120.7	borehole log (GRAM)	NDE	NDE	<113.6	N/A	
199-N-315	C7408	121.89	Brass Survey Marker - Final Survey Report		17.5	5.3	116.6	3.0	0.9	121.0	borehole log (GRAM)	NDE	NDE	<116.5	N/A	
199-N-316	C7409	121.91	Brass Survey Marker - Final Survey Report		27.6	8.4	113.5	NDE	NDE	<113.5	N/A	NDE	NDE	<113.5	N/A	
199-N-317	C7410	121.87	Brass Survey Marker - Final Survey Report		17.5	5.3	116.5	NDE	NDE	<116.5	N/A	NDE	NDE	<116.5	N/A	
199-N-318	C7411	121.88	Brass Survey Marker - Final Survey Report		26.8	8.2	113.7	2.0	0.6	121.3	borehole log (GRAM)	NDE	NDE	<113.6	N/A	
199-N-319	C7412	121.88	Brass Survey Marker - Final Survey Report		16.9	5.2	116.7	2.0	0.6	121.3	borehole log (GRAM)	NDE	NDE	<116.7	N/A	
199-N-320	C7413	121.88	Brass Survey Marker - Final Survey Report		27.3	8.3	113.6	3.0	0.9	121.0	borehole log (GRAM)	NDE	NDE	<113.5	N/A	
199-N-321	C7414	121.91	Brass Survey Marker - Final Survey Report		17.9	5.5	116.5	3.0	0.9	121.0	borehole log (GRAM)	NDE	NDE	<116.4	N/A	
199-N-322	C7415	121.91	Brass Survey Marker - Final Survey Report		26.6	8.1	113.8	4.0	1.2	120.7	borehole log (GRAM)	NDE	NDE	<113.8	N/A	
199-N-323	C7416	122.02	Brass Survey Marker - Final Survey Report		17.2	5.2	116.8	2.0	0.6	121.4	borehole log (GRAM)	NDE	NDE	<116.7	N/A	
199-N-324	C7417	122.08	Brass Survey Marker - Final Survey Report		26.8	8.2	113.9	2.0	0.6	121.5	borehole log (GRAM)	NDE	NDE	<113.9	N/A	
199-N-325	C7418	122.07	Brass Survey Marker - Final Survey Report		18.1	5.5	116.6	3.0	0.9	121.2	borehole log (GRAM)	NDE	NDE	<116.5	N/A	
199-N-326	C7419	122.09	Brass Survey Marker - Final Survey Report		26.5	8.1	114.0	2.0	0.6	121.5	borehole log (GRAM)	NDE	NDE	<113.9	N/A	
199-N-327	C7420	122.09	Brass Survey Marker - Final Survey Report		17.9	5.5	116.6	2.0	0.6	121.5	borehole log (GRAM)	NDE	NDE	<116.6	N/A	
199-N-328	C7421	122.10	Brass Survey Marker - Final Survey Report		26.0	7.9	114.2	3.0	0.9	121.2	borehole log (GRAM)	NDE	NDE	<114.4	N/A	
199-N-329	C7422	122.12	Brass Survey Marker - Final Survey Report		16.8	5.1	117.0	3.0	0.9	121.2	borehole log (GRAM)	NDE	NDE	<116.9	N/A	
199-N-330	C7423	122.09	Brass Survey Marker - Final Survey Report		25.9	7.9	114.2	3.0	0.9	121.2	borehole log (GRAM)	NDE	NDE	<114.1	N/A	
199-N-331	C7424	122.09	Brass Survey Marker - Final Survey Report		18.6	5.7	116.4	3.5	1.1	121.0	borehole log (GRAM)	NDE	NDE	<116.3	N/A	
199-N-332	C7425	122.14	Brass Survey Marker - Final Survey Report		26.3	8.0	114.1	0.0	0.0	122.1	borehole log (GRAM)	NDE	NDE	<114.0	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-333	C7426	122.16	Brass Survey Marker - Final Survey Report		17.3	5.3	116.9	2.0	0.6	121.5	borehole log (GRAM)	NDE	NDE	<116.8	N/A	
199-N-334	C7427	122.15	Brass Survey Marker - Final Survey Report		26.3	8.0	114.1	2.0	0.6	121.5	borehole log (GRAM)	NDE	NDE	<114.0	N/A	
199-N-335	C7428	122.13	Brass Survey Marker - Final Survey Report		17.3	5.3	116.9	3.0	0.9	121.2	borehole log (GRAM)	NDE	NDE	<116.7	N/A	
199-N-336	C7429	122.14	Brass Survey Marker - Final Survey Report		26.8	8.2	114.0	4.0	1.2	120.9	borehole log (GRAM)	NDE	NDE	<113.9	N/A	
199-N-337	C7430	122.13	Brass Survey Marker - Final Survey Report		17.4	5.3	116.8	3.0	0.9	121.2	borehole log (GRAM)	NDE	NDE	<116.7	N/A	
199-N-338	C7431	122.10	Brass Survey Marker - Final Survey Report		27.0	8.2	113.9	3.0	0.9	121.2	borehole log (GRAM)	NDE	NDE	<113.8	N/A	
199-N-339	C7432	122.10	Brass Survey Marker - Final Survey Report		17.4	5.3	116.8	6.0	1.8	120.3	borehole log (GRAM)	NDE	NDE	<116.7	N/A	
199-N-340	C7433	122.08	Brass Survey Marker - Final Survey Report		25.9	7.9	114.2	6.0	1.8	120.2	borehole log (GRAM)	NDE	NDE	<114.1	N/A	
199-N-341	C7434	122.15	Brass Survey Marker - Final Survey Report		17.1	5.2	116.9	3.0	0.9	121.2	borehole log (GRAM)	NDE	NDE	<116.8	N/A	
199-N-342	C7435	122.20	Brass Survey Marker - Final Survey Report		28.4	8.7	113.5	n/a			borehole log (GRAM)	NDE	NDE	<113.4	N/A	
199-N-343	C7436	122.25	Brass Survey Marker - Final Survey Report		17.4	5.3	117.0	3.0	0.9	121.3	borehole log (GRAM)	NDE	NDE	<116.9	N/A	
199-N-344	C7437	122.27	Brass Survey Marker - Final Survey Report		27.4	8.4	113.9	2.0	0.6	121.7	borehole log (GRAM)	NDE	NDE	<113.8	N/A	
199-N-345	C7438	122.21	Brass Survey Marker - Final Survey Report		18.1	5.5	116.7	3.0	0.9	121.3	borehole log (GRAM)	NDE	NDE	<116.7	N/A	
199-N-346	C7442	123.61	Brass Survey Marker - Final Survey Report		26.8	8.2	115.4	7.0	2.1	121.5	borehole log (GRAM)	NDE	NDE	<115.4	N/A	
199-N-347	C7441	123.13	Brass Survey Marker - Final Survey Report		26.8	8.2	115.0	7.0	2.1	121.0	borehole log (GRAM)	NDE	NDE	<114.9	N/A	

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
199-N-348	C7440	123.19	Brass Survey Marker - Final Survey Report		26.5	8.1	115.1	2.0	0.6	122.6	borehole log (GRAM)	NDE	NDE	<115.0	N/A	
199-N-349	C7439	123.17	Brass Survey Marker - Final Survey Report		26.7	8.1	115.0	9.0	2.7	120.4	borehole log (GRAM)	NDE	NDE	<115.0	N/A	
199-N-350	C7443	122.16	Brass Survey Marker - Final Survey Report		26.9	8.2	114.0	11.5	3.5	118.7	borehole log (GRAM)	NDE	NDE	<113.9	N/A	
199-N-351	C7444	122.30	Brass Survey Marker - Final Survey Report		26.9	8.2	114.1	6.0	1.8	120.5	borehole log (GRAM)	NDE	NDE	<114.0	N/A	
199-N-352	C7445	122.18	Brass Survey Marker - Final Survey Report		27.0	8.2	114.0	4.0	1.2	121.0	borehole log (GRAM)	NDE	NDE	<113.9	N/A	
199-N-353	C7446	121.92	Disc Z		26.4	8.0	113.9	0.0	0.0	121.9	borehole log (GRAM)	NDE	NDE	<113.8	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-354	C7447	121.93	Disc Z		26.9	8.2	113.7	3.0	0.9	121.0	borehole log (GRAM)	NDE	NDE	<113.7	N/A	
199-N-355	C7448	121.96	Disc Z		26.6	8.1	113.9	1.0	0.3	121.7	borehole log (GRAM)	NDE	NDE	<113.8	N/A	
199-N-356	C7449	122.00	Disc Z		25.6	7.8	114.2	0.0	0.0	122.0	borehole log (GRAM)	NDE	NDE	<114.2	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-357	C7450	121.83	Disc Z		26.8	8.2	113.7	NDE	NDE	<113.6	N/A	NDE	NDE	<113.6	N/A	
199-N-358	C7451	121.73	Brass Survey Marker - Final Survey Report		26.5	8.1	113.6	NDE	NDE	<113.6	N/A	NDE	NDE	<113.6	N/A	
199-N-359	C7452	121.93	Brass Survey Marker - Final Survey Report		26.9	8.2	113.7	10.0	3.0	118.9	borehole log (GRAM)	NDE	NDE	<113.7	N/A	
199-N-360	C7453	122.09	Brass Survey Marker - Final Survey Report		26.5	8.1	114.0	10.0	3.0	119.0	borehole log (GRAM)	NDE	NDE	<113.9	N/A	
199-N-361	C7454	122.08	Brass Survey Marker - Final Survey Report		27.0	8.2	113.9	6.0	1.8	120.3	borehole log (GRAM)	NDE	NDE	<113.8	N/A	
199-N-362	C7455	122.11	Brass Survey Marker - Final Survey Report		27.1	8.3	113.8	4.0	1.2	120.9	borehole log (GRAM)	NDE	NDE	<113.8	N/A	
199-N-363	C7456	121.99	Brass Survey Marker - Final Survey Report		26.9	8.2	113.8	4.0	1.2	120.8	borehole log (GRAM)	NDE	NDE	<113.8	N/A	
199-N-364	C7457	121.91	Brass Survey Marker - Final Survey Report		26.0	7.9	114.0	4.0	1.2	120.7	borehole log (GRAM)	NDE	NDE	<113.9	N/A	
199-N-365	C7458	122.10	Brass Survey Marker - Final Survey Report		26.4	8.0	114.0	2.0	0.6	121.5	borehole log (GRAM)	NDE	NDE	<114.0	N/A	
199-N-366	C7459	122.17	Brass Survey Marker - Final Survey Report		25.5	7.8	114.4	4.0	1.2	121.0	borehole log (GRAM)	NDE	NDE	<114.4	N/A	
199-N-367	C7463	122.21	Brass Survey Marker - Final Survey Report		27.1	8.3	113.9	3.0	0.9	121.3	borehole log (GRAM)	NDE	NDE	<113.9	N/A	
199-N-368	C7460	122.07	Brass Survey Marker - Final Survey Report		26.2	8.0	114.1	14.5	4.4	117.7	borehole log (GRAM)	NDE	NDE	<113.9	N/A	
199-N-369	C7461	122.13	Brass Survey Marker - Final Survey Report		26.2	8.0	114.1	X	X	X	borehole log (GRAM)	NDE	NDE	<114.1	N/A	
199-N-370	C7462	122.14	Brass Survey Marker - Final Survey Report		26.2	8.0	114.2	NDE	NDE	<114.1	N/A	NDE	NDE	<114.1	N/A	RE from surface to TD, Hf/RE contact presumably eroded away
199-N-41	A4689	139.90	TOC (140.657 (m) - 2.5 ft SU		78	23.8	116.1	45.0	13.7	126.2	WCS-driller's note	NDE	NDE	<116.1	N/A	qualitative (approximate) pick based on drillers note
199-N-43	A5831	137.13	TOC (138.047 (m) - 3.0 ft SU Assumed		78	23.8	113.4	38.0	11.6	125.6	Driller & geophysical logs (Williams)	NDE	NDE	<113.4	N/A	qualitative pick based on geophysical logs and drillers note
199-N-5	A5814	139.37	TOC (139.831 (m) - 1.5 ft SU		125	38.1	101.3	X	X	X	N/A	115.0	35.1	104.3	borehole log (GRAM)	Hf/RE not identified in log
199-N-50	A4693	141.75	TOC (142.423 (m) - 2.2 ft SU		86	26.2	115.5	59.0	18.0	123.8	geophysical logs (Williams)	NDE	NDE	<115.5	N/A	qualitative pick based on geophysical logs
199-N-52	A4695	141.90	TOC (142.514 (m) - 2.0 ft SU		76	23.2	118.7	62.0	18.9	123.0	geophysical logs (Williams)	NDE	NDE	<118.7	N/A	qualitative pick based on geophysical logs
199-N-54	A4697	139.77	Disc Z		73	22.3	117.5	49	14.9	124.8	borehole log (GRAM)	NDE	NDE	<117.5	N/A	
199-N-57	A4700	140.06	Disc Z		76	23.2	116.9	57	17.4	122.7	Driller's note	NDE	NDE	<116.9	N/A	
199-N-61	A4705	141.30	Disc Z		67.5	20.6	120.7	59	18.0	123.3	borehole log (GRAM)	NDE	NDE	<120.7	N/A	
199-N-62	A4706	141.82	Disc Z		78.5	23.9	117.9	64	19.5	122.3	borehole log (GRAM)	NDE	NDE	<117.9	N/A	
199-N-66	A4710	142.42	Disc Z		80	24.4	118.0	53	16.2	126.3	borehole log (GRAM)	NDE	NDE	<118.0	N/A	
199-N-69	A4712	140.61	Disc Z		104	31.7	108.9	42.0	12.8	127.8	borehole log (GRAM)	101.0	30.8	109.8	borehole log (GRAM)	
199-N-70	A4713	138.91	Disc Z		104.4	31.8	107.1	37.0	11.3	127.6	borehole log (GRAM)	104.0	31.7	107.2	borehole log (GRAM)	
199-N-71	A4714	141.23	Disc Z		87	26.5	114.7	55	16.8	124.5	borehole log (GRAM)	NDE	NDE	<114.7	N/A	
199-N-75	A4718	139.33	Disc Z		89.6	27.3	112.0	45	13.7	125.6	borehole and geophysical logs (Williams)	NDE	NDE	<112.0	N/A	qualitative RE pick based on geo and geophysical logs
199-N-77	A5442	139.94	Disc Z		103	31.4	108.5	X	X	X	N/A	97	29.6	110.4	N/A	Hf/RE not identified in log
199-N-80	A4720	139.61	Disc Z		125.5	38.3	101.4	49.0	14.9	124.7	borehole and geophysical logs (Williams)	98.0	29.9	109.7	borehole log (GRAM)	qualitative RE pick based on geo and geophysical logs
199-N-8P	A5816	124.46	TOC (124.675 (m) - 0.7 ft SU	Based on 2007 well attribute report	100	30.5	94.0	X	X	X	N/A	52.0	15.9	108.6	borehole log (GRAM)	Hf/RE not identified in log
199-N-91A	A9877	122.55	Disc Z		59	18.0	104.6	2.0	0.6	121.9	borehole log (GRAM)	44.0	13.4	109.1	borehole log (GRAM)	RE interpreted to be present just below road fill at 2 ft bgs
199-N-92A	A9878	122.10	Disc Z		48	14.6	107.5	X	X	X	N/A	42.0	12.8	109.3	borehole log (GRAM)	Hf/RE not identified in log
199-N-93A	A9879	120.79	Disc Z		43	13.1	107.7	X	X	X	N/A	33.1	10.1	110.7	borehole log (GRAM)	Hf/RE not identified in log
199-N-94A	A9880	121.60	Disc Z		33	10.1	111.5	X	X	X	N/A	36.5	11.1	110.5	borehole log (GRAM)	Hf/RE not identified in log
199-N-95A	A9881	121.61	Ground Surface	converted elevation from NGVD29 to NAVD88 using 1.032 (see BHI-01153, Rev. 0, page 3-2.	49	14.9	106.7	14.0	4.3	117.3	borehole log (GRAM)	38.5	11.7	109.9	borehole log (GRAM)	no vertical survey data, elevation from well summary sheet (395.60 ft), assumed to be ground surface
199-N-96A	A9882	123.64	Disc Z		71	21.6	102.0	X	X	X	N/A	60.0	18.3	105.4	borehole log (GRAM)	Hf/RE not identified in log
199-N-97A	A9883	120.85	Disc Z		46	14.0	106.8	4.5	1.4	119.5	borehole log (Williams)	35.0	18.3	102.6	borehole log (Williams)	
699-100-43B	C5647	122.18	Disc Z		35.1	10.7	111.5	NP	NP	NP	N/A	29.5	9.0	113.2	Weekes; DOE/RL-2008-42	RE not present
699-101-45	C5666	121.81	Disc Z		30.8	9.4	112.4	NP	NP	NP	N/A	25.5	7.8	114.0	Weekes; DOE/RL-2008-42	RE not present
699-101-48C	A9102	119.42	TOC - 0.3 ft SU	Based on WCCS	77	23.5	95.9	X	X	X	N/A	49.0	14.9	104.5	Williams; drill log review 2009	Hf/RE not identified in log, "fine yellow sandstone" assumed to be RUM silts
699-52-17	A8832	122.23	TOC (122.838 (m) - 2.0 ft SU	Based on 2011 RPGW	380	115.8	6.4	X	X	X	N/A	90	27.4	94.8	borehole log (GRAM)	Hf/RE not identified in log, basalt at 380 ft bgs
699-52-18A	A8833	125.49	TOC (126.104 (m) - 2.0 ft SU		90	27.4	98.1	X	X	X	N/A	88	26.8	98.7	well summary sheet (GRAM)	Hf/RE not identified in cursory log in WCS
699-52-18C	A8835	125.42	TOC (126.028 (m) - 2.0 ft SU	Based on 1994 RPGW	107	32.6	92.8	X	X	X	N/A	100	30.5	94.9	well summary sheet (GRAM)	Hf/RE not identified in cursory log in WCS
699-54-18C	A8857	123.56	TOC (123.77 (m) - 0.7 ft SU	Based on 1995 RPGW	355	108.2	15.4	X	X	X	N/A	75	22.9	100.7	well summary sheet (GRAM)	Hf/RE not identified in cursory log in WCS
699-54-18E	A8859	121.22	Disc Z		90	27.4	93.8	X	X	X	N/A	79	24.1	97.1	well summary sheet (GRAM)	Hf/RE not identified in cursory log in WCS
699-57-16	A8892	117.29	TOC (118.202 (m) - 3.0 ft SU Assumed		41	12.5	104.8	X	X	X	N/A	38	11.6	105.7	borehole log (GRAM)	Hf/RE not identified in log
699-57-25B	A8894	126.79	TOC (127.553 (m) - 2.5 ft SU		81	24.7	102.1	X	X	X	N/A	79	24.1	102.7	well summary sheet (GRAM)	Hf/RE not identified in log
699-57-29B	A5268	127.27	TOC (127.875 (m) - 2.0 ft SU		81	24.7	102.6	X	X	X	N/A	81	24.7	102.6	Driller's Log (Williams)	Hf/RE not identified in log

