SGW-60540
Revision 0

200-EA-1 Operable Unit Scoping

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

P.O. Box 1600
Richland, Washington 99352

Approved for Public Release;
Further Dissemination Unlimited

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Contents

Contents iii

Figures iii

Tables iii

1 Introduction 1

2 Purpose 1

3 Scoping Process 2

4 Waste Streams 4

5 Waste Site Listing 5

6 Waste Site Scoping Summaries 9

7 References 13

Figures

Figure 1. Annotated Scoping Summary, Page 1 Details 15

Figure 2. Annotated Scoping Summary, Cross Section Sample 17

Tables

Table 1. Summary of Central Plateau Liquid Waste Streams Relevant to the 200-EA-1 OU 10

Table 2. 200-EA-1 OU Waste Sites 11

Table 3. Scoped Waste Sites Susequently Rejected or Assigned to a Different Operable Unit 14

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Terms

CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CHPRC	CH2M HILL Plateau Remediation Company
CMS	corrective measures study
DOE-RL	U.S. Department of Energy, Richland Operations Office
Ecology	Washington State Department of Ecology
FS	feasibility study
GIS	geographic information system
GSR	general summary report
OU	operable unit
PUREX	Plutonium-Uranium Extraction (Plant or process)
RCRA	*Resource Conservation and Recovery Act of 1976*
RFI	RCRA facility investigation
RI	remedial investigation
TPA	Tri-Party Agreement
TSD	treatment, storage, and disposal
UPR	unplanned release
WIDS	Waste Information Data System (database)

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1 Introduction

This document presents scoping information for the 200-EA-1 Operable Unit (OU) *Resource Conservation and Recovery Act of 1976* (RCRA) facility investigation (RFI)/corrective measures study (CMS) and *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) remedial investigation (RI)/feasibility study (FS) process. The 200-EA-1 OU is located in the eastern portion of the Central Plateau Inner Area, and includes solid and liquid waste handling and disposal sites (e.g., cribs, ditches, trenches, retention basins, french drains, reverse wells, burn pits, burial vaults, and dumping and storage areas); inactive buried process sewers and related components (e.g., valve pits); other facility features (e.g., foundations, concrete slabs, and septic systems); contaminated soil resulting from planned releases; and contaminated soil or material from unplanned releases (UPRs). The following describes this document's organization and content:

- **Chapter 2** describes the document's purpose.
- **Chapter 3** describes the RFI/CMS/RI/FS scoping process methodology and key references used.
- **Chapter 4** identifies waste streams relevant to the 200-EA-1 OU. Information in this section supports the waste stream discussions provided in the individual scoping summaries (Chapter 6).
- **Chapter 5** provides alphanumeric listings of the 200-EA-1 OU waste sites, including waste sites that were scoped as part of this effort but are no longer assigned to the 200-EA-1 OU.
- **Chapter 6** is organized in two parts. Part 1 presents the individual scoping summaries for the 200-EA-1 OU waste sites, and Part 2 presents the scoping summaries for the waste sites that were scoped as part of this effort but have since been rejected or assigned to a different OU. All scoping summaries are the product of the scoping process described in Chapter 3.

Detailed information on the 200-EA-1 OU environmental setting, regulatory processes, and other relevant information will be provided in future 200-EA-1 OU RFI/CMS/RI/FS documents, as stipulated in the Tri-Party Agreement (TPA) (Ecology et al., 1989a, *Hanford Federal Facility Agreement and Consent Order*) and the Hanford Facility RCRA Permit (WA7890008967, *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste*).

2 Purpose

This document provides relevant information and the current understanding of 200-EA-1 OU waste sites. The scoping summaries support 200-EA-1 OU initial evaluations, data gap identification, and decision making during the 200-EA-1 OU RFI/CMS/RI/FS process. This document also memorializes information for waste sites listed in Chapter 5 that have been reassigned from the 200-EA-1 OU to other Central Plateau OUs through the TPA Change Control Form Process.

3 Scoping Process

The following explains the scoping process for the waste sites listed in Chapter 5:

1. **Reference identification and review:** The CH2M HILL Plateau Remediation Company (CHPRC) 200-EA-1 OU project team identified and reviewed references and engineering drawings spanning over 70 years to obtain the most relevant waste site information. The team reviewed key references about operational processes, Central Plateau geographic areas, and multiple waste sites to identify related waste sites and additional reference materials. Waste Information Data System (WIDS) general summary reports (GSRs) were reviewed for an initial list of site-specific references (e.g., engineering drawings and radiological survey reports). Relevant daily and monthly operation reports, engineering drawings of nearby sites, and early Hanford Site operation source documents were reviewed to verify pertinent waste site details. Site-specific references used to develop the scoping summaries are located in the WIDS Library.

    - When reviewing references, the project team identified operational dates, physical waste site details (e.g., construction materials and dimensions), documented or suspected UPRs, site-specific characterization and survey data, waste streams and discharge volumes, and uncertainties potentially significant to project decision making (e.g., locations, dimensions, and operational timeframes).

2. **Existing data evaluation:** Many 200-EA-1 OU waste sites were previously investigated and evaluated pursuant to CERCLA or RCRA. Information from these previous efforts was further evaluated during 200-EA-1 OU scoping to identify potential contaminant nature and extent. The following summarizes one such evaluation:

    - ECF-200EA1-17-0046, *Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit*, describes cross-section image development for select waste sites and associated vadose zone. These cross-sections illustrate prior investigation and available data locations in or around a waste site and were used to identify data needs.

3. **Scoping workshops and scoping summary development:** All relevant waste site information and cross-section depictions of exising data were compiled into the Chapter 6 scoping summary format. Incorrect or conflicting information about waste sites was eliminated. The project team included in the scoping summaries only verifiable information representing the best available understanding of waste site conditions. All 200-EA-1 OU waste sites and associated scoping summaries were discussed in a series of scoping workshops with the U.S. Department of Energy, Richland Operations Office (DOE-RL) and the Washington State Department of Ecology (Ecology). In accordance with these workshops, the scoping summaries were reviewed and revised, as necessary.

4. **WIDS coordination and interface:** The CHPRC 200-EA-1 OU project team provided WIDS with the final scoping summaries and supporting references so that WIDS GSRs and geographic information system (GIS) data could be updated, as appropriate, and scoping summary references could be saved in the WIDS Library.

5. **Scoping summary publication:** Waste site scoping summaries found in Chapter 6 may be updated and republished in subsequent revisions of this document as new information becomes available.

The following key references provided overarching information during waste site scoping.

- ARH-2155, *Radioactive Liquid Waste Disposal Facilities 200 West Area*
- ARH-ST-156, *Evaluation of Scintillation Probe Profiles From 200 Area Crib Monitoring Wells*
- BHI-00179, *B Plant Aggregate Area Management Study Technical Baseline Report*
- DOE/EIS-0391-2012, *Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site* (Appendix D Waste Inventories)
- DOE/RL-92-04, *PUREX Source Aggregate Area Management Study Report*
- DOE/RL-92-05, *B Plant Source Aggregate Area Management Study Report*
- DOE/RL-92-18, *Semiworks Source Aggregate Area Management Study Report*
- DOE/RL-98-48, *Groundwater/Vadose Zone Integration Project Background Information and State of Knowledge,* Volumes II and III
- DOE/RL-2004-25, Draft A, *Remedial Investigation Report for the 200-PW-2 Uranium-Rich Process Waste Group and the 200-PW-4 General Process Condensate Group Operable Units*[1]
- DOE/RL-2007-13, *Sampling and Analysis Plan for Electrical Resistivity Correlation for the BC Cribs and Trenches Area Waste Site*
- DOE/RL-2010-49, Draft B, *Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units*
- DOE/RL-2011-102, *Remedial Investigation/Feasibility Study and RCRA Facility Investigation/Corrective Measures Study Work Plan for the 200-DV-1 Operable Unit*
- HNF-1744, *Radionuclide Inventories of Liquid Waste Disposal Sites on the Hanford Site*
- PNL-6456, *Hazard Ranking System Evaluation Of CERCLA Inactive Waste Sites At Hanford,* Volumes I, II, and III
- PNNL-11800, *Addendum to Composite Analysis for Low-Level Waste Disposal in the 200 Area Plateau of the Hanford Site*
- PNNL-15829, *Inventory Data Package for Hanford Assessments*
- PNNL-19277, *Conceptual Models for Migration of Key Groundwater Contaminants Through the Vadose Zone and into the Unconfined Aquifer Below the B-Complex*
- RHO-CD-673, *Handbook 200 Area Waste Sites, Volumes I-III*
- RPP-26744, *Hanford Soil Inventory Model, Rev. 1*
- SD-BWI-DP-061, *A Hydrochemical Data Base For The Hanford Site, Washington*
- SGW-49924, *Conceptual Site Models for the 200-DV-1 Operable Unit Waste Sites in the T Complex Area, Central Plateau, Hanford, Washington*

[1] Draft A of DOE/RL-2004-25 is cited, because Rev. 0 was not completed.

- SGW-39648, *Summary Report: Direct Push Technology Boreholes for Geophysical Logging, 200-IS-I Operable Unit, FY 2008*
- WHC-EP-0037, *Data Compilation: Iodine-129 in Hanford Groundwater*
- WHC-SD-EN-ES-019, *Semi-Works Aggregate Area Management Study Technical Baseline Report*

4 Waste Streams

Chapter 4 of SGW-59881, *200-IS-1 Operable Unit Scoping*, and Table 1 present summary information supporting the scoping summary waste stream discussions presented in Chapter 6.

Table 1. Summary of Central Plateau Liquid Waste Streams Relevant to the 200-EA-1 OU

Chemical Process	Waste Streams		
	Stored in Underground SSTs and DSTs (High Activity)[a]	**Disposed to Cribs, Dry Wells, French Drains, and Trenches** (Intermediate Activity)[b]	**Disposed to Ponds, Retention Basins, and Ditches** (Low Activity)[c]
Bismuth Phosphate (B Plant, T Plant)	• Coating Waste • First-Cycle Decontamination Waste • Lanthanum Fluoride Process 224 Building Waste • Metal Waste • Second-Cycle Decontamination Waste	• Cell 5-6 Drainage Waste • First-Cycle High-Level Waste • Second-Cycle High-Level Waste • Process Condensate • Stack Drainage Waste • Tank Farm Supernatant Overflow Decontamination Waste	• Chemical Sewer Waste • Cold Startup Waste • Cooling Water • Laboratory Wastewater • Steam Condensate
Cesium and Strontium Recovery (B Plant, C Plant)	• B Plant High-Activity Waste • B Plant Low-Activity Waste[d] • Cesium Recovery Waste • Hot Semiworks Purification Waste • Ion-Exchange Waste • Strontium Recovery Waste • Washed Sludge	• Process Condensate • Steam Condensate	• Cold Startup Waste • Cooling Water
REDOX (S Plant)	• REDOX High-Level Waste • Aluminum Cladding Waste • Zirconium Cladding Waste • First-Cycle Decontamination and Coating Waste • Second-Cycle Decontamination and Coating Waste	• Floor Drainage Wastewater • Process Condensate • Steam Condensate	• Chemical Wastewater • Cold Startup Waste • Cooling Water • Steam Condensate
PUREX (A Plant)	• PUREX First-Cycle and Second-Cycle High-Level Waste • PUREX Acid Waste • Neutralized High-Level Waste • Aluminum Cladding Waste • Zirconium Cladding Waste • PUREX Ammonia Scrubber Feed Waste • PUREX Non-Boiling Waste • PUREX Organic Wash Waste • Thoria Process Waste	• Ammonia Scrubber Condensate • Process Condensate • Steam Condensate	• Chemical Sewer Waste • Cold Startup Waste • Cooling Water • Steam Condensate

Table 1. Summary of Central Plateau Liquid Waste Streams Relevant to the 200-EA-1 OU

Chemical Process	Waste Streams		
	Stored in Underground SSTs and DSTs (High Activity)[a]	**Disposed to Cribs, Dry Wells, French Drains, and Trenches** (Intermediate Activity)[b]	**Disposed to Ponds, Retention Basins, and Ditches** (Low Activity)[c]
Uranium Recovery (U Plant)	• Ferrocyanide Sludge • Tributyl Phosphate Process Waste	• Process Condensate • Scavenged Waste	• Cold Startup Waste • Cooling Water • Steam Condensate • Chemical Sewer Waste

Sources: BHI-00174, *U Plant Aggregate Area Management Study Technical Baseline Report;* BNWL-C-119, *Management of Radioactive Wastes at the Hanford Plant;* HW-31000, *PUREX Technical Manual;* and ISO-100, *Waste Management Technical Manual*.

a. High-activity waste is stored in underground SSTs and DSTs. It was sometimes high heat and was historically defined as having radionuclide concentrations >100 µCi/mL (1×10^{11} pCi/L) (BNWL-C-119).

b. Intermediate-activity waste was disposed to cribs, dry wells, french drains, and trenches and was historically defined as having radionuclide concentrations from 5×10^{-5} µCi/mL (5×10^{4} pCi/L) to 100 µCi/mL (1×10^{11} pCi/L) (BNWL-C-119).

c. Low-activity waste was routed to open ponds, retention basins, and ditches and was historically defined as having radionuclide concentrations <5×10^{-5} µCi/mL (5×10^{4} pCi/L) (BNWL-C-119).

d. B Plant low-activity waste stored in SSTs and DSTs.

DST = double-shell tank
OU = operable unit
PUREX = plutonium-uranium extraction
REDOX = reduction-oxidation
SST = single-shell tank

5 Waste Site Listing

Table 2 alphanumerically lists 200-EA-1 OU waste sites and their geographic group assignments. 200-EA-1 OU waste sites were separated into the A Tank Farms, B Plant, B Tank Farms, Hot Semiworks, PUREX Plant, and Miscellaneous geographic groups to focus the data needs assessment on waste sites with common underlying hydrogeology, similar plant processes, and similar expected contaminants, and to simplify the presentation of waste site contaminant distribution. Table 3 alphanumerically lists 200-EA-1 OU waste sites that were scoped but will no longer be addressed as part of the 200-EA-1 OU.

200-EA-1 OU waste sites are divided into several general waste site types. Some waste site types are fairly self-evident (e.g., burn pit, dumping area, storage area, foundation, pipeline, and unplanned release). Below are brief descriptions of engineered waste site types that may not be self-evident:

- Burial Vault: OU-specific burial vaults are square or rectangular wooden or concrete structures that are buried at a shallow depth. They were used to dispose of 222B solid laboratory waste.
- Crib: Cribs are shallow excavations held open by wood cribbing, concrete culverts, or gravel. Intermediate-activity wastes were discharged to cribs. Cribs promoted waste infiltration into the vadose zone to minimize the potential for direct exposure to site workers.
- Ditch: Ditches are shallow, unlined linear depressions. Intermediate-activity wastes were conveyed through ditches for discharge to cribs and trenches.

- French Drain: French drains are shallow vertical structures used for infiltration of liquid waste into the vadose zone. French drains were often constructed of concrete or steel culvert pipe.
- Injection/Reverse Well: Typically, injection/reverse wells are drilled and cased boreholes perforated in the lower portion of the casing to allow liquid to seep into the vadose zone at depths greater than cribs and french drains.
- Process Unit: Process units are remains and below-grade features of decommissioned processing facilities.
- Retention Basin: Generally, retention basins are rectangular and constructed of rubber-lined soil or concrete. High volumes of low-activity waste were conveyed through a combination of retention basins, open ditches, and buried pipelines for discharge to ponds or cribs.
- Septic System: Septic systems provided sanitary wastewater disposal system for facilities. Septic systems typically included a septic tank and a drain field, leaching trench, or dry well.
- Trench: Trenches are shallow excavations where intermediate-activity wastes were discharged. Trenches promoted waste infiltration into the vadose zone to minimize the potential for direct exposure to site workers.
- Valve Pit: The 200-EA-1 OU's valve pit is a cylindrical underground structure made of stainless steel. It housed pipeline systems connecting Hot Semiworks facilities to the 244CR Vault.

Table 2. 200-EA-1 OU Waste Sites

Waste Site	Geographic Group	Waste Site	Geographic Group
200-E BP (Burn pit)	Miscellaneous	216-A-41 Crib	A Tank Farms
200-E PD Ditch	PUREX Plant	216-A-42 Retention Basin	A Tank Farms
200-E-4 French Drain	Hot Semiworks	216-A-45 Crib	PUREX Plant
200-E-13 Dumping Area	PUREX Plant	216-B-2-1 Ditch	B Plant
200-E-25 French Drain	B Plant	216-B-2-2 Ditch	B Plant
200-E-26 (UPR)	B Plant	216-B-2-3 Ditch	B Plant
200-E-27 Dumping Area	A Tank Farms	216-B-10A Crib	B Plant
200-E-41 (UPR)	Hot Semiworks	216-B-10B Crib	B Plant
200-E-43 Storage Area	PUREX Plant	216-B-12 Crib	B Plant
200-E-53 (UPR)	Miscellaneous	216-B-51 French Drain	B Tank Farms
200-E-56 (UPR)	Hot Semiworks	216-B-55 Crib	B Plant
200-E-57 (UPR)	Hot Semiworks	216-B-59 Trench	B Plant
200-E-99 French Drain	B Plant	216-B-59B Retention Basin	B Plant
200-E-100 French Drain	B Plant	216-B-62 Crib	B Plant
200-E-109 (UPR)	Miscellaneous	216-B-63 Ditch[a]	B Plant

Table 2. 200-EA-1 OU Waste Sites

Waste Site	Geographic Group	Waste Site	Geographic Group
200-E-115 (UPR)	Miscellaneous	216-B-64 Retention Basin	B Plant
200-E-117 (UPR)	B Plant	216-C-1 Crib	Hot Semiworks
200-E-121 (UPR)	B Tank Farms	216-C-2 Injection/Reverse Well	Hot Semiworks
200-E-123 (UPR)	B Plant	216-C-3 Crib	Hot Semiworks
200-E-124 (UPR)	PUREX Plant	216-C-4 Crib	Hot Semiworks
200-E-125 (UPR)	A Tank Farms	216-C-5 Crib	Hot Semiworks
200-E-129 (UPR)	B Plant	216-C-6 Crib	Hot Semiworks
200-E-130 (UPR)	B Plant	216-C-7 Crib	Hot Semiworks
200-E-139 (UPR)	Miscellaneous sites	216-C-10 Crib	Hot Semiworks
200-E-142 Depression	B Plant	218-E-7 Burial Vault	B Plant
200-E-209-PL (Pipeline)	B Plant	2607-E3 Septic System	B Plant
200-E-249-PL (Pipeline)	Hot Semiworks	2607-E5 Septic System	Hot Semiworks
200-E-251-PL (Pipeline)	Hot Semiworks	2607-E6 Septic System	PUREX Plant
200-E-252-PL (Pipeline)	Hot Semiworks	2607-E7A Septic System	Hot Semiworks
200-E-262-PL (Pipeline)	A Tank Farms	2607-E7B Septic System	Hot Semiworks
200-E-276-PL (Pipeline)	A Tank Farms	2607-E9 Septic System	B Tank Farms
200-E-287 (UPR)	A Tank Farms	2607-E12 Septic System	A Tank Farms
200-E-292 Dumping Area	B Tank Farms	2607-EA Septic System	A Tank Farms
200-E-293 Foundation	Hot Semiworks	2607-EF Septic System	B Tank Farms
200-E-294 Foundation	Hot Semiworks	291-C Process Unit	Hot Semiworks
200-E-297 Dumping Area	B Plant	291-C-1 Burial Ground	Hot Semiworks
200-E-301 Dumping Area	Hot Semiworks	HVSP (Valve Pit)	Hot Semiworks
201-C Process Unit	Hot Semiworks	UPR-200-E-10	PUREX
207-A-NORTH Retention Basin	A Tank Farms	UPR-200-E-11	Miscellaneous sites
207-A-SOUTH Retention Basin[b]	A Tank Farms	UPR-200-E-12	PUREX Plant
207-B Retention Basin	B Plant	UPR-200-E-20	PUREX Plant
209-E-WS-2 French Drain	Hot Semiworks	UPR-200-E-21	A Tank Farms
216-A-1 Crib	A Tank Farms	UPR-200-E-29	A Tank Farms
216-A-3 Crib	PUREX Plant	UPR-200-E-33	PUREX Plant
216-A-6 Crib	A Tank Farms	UPR-200-E-37	Hot Semiworks

Table 2. 200-EA-1 OU Waste Sites

Waste Site	Geographic Group	Waste Site	Geographic Group
216-A-9 Crib	PUREX Plant	UPR-200-E-43	B Tank Farms
216-A-10 Crib	PUREX Plant	UPR-200-E-50	Miscellaneous sites
216-A-18 Trench	A Tank Farms	UPR-200-E-64	B Plant
216-A-19 Trench	A Tank Farms	UPR-200-E-66	A Tank Farms
216-A-20 Trench	A Tank Farms	UPR-200-E-69	B Plant
216-A-27 Crib	PUREX Plant	UPR-200-E-88	PUREX Plant
216-A-29 Ditch[a]	A Tank Farms	UPR-200-E-89	B Tank Farms
216-A-30 Crib	A Tank Farms	UPR-200-E-95	Miscellaneous
216-A-34 Ditch	A Tank Farms	UPR-200-E-98	Hot Semiworks
216-A-36A Crib	PUREX Plant	UPR-200-E-99	A Tank Farms
216-A-36B Crib[a]	PUREX Plant	UPR-200-E-101	B Tank Farms
216-A-37-1 Crib[a]	A Tank Farms	UPR-200-E-112	Miscellaneous
216-A-37-2 Crib	A Tank Farms	UPR-200-E-143	A Tank Farms
216-A-38-1 Crib	PUREX Plant	UPR-200-E-144	B Tank Farms
216-A-40 Retention Basin	A Tank Farms	--	--

a. Waste site is a RCRA treatment, storage and disposal (TSD) unit. Appendix C of the Tri-Party Agreement Action Plan (Ecology et al., 1989b, *Hanford Federal Facility Agreement and Consent Order Action Plan*) includes determinations for the waste sites that have been assigned to the 200-EA-1 OU.

b. May 18, 2017 letter received from Washington State Department of Ecology accepts certification of clean closure for this waste site.

OU = operable unit
PUREX = plutonium-uranium extraction
RCRA = *Resource Conservation and Recovery Act ot 1976*
UPR = unplanned release

Table 3. Scoped Waste Sites Subsequently Rejected or Assigned to a Different Operable Unit

• 200-E-29	• 216-A-2	• 216-BY-201
• 200-E-44	• 216-A-4	• 241-B-361
• 200-E-58	• 216-A-5	• 270-E-1
• 200-E-68	• 216-A-15	• 299-E24-111
• 200-E-102	• 216-A-21	• 2704-C-WS-1
• 200-E-103	• 216-A-22	• UPR-200-E-9
• 200-E-128	• 216-A-26	• UPR-200-E-17
• 200-E-242-PL	• 216-A-26A	• UPR-200-E-19
• 200-E-250-PL	• 216-A-28	• UPR-200-E-35
• 200-E-279-PL	• 216-A-33	• UPR-200-E-62
• 209-E-WS-3	• 216-B-6	

6 Waste Site Scoping Summaries

The information in this section is presented in two parts:

- Part 1 provides detailed, site-specific scoping information for the 200-EA-1 OU waste sites listed in Table 2. The information is important to the initial evaluation, the identification of data needs, and task planning for the 200-EA-1 OU.
- Part 2 provides detailed, site-specific scoping information for the waste sites listed in Table 3 that were scoped as part of this effort but are no longer planned to be addressed as part of the 200-EA-1 OU.

All scoping summaries are the product of the scoping process described in Chapter 3. Figure 1 shows the layout and sections found on the first page of each scoping summary, describes the type of information found in each section, and lists the kinds of references used to gather information. Figure 2 shows a representative waste site and vadose zone cross-section image. Cross-sections were developed following the methodology described in ECF-200EA1-17-0046 and show lateral and vertical locations from previous investigations and sampling, including available data in and around the target waste site.

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Page 1 of 1 **Waste Site Code (Site Type)**

History

This section represents a concise summary of the best available information from all sources. The History summary focuses on key activities and event; such as operational dates, releases, and as-left/ current conditions. Inferences are avoided, unless they are found in source documents. For example, if a source document mentions known or suspected releases, that statement is included in the scoping summary.

Primary sources for the history section include the key references found in Section 3 of this document, project and facility evaluations, daily and monthly work reports, Aggregate Area Management Reports, and engineering drawings.

The Plan View map highlights the waste site components, site interfaces, and features of interest at a scale that makes it possible to see the details of the waste site. Since many of the waste sites are very small relative to the overall size of the Central Plateau, identification of the waste site in relation to major facilities or landmarks is not always feasible.

The Plan View map and full-page aerial photo are generated using Hanford GIS data overlain with features of interest and corrections sourced from engineering drawings. In both the map and aerial photo, color-coding was added to make identification of key elements easier. Generally the subject waste site is shown in blue; however, waste sites, or portions of waste sites, that are 15 feet below ground surface or deeper appear in green and portions of waste sites within Tank Farm boundaries are pink. Intersecting waste sites are highlighted in light orange.

Construction

This section provides key physical attributes tailored to each waste site type (e.g., crib, ditch, retention basin, french drain, septic tank, and unplanned release):

- Length
- Width
- Depth
- Volume
- Composition
- Cover material
- Side slope

Construction details promote greater understanding of waste site scope and support waste site evaluations. Engineering drawings and GIS records are primary sources of waste site construction information.

Units of measure are not converted from the units provided in the source documents to ensure transparency between the scoping summaries and the source documents and to minimize the introduction of errors through unit conversion.

Features of Interest

This section highlights portions of the waste site that are important or useful in supporting the development of a sampling strategy.

The primary source of information about features of interest are engineering drawings.

Relevant Characterization

This section summarizes data and observations from investigations of the waste site and surroundings. Sources of information include periodic radiological surveys, incident reports, well and borehole logs, and unplanned release investigations.

For waste sites without a documented release, it is common for no characterization to have been done. This should not be considered a deficiency in the scoping summary, but rather a potential data need to be addressed as part of the work plan.

Waste Streams

This section summarizes the processes supported by the waste site and provides any information known about the material streams that were transported by, contained in, or came in contact with the waste site.

Sources of information about waste streams include tank reports, Tank Farm and process transfer histories, and disposal records and investigation results for cribs and trenches.

Misc./Other Relevant Information

Important details that don't cleanly fit into other sections are included here.

Site Interfaces

Origin/Termination

This information is important to defining the scope of the waste site and to supporting the holistic evaluation of related components.

Site Intersects

This section lists waste sites that intersect or are in the vicinity of the subject waste site. The information supports an integrated evaluation approach, maximizing the usefulness of data collected in geographic areas and identifying key interfaces with other operable units or waste management areas.

Figure 1. Annotated Scoping Summary, Page 1 Details

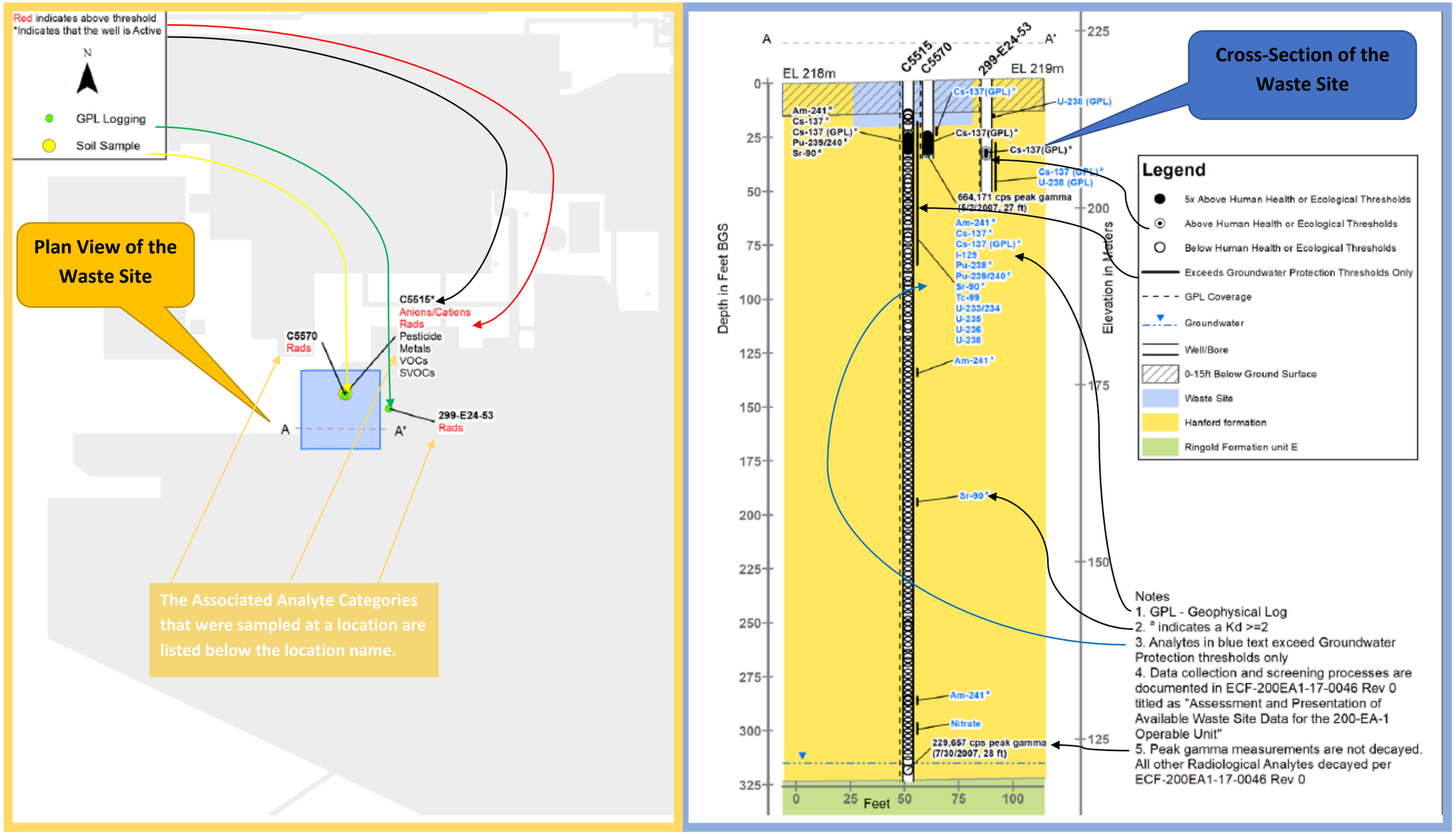

Figure 2. Annotated Scoping Summary, Cross Section Sample

7 References

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200-EA-1 OU Waste Site Scoping Summaries

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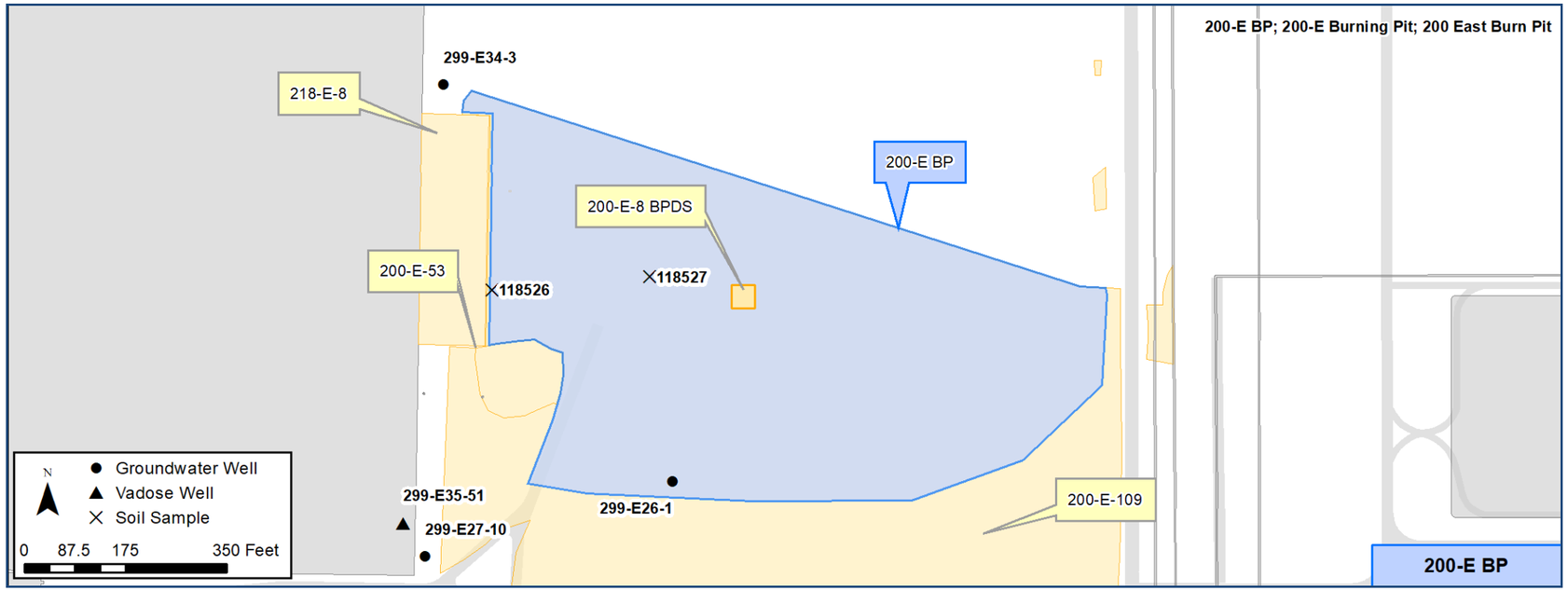
Scoping Summary: 200-E BP (Burn Pit)

History

The 200-E BP waste site is an inactive burn pit used to burn non-radioactive material. It is co-located with 200-E-109, which is an accumulation of radiologically-contaminated tumbleweeds that were blew into the burn pit and did not grow on the site. The burn pit is in the large excavation (i.e., an open pit or depression) immediately east of the 218-E-8 Burial Grounds.

Between 1950 and 1970, the burn pit received 1,500 cubic meters of construction and office waste, as well as 1,000 cubic meters of paint waste and chemical solvents. In the late 1990's thru 2009, the pit was used as a non-radioactive miscellaneous storage area and housed mostly load luggers and trash containers, which have since been radiologically-surveyed and released.

A 40-ft by 40-ft portion of the pit was once used to for a single demolition event, to detonate nonradioactive, shock-sensitive chemicals and was known as the 200-E8 BPDS, which was a RCRA TSD that has since been clean-closed. There have been a number of tumbleweed removals from the burn pit, as contaminated tumbleweeds and tumbleweed fragments are routinely discovered here.



Construction

- Length: 394 ft
- Width: 201 ft
- Depth (of pit): 15 ft
- Elevation: 605 ft
- Depth to Groundwater: 200 ft bgs

Features Of Interest

- Groundwater monitoring well 299-E26-1 was installed at the southwest end of the burn pit in 1948 and decommissioned in 2004. It was drilled to a depth of 248 ft bgs.

Relevant Characterization

- As of 1986, there was no radiological inventory at the burn pit.
- A 1992 survey of the 200-E BPDS had no recordings of radiation/contamination above background levels.
- At least twice in 2009, tumbleweeds were discovered and subsequently removed with maximum concentrations (beta-gamma) at 120,000 dpm/100 square cm, and greater than 1,000,000 dpm/100 square cm, respectively.

Waste Streams

- Not intentionally used for radiological waste.
- **1950-thru-1970**: Chemical, construction, office, and paint waste disposed here.

