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Terms

CAD	computer-aided design
DOE	U.S. Department of Energy
ECF	environmental calculation file
EDA	Environmental Dashboard Application
FS	feasibility study
GIS	Geographic Information System
GPL	Geophysical Log
HEIS	Hanford Environmental Information System
HWIS	Hanford Well Information System
ID	identification
IDMS	Integrated Document Management System
K_d	partition (or distribution) coefficient
OU	operable unit
RFI/CMS	facility investigation/corrective measures study
RI	remedial investigation
SAF	sample authorization form
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
WIDS	Waste Information Data System

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1 Purpose

This environmental calculation file (ECF) supports the 200-EA-1 Operable Unit (OU) waste site *Resource Conservation and Recovery Act of 1976* facility investigation/corrective measures study (RFI/CMS) and remedial investigation/feasibility study (RI/FS) work plan and associated OU scoping activity. The scoping activities are described in Section 7.2.2 of Ecology et al., 1989, *Hanford Federal Facility Agreement and Consent Order* (hereinafter called Tri-Party Agreement), specifically the assessment of available data in support of identification of additional data needs.

Specifically, in regard to the scoping and assessment, the TPA states: "The U.S. Department of Energy (DOE) shall assemble and evaluate existing data and information about the individual waste management units within each operable unit. The data and information obtained during each operable unit scoping activity will be used to support the logic for the RI/FS (or RFI/CMS) work plan and, therefore, will be submitted as part of each work plan."

This ECF describes the methodology and calculations used for graphic presentation of available data for waste sites in the 200 East Area that are or had recently been assigned to the 200-EA-1 OU. Because of reassignment of some waste sites through TPA change packages, there are waste sites included in this ECF that are no longer assigned to the 200-EA-1 OU.

2 Methodology

This ECF documents a three-step process for identifying and evaluating existing data.

1. Identification and retrieval of available data associated with the waste site (Section 2.1).
2. Determination of what data are most relevant for graphic depiction (Section 2.2).
3. Development of waste-site specific cross-section images to depict the understanding of existing data (Section 2.3).

2.1 Identification and Retrieval of Relevant Data

Data were retrieved from the following sources:

- Hanford Environmental Information System (HEIS)
- Environmental Dashboard Application (EDA)
- Geophysical log (GPL)
- Historical documents

HEIS and EDA provide the most comprehensive sources of quantitative sample data and are the primary sources of information. However, other resources, listed in Section 2.1.4, were also reviewed by scoping summary researchers to identify additional relevant information.

2.1.1 Data Management

Queries used and data retrieved are managed in a Microsoft® Access® database (200-EA-1_SampleData.accdb) using a naming convention that includes the site code in the query names. Output from these queries is managed in a Microsoft Excel® workbook for each respective waste site (e.g., 216-B-63_20160613.xlsx). The Excel workbooks include several worksheets (referred to as "Tabs") that correlate to the data retrieval and evaluation process described in detail in the following sections. Table 1 provides a summary of the tabs included within each waste site-specific Excel workbook.

2.1.2 Data Retrieval

The following steps are used to identify locations with environmental data associated with the subject waste site. Search terms and results are documented in Tab 13 of the associated waste site Excel workbook. All searches were run on the HEIS dataset available on the date of the search. While data available in HEIS are subject to change, the variance during the period for which searches were run is expected to be minimal. Search dates are documented for each step so searches may be recreated against backup copies of that day's HEIS data.

In some cases, sampling site geospatial coordinate values may not be documented in HEIS (e.g., surface samples, test pits); therefore, it is necessary to also search for sampling sites associated with a location of interest based on various text fields. This process is addressed in Steps 1-3. A variation of the waste site name may be included in one or more fields of the HEIS database tables. For thoroughness, the HEIS database (via Access) is searched using variations of the waste site name to catch instances where the waste site name is nonuniform (e.g., searching for "B12" as one instance of searching for data related to 216-B-12). Search terms used are documented in Tab 13 of the associated waste site Excel workbook where applicable, and the search structured query language (SQL) is captured in the same tab, which should allow another reviewer to duplicate the search results. The search date is also captured, since data available for the database are subject to change.

1. **Sample Authorization Form (SAF)** – Query 1 (e.g., 200-EA-1_SampleData.accdb: qsel_216-B-63_01_SAFs) searches for forms of the waste site code in the SDT_ADM_SAF table.
    - Search will return references to the Waste Information Data System (WIDS) Site Code in the SAF title or SAF COMMENT fields. The query will return SAFs related directly to the site or those referencing it in the comments. SAF numbers located are used to inform the SAF Based Locations search in Step 2.
    - The query and any relevant SAFs, sample sites, or well names are documented in Step 1 row of Tab 13 of the associated waste site Excel workbook.
2. **SAF Based Locations** – Query 2 (e.g., 200-EA-1_SampleData.accdb: qsel_216-B-63_02_WellSampSiteBySAF) identifies wells/borings and sampling sites based on SAFs identified in Step 1.
    - Search will identify wells/borings and sample sites with analytical data by searching for the SAF numbers identified in Step 1 in the SAF_NUM field. Results are documented in Step 2 row of Tab 13 of the associated waste site Excel workbook.

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Table 1. Excel Workbook Outputs and Associated Tabs

Tab #	Title	Description
Tab 01	Researcher Notes	Documents search and review dates, as well as comments from reviewers and additional data collected through review of documents while researching the waste site.
Tab 02	Assumptions	Records basis for action values applied, decay dates, and assumptions. Allows reviewers to toggle or change options in order to compare evaluation results.
Tab 03	Values	Records basis for action values and analyte details available for analysis.
Tab 04	Data Evaluation Summary	Displays unique samples (same source, site, date, depth, and analyte type). Also displays the number of samples collected in the data set and the number excluded at each step of the evaluation process.
Tab 05	Site Data Details for 2D	Displays data necessary to create plan view image of waste site. Displays well depths, screen locations, analyte categories sampled for each sample site, and the types of value exceedances.
Tab 06	Sample Results for 2D	Displays samples surviving evaluation process that will be displayed on cross-section view. Reports values exceeded.
Tab 07	Soil Gas Results for 2D	Displays soil gas samples recorded for sample sites. The maximum value for each analyte located by filtering the data and is reported on the cross-section image.
Tab 08	Gamma Results for 2D	Displays gamma readings recorded for sample sites. The maximum value is located by filtering the data and will be reported on the cross-section image.
Tab 09	Sample Results Below Background	Displays all samples excluded due to measurements below background values that survived prior evaluation steps.
Tab 10	Sample Results Below Analyte Values	Displays all samples excluded due to measurements below the minimum values available for the sample depth that survived prior evaluation steps.
Tab 11	Sampled Analytes Without Analyte Values	Displays all samples that survived prior evaluation steps but lack a minimum value at the sample depth.
Tab 12	Samples on Rad Exclusion List	Displays all samples excluded due to the analyte's presence on the radionuclide exclusion list that were not excluded due to data qualifiers.
Tab 13	Search Summary	Records search terms and sample sites included in searches as well as information necessary to recreate the data collection searches.
Tab 14	Site Map	Displays map prepared by GIS analyst where available.