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
699-58-24	A5275	127.75	TOC (128.662 (m) - 3.0 ft SU		60	18.3	109.5	NP	NP	NP	N/A	NDE	NDE	NDE	Driller's Log (Williams)	Hf/RE not identified in log
699-59-32	A5276	129.64	TOC (130.342 (m) - 2.3 ft SU		75	22.9	106.8	X	X	X	N/A	NDE	NDE	<106.8	N/A	Hf/RE not identified in cursory log in WCS
699-60-32	A5279	129.67	TOC (130.646 (m) - 3.2 ft SU		85	25.9	103.8	X	X	X	N/A	65	19.8	109.9	well summary sheet (Hartman)	RUM top picked at first clay
699-60-57	A5280	143.44	Disc Z		155	47.2	96.2	X	X	X	N/A	96	29.3	114.2	well summary sheet (GRAM)	Hf/RE not identified in log; basalt encountered at 145 ft bgs
699-60-60	A5282	156.36	Disc Z		128	39.0	117.3	60	18.3	138.1	well summary sheet (GRAM)	98	29.9	126.5	well summary sheet (GRAM)	basalt at 128 ft, RE interpreted to be top of finer sand unit
699-61-26A	A8930	125.12	TOC (126.03 (m) - 3 ft SU Assumed		363	110.6	14.5	24	7.3	117.8	borehole log (GRAM)	74	22.6	102.6	borehole log (GRAM)	Note: log shows depths to bottoms, not tops
699-61-37	A5283	135.06	TOC (136.062 (m) - 3.3 ft SU		76	23.2	111.9	X	X	X	N/A	NDE	NDE	<114.1		
699-61-41	A5284	130.82	TOC (131.793 (m) - 3.2 ft SU		52	15.8	115.0	X	X	X	N/A	40	12.2	118.6	well summary sheet (GRAM)	Hf/RE not identified in cursory log in WCS
699-61-62	A5285	151.76	Disc Z		188	57.3	94.5	X	X	X	N/A	NP	NP	NP	N/A	basalt at 177.8 ft bgs, RUM not present, Hf/RE contact not identified
699-61-66	A5286	159.68	TOC (160.194 (m) - 1.7 ft SU		225	68.6	91.1	X	X	X	N/A	NP	NP	NP	N/A	basalt at 216 ft bgs, RUM not present, Hf/RE contact not identified
699-62-31	A5287	132.42	TOC (133.336 (m) - 3.0 ft SU		84	25.6	106.8	X	X	X	N/A	75	22.9	109.6	well summary sheet (Hartman)	RUM top uncertain; changed from gravel to sand and silt
699-62-43A	A5288	132.20	TOC (132.811 (m) - 2.0 ft SU		78	23.8	108.4	X	X	X	N/A	66	20.1	112.1	well summary sheet (M. Hartman interp)	Hf/RE not identified in log
699-62-43F	A8944	129.31	TOC (130.089 (m) - 2.55 ft SU		81	24.7	104.6	X	X	X	N/A	70	21.3	108.0	well summary sheet (M. Hartman interp)	Hf/RE not identified in log
699-63-25A	A5289	121.23	TOC (121.471 (m) - 0.8 ft SU		110	33.5	87.7	X	X	X	N/A	62	18.9	102.3	well summary sheet (GRAM)	Hf/RE not identified in cursory log in well construction and completion summary
699-63-51	A5290	129.48	TOC (130.409 (m) - 3.06 ft SU		36	11.0	118.5	X	X	X	N/A	25	7.6	121.9	well summary sheet (GRAM)	Hf/RE not identified in cursory log in well construction and completion summary
699-63-55	A5291	130.19	TOC (131.01 (m) - 2.7 ft SU		125	38.1	92.1	65	19.8	110.4	well summary sheet (GRAM)	82	25.0	105.2	well summary sheet (GRAM)	RE top interpreted to be top of sand unit
699-63-58	A5292	150.10	TOC (150.919 (m) - 2.7 ft SU	Based on 1993 RPGW	133	40.5	109.6	110	33.5	116.6	well summary sheet (GRAM)	NP	NP	NP	Driller's log	RE top interpreted to be first cemented interval; Basalt at 120 ft
699-63-89	A8956	156.24	TOC (157.241 (m) - 3.3 ft SU		220	67.1	89.2	100	30.5	125.8	SGW-44022, geophysical logs (GRAM)	NP	NP	NP	N/A	neutron, density, and gamma logs all show strong discontinuity at 100 ft bgs, SGW-44022 (from DOE/RL-93-37) indicates RE found at depth of 110 ft bgs, well drilled to basalt at 209 ft bgs, no evidence of RUM
699-63-90	A5293	156.28	TOC (156.855 (m) - 1.9 ft SU		253	77.1	79.2	105	32.0	124.3	geophysical logs (GRAM)	NP?	NP?	NP?	driller' log unclear	SGW-44022 indicates RE at 135 ft bgs (from DOE/RL-93-37), nothing in cursory log in as-built to support this interpretation. Modest discontinuities in gamma, neutron, and density logs at 105 ft bgs interpreted to represent the top of the RE. Basalt at 238 ft.
699-63-92	A5294	151.84	TOC (152.63 (m) - 2.6 ft SU		186	56.7	95.1	X	X	X	N/A	NP	NP	NP	N/A	basalt at 150 ft bgs, RUM not present, Hf/RE contact not identified
699-63-95	A8958	148.33	TOC (148.776 (m) - 1.45 ft SU		707	215.5	-67.2	X	X	X	N/A	NP	NP	NP	N/A	78 ft to basalt.
699-64-27	A5295	127.04	TOC (127.284 (m) - 0.8 ft SU		84	25.6	101.4	X	X	X	N/A	74	22.6	104.5	well summary sheet (GRAM)	Hf/RE not identified in cursory log in WCS
699-65-50	A5300	142.57	TOC (143.365 (m) - 2.6 ft SU		585	178.3	-35.7	X	X	X	N/A	115	35.1	107.5	well construction summary (GRAM)	Hf/RE not identified in log
699-65-72	A5302	164.97	TOC (165.676 (m) - 2.3 ft SU		216	65.8	99.1	X	X	X	N/A	X	X	X	N/A	No log available
699-65-83	A5303	148.10	TOC (149.047 (m) - 3.1 ft SU		121	36.9	111.2	85	25.9	122.2	geophysical logs (GRAM)	NDE	NDE	<111.2	N/A	SGW-444022 indicates RE at 97 ft bgs (from DOE/RL-93-37), nothing in log in as-built to support this interpretation; discontinuities in density log at 85 ft bgs, neutron log at 82 ft bgs, and gamma log at 87 ft bgs are interpreted to represent top of RE
699-65-95	A5304	137.91	TOC (138.858 (m) - 3.11 ft SU		106	32.3	105.6	X	X	X	N/A	NDE	NDE	<105.6	N/A	Basalt at 56 ft bgs
699-66-103	A5305	142.04	TOC (142.346 (m) - 1.0 ft SU		128	39.0	103.0	X	X	X	N/A	NDE	NDE	<103.0	N/A	Construciton Summary states pump test 26Jan44 540 gpm w/0.6-ft drawdown.
699-66-23	A5306	119.03	TOC (119.593 (m) - 1.85 ft SU		100	30.5	88.5	X	X	X	N/A	55	16.8	102.3	well summary sheet (GRAM)	Hf/RE not identified in cursory log in WCS
699-66-38	A5307	133.30	TOC (133.975 (m) - 2.2 ft SU		150	45.7	87.6	X	X	X	N/A	27	8.2	125.1	well summary sheet (GRAM)	Hf/RE not identified in cursory log in WCS
699-66-39	A5308	138.47	TOC (139.325 (m) - 2.8 ft SU	Based on 1993 RPGW	90	27.4	111.0	X	X	X	N/A	42	12.8	125.7	well summary sheet (GRAM)	Hf/RE not identified in cursory log in WCS
699-66-58	A5309	153.44	TOC (154.402 (m) - 3.16 ft SU		112.5	34.3	119.1	X	X	X	N/A	X	X	X	N/A	Hf/RE not identified in cursory log in WCS
699-66-64	A5310	154.31	TOC (155.194 (m) - 2.9 ft SU		118	36.0	118.3	X	X	X	N/A	X	X	X		
699-66-91	A5311	142.62	TOC (143.566 (m) - 3.1 ft SU		190	57.9	84.7	78	23.8	118.8	geophysical logs (GRAM)	NP	NP	NP	N/A	SGW-44022 indicates possible RE at 57 ft bgs, cursory log in as-built does not support this interpretation. Neutron and density logs show discontinuities at 78 ft bgs (matching a lithology change) interpreted as top of RE. Basalt at 98 ft.
699-67-51	A5312	160.21	TOC (160.884 (m) - 2.2 ft SU		250	76.2	84.0	145	44.2	116.0	well construction summary (GRAM)	210	64.0	96.2	well construction summary (GRAM)	
699-67-77	A8965	149.74	TOC [150.655 (m) assumed] - 3 ft SU (assumed)		X	X	X	X	X	X	N/A	X	X	X	N/A	No log available
699-67-86	A5313	144.47	TOC (145.016 (m) - 1.8 ft SU		467	142.3	2.1	X	X	X	geophysical logs (GRAM)	247	75.3	69.2	well summary sheet (GRAM)	SGW-44022 indicates RE at 79 ft bgs (from DOE/RL-93-37), cursory log in as-built does not support this interpretation, RUM assumed to be first silt layer at 247 ft bgs
699-67-98	A5314	139.17	TOC (139.84 (m) - 2.2 ft SU	Based on 1993 RPGW	185	56.4	82.8	X	X	X	N/A	129	39.3	99.9	well summary sheet (GRAM)	Hf/RE not identified in log; basalt at 185 ft bgs
699-68-105	A5315	138.93	TOC (139.45 (m) - 1.7 ft SU		94	28.7	110.3	X	X	X	N/A	NDE	NDE	<110.3	N/A	
699-69-45	A8967	148.66	TOC (149.432 (m) - 2.53 ft SU		300	91.4	57.2	X	X	X	N/A	135	41.1	107.5	well construction summary (GRAM)	Hf/RE not identified in log
699-71-30	A5320	122.67	TOC (123.132 (m) - 1.5 ft SU		150	45.7	77.0	X	X	X	N/A	37.0	11.3	111.4	well construction summary (GRAM)	Hf/RE not identified in log
699-71-52	A5321	159.94	TOC (160.427 (m) - 1.6 ft SU		210	64.0	95.9	X	X	X	N/A	175	53.3	106.6	well construction summary (GRAM)	Hf/RE not identified in log
699-71-77	A5322	144.23	TOC (144.961 (m) - 2.4 ft SU		300	91.4	52.8	80.0	24.4	119.8	geophysical logs (GRAM)	180	54.9	89.4	well summary sheet (GRAM)	RE interpretation of 94 ft bgs in SGW-44022 (from DOE/RL-93-67) not supported by cursory log in as-built or by geophysical log;, neutron and gamma logs show a discontinuity at 80 ft bgs, which is interpreted to represent the top of the RE; RUM interpretation from borehole log is 3 ft deeper than depth shown in SGW-44022
699-71-85	A8972	127.26	TOC [128.172 (m) assumed] - 3 ft SU (assumed)		X	X	X	X	X	X	N/A	X	X	X	N/A	No log available. Old dug well; filled in
699-72-73	A5323	147.55	TOC (148.125 (m) - 1.9 ft SU		200	61.0	86.6	90	27.4	120.1	well summary sheet (GRAM)	167	50.9	96.6	well summary sheet (GRAM)	RE interpreted to be cemented sediments at 90 ft bgs
699-72-88	A5324	132.37	TOC (133.099 (m) - 2.4 ft SU		X	X	X	X	X	X	N/A	X	X	X	N/A	No log available

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
699-72-92	A5325	137.51	TOC (138.054 (m) - 1.8 ft SU	Based on 1997 RPGW	200	61.0	76.5	155	47.2	90.3	SGW-44022	NDE	NDE	<72.2	N/A	based on cemented gravels described in cursory drill log in as-built, seems quite deep and interpretation may not be correct, no other useful data (e.g., geophysical logs, etc.)
699-73-61	A5327	162.50	TOC (163.014 (m) - 1.7 ft SU		150	45.7	116.8	X	X	X	N/A	NDE	NDE	<116.8	N/A	borehole did not reach RUM, Hf/RE not identified in log
699-74-23	A8975	114.90	TOC (115.819 (m) - 3.0 ft SU Assumed		50	15.2	99.7	X	X	X	N/A	25.0	7.6	107.3	borehole log (GRAM)	Hf/RE not identified in cursory borehole log
699-74-44	A5328	136.28	TOC (136.703 (m) - 1.4 ft SU		150	45.7	90.6	X	X	X	N/A	55.0	16.8	119.5	Williams; well log	Hf/RE not identified in log
699-74-48	A5329	148.88	TOC (149.417 (m) - 1.75 ft SU		150	45.7	103.2	X	X	X	N/A	124.0	37.8	111.1	Williams; well log	Hf/RE not identified in cursory borehole log
699-75-23A	A8978	115.69	TOC (116.609 (m) - 3.0 ft SU Assumed		35.0	10.7	105.0	X	X	X	N/A	35.0	10.7	105.0	borehole log (GRAM)	RUM at fine sand
699-75-23B	A8979	115.98	TOC (116.892 (m) - 3.0 ft SU Assumed		36.0	11.0	105.0	X	X	X	N/A	36.0	11.0	105.0	borehole log (GRAM)	RUM at fine sand
699-77-36	A5330	126.09	TOC (126.669 (m) - 1.9 ft SU		150	45.7	80.4	X	X	X	N/A	50.0	15.2	110.8	well summary sheet (GRAM)	Hf/RE not identified in log
699-77-54	A5331	146.92	TOC (147.346 (m) - 1.4 ft SU		150	45.7	101.2	95.0	29.0	118.0	well summary sheet (GRAM)	152.0	46.3	100.6	Williams; well log	
699-78-62	A5332	143.62	TOC (144.195 (m) - 1.9 ft SU		150	45.7	97.9	X	X	X	N/A	130	39.6	104.0	well summary sheet (GRAM)	1957 driller's log not sufficient to identify Hf/Re contact
699-80-39B	A8991	123.87	Brass Survey Marker - Final Survey Report		53	16.2	107.7	X	X	X	N/A	43	13.1	110.8	well construction summary (GRAM)	Hf/RE not identified in log
699-80-43P	A8993	126.68	TOC (127.137 (m) - 1.5 ft SU		450	137.2	-10.5	x	x	X	N/A	46.0	14.0	112.7	Williams; well log	
699-80-43Q	A8994	126.41	TOC (126.867 (m) - 1.5 ft SU		232	70.7	55.7	X	X	X	N/A	45.0	13.7	112.7	borehole log (GRAM)	
699-80-43R	A8995	126.45	TOC (126.912 (m) - 1.5 ft SU		140	42.7	83.8	X	X	X	N/A	45.0	13.7	112.7	borehole log (GRAM)	
699-80-43S	A5336	125.28	TOC (125.736 (m) - 1.5 ft SU	WCCS	50	15.2	110.0	X	X	X	N/A	40	12.2	113.1	Drillers log (Williams)	
699-81-38	A5337	124.76	TOC (124.887 (m) - 0.42 ft SU		35.4	10.8	114.0	X	X	X	N/A	X	X	X	N/A	No log available
699-81-58	A5338	134.50	TOC (134.988 (m) - 1.6 ft SU	Average Based on 1991 through 1997 RPGW	150	45.7	88.8	X	X	X	N/A	95.0	29.0	105.5	well summary sheet	
699-81-62	A9000	134.86	TOC (135.305 (m) - 1.45 ft SU		1011	308.2	-173.3	45.0	13.7	121.1	geophysical logs (GRAM)	105	32.0	102.9	geophysical logs (GRAM)	RUM top picked from gamma log (100 ft bgs) and density log (110 ft bgs), RE top picked from density log
699-81-64B	A9002	136.64	Well survey report	confirmed with GIS surface elevation	38	11.6	125.1	X	X	X	N/A	NDE	NDE	<125.1	N/A	Hf/RE not identified in log
699-83-47	A5341	133.16	TOC (133.704 (m) - 1.8 ft SU		150	45.7	87.4	35.0	10.7	122.5	Williams; well log	95.0	29.0	104.2	Williams; well log	
699-84-59	A9031	140.61	TOC - 3 ft SU	assumed stickup	1001	305.1	-164.5	52	15.8	124.8	geophysical logs (GRAM)	X	X	X	N/A	density log shows inflection at 52 ft bgs, good correspondence with depth to RE in nearby wells, RUM not identified in log, basalt at 524 ft bgs
699-86-60	A9059	138.41	TOC (139.322 (m) - 3.0 ft SU Assumed		531	161.8	-23.4	55	16.8	121.6	borehole log (GRAM)	96.0	29.3	109.1	borehole log (GRAM)	
699-87-55	A5346	140.33	TOC (141.122 (m) - 2.6 ft SU		94	28.7	111.7	61	18.6	121.7	Williams; borehole log	NDE	NDE	<111.7	N/A	
699-89-35	A5348	121.77	TOC (122.35 (m) - 1.9 ft SU		75	22.9	98.9	X	X	X	N/A	55.0	16.8	105.0	well summary sheet (GRAM)	Hf/RE not identified in log
699-91-46A	A5354	127.26	Disc Z		45.5	13.9	113.4	NP	NP	NP	Borehole log	NDE	NDE	NDE	Borehole log	Hf/RE not identified in log
699-93-48A	A5356	133.54	Disc Z		83	25.3	108.2	NP	NP	NP	N/A	73.0	22.3	111.3	Weekes; DOE/RL-2008-42	
699-94-41	C5665	124.96	Disc Z		40.12	12.2	112.7	NP	NP	NP	Borehole Log	35.5	10.8	114.1	Weekes; DOE/RL-2008-42	RE not present
699-94-43	C5661	129.81	Disc Z		60.7	18.5	111.3	45.0	13.7	116.1	Weekes; DOE/RL-2008-42	55.5	16.9	112.9	Weekes; DOE/RL-2008-42	Hf/RE not identified in log
699-95-45	C5660	128.54	Disc Z		50.4	15.4	113.2	X	X	X	N/A	45.3	13.8	114.7	Weekes; DOE/RL-2008-42	Hf/RE not identified in log
699-95-48	C5667	130.69	Disc Z		64.37	19.6	111.1	NP	NP	NP	Borehole Log	59.0	18.0	112.7	Weekes; DOE/RL-2008-42	RE not present
699-95-51	C5663	132.29	Disc Z		71.3	21.7	110.6	X	X	X	N/A	66.0	20.1	112.2	Williams; borehole log	Possible remnant of Ringold Unit E
699-96-41	C5191	129.18	Disc Z		62.2	19.0	110.2	X	X	X	N/A	46.6	14.2	115.0	Williams; borehole log	Hf/Re not identified in log, H Area Bio well
699-96-42	C5192	129.21	Disc Z		52	15.8	113.4	NP	NP	NP	Borehole Log	48.0	14.6	114.6	Williams; borehole log	RE not present. H Area Bio well
699-96-43	A5357	128.71	Disc Z		53.1	16.2	112.5	NP	NP	NP	N/A	45.0	13.7	115.0	Williams; borehole log	RE not present
699-96-44	C4131	129.24	Disc Z		59.6	18.2	111.1	NP	NP	NP	Borehole Log	47.0	14.3	114.9	Williams; borehole log	RE not present. H Area Bio well
699-96-45	C4132	129.19	Disc Z		59.9	18.3	110.9	NP	NP	NP	Borehole Log	47.3	14.4	114.8	Williams; borehole log	RE not present. H Area Bio well
699-96-49	A5358	128.26	TOC (128.805 (m) - 1.8 ft SU		100	30.5	97.8	NP	NP	NP	N/A	61.0	18.6	109.7	Williams; borehole log	Inconclusive (drill log)
699-96-52B	C5668	123.56	Disc Z		46	14.0	109.5	NP	NP	NP	N/A	40.0	12.2	111.4	Weekes; DOE/RL-2008-42	RE not present
699-97-41	C5657	127.59	Disc Z		58.7	17.9	109.7	NP	NP	NP	N/A	54.0	16.5	111.1	Weekes; DOE/RL-2008-42	
699-97-43	A5360	129.08	TOC (129.597 (m) - 1.7 ft SU		100	30.5	98.6	X	X	X	N/A	55.0	16.8	112.3	well summary sheet (GRAM)	Hf/RE not identified in log
699-97-43B	C5664	129.34	Disc Z		53.4	16.3	113.1	NP	NP	NP	N/A	48.0	14.6	114.7	Weekes; DOE/RL-2008-42	RE not present
699-97-43C	C5685	129.41	Disc Z		126	38.4	91.0	NP	NP	NP	N/A	50.5	15.4	114.0	Weekes; DOE/RL-2008-42	RE not present
699-97-45	C5659	126.03	Disc Z		45.7	13.9	112.1	X	X	X	N/A	39.9	12.2	113.9	Weekes; DOE/RL-2008-42	Hf/RE not identified in log
699-97-45B	C5686	125.99	Disc Z		120.4	36.7	89.3	NP	NP	NP	N/A	39.6	12.1	113.9	Weekes; DOE/RL-2008-42	RE not present
699-97-48B	C5662	129.02	Disc Z		59.22	18.1	111.0	NP	NP	NP	N/A	54.0	16.5	112.6	Weekes; DOE/RL-2008-42	RE not present
699-97-48C	C5687	129.07	Disc Z		123	37.5	91.6	NP	NP	NP	N/A	55.0	16.8	112.3	Weekes; DOE/RL-2008-42	RE not present
699-98-43	C5656	122.44	Disc Z		39.5	12.0	110.4	NP	NP	NP	N/A	34.0	10.4	112.1	Weekes; DOE/RL-2008-42	RE not present
699-98-46	C5658	127.37	Disc Z		45.6	13.9	113.5	NP	NP	NP	N/A	40.5	12.3	115.0	Weekes; DOE/RL-2008-42	RE not present
699-98-51	C5669	120.40	Disc Z		30.1	9.2	111.2	NP	NP	NP	N/A	25.0	7.6	112.8	Weekes; DOE/RL-2008-42	RE not present
699-99-41	C5649	125.63	Disc Z		45.6	13.9	111.7	NP	NP	NP	N/A	40.0	12.2	113.4	Weekes; DOE/RL-2008-42	RE not present
699-99-42B	C5648	127.12	Disc Z		51.6	15.7	111.4	NP	NP	NP	N/A	45.5	13.9	113.2	Weekes; DOE/RL-2008-42	RE not present
699-99-44	C5650	124.16	Disc Z		37.5	11.4	112.7	NP	NP	NP	N/A	32.5	9.9	114.3	Weekes; DOE/RL-2008-42	RE not present
B2537	B2537	140.25	Brass Survey Marker	1996 WCSR as revised	72.5	22.1	118.2	X	X	X	N/A	NDE	NDE	<119.2	borehole log (GRAM)	100-N vadose borehole
B2539	B2539	138.34	Brass Survey Marker	1996 WCSR	64.5	19.7	118.7	44	13.4	124.9	N/A	NDE	NDE	<118.7	borehole log (GRAM)	100-N vadose borehole
C5670	C5670	140.88	Disc Z		74.1	22.6	118.3	NDE	NDE	<118.3	N/A	NDE	NDE	<118.3	N/A	100-BC vadose borehole. Appears to be Hf to TD.
C6446	C6447	139.71	Brass Survey Marker		55	16.8	122.9	50	15.2	124.5	Geologic Borehole Log (Williams)	NDE	NDE	<122.9	N/A	Questionable Hf/RE pick. Appears transitional from as shallow as 23 ft (but believe this is really a reworked interval judging from the clean gravel interval deeper in the section.
C6447	C6448	139.85	Brass Survey Marker		40	12.2	127.7	X	X	X	Borehole Log	NDE	NDE	<127.7	N/A	
C6449	C6449	140.05	Brass Survey Marker		54	16.5	123.6	38	11.6	128.5	Geologic Borehole Log (Williams)	NDE	NDE	<123.6	N/A	100-D Chromium Source Investigation
C6450	C6450	138.61	Brass Survey Marker		50	15.2	123.4	46	14.0	124.6	Geologic Borehole Log (Williams)	NDE	NDE	<123.4	N/A	CSI Northern Plume 100-D. RE pick not certain.
C7842	C7842	133.42	Disc Z		55	16.8	116.7	X	X	X	N/A	NDE	NDE	<116.0	N/A	100-BC vadose borehole. Hf/RE not identifiable from logs (Williams)
C7844	C7844	141.36	Disc Z		73.1	22.3	119.1	X	X	X	N/A	NDE	NDE	<118.2	N/A	100-BC vadose borehole. Hf/RE not identifiable from logs (Williams)
C7845	C7845	143.10	Disc Z		78.9	24.0	119.1	NDE	NDE	<119.1	N/A	NDE	NDE	<119.8	N/A	100-BC vadose borehole
C7847	C7847	144.10	Disc Z		13.4	4.1	140.0	NDE	NDE	<140.0	N/A	NDE	NDE	<140.0	N/A	100-BC vadose borehole
C7849	C7849	151.81	Disc Z		107.7	32.8	119.0	NDE	NDE	<119.0	borehole log (GRAM)	NDE	NDE	<120.4	N/A	100-BC vadose borehole; transitional gravels at Hf/RE contact
C7850	C7850	136.39	Brass Survey Marker - Final Survey Report		72.3	22.0	114.4	NP	NP	NP	WSS	NDE	NDE	<114.4	N/A	100-D vadose borehole; RE not present (Williams)