Misc./Other Relevant Information

- In the 200-MG-1 OU Engineering Evaluation/Cost Analysis (EE/CA) (DOE/RL-2008-44, Rev0), Remove Treatment Disposal (RTD) was the preferred alternative here.
- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data.*

Site Interfaces

Site Intersects:

200-EA-1 OU

- 200-E-109 (Contaminated Tumbleweed Accumulation)
- 200-E-53 (Above Ground Storage Area)

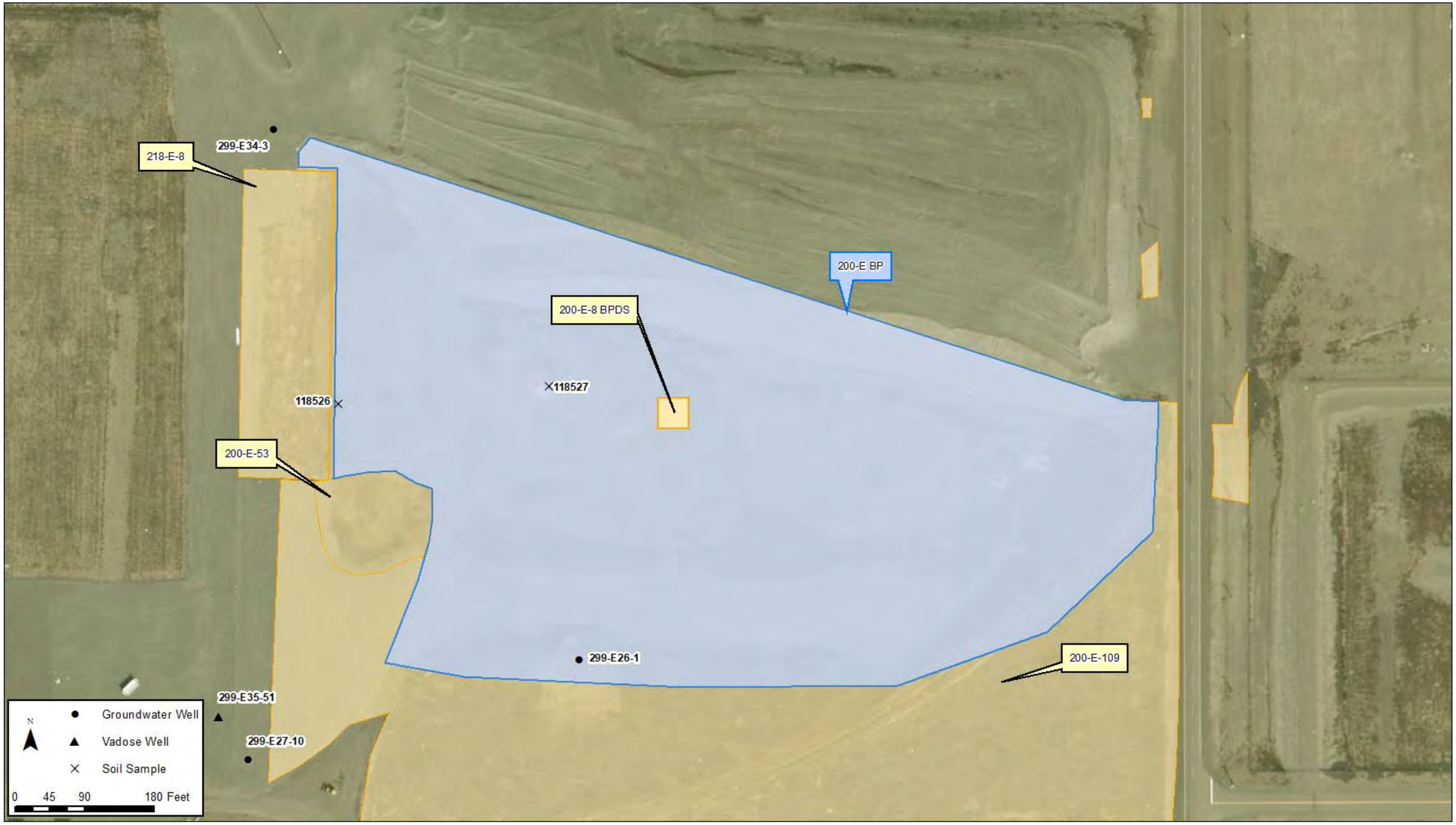
200-SW-2 OU

- 218-E-8 (Burial Ground)

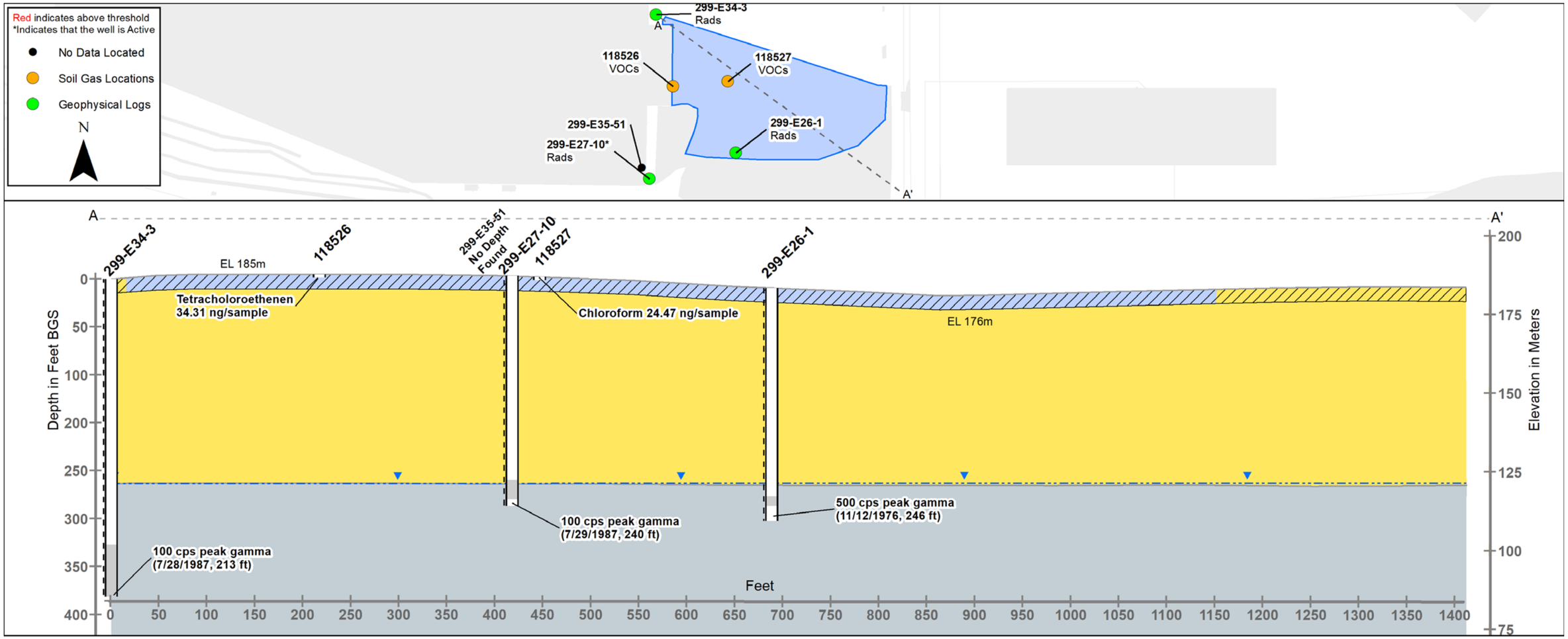
No Operable Unit

- 200-E8 BPDS (RCRA Clean-Closed, 1995)

Scoping Summary: 200-E BP (Burn Pit)



Scoping Summary: 200-E BP (Burn Pit)



Legend

- GPL Coverage
- Groundwater
- Screen
- Well/Bore
- 0-15ft Below Ground Surface
- Waste Site
- Columbia River Basalt Group
- Hanford formation

Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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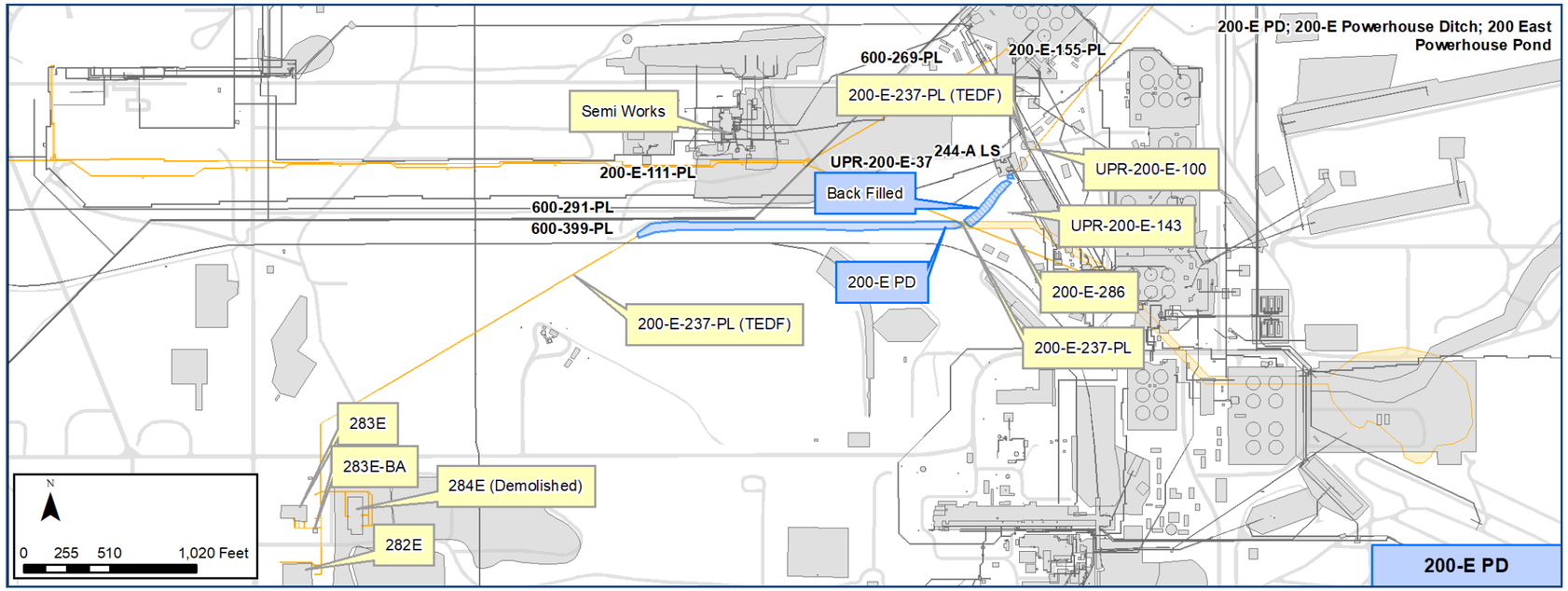
Scoping Summary: 200-E PD (Ditch)

History

The 200-E Powerhouse Ditch (PD) waste site is an active ditch that received process effluent from the 282E Water Reservoir and Pumphouse, 283E Water Treatment Plant and 284E Power Plant via 200-E-237-PL. The ditch is located along the southern boundary of the Semi-Works Aggregate Area. The ditch has been operational since 1945 and originally emptied into the Powerhouse Pond (200-E-286) until 1953. In 1954 the ditch effluent was redirected to drain to the 216-B-3C pond until 1997, when it was diverted to the 200 Area Treated Effluent Disposal Facility (TEDF) and when the 284E Power Plant was shut down. The TEDF and LERF lines are located adjacent to a portion of the north edge of the 200-E PD. Then the Liquid Effluent Retention Facility (LERF) and TEDF lines divert in a more northwest direction, farther away from 200-E PD.

In 1996 there was contamination migration from UPR-200-E-100 and UPR-200-E-143; in reponse the eastern portion of the ditch was backfilled. During stabilization efforts a bypass pipe was installed southeast of the ditch to gravity feed to a headwall drain south of the 244-A Lift Station facility. The 283E Water Treatment Plant was placed in wet standby in 1999. The site is currently posted as an Underground Radioactive Material Area (URMA).



Construction

- Total Length: Approx. 1,921 ft
- Width:
  - Top Approx. 49 ft
  - Bottom Approx. 20 ft
- Depth: 8 ft to 11.5 ft bgs
- Ditch is unlined and allows for effluent percolation into the soil

East Backfilled Portion

- Length: 366 ft
- Depth: 6 ft

Features Of Interest

- Due to potential volumes that could overflow from the 282E Reservoir, the ditch has the potential to fill and discharge to the TEDF pipeline

Relevant Characterization

- Surface water samples mean values (pCi/L)
  - 1992: 1.7E+00 total beta, 1.3E+00 total alpha, 4.1E+01 Cs-137, 8.1E+00 Sr-90
  - 1993: 2.6E-01 total alpha, 2.5E+00 total beta, 5.6E+01 Cs-137, 4.9E+00 Sr-90
- 2012 and 2016 rad surveys for the soil and vegatation in 200-E PD had Total beta/gamm readings at <5,000 dpm/100 cm-2
- Aerial Rad surveys are shown on Pages 3 and 4

Waste Streams

- Chloride

284E Power Plant

- Cooling water, softener regeneration effluents, boiler blowdown, floor/trench drains
- Approx. 57,000,000 gal per year

283E Water Treatment Plant

- Filter backwash, clearwell overflow, floor/trench drains, settling basin drain
- Approx. 11,899 gal per year
- 1997-1998 a small amount of water from 283E-BA (Boiler Annex), 282E Water Reservoir and Pumphouse
- Reservoir overflow, floor/trench drains
- Approx. 5,270,600 gal per year

Misc./Other Relevant Information

- The Action Memorandum for Non-Time-Critical Removal Action for 37 Waste Sites in the 200-MG-1 Operable Unit determined the preferred removal action for the site to be Remove, Treat and Dispose (RTD) (DOE/RL-2009-86, Rev. 0)
- 2006 WIDS Site Information Form states that this site has a state waste discharge permit and is subject to ST 4502

Site Interfaces

Origins/Terminations

200-E-237-PL (active)

Intersecting/Nearby Sites

OU Unassigned

- 200-E-286

200-IS-1 Operable Unit

- UPR-200-E-100
- 244-A LS

200-EA-1 Operable Unit

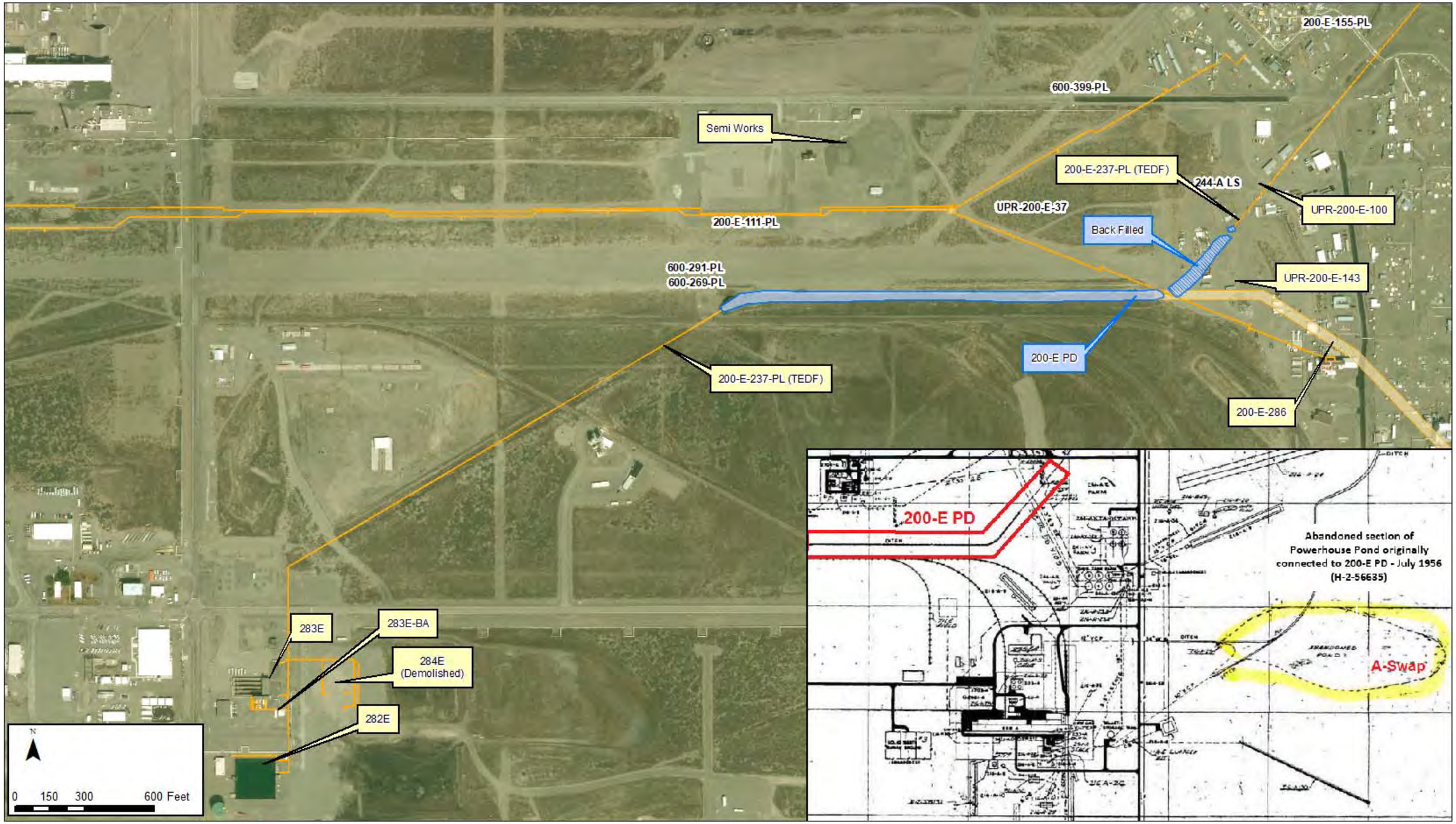
- UPR-200-E-143

- 282E (Pump House and Reservoir)
- 283E (Water Filtration Plant)
- 284E (200E Powerhouse)
- 283E-BA (Boiler Annex)

Active

- TEDF Line
- LERF Line

Scoping Summary: 200-E PD (Ditch)



SGW-60352, REV. 0

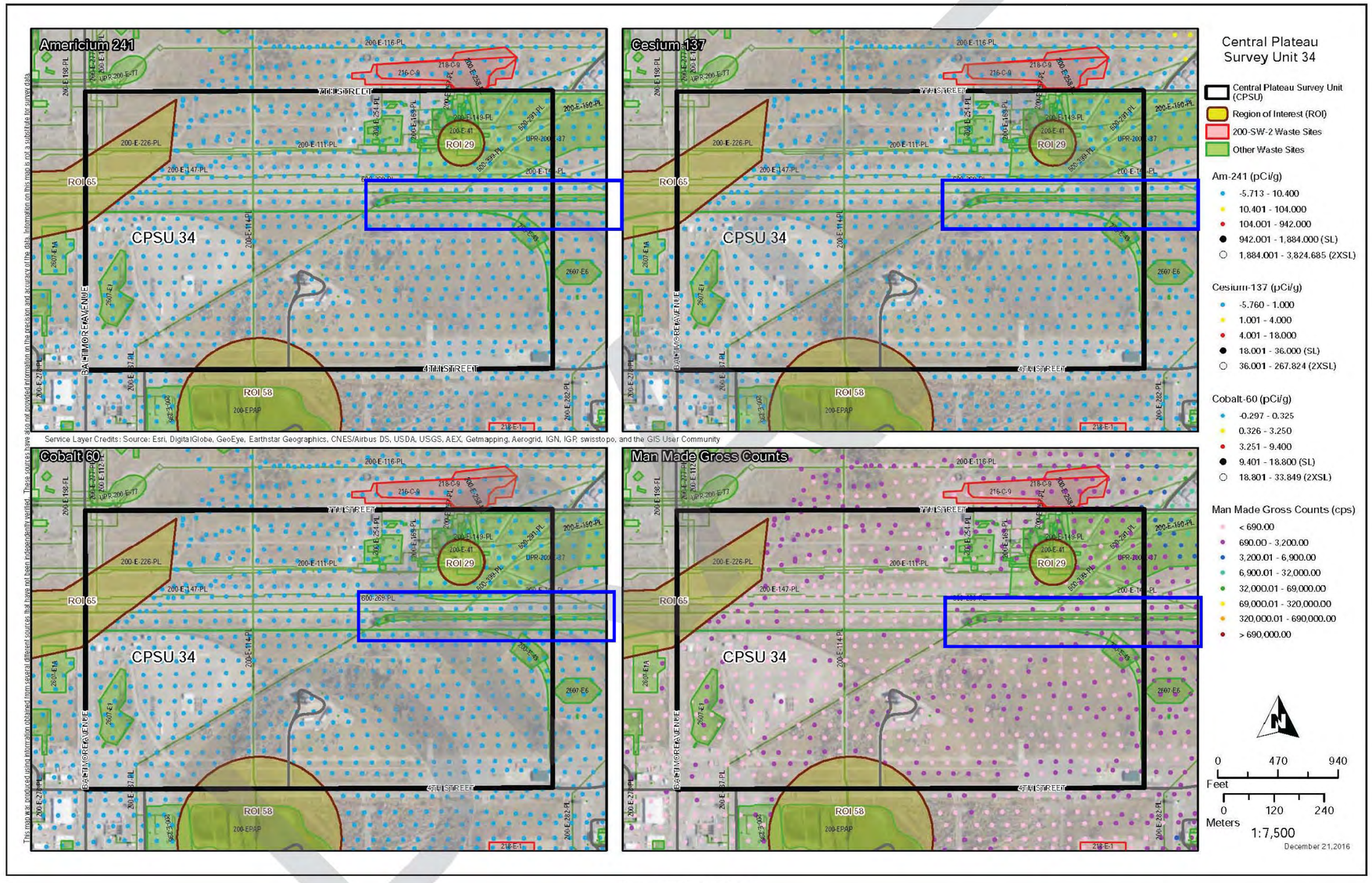


Figure A-81. CPSU 34

SGW-60352, REV. 0

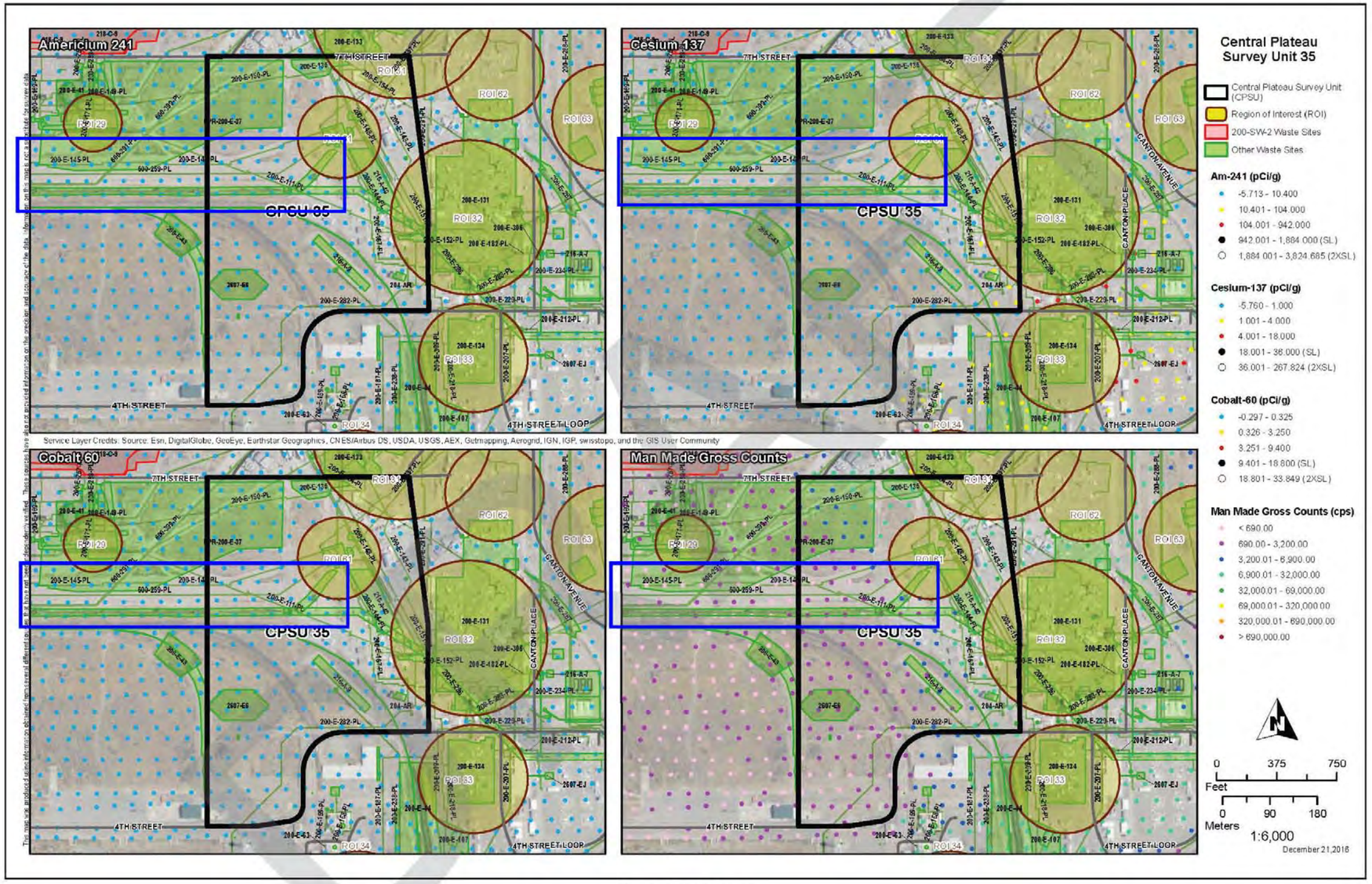


Figure A-83. CPSU 35

A-140

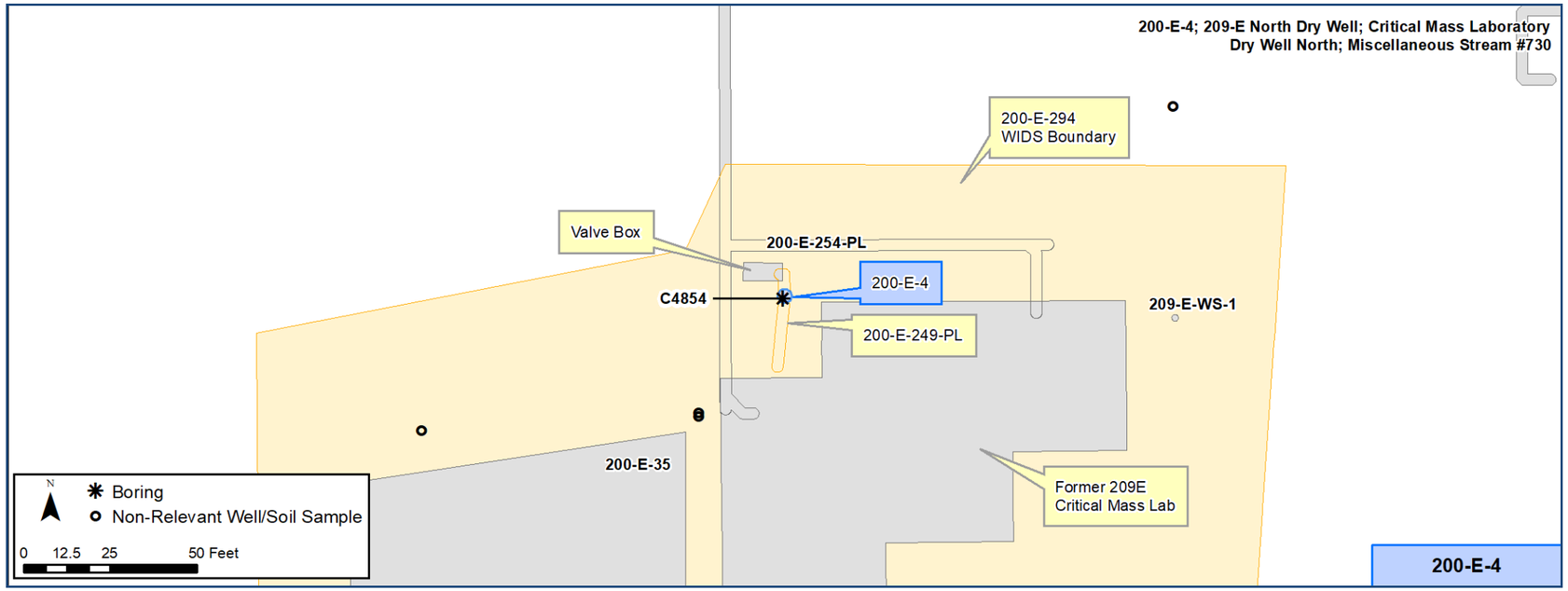
Scoping Summary: 200-E-4 (French Drain)

History

The 200-E-4 waste site is an inactive french drain that received condensate from the 209E Critical Mass Laboratory via the 200-E-249-PL sewer pipelines. The french drain was constructed in 1959 and operated from 1960 to 1985, when the 209E facility was deactivated. Research at the laboratory had previously ceased in 1983.

Portions of 209E were used to conduct criticality research with plutonium nitrate and enriched uranium solutions. However, 200-E-249-PL originated in the facility's Equipment Room, which was not used for radioactive experimentation. The second line originated from the steam trap of an associated valve box that carried fluids to and from the Equipment Room.

Isolation of 200-E-249-PL and the 200-E-4 French drain occurred in 2011, when the 209E facility was demolished. Equipment was removed and piping was cut and capped. The floor slab of 209E, along with slabs of other facilities in the vicinity were covered with gravel (*See 200-E-294 shading, on images*).



Construction

- Diameter: 4 ft
- Depth: 6 to 8 ft

Features Of Interest

- .25 in. steel plate cover
- Gravel fill

Waste Streams

- 209E Critical Mass Laboratory
  - Condensate and drainages via 200-E-249-PL
  - Equipment room steam traps, heat exchangers, and HEPA filters
  - Connected valve box condensate fluid

Site Interfaces

Origin/Termination

200-IS-1 OU

- 200-E-249-PL

OU Unassigned

- Valve box serving 209E equipment room

Intersecting/Nearby Sites

Facility

- 209E Critical Mass Lab (Demolished in 2011)

200-IS-1 OU

- 200-E-254-PL

200-EA-1 OU

- 200-E-294 (stabilized gravel area WIDS boundary)

Rejected from WIDS

- 200-E-35 Storage Pad
- 209-E-WS-1 French Drain

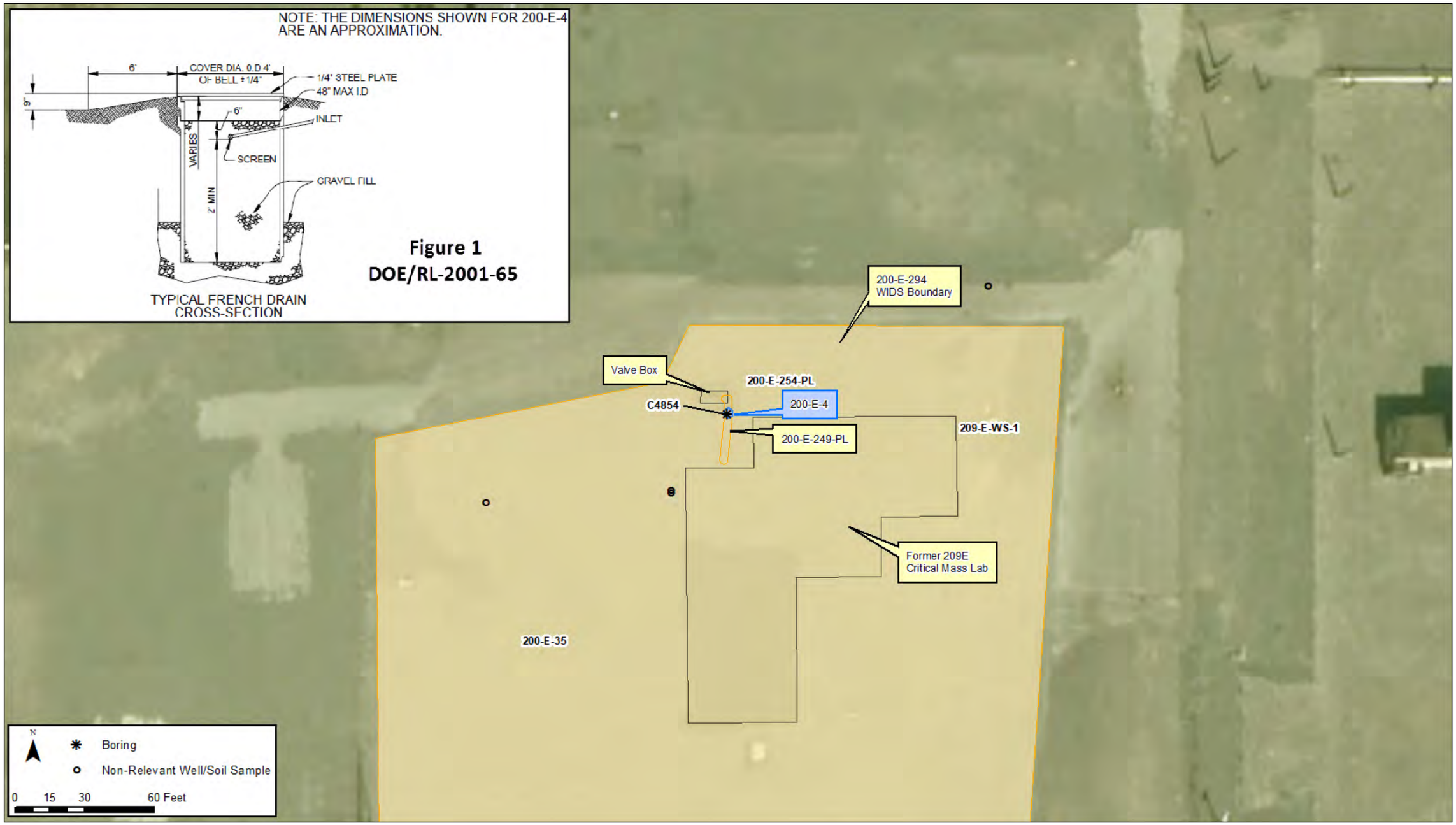
Relevant Characterization

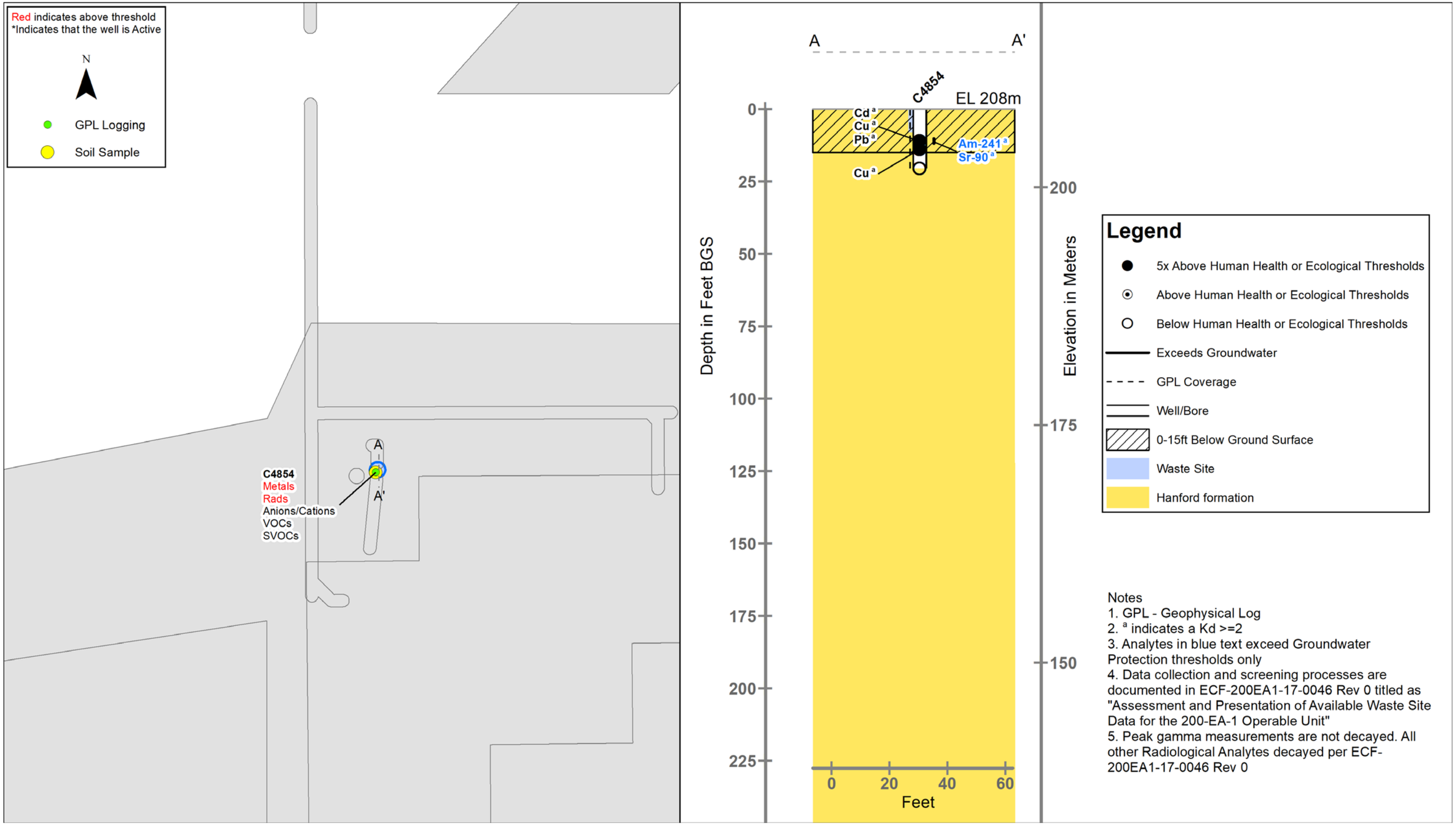
2005 boring C4854 from 7-to-11 ft bgs (*See Page 3)*:

- Three metals, Cd (1,080 ug/kg), Cu (4,080,000 ug/kg), Pb (25,400 ug/kg), and a second hit of Cu (621,000), were detected at 5x above human health or ecological risk thresholds.
- Two radionuclides, Am-241 (0.19 pCi/g) and Sr-90 (0.39 pCi/g), were detected above groundwater thresholds, only.

Misc./Other Relevant Information

- 200-E-4 has been previously included in the 200-MW-1 and 200-SO-1 operable units
- The historical record is conflicting on the French drain's operational end date, with some sources stating that it was still active in the early 1990s despite cesation of operations in 209E in the 1980s.


NOTE: THE DIMENSIONS SHOWN FOR 200-E-4 ARE AN APPROXIMATION.
6'
COVER DIA. O.D 4' OF BELL ± 1/4"
1/4" STEEL PLATE
48" MAX I.D
9"
6"
INLET
VARIES
SCREEN
GRAVEL FILL
2' MIN
TYPICAL FRENCH DRAIN CROSS-SECTION
Figure 1
DOE/RL-2001-65
200-E-294 WIDS Boundary
Valve Box
200-E-254-PL
C4854
200-E-4
200-E-249-PL
209-E-WS-1
Former 209E Critical Mass Lab
200-E-35
N
Boring
Non-Relevant Well/Soil Sample
0 15 30 60 Feet


Red indicates above threshold
*Indicates that the well is Active
N
GPL Logging
Soil Sample
C4854
Metals
Rads
Anions/Cations
VOCs
SVOCs
A
A'
C4854
EL 208m
Cd a
Cu a
Pb a
Cu a
Am-241 a
Sr-90 a
Depth in Feet BGS
0
25
50
75
100
125
150
175
200
225
Elevation in Meters
200
175
150
0
20
40
60
Feet
Legend
5x Above Human Health or Ecological Thresholds
Above Human Health or Ecological Thresholds
Below Human Health or Ecological Thresholds
Exceeds Groundwater
GPL Coverage
Well/Bore
0-15ft Below Ground Surface
Waste Site
Hanford formation
Notes
1. GPL - Geophysical Log
2. a indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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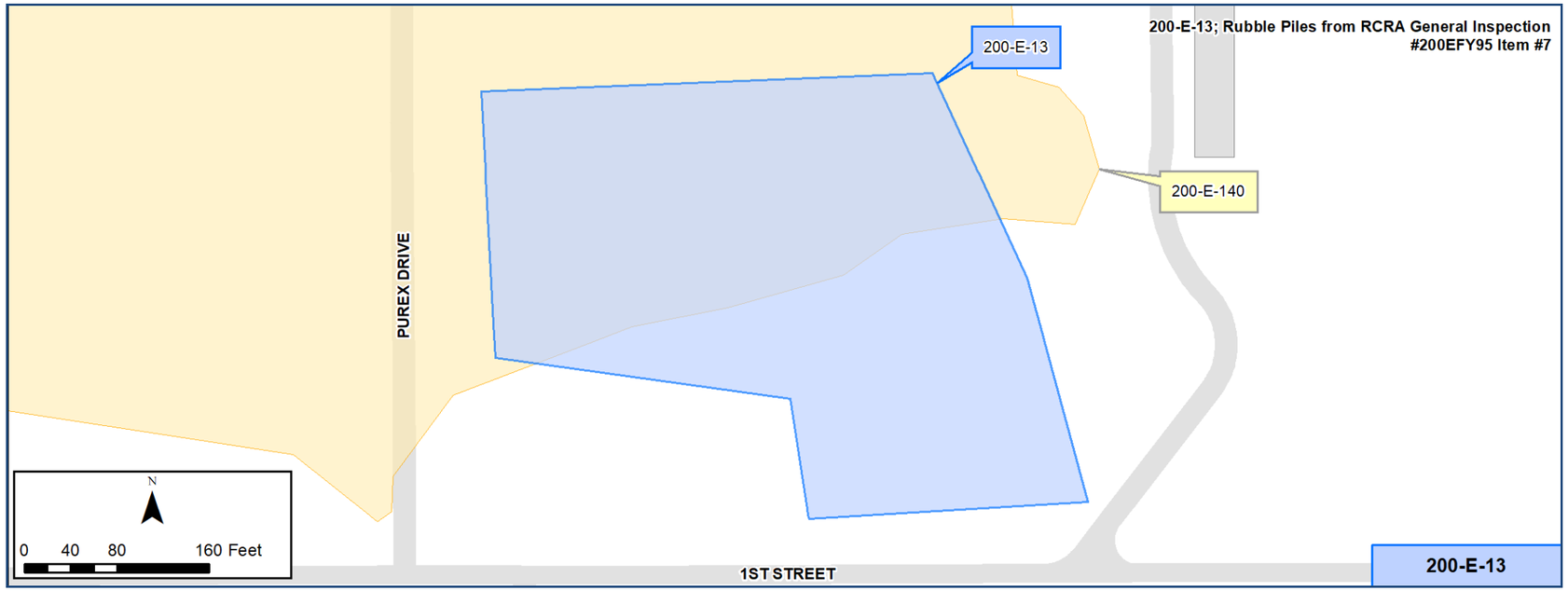
Scoping Summary: 200-E-13 (Dumping Area)

History

The 200-E-13 waste site is an inactive dumping area that consists of a handful of rubble piles south of PUREX. During a RCRA Permit General Inspection in 1995, the area was labelled a solid waste site not previously identified for remedial action. The dumping area is immediately south of and overlapping an inactive borrow/gravel pit, waste site 200-E-140.