Table 1. Excel Workbook Outputs and Associated Tabs

Tab #	Title	Description
Tab 15	Media Summary By Well	Records results of HEIS search for media by well. Used to inform further searches for data through EDA Analytical Data.
Tab 16	Media Summary By Sample Site	Records results of HEIS search for media by sample site. Used to inform further searches for data through EDA Analytical Data.
Tab 17	Analytical Results - Atmospheric	Records results of search of EDA Analytical Data for Atmospheric sample data in wells and sample sites identified in prior search steps.
Tab 18	Analytical Results - Biota	Records results of search of EDA Analytical Data for Biota sample data in wells and sample sites identified in prior search steps.
Tab 19	Analytical Results - Groundwater	Records results of search of EDA Analytical Data for Groundwater sample data in wells and sample sites identified in prior search steps.
Tab 20	Analytical Results - Miscellaneous Materials	Records results of search of EDA Analytical Data for Miscellaneous Materials sample data in wells and sample sites identified in prior search steps.
Tab 21	Analytical Results - Soil	Records results of search of EDA Analytical Data for Soil sample data in wells and sample sites identified in prior search steps. Contains formulas necessary to evaluate data for cross-section development and Tabs 4, 6, and 8-12.
Tab 22	Analytical Results - Soil Gas	Records results of search of EDA Analytical Data for Soil Gas sample data in wells and sample sites identified in prior search steps. Contains formulas necessary to evaluate data for cross-section development and Tabs 4 and 7.
Tab 23	HEIS GPL Summary	Records results of HEIS search for GPL by well or sample site. Used to inform further searches for data through HEIS, GPL, or EDA Analytical Data.
Tab 24	GPL Documents Index	Records list of GPL documents available through EDA Document Lookup.
Tab 25	Non-GPL Documents Index	Records list of non-GPL documents available through EDA Document Lookup.
Tab 26	HEIS GPL Data	Records results of search of HEIS data for GPL data in wells and sample sites identified in prior search steps. Contains formulas necessary to evaluate data for cross-section development and Tabs 4, 6, and 8-12.

Table 1. Excel Workbook Outputs and Associated Tabs

Tab #	Title	Description
Tab 27	EDA GPL Data	Records results of search of EDA Geophysical Logging Legacy Data for GPL data in wells identified in prior search steps. Data were not entered for wells with data located in HEIS. Contains formulas necessary to evaluate data for cross-section development and Tabs 4, 6, and 8-12.
Tab 28	GPL Docs Manual Analysis	Records manually entered GPL data retrieved through search for GPL documents. Contains formulas necessary to evaluate data for cross-section development and Tabs 4, 6, and 8-12.

EDA = Environmental Dashboard Application
GIS = geographic information system
GPL = geophysical log
HEIS = Hanford Environmental Information System
Rad = radiation absorbed dose

3. **SITE Code Based Locations** – Query 3 (e.g., 200-EA-1_SampleData.accdb: qsel_216-B-63_03_SITE_CODE) identifies sampling sites associated with the waste site code.

    - Search will identify sampling sites with analytical data based on references to the WIDS waste site code or waste site name. Sampling sites located are used to inform subsequent searches for analytical data.

    - The query and any relevant sample sites are documented in Step 3 row of Tab 13 of the associated waste site Excel workbook.

4. **Sampling Site and Well Coordinates** – The data analyst identifies wells and boring sites within or near a waste site of interest based on two sources. There is not a standard "within x ft of the waste site" measurement that is implemented. For example, in an area with multiple wells, a sample site 20 ft from the waste site might be more closely related to another waste site, but there are instances where a well 100 ft away from the site may be most reasonably related to the waste site. Nearby sampling locations that were considered but excluded are documented in Steps 4 and 5 in Tab 13 of the associated waste site Excel workbook.

    - A map is prepared by the Geographic Information System (GIS) analyst of all sampling sites, boreholes, and wells within a reasonable distance from the waste site. Appendix A provides information related to data sources used by the GIS analyst. The map prepared by the GIS analyst is included in Tab 14 of the associated waste site Excel workbook.

    - Hanford Maps is used to locate any sites not available through the GIS analyst's map and to determine distances between wells and sites.

5. **Well Analytical Data by MEDIA** – Query 4 (e.g., 200-EA-1_SampleData.accdb: qsel_216-B-63_04_WellResultsByMedia) identifies which media data exist for wells and borings identified in Steps 1 – 4.

    - Search will identify media types where data are available (e.g., Biota, Soil, Groundwater) for each well or boring. Search is documented in Step 6 of Tab 13 and results are documented in Tab 15 of the associated waste site Excel workbook. Results function as a check to confirm all EDA Analytical Data are retrieved in later steps (by CountOfRRN field).

6. **Sampling Site Analytical Data by MEDIA** – Query 5 (e.g., 200-EA-1_SampleData.accdb: qsel_216-B-63_05_SampSiteResultsByMedia) identifies which media data exist for sampling sites identified in Steps 1 – 5.

    - Search will identify media types where data are available (e.g., Biota, Soil, Groundwater) for each sampling site. Search is documented in Step 7 of Tab 13 and results are documented in Tab 16 of the associated waste site Excel workbook. Results function as a check to confirm all EDA Analytical Data are retrieved in later steps (by CountofRRN field).

7. **Analytical Data Detail** – The internal version of EDA (https://ehs.chprc.rl.gov/eda/) is used to download analytical data for wells, borings, and sampling sites identified in Steps 1 – 4 and media identified in Steps 5 and 6.

    - Accessed through EDA - > Analytical Results Detail. Search performed for all wells, borings, and sampling sites identified in earlier steps by entering site identification (ID) in Sample Sites. Search is documented in Step 8 of Tab 13 and results retrieved for media types identified in Steps 5 and 6 are documented in Tabs 17 through 22 of the associated waste site Excel workbook.

2.1.3 GPL Data Retrieval

1. **HEIS_GPL** – Query 6 (e.g., 200-EA-1_SampleData.accdb: qsel_216-B-63_06_HEIS_GPL_SummaryByWell) identifies wells/borings identified in Steps 1 – 4 for which geophysical logging data exist in HEIS_GPL.

   - Search will identify what borehole geophysical logging data exist in the HEIS_GPL database. Search is documented in Step 9 of Tab 13 and results are documented in Tab 23 of the associated waste site Excel workbook. Shows standard value and max of standard values of some analytes for well samples.

2. **GPL Docs** identifies borehole GPL documents in the Integrated Documentation Management System (IDMS) for the wells identified in Steps 1 – 4. EDA GPL document listing for wells and borings identified in steps 1 – 4.

   - Accessed through Environmental Dashboard Application -> Well Reports -> Document Lookup.
   - Well IDs located in earlier steps are entered in the Wells selection box, and the Well Document Types is set to "Geophysical Logs (GPL)."
   - Search is documented in Step 10 of Tab 13 and results are documented in Tab 24 of the associated waste site Excel workbook.

3. **GPL Data Analyses** – GPL data are available from three sources (HEIS, EDA, and manual review of GPL reports). Data are collected from these sources preferentially. If the data are not available from HEIS for a particular well, then the logging reports were retrieved from EDA. If there are no data from either HEIS or EDA for a well, then the most recent logging report is manually reviewed. Where data are available from multiple GPL sources, priority is given to HEIS Data, followed by EDA Legacy Data, and finally manually entered data from GPLs. Results of the evaluation are recorded in the Excel workbook Tabs 6-12 of the associated waste site Excel workbook. The steps for this process are outlined as follows:

   a) **HEIS GPL Data** – Query 7 (e.g., 200-EA-1_SampleData.accdb: qsel_216-B-63_07_HEIS_GPL_ResultsByWell) collects GPL sample data previously summarized in Step 8.