Table A.1. Stratigraphic Information for Hanford Site 100 Area Wells

Well Name	Well ID	Surface Elev (m)	Elevation_Control	Reference	Drill Depth (ft)	Drill Depth (m)	Elev bottom (m)	Depth to RE (ft)	Depth to RE (m)	Hf/Re Elev. (m)	Ringold E Depth Data Source	Depth to RUM (ft)	Depth to RUM (m)	RUM Elev. (m)	RUM Depth Data Source	Notes
C7851	C7851	135.88	Disc Z - Final Survey		69	21.0	114.8	X	X	X	N/A	NDE	NDE	<114.5	N/A	100-D vadose borehole; RE difficult to determine; not enough description
C7855	C7855	144.13	Disc Z		91.2	27.8	116.3	50	15.2	128.9	borehole and geophysical logs (Williams)	NDE	NDE	<116.4	N/A	100-D vadose borehole
C7862	C7862	129.61	Brass Survey Marker - Final Survey Report		52.4	16.0	113.6	NP	NP	NP	N/A	NDE	NDE	<113.6	N/A	100-H vadose borehole
C7864	C7864	128.74	Brass Survey Marker - Final Survey Report		50.8	15.5	113.3	NP	NP	NP	N/A	NDE	NDE	<113.3	N/A	100-H vadose borehole
C8205	C8205	144.32	Disc Z		186.4	56.8	87.5	23	7.0	137.3	borehole log and well summary report (Williams)	170	51.8	92.5	borehole log and well summary report (Williams)	"Grounding" Well for the 100-K Substation
C7883	C7883	145.49	Staking Survey		89.7	27.3	118.1	NDE	NDE	<118.2	N/A	NDE	NDE	<118.2	N/A	100-BC vadose borehole (100-C-7)
C7884	C7884	145.38	Staking Survey		91.1	27.8	117.6	NDE	NDE	<117.6	N/A	NDE	NDE	<117.6	N/A	100-BC vadose borehole (100-C-7)
C7971	C7971	122.14	Disc Z		33.5	10.2	111.9	NP	NP	NP	N/A	29	8.8	113.3	borehole log (GRAM)	100-F vadose borehole; RE not present
C8239	C8239	144.04	Disc Z		82.3	25.1	119.0	NDE	NDE	<119.0	N/A	NDE	NDE	<119.0	N/A	100-BC vadose borehole

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Environmental Calculation Cover Page

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1 Purpose

This environmental calculation describes the methods to obtain, select, evaluate, and calculate the values plotted on and used for constructing regional contaminant plume contour maps for the Hanford Site. The result is a set of tables that provide values for each of 15 constituents. Due to the large size of the values tables, and to reduce paper usage and unnecessary file size, only example values for these tables are provided in Appendix A.

Reports are produced annually describing the conditions of Hanford Site groundwater, and groundwater constituent data are updated and plotted on maps annually. Data from previous years are evaluated for representativeness and to determine the optimal means of presenting the data to convey to the reader the most complete and accurate conceptualization of current constituent distributions in Hanford Site groundwater in the upper unconfined aquifer. Contours represent areas of equal constituent concentration and help the reader visualize constituent distributions in the groundwater.

2 Methodology

The general methodology for constructing the Hanford Site groundwater plume maps is outlined below.

1. Identify the data sources for the plume maps.

Regional contaminant plume maps are documented in the annual Hanford Site groundwater monitoring report. The data are retrieved from the Hanford Environmental Information System (HEIS) database. Some results from the Richland Areva Facility (Areva) and the US Ecology Low-Level Radioactive Waste site (US Ecology) are also used. These data are not included in HEIS so queries are generated by Soil and Groundwater database staff to Areva and US Ecology requesting relevant results. The Areva and US Ecology results are collected in accordance with environmental monitoring plans based on language in the facilities' licenseses that have the approval of the State of Washington. For instance Areva now publishes an annual groundwater report containing tables of monitoring results from their monitoring well network. In past years US Ecology has sent Soil and Groundwater staff an electronic copy of annual monitoring results from their monitoring wells.

2. Define the constituents that are evaluated.

The 15 constituents included in this environmental calculation are listed below. The annual report includes plume maps for most of these constituents, but the constituent files may also be used for other purposes.

- Carbon-14
- Carbon tetrachloride
- Chloroform
- Chromium
- Cobalt-60
- Cyanide
- Fluoride
- Iodine-129
- Nitrate
- Strontium-90
- Sulfate
- Technetium-99
- Trichloroethene
- Tritium
- Uranium

3. Define the timeframe from which data are evaluated and are subject to this process.

The plume maps are based on annual average results for the most recent of the past 3 years where data are available for the respective constituent at selected wells completed at or near the water table. Averaging data allows maps to include wells sampled at different times and different frequencies. This is necessary because monitoring frequencies vary and range from monthly to once every 3 years.

In certain circumstances, it is useful to present data from specific point-in-time sampling events. However, data representing conditions on a shorter term rather than annually are not the subject of this calculation.

4. Describe the process to evaluate data set representativeness.

Data identified as unrepresentative are eliminated from the data set prior to calculating annual average values. The wells used for annual contaminant plume map construction are screened in the upper unconfined aquifer in order to represent constituent concentrations in the upper unconfined aquifer (generally the top approximately 10 m). Wells are selected for inclusion in the data sets for regional plume mapping based on the portion of the aquifer in which they are screened. The construction of each well has been evaluated, and the well is classified and tracked in a project file. Definitions of the various classifications are listed below:

- NA (not applicable): In most cases, not a valid groundwater monitoring well (i.e., no open interval).
- V (vadose): Completed above the water table.
- P (perched): Monitors only perched water above the regional water table.
- U (undifferentiated unconfined): Open to more than 50 ft of the unconfined aquifer.
- TU (top unconfined): Screened across or within 5 ft of the water table with less than 35 ft of the open interval extending below the water table.
- UU (upper unconfined): Screened more than 5 ft below the water table and the open interval extends no more than 50 ft below the water table.
- MU (middle unconfined): Open interval begins at greater than 50 ft below the water table and does not extend below the middle coarse of the Ringold Formation (Unit 7) or to within 50 ft of the top of basalt.
- LU (lower unconfined): Open interval begins at greater than 50 ft below the water table and below the middle coarse of the Ringold Formation (Unit 7) or within 50 ft of the top of basalt and does not extend more than a few feet (i.e., 10) below the top of basalt.
- CR (confined Ringold): Wells for which the open interval does not extend more than a few feet (i.e., 10) below the top of basalt. Typically open to the lower mud (Unit 8) and basal gravel (Unit 9) of the Ringold Formation.
- TB (top basalt): Open to less than 30 ft above and below the top of basalt.
- C (undifferentiated basalt-confined): Open to basalt and/or interflow zone(s), but may be open to more than one zone.
- UC (upper basalt-confined): Open to the basalt and/or interflow zones but does not extend below the Pomona Member of the Saddle Mountains Basalt.
- LC (lower basalt-confined): Open to the basalt and interflow zones below the Pomona Member of the Saddle Mountains Basalt.

Only wells classified as "TU," "UU," and "U," or that have no zone designation, are included in the data set for regional contaminant plume maps to represent constituent concentrations in the upper unconfined aquifer (generally the top approximately 10 m).

Specific samples are eliminated from the data set based on the COLLECTION_PURPOSE and the SAMP_INTV_BOT fields in HEIS database. To be included in the data set, the COLLECTION_PURPOSE must be "C" or "R" and the SAMP_INTV_BOT must be "NULL." The samples eliminated are generally associated with vertical profile sampling or some other special circumstance that would make the samples unrepresentative of conditions in the upper unconfined aquifer.

Specific data results are also eliminated from the data set based on the REVIEW_QUALIFIER field in the HEIS database. Results that contain "Y" or "R" in the REVIEW_QUALIFIER field are eliminated. These results represent data points that have been identified, evaluated, and flagged as suspect or reject, respectively.

5. Describe data conditioning to arrive at the data set that will be processed.

Unrepresentative data are eliminated from the data set before the average value is calculated for each of the previous 3 years. The process is set up in a Microsoft Access[1] database, running a macro that executes a series of queries (in a set order) to obtain the data set to work with for each plume. These queries pull data from HEIS and additional data (from Step 1 above) for the selected constituents (from Step 2), within the specified timeframe (from Step 3), and remove unrepresentative data (from Step 4). The steps in the macro that are used to obtain the data set are provided in Chapter 5, and the Microsoft Access database code is provided in Appendix B.

The data set was exported into a Microsoft Excel[1] file, named "CY10Avgs.xlsx," to document the results of this process. The file will be available in Integrated Document Management System IDMS.

6. Document the values that are used for plume map construction.

Examples of the values derived from this calculation process and used for constructing constituent contour maps are provided in the tables in Appendix A.

7. Develop the statistical representation of data for each data point.

The last step involves running a code module that actually performs the averaging calculation. The average values for each data set are calculated using a Microsoft Visual Basic[1] code module within Microsoft Access. A discussion of the averaging methodology is provided in Chapter 5, and the code is provided in Appendix C.

8. Define the concentrations to plot for each constituent contour.

Contaminant concentrations for contours are chosen to correspond with state or federally enforceable drinking water standards because these levels provide perspective on contaminant concentrations. Using these concentrations consistently also provide a means for comparison with previous year's maps. Radionuclide concentrations are also compared with U.S. Department of Energy-derived concentration guides for tritium. For reports depicting annual Hanford Site groundwater conditions, contour levels are based on the following criteria:

[1] Microsoft Access®, Microsoft Excel®, and Microsoft Visual Basic® are each registered trademarks of Microsoft Corporation, Redmond, Washington.

- Drinking water standards (DWSs) and multiples of 10 times the DWS (e.g., 8, 80, and 800 pCi/L for strontium-90)
- Cleanup levels, where applicable (e.g., 20 μg/L for chromium in the River Corridor)
- Levels below the DWS where the DWS does not adequately represent the full extent of constituent distribution (e.g., 2,000 pCi/L for tritium)
- Intermediate levels to help define plumes (e.g., 60 and 90 μg/L for uranium in the 300 Area).

9. Define the map symbol to plot for year well was sampled and the well type sampled [i.e., CY10, CY09, CY08; monitoring well, injection well, extraction well, or aquifer tube].
10. Post average concentration data on the maps and construct the contours.

The constituent concentrations (provided in Appendix A) are available for interpretation of plume contours. Contour plume maps are not constructed for all 15 of the constituents in this environmental calculation, but the values are available on request by staff.

The average values are posted on maps for the constituents requested. The constituent plume contour construction does not use analytical computer software tools; rather, the data are evaluated and interpreted by hand by scientists with historical knowledge of groundwater contaminant conditions at the Hanford Site. The plume maps are constructed by hand-contouring (interpolation between data values posted on the maps) combined with in-depth scientific understanding of contaminant sources and contaminant migration pathways. The plume maps are subject to internal peer review by other scientific staff before final interpretations are documented.

3 Assumptions and Inputs

The average value for the most current year is plotted on maps for each constituent, which allows for wells that are sampled only every 2 or 3 years to be included where more recent sample data are not available. Scientists can then also use data from the previous 2 years for wells that did not have new data in the current year. If it is known during the interpretation and contouring process that a well is either WAC compliant or a non-compliant well, then the WAC compliant groundwater monitoring well is given the highest weight. Alternative well constructions such as aquifer tubes along the Columbia River are given less weight. The data tables (provided in Appendix A) include the year for which the annual average was calculated for each data point. In areas where multiple data points exist in close proximity, the most recent data values are considered more important than data from previous years.

Geologic samples are not collected during installation of aquifer tubes, so the hydrologic unit monitored must be inferred. All aquifer tubes are assumed to be screened in the upper unconfined aquifer because screens are shallow (typically 2 to 8 meters).

Conventions for handling nondetected values do not adversely affect data interpretation for most constituents because the detection limits are much lower than the contour intervals. However, iodine-129 is contoured at 1 pCi/L (the DWS), which can be less than the laboratory's detection limit. Many of the "U"-flagged values for iodine-129 are believed to be real detections and the values are used as such to construct the contours.

Values for chromium include total chromium from filtered samples and/or hexavalent chromium in either filtered or unfiltered samples. Dissolved chromium in Hanford Site groundwater is virtually all hexavalent, so filtered total chromium data effectively represent hexavalent chromium.

4 Software Applications

Microsoft Access is used to retrieve the data from the database and to exclude certain data from the input dataset. Microsoft Visual Basic in Access is used to perform the averaging calculation.

5 Calculation

5.1 Data Retrieval and Conditioning

The calculation to arrive at the conditioned data set prior to calculating the average values is summarized below, and the database code is provided in Appendix B.

1. Copy from the groundwater materialized view (in HEIS) all data for the plume constituents for the 3-year period (January 1, 2008 through December 31, 2010) and load the data into a Microsoft Access table using the following data translations:

    a. Populate a field in the Access table with the data source (HEIS).

    b. Populate a field in the Access table with a radiological/nonradiological identifier based on the constituent.

    c. Populate a field in the Access table with a calendar year (CY) identifier.

    d. Convert the constituent name on hexavalent chromium to chromium so the data can be combined for plume-mapping purposes.

2. Add any additional data from sources other than HEIS that will be used in plume determinations. (For CY10, this included Areva and US Ecology data.)

3. Copy the data set pulled thus far into a backup table for documentation purposes.

4. Run sets of queries to identify data to be removed from the data set for various reasons. (For the CY10 plumes process, these queries reduced the data set from just over 72,000 to approximately 50,000 data points). The first query in each set copies the data to be removed into a "rejects" table, as well as the reason for the data rejection; the second query actually deletes the data from the base data set.

    a. Query to remove any data with a review qualifier of "R" or "Y" (data identified in HEIS as reject or suspect).

    b. Query to remove any data with a collection purpose other than "C" or "R," any data where the well has been identified (by Bill Webber) as not in the correct portion of the aquifer zone or to be excluded for some other reason, and data from any samples that have a sample interval bottom (vertical profile samples).

    c. Query to remove any data with a reported null value.

5.2 Data Averaging

The method used to calculate the averages is a simple arithmetic average of the data for each constituent for each well, excluding some data (as described above). For aquifer tubes, there is one further step in which the highest average value for each aquifer tube cluster for the most recent year is determined and that value is loaded into the target table. The database code is provided in Appendix C.

Analytical results that are less than detection limits (flagged with "U" in the HEIS database) are treated in one of two ways when calculating the data set used for constructing maps:

- For chemical constituents (including total uranium), "U"-flagged values represent analytical detection limits. These values are treated as zeroes in the data to be averaged. If all results are detects (i.e., do not have a "U" flag), the average is plotted on the map. If all of the results (or the only result) for the year were nondetects (i.e., received a "U" flag), a "U" is plotted on the map. If the data represent a mixture of detected and nondetected results, the average is plotted on the map, followed by an asterisk (e.g., 1.2*).
- For radionuclides, the laboratory determines a background counting level that is subtracted from sample results, sometimes resulting in negative results. When analyzing each sample, the laboratory estimates a minimum detectable activity from the counting rate and also a counting error. Results below the minimum detectable activity or counting error are "U"-flagged. Therefore, the results can be positive or negative, and the results may or may not be "U"-flagged. All of the results for the year are averaged, whether "U"-flagged or not, because the reported values are statistically significant. The average values are plotted on the map, followed by "U" (if all of the results for the FY were undetected) or an asterisk (if the data represent a mixture of detected and nondetected values).

Values for anions such as nitrate and sulfate are converted from the standardized "µg/L" units in the database to "mg/L" units, which is preferred for mapping these constituents.

Mapped data are rounded to two significant digits. This is representative of the laboratory precision criteria of ±20% for duplicate samples. Additional digits would imply greater precision than can be provided by the laboratory.

6 Results/Conclusions

Example results of average annual concentrations for each contaminant plume are provided in the tables in Appendix A. The tables list representative wells for which values were used in contaminant plume map contouring. After each well name, the following information is provided:

- Average value for the contaminant in that well (displayed as a number with no particular format)
- Average value for the contaminant in that well (displayed to two significant digits with a flag (U or *), and provided as a text field in the format desired for posting on the contour maps)
- Unit used for each value
- The fiscal year for which the values were measured
- Whether the value is detected (D), nondetected (U), or a combination of detected and nondetected results (C).

The Access database code used to provide the input data set is shown in Appendix B. The database code used to average the data set to arrive at the posting values is shown in Appendix C.

Appendix A: Example Values Used for Constructing Contour Plume Maps for Calendar Year 2010

Tables A-1 through A-15 provide partial sets of data for 2010 plume maps, as examples. Full tables are not provided here in the interest of brevity, but are available in a project specific database and available upon request to the preparer.