Initial identification noted the piles appeared to contain inert construction debris, including wood, asphalt, dirt, pipe, and concrete. Follow-up investigations identified almost 20 half-buried towels or rags in the borrow pit, as well as steel pipe, rebar, and PVC pipe in the rubble piles.

No use history for this dumping area was located.



Construction

- Area: 141,000 square ft
- Site Shape: Irregular
- Rubble Pile Material:
  - wood
  - asphalt
  - dirt
  - PVC pipe
  - steel pipe
  - concrete
  - rebar
  - towels/rags

Features Of Interest

- No features of interest identified.

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil.

Waste Streams

- Primarily inert construction debris, including asphalt containing PAHs.

Misc./Other Relevant Information

- No additional information.

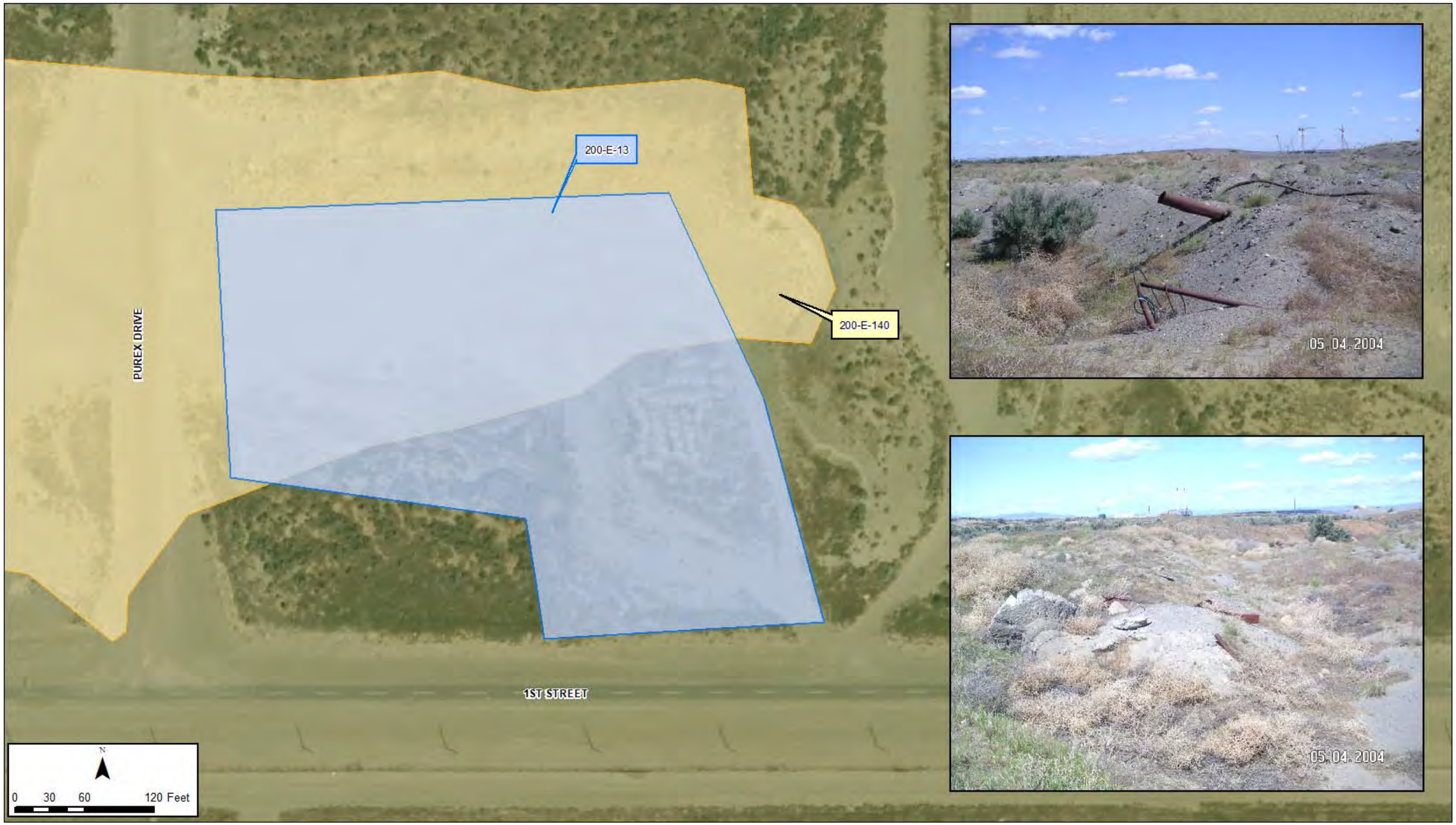
Site Interfaces

Site Intersects

OU Unassigned

- 200-E-140 (Gravel pit)

Scoping Summary: 200-E-13 (Dumping Area)



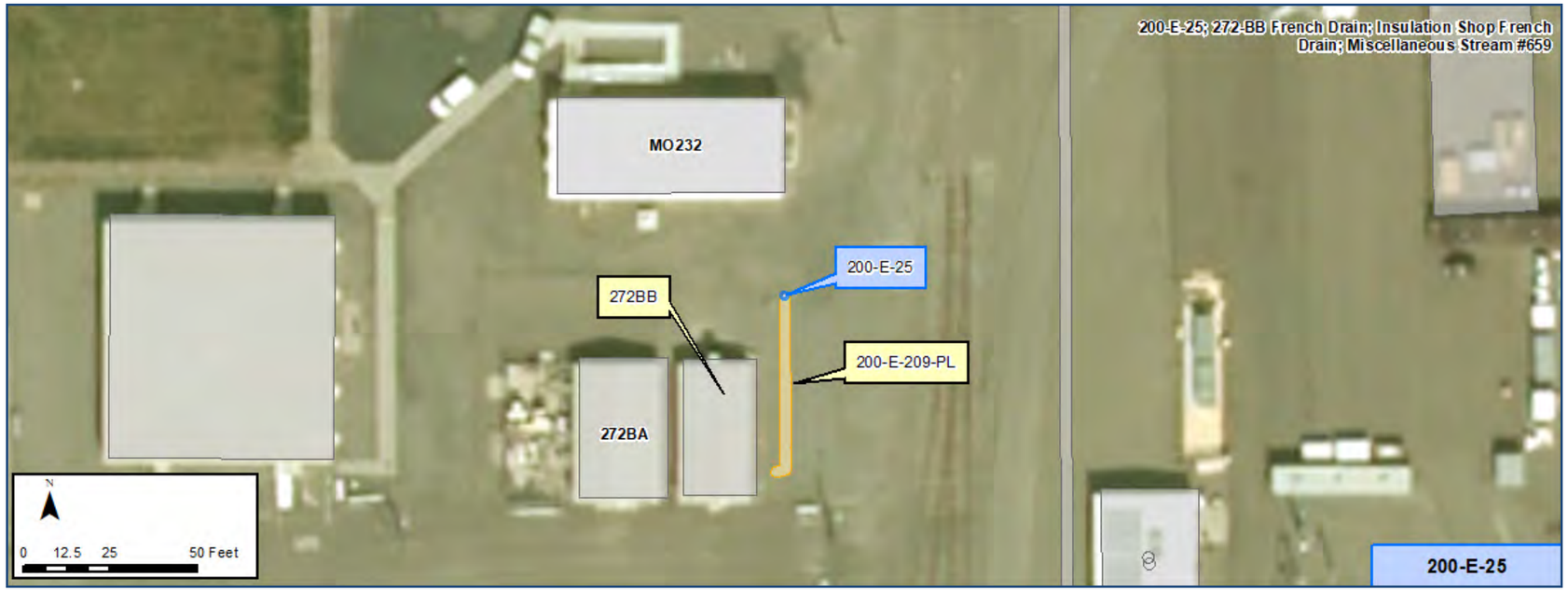
Scoping Summary: 200-E-25 (French Drain)

History

The 200-E-25 waste site is an inactive, underground French Drain that received insulation material waste from the 272BB Insulation Shop (also known as the asbestos shop) via the 200-E-209-PL pipeline. The French Drain is located on the north end of 200-E-209-PL and east of 272BB.

The French drain was constructed by 1971 and operational until 1991, when the main water supply valve in 272BB was locked and tagged in the off position and the sink and floor drain were plugged with concrete. Installation of a replacement drainage system was proposed but not selected, due to regulatory issues.

In 1990, percolating water around the French Drain was noted, which suggested a break in the line or plug in the drain itself. In 1991, the French Drain was categorized as a Class IV injection well. It was recommended discharges to the site be discontinued, due to concerns for the potential that the French Drain and settling drum contain organic hazardous substances from historical discharges.



Construction

- Width: 2 ft
- Depth: 20 ft (approximate)
  - Typically three sections deep with each section 5 ft long and an additional 5 ft of hole at the bottom of the excavation
- Diameter: 24 in.
- Incoming Pipes: 1
- 200-E-209-PL connects 30.5 in. bgs (approximate)
- The 272BB building sink and floor drain were connected to the dry well via a 2 in., schedule 40 carbon steel pipe (200-E-209-PL), 50 ft length

Features Of Interest

- The French Drain is not visible from the surface and its location is marked with a sign stating "Asbestos Waste Disposal Site - Do Not Excavate."

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil.

Waste Streams

- Drain Wastes and other waste streams
  - Possible flushed materials from 272BB include: asbestos, calcium silicate, fiberglass, silicate, "airball" (insulation cover material), and latex paint
  - Organic chemicals, oils and grease may have been discharged into the French Drain prior to 1988.
- Soil Inventory Model (SIM) volume and concentration inventory estimates are available here for U-234, U-235, and U-238 (PNNL-15829 pg 6.1 (pg 60 of 156)).

Misc./Other Relevant Information

- 200-E-25 was identified for Removal Treatment and Disposal (RTD) in an Action Memorandum for the 200-MG-2 operable unit (DOE-RL-2009-37, Rev0), but no action was taken prior to the waste site being transferred, ultimately, to the 200-EA-1 OU.
- The French drain is in the UIC permit

Site Interfaces

Origin/Termination:

200-IS-1 OU

- 200-E-209-PL

Intersecting/Nearby Sites:

Facility

- 272BB (Insulation Shop)

Scoping Summary: 200-E-25 (French Drain)

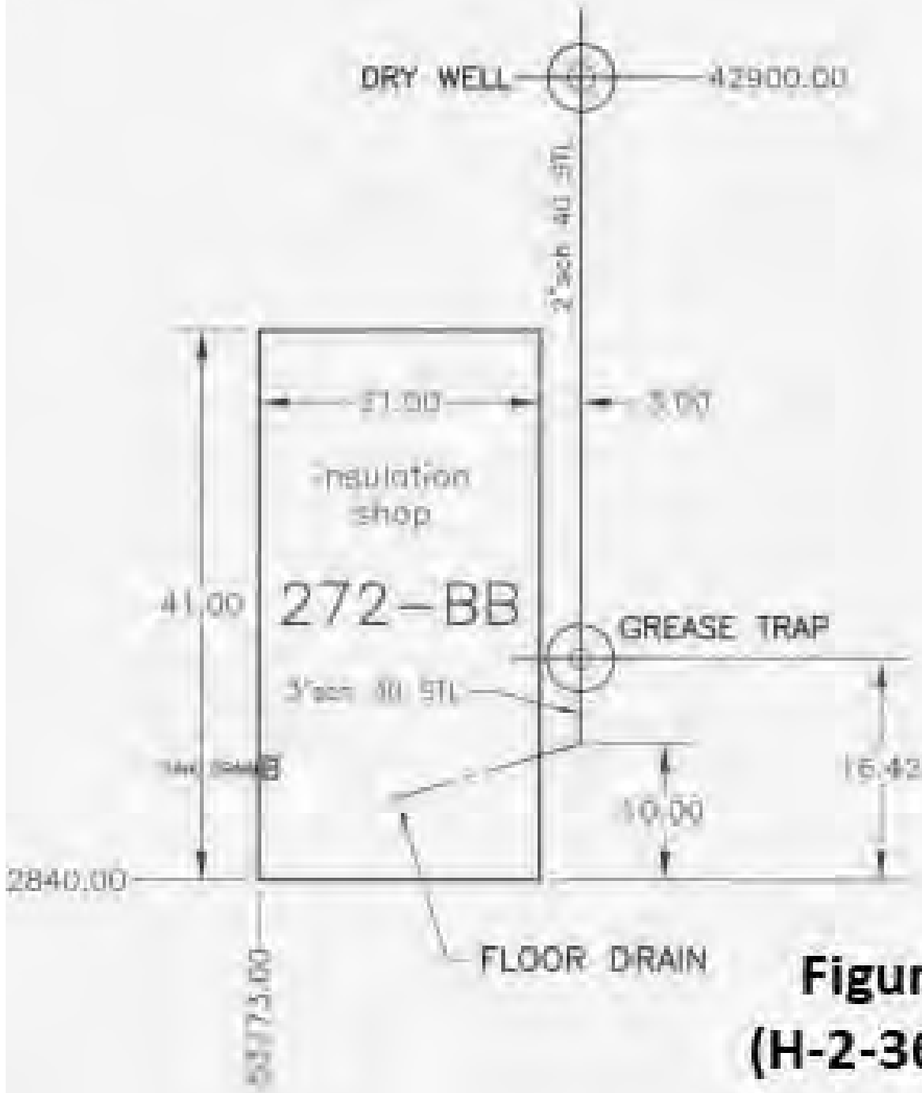


Figure 1
(H-2-36408)

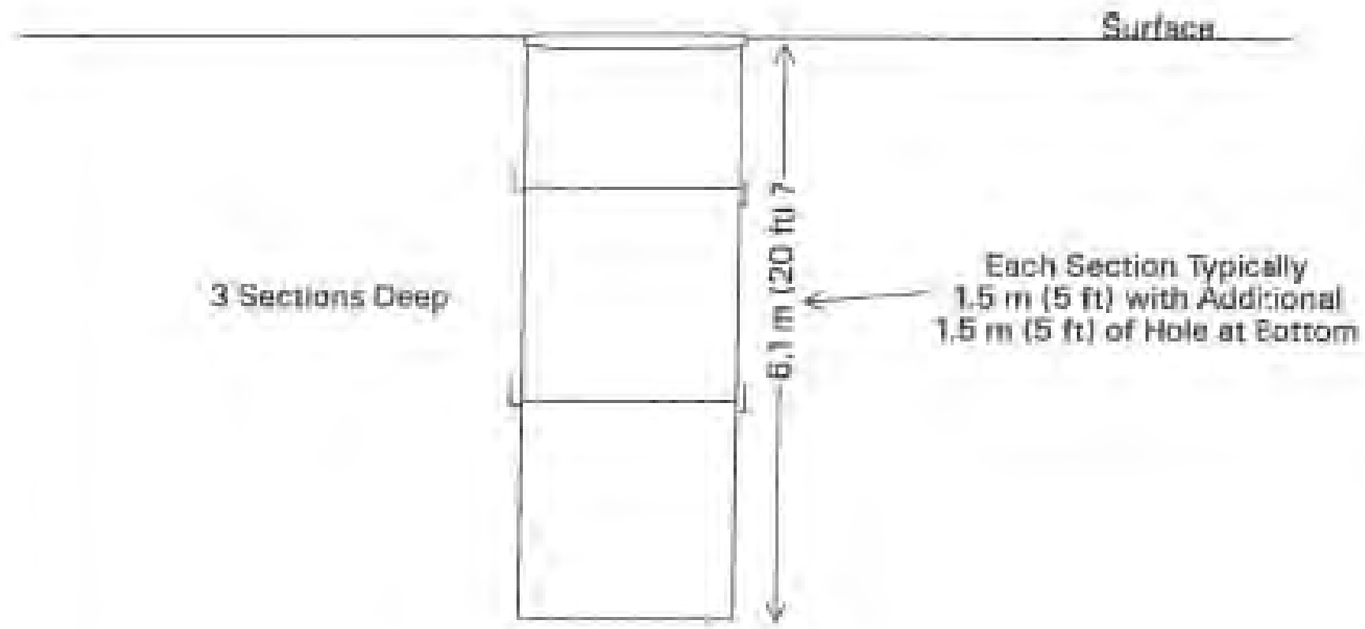


Figure 2
(Document Number N/A, 3/5/2001)

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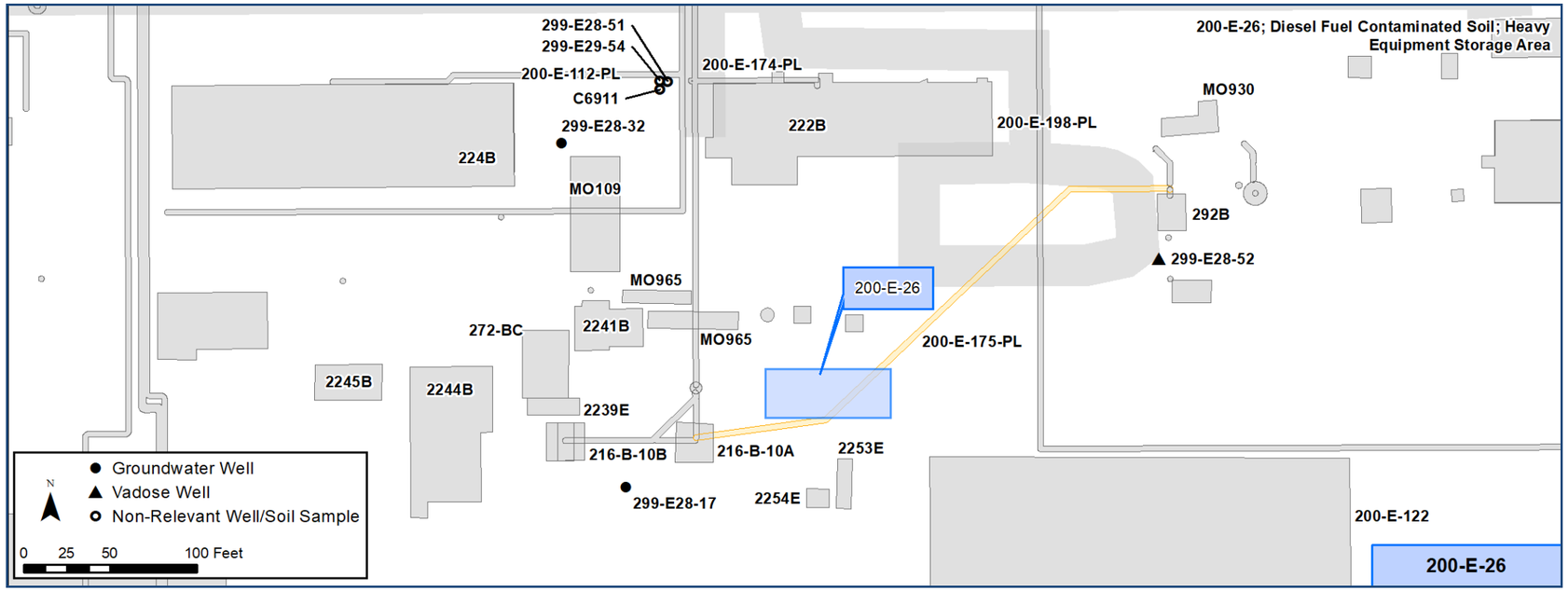
Scoping Summary: 200-E-26 (Unplanned Release)

History

The 200-E-26 waste site is an inactive, above ground unplanned release that received oil and diesel fuel from leaking equipment. The waste site is located south of the 222B office building, in an area once used for staging equipment (i.e., trucks, backhoes, compressors, and other heavy equipment).

The evidence of leaking equipment was first noted in 1996 when a diesel fuel odor was identified; the visual signs of oil contaminated soil were spotty. An attempt was made to remove the visual contamination, but it went deeper than expected. As a result, the area was covered with gravel. The diesel odor was not reported to be present in 2001.

This site was formerly a part of operable units 200-MG-1 and 200-UR-1. In 2004, it was determined that a sufficient remedy for this waste site was to maintain the existing gravel soil cover, maintain institutional controls, and monitor the natural attenuation of the site as a part of the OU 200-UR-1 remedial investigation/feasibility study work plan (*DOE/RL-2004-39, Draft A*).



Construction

- Length: Approx. 120 ft
- Width: Approx. 30 ft
- Depth: Not Located
- Covering Material: crushed rock/gravel
- Covering Depth: Approx. 1-2 ft

Features Of Interest

- Electrical receptacles mark each end of the site.

Waste Streams

- Oil and diesel fuel leakage from heavy equipment stored at the waste site.

Site Interfaces

Nearby Sites:

200-IS-1 OU

- 200-E-175-PL (pipeline unrelated to UPR)

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil.

Misc./Other Relevant Information

- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Waste Sites identified Confirmatory Sampling/No Further Action (CS/NFA) as the preferred remedial action (DOE/RL-2008-44; Rev. 0).

Scoping Summary: 200-E-26 (Unplanned Release)

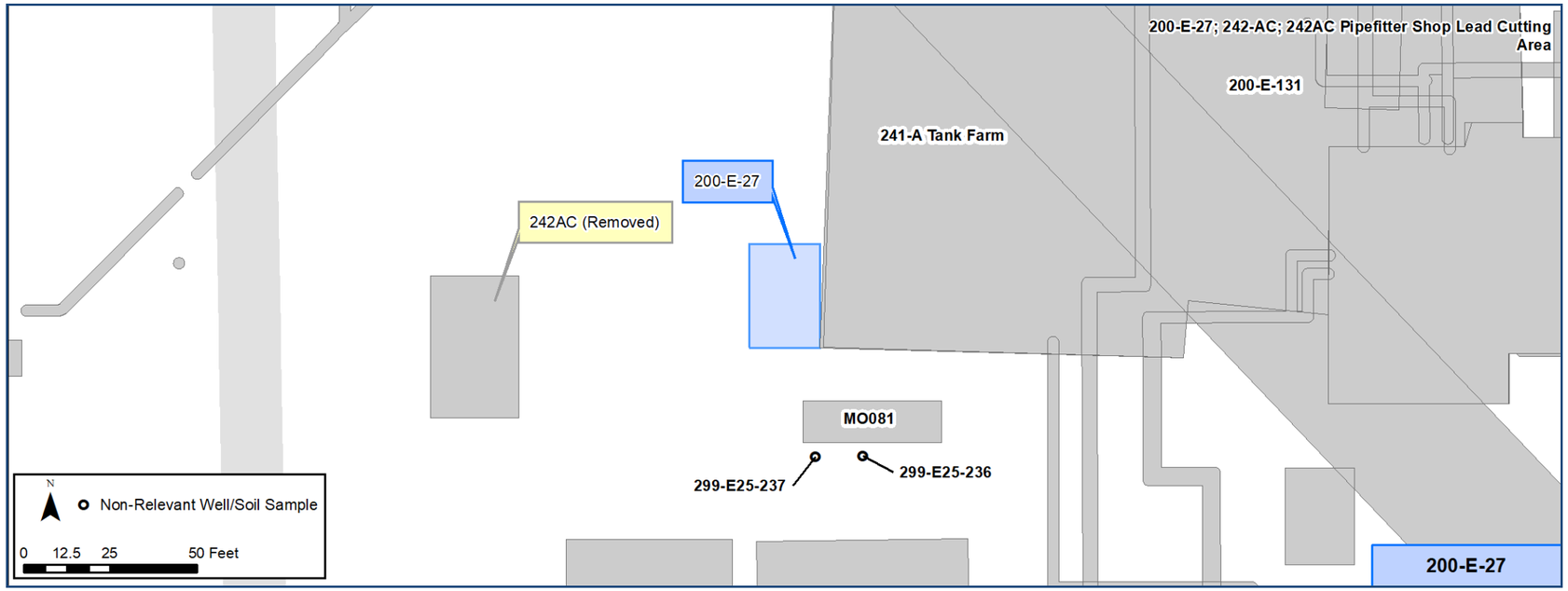
Scoping Summary: 200-E-27 (Dumping Area)

History

The 200-E-27 waste site is an inactive, above ground dumping area that was used for the storage and cutting of lead during various construction projects. The lead previously stored there was sent to recycling sometime after the area was no longer in use, and has since been used as an equipment and material storage area. The site is located at the corner of 4th Street and Buffalo Ave on the east side of the 242AC Labor Painter Shop (Pipefitter Shop). There is no start or end date associated with this site.

A general area where the lead was cut and stored (12 feet by 16 feet) was cleaned by removing seven drums worth of lead contaminated soil. After this cleanup, visible lead material was noted after rain washed away additional soil. As a result, more soil was collected and placed in another drum.

After clean up had been accomplished, further investigation were completed that resulted in the discovery of smaller lead pieces lying in the general 40 foot radius around the cutting area. No exact dates are associated with these events, but they were discussed in a 1996 email. The findings of the lead pieces is what lead to the recommendation that the site be on the WIDS system.



Construction

- No construction information is available for this site.

Features Of Interest

- The entire 242AC Pipefitter Shop area is surrounded by a chain-link fence (including 200-E-27).

Relevant Characterization

- A 1996 soil analysis, done after initial soil removal, detected lead concentrations as high as 11,000 ug/g Pb.

Waste Streams

- Lead chips from lead cutting and storage.

Misc./Other Relevant Information

- Wells to the south of the site indicate corrosive soil conditions.

Site Interfaces

Origin/Termination

- N/A

Intersecting/Nearby Sites

WMA A/AX

- 200-E-131 (Contaminated Soil Associated With 241-A Tank Farm)

Facility

- 241-A Tank Farm

Unassigned OU

- 242AC Labor Painter Shop (Pipefitter Shop)

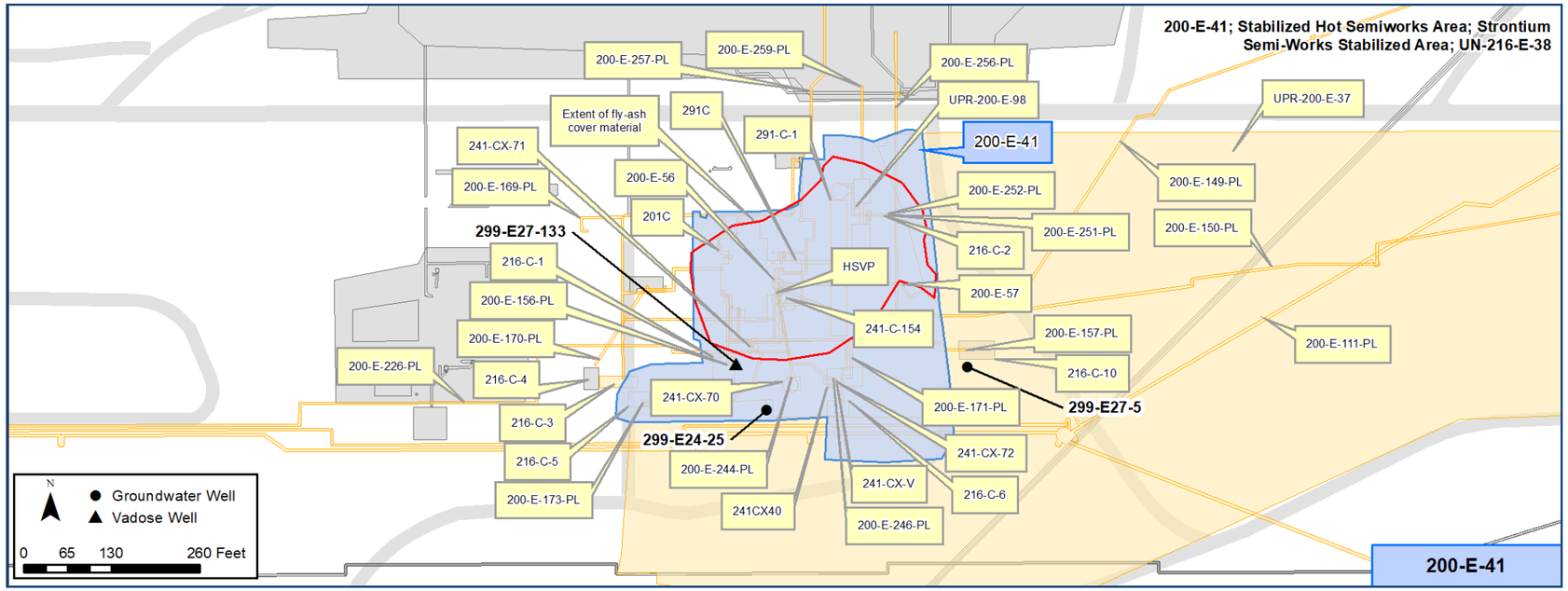
Scoping Summary: 200-E-27 (Dumping Area)

Scoping Summary: 200-E-41 (Unplanned Release)

History

The 200-E-41 waste site is a large Underground Radioactive Material Area around the Hot Semi-works facilities. Hot Semi-works operated from 1949 to 1967 with the main 201-C facility (Hot Semiworks) as a plant for the REDOX, PUREX and strontium recovery processes. Routine operations caused repeated contamination of the Hot Semi-works area ground surface. By 1987 the area had been decommissioned by decontaminating and dismantling external features and entombing the below grade features in concrete grout.

Subsequently all the Semi-works entombed facilities were to be covered with an engineered earthen barrier with a base layer of ash beneath soil and a surface soil stabilizing mat with re-vegetation. In 1992 the Radiation Area Remedial Action group covered 201-C and most of the Hot Semi-works area with ash, which became the initial 200-E-41 waste site (see figure 1). The documentation for these efforts are recorded in WHC-SA-0256 and H-2-95503. In December 1999 and January 2000 additional posted contamination areas located adjacent to the original 200-E-41 area were surface stabilized. An additional 1.24 acres of contamination was added to the posted Underground Radioactive Material.



Construction

- Width: 493 ft
- Length: 493 ft
- Irregular shape

Features Of Interest

- Site is posted with chain
- The ash-covered area encompasses the decommissioned 201-C and 291-C facilities, the 291-C Stack base and burial trench and the 216-C-2 french drain
- Other unplanned release waste sites within or overlapping the 200-E-41 footprint include UPR-200-E-98, UPR-200-E-37, 200-E-56 and 200-E-57. These release sites are separate waste sites that have not been consolidated with 200-E-41
- Waste sites and facilities buried beneath the ash are not individually distinguishable

Relevant Characterization

- No direct characterization data was located for this waste site. However, there is data associated with individual waste sites located within the boundary of 200-E-41
- Aerial radiological survey information is available from 1996 (DOE-0335) and 2009 (SG-45563)

Waste Streams

- Waste streams associated with the facilities located within the boundary of 200-E-41 include:
  - PUREX
  - REDOX
  - Strontium Recovery
  - Cerium, technetium, and promethium (and neodymium daughter products) as well as minor amounts of americium and curium were also extracted
  - Chemical wastes included solvents and acids

Misc./Other Relevant Information

- Site previously in 200-SO-1, which was a geographic-based OU near S Plant (REDOX) in late 1980s/early 90s.
- UPR-200-E-36 is a 1967 release during the removal of two pumps that contaminated an area adjacent to the east side of 201-C. The area was cleaned and the waste site has been consolidated with 200-E-41
- Historical records do not indicate that 200-E-41 is a waste site from a unique release, but rather an administrative designation for a broad stabilized area.

Site Interfaces

Origin/Termination

200-EA-1 OU

- 201-C

Nearby/Intersecting Sites

200-EA-1 OU

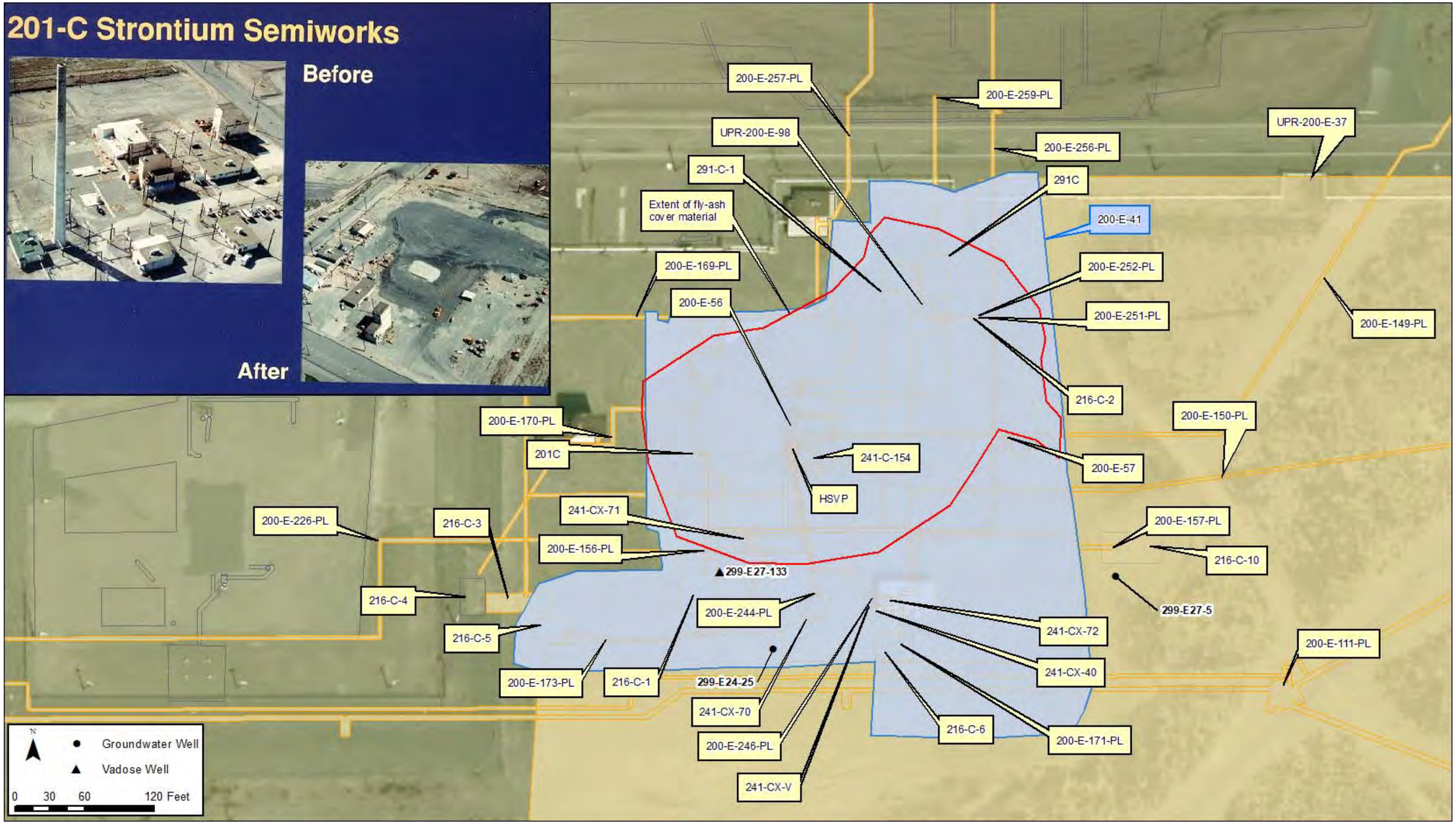
- 200-E-56
- 200-E-57
- 216-C-1
- 216-C-2
- 216-C-3
- 216-C-5
- 216-C-6
- 291-C
- 291-C-1
- UPR-200-E-37
- UPR-200-E-98
- HSVP
- 216-C-4
- 216-C-10

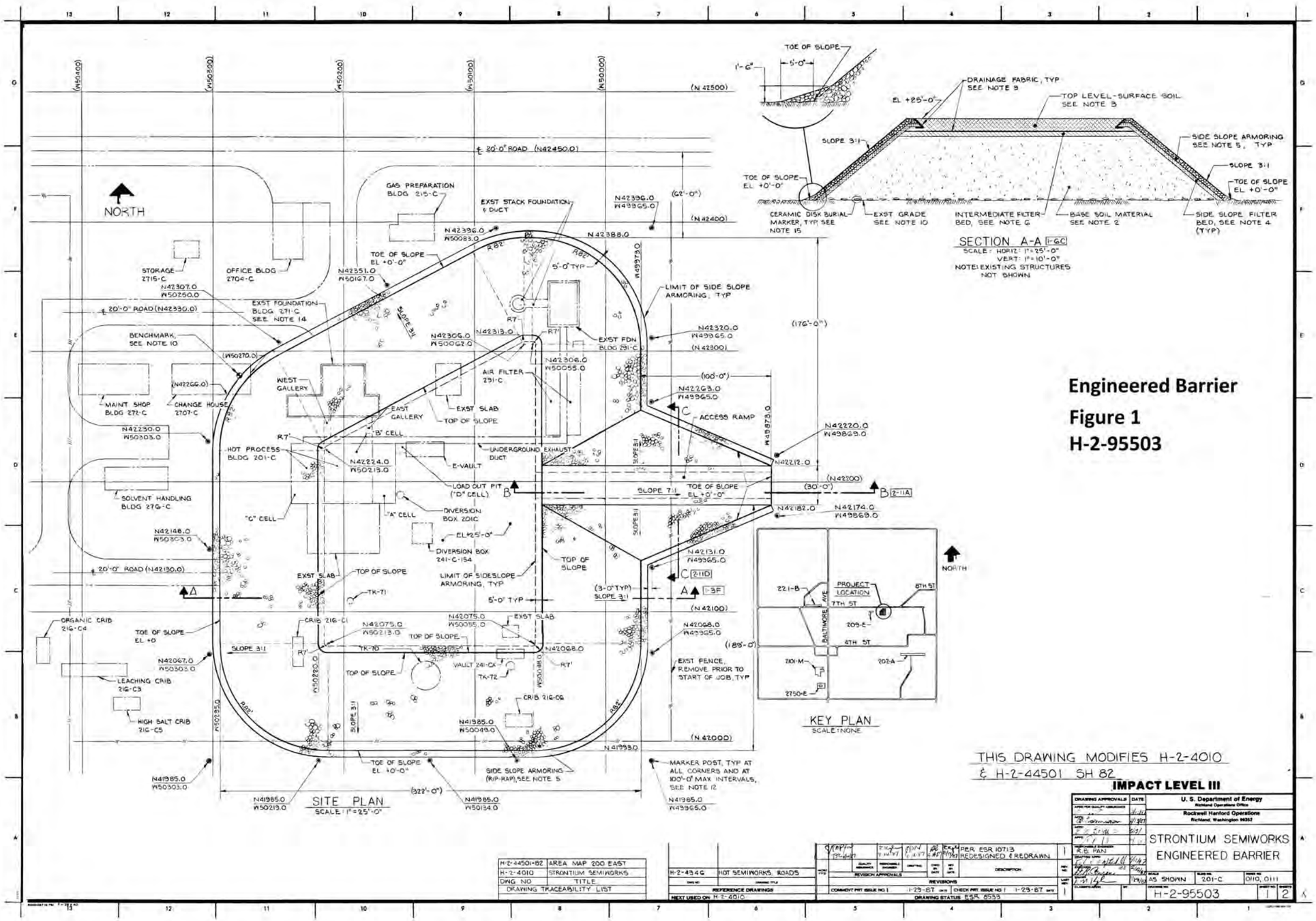
OU Unassigned

- 241-CX-V

200-IS-1 OU

- 200-E-111-PL
- 200-E-149-PL
- 200-E-150-PL
- 200-E-156-PL
- 200-E-157-PL
- 200-E-169-PL
- 200-E-170-PL
- 200-E-171-PL
- 200-E-173-PL
- 200-E-226-PL
- 200-E-244-PL
- 200-E-245-PL
- 200-E-246-PL
- 200-E-251-PL
- 200-E-252-PL
- 200-E-256-PL
- 200-E-257-PL
- 200-E-259-PL
- 241-C-154
- 241-CX-70
- 241-CX-71
- 241-CX-72


201-C Strontium Semiworks
Before
After
200-E-257-PL
200-E-259-PL
UPR-200-E-98
200-E-256-PL
UPR-200-E-37
291-C-1
291C
Extent of fly-ash cover material
200-E-41
200-E-169-PL
200-E-252-PL
200-E-56
200-E-251-PL
200-E-149-PL
216-C-2
200-E-170-PL
200-E-150-PL
201C
241-C-154
200-E-57
HSVP
241-CX-71
200-E-226-PL
216-C-3
200-E-157-PL
200-E-156-PL
216-C-10
299-E27-133
216-C-4
299-E27-5
200-E-244-PL
241-CX-72
216-C-5
200-E-111-PL
241-CX-40
200-E-173-PL
216-C-1
299-E24-25
241-CX-70
216-C-6
200-E-171-PL
200-E-246-PL
241-CX-V
N
Groundwater Well
Vadose Well
0 30 60 120 Feet


Engineered Barrier
Figure 1
H-2-95503
SITE PLAN
SCALE: 1"=25'-0"
SECTION A-A
KEY PLAN
NORTH
THIS DRAWING MODIFIES H-2-4010 & H-2-44501 SH 82
IMPACT LEVEL III
U. S. Department of Energy
Rockwell Hanford Operations
STRONTIUM SEMIWORKS ENGINEERED BARRIER
H-2-95503

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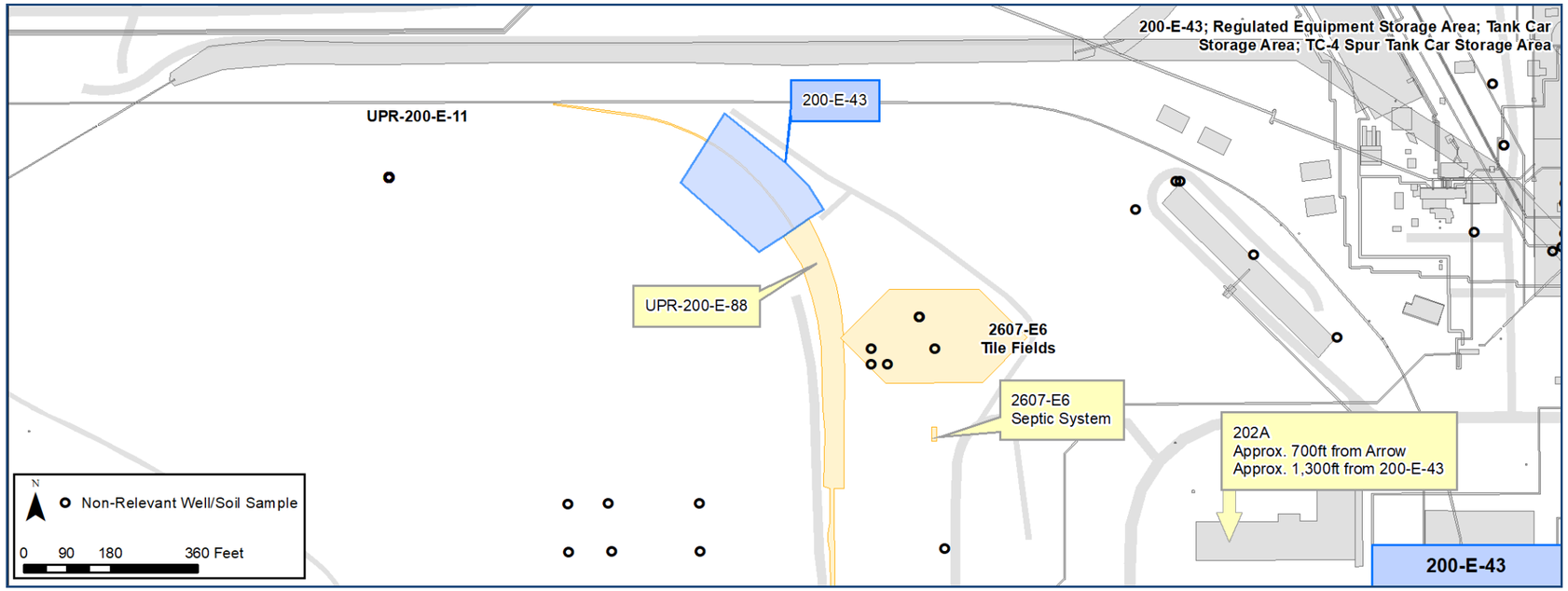
Scoping Summary: 200-E-43 (Storage)

History

The 200-E-43 waste site is a contamination area consisting of the fenced portion of the TC-4 Railroad Spur located northwest of the 202A building (PUREX). Also known as the Regulated Equipment Storage Area, it was used to park rail cars transporting radioactive material. The programmatic history of the spur evolved over time. It was first identified in 1957, when a burial box containing failed process jumpers dripped liquid while in transit across the main railroad tracks and the TC-4 spur (UPR-200-E-11 and UPR-200-E-12).