      Search is documented in Tab 13 and results are documented in Tab 26 of the associated waste site Excel workbook.

   b) **Legacy GPL Data** – Waste Sites with data available through EDA -> Geophysical Logging -> Hanford Vadose Zone Characterization are reviewed to locate GPL data spreadsheets. Where a relevant GPL spreadsheet exists for a well that has no GPL data available through the HEIS GPL Data search, data are collected in Tab 27 of the associated waste site Excel workbook.

   c) **Manual Review of GPL logs** – Where GPL data are unavailable through HEIS or EDA, the most recent GPL document will be analyzed and measurements over the human risk-based values for reported isotopic values will be recorded in "GPL Docs Data" tab. Manually reviewed log data are documented in the Excel workbook Tab 28 of the associated waste site Excel workbook.

   The manual measurement values are considered estimates or approximations and are used qualitatively as comparisons to the laboratory analytical data of samples from similar depth intervals (as available through HEIS).

4. **Other Well Documents** include non-GPL well documents from IDMS associated with wells/borings identified in Steps 1 – 4.

   - Accessed through Environmental Dashboard Application -> Well Reports -> Document Lookup.
   - Well IDs located in earlier steps are entered in the Wells selection box, and the Well Document Types is set to include all document types except "Geophysical Logs (GPL)".
   - Search is documented in Step 11 of Tab 13 and results are documented in Tab 25 of the associated waste site Excel workbook.
   - This document list is not analyzed as part of the HEIS data retrieval process, except where necessary to gather information related to well construction. Researchers who note data deficiencies or inconsistencies may reference this list to find documentation related to a well or sample location.

2.1.4 Historical Document Data Review

The following is a list of historical documents reviewed by scoping researchers to identify prior investigations and related information that should be incorporated in the initial evaluation of existing data. Information retrieved from the historical documents that is not already represented in the data retrieval described previously is recorded on the Researcher_Reviewer_Notes, Tab 01 of the Excel workbook.

1. WHC-SD-EN-ES-019, *Semiworks Aggregate Area Management Study Technical Baseline Report*
2. DOE/RL-92-05, *B Plant Source Aggregate Area Management Study Report*
3. DOE/RL-92-18, *Semiworks Source Aggregate Area Management Study Report*
4. DOE/RL-92-04, *PUREX Source Aggregate Area Management Study Report*
5. DOE/RL-2007-13, *Sampling and Analysis Plan for High-Resolution Resistivity Correlation for the BC Cribs and Trenches Area*
6. RPP-26744, *Hanford Soil Inventory Model, Rev. 1*
7. Appendix_A_Waste_Site_SIM_Data_-_S_Complex--decay_correct_with_roll_up (Excel workbook)
8. Waste_Site_SIM_Data_Appendix_A-T_Complex-07-21-11-decay_correct_with_roll_up.
9. DOE/EIS-0391,l *Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington (TC & WM EIS)*, Appendix D
10. PNNL-19277, *Conceptual Models for Migration of Key Groundwater Contaminants Through the Vadose Zone and into the Unconfined Aquifer Below the B-Complex*
11. PNNL-15829, *Inventory Data Package for Hanford Assessments*
12. PNNL-11800, *Addendum to Composite Analysis for Low-Level Waste Disposal in the 200 Area Plateau of the Hanford Site*
13. HNF-1744, *Radionuclide Inventories of Liquid Waste Disposal Sites on the Hanford Site*
14. ARH-2155, *Radioactive Liquid Waste Disposal Facilities 200 West Area*
15. DOE/RL-2010-49, Draft B, *Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units*

16. SGW-39648, *Summary Report: Direct Push Technology Boreholes for Geophysical Logging, 200-IS-I Operable Unit, FY 2008*

17. SD-BWI-DP-061, *A Hydrochemical Data Base for the Hanford Site, Washington*

18. WHC-EP-0037, *Data Compilation: lodine-129 in Hanford Groundwater*

19. DOE/RL-98-48, *Groundwater/Vadose Zone Integration Project Background Information and State of Knowledge*, Volumes I, II, and III

20. ARH-ST-156, *Evaluation of Scintillation Probe Profile From 200 Area Crib Monitoring Wells*

21. PNL-6456, *Hazard Ranking System Evaluation of Comprehensive Environmental Response, Compensation, and Liability Act of 1980 Inactive Waste Sites At Hanford*, Volumes I, II, and III

22. RHO-CD-673, *Handbook 200 Areas Waste Sites*, Volumes I-III

2.2 Data Evaluation

The data collected for each waste site are subject to a stepped process to support development of visual cross-sections (Section 2.3). The data evaluation steps are shown in Figure 1 and described as follows:

1. **Laboratory Data Qualifiers Indicate Detection -** Laboratory data with data qualifiers R, B, or any variation starting with U are recorded on Tab 04 of the Excel workbook and are not considered in subsequent steps.
2. Any detected soil gas measurements are recorded on Tab 07.
3. **Decay Radionuclide Measurements -** All soil and GPL radionuclide analyte data are decayed to 01/01/2017. The decay is based on the following formula:

$$N(t) = N_o \left(\frac{1}{2}\right)^{\frac{t}{t1/2}}$$

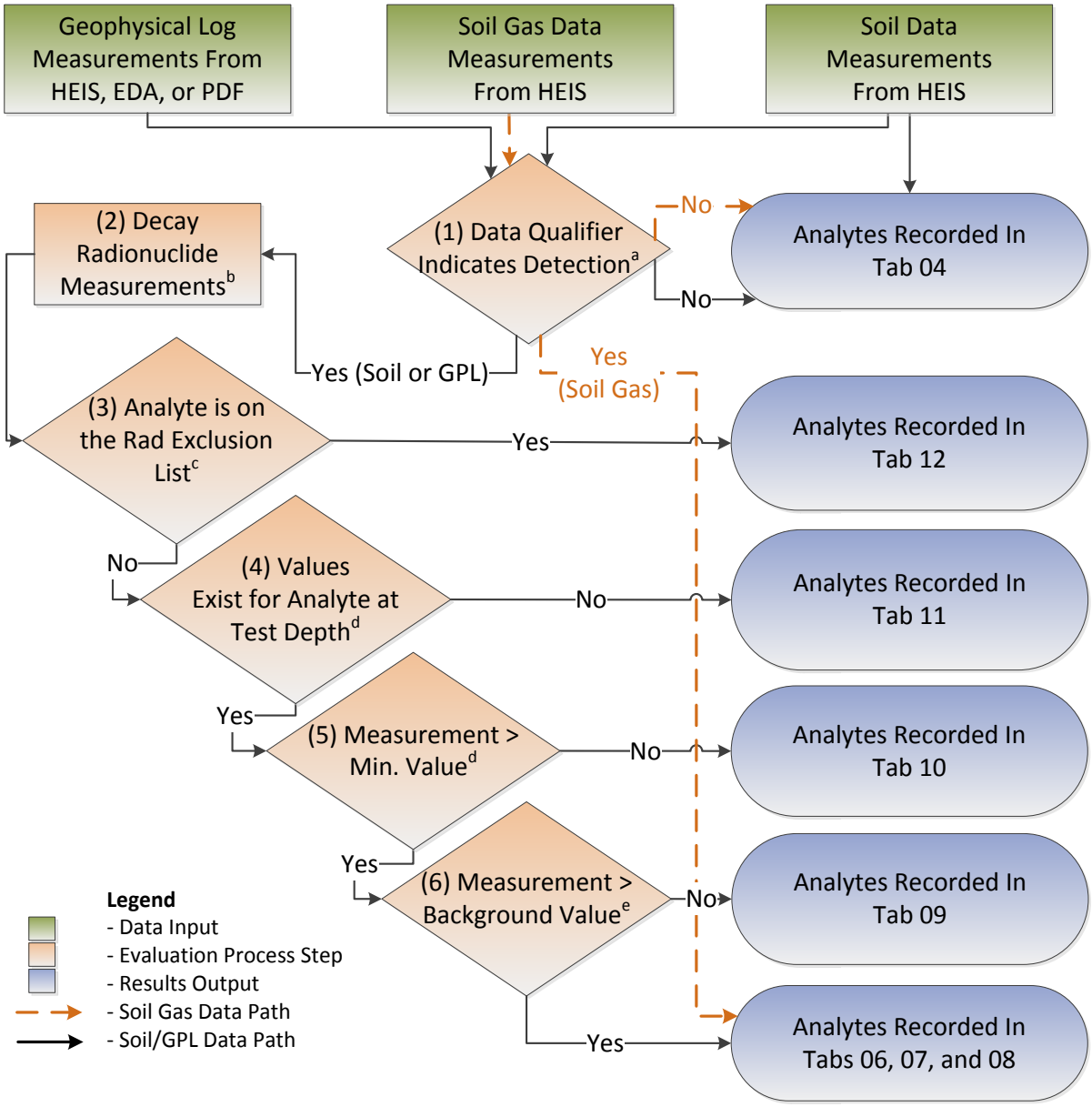
where:

N_o	=	the initial measurement of the substance that will be decayed
$N(t)$	=	the quantity remaining
t	=	the length of time for which the measurement will be decayed
$t1/2$	=	the half-life of the decaying analyte

Half-lives were obtained through the National Nuclear Data Center NUDAT database version 10/21/2016 located at http://www.nndc.bnl.gov/nudat2/indx_dec.jsp. Where an analyte had more than one documented half-life, the longest half-life is used.

Data summary Tabs 06 and 09-12 report decay-corrected measurements.

Soil gas measurements (Tab 07) and gross gamma measurements in GPL data (Tab 08) are not decay-corrected.



a. Excludes measurements with data qualifiers R, B, or any data qualifier starting with U.
b. Radionuclides decayed to 1/1/2017.
c. Refer to Table 2 for Rad Exclusion List.
d. Risk-Based Values:
- Ecological: CHPRC-00784, Rev. 0;
- Construction Worker: ECF-HANFORD-16-0132, Rev. 0;
- Outdoor Worker: ECF-HANFORD-16-0133, Rev. 0 and ECF-HANFORD-16-0134, Rev. 0
- Protection of Ground Water (non-rad): ECF-HANFORD-10-0442, Rev. 2
- Protection of Ground Water (rad): https://epa-prgs.ornl.gov/radionuclides/download/ressoil2gw_rprg_table_run_pCi_25NOV14.pdf

e. Background values from ECF-Hanford-11-0038, Rev. 0, 3/31/2012

Note: Complete reference citations are provided in Chapter 6.

Figure 1. Data Evaluation Process

Analyte is on the Rad Exclusion List - Radiological analytes listed in Table 2 are recorded on Tab 12 of the associated Excel workbook; associated data are not considered further in subsequent steps. The basis for not including these data in subsequent steps is documented in Table 2.

Table 2. Radionuclides Excluded from Evaluation

Radionuclide	Exclusion Basis
Actinium-228	Short half-life (less than 3 years)
Antimony-125	Short half-life (less than 3 years)
Barium-133	Not significantly related to Hanford operations
Barium-140	Short half-life (less than 3 years)
Bismuth-214	Short half-life (less than 3 years)
Cerium-141	Short half-life (less than 3 years)
Cerium-144	Short half-life (less than 3 years)
Cesium-134	Short half-life (less than 3 years)
Chromium-51	Short half-life (less than 3 years)
Curium-242	Short half-life (less than 3 years)
Curium-243	Actinide with atomic mass number greater than 242 expected to constitute less than 1% total actinide activity in waste streams
Iodine-131	Short half-life (less than 3 years)
Iron-59	Short half-life (less than 3 years)
Lead-212	Short half-life (less than 3 years)
Lead-214	Short half-life (less than 3 years)
Manganese-54	Short half-life (less than 3 years)
Niobium-94	Not significantly related to Hanford operations
Potassium-40a	Not significantly related to Hanford operations; naturally occurring
Radium-224	Short half-life (less than 3 years)
Radium-226	Not significantly related to Hanford operations; naturally occurring
Radium-228	Not significantly related to Hanford operations; naturally occurring
Ruthenium-103	Short half-life (less than 3 years)
Ruthenium-106	Short half-life (less than 3 years)
Selenium-79	Trace fission product with activity yield less than 1% that for cesium-137
Sodium-22	Short half-life (less than 3 years)
Thallium-208	Short half-life (less than 3 years)
Thorium-228	Short half-life (less than 3 years)
Thorium-230	Progeny-only radionuclide that would not build significant activity within 70 years
Thorium-234	Short half-life (less than 3 years)
Tin-113	Short half-life (less than 3 years)
Tin-126	Trace fission product with activity yield less than 1% that for cesium-137
Zinc-65	Short half-life (less than 3 years)
Zirconium/Niobium-95	Short half-life (less than 3 years)

Table 2. Radionuclides Excluded from Evaluation

Radionuclide	Exclusion Basis
Zirconium-95	Short half-life (less than 3 years)
Protactinium-231	Progeny-only radionuclide that would not build significant activity within 70 years

Note: Including activity results reported as "natural potassium."

5. **Comparison Against Risk-Based Values (No Applicable Values)** – As part of the evaluation process, analytical results are compared against currently available risk-based values. Analytes and associated results for which no risk-based value is available or applicable at the sample depth are recorded on Tab 11 of the Excel workbook and not evaluated further in subsequent steps. Risk-based values were obtained from the following sources:

   - ECF-HANFORD-16-0132, Rev. 0, *Calculation of Soil Radiological Preliminary Remedial Goals for the Construction Worker Scenario*, Table 6, "Selected Radionuclide Final PRG."
   - ECF-HANFORD-16-0133, Rev. 0, *Calculation of Soil Radiological Preliminary Remedial Goals for the Outdoor Worker Scenario*, Table 4, "Radionuclide PRG at 10^{-4} Target Risk Level."
   - ECF-HANFORD-16-0134, Rev. 0, *Calculation of Soil Nonradiological Preliminary Remediation Goals for the Outdoor Worker Scenario*, Table 9, "Preliminary Remediation Goals – Totals and Final, Final."
   - CHPRC-00784, Rev. 0, *Tier 1 Risk-Based Concentrations Protective of Ecological Receptors at the Hanford Site*, Table 6-13, "NOAEL Lowest" for non-Radionuclides, "LOAEL Lowest" for Radionuclides.
   - U.S. Environmental Protection Agency preliminary remediation goals Res. Soil to groundwater (Rads), Minimum of SSL Risk-Based (pCi/g) or SSL MCL-Based (pCi/g)[1].
   - ECF-HANFORD-10-0442, Rev. 2[2], *Calculation of Nonradiological Soil Concentrations Protective of Groundwater Using the Fixed Parameter 3 Phase Equilibrium Partitioning Equation for the 100 Areas and 300 Areas*, Table 7-1, "Soil Concentration Protective of Groundwater."

The human and ecological risk-based values are applied as follows:

- 0 to 15 ft below ground surface: Data are compared to the outdoor worker and ecological values for radionuclides and nonradionuclides.
- >15 ft below ground surface: Data are compared to the construction worker values for radionuclides.