Table A-1. Carbon-14 Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	0.084	0.08U	pCi/L	Carbon-14	CY2010	U
199-B2-14	B2-14	0.53	0.53U	pCi/L	Carbon-14	CY2010	U
199-B3-1	B3-1	1.4	1.4U	pCi/L	Carbon-14	CY2010	U
199-B3-46	B3-46	2.4	2.4U	pCi/L	Carbon-14	CY2010	U
199-B3-47	B3-47	3.4	3.4U	pCi/L	Carbon-14	CY2010	U
199-B3-50	B3-50	-0.26	-0.26U	pCi/L	Carbon-14	CY2010	U
199-B4-4	B4-4	1.3	1.3U	pCi/L	Carbon-14	CY2010	U
199-B4-8	B4-8	0.13	0.13U	pCi/L	Carbon-14	CY2010	U
199-B5-1	B5-1	-0.029	-0.03U	pCi/L	Carbon-14	CY2010	U
199-B5-2	B5-2	2.6	2.6U	pCi/L	Carbon-14	CY2010	U
199-B8-6	B8-6	2	2.0U	pCi/L	Carbon-14	CY2010	U
199-B8-9	B8-9	-5.4	-5.4U	pCi/L	Carbon-14	CY2010	U
199-B9-3	B9-3	3.1	3.1U	pCi/L	Carbon-14	CY2010	U
199-F1-2	F1-2	1.9	1.9U	pCi/L	Carbon-14	CY2010	U
199-F5-1	F5-1	1.4	1.4U	pCi/L	Carbon-14	CY2010	U
199-F5-4	F5-4	9	9.0*	pCi/L	Carbon-14	CY2010	C
199-F5-6	F5-6	1.3	1.3U	pCi/L	Carbon-14	CY2010	U
199-F5-42	F5-42	0.54	0.54U	pCi/L	Carbon-14	CY2010	U
199-F5-43A	F5-43A	3.6	3.6U	pCi/L	Carbon-14	CY2010	U
199-F5-44	F5-44	1.7	1.7U	pCi/L	Carbon-14	CY2010	U
199-F5-45	F5-45	8.4	8.4*	pCi/L	Carbon-14	CY2010	C
199-F5-46	F5-46	1.1	1.1*	pCi/L	Carbon-14	CY2010	C
199-F5-48	F5-48	8	8.0*	pCi/L	Carbon-14	CY2010	C
199-F6-1	F6-1	3.9	3.9U	pCi/L	Carbon-14	CY2010	U
199-F7-1	F7-1	0.87	0.87U	pCi/L	Carbon-14	CY2010	U
199-F7-2	F7-2	1.8	1.8U	pCi/L	Carbon-14	CY2010	U
199-F7-3	F7-3	1.5	1.5U	pCi/L	Carbon-14	CY2010	U
199-F8-2	F8-2	3.5	3.5U	pCi/L	Carbon-14	CY2010	U
199-F8-3	F8-3	58	58	pCi/L	Carbon-14	CY2010	D
199-F8-4	F8-4	4.2	4.2U	pCi/L	Carbon-14	CY2010	U
199-F8-7	F8-7	7.7	7.7*	pCi/L	Carbon-14	CY2010	C
199-K-11	K-11	130	130	pCi/L	Carbon-14	CY2010	D
199-K-18	K-18	18	18	pCi/L	Carbon-14	CY2010	D
199-K-19	K-19	8.3	8.3*	pCi/L	Carbon-14	CY2010	C
199-K-20	K-20	4.3	4.3U	pCi/L	Carbon-14	CY2010	U

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-K-21	K-21	7.3	7.3U	pCi/L	Carbon-14	CY2010	U
199-K-22	K-22	3.7	3.7U	pCi/L	Carbon-14	CY2010	U
199-K-27	K-27	300	300	pCi/L	Carbon-14	CY2008	D
199-K-29	K-29	3100	3,100	pCi/L	Carbon-14	CY2010	D
199-K-30	K-30	4400	4,400	pCi/L	Carbon-14	CY2010	D
199-K-31	K-31	370	370	pCi/L	Carbon-14	CY2010	D
199-K-32A	K-32A	190	190	pCi/L	Carbon-14	CY2010	D
199-K-34	K-34	2300	2,300	pCi/L	Carbon-14	CY2010	D
199-K-36	K-36	63	63	pCi/L	Carbon-14	CY2010	D
199-K-37	K-37	1.7	1.7U	pCi/L	Carbon-14	CY2010	U
199-K-106A	K-106A	8800	8,800	pCi/L	Carbon-14	CY2010	D
199-K-107A	K-107A	550	550	pCi/L	Carbon-14	CY2010	D
199-K-108A	K-108A	510	510	pCi/L	Carbon-14	CY2010	D
199-K-109A	K-109A	120	120	pCi/L	Carbon-14	CY2008	D
199-K-110A	K-110A	150	150	pCi/L	Carbon-14	CY2009	D
199-K-111A	K-111A	130	130	pCi/L	Carbon-14	CY2010	D
199-K-113A	K-113A	4.6	4.6U	pCi/L	Carbon-14	CY2009	U
199-K-114A	K-114A	5.8	5.8U	pCi/L	Carbon-14	CY2009	U
199-K-115A	K-115A	1.7	1.7U	pCi/L	Carbon-14	CY2009	U
199-K-116A	K-116A	5.4	5.4U	pCi/L	Carbon-14	CY2009	U
199-K-117A	K-117A	2.5	2.5U	pCi/L	Carbon-14	CY2010	U
199-K-119A	K-119A	6.3	6.3U	pCi/L	Carbon-14	CY2010	U
199-K-120A	K-120A	5.2	5.2U	pCi/L	Carbon-14	CY2010	U
199-K-124A	K-124A	2.9	2.9U	pCi/L	Carbon-14	CY2010	U
199-K-125A	K-125A	4.4	4.4U	pCi/L	Carbon-14	CY2010	U
199-K-127	K-127	5.6	5.6U	pCi/L	Carbon-14	CY2010	U
199-K-129	K-129	1.3	1.3U	pCi/L	Carbon-14	CY2009	U
199-K-130	K-130	9.9	9.9	pCi/L	Carbon-14	CY2010	D
199-K-131	K-131	4.7	4.7U	pCi/L	Carbon-14	CY2009	U
199-K-132	K-132	1900	1,900	pCi/L	Carbon-14	CY2010	D
199-K-137	K-137	540	540	pCi/L	Carbon-14	CY2010	D
199-K-138	K-138	400	400	pCi/L	Carbon-14	CY2010	D
199-K-139	K-139	430	430	pCi/L	Carbon-14	CY2009	D
199-K-140	K-140	470	470	pCi/L	Carbon-14	CY2009	D
199-K-141	K-141	110	110	pCi/L	Carbon-14	CY2010	D
199-K-142	K-142	210	210	pCi/L	Carbon-14	CY2010	D
199-K-143	K-143	-3.8	-3.8U	pCi/L	Carbon-14	CY2008	U
199-K-144	K-144	30	30	pCi/L	Carbon-14	CY2010	D
199-K-145	K-145	9.6	9.6	pCi/L	Carbon-14	CY2010	D
199-K-146	K-146	4.5	4.5U	pCi/L	Carbon-14	CY2009	U
199-K-147	K-147	6.4	6.4U	pCi/L	Carbon-14	CY2010	U
199-K-148	K-148	5.3	5.3U	pCi/L	Carbon-14	CY2010	U
199-K-149	K-149	8.1	8.1U	pCi/L	Carbon-14	CY2009	U
199-K-150	K-150	15	15*	pCi/L	Carbon-14	CY2009	C
199-K-151	K-151	3.9	3.9U	pCi/L	Carbon-14	CY2010	U
199-K-152	K-152	11	11*	pCi/L	Carbon-14	CY2010	C

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-K-153	K-153	10	10	pCi/L	Carbon-14	CY2010	D
199-K-154	K-154	5	5.0U	pCi/L	Carbon-14	CY2010	U
199-K-156	K-156	8.7	8.7*	pCi/L	Carbon-14	CY2008	C
199-K-157	K-157	12	12*	pCi/L	Carbon-14	CY2010	C
199-K-159	K-159	7.8	7.8U	pCi/L	Carbon-14	CY2008	U
199-K-160	K-160	11	11	pCi/L	Carbon-14	CY2008	D
199-K-161	K-161	2.3	2.3U	pCi/L	Carbon-14	CY2010	U
199-K-162	K-162	10	10	pCi/L	Carbon-14	CY2010	D
199-K-163	K-163	9	9.0*	pCi/L	Carbon-14	CY2010	C
199-K-164	K-164	0.82	0.82U	pCi/L	Carbon-14	CY2008	U
199-K-165	K-165	150	150	pCi/L	Carbon-14	CY2009	D
199-K-166	K-166	400	400	pCi/L	Carbon-14	CY2010	D
199-K-168	K-168	290	290	pCi/L	Carbon-14	CY2009	D
199-K-169	K-169	13	13	pCi/L	Carbon-14	CY2008	D
199-K-170	K-170	15	15	pCi/L	Carbon-14	CY2008	D
199-K-171	K-171	0.68	0.68U	pCi/L	Carbon-14	CY2010	U
199-K-173	K-173	580	580	pCi/L	Carbon-14	CY2009	D
199-K-174	K-174	7.3	7.3U	pCi/L	Carbon-14	CY2009	U
199-K-175	K-175	7.9	7.9U	pCi/L	Carbon-14	CY2009	U
199-K-178	K-178	170	170	pCi/L	Carbon-14	CY2010	D
199-K-179	K-179	8	8.0U	pCi/L	Carbon-14	CY2009	U
199-K-180	K-180	1.9	1.9U	pCi/L	Carbon-14	CY2010	U
199-K-181	K-181	130	130	pCi/L	Carbon-14	CY2010	D
199-K-182	K-182	7.3	7.3U	pCi/L	Carbon-14	CY2010	U
199-N-16	N-16	5	5.0U	pCi/L	Carbon-14	CY2009	U
199-N-71	N-71	28	28*	pCi/L	Carbon-14	CY2009	C
199-N-72	N-72	19	19	pCi/L	Carbon-14	CY2008	D
199-N-165	N-165	21	21	pCi/L	Carbon-14	CY2009	D
299-E27-155	E27-155	3.3	3.3U	pCi/L	Carbon-14	CY2009	U
299-E33-205	E33-205	9.3	9.3	pCi/L	Carbon-14	CY2010	D
299-E33-341	E33-341	70	70	pCi/L	Carbon-14	CY2010	D
299-E33-342	E33-342	38	38	pCi/L	Carbon-14	CY2010	D
299-E33-343	E33-343	26	26	pCi/L	Carbon-14	CY2010	D
299-E33-345	E33-345	14	14	pCi/L	Carbon-14	CY2010	D
299-W15-41	W15-41	7	7.0U	pCi/L	Carbon-14	CY2009	U
299-W19-46	W19-46	2.9	2.9U	pCi/L	Carbon-14	CY2009	U
299-W19-105	W19-105	6.5	6.5U	pCi/L	Carbon-14	CY2009	U
299-W19-107	W19-107	-1.5	-1.5U	pCi/L	Carbon-14	CY2009	U
299-W22-69	W22-69	2.8	2.8U	pCi/L	Carbon-14	CY2009	U
299-W22-72	W22-72	10	10*	pCi/L	Carbon-14	CY2010	C
299-W22-83	W22-83	9	9.0	pCi/L	Carbon-14	CY2009	D
299-W22-86	W22-86	5.5	5.5*	pCi/L	Carbon-14	CY2009	C
299-W22-87	W22-87	1.2	1.2U	pCi/L	Carbon-14	CY2008	U
299-W22-88	W22-88	1.9	1.9U	pCi/L	Carbon-14	CY2008	U
299-W23-4	W23-4	9.1	9.1	pCi/L	Carbon-14	CY2009	D
299-W23-21	W23-21	15	15	pCi/L	Carbon-14	CY2009	D

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
699-8-25	8-25	3	3.0U	pCi/L	Carbon-14	CY2010	U
699-10-54A	10-54A	2.4	2.4U	pCi/L	Carbon-14	CY2010	U
699-14-38	14-38	3.6	3.6U	pCi/L	Carbon-14	CY2010	U
699-17-5	17-5	-1.5	-1.5U	pCi/L	Carbon-14	CY2010	U
699-20-20	20-20	8.4	8.4*	pCi/L	Carbon-14	CY2010	C
699-20-E5A	20-E5A	3.9	3.9U	pCi/L	Carbon-14	CY2010	U
699-26-15A	26-15A	9.9	9.9*	pCi/L	Carbon-14	CY2010	C
699-29-4	29-4	6.7	6.7*	pCi/L	Carbon-14	CY2010	C
699-32-22A	32-22A	10	10*	pCi/L	Carbon-14	CY2010	C
699-32-76	32-76	0.37	0.37U	pCi/L	Carbon-14	CY2008	U
699-33-74	33-74	5.3	5.3U	pCi/L	Carbon-14	CY2008	U
699-33-75	33-75	-1.5	-1.5U	pCi/L	Carbon-14	CY2008	U
699-33-76	33-76	-1	-1.0U	pCi/L	Carbon-14	CY2009	U
699-34-72	34-72	1.6	1.6U	pCi/L	Carbon-14	CY2010	U
699-34-88	34-88	-1.1	-1.1U	pCi/L	Carbon-14	CY2010	U
699-35-9	35-9	7	7.0*	pCi/L	Carbon-14	CY2010	C
699-35-66A	35-66A	29	29U	pCi/L	Carbon-14	CY2008	U
699-36-66B	36-66B	-0.78	-0.78U	pCi/L	Carbon-14	CY2008	U
699-36-70A	36-70A	-0.37	-0.37U	pCi/L	Carbon-14	CY2008	U
699-37-66	37-66	-9.3	-9.3U	pCi/L	Carbon-14	CY2008	U
699-38-15	38-15	14	14	pCi/L	Carbon-14	CY2010	D
699-41-23	41-23	6.2	6.2U	pCi/L	Carbon-14	CY2010	U

Table A-2. Chloroform Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	0.23	0.23	ug/L	Chloroform	CY2010	D
199-B2-14	B2-14	0.11	0.11*	ug/L	Chloroform	CY2010	C
199-B3-1	B3-1	0.21	0.21	ug/L	Chloroform	CY2010	D
199-B3-46	B3-46	0.34	0.34	ug/L	Chloroform	CY2010	D
199-B3-47	B3-47	0.028	0.03*	ug/L	Chloroform	CY2010	C
199-B3-50	B3-50	0.36	0.36	ug/L	Chloroform	CY2010	D
199-B4-4	B4-4	0.39	0.39	ug/L	Chloroform	CY2010	D
199-B4-8	B4-8	0.38	0.38	ug/L	Chloroform	CY2010	D
199-B5-1	B5-1	0.04	0.04*	ug/L	Chloroform	CY2010	C
199-B5-2	B5-2	0.26	0.26	ug/L	Chloroform	CY2010	D
199-B8-6	B8-6	0.07	0.07*	ug/L	Chloroform	CY2010	C
199-B8-9	B8-9	0	U	ug/L	Chloroform	CY2010	U
199-B9-3	B9-3	0.54	0.54	ug/L	Chloroform	CY2010	D
199-D2-6	D2-6	0.43	0.43*	ug/L	Chloroform	CY2010	C
199-D2-11	D2-11	0.14	0.14	ug/L	Chloroform	CY2010	D
199-D4-23	D4-23	0.23	0.23	ug/L	Chloroform	CY2010	D
199-D4-84	D4-84	1.8	1.8	ug/L	Chloroform	CY2010	D
199-D5-13	D5-13	3.4	3.4	ug/L	Chloroform	CY2010	D

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-D5-14	D5-14	2.4	2.4	ug/L	Chloroform	CY2010	D
199-D5-15	D5-15	1.2	1.2	ug/L	Chloroform	CY2010	D
199-D5-16	D5-16	1.1	1.1	ug/L	Chloroform	CY2010	D
199-D5-17	D5-17	0.18	0.18	ug/L	Chloroform	CY2010	D
199-D5-18	D5-18	0.14	0.14	ug/L	Chloroform	CY2010	D
199-D5-19	D5-19	0.13	0.13	ug/L	Chloroform	CY2010	D
199-D5-37	D5-37	1.6	1.6	ug/L	Chloroform	CY2010	D
199-D5-38	D5-38	2	2.0	ug/L	Chloroform	CY2010	D
199-D5-40	D5-40	0	U	ug/L	Chloroform	CY2010	U
199-D5-41	D5-41	3.4	3.4	ug/L	Chloroform	CY2009	D
199-D5-43	D5-43	0.32	0.32	ug/L	Chloroform	CY2010	D
199-D5-99	D5-99	1.6	1.6	ug/L	Chloroform	CY2010	D
199-D5-109	D5-109	0	U	ug/L	Chloroform	CY2010	U
199-D5-114	D5-114	0	U	ug/L	Chloroform	CY2010	U
199-D8-5	D8-5	5	5.0	ug/L	Chloroform	CY2010	D
199-D8-55	D8-55	0.29	0.29	ug/L	Chloroform	CY2010	D
199-D8-70	D8-70	0.57	0.57	ug/L	Chloroform	CY2010	D
199-D8-71	D8-71	1.1	1.1	ug/L	Chloroform	CY2010	D
199-D8-88	D8-88	5	5.0	ug/L	Chloroform	CY2010	D
199-F1-2	F1-2	0.23	0.23*	ug/L	Chloroform	CY2010	C
199-F5-1	F5-1	0.63	0.63*	ug/L	Chloroform	CY2010	C
199-F5-4	F5-4	0.13	0.13*	ug/L	Chloroform	CY2010	C
199-F5-6	F5-6	0.78	0.78	ug/L	Chloroform	CY2010	D
199-F5-42	F5-42	0	U	ug/L	Chloroform	CY2010	U
199-F5-43A	F5-43A	0	U	ug/L	Chloroform	CY2010	U
199-F5-44	F5-44	0	U	ug/L	Chloroform	CY2010	U
199-F5-45	F5-45	0.22	0.22*	ug/L	Chloroform	CY2010	C
199-F5-46	F5-46	0.28	0.28*	ug/L	Chloroform	CY2010	C
199-F5-48	F5-48	0.06	0.06*	ug/L	Chloroform	CY2010	C
199-F6-1	F6-1	0	U	ug/L	Chloroform	CY2010	U
199-F7-1	F7-1	0.12	0.12*	ug/L	Chloroform	CY2010	C
199-F7-2	F7-2	0.22	0.22	ug/L	Chloroform	CY2010	D
199-F7-3	F7-3	0.09	0.09*	ug/L	Chloroform	CY2010	C
199-F8-2	F8-2	0	U	ug/L	Chloroform	CY2010	U
199-F8-3	F8-3	0	U	ug/L	Chloroform	CY2010	U
199-F8-4	F8-4	0.17	0.17*	ug/L	Chloroform	CY2010	C
199-F8-7	F8-7	0.053	0.05*	ug/L	Chloroform	CY2010	C
199-H1-43	H1-43	0	U	ug/L	Chloroform	CY2010	U
199-H3-2A	H3-2A	1.2	1.2	ug/L	Chloroform	CY2010	D
199-H3-4	H3-4	0.37	0.37	ug/L	Chloroform	CY2010	D
199-H3-5	H3-5	0.32	0.32	ug/L	Chloroform	CY2010	D
199-H3-25	H3-25	0	U	ug/L	Chloroform	CY2010	U
199-H4-3	H4-3	1.1	1.1	ug/L	Chloroform	CY2010	D
199-H4-5	H4-5	1.4	1.4	ug/L	Chloroform	CY2010	D
199-H4-6	H4-6	0.49	0.49*	ug/L	Chloroform	CY2010	C
199-H4-9	H4-9	0.98	0.98	ug/L	Chloroform	CY2010	D

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-H4-10	H4-10	0.7	0.70	ug/L	Chloroform	CY2010	D
199-H4-11	H4-11	1.4	1.4	ug/L	Chloroform	CY2010	D
199-H4-13	H4-13	1	1.0	ug/L	Chloroform	CY2010	D
199-H4-16	H4-16	0.78	0.78	ug/L	Chloroform	CY2010	D
199-H4-45	H4-45	0.93	0.93	ug/L	Chloroform	CY2010	D
199-H4-46	H4-46	0.71	0.71	ug/L	Chloroform	CY2010	D
199-H4-48	H4-48	1.2	1.2	ug/L	Chloroform	CY2010	D
199-H5-1A	H5-1A	0.22	0.22*	ug/L	Chloroform	CY2010	C
199-H6-1	H6-1	0.78	0.78	ug/L	Chloroform	CY2010	D
199-H6-4	H6-4	0	U	ug/L	Chloroform	CY2010	U
199-K-11	K-11	0.78	0.78	ug/L	Chloroform	CY2010	D
199-K-18	K-18	2	2.0	ug/L	Chloroform	CY2010	D
199-K-20	K-20	0.69	0.69	ug/L	Chloroform	CY2010	D
199-K-22	K-22	0.78	0.78	ug/L	Chloroform	CY2010	D
199-K-31	K-31	0.31	0.31	ug/L	Chloroform	CY2010	D
199-K-32A	K-32A	2.2	2.2	ug/L	Chloroform	CY2010	D
199-K-34	K-34	0.047	0.05*	ug/L	Chloroform	CY2010	C
199-K-36	K-36	0.68	0.68	ug/L	Chloroform	CY2010	D
199-K-37	K-37	0.45	0.45	ug/L	Chloroform	CY2010	D
199-K-106A	K-106A	0.13	0.13	ug/L	Chloroform	CY2010	D
199-K-107A	K-107A	0.11	0.11*	ug/L	Chloroform	CY2010	C
199-K-108A	K-108A	0.21	0.21	ug/L	Chloroform	CY2010	D
199-K-117A	K-117A	0	U	ug/L	Chloroform	CY2010	U
199-K-132	K-132	0	U	ug/L	Chloroform	CY2010	U
199-K-138	K-138	0	U	ug/L	Chloroform	CY2010	U
199-K-139	K-139	0	U	ug/L	Chloroform	CY2010	U
199-K-140	K-140	0.39	0.39	ug/L	Chloroform	CY2009	D
199-K-142	K-142	1	1.0	ug/L	Chloroform	CY2010	D
199-K-151	K-151	6.3	6.3	ug/L	Chloroform	CY2010	D
199-K-152	K-152	0.58	0.58	ug/L	Chloroform	CY2010	D
199-K-157	K-157	0.67	0.67	ug/L	Chloroform	CY2010	D
199-K-165	K-165	0	U	ug/L	Chloroform	CY2010	U
199-K-166	K-166	0	U	ug/L	Chloroform	CY2010	U
199-K-168	K-168	0	U	ug/L	Chloroform	CY2010	U
199-K-173	K-173	0.21	0.21*	ug/L	Chloroform	CY2010	C

Table A-3. Chromium Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	4.8	4.8*	ug/L	Chromium	CY2010	C
199-B2-14	B2-14	25	25	ug/L	Chromium	CY2010	D
199-B3-1	B3-1	21	21	ug/L	Chromium	CY2010	D
199-B3-46	B3-46	14	14*	ug/L	Chromium	CY2010	C
199-B3-47	B3-47	49	49	ug/L	Chromium	CY2010	D
199-B3-50	B3-50	13	13*	ug/L	Chromium	CY2010	C