The TC-4 spur was established as a waste site in 1980, then in 1981 five acres surrounding the spur were surveyed and released after tumbleweed clean up activities. In 1989, an Environmental Surveillance Compliance Report identified the spur as a surface contamination problem. In 1997 it was divided into two waste sites: the northern fenced portion was assigned to 200-E-43 and the southern unfenced area to UPR-200-E-88.

The 200-E-43 waste site was stabilized in 1996, and marked inactive in 2005. The co-located unfenced portion of UPR-200-E-88 was interim stabilized in 1998. As of January 1999 no rail cars were being stored in 200-E-43.



Construction

- Length: Approx. 215 ft
- Width: Approx. 164 ft
- Area: 35,263 sq. ft
- Cover thickness: 1-2 ft
- Ties between the rails are covered with gravel

- 200-E-43 was previously included in the 200-UR-1 OU's RI/FS Work Plan & EE/CA (DOE/RL-2004-39, Draft A Re-issue) and the 200-MG-1 OU's Non-Time Critical Removal Action EE/CA and Action Memo (DOE/RL-2009-86). The selected remedy in each instance for this waste site was remove / treatment / disposal but no action was taken and the waste site was subsequently moved out of the operable unit prior to implementation.

Features Of Interest

- Chain link fence surrounds the site.

Relevant Characterization

- Contaminated liquid drip 40 to 1,700 millirads/hour on the track; dose rate on the burial box was 450 millirads/hour at 150 feet (1957).
- Survey records from the 1980s indicate that good readings were difficult to obtain due to high background from the tank cars that were stored in the 200-E-43 area.
- Spotty surface readings from 200 cpm to 30,000 cpm throughout 200-E-43 and UPR-200-E-88 areas (1984).
- 20,000 to 60,000 dpm on the track near tank cars (1991).

Waste Streams

- Contamination on the railroad spur has occurred multiple times due to releases from rail cars in transit and storage of radioactive equipment; a specific waste stream was not located.

Misc./Other Relevant Information

- In December 2010 approximately 576,000 gallons of potable water discharged to the ground and flooded a portion of both 200-E-43 and UPR-200-E-88. The flow path area was surveyed in January 2011 and no direct or removable contamination was detected.
- In 1996, no readings above background and there were 4 single-shell tanks and one double-shell tank cars. All five cars were removed by the end of 1998

Site Interfaces

Origins/Terminations

- T-C Railroad Spur

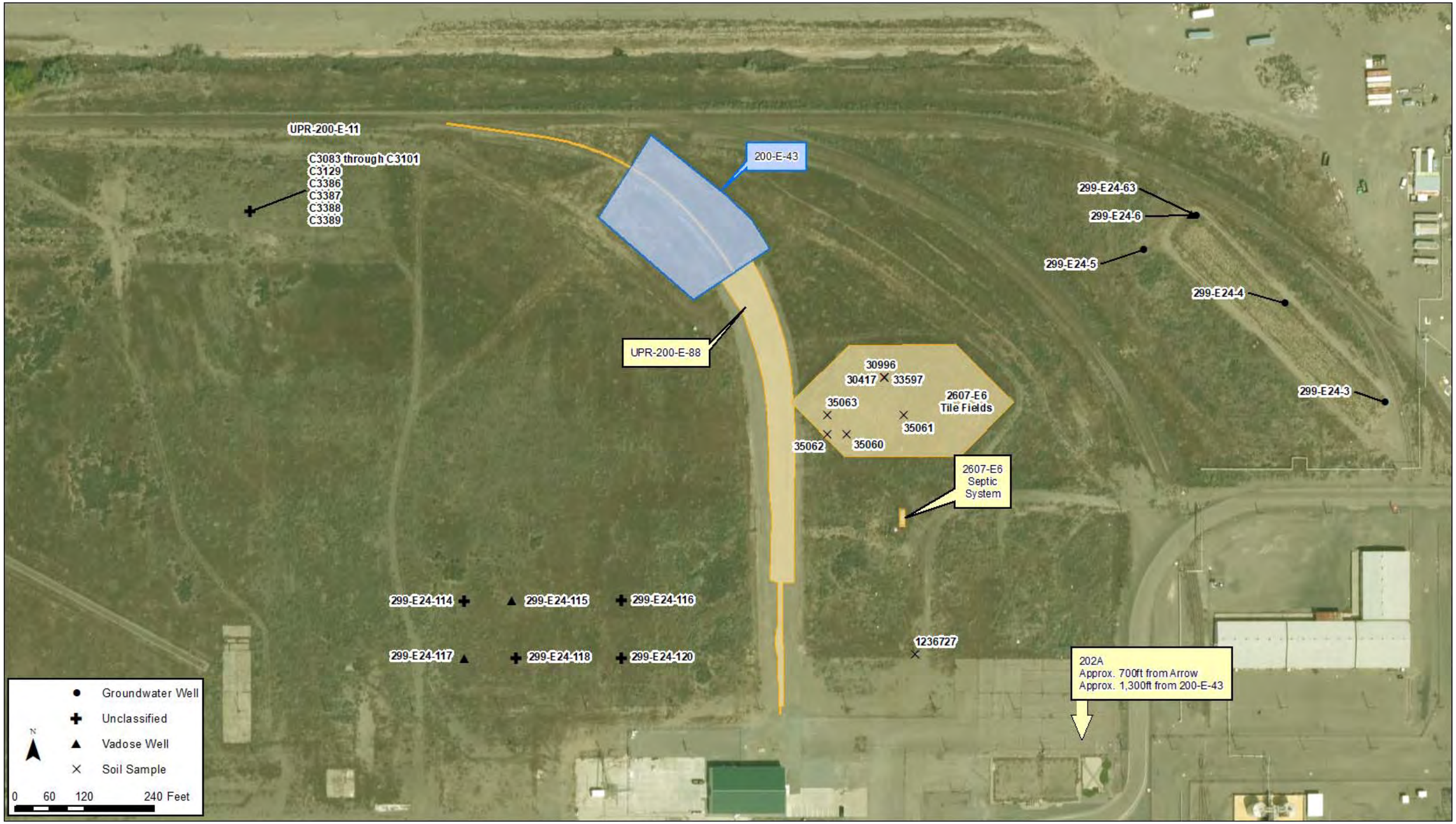
Intersecting/Nearby Sites

200-EA-1 OU

- 2607-E6
- UPR-200-E-88

- Sanitary sewer line from the 2607-E6 septic system underlies the TC-4 railroad spur (no site code available)

Scoping Summary: 200-E-43 (Storage)



Scoping Summary: 200-E-53 (Unplanned Release)

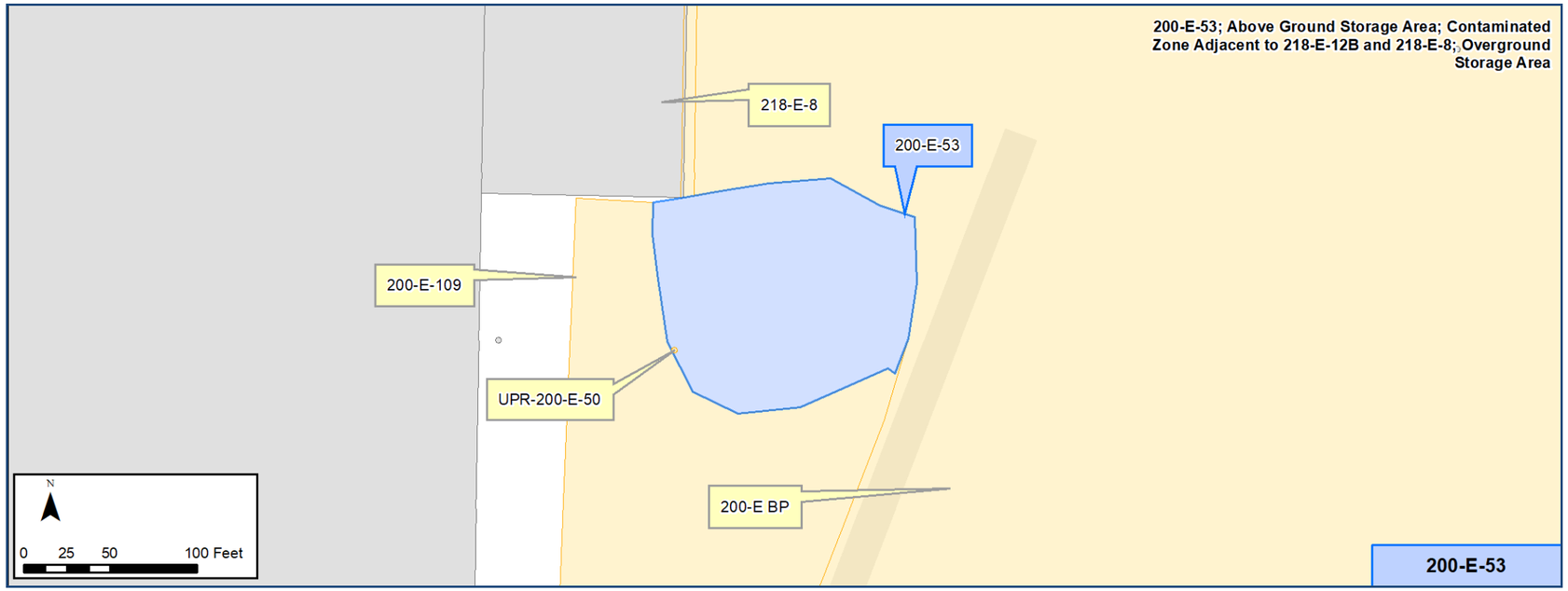
History

The 200-E-53 waste site is an unplanned release and an above ground storage area, which was formerly referred to as the Overground Radioactive Equipment Storage Yard North of the 241C Tank Farm. The site is located in the southwest corner of the 200-E BP, just south of the 218-E-8 waste site, the 200-East Construction Burial Grounds.

The site was first identified in 1987, when six specks of unknown contamination were encountered during a routine radiation survey of the area. It was surveyed again later that year, and three more specks of unknown contamination were identified.

A 1993 radiation survey identified 13 specks or 'spots' in the area, and allegorical information notes the surrounding area has long been known to contain some form of radiological contamination, from blown-in tumbleweeds to termites bringing contamination to the surface to elevated ground squirrel activity mobilizing contaminants.

In February 2010, this area was covered with gravel and re-posted Underground Radiological Contamination Area.



Construction

The waste site is an irregular shaped area in the bottom of a soil depression. The size, shape, and type of posting for the area has varied over the years.

- Site Shape: Irregular

Current Dimensions in HMAP:

- Length: ~170 ft
- Width: ~130 ft

Features Of Interest

- No features of interest.

Relevant Characterization

- 1987: Contamination readings ranged from 600 cpm to >1,000 cpm.
- 1997 Occurrence Report: Surface Contamination Area perimeter re-established and a radiological control technician surveyed the area around the barricade and determined no contamination was present at the surface.
- 2014 Radiological Survey Report: No sign of animal intrusions or deep-rooted vegetation; contamination measurements negligible.

Waste Streams

- None identified. This area was previously used to store contaminated equipment, based on photos from 1982 (RHO-CD-1048).

Misc./Other Relevant Information

- Nearby wells and soil samples are not associated with this waste site.
- In the 200-MG-1 OU's EE/CA (DOE/RL-2008-44, Rev0), Removal Treatment Disposal (RTD) was the preferred alternative here.

Site Interfaces

Site Intersects:

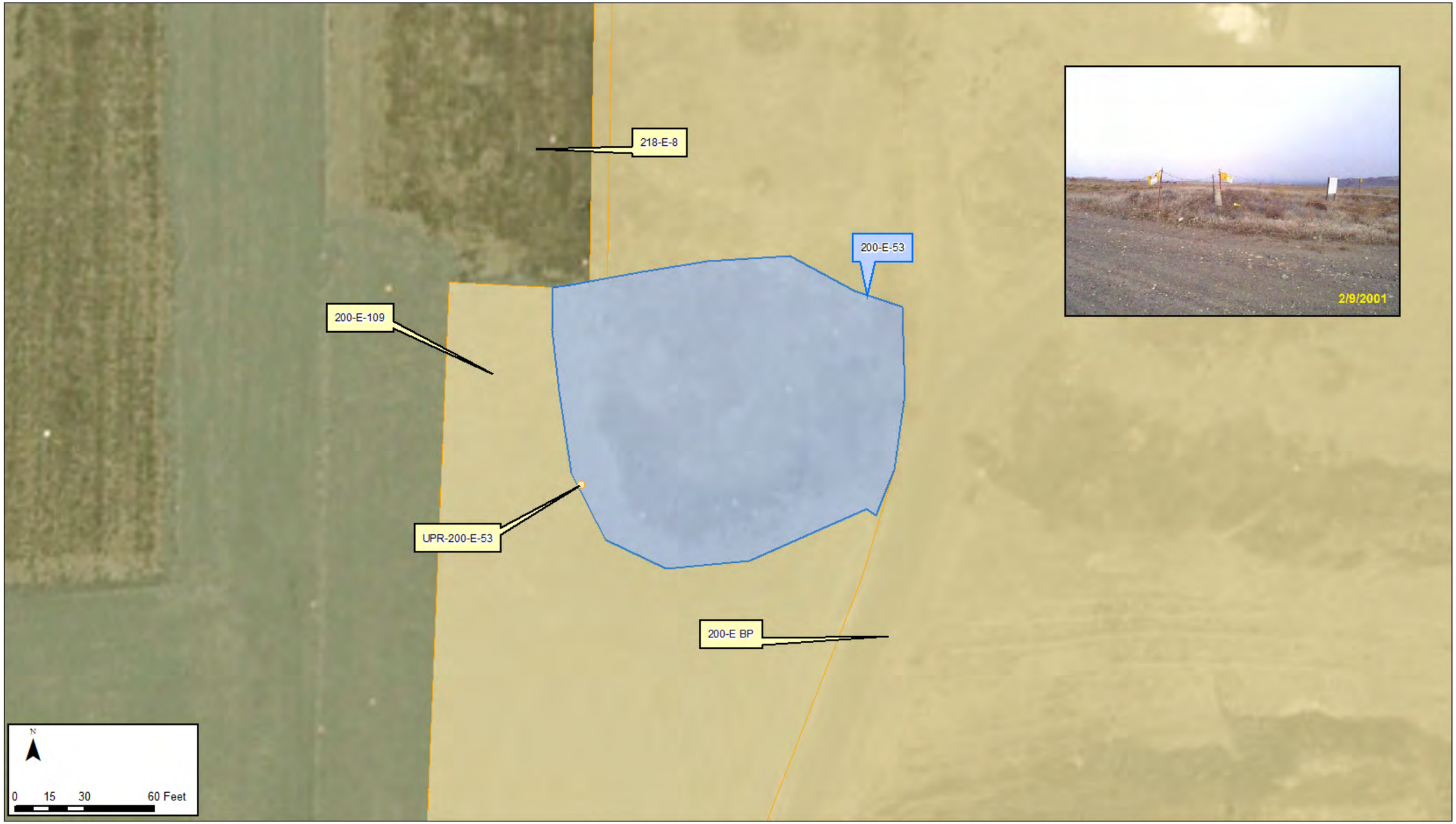
200-SW-2 OU

- 218-E-8 (200 East Construction Burial Grounds)

200-EA-1 OU

- 200-E BP (Burn Pit)
- 200-E-109 (Contaminated Tumbleweed Accumulation)

Scoping Summary: 200-E-53 (Unplanned Release)



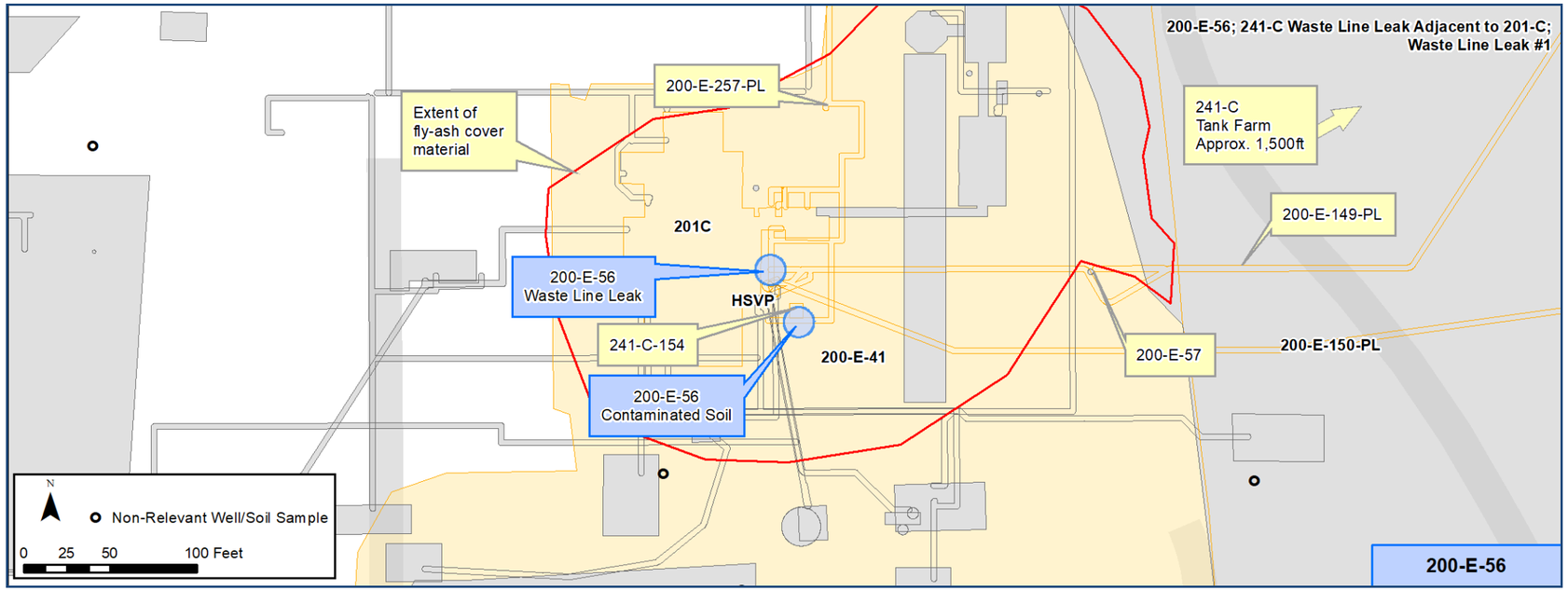
Scoping Summary: 200-E-56 (Unplanned Release)

History

The 200-E-56 waste site is an unplanned release (UPR) consisting of two areas of contaminated soil. The UPR is associated with the 200-E-149-PL waste line that runs from the 201-C Hot Semi-Works facility to the to the 241-C Tank Farm. A release occurred gradually circa 1957 adjacent to the 201-C facility at a flanged section of the line where it connects to 200-E-257-PL.

The leak was addressed in 1957 by cutting and abandoning the leaking pipe sections and installing bypass lines. The historical record indicates that at least some of the contaminated dirt was removed during the repair and buried to the south near the 241-C-154 diversion box. This area is also included as part of the UPR site.

At the time of the releases, the 201-C facility was used for pilot testing of REDOX and PUREX processes. The facility was decommissioned in 1987 and the Hot Semi-Works area was subsequently covered with 3 ft of fly ash barrier and posted as an Underground Radioactive Material Area (200-E-41).



Construction

Pipeline Construction:

- Length: 2,177 ft
- Diameter: 3 in. on east side and 2 in. on west side
- Composition: Stainless Steel
- Pressurized
- Direct Buried and not encased
- Depth: at least 15 ft bgs
- Calculated Volume: 501 gal

Features Of Interest

- None

Relevant Characterization

- Waste line leak site - >100 rad/hr at 12 ft bgs (Prior to 1957)
- Contaminated soil site - 75 rad/hr at 6 ft (1956)

Waste Streams

- 201-C Hot Semi-Works
- PUREX
- REDOX
- 19,958 gal volume discharged
  - 7,378.64 Ci of Sr-90 Mean Inventory (DOE/RL-2009-127)
- Based on the Soil Inventory Model, 8,000 cubic ft of contamination volume is estimated with 33% void space assumed (RPP-26744)
  - Estimate includes 50% variability due to the indefinite nature of the volume description

Misc./Other Relevant Information

- The historical record and location of the leak adjacent to 201-C indicates an additional waste line association with 200-E-257-PL that could not be confirmed
- This waste site is associated with a similar unplanned release site, 200-E-57, which was identified on another section of 200-E-149-PL and addressed at the same time as 200-E-56

Site Interfaces

Origin/Termination

200-IS-1 OU

- 200-E-149-PL

OU Not Assigned

- 201-C (facility)

Intersecting/Nearby Sites

200-IS-1 OU

- 200-E-257-PL
- 241-C-154 (diversion box)

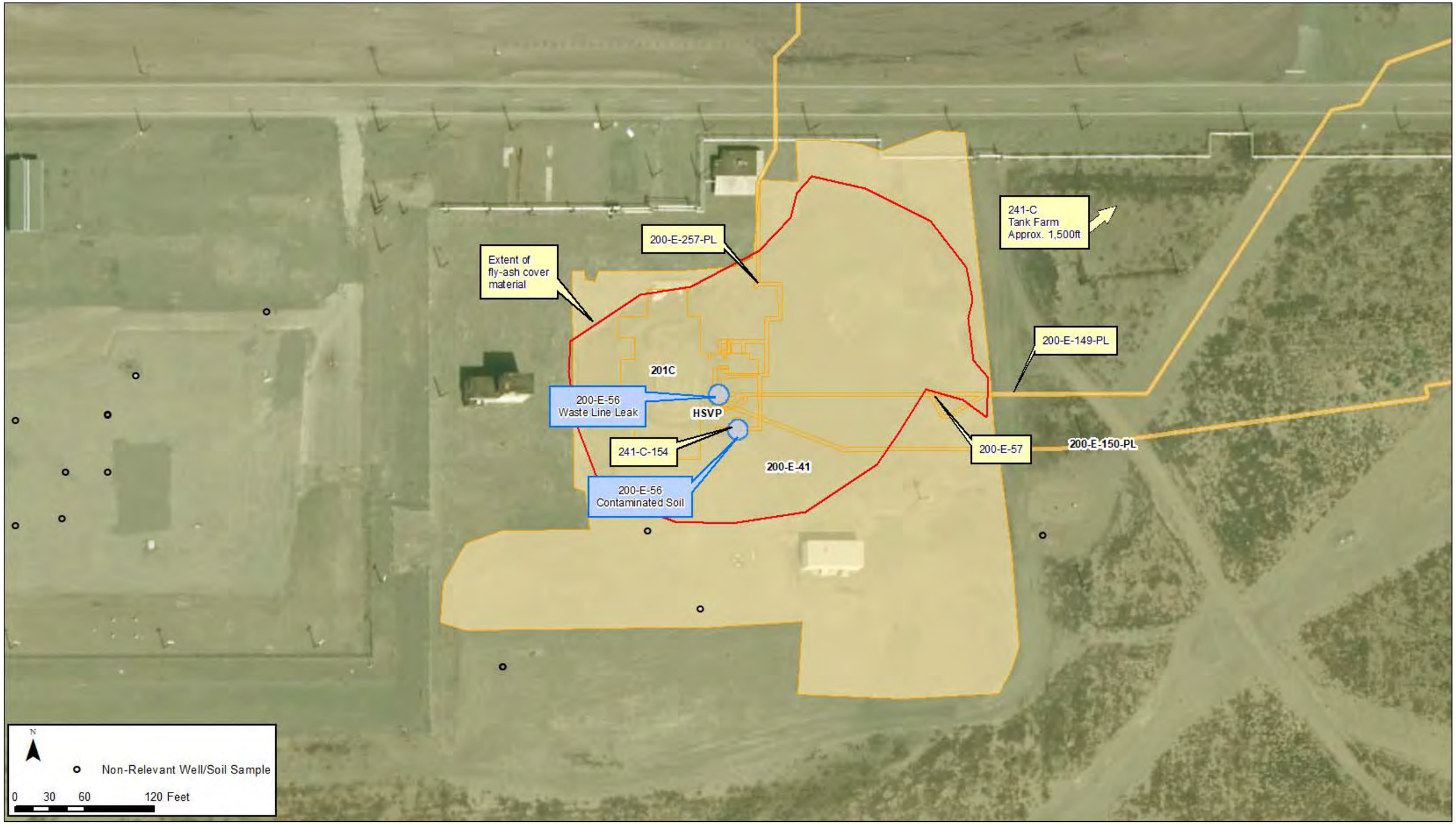
200-EA-1 OU

- HSVP

OU Not Assigned

- 200-E-41 (stabilized area)

Scoping Summary: 200-E-56 (Unplanned Release)

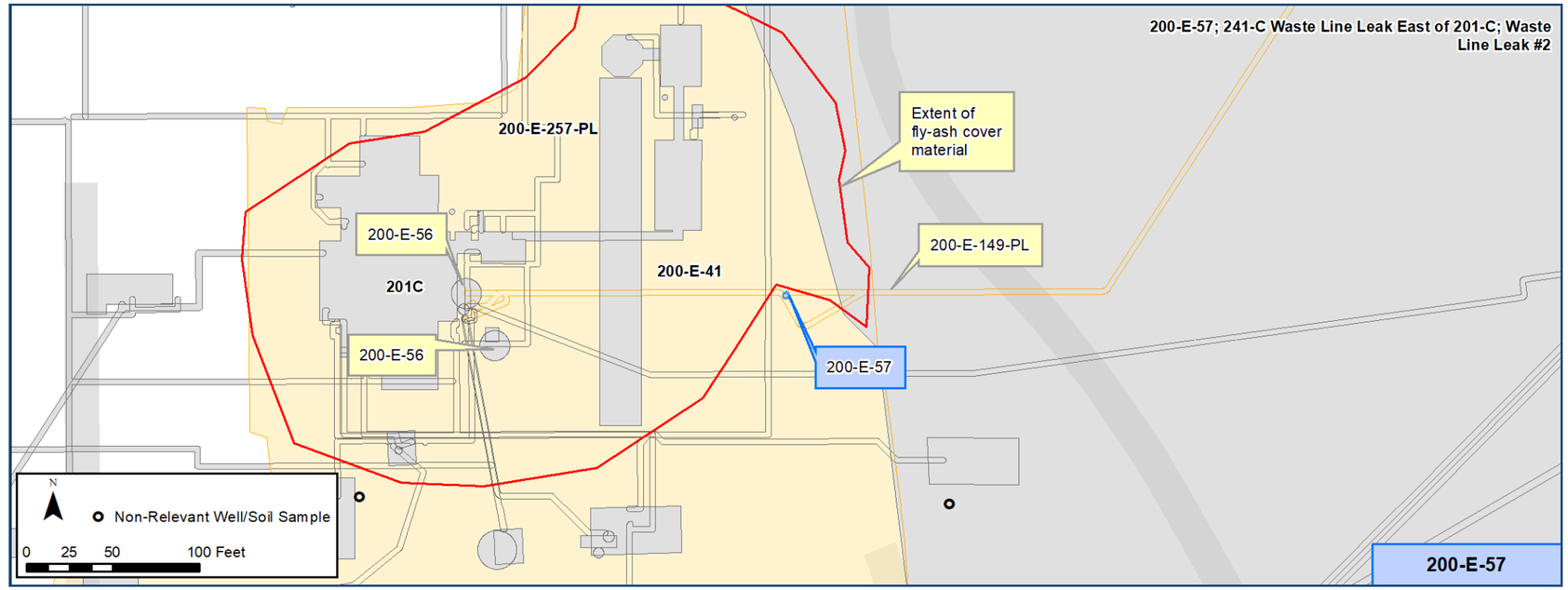


Scoping Summary: 200-E-57 (Unplanned Release)

History

The 200-E-57 waste site is an unplanned release associated with the 200-E-149-PL underground waste line that runs from the 201-C Hot Semi-Works facility to the 241-C Tank Farm. The leak occurred adjacent to the east Semi-Works fence and was attributed to a gasket leak at a flanged section of the waste line. In 1957 the release was addressed by cutting and abandoning the leaking pipe section and installing a bypass line around the contaminated dirt.

At the time of the release, the 201-C facility was used for pilot testing of REDOX and PUREX processes. The facility was decommissioned in 1987 and the Hot Semi-Works area was subsequently covered with 3 ft of fly ash barrier and posted as an Underground Radioactive Material Area (200-E-41). The 200-E-57 release site is not separately marked or posted.



Construction

- Length: ~30 ft
- 12,000 cubic ft of contamination volume estimated with 33% void space is assumed (RPP-26744)
  - Estimate includes 50% variability due to the indefinite nature of the volume description

Features Of Interest

- None

Relevant Characterization

- Radiation levels >100 Rad/hr at 15 ft bgs (Prior to 1957)

Waste Streams

- 201-C Hot Semi-Works
  - PUREX
  - REDOX
- 29,851 gal volume discharged
- Inventories of Sr-90, Eu-152, Eu-154, Eu-155, Sr-90, and Y-90 (DOE/RL-2009-127; RI Report for 200-BP-5 OU)
  - 11,100 Ci of Sr-90 mean inventory

Misc./Other Relevant Information

- This waste site is associated with a similar unplanned release site, 200-E-56, which was identifed on another section of 200-E-149-PL and addressed at the same time as 200-E-57

Site Interfaces

Origin/Termination

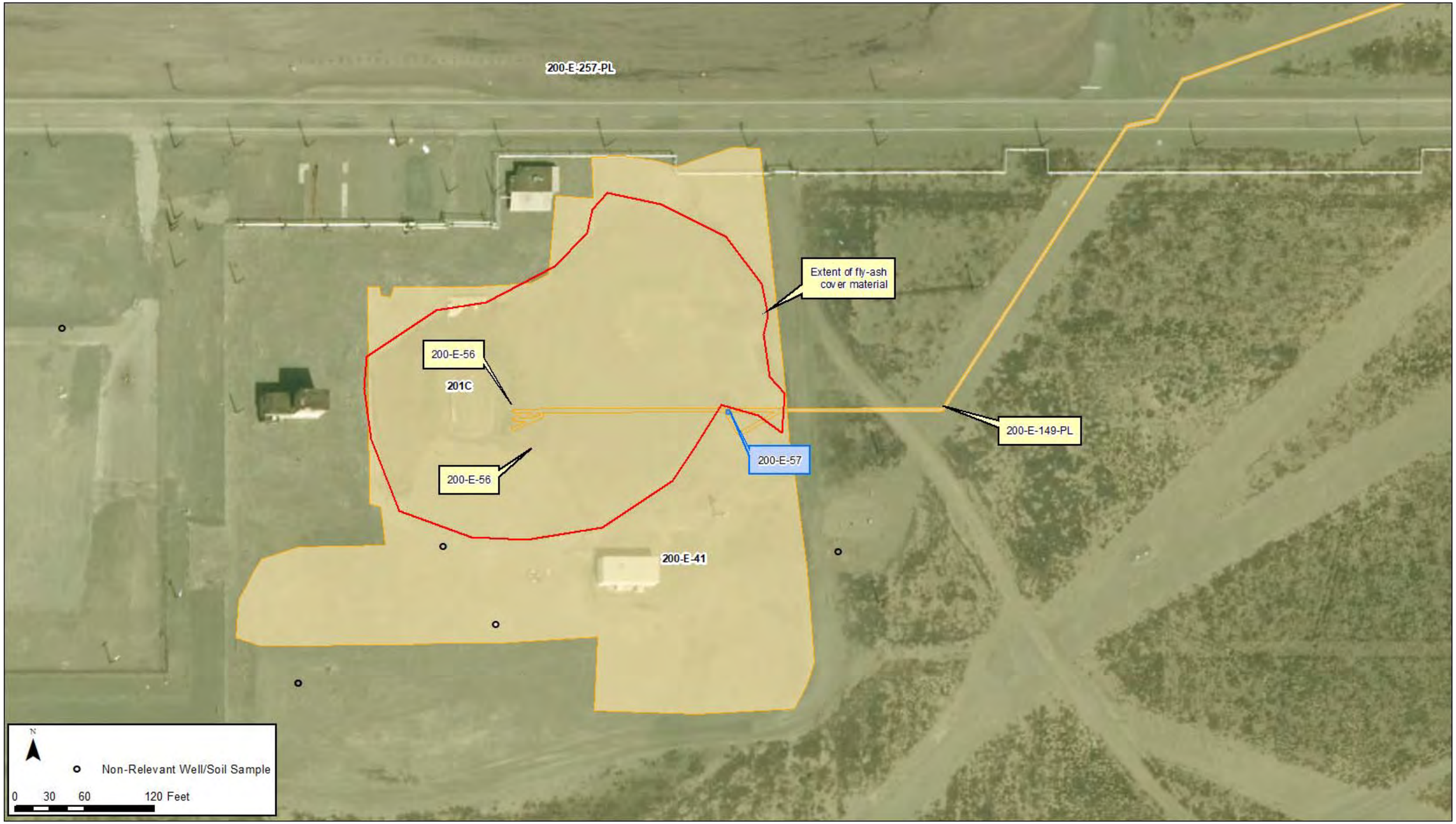
200-IS-1 OU

- 200-E-149-PL

Intersecting/Nearby Sites

No OU Assigned

- 201-C (facility)
- 200-E-41 (stabilized area)


200-E-257-PL
Extent of fly-ash cover material
200-E-56
201C
200-E-149-PL
200-E-57
200-E-56
200-E-41
N
Non-Relevant Well/Soil Sample
0 30 60 120 Feet

Scoping Summary: 200-E-99 (French Drain)

History

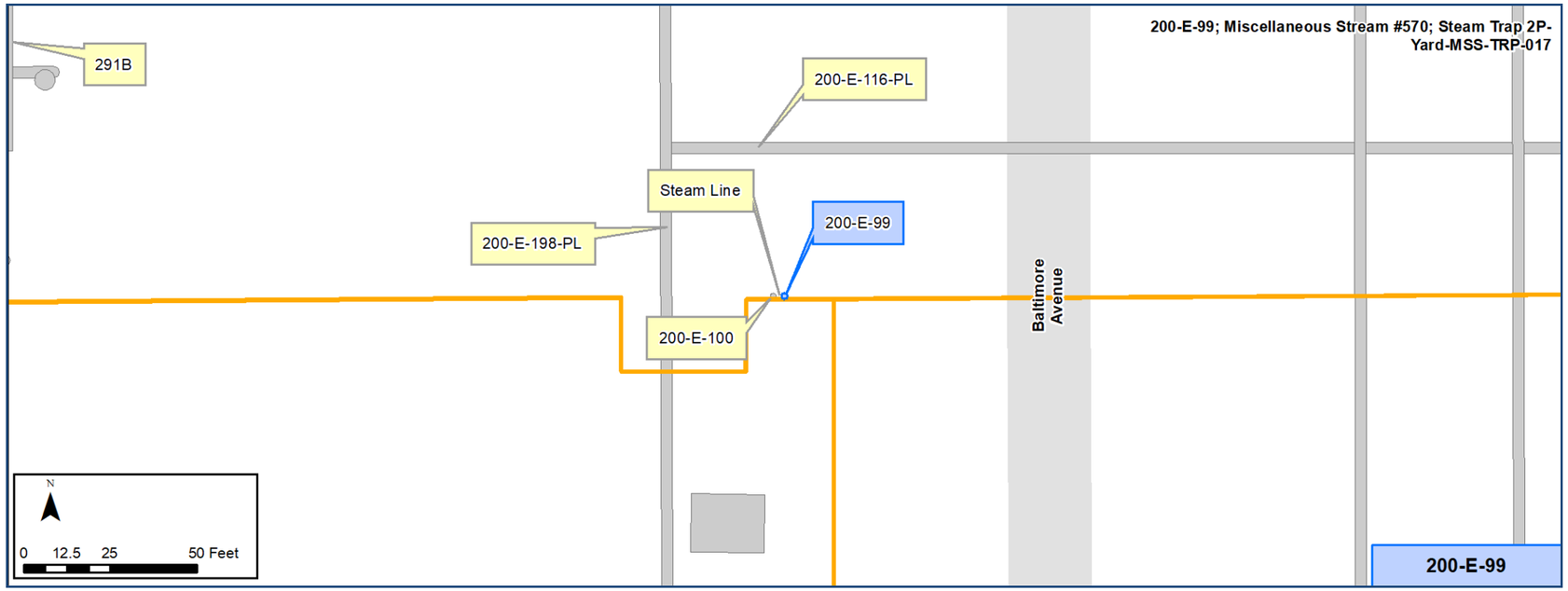
The 200-E-99 waste site is an inactive French drain that received steam condensate from the steam distribution line. The condensate received by this French drain is designated as miscellaneous waste stream # 570. 200-E-99 is located near Baltimore Avenue, east of the 291B Sand Filter (Exhaust Air Control House). It is 20 feet east of a similar drain feature, 200-E-100.