[1] Groundwater protection preliminary remediation goals have not yet been developed for the 200-EA-1 OU. Generic U.S. Environmental Protection Agency values for radionuclides were used for this comparison step; these values are likely to be more conservative than more site-specific values that will be developed in the future.

[2] Groundwater protection preliminary remediation goals have not yet been developed for the 200-EA-1 OU. Generic values for nonradionuclides calculated using the fixed-parameter three-phase equilibrium partitioning equation were used for this comparison step; these values are likely to be more conservative than more site-specific values that will be developed in the future.

Data from all depths are compared to generic groundwater protection screening values for radionuclides and nonradionuclides.

6. **Comparison Against Risk-Based Values (Values Exist)** – All measurements are compared to risk-based values identified in Step 4. Analytical data below all applicable risk-based values are recorded on Tab 10 of the Excel workbook.

7. **Measurement > Background Values** –Measurements that are above risk-based values in Step 5 are compared to background concentrations established in ECF-Hanford-11-0038, *Soil Background for Interim Use at the Hanford Site* (90th percentile values). Analytes that are below background are recorded on Tab 09 of the Excel workbook. Analytes with measurements above background are recorded on Tab 06.

2.3 Waste-Site Cross-Section Image Development

A cross-section image of the waste site and associated vadose zone is developed to illustrate the location of prior investigations and available data in or around a waste site. The image consists of a plan view to show the sample locations relative to the waste site laterally and a cross section to see the sample locations relative to the waste site vertically, as shown in Figure 2. The images are produced using the data from the waste site-specific Excel workbooks and the ArcGIS® database EA-1 Cross-section Geodatabase, which are then developed within ArcGIS 10.4 for Desktop. The cross-section images have the following components:

1. Waste site location, elevation, and dimension information are imported into the *EA-1 Cross-section Geodatabase* from the **ehsit shapefiles**.

    - The ehsit shapefile is imported from the Hanford Local Area Network (HLAN). For further details on the metadata, refer to Appendix A.

2. Well coordinates, elevation, depth, and the inactive/active label information are retrieved from the **imwelwel** shapefiles that are imported into the *EA-1 Cross-section Geodatabase*. When available, the well screen extent is retrieved from the associated well's GPL log data and is recorded in the Excel workbooks.

    - Imwelwel is a shapefile that includes associated data for each well and comes from the Hanford Well Information System (HWIS). Some well coordinates are not located in the Imwelwel and are looked up individually within IDMS. For further details on the Imwelwel and the associated HWIS, refer to Appendix A.

    - The well screen information is located in columns Screen Top and Screen Bottom on Tab 05 of the Excel workbook.

    - Well depth is collected from the GPL documents or well construction records available through EDA and is recorded in the column Depth to Bottom on Tab 05 of the Excel workbook. In some cases, the well depths for the Imwelwel shapefile and the recorded GPL information do not match. In these situations, the maximum well depth is used on the cross-section.

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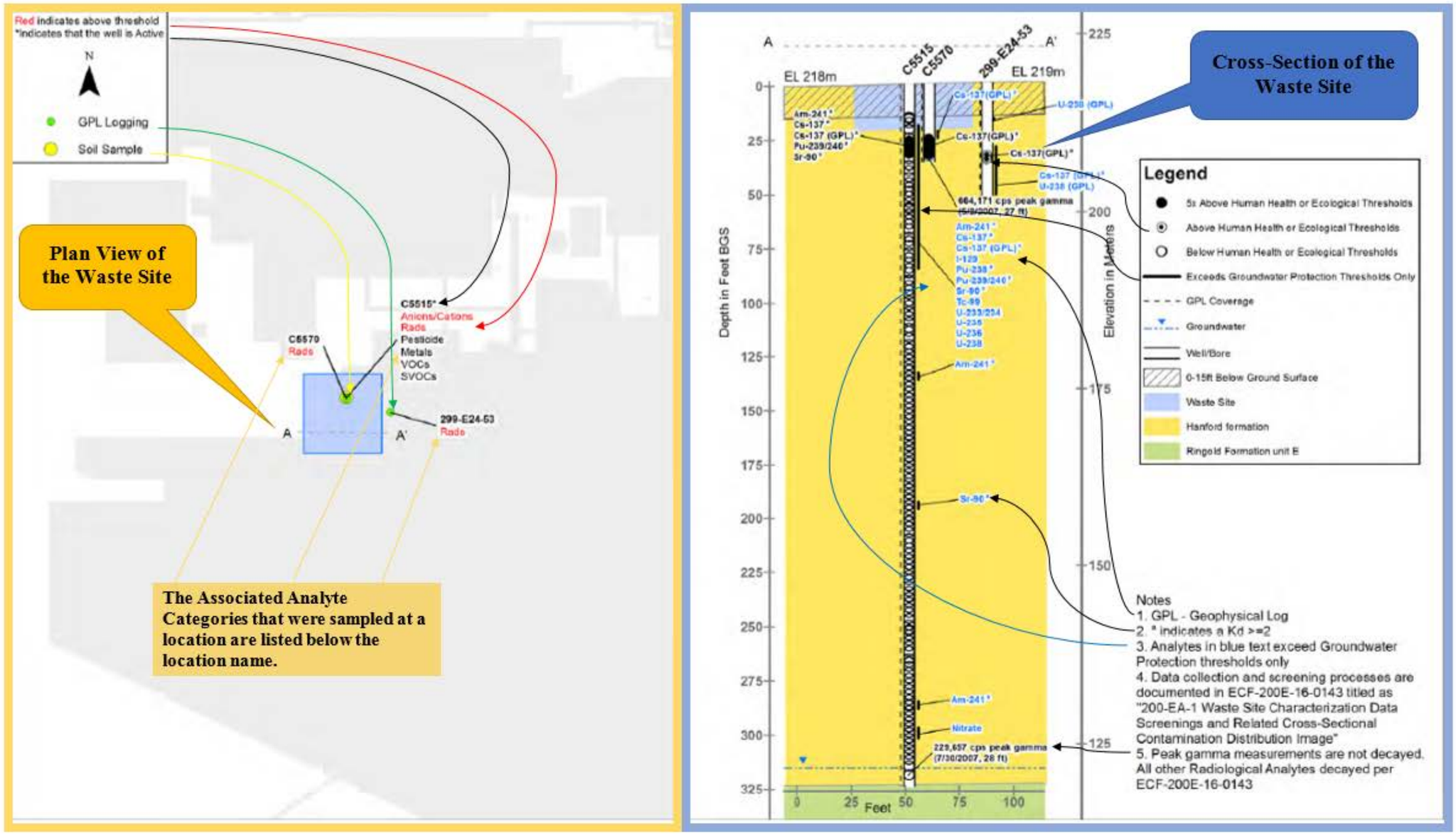

Figure 2. Cross-Section Image

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3. Surface sample locations were retrieved from the SamplingSites_2016-06-22 query that pulled sample coordinates from HEIS. The associated coordinates are inputted into the *EA-1 Cross-section Geodatabase*.

    - For further details on the SamplingSites_2016-06-22 query, refer to Appendix A.

4. General vadose zone geologic formations and water table elevations are digitized from the following website: http://higrv.hanford.gov/Hanford_Reports_2014/Hanford_GW_Report/index.html.

    - Using the website's Plateau Cross-section, the cross-section of the waste site's geology and groundwater depth are digitized into ArcGIS with a snipped image, using Microsoft Windows Snipping Tool 10.1.