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Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B4-1	B4-1	38	38	ug/L	Chromium	CY2010	D
199-B4-4	B4-4	24	24	ug/L	Chromium	CY2010	D
199-B4-7	B4-7	32	32	ug/L	Chromium	CY2009	D
199-B4-8	B4-8	18	18	ug/L	Chromium	CY2010	D
199-B5-1	B5-1	29	29	ug/L	Chromium	CY2010	D
199-B5-2	B5-2	25	25	ug/L	Chromium	CY2010	D
199-B8-6	B8-6	2.5	2.5*	ug/L	Chromium	CY2010	C
199-B8-7	B8-7	6.9	6.9*	ug/L	Chromium	CY2010	C
199-B8-8	B8-8	9	9.0*	ug/L	Chromium	CY2010	C
199-B8-9	B8-9	13	13	ug/L	Chromium	CY2010	D
199-B9-2	B9-2	12	12	ug/L	Chromium	CY2010	D
199-B9-3	B9-3	13	13*	ug/L	Chromium	CY2010	C
199-D2-6	D2-6	31	31	ug/L	Chromium	CY2010	D
199-D2-8	D2-8	130	130	ug/L	Chromium	CY2010	D
199-D2-11	D2-11	5.4	5.4*	ug/L	Chromium	CY2010	C
199-D3-2	D3-2	9.4	9.4	ug/L	Chromium	CY2010	D
199-D3-3	D3-3	48	48	ug/L	Chromium	CY2008	D
199-D3-4	D3-4	20	20	ug/L	Chromium	CY2008	D
199-D3-5	D3-5	0	U	ug/L	Chromium	CY2010	U
199-D4-1	D4-1	9	9.0	ug/L	Chromium	CY2010	D
199-D4-2	D4-2	940	940	ug/L	Chromium	CY2009	D
199-D4-3	D4-3	420	420	ug/L	Chromium	CY2009	D
199-D4-4	D4-4	0	U	ug/L	Chromium	CY2010	U
199-D4-5	D4-5	65	65	ug/L	Chromium	CY2010	D
199-D4-6	D4-6	0	U	ug/L	Chromium	CY2010	U
199-D4-7	D4-7	39	39	ug/L	Chromium	CY2010	D
199-D4-8	D4-8	10	10	ug/L	Chromium	CY2008	D
199-D4-9	D4-9	570	570	ug/L	Chromium	CY2009	D
199-D4-10	D4-10	10	10	ug/L	Chromium	CY2009	D
199-D4-11	D4-11	350	350	ug/L	Chromium	CY2009	D
199-D4-12	D4-12	10	10	ug/L	Chromium	CY2008	D
199-D4-13	D4-13	0	U	ug/L	Chromium	CY2010	U
199-D4-14	D4-14	49	49	ug/L	Chromium	CY2010	D
199-D4-15	D4-15	760	760	ug/L	Chromium	CY2010	D
199-D4-19	D4-19	0	U	ug/L	Chromium	CY2010	U
199-D4-20	D4-20	28	28	ug/L	Chromium	CY2010	D
199-D4-21	D4-21	700	700	ug/L	Chromium	CY2009	D
199-D4-22	D4-22	670	670	ug/L	Chromium	CY2010	D
199-D4-23	D4-23	29	29	ug/L	Chromium	CY2010	D
199-D4-24	D4-24	10	10	ug/L	Chromium	CY2008	D
199-D4-25	D4-25	130	130	ug/L	Chromium	CY2010	D
199-D4-26	D4-26	0	U	ug/L	Chromium	CY2010	U
199-D4-27	D4-27	150	150	ug/L	Chromium	CY2010	D
199-D4-28	D4-28	300	300	ug/L	Chromium	CY2009	D
199-D4-29	D4-29	570	570	ug/L	Chromium	CY2009	D
199-D4-30	D4-30	270	270	ug/L	Chromium	CY2009	D
199-D4-31	D4-31	150	150	ug/L	Chromium	CY2010	D

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Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-D4-32	D4-32	3.8	3.8	ug/L	Chromium	CY2010	D
199-D4-33	D4-33	47	47*	ug/L	Chromium	CY2008	C
199-D4-34	D4-34	350	350	ug/L	Chromium	CY2009	D
199-D4-35	D4-35	60	60	ug/L	Chromium	CY2009	D
199-D4-36	D4-36	220	220	ug/L	Chromium	CY2010	D
199-D4-37	D4-37	80	80	ug/L	Chromium	CY2009	D
199-D4-38	D4-38	110	110	ug/L	Chromium	CY2010	D
199-D4-39	D4-39	800	800	ug/L	Chromium	CY2010	D
199-D4-40	D4-40	630	630	ug/L	Chromium	CY2009	D
199-D4-41	D4-41	270	270	ug/L	Chromium	CY2009	D
199-D4-42	D4-42	590	590	ug/L	Chromium	CY2009	D
199-D4-43	D4-43	540	540	ug/L	Chromium	CY2009	D
199-D4-44	D4-44	17	17	ug/L	Chromium	CY2008	D
199-D4-45	D4-45	100	100	ug/L	Chromium	CY2009	D
199-D4-46	D4-46	6.7	6.7*	ug/L	Chromium	CY2008	C
199-D4-47	D4-47	20	20	ug/L	Chromium	CY2008	D
199-D4-48	D4-48	0	U	ug/L	Chromium	CY2010	U
199-D4-49	D4-49	6.7	6.7	ug/L	Chromium	CY2008	D
199-D4-50	D4-50	250	250	ug/L	Chromium	CY2009	D
199-D4-51	D4-51	18	18*	ug/L	Chromium	CY2008	C
199-D4-52	D4-52	17	17	ug/L	Chromium	CY2008	D
199-D4-53	D4-53	13	13	ug/L	Chromium	CY2008	D
199-D4-54	D4-54	3.3	3.3*	ug/L	Chromium	CY2008	C
199-D4-55	D4-55	6.7	6.7*	ug/L	Chromium	CY2008	C
199-D4-56	D4-56	50	50*	ug/L	Chromium	CY2008	C
199-D4-57	D4-57	17	17	ug/L	Chromium	CY2008	D
199-D4-58	D4-58	13	13*	ug/L	Chromium	CY2008	C
199-D4-59	D4-59	5	5.0*	ug/L	Chromium	CY2008	C
199-D4-60	D4-60	0	U	ug/L	Chromium	CY2009	U
199-D4-61	D4-61	10	10*	ug/L	Chromium	CY2008	C
199-D4-62	D4-62	0	U	ug/L	Chromium	CY2010	U
199-D4-63	D4-63	0	U	ug/L	Chromium	CY2008	C
199-D4-64	D4-64	0	U	ug/L	Chromium	CY2008	C
199-D4-65	D4-65	0	U	ug/L	Chromium	CY2008	C
199-D4-66	D4-66	0	U	ug/L	Chromium	CY2008	C
199-D4-67	D4-67	0	U	ug/L	Chromium	CY2008	C
199-D4-68	D4-68	3.3	3.3*	ug/L	Chromium	CY2008	C
199-D4-69	D4-69	3.3	3.3*	ug/L	Chromium	CY2008	C
199-D4-70	D4-70	10	10*	ug/L	Chromium	CY2008	C
199-D4-71	D4-71	3.3	3.3*	ug/L	Chromium	CY2008	C
199-D4-72	D4-72	13	13	ug/L	Chromium	CY2008	D
199-D4-73	D4-73	10	10*	ug/L	Chromium	CY2008	C
199-D4-74	D4-74	3.3	3.3*	ug/L	Chromium	CY2008	C
199-D4-75	D4-75	3.3	3.3*	ug/L	Chromium	CY2008	C
199-D4-76	D4-76	6.7	6.7*	ug/L	Chromium	CY2008	C
199-D4-77	D4-77	3.3	3.3*	ug/L	Chromium	CY2008	C

Table A-4. Cobalt-60 Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	0.14	0.14U	pCi/L	Cobalt-60	CY2010	U
199-B2-14	B2-14	-0.18	-0.18U	pCi/L	Cobalt-60	CY2010	U
199-B3-1	B3-1	-0.39	-0.39U	pCi/L	Cobalt-60	CY2010	U
199-B3-46	B3-46	1.1	1.1U	pCi/L	Cobalt-60	CY2010	U
199-B3-47	B3-47	2.2	2.2U	pCi/L	Cobalt-60	CY2010	U
199-B3-50	B3-50	0.61	0.61U	pCi/L	Cobalt-60	CY2010	U
199-B4-4	B4-4	-0.49	-0.49U	pCi/L	Cobalt-60	CY2010	U
199-B4-8	B4-8	0.69	0.69U	pCi/L	Cobalt-60	CY2010	U
199-B5-1	B5-1	0.18	0.18U	pCi/L	Cobalt-60	CY2010	U
199-B5-2	B5-2	-0.25	-0.25U	pCi/L	Cobalt-60	CY2010	U
199-B8-6	B8-6	0.55	0.55U	pCi/L	Cobalt-60	CY2010	U
199-B8-9	B8-9	-1	-1.0U	pCi/L	Cobalt-60	CY2010	U
199-B9-3	B9-3	-0.68	-0.68U	pCi/L	Cobalt-60	CY2010	U
199-D2-6	D2-6	0.59	0.59U	pCi/L	Cobalt-60	CY2010	U
199-D2-11	D2-11	-0.13	-0.13U	pCi/L	Cobalt-60	CY2010	U
199-D4-23	D4-23	-0.7	-0.7U	pCi/L	Cobalt-60	CY2010	U
199-D4-84	D4-84	0.47	0.47U	pCi/L	Cobalt-60	CY2010	U
199-D5-13	D5-13	0.47	0.47U	pCi/L	Cobalt-60	CY2010	U
199-D5-14	D5-14	-0.23	-0.23U	pCi/L	Cobalt-60	CY2010	U
199-D5-15	D5-15	0.45	0.45U	pCi/L	Cobalt-60	CY2010	U
199-D5-16	D5-16	0.34	0.34U	pCi/L	Cobalt-60	CY2010	U
199-D5-17	D5-17	-0.24	-0.24U	pCi/L	Cobalt-60	CY2010	U
199-D5-18	D5-18	0.39	0.39U	pCi/L	Cobalt-60	CY2010	U
199-D5-19	D5-19	0.69	0.69U	pCi/L	Cobalt-60	CY2010	U
199-D5-37	D5-37	-0.35	-0.35U	pCi/L	Cobalt-60	CY2010	U
199-D5-38	D5-38	1.3	1.3U	pCi/L	Cobalt-60	CY2010	U
199-D5-41	D5-41	0.8	0.80U	pCi/L	Cobalt-60	CY2009	U
199-D5-43	D5-43	0.31	0.31U	pCi/L	Cobalt-60	CY2010	U
199-D5-99	D5-99	0.2	0.20U	pCi/L	Cobalt-60	CY2010	U
199-D8-5	D8-5	-0.3	-0.3U	pCi/L	Cobalt-60	CY2010	U
199-D8-55	D8-55	0.82	0.82U	pCi/L	Cobalt-60	CY2010	U
199-D8-70	D8-70	-0.42	-0.42U	pCi/L	Cobalt-60	CY2010	U
199-D8-71	D8-71	-0.43	-0.43U	pCi/L	Cobalt-60	CY2010	U
199-D8-88	D8-88	-0.16	-0.16U	pCi/L	Cobalt-60	CY2010	U
199-D8-96	D8-96	2.9	2.9U	pCi/L	Cobalt-60	CY2010	U
199-F1-2	F1-2	0.028	0.03U	pCi/L	Cobalt-60	CY2010	U
199-F5-1	F5-1	0.039	0.04U	pCi/L	Cobalt-60	CY2010	U
199-F5-4	F5-4	0.28	0.28U	pCi/L	Cobalt-60	CY2010	U
199-F5-6	F5-6	-0.2	-0.2U	pCi/L	Cobalt-60	CY2010	U
199-F5-42	F5-42	-0.6	-0.6U	pCi/L	Cobalt-60	CY2010	U
199-F5-43A	F5-43A	-0.43	-0.43U	pCi/L	Cobalt-60	CY2010	U
199-F5-44	F5-44	0.051	0.05U	pCi/L	Cobalt-60	CY2010	U
199-F5-45	F5-45	-0.049	-0.05U	pCi/L	Cobalt-60	CY2010	U

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Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-F5-46	F5-46	2.7	2.7U	pCi/L	Cobalt-60	CY2010	U
199-F5-48	F5-48	-0.16	-0.16U	pCi/L	Cobalt-60	CY2010	U
199-F6-1	F6-1	0.32	0.32U	pCi/L	Cobalt-60	CY2010	U
199-F7-1	F7-1	0.017	0.02U	pCi/L	Cobalt-60	CY2010	U
199-F7-2	F7-2	0.27	0.27U	pCi/L	Cobalt-60	CY2010	U
199-F7-3	F7-3	-0.33	-0.33U	pCi/L	Cobalt-60	CY2010	U
199-F8-2	F8-2	-0.42	-0.42U	pCi/L	Cobalt-60	CY2010	U
199-F8-3	F8-3	0.4	0.40U	pCi/L	Cobalt-60	CY2010	U
199-F8-4	F8-4	-0.074	-0.07U	pCi/L	Cobalt-60	CY2010	U
199-F8-7	F8-7	0.13	0.13U	pCi/L	Cobalt-60	CY2010	U
199-H1-27	H1-27	0.43	0.43U	pCi/L	Cobalt-60	CY2010	U
199-H3-2A	H3-2A	0.1	0.10U	pCi/L	Cobalt-60	CY2010	U
199-H3-4	H3-4	-0.64	-0.64U	pCi/L	Cobalt-60	CY2010	U
199-H3-5	H3-5	-0.35	-0.35U	pCi/L	Cobalt-60	CY2010	U
199-H4-3	H4-3	0.061	0.06U	pCi/L	Cobalt-60	CY2010	U
199-H4-5	H4-5	0.2	0.20U	pCi/L	Cobalt-60	CY2010	U
199-H4-6	H4-6	-0.085	-0.09U	pCi/L	Cobalt-60	CY2010	U
199-H4-9	H4-9	-1.5	-1.5U	pCi/L	Cobalt-60	CY2010	U
199-H4-10	H4-10	-0.23	-0.23U	pCi/L	Cobalt-60	CY2010	U
199-H4-11	H4-11	-0.1	-0.1U	pCi/L	Cobalt-60	CY2010	U
199-H4-13	H4-13	0.27	0.27U	pCi/L	Cobalt-60	CY2010	U
199-H4-16	H4-16	0.42	0.42U	pCi/L	Cobalt-60	CY2010	U
199-H4-45	H4-45	-0.31	-0.31U	pCi/L	Cobalt-60	CY2010	U
199-H4-46	H4-46	0.7	0.70U	pCi/L	Cobalt-60	CY2010	U
199-H4-48	H4-48	0.33	0.33U	pCi/L	Cobalt-60	CY2010	U
199-H4-80	H4-80	-0.37	-0.37U	pCi/L	Cobalt-60	CY2010	U
199-H5-1A	H5-1A	0.7	0.70U	pCi/L	Cobalt-60	CY2010	U
199-H6-1	H6-1	0.091	0.09U	pCi/L	Cobalt-60	CY2010	U
199-H6-4	H6-4	1.8	1.8U	pCi/L	Cobalt-60	CY2010	U
199-K-18	K-18	-3200	-3200.0U	pCi/L	Cobalt-60	CY2010	U
199-K-19	K-19	-4.3	-4.3U	pCi/L	Cobalt-60	CY2010	U
199-K-20	K-20	1.5	1.5U	pCi/L	Cobalt-60	CY2010	U
199-K-21	K-21	4.9	4.9U	pCi/L	Cobalt-60	CY2010	U
199-K-22	K-22	-3.5	-3.5U	pCi/L	Cobalt-60	CY2009	U
199-K-29	K-29	1.4	1.4U	pCi/L	Cobalt-60	CY2010	U
199-K-30	K-30	5	5.0*	pCi/L	Cobalt-60	CY2010	C
199-K-31	K-31	-2.9	-2.9U	pCi/L	Cobalt-60	CY2008	U
199-K-32A	K-32A	-9.3	-9.3U	pCi/L	Cobalt-60	CY2010	U
199-K-34	K-34	2	2.0U	pCi/L	Cobalt-60	CY2010	U
199-K-36	K-36	-1.8	-1.8U	pCi/L	Cobalt-60	CY2010	U
199-K-37	K-37	1.3	1.3U	pCi/L	Cobalt-60	CY2010	U
199-K-106A	K-106A	2.4	2.4U	pCi/L	Cobalt-60	CY2010	U
199-K-107A	K-107A	0.062	0.06U	pCi/L	Cobalt-60	CY2010	U
199-K-108A	K-108A	5.3	5.3U	pCi/L	Cobalt-60	CY2010	U
199-K-110A	K-110A	-4.6	-4.6U	pCi/L	Cobalt-60	CY2008	U
199-K-111A	K-111A	-2.9	-2.9U	pCi/L	Cobalt-60	CY2010	U
199-K-117A	K-117A	0.66	0.66U	pCi/L	Cobalt-60	CY2010	U

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-K-119A	K-119A	-2.7	-2.7U	pCi/L	Cobalt-60	CY2010	U
199-K-120A	K-120A	-1.5	-1.5U	pCi/L	Cobalt-60	CY2010	U
199-K-124A	K-124A	-0.29	-0.29U	pCi/L	Cobalt-60	CY2010	U
199-K-125A	K-125A	-2.7	-2.7U	pCi/L	Cobalt-60	CY2010	U
199-K-127	K-127	0.54	0.54U	pCi/L	Cobalt-60	CY2010	U
199-K-129	K-129	-1.1	-1.1U	pCi/L	Cobalt-60	CY2010	U
199-K-130	K-130	-3.3	-3.3U	pCi/L	Cobalt-60	CY2010	U
199-K-131	K-131	0.27	0.27U	pCi/L	Cobalt-60	CY2010	U
199-K-132	K-132	2	2.0U	pCi/L	Cobalt-60	CY2010	U

Table A-5. Cyanide Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-H4-3	H4-3	0	U	ug/L	Cyanide	CY2010	U
199-H4-9	H4-9	0	U	ug/L	Cyanide	CY2009	U
199-H4-12A	H4-12A	0	U	ug/L	Cyanide	CY2010	U
199-H4-12B	H4-12B	0	U	ug/L	Cyanide	CY2010	U
199-K-37	K-37	0	U	ug/L	Cyanide	CY2010	U
199-K-151	K-151	0	U	ug/L	Cyanide	CY2010	U
199-K-152	K-152	0	U	ug/L	Cyanide	CY2010	U
199-K-182	K-182	0	U	ug/L	Cyanide	CY2010	U
199-N-14	N-14	1.4	1.4*	ug/L	Cyanide	CY2010	C
199-N-16	N-16	0	U	ug/L	Cyanide	CY2010	U
199-N-18	N-18	0	U	ug/L	Cyanide	CY2010	U
199-N-19	N-19	0	U	ug/L	Cyanide	CY2010	U
199-N-32	N-32	0	U	ug/L	Cyanide	CY2010	U
199-N-41	N-41	0	U	ug/L	Cyanide	CY2010	U
199-N-50	N-50	0	U	ug/L	Cyanide	CY2010	U
199-N-51	N-51	0	U	ug/L	Cyanide	CY2010	U
199-N-67	N-67	0	U	ug/L	Cyanide	CY2010	U
199-N-71	N-71	0	U	ug/L	Cyanide	CY2010	U
199-N-72	N-72	0	U	ug/L	Cyanide	CY2010	U
199-N-74	N-74	0	U	ug/L	Cyanide	CY2010	U
199-N-81	N-81	0	U	ug/L	Cyanide	CY2010	U
199-N-96A	N-96A	0	U	ug/L	Cyanide	CY2010	U
199-N-99A	N-99A	0	U	ug/L	Cyanide	CY2010	U
199-N-147	N-147	0	U	ug/L	Cyanide	CY2010	U
199-N-165	N-165	0	U	ug/L	Cyanide	CY2010	U
299-E13-5	E13-5	0	U	ug/L	Cyanide	CY2010	U
299-E13-11	E13-11	0	U	ug/L	Cyanide	CY2009	U
299-E13-14	E13-14	0	U	ug/L	Cyanide	CY2010	U
299-E13-19	E13-19	0	U	ug/L	Cyanide	CY2010	U
299-E27-4	E27-4	2.1	2.1*	ug/L	Cyanide	CY2010	C
299-E27-7	E27-7	29	29	ug/L	Cyanide	CY2010	D
299-E27-10	E27-10	0	U	ug/L	Cyanide	CY2010	U
299-E27-12	E27-12	0	U	ug/L	Cyanide	CY2010	U

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Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
299-E27-13	E27-13	0	U	ug/L	Cyanide	CY2010	U
299-E27-14	E27-14	18	18	ug/L	Cyanide	CY2010	D
299-E27-15	E27-15	0	U	ug/L	Cyanide	CY2010	U
299-E27-21	E27-21	2.8	2.8*	ug/L	Cyanide	CY2010	C
299-E27-22	E27-22	0	U	ug/L	Cyanide	CY2010	U
299-E27-23	E27-23	3.4	3.4*	ug/L	Cyanide	CY2010	C
299-E27-24	E27-24	15	15	ug/L	Cyanide	CY2010	D
299-E27-25	E27-25	0	U	ug/L	Cyanide	CY2010	U
299-E27-155	E27-155	7	7.0	ug/L	Cyanide	CY2010	D
299-E28-8	E28-8	0	U	ug/L	Cyanide	CY2010	U
299-E28-21	E28-21	4.2	4.2	ug/L	Cyanide	CY2008	D
299-E28-26	E28-26	3.9	3.9*	ug/L	Cyanide	CY2008	C
299-E28-27	E28-27	8.2	8.2	ug/L	Cyanide	CY2008	D
299-E28-28	E28-28	5.7	5.7	ug/L	Cyanide	CY2008	D
299-E32-2	E32-2	2.4	2.4*	ug/L	Cyanide	CY2008	C
299-E32-3	E32-3	3.9	3.9*	ug/L	Cyanide	CY2008	C