The site is a low spot, or natural depression in the ground under a steam line, where the ground was slightly stained with rust; there is no engineered drain structure.

During the miscellaneous streams inventory in 1998, this site was listed as eliminated, since the steam source had been shut off (*Page 237 of 316, Miscellaneous Streams Inventory, dated 9/04/1998)*.

Additional details for the steam line source from which the subject waste site received waste were not located.

This waste site is a UIC.



Construction

- Depth of depression: 1 ft, at its deepest
- Diameter of depression: 2 ft

Features Of Interest

- No features of interest identified.

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil.

Waste Streams

- This waste stream was sent through boilers to produce superheated steam, which was used to heat facilities and for other process uses.
- In the 1998 Miscellaneous Streams Report, this stream is called Miscellaneous Stream #570, where it is described as non-contaminated steam condensate.

Misc./Other Relevant Information

- The UIC Name for 200-E-99 is 291BJ-SE-1

Site Interfaces

Nearby Sites:

200-IS-1 OU

- 200-E-116-PL
- 200-E-198-PL

200-EA-1 OU

- 200-E-100 (French drain)

Facility

- 291B (sand filter)

Scoping Summary: 200-E-99 (French Drain)

Scoping Summary: 200-E-100 (French Drain)

History

The 200-E-100 waste site is an inactive French drain that received steam condensate from the steam distribution line. The condensate received by this French drain is designated as miscellaneous waste stream #571 (Notebook No. E1-1255).

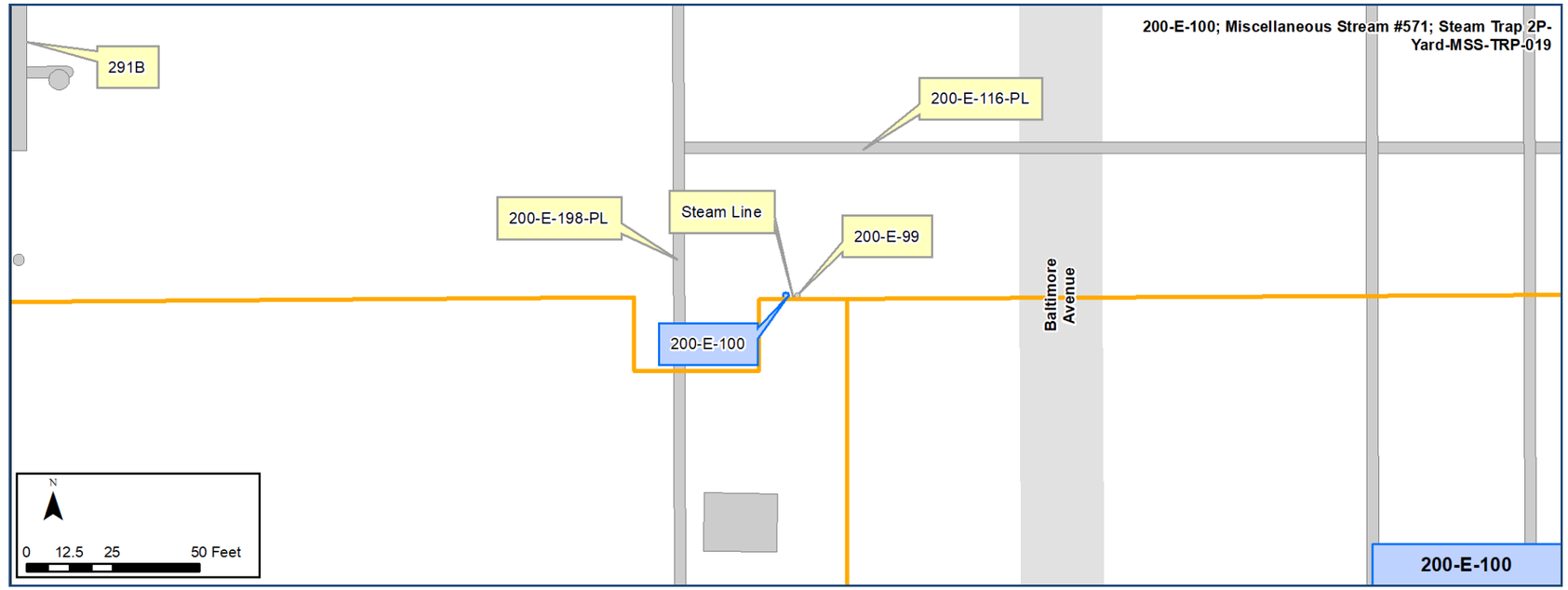
The site is a low spot, or a natural depression in the ground under the steam line, where the ground was slightly stained with rust; there is no engineered drain structure (refer to image on page 2).

200-E-100 is located near Baltimore Avenue, east of the 291B Sand Filter. It is 20 feet west of a similar drain feature, 200-E-99.

During the miscellaneous streams inventory in 1998, this site was listed as eliminated, since the steam source had been shut off (*Page 237 of 316, Miscellaneous Streams Inventory, dated 9/04/1998)*.

Additional details for the steam line source from which the subject waste site received waste were not located.

This waste site is a UIC.



Construction

- Depth of depression: 1 ft, at lowest point
- Diameter of depression: 2 ft

Features Of Interest

- An approximately 2 ft by 2 ft area (irregularly shaped) was was previously reported to be discolored with rust at the site of this waste site.

Waste Streams

- This waste stream was sent through boilers to produce superheated steam, which was used to heat facilities and for other process uses.
- In the 1998 Miscellaneous Streams Report, this stream is called Miscellaneous Stream #571, where it is described as non-contaminated steam condensate.

Site Interfaces

Nearby Sites:

200-IS-1 OU

- 200-E-116-PL
- 200-E-198-PL

200-EA-1 OU

- 200-E-99 (French drain)

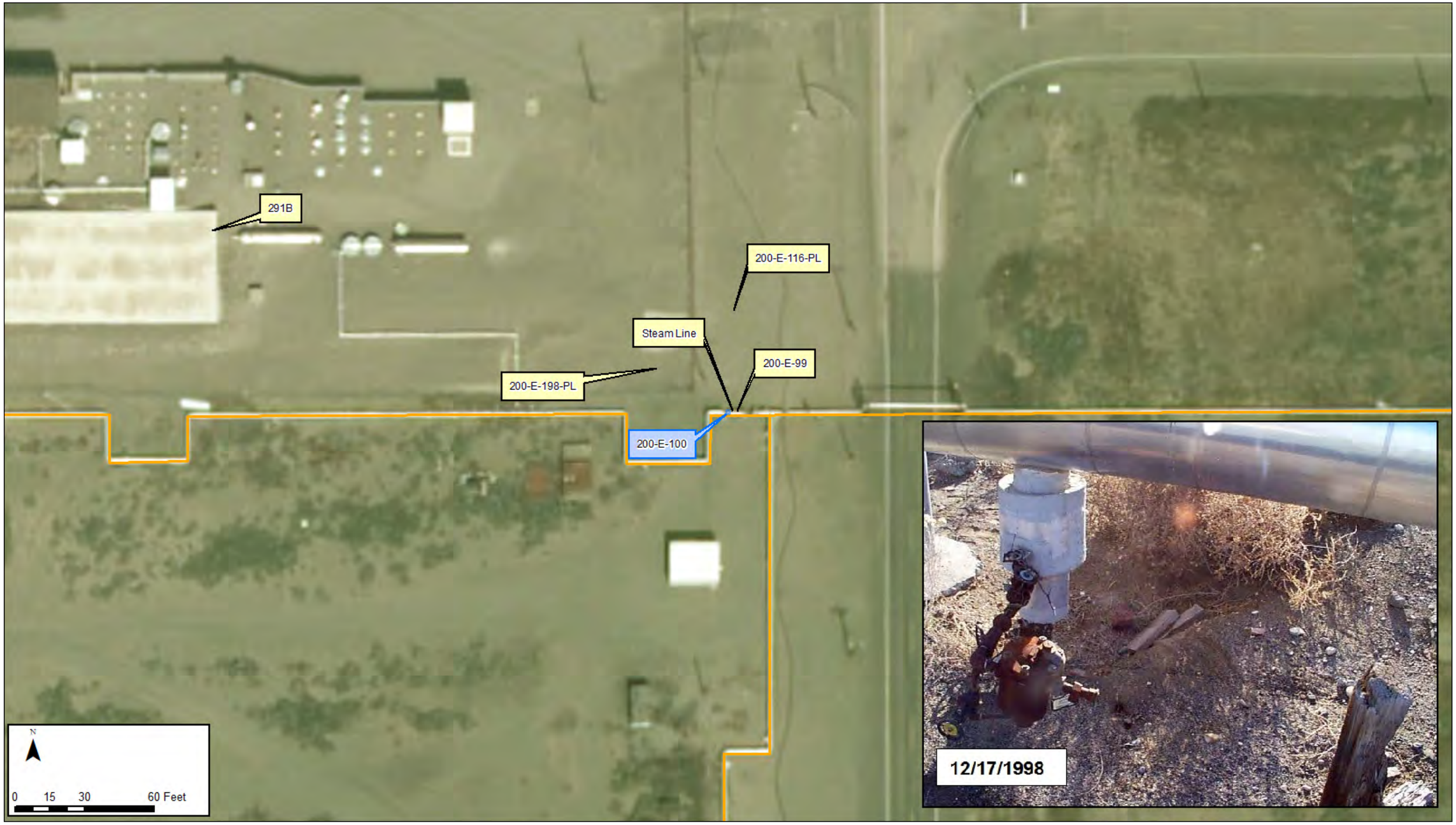
Relevant Characterization

- No direct characterization data was located for the site or adjacent soil.

Misc./Other Relevant Information

- The UIC Name for 200-E-100 is 291BJ-SE-2

Scoping Summary: 200-E-100 (French Drain)

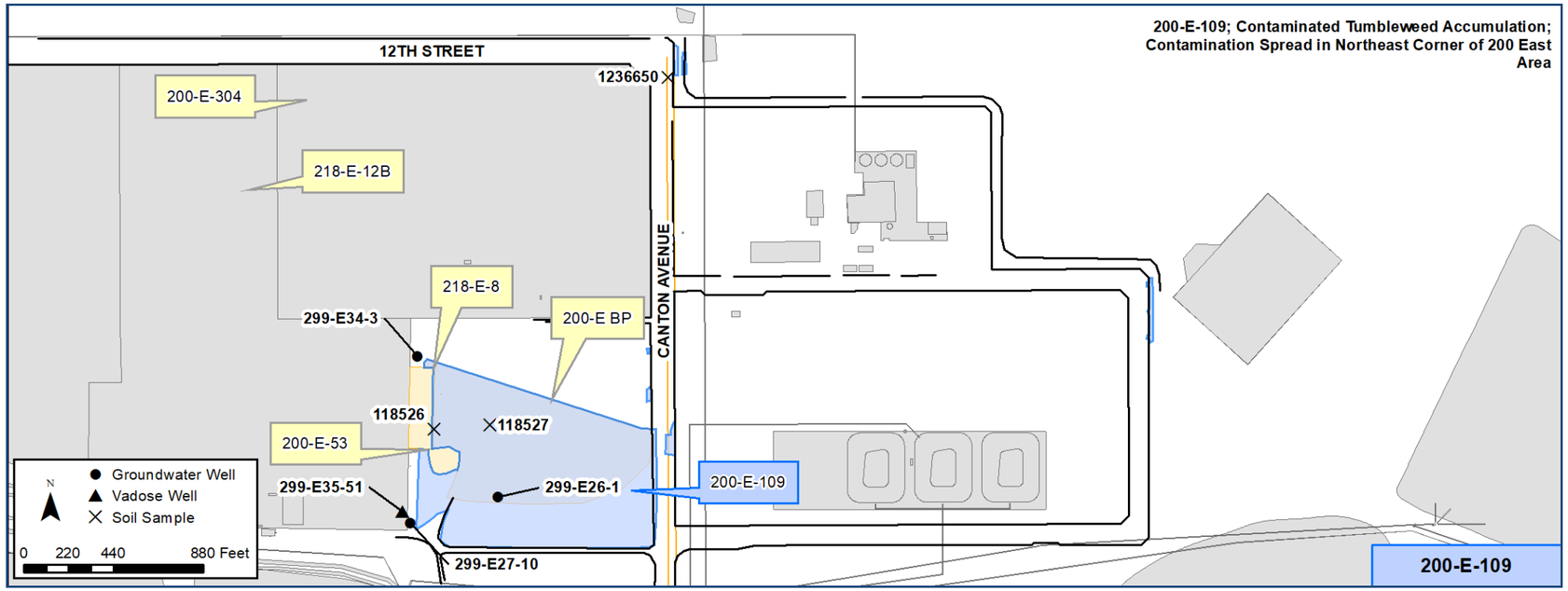


Scoping Summary: 200-E-109 (Contamination Migration)

History

The 200-E-109 waste site consists of multiple posted radiologically contaminated windblown tumbleweed accumulations in and around waste sites 200-E BP, 218-E-8, and 200-E-53. Newly discovered accumulations in and around this geographical area are to be included in this waste site. The number of posted areas, their size and shape, vary as more radiological surveys are conducted.

The tumbleweeds accumulate in natural depressions and along the north and east perimeter fencing, due to the prevailing winds. They are routinely collected and disposed onsite at the Environmental Restoration Disposal Facility (ERDF), and the fence lines are regularly surveyed and routinely reveal windblown radiologically-contaminated tumbleweeds, tumbleweed fragments, and radiologically-contaminated specks or hot spots at least as far back as 1998. In 2003-2004, the inactive and stabilized portion of 218-E-12B was surveyed and growing radiologically-contaminated tumbleweeds were identified, collected, and properly disposed as a source abatement. Regardless, large amounts of radiologically-contaminated tumbleweeds continue to blow-in to this general area and require collection and disposal.



Construction

- URMA on West side of Canton Ave: 250 ft X 62 ft
- Other areas are identified and posted, as discovered.

Features Of Interest

- No features of interests.

*In the 200-MG-1 OU EE/CA (DOE/RL-2008-44, Rev0), Remove Treatment Disposal (RTD) was the preferred alternative here. It was later included in that OU's Removal Action Work Plan (DOE/RL-2009-53, Rev1), and the Action Memorandum for the OU (DOE/RL-2009-86, Rev0).

Relevant Characterization

- Upon discovery and prior to proper on-site disposal, tumbleweeds are scanned for radioactivity. Beta-gamma levels are reported and range from 300,000-to-2,700,000 dpm/100cm2, alpha is regularly non-detectable, and dose rates range from 0.5-to-15 mRad/hr.
- In 2012, ~150 windblown contaminated tumbleweeds and fragments were found and disposed. Maximum detect was 2,100,000 dpm/100cm2 beta-gamma, no alpha; uncorrected dose rate was 1 mRad/hr, window open.

Waste Streams

- Radiologically-contaminated tumbleweeds, tumbleweed fragments, and smaller specks from decaying tumbleweeds.

Misc./Other Relevant Information

- 200-E-304 was created in 2014 and is the active portion of the original 218-E-12B Burial Ground waste site. The active trench is Trench 94, which is the Naval Reactor trench. These burial grounds include a series of open trenches, some 38 of which have been used, while about 100 remain open. Radiologically-contaminated tumbleweeds are known to have grown here.

Site Interfaces

Site Intersects

200-EA-1 OU

- 200-E-53 (Above Ground Storage Area)
- 200-E BP (Burn Pit)

200-SW-2 OU

- 218-E-8 (200 East Construction Burial Grounds)

Nearby Sites

200-SW-2 OU

- 218-E-12B (Burial Ground)
- 200-E-304 Burial Ground (Active)

Scoping Summary: 200-E-109 (Contamination Migration)

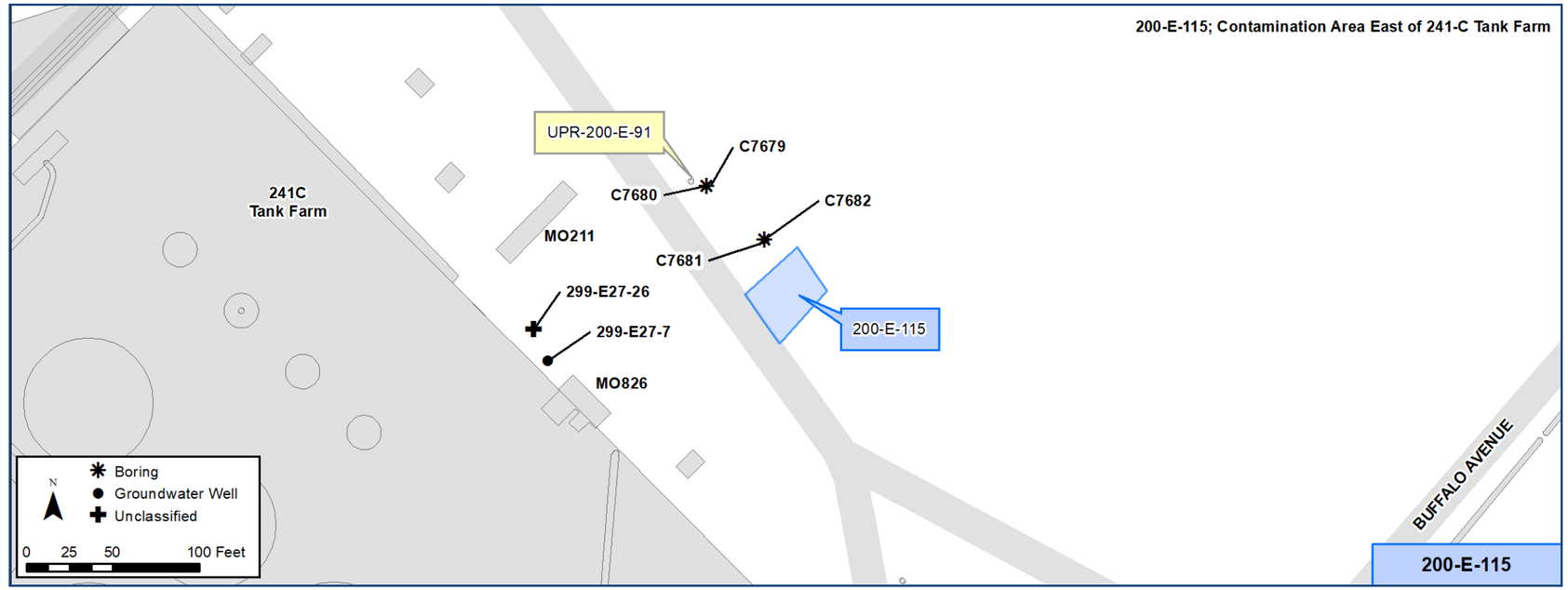
Scoping Summary: 200-E-115 (Unplanned Release)

History

The 200-E-115 waste site is an unplanned release of unknown origin currently posted as an Underground Radioactive Material (URM) area. The site is located east of the 241-C Tank Farm and south of 8th Street.

The Dyncorp Integrated Soil, Vegetation and Animal Control group submitted a Waste Site Information Form to WIDS in 2000 following routine radiological surveys. The area was posted as a Contamination Area by 2001. In June 2004, vegetation was removed from the site, then a biobarrier and 6 inches of gravel was added. A radiological survey was completed in July, and the site was downposted to a URM area in August 2004.

In 1980, a larger posted contamination area (UPR-200-E-91) was established in the same vicinity as 200-E-115, and the contaminated soil was removed and buried in an excavation (UPR-200-E-56) north of the 216-A-24 Crib in 1981. The contaminated area was released from radiological posting in 1981, but it is difficult to determine if the UPR-200-E-91 and 200-E-115 are related. The source of the contamination for UPR-200-E-91 was waste water from the equipment decontamination station inside the 241-C Tank Farm that seeped downhill to the area.



Construction

- Estimated Length: 40 ft
- Estimated Width: 33 ft
  - A field walk down determined the site to be 30 ft x 30 ft (exact dimensions unknown)
- Biobarrier and 6 inches of gravel added in 2004.

Features Of Interest

- Sampling holes:
  - C7681
    - Depth: 222 ft
  - C7682
    - Depth: 124 ft

Waste Streams

- Waste source is unknown
  - The site consists of contaminated soil specks and contaminated vegetation
  - Waste may have been wastewater from equipment decontamination station inside 241-C Tank Farm.

Site Interfaces

Nearby Sites:

WMA C OU

- UPR-200-E-91

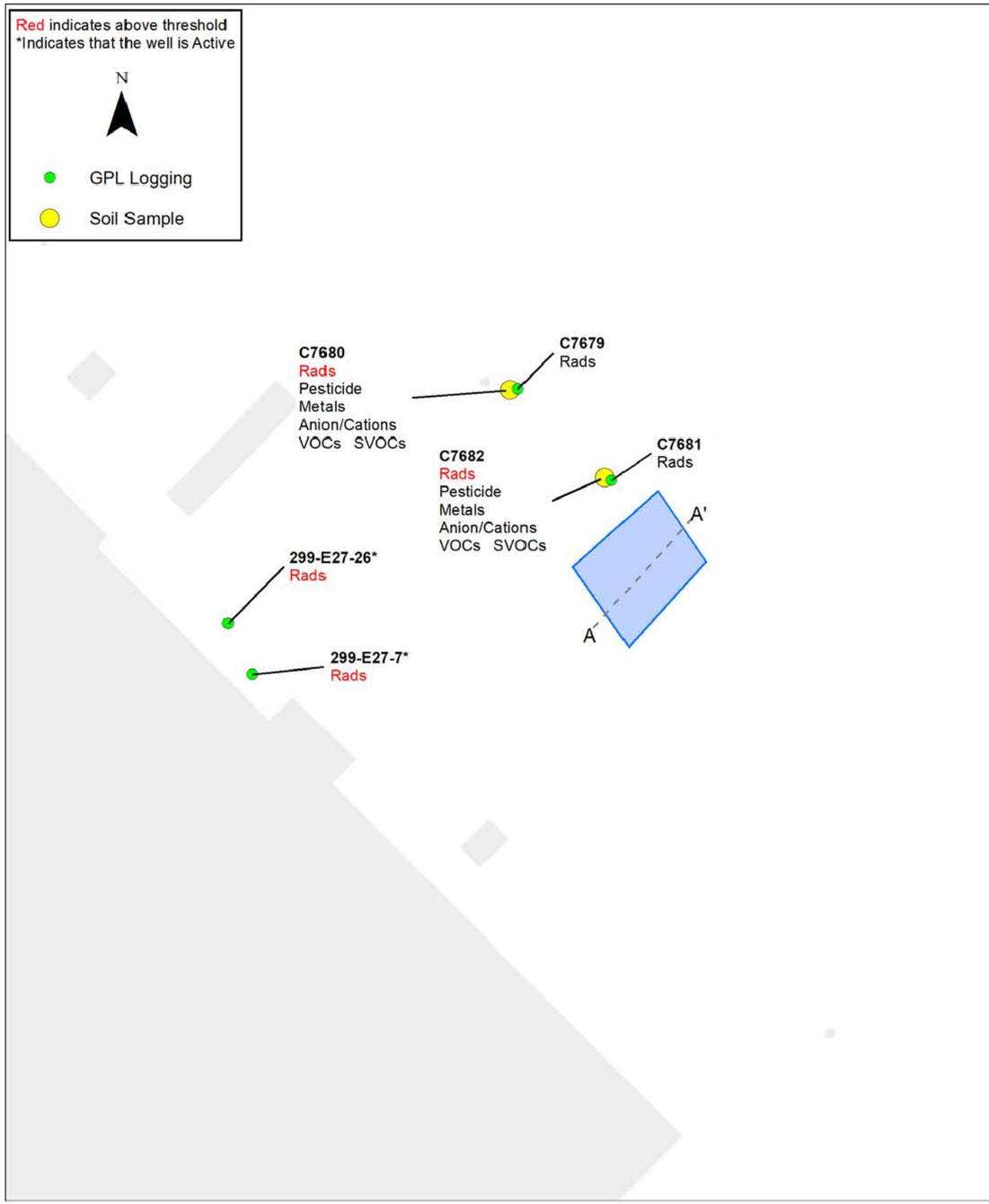
Relevant Characterization

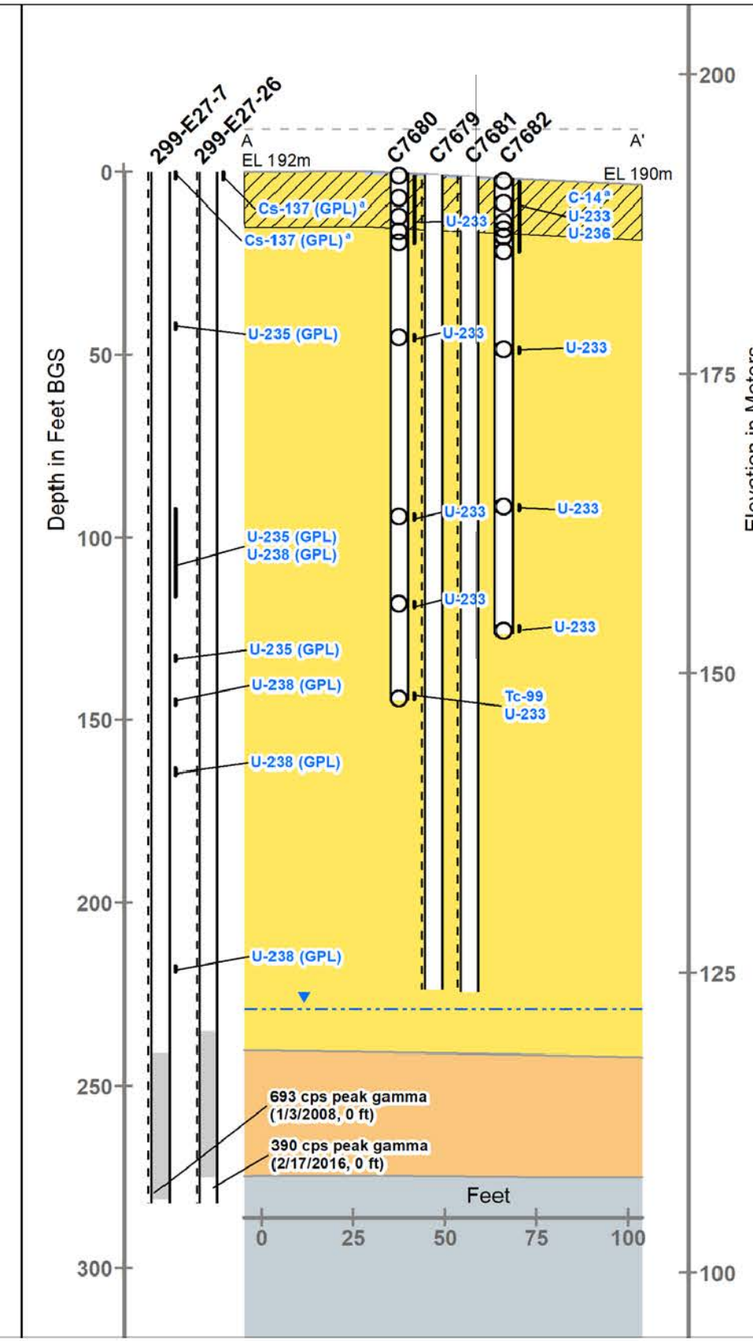
- A September 2002 radiological survey reported 6,000 dpm/100 cm2 beta/gamma, in the old growth vegetation and 15,000 dpm/100 cm2 beta/gamma, in the new growth vegetation surveyed
- 2014 and 2015 radiological surveys of the site reported Total Gross beta/gamma at <5,000 dpm/100-cm-2
- *See Page 3 for a depiction of the nature and extent of nearby contamination, as defined by existing data.*

Misc./Other Relevant Information

- Potential ground contamination, based on contamination showing in nearby boreholes
- In the 200-MG-1 OU EE/CA (DOE/RL-2008-44, Rev0), Remove Treatment Disposal (RTD) was the preferred alternative here.

UPR-200-E-91
C7679
C7680
C7682
C7681
MO211
200-E-115
299-E27-26
299-E27-7
MO826
241-C Tank Farm
BUFFALO AVENUE
Boring
Groundwater Well
Unclassified
N
0 15 30 60 Feet





Legend

- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- GPL Coverage
- Groundwater
- Screen
- Well/Bore
- 0-15ft Below Ground Surface
- Waste Site
- Cold Creek unit
- Columbia River Basalt Group
- Hanford formation

Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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Scoping Summary: 200-E-117 (Unplanned Release)

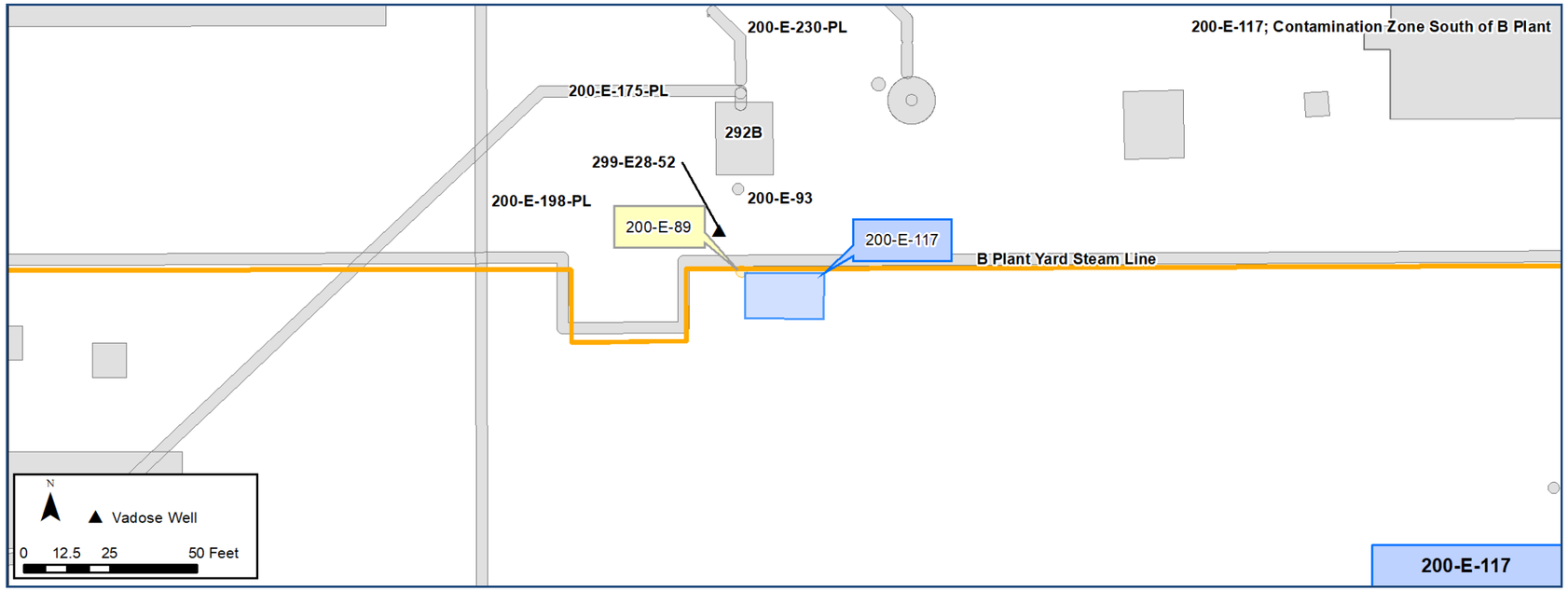
History

The 200-E-117 waste site is an unplanned release referred to as the Contamination Zone South of B Plant. The initial reason this area was posted is not known. The waste site is a small 10-ft by 20-ft posted contamination area (CA). Two vertical steel pipes with valves on them extend 1 to 2 ft above ground surface and connect to the B Plant steam line, as shown on Page 3, which extends to the 292B building (Stack Monitor Station).

In 2000, uncontaminated windblown tumbleweeds were removed from inside the posted CA. The two valves were surveyed and found to be contaminated to 800 cpm (direct), beta gamma, but no removable contamination was found.

In 2012, the site was backfilled with 6-to-12 inches of gravel. The site was surveyed prior, during, and after backfill. No contamination was found; no action levels were exceeded, and no biological hazards were encountered. Fixed contamination was located on piping and labelled, and the area was down-posted to URMA.

In 2013, the site was again radiologically surveyed; soil was at background; the valves and pipes at 4,200 cpm, beta gamma.



Construction

- Length: 10 ft
- Width: 20 ft

Features Of Interest

- Two steel pipes with valves extending approximately 1 to 2 ft above ground surface. Posted as Fixed Contamination Area.

Waste Streams

- No relevant waste stream information.

Site Interfaces

Nearby Sites:

200-IS-1 OU

- 200-E-198-PL
- 200-E-175-PL
- 200-E-230-PL

- 292B (Stack Monitor Station)
- B Plant Yard Steam Line

No Operable Unit

- 200-E-93 (B Plant Yard Steam Condensate)
- 200-E-89 (B Plant Yard Steam Condensate)

Monitoring Well:

- 299-E28-52 (to 110 ft bgs; decommissioned)

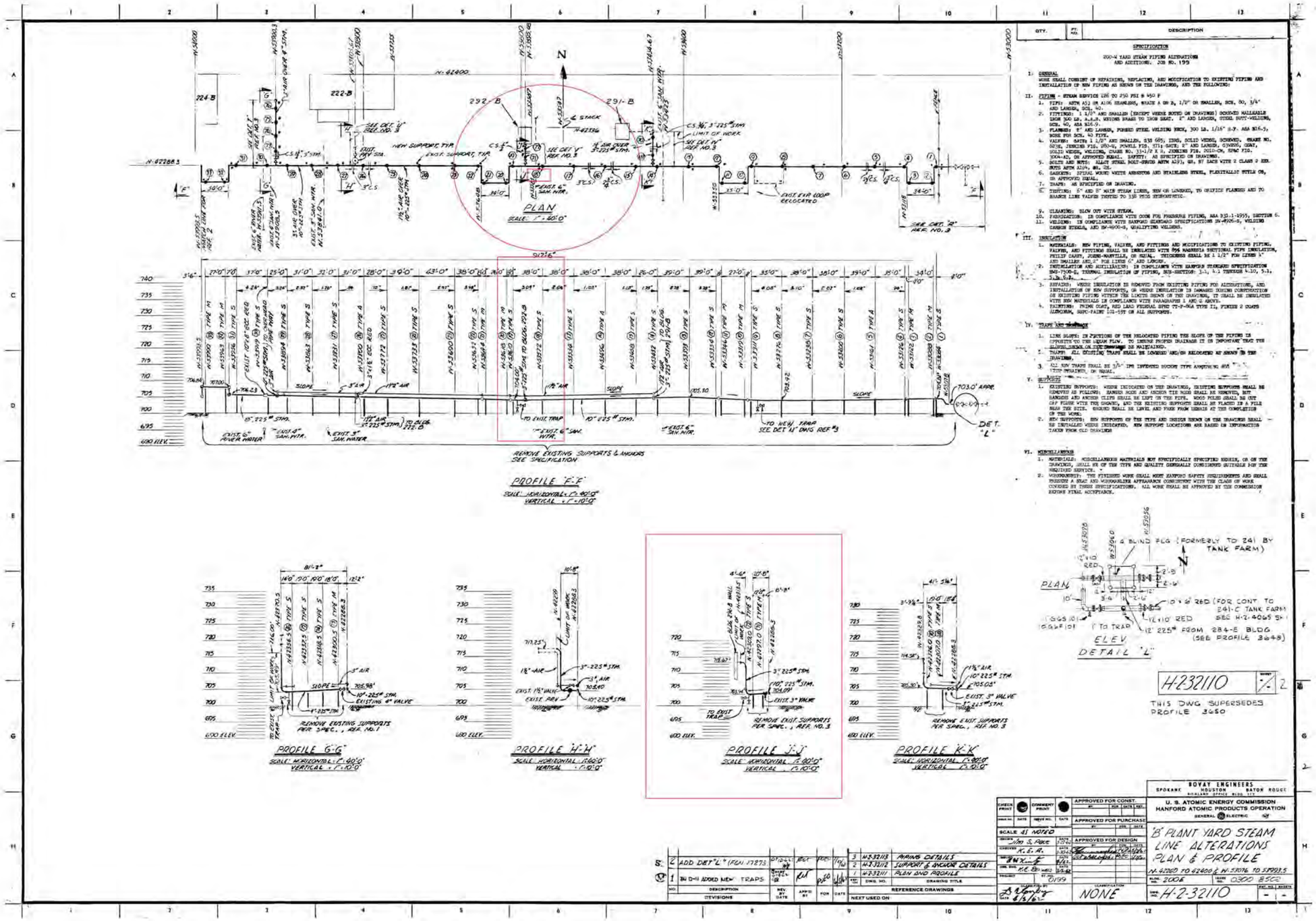
Relevant Characterization

- 2000: two valves radiologically contaminated to 800 cpm; no removable contamination found.
- 2012: fixed contamination on piping (no data located) found and labelled, but no removable contamination identified.
- 2013: Most recent radiological survey data indicated soil and gravel were at background levels, while the valves and pipes were 4,200 cpm/100 cm2, direct beta-gamma.