5. Sampled medium types: Soil Gas, Soil Sample, and GPL Loggings that are associated with each sample location are indicated by unique color on the Plan View image.

    - Locations with soil gas samples (Orange Circle on Plan View) are indicated in the **Soil Gas Data** column on Tab 05 of the Excel workbook, when the text is recorded as "Yes."

    - Locations with soil samples (Yellow Circle on Plan View) are indicated in the **HEIS Soil Data** column on Tab 05 of the Excel workbook, when the text is recorded as "Yes."

    - Locations with GPL loggings (Green Circle on Plan View) are indicated in either of the **HEIS GPL Data Collected, EDA GPL Data Collected,** or the **GPL Manual Data Included** columns on Tab 05 of the Excel workbook, when the text is recorded as "Yes" in any of the three columns.

    - Locations of penetrations (i.e., wells or borings) that have no data available for Soil Gas, Soil Sample, or GPL Loggings are indicated as a Black Circle on the Plan View.

6. Categories of analytes (i.e., Pesticide, Metals, Anions/Cations, Asbestos, volatile organic compounds, semivolatile organic compound, and Rads) that were analyzed at a location are listed under the well name on the Plan View. If any of the measurements exceed an applicable risk-based value (see Steps 4-6 of Section 2.2) at a location (Steps 7 and 8), then the associated category name(s) is highlighted in red on the Plan View.

    - Analyte Categories that were sampled for a well are indicated when the value in the **No. Samples** column is greater than 0 in Tab 05 of the Excel workbook (the bottom table). The associated well name and analyte category name is in the adjacent columns named **Sample Site/Well** and **Analyte Type**.

    - A Category is indicated as having an analyte exceeding a risk-based value, when either the **Post-Evaluation Measurements over Groundwater Only, Post-Evaluation Measurements over Low Other Values** or **Post-Evaluation Measurements over High Other Values** columns are marked with a value of "Yes".

7. Soil or GPL sample measurements that exceed either the human health or ecological values are identified in the data evaluation process (Section 2.2) and indicated on the cross-section as follows:

- All analyte measurements located on Tab 06 of the Excel workbook are placed on the cross-section at the associated sample depth. The columns controlling how the analytes are placed on the cross-section are as follows:

  (a) **Analyte** – the named analyte that was detected above the risk-based values.

  (b) **Abbreviation** - the named analyte's abbreviation, if available, that was detected above the risk-based values.

  (c) **Sample Site/Well** – the sample site/well location that analyte was sampled at.

  (d) **Source** – states whether the sample analyte was from a soil sample or GPL data. If it is from GPL data, then the named analyte on the cross-section is followed by the parenthetical …*(GPL).*

  (e) **Depth to Bottom** – the depth that the analyte was sampled at (in meters)

- If an analyte is five times greater than either the applicable human health or ecological value, then the **Over Values** column on Tab 06 of the Excel workbook will state "High Other Value" and a solid circle will be shown at the associated sample depth on the cross-section.

- If an analyte is greater than either the applicable human health or ecological risk-based value but less than five times the risk-based value, then the **Over Values** column on Tab 06 will state "Low Other Value" and a circle with a dot in the middle will be shown at the associated sample depth on the cross-section.

8. Soil or GPL analytes that only exceed groundwater protection values are indicated by a "groundwater Only" entry under the **Over Values** column of Tab 06 of the Excel workbook.

9. Analytes that only exceed groundwater protection values are shown on the cross-section as a solid bar to the right of the well or boring at the associated sample depths with callout text colored in blue.

   - The columns used to determine how the analytes are shown on the cross-section are the following:

     (a) **Analyte** – the named analyte that was detected above the risk-based values.

     (b) **Abbreviation** - the named analyte's abbreviation, if available, that was detected above the risk-based values.

     (c) **Sample Site/Well** – the sample site/well that analyte was sampled at.

     (d) **Source** – states whether the sample analyte was from a soil sample or GPL logs. If it is from GPL data, then the named analyte on the cross-section is followed by the ending …*(GPL)* to indicate as such.

     (e) **Depth to Bottom** – the depth that the analyte was sampled at (in meters).

10. Analytes with a partition (or distribution) coefficient (K_d) value greater than or equal to 2 are indicated with the "a" superscript on the cross-section callout for the analyte (e.g., Cs-137[a]).

    - To determine if a measured analyte has a K_d >= 2, refer Tab 06 under the **Comp. to K_d** column and the text will read exactly as "K_d >= 2."

- The K_d Values were retrieved from Tables C-5 and C-6 in ECF-HANFORD-11-0063, Rev. 6, *STOMP 1-D modeling for Determination of Soil Screening Levels and Preliminary Remediation Goals for Waste Sites in the 100-D and 100-H Source Operable Units*. The analytes and their associated K_d values are shown in Attachment C of ECF-HANFORD-11-0063.

11. Soil samples for which no analytes exceed human health or ecological values are shown on the cross-section as an empty circle for each sampled depth. These locations are shown on the cross-section regardless of lab qualifiers, rad exclusions, or comparisons to risk-based values or backgrounds. They are intended to show all locations from which samples were collected.

    - The **Source** column on Tab 04 of the Excel workbook will indicate "Soil Data" for the associated sampled depth. The columns used to indicate the location of soil samples include:

      (a) **Sample Site/Well** – the sample site/well that analyte was sampled at.

      (b) **Depth to Bottom** – the depth that the soil sample was taken (in meters).

12. GPL Coverage is indicated on the cross-section by a dashed line to the left of the associated well.

    - GPL Coverage is indicated by a "Yes**"** in either of the **HEIS GPL Data Collected, EDA GPL Data Collected,** or the **GPL Manual Data Included** columns on Tab 05 of the Excel workbook.

13. Soil gas measurements are identified on Tab 07 of the Excel workbook and shown on the cross-section as a callout at the associated location, with the analyte name and maximum recorded measurement.

    - The columns used to indicate soil gas analytes that are listed on the cross-section include:

      (a) **Sample Site/Well** – the sample site/well where sampling occurred.

      (b) **Analyte** – the named analyte that was detected.

      (c) **Measurement** – the measured value (No decay-correction has been applied to these measurements).

      (d) **Units** – the units for the measured value.

14. The maximum gamma reading (i.e., peak), associated depth and year of logging are recorded for each well on Tab 08 of the Excel workbook and shown on the cross-section, when available. No decay-correction has been applied to these gross measurements.

    - The columns used to indicate gamma readings that are listed on the cross-section include:

      (a) **Sample Site/Well** – the sample site/well that was logged.

      (b) **Depth to Bottom** – the depth that the soil sample was taken (in meters).

      (c) **Measurement** – the measured gamma reading in cps. The maximum reading is filtered out for each well and is the only reported reading for the well. Maximum gamma readings are presented at the recorded value and are not decayed.

      (d) **Date** – the date when the measurement was taken.

3 Assumptions and Inputs

The primary assumptions and inputs associated with this ECF have been incorporated into the discussion of Methodology presented in Chapter 2. The following are additional assumptions that apply to the methodology described in this ECF.

1. Groundwater, atmospheric, miscellaneous materials, and biota data, while relevant to the overall evaluation of the 200-EA-1 waste sites, are not included in the cross-section depiction of data for the vadose zone. However, data for these media have been retrieved from HEIS and are included in the Excel workbooks.

2. Data retrieved from HEIS contains columns for Depth to Top and Depth to Bottom for samples taken. In order to automate the data evaluation process, the Depth to Bottom value is used in this analysis.