Table A-6. Carbon Tetrachloride Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-B2-14	B2-14	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-B3-1	B3-1	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-B3-46	B3-46	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-B3-47	B3-47	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-B3-50	B3-50	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-B4-4	B4-4	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-B4-8	B4-8	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-B5-1	B5-1	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-B5-2	B5-2	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-B8-6	B8-6	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-B8-9	B8-9	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-B9-3	B9-3	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D2-6	D2-6	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D2-11	D2-11	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D4-23	D4-23	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D4-84	D4-84	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D5-13	D5-13	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D5-14	D5-14	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D5-15	D5-15	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D5-16	D5-16	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D5-17	D5-17	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D5-18	D5-18	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D5-19	D5-19	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D5-37	D5-37	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D5-38	D5-38	0	U	ug/L	Carbon tetrachloride	CY2010	U

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-D5-40	D5-40	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D5-41	D5-41	0	U	ug/L	Carbon tetrachloride	CY2009	U
199-D5-43	D5-43	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D5-99	D5-99	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D5-109	D5-109	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D5-114	D5-114	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D8-5	D8-5	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D8-55	D8-55	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D8-70	D8-70	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D8-71	D8-71	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-D8-88	D8-88	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-F1-2	F1-2	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-F5-1	F5-1	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-F5-4	F5-4	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-F5-6	F5-6	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-F5-42	F5-42	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-F5-43A	F5-43A	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-F5-44	F5-44	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-F5-45	F5-45	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-F5-46	F5-46	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-F5-48	F5-48	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-F6-1	F6-1	0	U	ug/L	Carbon tetrachloride	CY2010	U
199-F7-1	F7-1	0	U	ug/L	Carbon tetrachloride	CY2010	U

Table A-7. Fluoride Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	0.087	0.09*	mg/L	Fluoride	CY2010	C
199-B2-14	B2-14	0	U	mg/L	Fluoride	CY2010	U
199-B3-1	B3-1	0.035	0.04*	mg/L	Fluoride	CY2010	C
199-B3-46	B3-46	0.12	0.12	mg/L	Fluoride	CY2010	D
199-B3-47	B3-47	0.022	0.02*	mg/L	Fluoride	CY2010	C
199-B3-50	B3-50	0.17	0.17	mg/L	Fluoride	CY2010	D
199-B4-1	B4-1	0	U	mg/L	Fluoride	CY2010	U
199-B4-4	B4-4	0.11	0.11	mg/L	Fluoride	CY2010	D
199-B4-7	B4-7	0.18	0.18	mg/L	Fluoride	CY2009	D
199-B4-8	B4-8	0.11	0.11	mg/L	Fluoride	CY2010	D
199-B5-1	B5-1	0.15	0.15	mg/L	Fluoride	CY2010	D
199-B5-2	B5-2	0.084	0.08	mg/L	Fluoride	CY2010	D
199-B8-6	B8-6	0.083	0.08*	mg/L	Fluoride	CY2010	C
199-B8-7	B8-7	0.13	0.13	mg/L	Fluoride	CY2009	D
199-B8-8	B8-8	0.16	0.16	mg/L	Fluoride	CY2010	D
199-B8-9	B8-9	0.22	0.22	mg/L	Fluoride	CY2010	D
199-B9-3	B9-3	0.18	0.18	mg/L	Fluoride	CY2010	D
199-D2-6	D2-6	0	U	mg/L	Fluoride	CY2010	U
199-D2-8	D2-8	0	U	mg/L	Fluoride	CY2009	U

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-D2-11	D2-11	0.074	0.07*	mg/L	Fluoride	CY2010	C
199-D3-2	D3-2	0	U	mg/L	Fluoride	CY2010	U
199-D4-1	D4-1	0.07	0.07	mg/L	Fluoride	CY2010	D
199-D4-4	D4-4	0	U	mg/L	Fluoride	CY2010	U
199-D4-5	D4-5	0.14	0.14	mg/L	Fluoride	CY2010	D
199-D4-6	D4-6	0.11	0.11	mg/L	Fluoride	CY2010	D
199-D4-7	D4-7	0	U	mg/L	Fluoride	CY2010	U
199-D4-13	D4-13	0	U	mg/L	Fluoride	CY2010	U
199-D4-14	D4-14	0	U	mg/L	Fluoride	CY2010	U
199-D4-15	D4-15	0.029	0.03*	mg/L	Fluoride	CY2010	C
199-D4-19	D4-19	0.29	0.29	mg/L	Fluoride	CY2010	D
199-D4-20	D4-20	0	U	mg/L	Fluoride	CY2010	U
199-D4-22	D4-22	0	U	mg/L	Fluoride	CY2010	U
199-D4-23	D4-23	0	U	mg/L	Fluoride	CY2010	U
199-D4-25	D4-25	0.31	0.31	mg/L	Fluoride	CY2010	D
199-D4-26	D4-26	1	1.0	mg/L	Fluoride	CY2010	D
199-D4-27	D4-27	0	U	mg/L	Fluoride	CY2010	U
199-D4-31	D4-31	0	U	mg/L	Fluoride	CY2010	U
199-D4-32	D4-32	0.13	0.13	mg/L	Fluoride	CY2010	D
199-D4-36	D4-36	0	U	mg/L	Fluoride	CY2010	U
199-D4-38	D4-38	0	U	mg/L	Fluoride	CY2010	U
199-D4-39	D4-39	0	U	mg/L	Fluoride	CY2010	U
199-D4-48	D4-48	0.18	0.18	mg/L	Fluoride	CY2010	D
199-D4-62	D4-62	0	U	mg/L	Fluoride	CY2010	U
199-D4-78	D4-78	0.052	0.05*	mg/L	Fluoride	CY2010	C
199-D4-83	D4-83	0	U	mg/L	Fluoride	CY2010	U
199-D4-84	D4-84	0	U	mg/L	Fluoride	CY2010	U
199-D4-85	D4-85	0	U	mg/L	Fluoride	CY2009	U
199-D4-86	D4-86	0	U	mg/L	Fluoride	CY2010	U
199-D4-92	D4-92	0.14	0.14*	mg/L	Fluoride	CY2010	C

Table A-8. Iodine-129 Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	-0.02	-0.02U	pCi/L	Iodine-129	CY2010	U
199-B2-14	B2-14	0.0038	0.00U	pCi/L	Iodine-129	CY2010	U
199-B3-1	B3-1	0.041	0.04U	pCi/L	Iodine-129	CY2010	U
199-B3-46	B3-46	0.0067	0.01U	pCi/L	Iodine-129	CY2010	U
199-B3-47	B3-47	-0.041	-0.04U	pCi/L	Iodine-129	CY2010	U
199-B3-50	B3-50	0.12	0.12U	pCi/L	Iodine-129	CY2010	U
199-B4-4	B4-4	0.036	0.04U	pCi/L	Iodine-129	CY2010	U
199-B4-8	B4-8	0.013	0.01U	pCi/L	Iodine-129	CY2010	U
199-B5-1	B5-1	0.083	0.08U	pCi/L	Iodine-129	CY2010	U
199-B5-2	B5-2	0.041	0.04U	pCi/L	Iodine-129	CY2010	U
199-B8-6	B8-6	-0.01	-0.01U	pCi/L	Iodine-129	CY2010	U
199-B8-9	B8-9	-0.0079	-0.01U	pCi/L	Iodine-129	CY2010	U

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B9-3	B9-3	0.023	0.02U	pCi/L	Iodine-129	CY2010	U
199-F1-2	F1-2	0.0087	0.01U	pCi/L	Iodine-129	CY2010	U
199-F5-1	F5-1	0.043	0.04U	pCi/L	Iodine-129	CY2010	U
199-F5-4	F5-4	-0.033	-0.03U	pCi/L	Iodine-129	CY2010	U
199-F5-6	F5-6	0.084	0.08U	pCi/L	Iodine-129	CY2010	U
199-F5-42	F5-42	0.029	0.03U	pCi/L	Iodine-129	CY2010	U
199-F5-43A	F5-43A	0.027	0.03U	pCi/L	Iodine-129	CY2010	U
199-F5-44	F5-44	0.029	0.03U	pCi/L	Iodine-129	CY2010	U
199-F5-45	F5-45	0.034	0.03U	pCi/L	Iodine-129	CY2010	U
199-F5-46	F5-46	-0.48	-0.48U	pCi/L	Iodine-129	CY2010	U
199-F5-48	F5-48	-0.037	-0.04U	pCi/L	Iodine-129	CY2010	U
199-F6-1	F6-1	0.051	0.05U	pCi/L	Iodine-129	CY2010	U
199-F7-1	F7-1	0.0043	0.00U	pCi/L	Iodine-129	CY2010	U
199-F7-2	F7-2	0.052	0.05U	pCi/L	Iodine-129	CY2010	U
199-F7-3	F7-3	0.066	0.07U	pCi/L	Iodine-129	CY2010	U
199-F8-2	F8-2	0.01	0.01U	pCi/L	Iodine-129	CY2010	U
199-F8-3	F8-3	-0.037	-0.04U	pCi/L	Iodine-129	CY2010	U
199-F8-4	F8-4	0.065	0.07U	pCi/L	Iodine-129	CY2010	U
199-F8-7	F8-7	-0.013	-0.01U	pCi/L	Iodine-129	CY2010	U
299-E13-4	E13-4	0.034	0.03U	pCi/L	Iodine-129	CY2008	U
299-E13-5	E13-5	-0.4	-0.4U	pCi/L	Iodine-129	CY2008	U
299-E13-6	E13-6	0.58	0.58U	pCi/L	Iodine-129	CY2008	U
299-E13-8	E13-8	0.01	0.01U	pCi/L	Iodine-129	CY2008	U
299-E13-9	E13-9	0.11	0.11U	pCi/L	Iodine-129	CY2008	U
299-E13-11	E13-11	-0.069	-0.07U	pCi/L	Iodine-129	CY2008	U
299-E13-12	E13-12	0.87	0.87U	pCi/L	Iodine-129	CY2008	U
299-E13-14	E13-14	-0.14	-0.14U	pCi/L	Iodine-129	CY2008	U
299-E13-16	E13-16	0.31	0.31U	pCi/L	Iodine-129	CY2008	U
299-E13-17	E13-17	-0.072	-0.07U	pCi/L	Iodine-129	CY2008	U
299-E13-18	E13-18	-0.27	-0.27U	pCi/L	Iodine-129	CY2008	U
299-E13-19	E13-19	-0.16	-0.16U	pCi/L	Iodine-129	CY2008	U
299-E16-2	E16-2	1.4	1.4	pCi/L	Iodine-129	CY2010	D
299-E17-1	E17-1	3.8	3.8	pCi/L	Iodine-129	CY2010	D
299-E17-12	E17-12	1.1	1.1	pCi/L	Iodine-129	CY2010	D
299-E17-13	E17-13	1	1.0	pCi/L	Iodine-129	CY2010	D
299-E17-14	E17-14	8.3	8.3	pCi/L	Iodine-129	CY2010	D
299-E17-16	E17-16	3.5	3.5	pCi/L	Iodine-129	CY2010	D

Table A-9. Nitrate Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	12	12	mg/L	Nitrate	CY2010	D
199-B2-14	B2-14	11	11	mg/L	Nitrate	CY2010	D
199-B3-1	B3-1	19	19	mg/L	Nitrate	CY2010	D
199-B3-46	B3-46	11	11	mg/L	Nitrate	CY2010	D
199-B3-47	B3-47	39	39	mg/L	Nitrate	CY2010	D

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Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B3-50	B3-50	8.3	8.3	mg/L	Nitrate	CY2010	D
199-B4-1	B4-1	11	11	mg/L	Nitrate	CY2010	D
199-B4-4	B4-4	12	12	mg/L	Nitrate	CY2010	D
199-B4-7	B4-7	11	11	mg/L	Nitrate	CY2009	D
199-B4-8	B4-8	13	13	mg/L	Nitrate	CY2010	D
199-B5-1	B5-1	6.4	6.4	mg/L	Nitrate	CY2010	D
199-B5-2	B5-2	12	12	mg/L	Nitrate	CY2010	D
199-B8-6	B8-6	5.6	5.6	mg/L	Nitrate	CY2010	D
199-B8-7	B8-7	6.7	6.7	mg/L	Nitrate	CY2009	D
199-B8-8	B8-8	6.6	6.6	mg/L	Nitrate	CY2010	D
199-B8-9	B8-9	8.1	8.1	mg/L	Nitrate	CY2010	D
199-B9-3	B9-3	8.3	8.3	mg/L	Nitrate	CY2010	D
199-D2-6	D2-6	68	68	mg/L	Nitrate	CY2010	D
199-D2-8	D2-8	37	37	mg/L	Nitrate	CY2009	D
199-D2-11	D2-11	31	31	mg/L	Nitrate	CY2010	D
199-D3-2	D3-2	22	22	mg/L	Nitrate	CY2010	D
199-D4-1	D4-1	28	28	mg/L	Nitrate	CY2010	D
199-D4-4	D4-4	21	21	mg/L	Nitrate	CY2010	D
199-D4-5	D4-5	48	48	mg/L	Nitrate	CY2010	D
199-D4-6	D4-6	17	17	mg/L	Nitrate	CY2010	D
199-D4-7	D4-7	31	31	mg/L	Nitrate	CY2010	D
199-D4-13	D4-13	9.5	9.5	mg/L	Nitrate	CY2010	D
199-D4-14	D4-14	22	22	mg/L	Nitrate	CY2010	D
199-D4-15	D4-15	57	57	mg/L	Nitrate	CY2010	D
199-D4-19	D4-19	8.1	8.1	mg/L	Nitrate	CY2010	D
199-D4-20	D4-20	24	24	mg/L	Nitrate	CY2010	D
199-D4-22	D4-22	66	66	mg/L	Nitrate	CY2010	D
199-D4-23	D4-23	30	30	mg/L	Nitrate	CY2010	D
199-D4-25	D4-25	29	29	mg/L	Nitrate	CY2010	D
199-D4-26	D4-26	0.96	0.96	mg/L	Nitrate	CY2010	D
199-D4-27	D4-27	33	33	mg/L	Nitrate	CY2010	D
199-D4-31	D4-31	44	44	mg/L	Nitrate	CY2010	D
199-D4-32	D4-32	28	28	mg/L	Nitrate	CY2010	D
199-D4-36	D4-36	30	30	mg/L	Nitrate	CY2010	D
199-D4-38	D4-38	31	31	mg/L	Nitrate	CY2010	D
199-D4-39	D4-39	44	44	mg/L	Nitrate	CY2010	D
199-D4-48	D4-48	7.1	7.1	mg/L	Nitrate	CY2010	D
199-D4-62	D4-62	33	33	mg/L	Nitrate	CY2010	D
199-D4-78	D4-78	25	25	mg/L	Nitrate	CY2010	D
199-D4-83	D4-83	17	17	mg/L	Nitrate	CY2010	D
199-D4-84	D4-84	25	25	mg/L	Nitrate	CY2010	D
199-D4-85	D4-85	29	29	mg/L	Nitrate	CY2009	D
199-D4-86	D4-86	28	28	mg/L	Nitrate	CY2010	D
199-D4-92	D4-92	0.35	0.35*	mg/L	Nitrate	CY2010	C

Table A-10. Sulfate Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	38	38	mg/L	Sulfate	CY2010	D
199-B2-14	B2-14	43	43	mg/L	Sulfate	CY2010	D
199-B3-1	B3-1	51	51	mg/L	Sulfate	CY2010	D
199-B3-46	B3-46	41	41	mg/L	Sulfate	CY2010	D
199-B3-47	B3-47	68	68	mg/L	Sulfate	CY2010	D
199-B3-50	B3-50	36	36	mg/L	Sulfate	CY2010	D
199-B4-1	B4-1	45	45	mg/L	Sulfate	CY2010	D
199-B4-4	B4-4	50	50	mg/L	Sulfate	CY2010	D
199-B4-7	B4-7	46	46	mg/L	Sulfate	CY2009	D
199-B4-8	B4-8	54	54	mg/L	Sulfate	CY2010	D
199-B5-1	B5-1	31	31	mg/L	Sulfate	CY2010	D
199-B5-2	B5-2	47	47	mg/L	Sulfate	CY2010	D
199-B8-6	B8-6	29	29	mg/L	Sulfate	CY2010	D
199-B8-7	B8-7	33	33	mg/L	Sulfate	CY2009	D
199-B8-8	B8-8	34	34	mg/L	Sulfate	CY2010	D
199-B8-9	B8-9	36	36	mg/L	Sulfate	CY2010	D
199-B9-3	B9-3	41	41	mg/L	Sulfate	CY2010	D
199-D2-6	D2-6	140	140	mg/L	Sulfate	CY2010	D
199-D2-8	D2-8	85	85	mg/L	Sulfate	CY2009	D
199-D2-11	D2-11	79	79	mg/L	Sulfate	CY2010	D
199-D3-2	D3-2	66	66	mg/L	Sulfate	CY2010	D
199-D4-1	D4-1	170	170	mg/L	Sulfate	CY2010	D
199-D4-4	D4-4	220	220	mg/L	Sulfate	CY2010	D
199-D4-5	D4-5	160	160	mg/L	Sulfate	CY2010	D
199-D4-6	D4-6	220	220	mg/L	Sulfate	CY2010	D
199-D4-7	D4-7	170	170	mg/L	Sulfate	CY2010	D
199-D4-13	D4-13	160	160	mg/L	Sulfate	CY2010	D
199-D4-14	D4-14	80	80	mg/L	Sulfate	CY2010	D
199-D4-15	D4-15	130	130	mg/L	Sulfate	CY2010	D
199-D4-19	D4-19	190	190	mg/L	Sulfate	CY2010	D
199-D4-20	D4-20	120	120	mg/L	Sulfate	CY2010	D
199-D4-22	D4-22	170	170	mg/L	Sulfate	CY2010	D
199-D4-23	D4-23	190	190	mg/L	Sulfate	CY2010	D
199-D4-25	D4-25	180	180	mg/L	Sulfate	CY2010	D
199-D4-26	D4-26	65	65	mg/L	Sulfate	CY2010	D
199-D4-27	D4-27	120	120	mg/L	Sulfate	CY2010	D
199-D4-31	D4-31	130	130	mg/L	Sulfate	CY2010	D
199-D4-32	D4-32	190	190	mg/L	Sulfate	CY2010	D
199-D4-36	D4-36	84	84	mg/L	Sulfate	CY2010	D
199-D4-38	D4-38	120	120	mg/L	Sulfate	CY2010	D
199-D4-39	D4-39	110	110	mg/L	Sulfate	CY2010	D
199-D4-48	D4-48	53	53	mg/L	Sulfate	CY2010	D
199-D4-62	D4-62	160	160	mg/L	Sulfate	CY2010	D
199-D4-78	D4-78	300	300	mg/L	Sulfate	CY2010	D
199-D4-83	D4-83	34	34	mg/L	Sulfate	CY2010	D

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-D4-84	D4-84	410	410	mg/L	Sulfate	CY2010	D
199-D4-85	D4-85	180	180	mg/L	Sulfate	CY2009	D
199-D4-86	D4-86	75	75	mg/L	Sulfate	CY2010	D
199-D4-92	D4-92	23	23	mg/L	Sulfate	CY2010	D