Misc./Other Relevant Information

- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Waste Sites identified Removal, Treatment, and Disposal (RTD) as the preferred remedial action (DOE/RL-2008-44; Rev. 0).
- During field inspection, other features were noted, such as pipe stickup, that indicates there may be a tank in that location

Scoping Summary: 200-E-117 (Unplanned Release)


PLAN
PROFILE "F-F"
PROFILE "G-G"
PROFILE "H-H"
PROFILE "J-J"
PROFILE "K-K"
DETAIL "L"
H-2-32110
THIS DWG SUPERSEDES PROFILE 3650
BOVAY ENGINEERS
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
"B" PLANT YARD STEAM LINE ALTERATIONS PLAN & PROFILE
NONE

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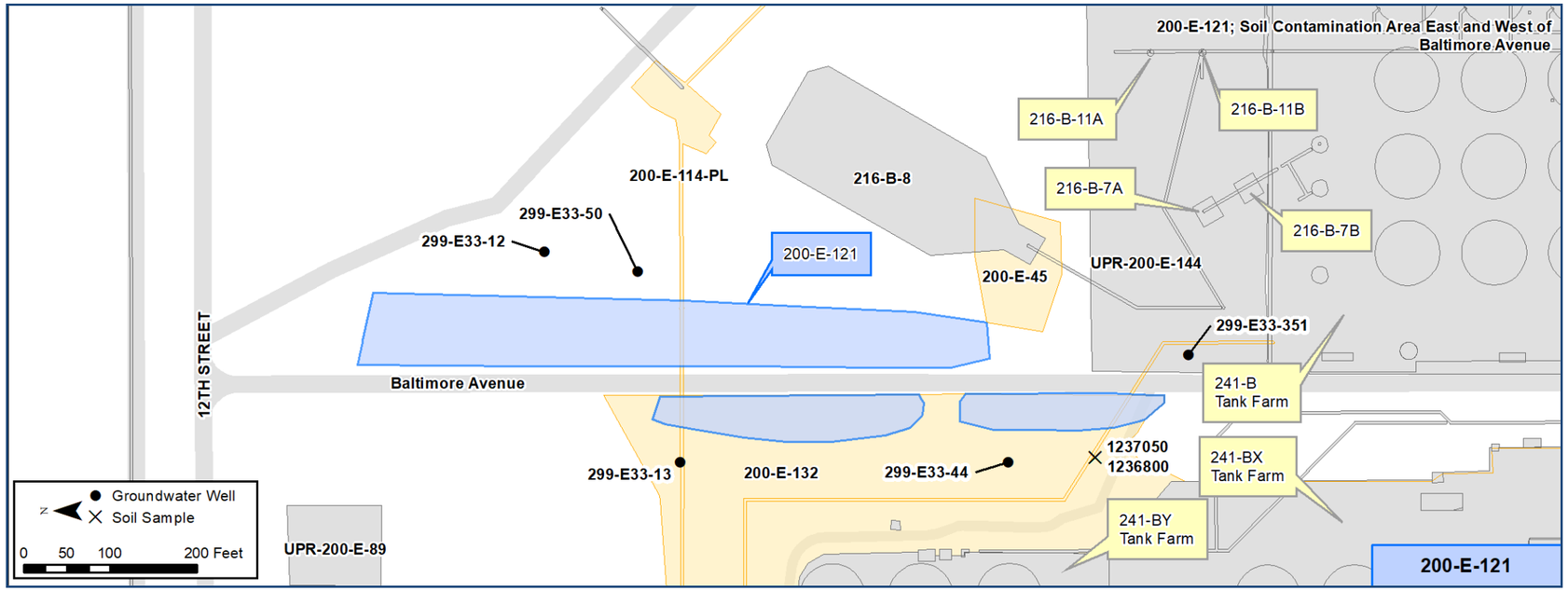
Scoping Summary: 200-E-121 (Unplanned Release)

History

The 200-E-121 waste site is an unplanned release resulting from contamination that spread through the top of a containment tent in the tank farm. Where this tent was located or what it was trying to contain is not known, but the contamination was first noticed near the BX/BY tank farm's east fence line. This waste site consists of three separate areas located directly adjacent to Baltimore Avenue and north of B Tank Farm and east of the 241BY Tank Farm.

The contamination was likely discovered in either 1996 or 1997, and the area was immediately posted as a Contamination Area. Within a few days, the contaminated section of Baltimore Ave was paved over and the original area was broken into the current three zones.

Contamination for this UPR could be linked to previous unplanned releases that occurred in 200-E-121, which includes UPR-200-E-144 and UPR-200-E-89. For both UPRs (144 and 89), the contaminated soil was scraped into smaller areas and was covered with clean backfill in the early 1990s. In December 2003, a 160-sq ft area within the site was covered with Biobarrier and gravel and downposted to an URMA. In 2011, the areas to the west side of Baltimore Ave was surface stabilized with clean gravel.



Construction

- Length:
  - East of Baltimore Ave.: 500 ft
  - 1st Section West of Baltimore Ave: 310 ft (Approximate)
  - 2nd Section West of Baltimore Ave: 230 ft (Approximate)
- Width:
  - East of Baltimore Ave.: 80 ft
  - 1st Section West of Baltimore Ave: 55 ft (Approximate)
  - 2nd Section West of Baltimore Ave: 40 ft (Approximate)
- Site consists of dirt and growing weeds

Features Of Interest

- Power poles are posted radioactive material

*UPR-200-E-89, located on the west side of Baltimore Ave had contamination scraped, covered with clean backfill, and consolidated into smaller areas.

Relevant Characterization

- In 2003, a small tumbleweed was discovered at the site with detected levels of 85,000 dpm/100cm2 beta/gamma, and no alpha contamination
  - The same survey identified contaminated tumbleweeds with levels of 12,000 dpm/100cm2 beta/gamma, no alpha contamination

Waste Streams

- Waste stream is unknown, likely attributed to leaks from the nearby 241B and BX/BY Tank Farms

Misc./Other Relevant Information

- UPR-200-E-144 was 15 acres that occurred in the 1980s east of Baltimore Ave. By 1992, the contaminated soil was scraped into a pile and placed on top of the 216-B-7 A&B and 216-B-11 A&B Cribs.
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit (DOE/RL-2008-44, Rev. 0) determined the preferred removal action to be confirmatory sampling/no further action (CS/NFA).

Site Interfaces

Origin/Termination

- N/A

Intersecting/Nearby Sites

WMA B/BX/BY

- 200-E-132

200-DV-1

- 200-E-45
- 216-B-8
- 216-B-7A&B Cribs
- 216-B-11A&B Cribs

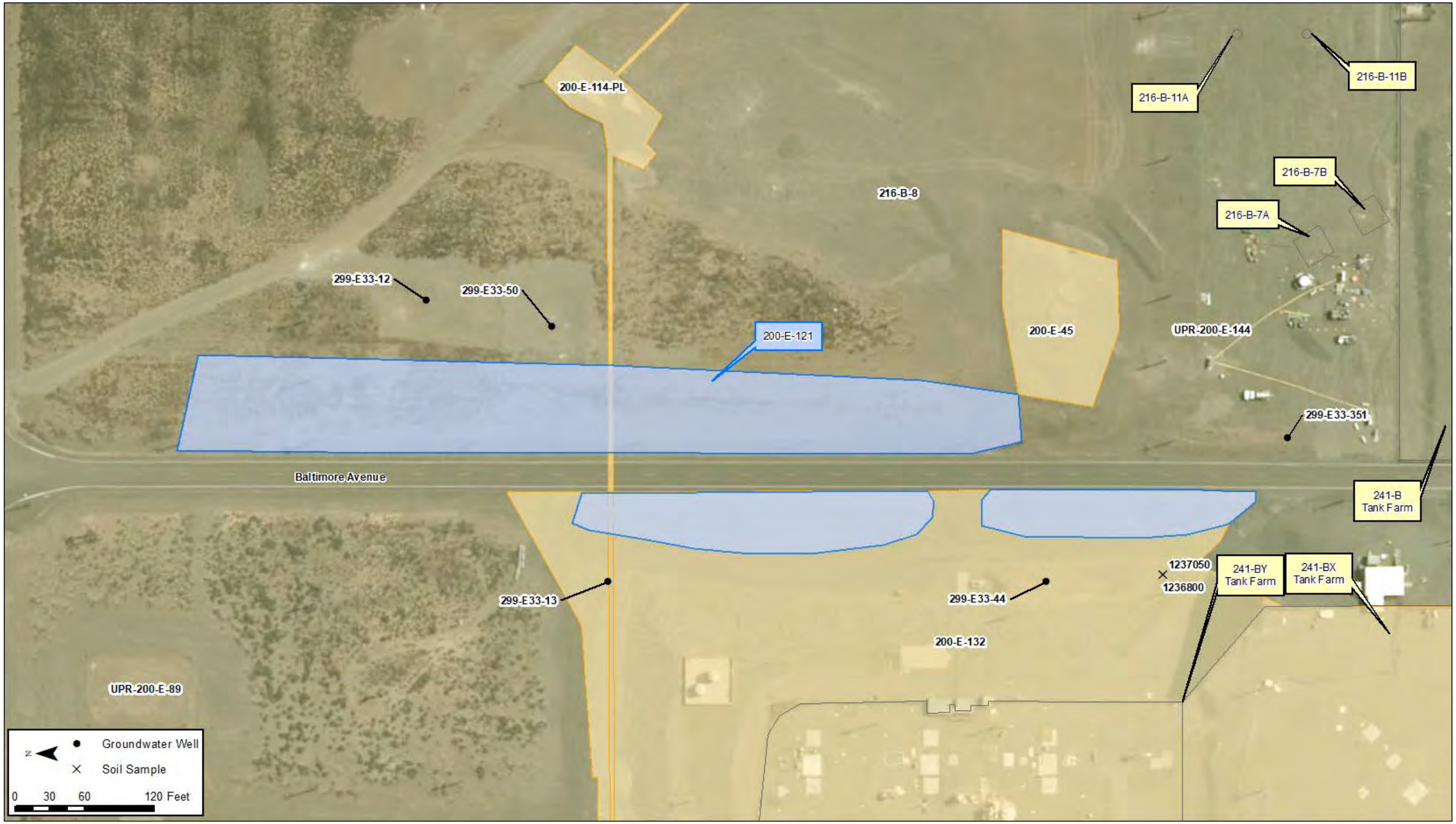
200-IS-1

- 200-E-114-PL

Unassigned OU

- 241B Tank Farm
- 24BX Tank Farm
- 241BY Tank Farm

Scoping Summary: 200-E-121 (Unplanned Release)

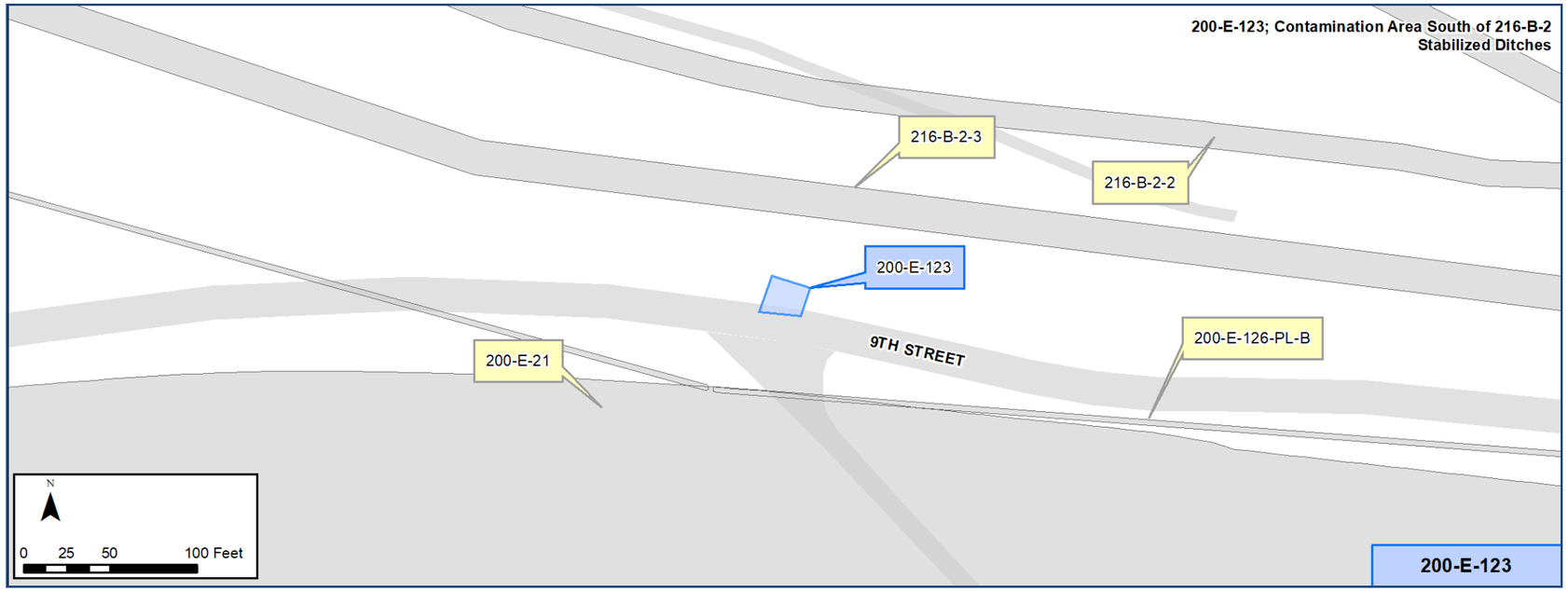


Scoping Summary: 200-E-123 (Unplanned Release)

History

The 200-E-123 waste site is an unplanned release, and the source of the contamination is unknown. The site is adjacent to 9th Street, south of the 216-B-2-3 Ditch, and north of 200-E-21 Borrow Pit.

In 1998, the site was surrounded with steel posts and chain. The Dyncorp Integrated Soil, Vegetation and Animal Control (ISVAC) group submitted the posted area to WIDS as a Discovery Site in 2000. In 2001, the site was covered with clean backfill material and downposted from a Soil Contaminated Area (SCA) to an Underground Radioactive Material Area (URMA).



Construction

- Length: 23 ft (approximate)
- Width: 15 ft (approximate)
- Surface cover thickness is an estimated 1-2 ft

Features Of Interest

- No features of interest identified.

Waste Streams

- Source of the contamination is unknown.

Site Interfaces

Intersecting/Nearby Sites:

200-EA-1 OU

- 216-B-2-2
- 216-B-2-3

200-IS-1 OU

- 200-E-126-PL-B

OU Unassigned

- 200-E-21 (Burrow Pit)

Relevant Characterization

- Routine radiological surveys of the area conducted in 2013 and 2014 had no detections (<5,000 dpm/100 cm2, beta-gamma). Radiological survey completed in 2014 is shown on page 3.

Misc./Other Relevant Information

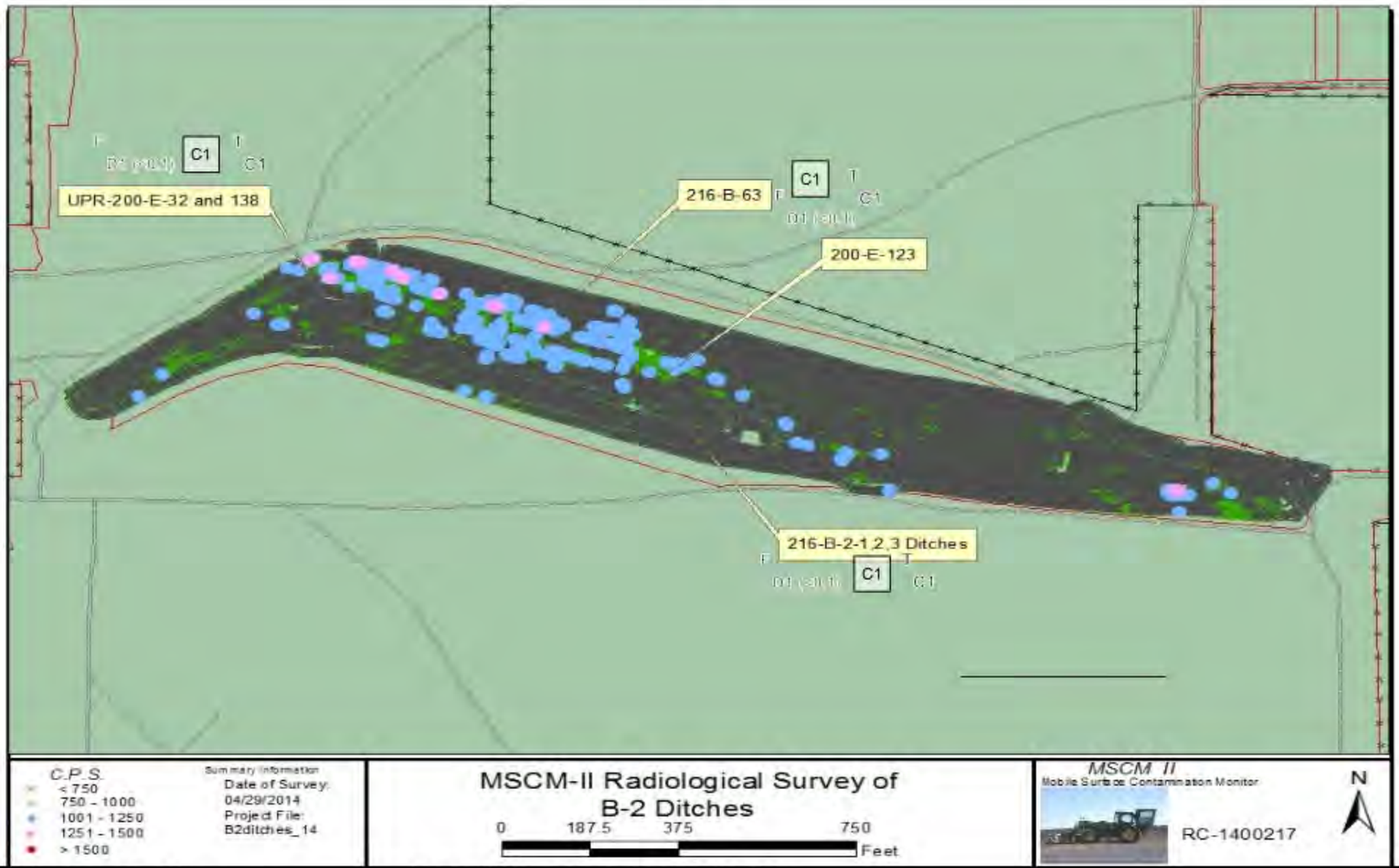
- The Engineering Evaluation/Cost Analysis for 200-MG-1 OU (DOE/RL-2008-44, Rev0) identified Removal Treatment Disposal (RTD) as the preferred alternative here.

216-B-2-2
216-B-2-3
200-E-123
200-E-21
9TH STREET
200-E-126-PL-B
N
0 15 30 60 Feet

** Electronically Approved – RC-1400217 on 5/5/2014 **

CH2M HILL PLATEAU REMEDIATION COMPANY RADIOLOGICAL SURVEY REPORT (Submitted for Approval)	RSR No. RC-1400217	Page 3 of 4

Map/Sketch



Map Name: Annual Rad Tractor

Map Description: 216-B -2-1,2,3 and 63 Ditches

Legend	# Direct Measurement	Air Sample	Smear	LAW	Neutron Dose Rate	T# Transferability	F# Field	C# Contact	D# Other Distance	Other Measurement
	---------- (designation inside) ---------- Radiological Area Boundary								Note: Dose Rates in mrem/hr unless otherwise noted.	

Date Submitted: 05/01/2014 10:42:00

A-6004-663-SS (Rev. 4)

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Scoping Summary: 200-E-124 (Unplanned Release)

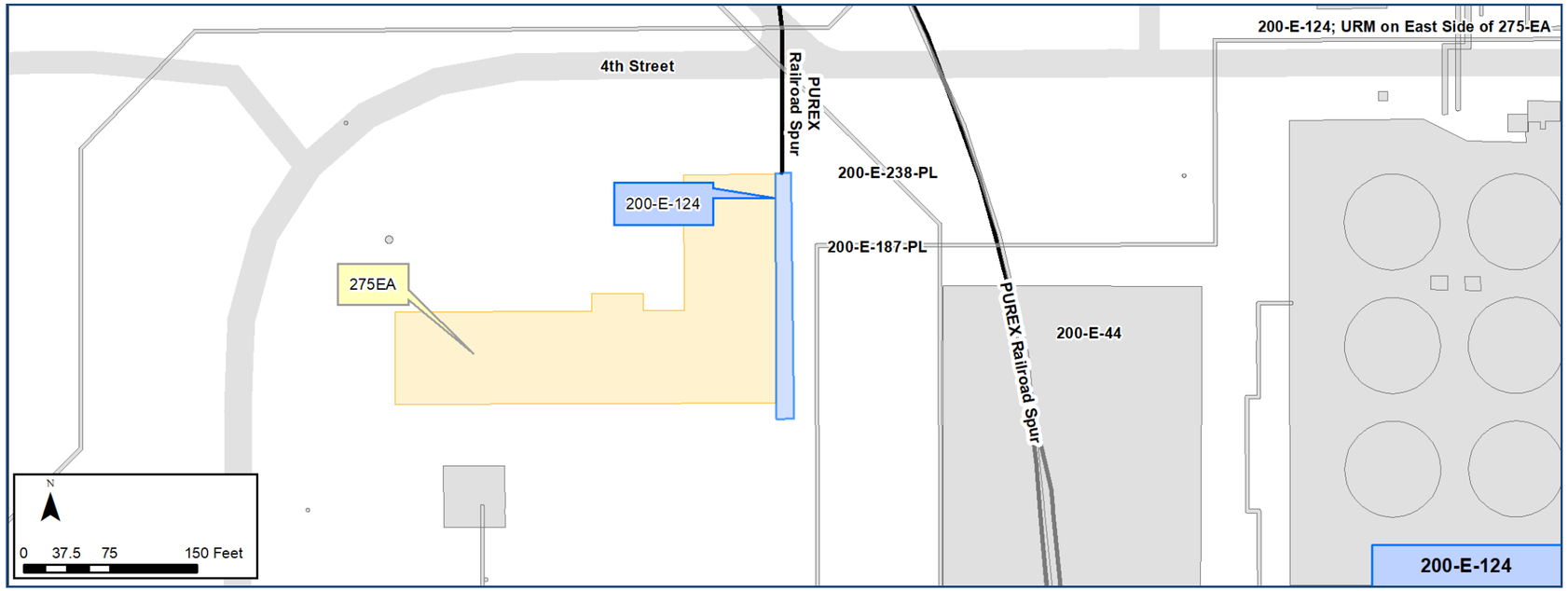
History

The 200-E-124 waste site is an unplanned release (UPR) located along the railroad tracks immediately east of where the 275EA Building (Warehouse Essential Materials) used to stand. The UPR is where railroad cars were parked and material was off-loaded into the building. The site is currently posted as an Underground Radioactive Material Area (URMA).

The 275EA Building was used as a warehouse to store non-radioactive parts and miscellaneous building materials for the PUREX Canyon. The building was demolished in 2016.

As recently as 1986, contaminated rail cars were parked and off-loaded into the 275EA Building from these railroad tracks, according to personal interviews conducted in 2001.

By 2001, the area had been stabilized with approximately 1 ft of clean soil, which covers up the railroad tracks extending the length of the UPR. The area was stabilized with clean fill due to the exposure potential from prior leaks and spills that may have occurred during unloading operations on the rail line at the 275EA Building. No documented characterization exists for this waste site.



Construction

- Length: 210 ft
- Width: 15 ft
- Area: 3,169 square ft
- Depth: unknown thickness of potential contamination
  - Additional Cover: 1 ft of clean fill

Features Of Interest

- Railroad tracks extending the length of the site, beneath clean fill material.

Waste Streams

- Potentially radioactive-liquid and solid waste from rail cars awaiting off-loading. No record of leaks or spills could be verified from this area.

Site Interfaces

Nearby Sites:

200-IS-1 OU

- 200-E-187-PL
- 200-E-238-PL

200-EA-1 OU

- 200-E-44 (PUREX Railroad Cut)

- 4th Street
- PUREX Railroad Spur

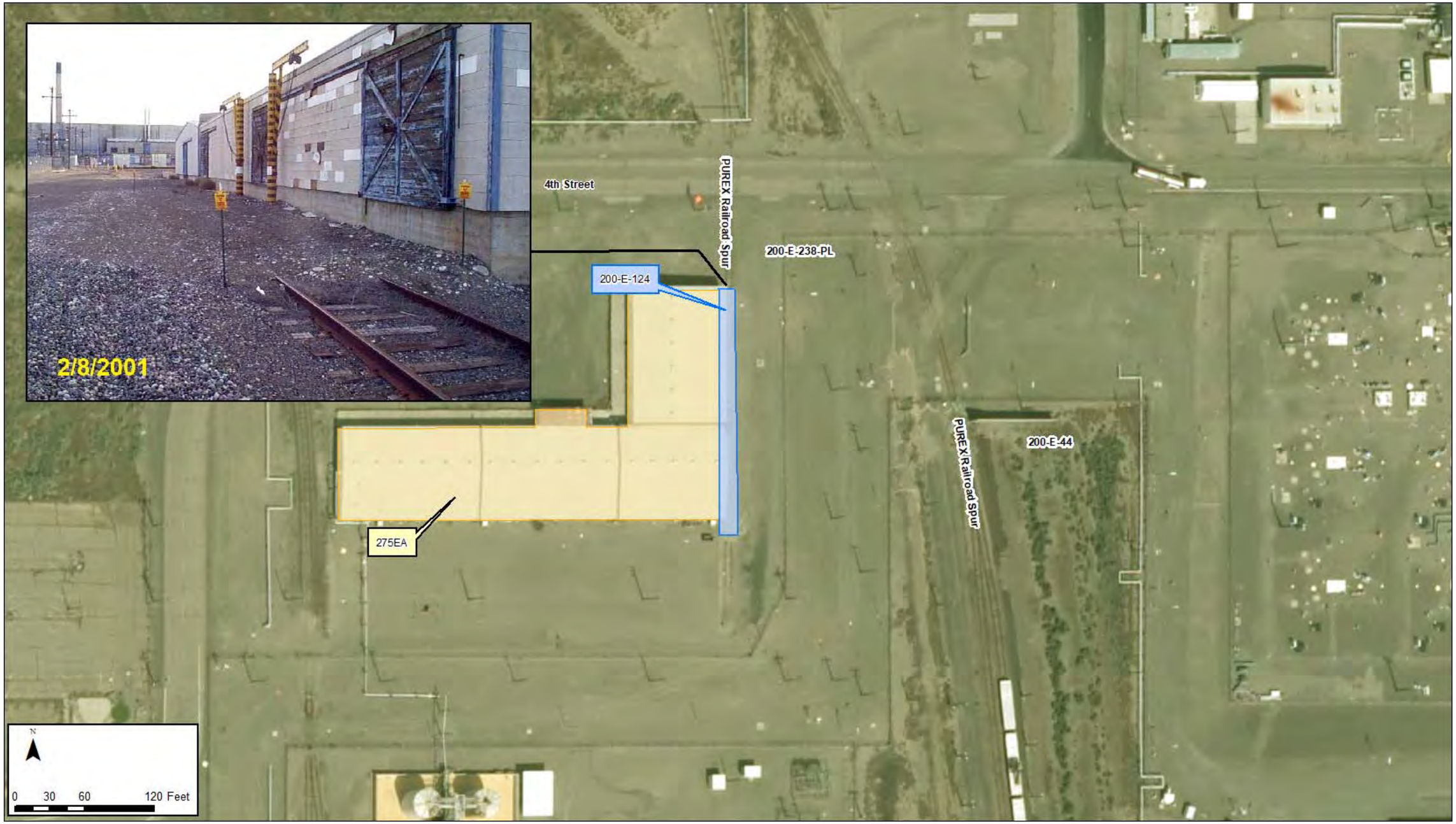
Relevant Characterization

- No soil samples have been collected from this waste site.
- In 2005, tumbleweeds were noted to be growing here during a routine radiological survey that otherwise found no action levels exceeded.
- In 2013, a routine radiological survey of the area's perimeter found no action levels exceeded and no biological hazards were noted.
- In 2016, a similar radiological survey resulted in the same conclusions as 2013.

Misc./Other Relevant Information

- The waste site was included in the 200-MG-1 Operable Unit's Engineering Evaluation/Cost Analysis (DOE/RL-2008-44, Rev0). Removal, Treatment, and Disposal (RTD) was identified as the preferred removal action alternative. No additional action or documentation was located for the waste site after the EE/CA was published in 2009.

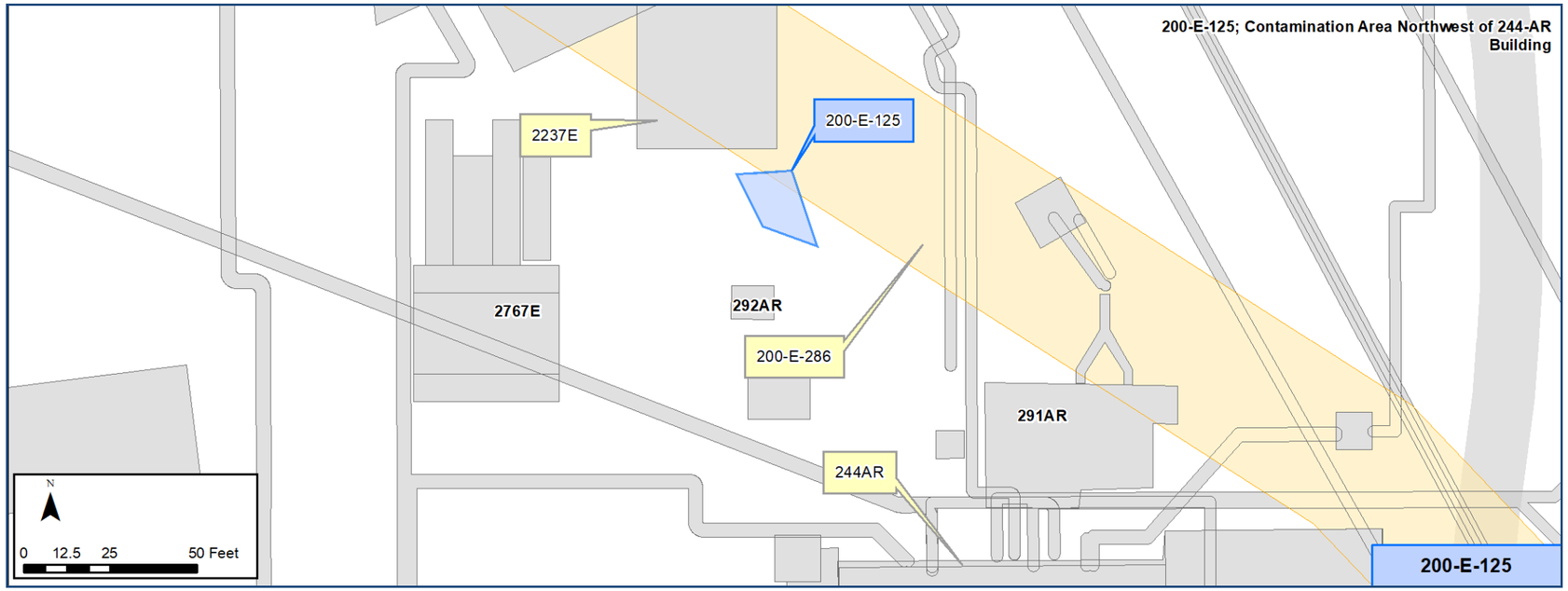
Scoping Summary: 200-E-124 (Unplanned Release)



Scoping Summary: 200-E-125 (Unplanned Release)

History

The 200-E-125 waste site is an unplanned release posted as a Contamination Area, located northwest of the 244AR vault storage and south of the 2237E Electrical Shop (Pipefitters Shop). The site was already posted as a CA upon discovery and no documentation of the original release mechanism was located. The earliest WIDS documentation is from December 2000.



Construction

- Length: 22 ft
- Width: 15 ft
- Depth: Approx. 3 ft
- Area: 326 sq. ft

Features Of Interest

- A site investigation logbook from February 2001 states that the site is posted with light duty chain, the surface is sand and no vegetation was observed.

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil

Waste Streams

- Source of the release is unknown, waste stream information was not located

Misc./Other Relevant Information

- In 2007 the site was included in the 200-UR-1 Unplanned Release Waste Group Operable Unit Sampling and Analysis Plan (DOE/RL-2006-50).
- In 2008 the site was included in the Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Waste Sites and classified the site as a candidate for Remove Treat and Dispose (RTD) though there is no indication that any sampling was conducted (DOE/RL-2008-44).

Site Interfaces

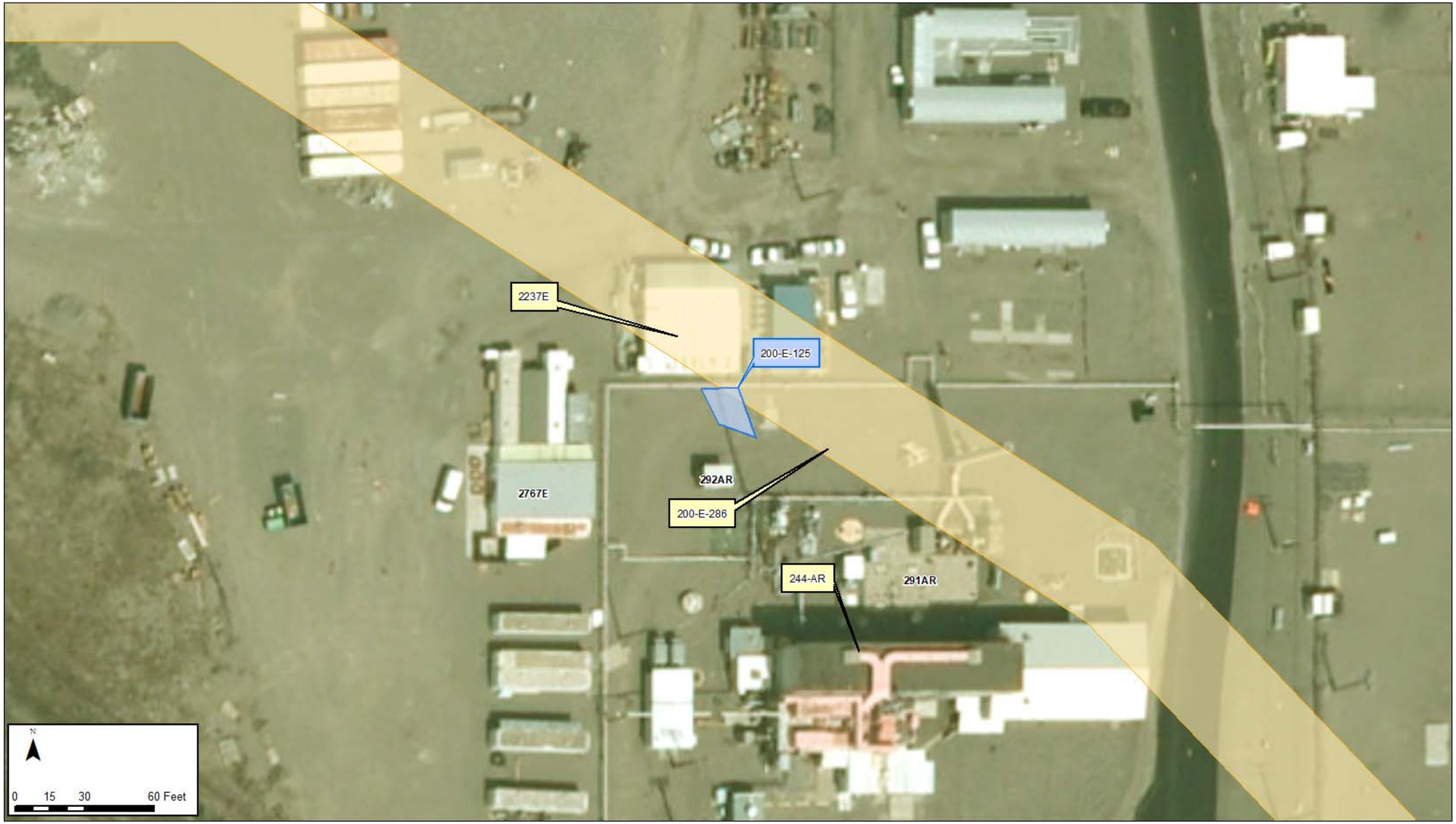
Origin/Termination

Intersecting/Nearby Sites

OU Unassigned

- 200-E-286 (pond)
- 2237E (Pipe Fitters Shop)

Scoping Summary: 200-E-125 (Unplanned Release)

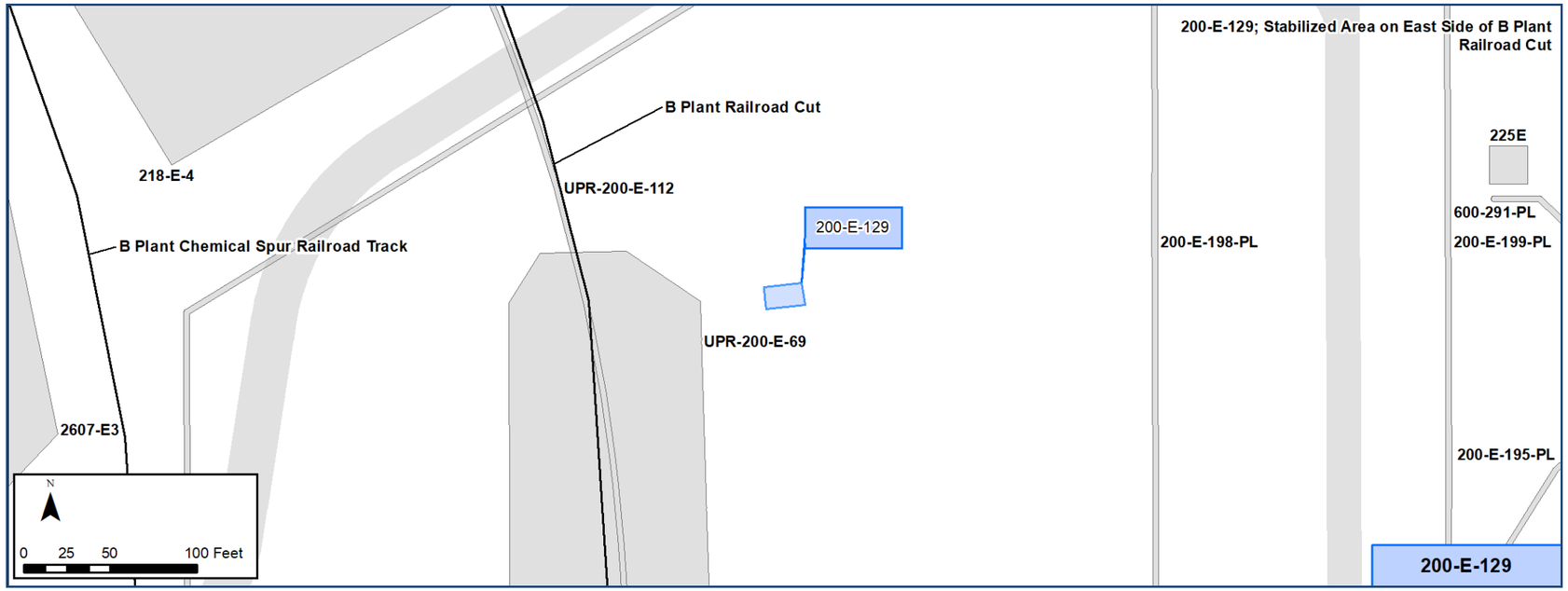


Scoping Summary: 200-E-129 (Unplanned Release)

History

The 200-E-129 waste site is an unplanned release that was identified during a radiological survey in 2001. The site is located at the north end of the B Plant Railroad cut, on the east side of a soil berm. The small area initially had maximum readings of 12,000 dpm/100 cm-2 and was covered with soil/gravel.