3. Individual deviations from the risk-based values and background values in the referenced documents are noted in the spreadsheets.

4 Software Applications

Microsoft Excel was used to sort, order, and rank the analyte data that is represented on the waste site cross-section images. Microsoft Access was used to retrieve HEIS data. ArcGIS 10.4 for Desktop was used to develop the waste site cross-section images, as well as the Microsoft Windows Snipping Tool 10.1.

5 Calculation

All calculations and data associated with the waste site data evaluation and cross-section image development are shown in the site-specific Excel workbook. The workbooks are located as separate files stored electronically on the device attached to Appendix B.

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Appendix A

Data Relied Upon for Development of GIS Maps and Cross-Sections

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A1 Source Data Information

Maps generated to locate Sample Sites and Wells for the Data Retrieval process outlined in this ECF relied on data incorporated from the following sources:

- Ehsit shapefiles from Hanford Spatial Data Clearinghouse provided by Shel Clark on 9/17/2015 and updated by Len Habel on 12/13/2016.
- Imwelwel well data from the Hanford Well Information System (HWIS) provided by Len Habel on 12/7/2015.
- Bggenexs collected from \\hanford\data\sitedata\HGSC_Prod\buildings\buildings_general\structure_existing_site\bggenexs.shp on 4/28/2016.
- SamplingSites_2016-06-22 Query data provided by William Webber on 6/22/2016.

Cross-Section Images were further developed using additional data from:

- The site-specific data collected and evaluated as detailed in this ECF.
- Site and construction characterization identified by scoping summary authors.
- Geology derived from the Central Plateau Cross Section Tool (http://higrv.hanford.gov/Hanford_Reports_2014/Hanford_GW_Report/index.html).

Ehsit Notes

The ehsit shapefiles were used for retrieving location, elevation, and dimension information for waste sites. The following is a description of the classes/metadata that are associated with the ehsit shapefiles.

Feature Class Descriptions

- Ehsit – imported from hland.
- Ehsit_scopesites – scoping waste sites extracted from ehsit. This is the primary data driven page feature class.
- Ehsit_scopesites_display – map display changes to scoping waste sites. These changes are solely for symbolizing the information. This is where merged sites, renames, aesthetic changes reside. It is important to keep this as a separate feature class so that data driven pages work as normal. This uses Page Definition based on SITE_NUM to control current display within the Data Driven Page.
- Ehsit_intersect – Product of an Intersect Analysis between ehsit and ehsit_scoping_HalfMilebuffer. This produces a feature class with a significant number of data base objects. It creates one shape for every instance of the Half Mile buffer intersecting with ehsit. Each object is tagged with the SITE_NUM from ehsit and SITE_NUM from ehsit_scoping_HalfMilebuffer.
- Ehsit_scoping_specific – Dissolve Analysis on ehsit_intersect using the SITE_NUM (ehsit_scoping_HalfMilebuffer) AND SITE_NUM (ehsit). The dissolve merges the database objects into a data set of every ehsit within the Half Mile buffer PER waste site.
- Geometry – not needed.

- Cap_comparison – This was digitized base on reference computer-aided design (CAD) drawings and the 2013 National Agriculture Imagery Program (NAIP) for extent of fly ash fill.
- Temporary_pipe – Digitized from ehsitpip, CAD drawings, or other written sources. This layer was generated to consolidate and streamline the data specific to the Waste Site locations. The line is generated for reference only and in the context of the summary narrative. The line can represent individual pipe locations as well as groups of pipes depending on the visual need for each site.
- Temporary_points – Digitized from ehsitpir, ehsitppt, CAD drawings, or other written sources. This layer was generated to consolidate and streamline the data specific to the Waste Site locations. The point is generated for reference only and in the context of the summary narrative.

Hanford Well Information System/Imwelwel Notes

The Hanford Well Information System (HWIS) tracks wells located on the Hanford Site and/or used by Hanford Site personnel. Some aspects tracked include well attributes, start card activities, location, construction, maintenance and well status.

The feature class has been created by reading northing and easting attributes directly from the HWIS database and processing this data to create a point feature that represents each well.

Description: Data in ESRI shape file (imwelwel) format which depicts wells on the Hanford Site. These wells are shafts dug or drilled into the earth for extracting water from subsurface aquifers, collecting groundwater environmental samples, injecting water or other fluids into subsurface aquifers, or extracting contamination or other impurities from subsurface aquifers.

Purpose: To provide the best available dataset in ESRI shape file format for general Hanford Local Area Network (HLAN) use.

Published by: Lockheed Martin Information Technology.

On: 9/3/2013

Contact: Byron Gessel

509-376-7056 or byron_gessel@rl.gov

*For complete documentation and data dictionary refer to HNF-23302.

Appendix B

Workbook Attachments

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B1 Workbook Attachments

Site-specific Microsoft® Excel® workbooks referenced in Section 2.1.2 and throughout this document are stored electronically on the file storage device attached to this document. Waste sites evaluated can be located using the file name listed below.

Site Name	File Name
200-E BP	200-E BP_20160712_WP.xlsx
200-E PD	200-E PD_20160801_WP.xlsx
200-E-100	200-E-100_20161018_WP.xlsx
200-E-102	200-E-102_20161018_WP.xlsx
200-E-103	200-E-103_20160912_WP.xlsx
200-E-109	200-E-109_20160723_WP.xlsx
200-E-115	200-E-115_20160831_WP.xlsx
200-E-117	200-E-117_20160801_WP.xlsx
200-E-121	200-E-121_20160802_WP.xlsx
200-E-123	200-E-123_20160815_WP.xlsx
200-E-124	200-E-124_20160909_WP-.xlsx
200-E-125	200-E-125_20160727_WP.xlsx
200-E-128	200-E-128_20160815_WP.xlsx
200-E-129	200-E-129_20160801_WP.xlsx
200-E-13	200-E-13_20160712_WP.xlsx
200-E-130	200-E-130_20160801_WP.xlsx
200-E-139	200-E-139_20160906_WP.xlsx
200-E-142	200-E-142_20161019_WP.xlsx
200-E-209-PL	200-E-209-PL_20161129_WP.xlsx
200-E-242-PL	200-E-242-PL_20161205_WP.xlsx
200-E-249-PL	200-E-249-PL_20161205_WP.xlsx
200-E-25	200-E-25_20160729_WP.xlsx
200-E-250-PL	200-E-250-PL_20161205_WP.xlsx
200-E-251-PL	200-E-251-PL_20161205_WP.xlsx

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Site Name	File Name
200-E-252-PL	200-E-252-PL_20161205_WP.xlsx
200-E-26	200-E-26_20160815_WP.xlsx
200-E-262-PL	200-E-262-PL_20161205_WP.xlsx
200-E-27	200-E-27_20161018_WP.xlsx
200-E-276-PL	200-E-276-PL_20161205_WP.xlsx
200-E-279-PL	200-E-279-PL_20161205_WP.xlsx
200-E-287	200-E-287_20161019_WP.xlsx
200-E-29	200-E-29_20160815_WP.xlsx
200-E-292	200-E-292_20161019_WP.xlsx
200-E-293	200-E-293_20161019_WP.xlsx
200-E-294	200-E-294_20161019_WP.xlsx
200-E-297	200-E-297-20161114_WP.xlsx
200-E-301	200-E-301_20161114_WP.xlsx
200-E-4	200-E-4_20160817_WP.xlsx
200-E-41	200-E-41_20161018_WP.xlsx
200-E-43	200-E-43_20160802_WP.xlsx
200-E-44	200-E-44_20161019_WP.xlsx
200-E-53	200-E-53_20160723_WP.xlsx
200-E-56	200-E-56_20160829_WP.xlsx
200-E-57	200-E-57_20160826_WP.xlsx
200-E-58	200-E-58_20160909_WP.xlsx
200-E-68	200-E-68_20160909_WP.xlsx
200-E-99	200-E-99_20161018_WP.xlsx
201-C	201-C_20161107_WP.xlsx
207-A-NORTH	207-A-North_20160906_WP.xlsx
207-A-SOUTH	207-A-South_20161112_WP.xlsx
207-B	207-B_20160815_WP.xlsx
209-E-WS-2	209-E-WS-2_20160817_WP.xlsx
209-E-WS-3	209-E-WS-3_20160830_WP.xlsx