Table A-11. Strontium-90 Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	-2.4	-2.4U	pCi/L	Strontium-90	CY2010	U
199-B2-14	B2-14	1.5	1.5*	pCi/L	Strontium-90	CY2010	C
199-B3-1	B3-1	27	27	pCi/L	Strontium-90	CY2010	D
199-B3-46	B3-46	36	36	pCi/L	Strontium-90	CY2010	D
199-B3-47	B3-47	20	20	pCi/L	Strontium-90	CY2010	D
199-B3-50	B3-50	-3.3	-3.3U	pCi/L	Strontium-90	CY2010	U
199-B4-1	B4-1	4.2	4.2	pCi/L	Strontium-90	CY2010	D
199-B4-4	B4-4	5.7	5.7*	pCi/L	Strontium-90	CY2010	C
199-B4-7	B4-7	1.5	1.5	pCi/L	Strontium-90	CY2009	D
199-B4-8	B4-8	-1.6	-1.6U	pCi/L	Strontium-90	CY2010	U
199-B5-1	B5-1	-3.8	-3.8U	pCi/L	Strontium-90	CY2010	U
199-B5-2	B5-2	14	14	pCi/L	Strontium-90	CY2010	D
199-B8-6	B8-6	-3.5	-3.5U	pCi/L	Strontium-90	CY2010	U
199-B8-9	B8-9	-4.7	-4.7U	pCi/L	Strontium-90	CY2010	U
199-B9-2	B9-2	-0.0091	-0.01U	pCi/L	Strontium-90	CY2008	U
199-B9-3	B9-3	-3.4	-3.4U	pCi/L	Strontium-90	CY2010	U
199-D2-6	D2-6	-2	-2.0U	pCi/L	Strontium-90	CY2010	U
199-D2-11	D2-11	-2.7	-2.7U	pCi/L	Strontium-90	CY2010	U
199-D4-23	D4-23	-5	-5.0U	pCi/L	Strontium-90	CY2010	U
199-D4-84	D4-84	-7.1	-7.1U	pCi/L	Strontium-90	CY2010	U
199-D5-13	D5-13	-3	-3.0U	pCi/L	Strontium-90	CY2010	U
199-D5-14	D5-14	-2.7	-2.7U	pCi/L	Strontium-90	CY2010	U
199-D5-15	D5-15	-3.9	-3.9U	pCi/L	Strontium-90	CY2010	U
199-D5-16	D5-16	0.5	0.50U	pCi/L	Strontium-90	CY2010	U
199-K-152	K-152	-5.2	-5.2U	pCi/L	Strontium-90	CY2010	U
199-K-153	K-153	-6.8	-6.8U	pCi/L	Strontium-90	CY2010	U
199-K-154	K-154	-4.3	-4.3U	pCi/L	Strontium-90	CY2010	U
199-K-156	K-156	-0.62	-0.62U	pCi/L	Strontium-90	CY2008	U
199-K-157	K-157	-2	-2.0U	pCi/L	Strontium-90	CY2010	U
199-K-159	K-159	0.21	0.21U	pCi/L	Strontium-90	CY2008	U
199-K-160	K-160	0.073	0.07U	pCi/L	Strontium-90	CY2008	U
199-K-161	K-161	1.8	1.8*	pCi/L	Strontium-90	CY2010	C
199-K-162	K-162	-1.8	-1.8U	pCi/L	Strontium-90	CY2010	U
199-K-163	K-163	-2.8	-2.8U	pCi/L	Strontium-90	CY2010	U
199-K-164	K-164	-0.09	-0.09U	pCi/L	Strontium-90	CY2008	U
199-K-165	K-165	-1.6	-1.6U	pCi/L	Strontium-90	CY2009	U
199-K-166	K-166	-8.8	-8.8U	pCi/L	Strontium-90	CY2010	U

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-K-168	K-168	-1.4	-1.4U	pCi/L	Strontium-90	CY2009	U
199-K-169	K-169	-0.14	-0.14U	pCi/L	Strontium-90	CY2008	U
199-K-170	K-170	-0.68	-0.68U	pCi/L	Strontium-90	CY2008	U
199-K-171	K-171	-4.6	-4.6U	pCi/L	Strontium-90	CY2010	U
199-K-172	K-172	-2	-2.0U	pCi/L	Strontium-90	CY2008	U
199-K-173	K-173	-6	-6.0U	pCi/L	Strontium-90	CY2009	U
199-K-174	K-174	-0.39	-0.39U	pCi/L	Strontium-90	CY2009	U
199-K-175	K-175	-3.9	-3.9U	pCi/L	Strontium-90	CY2009	U
199-K-178	K-178	-1.7	-1.7*	pCi/L	Strontium-90	CY2010	C
199-K-179	K-179	-5.5	-5.5U	pCi/L	Strontium-90	CY2009	U
199-K-180	K-180	-2.2	-2.2U	pCi/L	Strontium-90	CY2010	U
199-K-181	K-181	-5.5	-5.5U	pCi/L	Strontium-90	CY2010	U
199-K-182	K-182	-5.9	-5.9U	pCi/L	Strontium-90	CY2010	U

Table A-12. Technetium-99 Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	0.04	0.04U	pCi/L	Technetium-99	CY2010	U
199-B2-14	B2-14	3.9	3.9*	pCi/L	Technetium-99	CY2010	C
199-B3-1	B3-1	18	18	pCi/L	Technetium-99	CY2010	D
199-B3-46	B3-46	19	19	pCi/L	Technetium-99	CY2010	D
199-B3-47	B3-47	14	14	pCi/L	Technetium-99	CY2010	D
199-B3-50	B3-50	9.9	9.9	pCi/L	Technetium-99	CY2010	D
199-B4-4	B4-4	15	15	pCi/L	Technetium-99	CY2010	D
199-B4-8	B4-8	8.3	8.3	pCi/L	Technetium-99	CY2010	D
199-B5-1	B5-1	1.6	1.6U	pCi/L	Technetium-99	CY2010	U
199-B5-2	B5-2	7.5	7.5*	pCi/L	Technetium-99	CY2010	C
199-B8-6	B8-6	-1.2	-1.2U	pCi/L	Technetium-99	CY2010	U
199-B8-7	B8-7	3.9	3.9U	pCi/L	Technetium-99	CY2008	U
199-B8-8	B8-8	8.4	8.4	pCi/L	Technetium-99	CY2008	D
199-B8-9	B8-9	18	18	pCi/L	Technetium-99	CY2010	D
199-B9-3	B9-3	6.3	6.3*	pCi/L	Technetium-99	CY2010	C
199-D2-6	D2-6	-9	-9.0U	pCi/L	Technetium-99	CY2010	U

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Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-D2-11	D2-11	-8.1	-8.1U	pCi/L	Technetium-99	CY2010	U
199-D4-23	D4-23	-7	-7.0U	pCi/L	Technetium-99	CY2010	U
199-D4-84	D4-84	0.93	0.93*	pCi/L	Technetium-99	CY2010	C
199-D5-13	D5-13	-7	-7.0U	pCi/L	Technetium-99	CY2010	U
199-D5-14	D5-14	-5.5	-5.5U	pCi/L	Technetium-99	CY2010	U
199-D5-15	D5-15	-5	-5.0U	pCi/L	Technetium-99	CY2010	U
199-D5-16	D5-16	-8	-8.0U	pCi/L	Technetium-99	CY2010	U
199-D5-17	D5-17	1.5	1.5*	pCi/L	Technetium-99	CY2010	C
199-N-361	N-361	1.2	1.2U	pCi/L	Technetium-99	CY2010	U
199-N-362	N-362	1.2	1.2U	pCi/L	Technetium-99	CY2010	U
199-N-363	N-363	0.7	0.70U	pCi/L	Technetium-99	CY2010	U
199-N-364	N-364	-1.9	-1.9U	pCi/L	Technetium-99	CY2010	U
199-N-365	N-365	0.2	0.20U	pCi/L	Technetium-99	CY2010	U
199-N-366	N-366	-1.9	-1.9U	pCi/L	Technetium-99	CY2010	U
199-N-367	N-367	-0.1	-0.1U	pCi/L	Technetium-99	CY2010	U
199-N-368	N-368	-5.7	-5.7U	pCi/L	Technetium-99	CY2010	U
199-N-369	N-369	-8.5	-8.5U	pCi/L	Technetium-99	CY2010	U
199-N-370	N-370	-9.3	-9.3U	pCi/L	Technetium-99	CY2010	U
299-E13-4	E13-4	-4.3	-4.3U	pCi/L	Technetium-99	CY2008	U
299-E13-5	E13-5	-2.1	-2.1U	pCi/L	Technetium-99	CY2010	U
299-E13-6	E13-6	-3.5	-3.5U	pCi/L	Technetium-99	CY2008	U
299-E13-8	E13-8	-1	-1.0U	pCi/L	Technetium-99	CY2008	U
299-E13-9	E13-9	0.3	0.30U	pCi/L	Technetium-99	CY2008	U
299-E13-11	E13-11	-16	-16.0U	pCi/L	Technetium-99	CY2009	U
299-E13-12	E13-12	-3.1	-3.1U	pCi/L	Technetium-99	CY2008	U
299-E13-14	E13-14	-0.9	-0.9U	pCi/L	Technetium-99	CY2010	U

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
299-E13-16	E13-16	-3.8	-3.8U	pCi/L	Technetium-99	CY2008	U
299-E13-17	E13-17	-3.3	-3.3U	pCi/L	Technetium-99	CY2008	U
299-E13-18	E13-18	-4	-4.0U	pCi/L	Technetium-99	CY2008	U
299-E13-19	E13-19	-0.2	-0.2U	pCi/L	Technetium-99	CY2010	U
299-E17-1	E17-1	71	71	pCi/L	Technetium-99	CY2010	D
299-E17-14	E17-14	130	130	pCi/L	Technetium-99	CY2010	D
299-E17-16	E17-16	15	15	pCi/L	Technetium-99	CY2010	D
299-E17-18	E17-18	12	12	pCi/L	Technetium-99	CY2010	D

Table A-13. Trichloroethene Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	0.1	0.10*	ug/L	Trichloroethene	CY2010	C
199-B2-14	B2-14	0.24	0.24*	ug/L	Trichloroethene	CY2010	C
199-B3-1	B3-1	0.39	0.39	ug/L	Trichloroethene	CY2010	D
199-B3-46	B3-46	1	1.0	ug/L	Trichloroethene	CY2010	D
199-B3-47	B3-47	0.058	0.06*	ug/L	Trichloroethene	CY2010	C
199-B3-50	B3-50	1.1	1.1	ug/L	Trichloroethene	CY2010	D
199-B4-4	B4-4	0.97	0.97	ug/L	Trichloroethene	CY2010	D
199-B4-8	B4-8	0.76	0.76	ug/L	Trichloroethene	CY2010	D
199-B5-1	B5-1	0	U	ug/L	Trichloroethene	CY2010	U
199-B5-2	B5-2	0.52	0.52	ug/L	Trichloroethene	CY2010	D
199-B8-6	B8-6	0.16	0.16*	ug/L	Trichloroethene	CY2010	C
199-B8-9	B8-9	0	U	ug/L	Trichloroethene	CY2010	U
199-B9-3	B9-3	1.5	1.5	ug/L	Trichloroethene	CY2010	D
199-D2-6	D2-6	0	U	ug/L	Trichloroethene	CY2010	U
199-D2-11	D2-11	0	U	ug/L	Trichloroethene	CY2010	U
199-D4-23	D4-23	0	U	ug/L	Trichloroethene	CY2010	U
199-D4-84	D4-84	0	U	ug/L	Trichloroethene	CY2010	U
199-D5-13	D5-13	0	U	ug/L	Trichloroethene	CY2010	U
199-D5-14	D5-14	0	U	ug/L	Trichloroethene	CY2010	U
199-D5-15	D5-15	0	U	ug/L	Trichloroethene	CY2010	U
199-D5-16	D5-16	0	U	ug/L	Trichloroethene	CY2010	U
199-D5-17	D5-17	0	U	ug/L	Trichloroethene	CY2010	U
199-D5-18	D5-18	0	U	ug/L	Trichloroethene	CY2010	U
199-D5-19	D5-19	0	U	ug/L	Trichloroethene	CY2010	U
199-D5-37	D5-37	0	U	ug/L	Trichloroethene	CY2010	U
199-D5-38	D5-38	0	U	ug/L	Trichloroethene	CY2010	U
199-D5-40	D5-40	0	U	ug/L	Trichloroethene	CY2010	U

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-D5-43	D5-43	0	U	ug/L	Trichloroethene	CY2010	U
199-D5-99	D5-99	0	U	ug/L	Trichloroethene	CY2010	U
199-D5-109	D5-109	0	U	ug/L	Trichloroethene	CY2010	U
199-D5-114	D5-114	0	U	ug/L	Trichloroethene	CY2010	U
199-D8-5	D8-5	0	U	ug/L	Trichloroethene	CY2010	U
199-D8-55	D8-55	0	U	ug/L	Trichloroethene	CY2010	U
199-D8-70	D8-70	0	U	ug/L	Trichloroethene	CY2010	U
199-D8-71	D8-71	0	U	ug/L	Trichloroethene	CY2010	U
199-D8-88	D8-88	0	U	ug/L	Trichloroethene	CY2010	U
199-F1-2	F1-2	0	U	ug/L	Trichloroethene	CY2010	U
199-F5-1	F5-1	0	U	ug/L	Trichloroethene	CY2010	U
199-F5-4	F5-4	1.1	1.1*	ug/L	Trichloroethene	CY2010	C
199-F5-6	F5-6	0.083	0.08*	ug/L	Trichloroethene	CY2010	C
199-F5-42	F5-42	0	U	ug/L	Trichloroethene	CY2010	U
199-F5-43A	F5-43A	0	U	ug/L	Trichloroethene	CY2010	U
199-F5-44	F5-44	0	U	ug/L	Trichloroethene	CY2010	U
199-F5-45	F5-45	4.1	4.1*	ug/L	Trichloroethene	CY2010	C
199-F5-46	F5-46	1.7	1.7*	ug/L	Trichloroethene	CY2010	C
199-F5-48	F5-48	1.8	1.8	ug/L	Trichloroethene	CY2010	D
199-F6-1	F6-1	0	U	ug/L	Trichloroethene	CY2010	U
199-F7-1	F7-1	17	17	ug/L	Trichloroethene	CY2010	D

Table A-14. Tritium Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	950	950	pCi/L	Tritium	CY2010	D
199-B2-14	B2-14	7800	7,800	pCi/L	Tritium	CY2010	D
199-B3-1	B3-1	4000	4,000	pCi/L	Tritium	CY2010	D
199-B3-46	B3-46	1800	1,800	pCi/L	Tritium	CY2010	D
199-B3-47	B3-47	32000	32,000	pCi/L	Tritium	CY2010	D
199-B3-50	B3-50	1200	1,200	pCi/L	Tritium	CY2010	D
199-B4-1	B4-1	18000	18,000	pCi/L	Tritium	CY2010	D
199-B4-4	B4-4	11000	11,000	pCi/L	Tritium	CY2010	D
199-B4-7	B4-7	14000	14,000	pCi/L	Tritium	CY2009	D
199-N-19	N-19	900	900	pCi/L	Tritium	CY2010	D
199-N-26	N-26	-140	-140.0U	pCi/L	Tritium	CY2010	U
199-N-27	N-27	8300	8,300	pCi/L	Tritium	CY2010	D
199-N-32	N-32	16000	16,000	pCi/L	Tritium	CY2010	D
199-N-34	N-34	11000	11,000	pCi/L	Tritium	CY2010	D
199-N-41	N-41	7400	7,400	pCi/L	Tritium	CY2010	D
199-N-46	N-46	180	180	pCi/L	Tritium	CY2010	D
199-N-50	N-50	6300	6,300	pCi/L	Tritium	CY2010	D
199-N-51	N-51	2600	2,600	pCi/L	Tritium	CY2010	D
199-N-56	N-56	4100	4,100	pCi/L	Tritium	CY2010	D
199-N-57	N-57	4400	4,400	pCi/L	Tritium	CY2010	D
199-N-64	N-64	10000	10,000	pCi/L	Tritium	CY2010	D

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Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-N-67	N-67	12000	12,000	pCi/L	Tritium	CY2010	D
199-N-71	N-71	940	940	pCi/L	Tritium	CY2010	D
199-N-72	N-72	1400	1,400	pCi/L	Tritium	CY2010	D
199-N-74	N-74	7100	7,100	pCi/L	Tritium	CY2010	D
199-N-75	N-75	12000	12,000	pCi/L	Tritium	CY2010	D
199-N-76	N-76	13000	13,000	pCi/L	Tritium	CY2010	D
199-N-81	N-81	12000	12,000	pCi/L	Tritium	CY2010	D
199-N-92A	N-92A	12000	12,000	pCi/L	Tritium	CY2010	D
199-N-96A	N-96A	1500	1,500*	pCi/L	Tritium	CY2010	C
199-N-99A	N-99A	8600	8,600	pCi/L	Tritium	CY2010	D
199-N-103A	N-103A	13000	13,000	pCi/L	Tritium	CY2010	D
199-N-105A	N-105A	14000	14,000	pCi/L	Tritium	CY2010	D
199-N-106A	N-106A	15000	15,000	pCi/L	Tritium	CY2009	D
199-N-119	N-119	560	560	pCi/L	Tritium	CY2010	D

Table A-15. Uranium Values

Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
199-B2-13	B2-13	1.3	1.3	ug/L	Uranium	CY2010	D
199-B2-14	B2-14	3	3.0	ug/L	Uranium	CY2010	D
199-B3-1	B3-1	3.6	3.6	ug/L	Uranium	CY2010	D
199-B3-46	B3-46	1.9	1.9	ug/L	Uranium	CY2010	D
199-B3-47	B3-47	6.5	6.5	ug/L	Uranium	CY2010	D
199-B3-50	B3-50	1.8	1.8	ug/L	Uranium	CY2010	D
199-B4-4	B4-4	1.4	1.4	ug/L	Uranium	CY2010	D
199-B4-8	B4-8	1.7	1.7	ug/L	Uranium	CY2010	D
199-B5-1	B5-1	1.6	1.6	ug/L	Uranium	CY2010	D
399-4-11	3-4-11	28	28	ug/L	Uranium	CY2010	D
399-4-12	3-4-12	26	26	ug/L	Uranium	CY2010	D
399-4-14	3-4-14	44	44	ug/L	Uranium	CY2010	D
399-5-1	3-5-1	8.5	8.5	ug/L	Uranium	CY2008	D
399-5-4B	3-5-4B	7.8	7.8	ug/L	Uranium	CY2010	D
399-8-1	3-8-1	64	64	ug/L	Uranium	CY2010	D
399-8-3	3-8-3	4.2	4.2	ug/L	Uranium	CY2010	D
399-8-5A	3-8-5A	75	75	ug/L	Uranium	CY2010	D
699-1-18	1-18	4.4	4.4	ug/L	Uranium	CY2010	D
699-4-E16	4-E16	0.05	0.05U	ug/L	Uranium	CY2009	U
699-10-54A	10-54A	1.8	1.8	ug/L	Uranium	CY2008	D
699-10-E12	10-E12	5.9	5.9	ug/L	Uranium	CY2008	D
699-12-2C	12-2C	8.2	8.2	ug/L	Uranium	CY2010	D
699-12-4D	12-4D	6.4	6.4	ug/L	Uranium	CY2010	D
699-13-1E	13-1E	8.4	8.4	ug/L	Uranium	CY2010	D
699-13-2D	13-2D	8.6	8.6	ug/L	Uranium	CY2010	D
699-13-3A	13-3A	9.7	9.7	ug/L	Uranium	CY2010	D
699-15-15B	15-15B	8.2	8.2	ug/L	Uranium	CY2010	D

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Well Name	Short Name	Value	Plot Value	Units	Constituent Name	Year	Detect Code
699-16-E3A	16-E3A	0.05	0.05U	ug/L	Uranium	CY2009	U
699-20-E5A	20-E5A	4.6	4.6	ug/L	Uranium	CY2010	D
699-20-E12O	20-E12O	0.48	0.48	ug/L	Uranium	CY2008	D
699-23-33	23-33	0.093	0.09	ug/L	Uranium	CY2009	D
699-24-46	24-46	1.6	1.6	ug/L	Uranium	CY2008	D
699-25-20	25-20	0.05	0.05U	ug/L	Uranium	CY2009	U
699-26-33	26-33	8	8.0	ug/L	Uranium	CY2008	D
699-31-31	31-31	0.29	0.29	ug/L	Uranium	CY2009	D
699-32-22A	32-22A	2.7	2.7	ug/L	Uranium	CY2008	D
699-32-43	32-43	6.8	6.8	ug/L	Uranium	CY2008	D
699-32-76	32-76	1.7	1.7	ug/L	Uranium	CY2009	D
699-33-14	33-14	3.2	3.2	ug/L	Uranium	CY2009	D
699-33-56	33-56	3.3	3.3	ug/L	Uranium	CY2008	D
699-33-74	33-74	3.6	3.6	ug/L	Uranium	CY2010	D
699-33-75	33-75	2.4	2.4	ug/L	Uranium	CY2010	D
699-33-76	33-76	0.89	0.89	ug/L	Uranium	CY2009	D
699-34-72	34-72	7.3	7.3	ug/L	Uranium	CY2010	D
699-35-16	35-16	4.6	4.6	ug/L	Uranium	CY2009	D
699-35-19B	35-19B	0.05	0.05U	ug/L	Uranium	CY2009	U
699-35-66A	35-66A	11	11*	ug/L	Uranium	CY2008	C
699-35-78A	35-78A	12	12	ug/L	Uranium	CY2010	D
699-36-17	36-17	0.05	0.05U	ug/L	Uranium	CY2009	U
699-36-66B	36-66B	11	11*	ug/L	Uranium	CY2008	C

Appendix B: Microsoft Access Database Code to Produce Groundwater Plume Maps Data Sets

Step 1 Explanation:

Copy out of the groundwater materialized view (HEIS) all data for the plume constituents (Carbon-14, Chloroform, filtered total Chromium, Hexavalent Chromium, Cyanide, Cobalt-60, Carbon tetrachloride, Fluoride, Iodine-129, Manganese, Nitrate, Plutonium, Sulfate, Strontium-90, Technetium-99 [except if it has units other than pCi/L], Trichloroethene, Tritium, Uranium, Total organic carbon, Specific Conductance, Total organic halides, cis-1,2-Dichloroethylene) for a three year period (for the CY2010 report, 1/1/08 -12/31/10) and load them into an Access table. As part of this step, perform the following data translations:

- populate a field in the Access table with the data source (HEIS)
- populate a field in the Access table with a rad/nonrad identifier based on the constituent
- populate a field in the Access table with a calendar year identifier
- create a field in the Access table called "ReasonExcluded" and set it to null
- convert the constituent name for Hexavalent Chromium to Chromium so these data can be combined for plume mapping purposes