In 2002, there were radiological surveys completed with maximum readings at 64,500 dpm/100 cm-2. The area was again covered with soil and gravel, stabilized and was posted as a URMA status. Radiological surveys completed in 2015 and 2016 had readings below background levels.



Construction

- Area posted with an approximate size 8 ft x 15 ft (DOE/RL-2008-44 estimated removal area 12 x 20 ft)
- Covering 1-2 ft of gravel

Features Of Interest

No features of interest.

Waste Streams

- Waste stream is unknown.

Site Interfaces

Intersecting/Nearby Sites:

200-EA-1 OU

- UPR-200-E-112
- UPR-200-E-69

- B Plant chemical spur railroad track

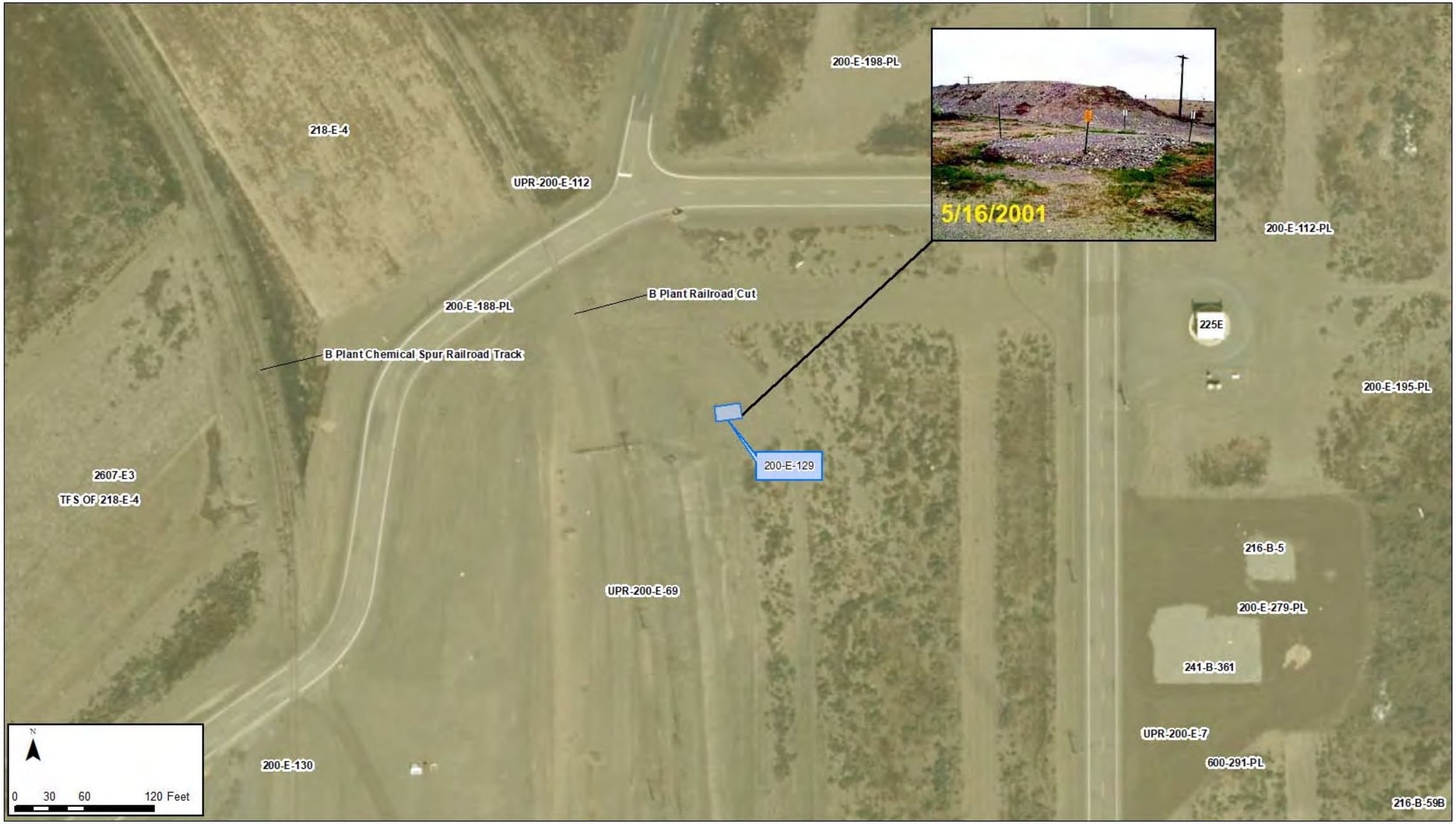
Relevant Characterization

- No records found to establish site conditions prior to posting as an URM, but rad survey beta/ gamma readings in 2002 at 64,500 dpm/100 cm-2
- Radiological surveys completed in 2015 and 2016 had total beta/gamma readings less than 5,000 dpm/100 cm-2

Misc./Other Relevant Information

- This site was previously associated with 200-MG-1 Operable Unit and 200-E-129 was recommended for Removal, Treatment, and Disposal (RTD) (DOE/RL-2008-44, Rev0).

Scoping Summary: 200-E-129 (Unplanned Release)

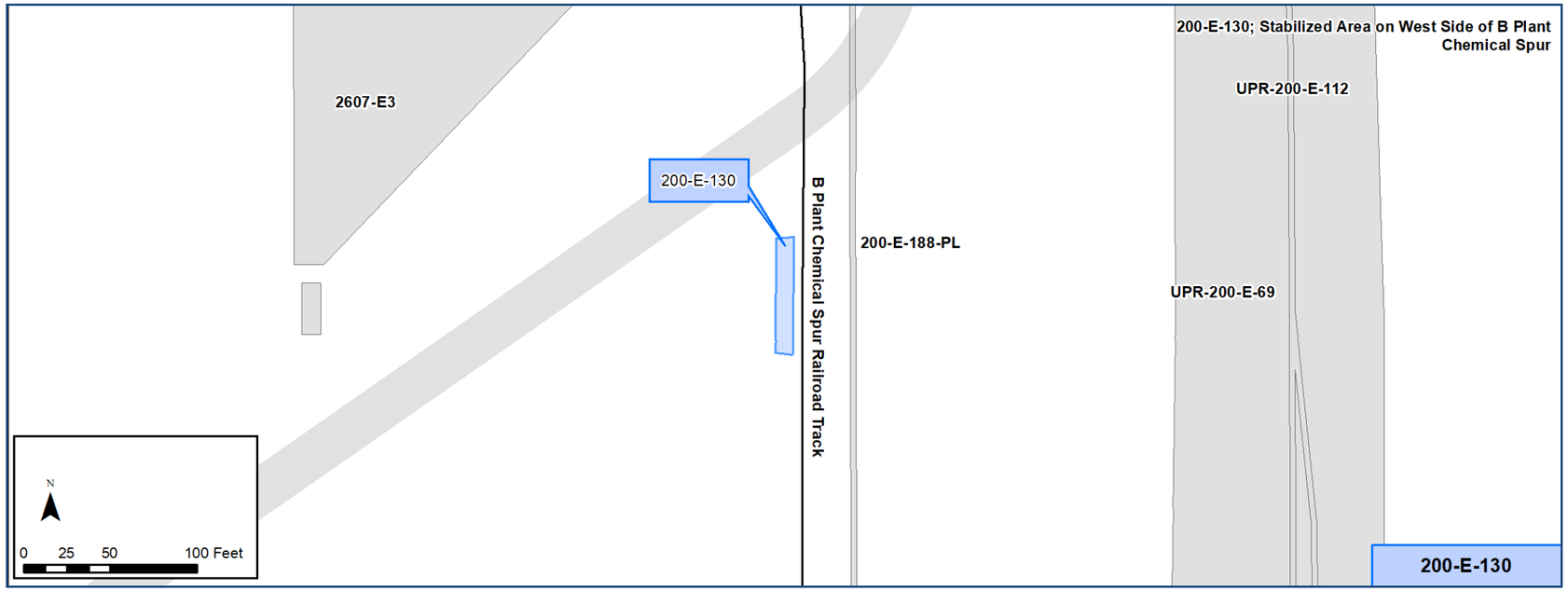


Scoping Summary: 200-E-130 (Unplanned Release)

History

The 200-E-130 waste site is an unplanned release that was originally submitted to WIDS in 2001 as a Discovery site by the Dyncorp Integrated Soil, Animal and Vegetation Control group. The area is posted with URM signs to the west of the B Plant chemical spur railroad track.

No records were located that identify the source of waste prior to the site being posted as a URMA, but there were radiation surveys in 2002 showing contamination levels of 20,000 dpm/100 cm-2. The site has been covered with gravel and rad surveys completed in 2015 and 2016 have beta/gamma readings below background levels.



Construction

- Area originally posted with an approximate size 2 ft x 50 ft (DOE/RL-2008-44 estimated removal area 10 x 65 ft)
- Covering 1-2 ft of gravel

Features Of Interest

No features of interest.

Waste Streams

- Waste stream is unknown.

Site Interfaces

Intersecting/Nearby Sites:

200-IS-1 OU

- 200-E-188-PL
- B Plant chemical spur railroad track

Relevant Characterization

- No records found to determine site conditions prior to it being posted as an URM, but rad survey beta/ gamma readings in 2002 at 20,000 dpm/100 cm-2
- Radiological surveys completed in 2015 and 2016 have total beta/gamma readings less than 5,000 dpm/100cm-2.

Misc./Other Relevant Information

- This site was previously associated with 200-MG-1 operable unit and 200-SW-2 operable unit. Removal, treatment, and disposal for this site was recommended as a part of the 200-MG-1 evaluation (DOE/RL-2008-44, Rev0).

Scoping Summary: 200-E-130 (Unplanned Release)

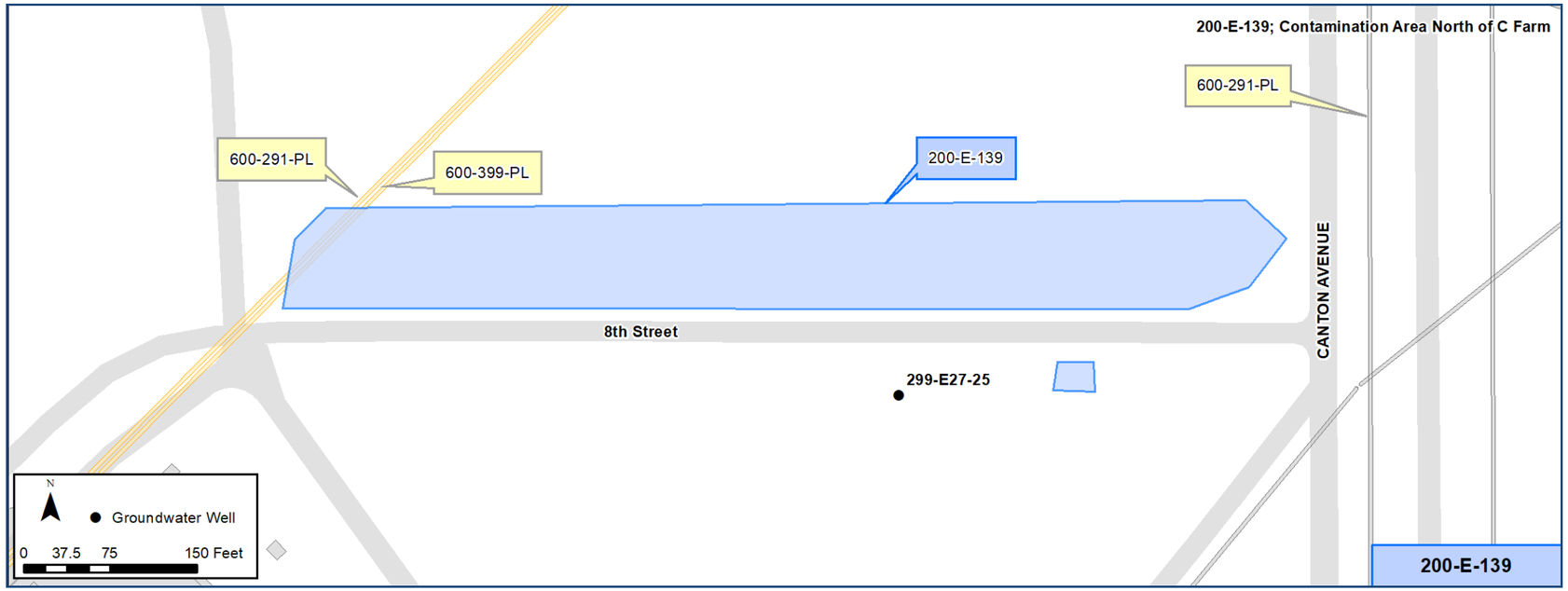
Scoping Summary: 200-E-139 (Unplanned Release)

History

The 200-E-139 waste site consists of two separately posted Underground Radioactive Material Areas (URMAs) located adjacent to 8th Street and Canton Avenue. The larger posted URMA is located on the north side of 8th Street and contains growing vegetation (i.e., Rabbitbrush and tumbleweeds). The smaller posted URMA is on the south side of 8th and has been covered with a bio-barrier and gravel. It is unknown when or why the posting of the waste site occurred; however, a WIDS Site Information Form from December 2001 identified both posted URMAs and their approximate dimensions.

During a routine surveillance in October 2003, contaminated growing tumbleweeds were located outside the posted URMA on the south side of 8th Street. The URMA was increased an additional 10 ft by 15 ft and posted as a Contamination Area (CA) for future clean-up. A one-foot square area on the north side of the road was also identified as contaminated. The contamination was removed and placed in a regulated compactor truck for disposal.

In December 2003, a bio-barrier and gravel were added to the area on the south side of the road, and the area was again down-posted to URMA.



Construction

- North of 8th Street URMA dimensions:
  - Length: 850 ft
  - Width: 100 ft
- South of 8th Street URMA dimensions:
  - Length: 43 ft
  - Width: 40 ft

Features Of Interest

- The north side URMA overlies two active underground pipelines: 600-399-PL and 600-291-PL.
- The bio-barrier and gravel were added to the area on the south side of the road, which is pictured on Page 2.

Relevant Characterization

- 2003: growing contaminated tumbleweeds and ground below on south side of street at 24,000 dpm/100cm2, beta/gamma. The contamination removed from the north side of road measured 18,000 dpm/100cm2 beta/gamma. No alpha contamination detected at either location.
- 2004 rad survey: 4,100 cpm maximum on soil specks on north side of street; no activity on south side.
- 2014 routine radiological survey: no radioactivity above background levels at this waste site.

Waste Streams

- No applicable waste stream information.

Misc./Other Relevant Information

- The waste site was included in the 200-MG-1 OU Engineering Evaluation/Cost Analysis (EE/CA) (DOE/RL-2008-44, Rev0), and the remove/treat/disposal alternative was the preferred alternative, due to the risk of direct exposure pathways for the URMA on the north side of the road.

Site Interfaces

Site Intersects:

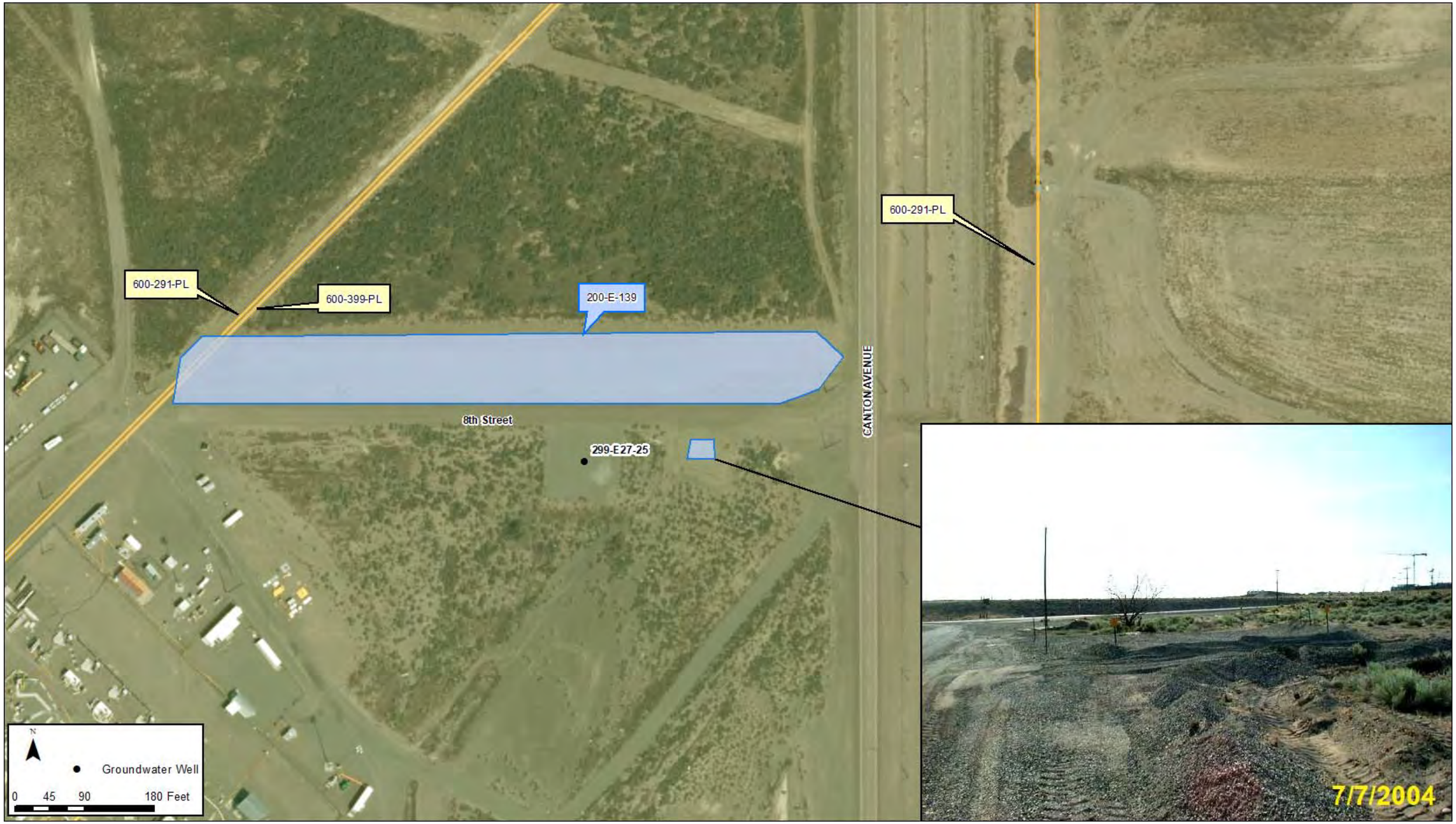
OU Unassigned

- 600-399-PL (Active; Liquid Effluent Treatment Facility Line)
- 600-291-PL (Active; Treated Effluent Disposal Facility Line)

Nearby Landmarks:

- 8th Street
- Canton Avenue

Scoping Summary: 200-E-139 (Unplanned Release)



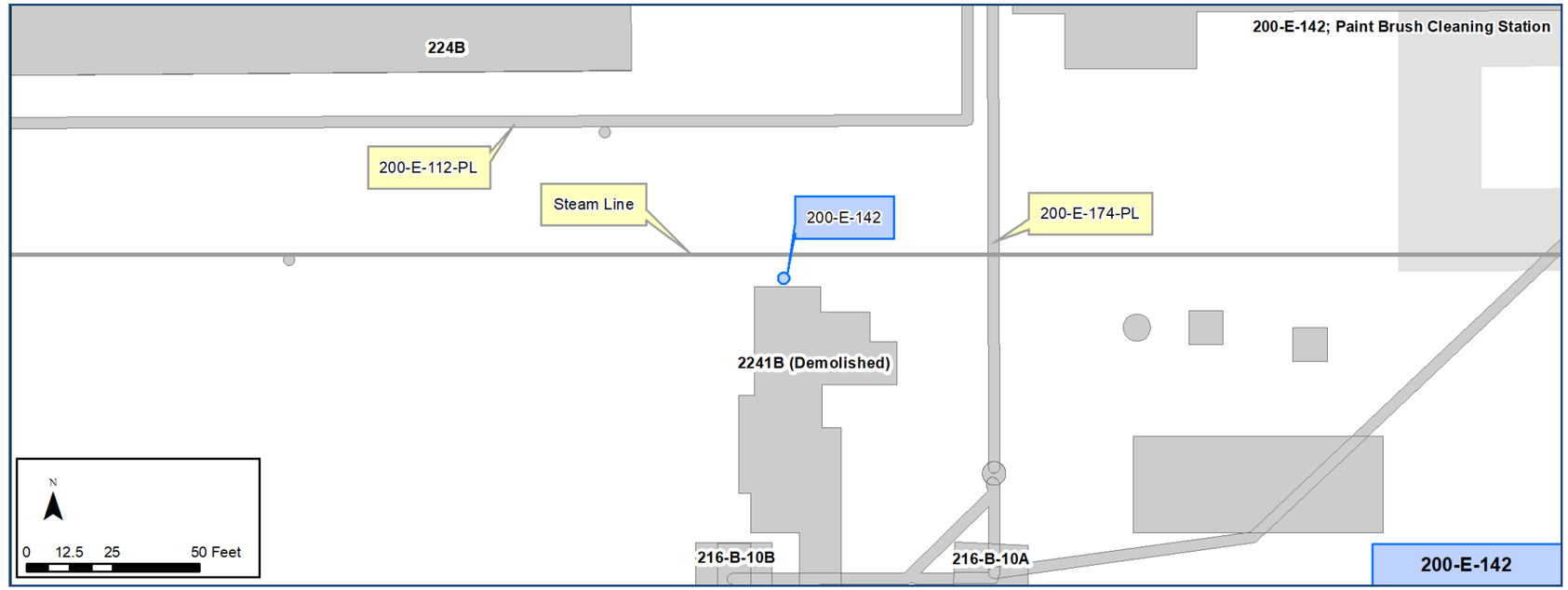
Scoping Summary: 200-E-142 (Depression/Pit)

History

The 200-E-142 waste site is an inactive depression in the ground where overflow waste drained from a paint brush washing station. It is located north of the 2241B building foundation (Labor's Storage), between a concrete pad and an above-ground steam line.

The concrete pad is associated with the 2241B Building and was the location of the washing station. It contained an open-top drum that was used to soak paint brushes. Excess liquid would drain from the drum onto the concrete pad, and into the adjacent soil.

The operational dates of the washing station are unknown, though the 2241B building was demolished in 2004. At this time, the building's foundation and the concrete pad remained.



Construction

- The dimensions of this waste site are unknown.

Features Of Interest

- No features of interest identified.

Waste Streams

- This waste contained chemicals used to clean paint brushes and buckets.

Site Interfaces

Nearby Sites:

200-IS-1 OU
- 200-E-112-PL
- 200-E-174-PL

200-EA-1 OU
- 216-B-10A (crib)
- 216-B-10B (crib)

Facilities
- 224B Building (Concentration Facility)
- 2241B (demolished, Labor's Storage)

Relevant Characterization

- No direct characterization data was located for this waste site.

Misc./Other Relevant Information

- No additional information.

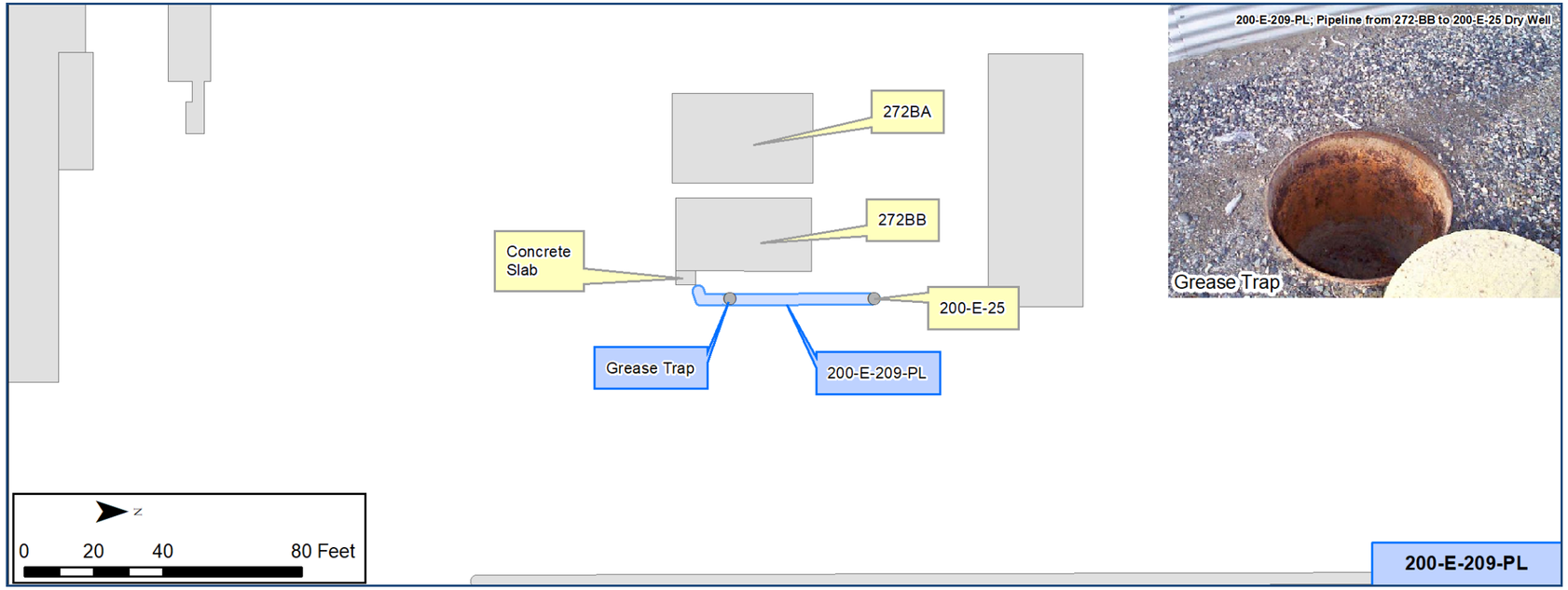
Scoping Summary: 200-E-142 (Depression/Pit)

Scoping Summary: 200-E-209-PL (Pipeline)

History

The 200-E-209-PL waste site is an inactive underground pipeline that was used as a process sewer between the 272BB Insulation Shop and the 200-E-25 French Drain. The pipeline extends from the southeast side of the building and continues northward to the French Drain. Operational start can be correlated to the construction of 272BB in 1971 and ended in 1991 when the drain system in the shop was isolated.

In 1990, percolating water around the French Drain was noted indicating a break in the line or plug in the drain itself. 272BB isolation activities included shutting off the main water supply, removing the sink, and plugging the floor drain with concrete. Installation of a replacement drainage system was proposed but not selected due to regulatory issues.



Construction

- Length: 50 ft
- Diameter:
  - 3 in., building to grease trap (approx. 8 ft)
  - 2 in., grease trap to drain (approx. 42 ft)
- Composition: Carbon steel
- Encasement: None
- Depth: 2 ft at grease trap, 2.5 ft at French Drain
- Cathodic Protection: None
- Volume: Approx. 10 gal

Features Of Interest

- 18 in. diameter, 36 in. tall grease trap with a removable cover exposed at the surface (see figure 1)
- 272BB floor plan shows a 4 ft x 6 ft, 4 in. thick concrete slab near building entrance. GIS data shows the site pipeline going under the slab, though no as-built drawings were located to confirm this (see figure 2).

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil.

Waste Streams

- Drain Wastes and other waste streams
  - Possible flushed materials from 272BB include: asbestos, calcium silicate, fiberglass, silicate, "airball" (insulation cover material), and latex paint
  - Organic chemicals, oils and grease may have been discharged into the French Drain prior to 1988.

Misc./Other Relevant Information

- None located

Site Interfaces

Origins/Termination:

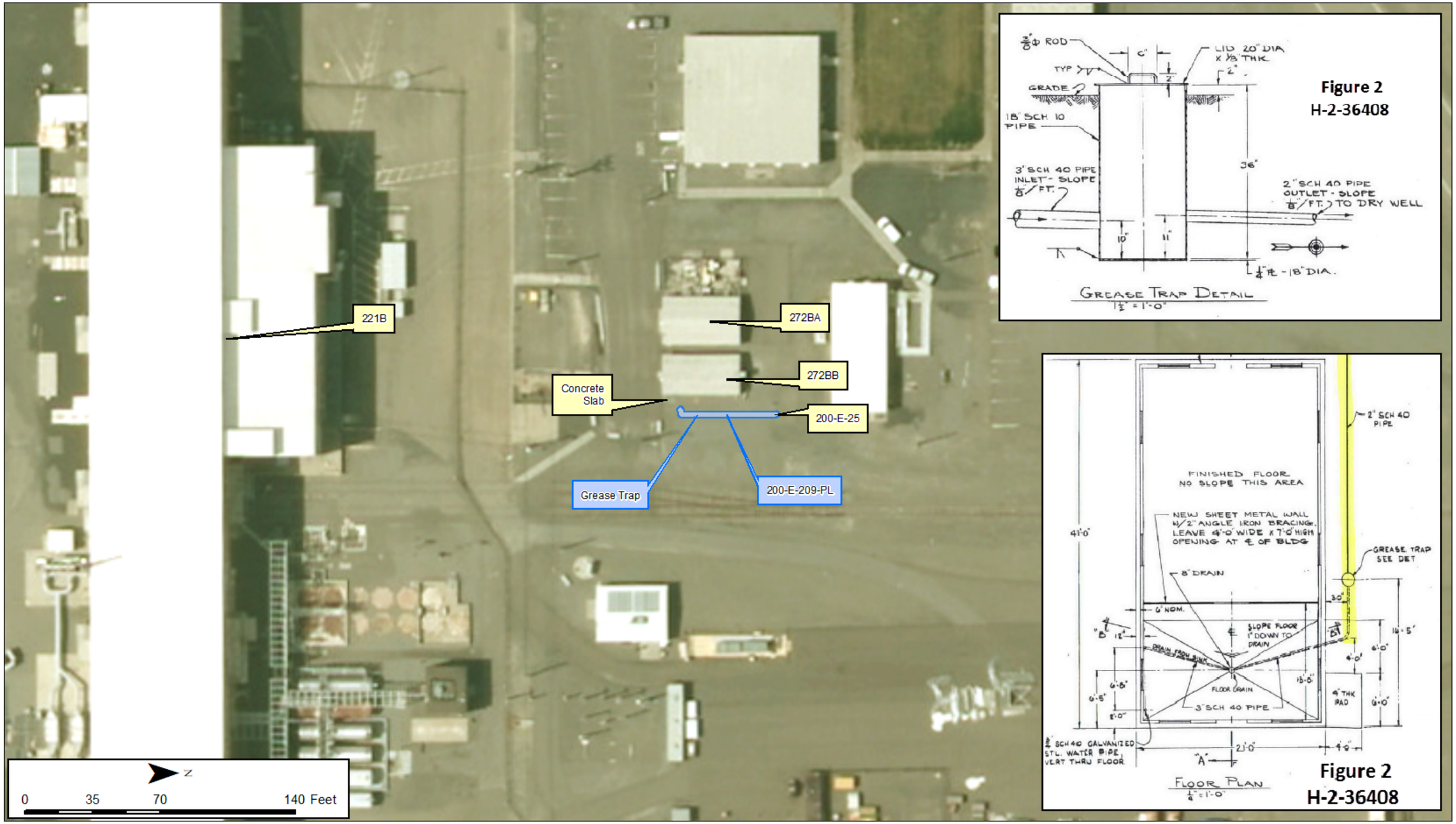
200-EA-1 OU

- 200-E-25 (French Drain)

OU Unassigned

- 272BB (Insulation Shop)

Scoping Summary: 200-E-209-PL (Pipeline)



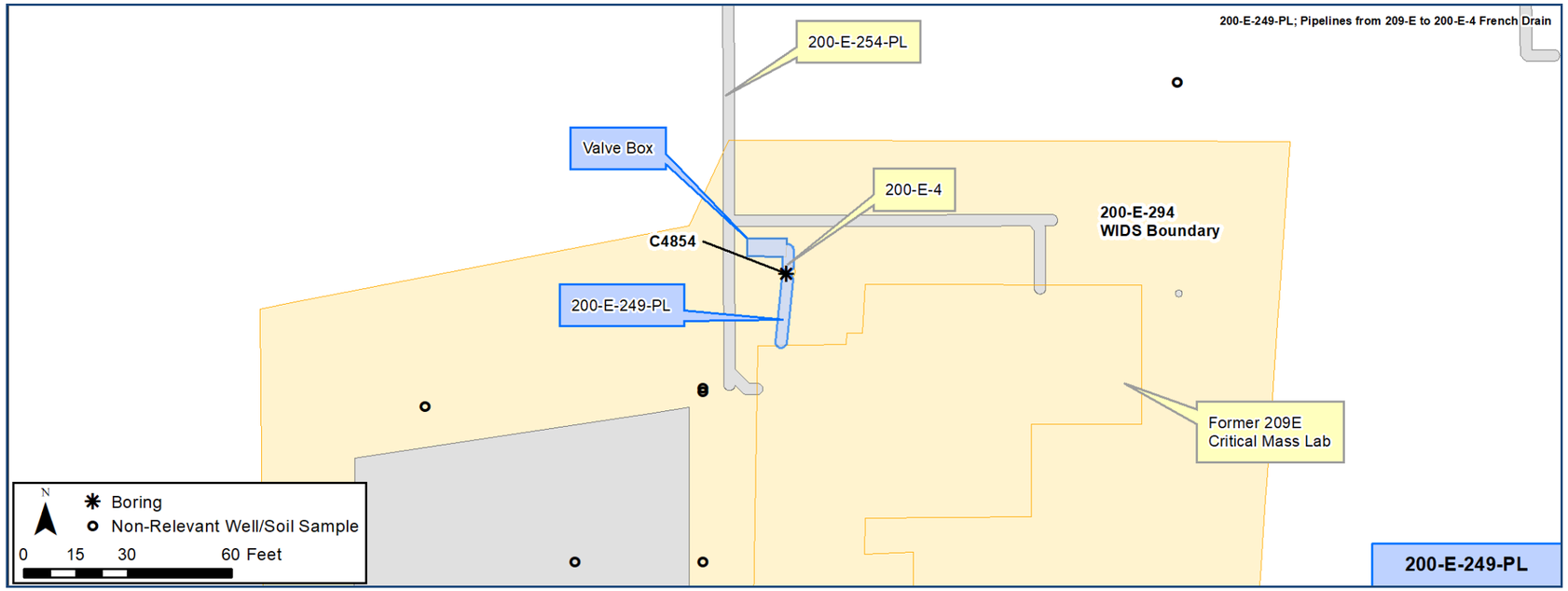
Scoping Summary: 200-E-249-PL (Pipeline)

History

The 200-E-249-PL waste site consists of two inactive underground process sewer lines and valve box that transferred condensate from the former 209E Critical Mass Laboratory to the 200-E-4 French drain. The pipelines were in use between 1960 and 1985, when the 209E facility was deactivated. Research at the laboratory had previously ceased in 1983.

Portions of 209E were used to conduct criticality research with plutonium nitrate and enriched uranium solutions. However, 200-E-249-PL originated in the facility's Equipment Room, which was not used for radioactive experimentation. The second line originated from the steam trap of an associated valve box that carried fluids to and from the Equipment Room.

Isolation of 200-E-249-PL occurred in 2011, when the 209E facility was demolished. Equipment was removed and piping was cut and capped. The floor slab of 209E, along with slabs of other facilities in the vicinity were covered with gravel (*See 200-E-294 shading, on images*).



Construction

Pipeline:

- Length
  - 200-E-249-PL:1 : 18.1 ft
  - 200-E-249-PL:2 : 5.9 ft
- Diameter:
  - 200-E-249-PL:1 : 1.5 in.
  - 200-E-249-PL:2 : 0.75 in.
- Composition: Carbon Steel
- Gravity flow line
- Direct Buried
- Depth: 4 ft to 6.5 ft bags
- Total Calculated Volume: 1.8 gal
  - 200-E-249-PL:1 : 1.66 gal
  - 200-E-249-PL:2 : 0.14 gal

Valve Box:

- 5 ft x 8 ft x 8 ft
- 3 - Valves
- 1 - 3/4 in. Drain

*Engineering drawings of the valve box are shown on page 3

Features Of Interest

- One elbow (200-E-249-PL:2)

Relevant Characterization

200-E-4 soil samples from 2005 boring C4854, as depicted in 200-E-4's Scoping Summary, from 7-to-11 ft bgs:

- Three metals, Cd (1,080 ug/kg), Cu (4,080,000 ug/kg), Pb (25,400 ug/kg), and a second hit of Cu (621,000), were detected at 5x above human health or ecological risk thresholds.
- Two radionuclides, Am-241 (0.19 pCi/g) and Sr-90 (0.39 pCi/g), were detected above groundwater thresholds, only.

Waste Streams

209E Critical Mass Laboratory

- Condensate and drainages from the equipment room steam traps, heat exchangers, and HEPA filters
- Connected valve box condensate fluid.

Misc./Other Relevant Information

- Upon completion of demolition and load-out of debris, the floor slab of the 209E facility was covered with a minimum of 15 cm (6 in.) clean fill and designated as an URMA.
- Details of the remaining valve box and what was removed a part of the 209E Removal efforts is unclear, but reports suggest that the surface features were removed and the subgrade structure remains.