Site Name	File Name
216-A-1	216-A-1_20160831_WP.xlsx
216-A-10	216-A-10_20160723_WP.xlsx
216-A-15	216-A-15_20160908_WP.xlsx
216-A-18	216-A-18_20160901_WP.xlsx
216-A-19	216-A-19_20160901_WP.xlsx
216-A-2	216-A-2_20160906_WP.xlsx
216-A-20	216-A-20_20160712_WP.xlsx
216-A-21	216-A-21_20160906_WP.xlsx
216-A-22	216-A-22_20160906_WP.xlsx
216-A-26	216-A-26_20160909_WP.xlsx
216-A-26A	216-A-26A_20160909_WP.xlsx
216-A-27	216-A-27_20160912_WP.xlsx
216-A-28	216-A-28_20160906_WP.xlsx
216-A-29	216-A-29_20160723_WP.xlsx
216-A-3	216-A-3_20160906_WP.xlsx
216-A-30	216-A-30_20160830_WP.xlsx
216-A-33	216-A-33_20160909_WP.xlsx
216-A-34	216-A-34_20160901_WP.xlsx
216-A-36A	216-A-36A_20160712_WP.xlsx
216-A-36B	216-A-36B_20160726_WP.xlsx
216-A-37-1	216-A-37-1_20160723_WP.xlsx
216-A-37-2	216-A-37-2_20160831_WP.xlsx
216-A-38-1	216-A-38-1_20160912_WP.xlsx
216-A-4	216-A-4_20160907_WP.xlsx
216-A-40	216-A-40_20160712_WP.xlsx
216-A-41	216-A-41_20160727_WP.xlsx
216-A-42	216-A-42_20160901_WP.xlsx
216-A-45	216-A-45_20160913_WP.xlsx
216-A-5	216-A-5_20160908_WP.xlsx

Site Name	File Name
216-A-6	216-A-6_20160831_WP.xlsx
216-A-9	216-A-9_20160803_WP.xlsx
216-B-10A	216-B-10A_20160812_WP.xlsx
216-B-10B	216-B-10B_20160812_WP.xlsx
216-B-12	216-B-12_20160712_WP.xlsx
216-B-2-1	216-B-2-1_20160907_WP.xlsx
216-B-2-2	216-B-2-2_20160815_WP.xlsx
216-B-2-3	216-B-2-3_20160907_WP.xlsx
216-B-51	216-B-51_20160712_WP.xlsx
216-B-55	216-B-55_20160812_WP.xlsx
216-B-59	216-B-59_20160816_WP.xlsx
216-B-59B	216-B-59B_20160816_WP.xlsx
216-B-6	216-B-6_20160729_WP.xlsx
216-B-62	216-B-62_20160812_WP.xlsx
216-B-63	216-B-63_20160712_WP.xlsx
216-B-64	216-B-64_20160812_WP.xlsx
216-BY-201	216-BY-201_20160801_WP.xlsx
216-C-1	216-C-1_20160826_WP.xlsx
216-C-10	216-C-10_20160830_WP.xlsx
216-C-2	216-C-2_20160826_WP.xlsx
216-C-3	216-C-3_20160826_WP.xlsx
216-C-4	216-C-4_20160826_WP.xlsx
216-C-5	216-C-5_20160830_WP.xlsx
216-C-6	216-C-6_20160830_WP.xlsx
216-C-7	216-C-7_20160830_WP.xlsx
218-E-7	218-E-7_20160712_WP.xlsx
241-B-361	241-B-361_20160816_WP.xlsx
241-C-151	241-C-151_20161112_WP.xlsx
241-C-154	241-C-154_20161128_WP.xlsx

Site Name	File Name
2607-E12	2607-E12_20160907_WP.xlsx
2607-E3	2607-E3_20160723_WP.xlsx
2607-E5	2607-E5_20160712_WP.xlsx
2607-E6	2607-E6_20160802_WP.xlsx
2607-E7A	2607-E7A_20160712_WP.xlsx
2607-E7B	2607-E7B_20160726_WP.xlsx
2607-E9	2607-E9_20160728_WP.xlsx
2607-EA	2607-EA-20160712_WP.xlsx
2607-EF	2607-EF_20161014_WP.xlsx
2704-C-WS-1	2704-C-WS-1_20160826_WP.xlsx
270-E-1	270-E-1_20160801_WP.xlsx
291-C	291-C_20161110_WP.xlsx
291-C-1	291-C-1_20160815_WP.xlsx
299-E24-111	299-E24-111_20160913_WP.xlsx
HSVP	HSVP_20161110_WP.xlsx
UPR-200-E-10	UPR-200-E-10_20160803_WP.xlsx
UPR-200-E-101	UPR-200-E-101_20160727_WP.xlsx
UPR-200-E-11	UPR-200-E-11_20161115_WP.xlsx
UPR-200-E-112	UPR-200-E-112_20160811_WP.xlsx
UPR-200-E-12	UPR-200-E-12_20160803_WP.xlsx
UPR-200-E-143	UPR-200-E-143_20160811_WP.xlsx
UPR-200-E-144	UPR-200-E-144_20160712_WP.xlsx
UPR-200-E-17	UPR-200-E-17_20160913_WP.xlsx
UPR-200-E-19	UPR-200-E-19_20160913_WP.xlsx
UPR-200-E-20	UPR-200-E-20_20160803_WP.xlsx
UPR-200-E-21	UPR-200-E-21_20160831_WP.xlsx
UPR-200-E-29	UPR-200-E-29_20160831_WP.xlsx
UPR-200-E-33	UPR-200-E-33_20160810_WP.xlsx
UPR-200-E-35	UPR-200-E-35_20160913_WP.xlsx

Site Name	File Name
UPR-200-E-37	UPR-200-E-37_20160830_WP.xlsx
UPR-200-E-43	UPR-200-E-43_20160810_WP.xlsx
UPR-200-E-50	UPR-200-E-50_20160723_WP.xlsx
UPR-200-E-62	UPR-200-E-62_20160723_WP.xlsx
UPR-200-E-64	UPR-200-E-64_20160811_WP.xlsx
UPR-200-E-66	UPR-200-E-66_20160901_WP.xlsx
UPR-200-E-69	UPR-200-E-69_20160812_WP.xlsx
UPR-200-E-88	UPR-200-E-88_20160810_WP.xlsx
UPR-200-E-89	UPR-200-E-89_20160811_WP.xlsx
UPR-200-E-9	UPR-200-E-9_20160802_WP.xlsx
UPR-200-E-95	UPR-200-E-95_20160727_WP.xlsx
UPR-200-E-98	UPR-200-E-98_20160826_WP.xlsx
UPR-200-E-99	UPR-200-E-99_20161115_WP.xlsx