Step 1 Code:

```
SELECT HEIS2_ADM_PNLGW_STD_RESULT_MV.WELL_NAME, IIf([WELL_TYPE]="AQUIFER
TUBE",[FamilyName],sh_name([HEIS2_ADM_PNLGW_STD_RESULT_MV].[WELL_NAME])) AS
ShortWellName, HEIS2_ADM_PNLGW_STD_RESULT_MV.SAMP_DATE_TIME,
HEIS2_ADM_PNLGW_STD_RESULT_MV.FILTERED_FLAG,
HEIS2_ADM_PNLGW_STD_RESULT_MV.STD_CON_ID,
HEIS2_ADM_PNLGW_STD_RESULT_MV.STD_CON_LONG_NAME,
HEIS2_ADM_PNLGW_STD_RESULT_MV.STD_VALUE_RPTD,
HEIS2_ADM_PNLGW_STD_RESULT_MV.STD_ANAL_UNITS_RPTD,
HEIS2_ADM_PNLGW_STD_RESULT_MV.LAB_QUALIFIER,
HEIS2_ADM_PNLGW_STD_RESULT_MV.REVIEW_QUALIFIER,
HEIS2_ADM_PNLGW_STD_RESULT_MV.COLLECTION_PURPOSE,
HEIS2_ADM_PNLGW_STD_RESULT_MV.OWNER_ID, "CY" & Year([SAMP_DATE_TIME]) AS
CY, IIf([STD_CON_LONG_NAME]="Hexavalent
Chromium","Chromium",[STD_CON_LONG_NAME]) AS Constituent, tblRadnonRad.Rad,
HEIS2_ADM_PNLGW_STD_RESULT_MV.SAMP_NUM,
HEIS2_ADM_PNLGW_STD_RESULT_MV.CON_ID,
HEIS2_ADM_PNLGW_STD_RESULT_MV.LAB_CODE,
HEIS2_ADM_PNLGW_STD_RESULT_MV.METHOD_NAME,
HEIS2_ADM_PNLGW_STD_RESULT_MV.SAF_NUM, WELLS_Bill.ZONE,
WELLS_Bill.EXCLUDE_TU_PLUME,
HEIS2_ADM_PNLGW_STD_RESULT_MV.STD_SAMP_INTV_TOP,
HEIS2_ADM_PNLGW_STD_RESULT_MV.STD_SAMP_INTV_BOT,
HEIS2_ADM_PNLGW_STD_RESULT_MV.STD_SAMP_INTV_UNITS, "HEIS" AS DataSource, Null
AS ReasonExcluded INTO tblCY10PlumesData
FROM (((HEIS2_ADM_PNLGW_STD_RESULT_MV INNER JOIN tblRadnonRad ON
HEIS2_ADM_PNLGW_STD_RESULT_MV.STD_CON_LONG_NAME = tblRadnonRad.Constituent)
LEFT JOIN WELLS_Bill ON HEIS2_ADM_PNLGW_STD_RESULT_MV.WELL_NAME =
WELLS_Bill.WELL_NAME) INNER JOIN WELL_ADM_WELL_ATTRIBUTES_MV ON
HEIS2_ADM_PNLGW_STD_RESULT_MV.WELL_NAME =
WELL_ADM_WELL_ATTRIBUTES_MV.WELL_NAME) LEFT JOIN ATgroupnames ON
HEIS2_ADM_PNLGW_STD_RESULT_MV.WELL_NAME = ATgroupnames.WELL_NAME
```

WHERE (((HEIS2_ADM_PNLGW_STD_RESULT_MV.SAMP_DATE_TIME) Between #1/1/2008# And #1/1/2011#) AND ((HEIS2_ADM_PNLGW_STD_RESULT_MV.STD_CON_LONG_NAME) In ("Carbon-14","Chloroform","Hexavalent Chromium","Cyanide","Cobalt-60","Carbon tetrachloride","Fluoride","Iodine-129","Manganese","Nitrate","Plutonium","Sulfate","Strontium-90","Trichloroethene","Technetium-99","Tritium","Uranium","Total organic carbon","Specific Conductance","Total organic halides","cis-1,2-Dichloroethylene"))) OR (((HEIS2_ADM_PNLGW_STD_RESULT_MV.SAMP_DATE_TIME) Between #1/1/2008# And #1/1/2011#) AND ((HEIS2_ADM_PNLGW_STD_RESULT_MV.FILTERED_FLAG)="Y") AND ((HEIS2_ADM_PNLGW_STD_RESULT_MV.STD_CON_LONG_NAME)="Chromium"));

Step 2 Explanation:
Add in any additional data from sources other than HEIS that will be used in plume determinations. (For CY2010, this included US Ecology data from previous years; I was not able to obtain the 2010 data.)

Step 2 Code:
INSERT INTO tblCY10PlumesData (WELL_NAME, ShortWellName, SAMP_DATE_TIME, STD_VALUE_RPTD, STD_ANAL_UNITS_RPTD, CY, Constituent, Rad, CON_ID, DataSource)
SELECT tblUSEdata.WELL_NAME, sh_name([WELL_NAME]) AS ShortWellName, tblUSEdata.[Assumed Sample Date], tblUSEdata.[Value Rptd], tblUSEdata.Units, tblUSEdata.CY, tblUSEdata.Constituent, tblUSEdata.Rad, tblUSEdata.CON_ID, tblUSEdata.DataSource
FROM tblUSEdata
WHERE (((tblUSEdata.[Assumed Sample Date]) Between #1/1/2008# And #1/1/2011#));

Step 3 Explanation:
Run queries to identify data to be excluded from the average calculations for various reasons. (For the CY10 plumes process, these queries reduced the dataset from around 113,000 to around 82,000 data points.) Each query fills in the ReasonExcluded field with a reason for the rejection of the particular subset of data. Here is a list of the queries:

a. Query to mark any data with a collection purpose other than C or R, any data where the well has been identified by Bill Webber as not in the correct part of the aquifer zone or to be excluded for some other aquifer/zone reason, and data from any samples that have a sample interval bottom.
b. Query to mark any data with a review qualifier of R or Y (data identified in HEIS as reject or suspect).
c. Query to mark any data with a null reported value.

Step 3a Code:
UPDATE tblCY10PlumesData SET tblCY10PlumesData.ReasonExcluded = IIf([ReasonExcluded] Is Null,"Data is not representative of conditions near the top of the unconfined aquifer",[ReasonExcluded] & "; Data is not representative of conditions near the top of the unconfined aquifer")
WHERE (((tblCY10PlumesData.COLLECTION_PURPOSE) Not In ("C","R"))) OR (((tblCY10PlumesData.ZONE) Not In ("TU","UU","U"))) OR (((tblCY10PlumesData.EXCLUDE_TU_PLUME)="EXCLUDE")) OR (((tblCY10PlumesData.STD_SAMP_INTV_BOT) Is Not Null));

Step 3b Code:
UPDATE tblCY10PlumesData SET tblCY10PlumesData.ReasonExcluded = IIf([ReasonExcluded] Is Null,"Data is marked in HEIS as reject or suspect",[ReasonExcluded] & "; Data is marked in HEIS as reject or suspect")
WHERE (((tblCY10PlumesData.REVIEW_QUALIFIER) Like "*R*" Or (tblCY10PlumesData.REVIEW_QUALIFIER) Like "*Y*"));

Step 3c Code:

```
UPDATE tblCY10PlumesData SET tblCY10PlumesData.ReasonExcluded = IIf([ReasonExcluded] Is
Null,"Value reported is null",[ReasonExcluded] & "; Value reported is null")
WHERE (((tblCY10PlumesData.STD_VALUE_RPTD) Is Null));
```

Step 4 Explanation:

The next step in the macro runs the code (a function called GetAnnualAvgDetectCode) to calculate averages, but essentially at this point you have the means to identify the dataset to feed into the code. The code does a number of things:

a. Executes a query that pulls all the data from tblCY09PlumesData for which the ReasonExcluded field is null and sorts it in a particular order which the code is dependent upon.
b. Sets the detect code for each well and constituent for the most recent year.
c. Sums all the results for each well and constituent for the most recent year, and calculates the annual average for that year, taking into account whether the constituent is a rad or non-rad. For rad data, non-detect values are set to 0 before calculating the average. For aquifer tubes, there is one further step in which the highest average value for each aquifer tube cluster for the most recent year is determined and that value is loaded into the target table.
d. Converts anions averages from ug/L to mg/L.
e. Loads the averages into a target table.
f. The last step in the macro queries the averages back out of the target table into an Excel file that is in a format needed by the graphics people for use in creating the plume maps.

Step 4a Code:

```
SELECT WELL_ADM_WELL.WELL_TYPE, ATgroupnames.FamilyName,
tblCY10PlumesData.WELL_NAME, tblCY10PlumesData.ShortWellName,
tblCY10PlumesData.SAMP_DATE_TIME, tblCY10PlumesData.FILTERED_FLAG,
tblCY10PlumesData.STD_CON_ID, tblCY10PlumesData.Constituent,
tblCY10PlumesData.STD_CON_LONG_NAME, tblCY10PlumesData.STD_VALUE_RPTD,
tblCY10PlumesData.STD_ANAL_UNITS_RPTD, tblCY10PlumesData.LAB_QUALIFIER,
tblCY10PlumesData.REVIEW_QUALIFIER, tblCY10PlumesData.COLLECTION_PURPOSE,
tblCY10PlumesData.OWNER_ID, tblCY10PlumesData.CY, tblCY10PlumesData.Rad,
tblCY10PlumesData.ReasonExcluded, ATgroupnames.PLOTNAME
FROM (tblCY10PlumesData LEFT JOIN ATgroupnames ON tblCY10PlumesData.WELL_NAME =
ATgroupnames.WELL_NAME) INNER JOIN WELL_ADM_WELL ON tblCY10PlumesData.WELL_NAME
= WELL_ADM_WELL.WELL_NAME
WHERE (((tblCY10PlumesData.ReasonExcluded) Is Null))
ORDER BY WELL_ADM_WELL.WELL_TYPE, ATgroupnames.FamilyName,
tblCY10PlumesData.WELL_NAME, tblCY10PlumesData.Constituent, tblCY10PlumesData.CY DESC;
```

Appendix C: Microsoft Visual Basic Database Code to Produce Groundwater Plume Maps Average Values

Groundwater Wells Code:

```
Public Function GetAnnualAvgDetectCode()

Dim db As Database
Dim rsRtrvConData, rsRtrvATData, rsTarget As DAO.Recordset
Dim strWellName, strShortWellName, strConstit, strCY, strDetectIndex, strDetectCode As String
Dim strRad, strLabQual, strUnits, strWellType, strFamilyName, strPlotVal As String
Dim dValue, dValueSum, dValueAvg As Double
Dim Counter, iRecordCount As Long
Dim iValueCount As Integer

Set db = CurrentDb()
' retrieve the data for the chosen constituent(s) and date range
' The query fed into the recordset below retrieves all the records in tblCY10PlumesData for which the
' ReasonExcluded field is null and makes sure that they are sorted by well type, well name, constituent,
and
' descending calendar year; the code below is dependent upon that order.
Set rsRtrvConData = db.OpenRecordset("qselCY10PlumesData_sorted", dbOpenSnapshot)
rsRtrvConData.MoveLast
iRecordCount = rsRtrvConData.RecordCount
rsRtrvConData.MoveFirst

Counter = 1
iValueCount = 1

'Capture well name, short well name, well type, constituent, most recent calendar year, the rad
designation
'of the constituent, standard units, and the family name of the tube cluster in the first record
strWellName = rsRtrvConData.Fields("WELL_NAME")
strShortWellName = rsRtrvConData.Fields("ShortWellName")
strWellType = rsRtrvConData.Fields("WELL_TYPE")
strConstit = rsRtrvConData.Fields("Constituent")
strCY = rsRtrvConData.Fields("CY")
strRad = rsRtrvConData.Fields("Rad")
strUnits = rsRtrvConData.Fields("STD_ANAL_UNITS_RPTD")
strFamilyName = rsRtrvConData.Fields("FamilyName")
'If the constituent is a rad, the value is used as is; if the constituent is not a rad and is a
'non-detect (U lab qualifier), the value is converted to 0.
If strRad = "Yes" Then
   dValue = rsRtrvConData.Fields("STD_VALUE_RPTD")
Else: dValue = Uto0(rsRtrvConData.Fields("STD_VALUE_RPTD"),
rsRtrvConData.Fields("LAB_QUALIFIER"))
End If
dValueSum = dValue
' Set the detect code of the current record
```

```
strDetectIndex = IIf(InStr(rsRtrvConData.Fields("LAB_QUALIFIER"), "U") >= 1, "U", "D")

Do
Counter = Counter + 1
If Counter > iRecordCount Then GoTo 100
rsRtrvConData.MoveNext
   Do While strWellName = rsRtrvConData.Fields("WELL_NAME") And strConstit =
rsRtrvConData.Fields("Constituent") And strCY = rsRtrvConData.Fields("CY")
      'Is the detect flag of the first record (strDetectIndex) different from subsequent records?
      'If so, set strDetectIndex to C (indicating a change); otherwise, leave it alone.
      strDetectCode = IIf(InStr(rsRtrvConData.Fields("LAB_QUALIFIER"), "U") >= 1, "U", "D")
      If strDetectCode <> strDetectIndex Then strDetectIndex = "C"
      If strRad = "Yes" Then
         dValue = rsRtrvConData.Fields("STD_VALUE_RPTD")
         'If the constituent is a rad, the value is used as is; if the constituent is not a rad and is a
         'non-detect (U lab qualifier), the value is converted to 0.
      Else: dValue = Uto0(rsRtrvConData.Fields("STD_VALUE_RPTD"),
rsRtrvConData.Fields("LAB_QUALIFIER"))
      End If
      dValueSum = dValueSum + dValue
      iValueCount = iValueCount + 1
      Counter = Counter + 1
      If Counter > iRecordCount Then GoTo 100
      rsRtrvConData.MoveNext
   Loop

'Averages are calculated with 2 significant digits
'For anions, units are converted from ug/L to mg/L
100 dValueAvg = sigfig(dValueSum / iValueCount, 2)
   If strConstit = "Nitrate" Or strConstit = "Sulfate" Or strConstit = "Fluoride" Then
      dValueAvg = dValueAvg / 1000
      strUnits = "mg/L"
   End If

'Averages are loaded into a target table

      Set rsTarget = db.OpenRecordset("tblAnnualAvgs", dbOpenDynaset)
         rsTarget.AddNew
         rsTarget.Fields("WELL_NAME") = strWellName
         rsTarget.Fields("ShortWellName") = strShortWellName
         If strWellType = "AQUIFER TUBE" Then
            rsTarget.Fields("FamilyName") = strFamilyName
         End If
         rsTarget.Fields("CON_NAME") = strConstit
         rsTarget.Fields("YEAR") = strCY
         rsTarget.Fields("VALUE") = dValueAvg
         rsTarget.Fields("UNITS") = strUnits
         rsTarget.Fields("WELL_TYPE") = strWellType
         rsTarget.Fields("PLOTVAL") = plotlabel(dValueAvg, strDetectIndex)
```

```
        rsTarget.Fields("DETECTCODE") = strDetectIndex
        rsTarget.Update


    If strCY <> rsRtrvConData.Fields("CY") Then
      Do While strWellName = rsRtrvConData.Fields("WELL_NAME") And strConstit =
rsRtrvConData.Fields("Constituent")
        Counter = Counter + 1
        If Counter > iRecordCount Then GoTo 200
        rsRtrvConData.MoveNext
      Loop
    End If

'   Reset well name, constituent, calendar year, rad flag, units, well type, and value variables
    strWellName = rsRtrvConData.Fields("WELL_NAME")
    strShortWellName = rsRtrvConData.Fields("ShortWellName")
    strWellType = rsRtrvConData.Fields("WELL_TYPE")
    strConstit = rsRtrvConData.Fields("Constituent")
    strCY = rsRtrvConData.Fields("CY")
    strRad = rsRtrvConData.Fields("Rad")
    strUnits = rsRtrvConData.Fields("STD_ANAL_UNITS_RPTD")
    If strWellType = "AQUIFER TUBE" Then
      strFamilyName = rsRtrvConData.Fields("FamilyName")
    End If
    If strRad = "Yes" Then
      dValue = rsRtrvConData.Fields("STD_VALUE_RPTD")
    Else: dValue = Uto0(rsRtrvConData.Fields("STD_VALUE_RPTD"),
rsRtrvConData.Fields("LAB_QUALIFIER"))
    End If
    dValueSum = dValue
    iValueCount = 1
    strDetectIndex = IIf(InStr(rsRtrvConData.Fields("LAB_QUALIFIER"), "U") >= 1, "U", "D")

Loop Until Counter > iRecordCount  'rsRtrvConData.EOF

200


' retrieve the processed aquifer tube data for the chosen constituent and date range
' The query fed into the recordset below retrieves all the aquifer tube records in tblTargetAvg and makes
' sure that it is sorted by aquifer tube group, constituent, descending fiscal year, and descending value;
' the code below is dependent upon that order.
Set rsRtrvATData = db.OpenRecordset("qselProcessedATdata_sorted", dbOpenSnapshot)
rsRtrvATData.MoveLast
iRecordCount = rsRtrvATData.RecordCount
rsRtrvATData.MoveFirst

Counter = 1
```

```
'Capture into variables all the fields for the first record in the dataset
strFamilyName = rsRtrvATData.Fields("FamilyName")
strConstit = rsRtrvATData.Fields("CON_NAME")
strCY = rsRtrvATData.Fields("YEAR")
strWellName = rsRtrvATData.Fields("WELL_NAME")
strShortWellName = rsRtrvATData.Fields("ShortWellName")
dValue = rsRtrvATData.Fields("VALUE")
strPlotVal = rsRtrvATData.Fields("PLOTVAL")
strUnits = rsRtrvATData.Fields("UNITS")
strDetectCode = rsRtrvATData.Fields("DETECTCODE")

Do
Counter = Counter + 1
If Counter > iRecordCount Then GoTo 300
rsRtrvATData.MoveNext
  Do While strFamilyName = rsRtrvATData.Fields("FamilyName") And strConstit =
rsRtrvATData.Fields("CON_NAME")
    'The way the data are sorted, the first value for each data group and constituent should be for the
    'latest calendar year.  All other values can be ignored until the data group and constituent change.
    Counter = Counter + 1
    If Counter > iRecordCount Then GoTo 300
    rsRtrvATData.MoveNext
  Loop

300

'Put chosen data into a target table
  Set rsTarget = db.OpenRecordset("tblTargetAvg", dbOpenDynaset)
    rsTarget.AddNew
    rsTarget.Fields("WELL_NAME") = strWellName
    rsTarget.Fields("ShortWellName") = strFamilyName
    rsTarget.Fields("CON_NAME") = strConstit
    rsTarget.Fields("YEAR") = strCY
    rsTarget.Fields("VALUE") = dValue
    rsTarget.Fields("PLOTVAL") = strPlotVal
    rsTarget.Fields("UNITS") = strUnits
    rsTarget.Fields("DETECTCODE") = strDetectCode
    rsTarget.Fields("WELL_TYPE") = "AQUIFER TUBE"
    rsTarget.Update

'  Reset variables
  strFamilyName = rsRtrvATData.Fields("FamilyName")
  strConstit = rsRtrvATData.Fields("CON_NAME")
  strCY = rsRtrvATData.Fields("YEAR")
  strWellName = rsRtrvATData.Fields("WELL_NAME")
  strShortWellName = rsRtrvATData.Fields("ShortWellName")
  dValue = rsRtrvATData.Fields("VALUE")
  strPlotVal = rsRtrvATData.Fields("PLOTVAL")
  strUnits = rsRtrvATData.Fields("UNITS")
```

```
    strDetectCode = rsRtrvATData.Fields("DETECTCODE")

Loop Until Counter > iRecordCount  'rsRtrvATData.EOF


rsRtrvConData.Close
rsRtrvATData.Close
rsTarget.Close
Set rsRtrvConData = Nothing
Set rsRtrvATData = Nothing
Set rsTarget = Nothing
Set db = Nothing
MsgBox ("All done!")

End Function


100

'Put chosen data into a target table
    Set rsTarget = db.OpenRecordset("tblATData", dbOpenDynaset)
        rsTarget.AddNew
        rsTarget.Fields("WELL_NAME") = strWellName
        rsTarget.Fields("CON_NAME") = strConstit
        rsTarget.Fields("FISCAL_YR") = strFY
        rsTarget.Fields("VALUE") = dValue
        rsTarget.Fields("UNITS") = strUnits
        rsTarget.Fields("PLOTVAL") = strPlotVal
        rsTarget.Fields("DETECTCODE") = strDetectCode
        rsTarget.Update

'   Reset variables
    strATGroup = rsRtrvATData.Fields("Family Name")
    strConstit = rsRtrvATData.Fields("CON_NAME")
    strFY = rsRtrvATData.Fields("FISCAL_YR")
    strWellName = rsRtrvATData.Fields("WELL_NAME")
    dValue = rsRtrvATData.Fields("VALUE")
    strPlotVal = rsRtrvATData.Fields("PLOTVAL")
    strUnits = rsRtrvATData.Fields("UNITS")
    strDetectCode = rsRtrvATData.Fields("DETECTCODE")

Loop Until Counter > iRecordCount  'rsRtrvATData.EOF

200

rsRtrvATData.Close
rsTarget.Close
Set rsRtrvATData = Nothing
Set rsTarget = Nothing
```

```
Set db = Nothing
MsgBox ("All done!")

End Function
```