Site Interfaces

Origin/Termination

OU Unassigned

- Valve box serving 209E equipment room

200-EA-1 OU

- 200-E-4 (French Drain)

Facility

- 209E Critical Mass Lab (Demolished in 2011)

Nearby/Intersecting Sites

200-IS-1 OU

- 200-E-254-PL

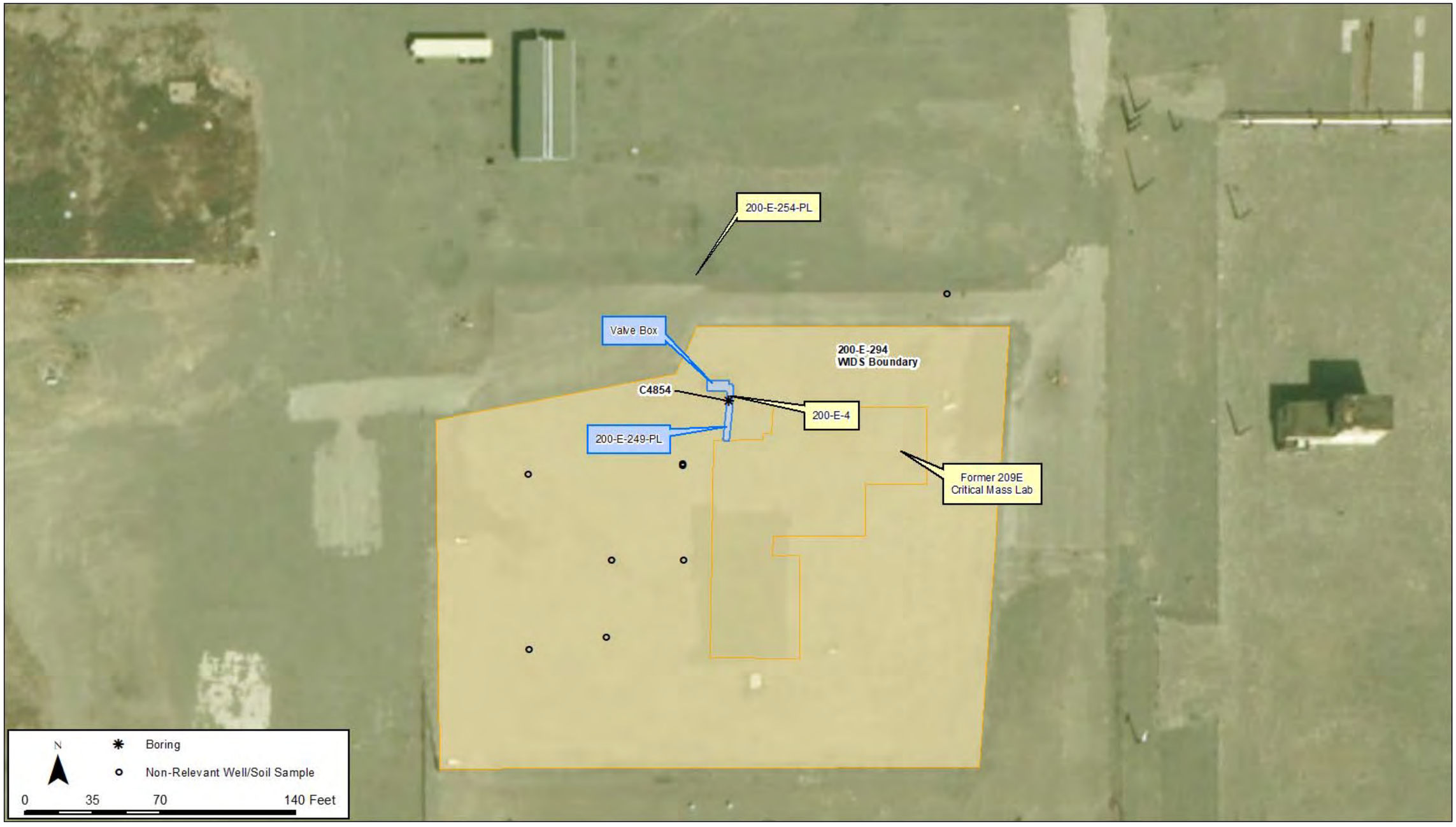
200-EA-1 OU

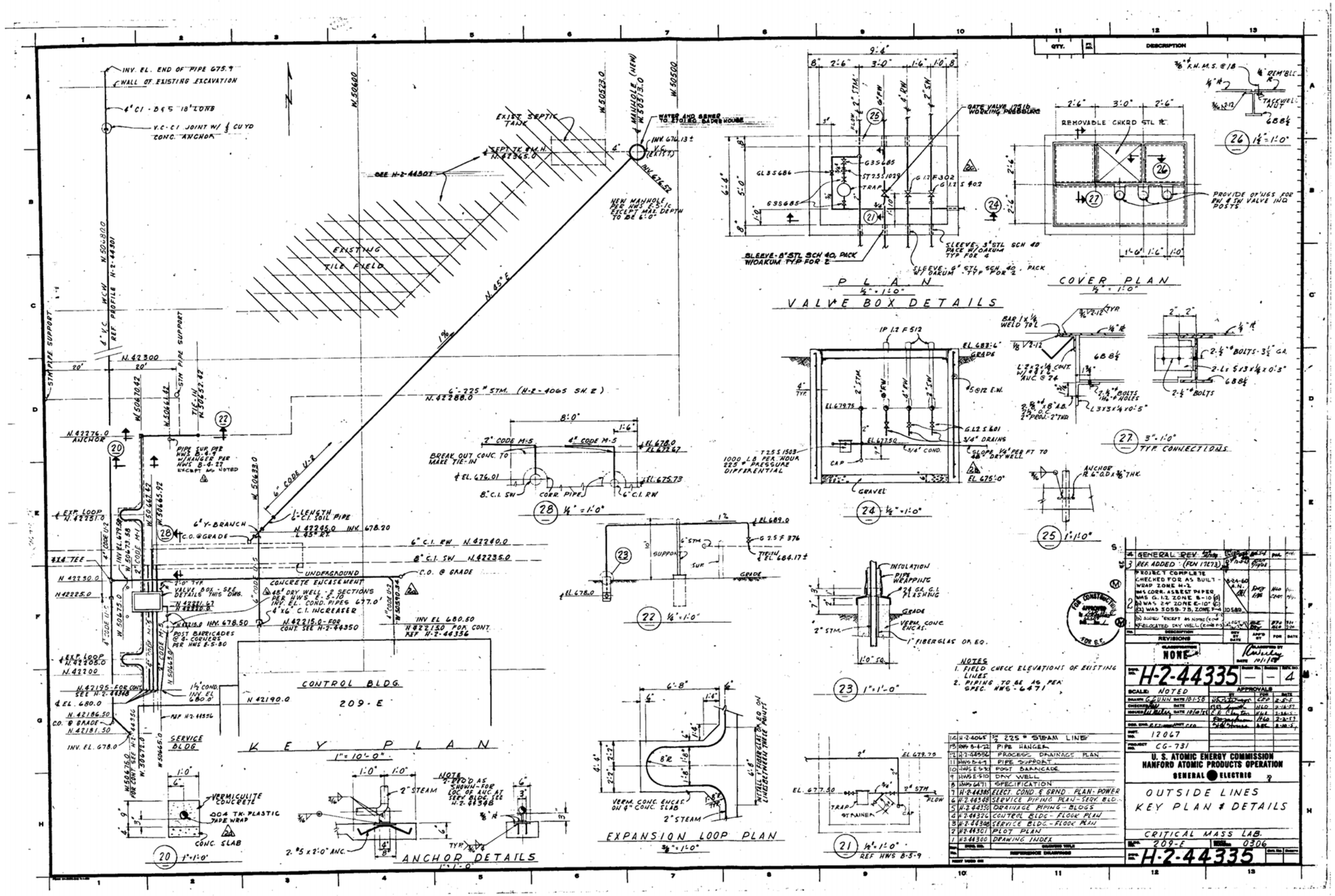
- 200-E-294 (stabilized gravel area WIDS boundary)

Rejected from WIDS

- 200-E-35 Storage Pad
- 209-E-WS-1 French Drain

Scoping Summary: 200-E-249-PL (Pipeline)




KEY PLAN
1" = 10'-0"
CONTROL BLDG.
209-E
SERVICE BLDG
EXISTING TILE FIELD
EXIST SEPTIC TANK
PLAN
VALVE BOX DETAILS
COVER PLAN
EXPANSION LOOP PLAN
ANCHOR DETAILS
OUTSIDE LINES
KEY PLAN & DETAILS
CRITICAL MASS LAB.
209-E
H-2-44335
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
NOTES
1. FIELD CHECK ELEVATIONS OF EXISTING LINES
2. PIPING TO BE AS PER SPEC. HWS-6471

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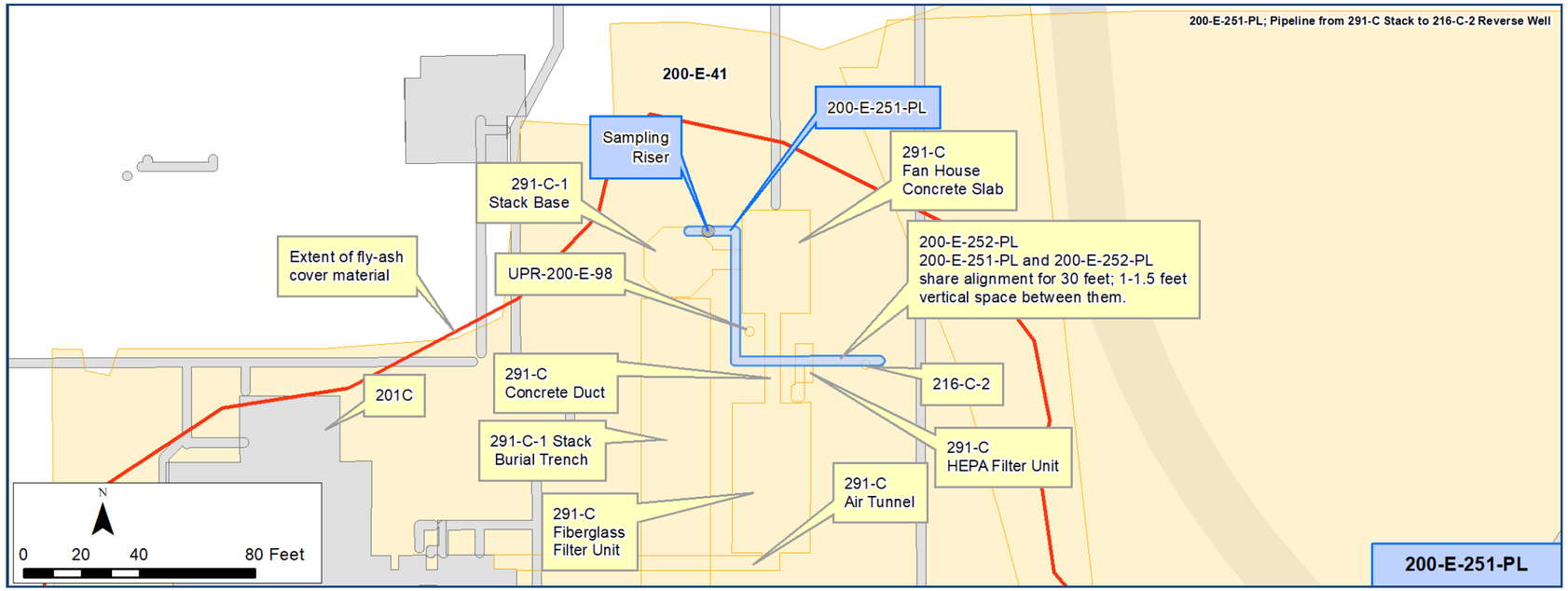
Scoping Summary: 200-E-251-PL (Pipeline)

History

The 200-E-251-PL waste site was an inactive underground pipeline used to carry condensate from the 291-C-1 stack to the 216-C-2 reverse well as part of the 291-C ventilation system. The pipeline was operational from 1949 to 1987 and was demolished in 1988 when the 291-C ventilation system was decommissioned. Its remnants are buried with the demolished stack in the 291-C-1 burial trench south of the stack's base.

The 291-C system also included an air tunnel from 201C (Hot Semiworks) facility cells, fiberglass filters, HEPA filters, fan house (291-C) and the 291-C-1 stack. All of the 291C complex components were removed and/or filled with grout and left in place and the 216-C-2 well was sealed with concrete. The stack burial trench is not marked and cannot be distinguished from the rest of the surface stabilized area. In 1992 the Hot Semi-works area was subsequently covered with 3 ft of fly ash barrier and is posted as an Underground Radioactive Material Area (200-E-41).



Construction

- Length: 111 ft
- Diameter: 4 in.
- Composition: Saran-lined steel
- Gravity drained
- Direct buried
- Depth: 11 ft - 14 ft bgs (including ~3 ft fly-ash cap covering)
- Total Calculated Volume: 73 gal

Features Of Interest

- Two rolled down elbows
- One flange to short section of stainless steel before entering 216-C-2 reverse well
- One sampling riser
  - Consists of two flanged tees, a blind flange, and a length of 4-in diameter pipe to grade, ending in a removable blind flange

Waste Streams

- Condensate from 291-C-1 Stack
- Associated 201-C waste streams includes:
  - PUREX
  - REDOX
  - Strontium Recovery
  - Cerium, technetium, and promethium as well as minor amounts of americium and curium were also extracted
- Low salt, neutral to basic

Site Interfaces

Origin/Termination

200-EA-1 OU
- 291-C-1
- 216-C-2

Intersecting/Nearby Sites

200-IS-1 OU
- 200-E-252-PL

200-EA-1 OU
- 200-E-41 (stabilized area)
- 291-C (Exhaust Fan House and Stack)
- 201C (Hot Semiworks)
- UPR-200-E-98

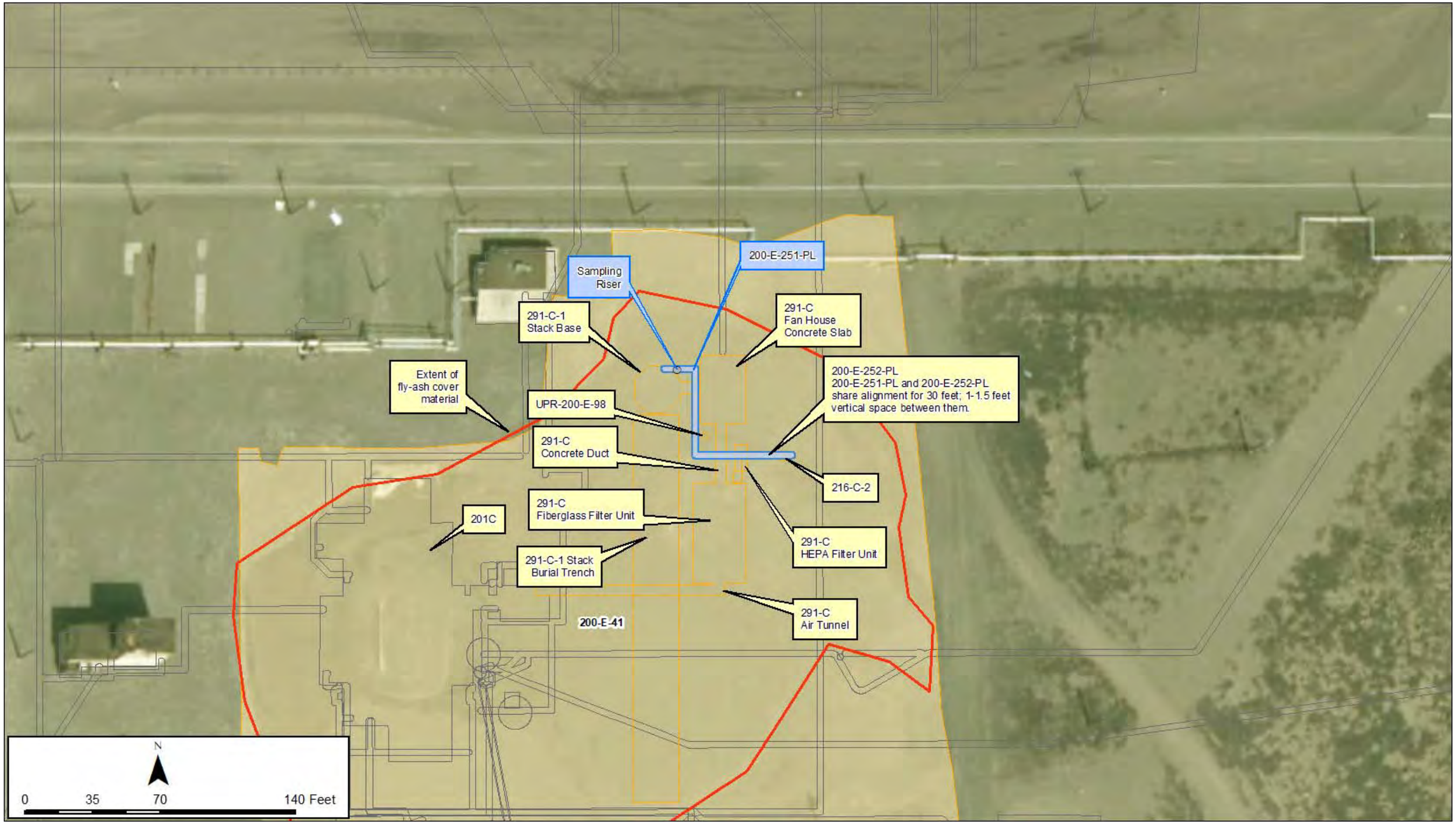
Relevant Characterization

- No direct characterization data was located for the site or adjacent soil
- Characterization data of related structures include:
  - Sediment sample from the reverse well (see Scoping Summary 216-C-2)
  - 1985 Gamma Energy Analysis detector readings from inside the stack (see Scoping Summary: 291-C-1)

Misc./Other Relevant Information

- UPR-200-E-98 is an unplanned release associated with the 291-C-1 stack that occurred near the base of the stack and the 216-C-2 reverse well. Some contamination was removed, but it is unclear if residual contamination remains

Scoping Summary: 200-E-251-PL (Pipeline)



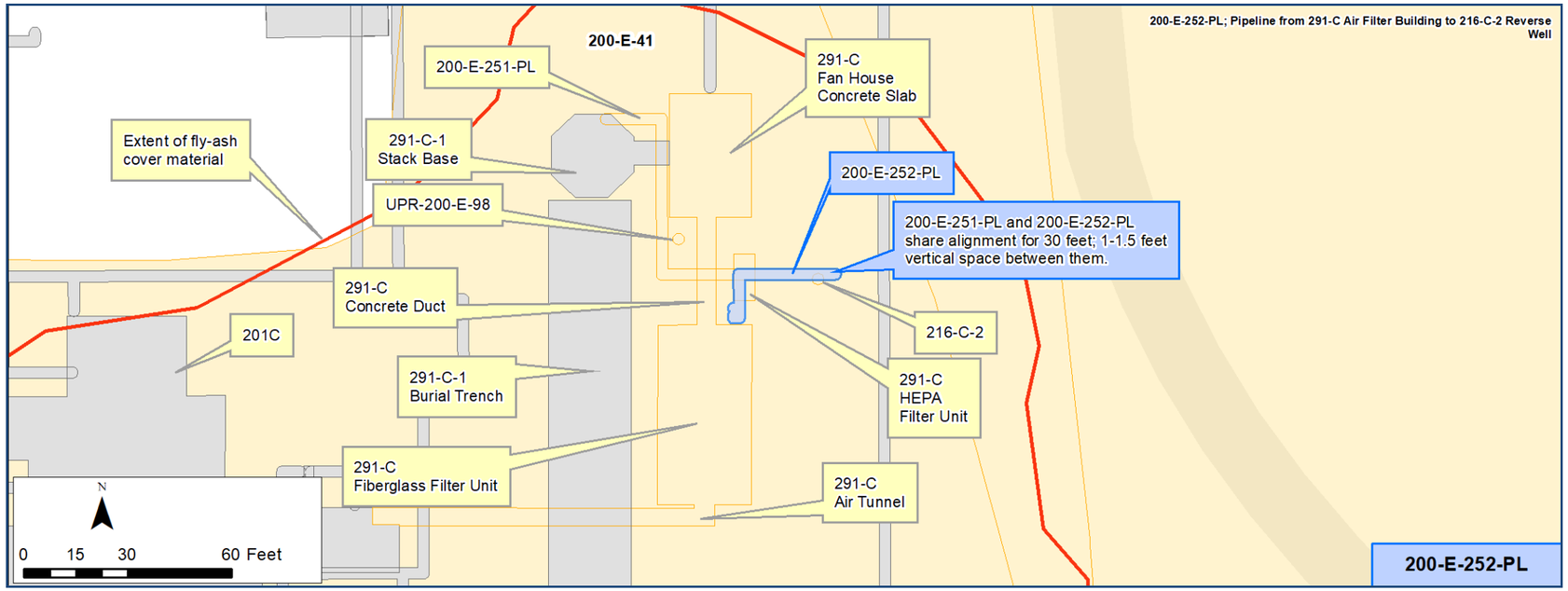
Scoping Summary: 200-E-252-PL (Pipeline)

History

The 200-E-252-PL waste site is an inactive underground collection of pipelines consisting of one main line and three duct lines that drained condensate from the 291-C ventilation system to the 216-C-2 reverse well. The pipelines operated from 1949 until 1988, when 291-C was decommissioned.

The 291-C system provided exhaust air ventilation for the 201-C Hot Semi-works facility and included an air tunnel from the facility cells, fiberglass filters, HEPA filters, fan house (291-C) and the 291-C-1 stack. All of the 291-C complex components were removed and/or filled with grout and left in place and the 216-C-2 well was sealed with concrete. 200-E-252-PL was effectively isolated by being sealed at both ends.

In 1992 the Hot Semi-works area was subsequently covered with 3 ft of fly ash barrier and is posted as an Underground Radioactive Material Area (200-E-41).



Construction

- Length: ~45 ft
  - Three duct lines: 1.5 ft each
  - One main line: 40 ft
- Diameter: 2 in.
- Composition: Cast Iron
- Gravity drained
- Direct buried
- Depth: 15 ft bgs (including 3-ft fly ash cap)
- Total Calculated Volume: 8 gal

Features Of Interest

- Two shut off valves
- Two tees
- Two elbows
- One screwed fitting that connects the downstream end of the pipeline to a short 2 in. diameter stainless steel pipe entering the 216-C-2 Reverse Well
- One 4 in. diameter trap - see figure 1
  Two 4 in. by 2 in. reducers
  Four 4 in. elbows

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil
- Characterization data of related structures include:
  - Sediment sample from the reverse well (see Scoping Summary 216-C-2)

Waste Streams

- 291-C seal water
- Associated 201-C waste streams includes:
  - PUREX
  - REDOX
  - Strontium Recovery
  - Cerium, technetium, and promethium as well as minor amounts of americium and curium were also extracted
- Low-salt and neutral basic

Misc./Other Relevant Information

- UPR-200-E-98 is an unplanned release associated with the 291-C-1 stack that occurred near the base of the stack and the 216-C-2 reverse well. Some contamination was removed, but it is unclear if residual contamination remains

Site Interfaces

Origin/Termination

200-EA-1

- 291-C (filter/fan house)
- 216-C-2

Nearby/Intersecting Sites

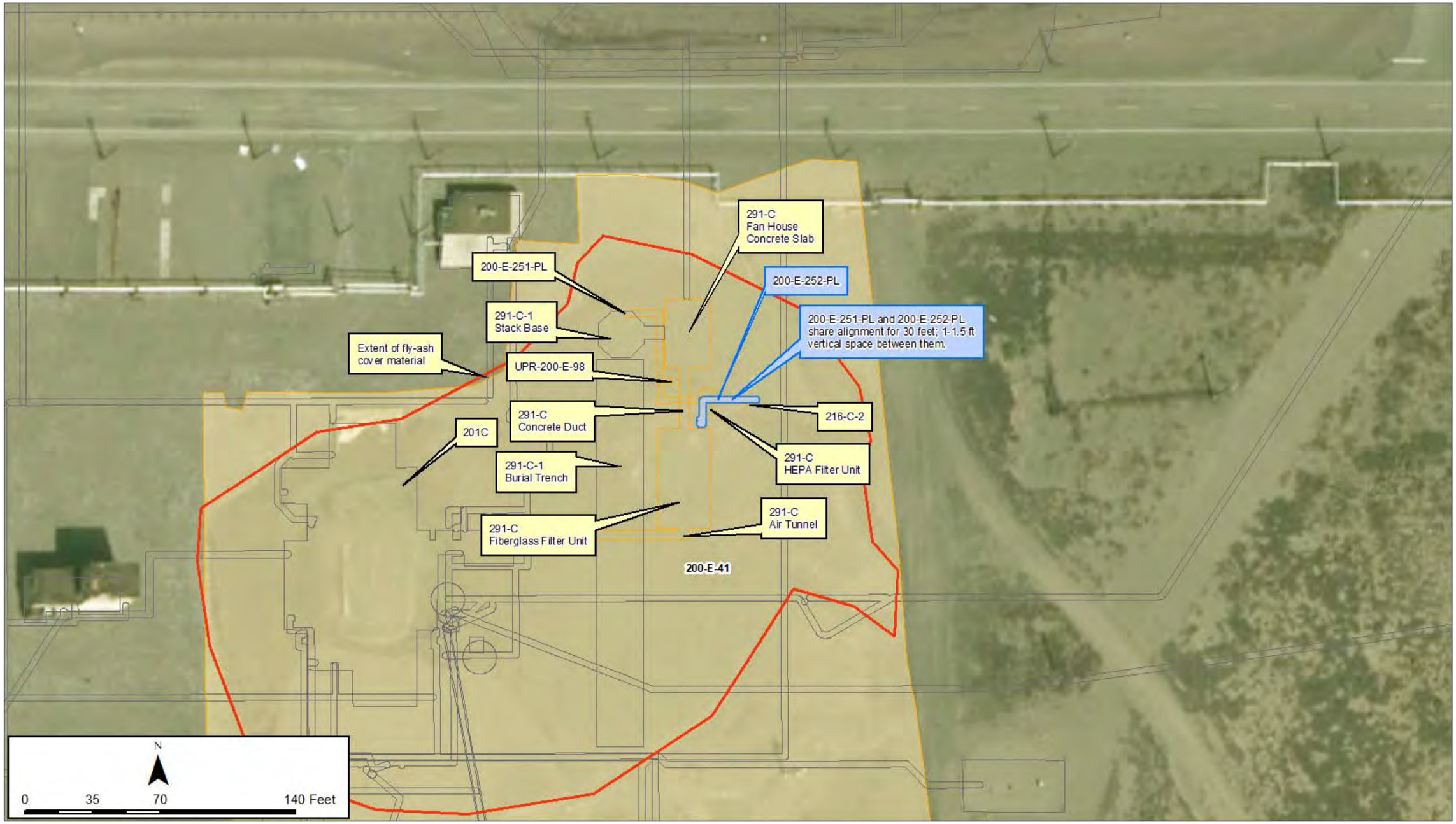
200-IS-1 OU

- 200-E-251-PL

200-EA-1 OU

- 200-E-41 (stabilized area)
- UPR-200-E-98

Scoping Summary: 200-E-252-PL (Pipeline)



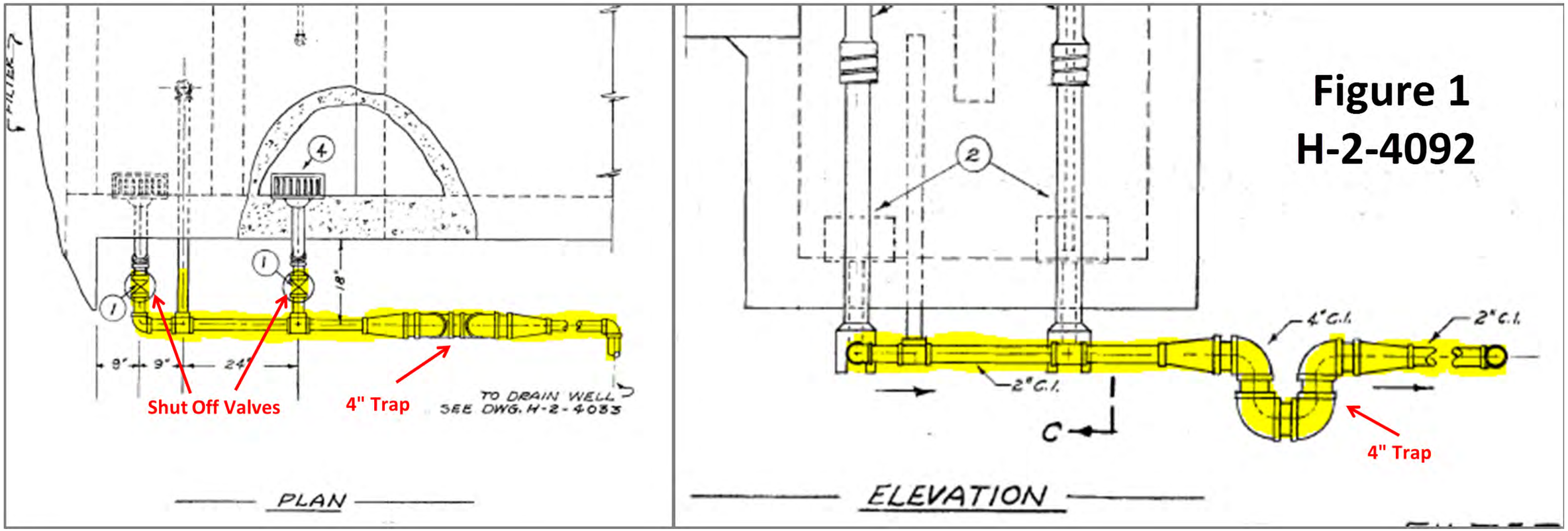


Figure 1
H-2-4092
FILTER
4
1
1
18"
9"
9"
24"
Shut Off Valves
4" Trap
TO DRAIN WELL
SEE DWG. H-2-4033
PLAN
2
4" C.I.
2" C.I.
2" C.I.
C
4" Trap
ELEVATION

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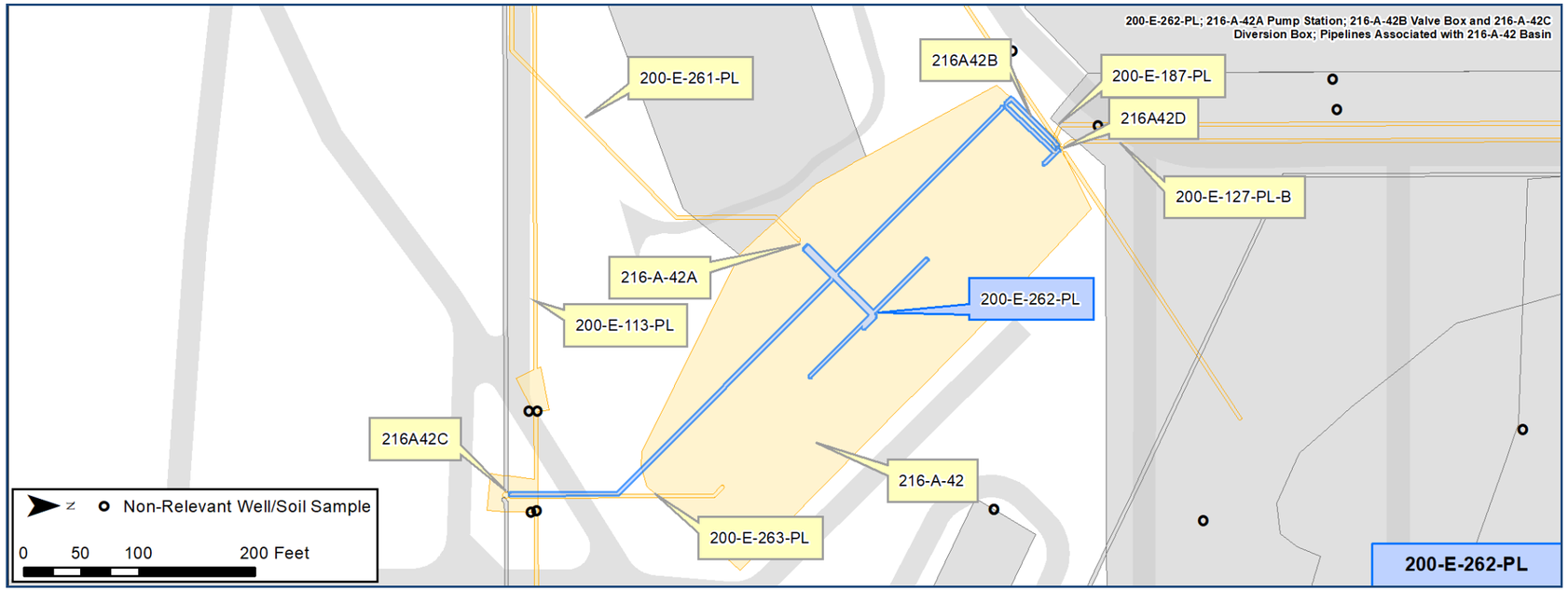
Scoping Summary: 200-E-262-PL (Pipeline)

History

The 200-E-262-PL waste site is an inactive underground pipeline constructed in 1977 to distribute effluent amongst the 216-A-42 holding cells and transfer effluent out of the 216-A-42 Retention Basin.

In addition to the underground lines, this waste site includes the 216A42A Pump Station, 216A42B Valve Box, 216A42C Valve Box, and the 216A42D Diversion Box.

In April 1997, the lines were isolated and the pump station sealed. In July 2001, the fence surrounding the basin was removed and the area was leveled and backfilled with clean dirt. It was posted with Underground Radioactive Material (URM) signs. The pump station, valve box, and diversion box were also filled with clean dirt and reported as URMs.



Construction

- Length: 1,166 ft
- Diameter: 4 in. (West and East lines) 3 in. (Central lines)
- Composition: Cast Iron (sections are Carbon Steel)
- Direct Buried
- Flow: Pressurized
- Depth: 9 ft (at 216-A-42A valve box), basin has been leveled and may exceed 20 feet (depth of former basin)
- Calculated Volume: 648 gal

- The West line connects the 216A42A Pump Station to the 216A42B and 216A42D Valve Boxes and 200-E-127-PL-B for discharge to Gable and B Ponds.
- Three center lines connect the 216A42A Pump Station to the three separate cells within the 216-A-42 Retention Basin.
- The 216A42A Pump Station connects to 200-E-261-PL for transfer of effluent out of the basin back to PUREX for reprocessing.
- The East line connects the 216A42A Pump Station to the 216A42C Diversion Box and 200-E-113-PL, where effluent above discharge limits in 200-E-113-PL was diverted into the 216A42 Retention Basin via the 200-E-262-PL.

Features Of Interest

West Pipeline

- Transitions (6), Material transitions from Carbon Steel to Cast Iron
- Bends (2), Direction change of pipeline
- Connection (1), Connection to 36 in. diameter chemical sewer line

Center Pipelines (3)

- Bends (9), Direction changes of pipeline segments

East Pipeline

- Transitions (2), Material transitions from Carbon Steel to Cast Iron
- Bends (2), Direction change of pipeline
- Reducer (1), 4 in. to 3 in. diameter reducer.

Relevant Characterization

- UPR-200-E-66 (Nov-7-1984): a radiation survey identified contamination both inside and outside of the area posted as a radiation zone around the perimeter of the 216-A-42 retention basin. At the time of this release, contamination levels were 40,000 cpm on the ground within the retention basin fence. Smears of the wall and bottom of the basin ranged from 200 to 100,000 cpm. The area outside the retention basin fence revealed specks with a maximum level of 3,000 cpm located between the road and the fence.

Waste Streams

- Chemically- or radioactively-contaminated diversions from the PUREX chemical sewer line, cooling water line, and steam condensate lines.
- Based on data from the Gable Mountain Pond, this system is likely to include the following isotopes: Sr-90, Tc-99, Cs-135, Cs-137, and Eu-154.

Misc./Other Relevant Information

- The 200-E-262-PL pipeline lies almost entirely within the 216-A-42 retention basin's footprint, which has been backfilled.

Site Interfaces

Origin/Termination

200-EA-1 OU

- 216-A-42 (Retention Basin)

200-IS-1 OU

- 200-E-113-PL
- 200-E-127-PL-B

Site Intersects

200-IS-1 OU

- 200-E-187-PL
- 200-E-261-PL
- 200-E-263-PL

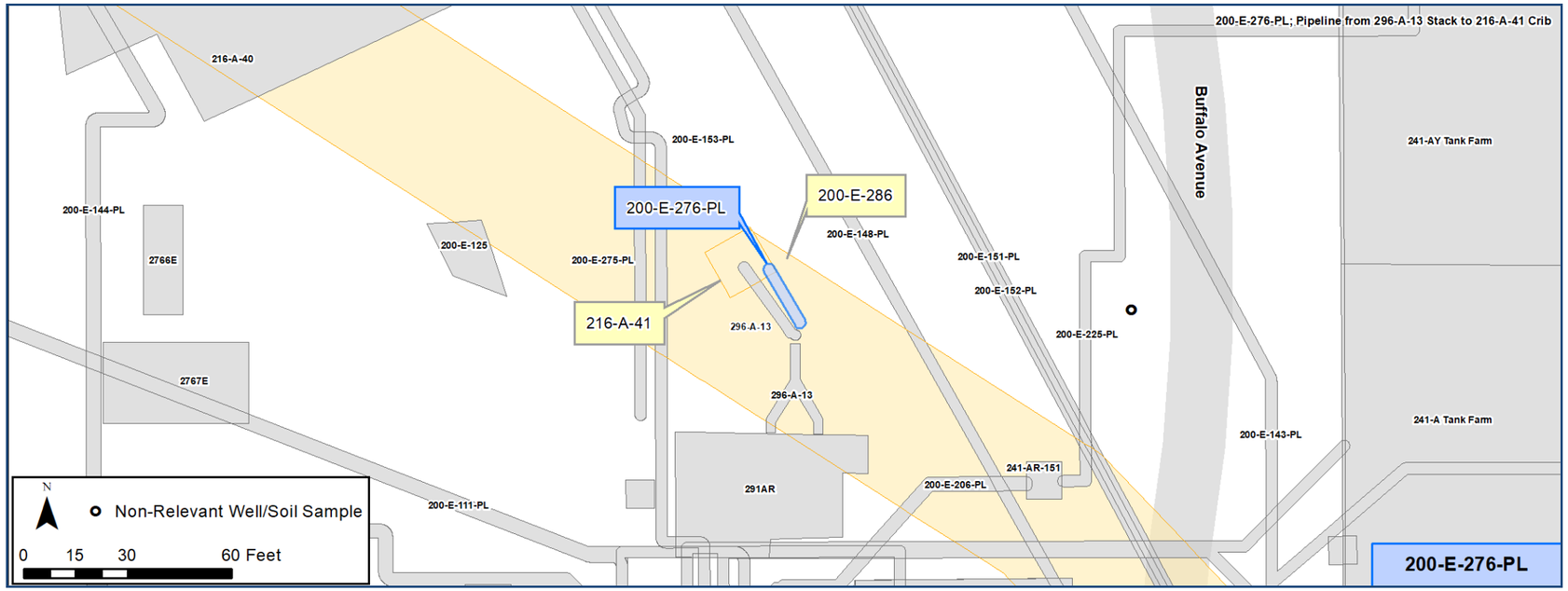
Scoping Summary: 200-E-262-PL (Pipeline)

Scoping Summary: 200-E-276-PL (Pipeline)

History

The 200-E-276-PL waste site is an inactive drain pipeline that carried effluent from the 296-A-13 Stack to the 216-A-41 Crib. The drain pipeline and crib are located west of the 241-A Tank Farm. The drain line operated from 1968 to 1974, when the crib was deactivated.

The stack drainage to the crib piping was removed and drainage was re-routed to the vessel vent seal pot system of the 244-AR Building. In 1997 the stack was taken out of service and filled with grout.



Construction

- Length: 17 ft
- Diameter: 4 in.
- Composition: VCP (extra-strength)
- Direct Buried
- Encasement: None
- Depth: 4 ft bgs
- Calculated Volume: 11 gal

Features Of Interest

- None identified

Relevant Characterization

- No direct characterization data has been located for the pipeline or adjacent soil

Waste Streams

- Drain Wastes & Cooling Water
  - PUREX Stack Drain Wastes
  - 296-A-13 Stack steam condensate
- 216-A-41
  - Slightly acidic and contained less than 1 curie total beta activity (RHO-CD-673)
  - 2,600 gal of drainage waste discharged to 216-A-41
  - Potential contaminants of concern may be Tritium, Cobalt-60, Strontium-90, and Cesium-137 (Stenner)

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

OU Not Assigned

- 296-A-13 Stack (building)

200-EA-1 OU

- 216-A-41

Nearby/Intersecting Sites

- 200-E-286 (rejected)

Scoping Summary: 200-E-276-PL (Pipeline)

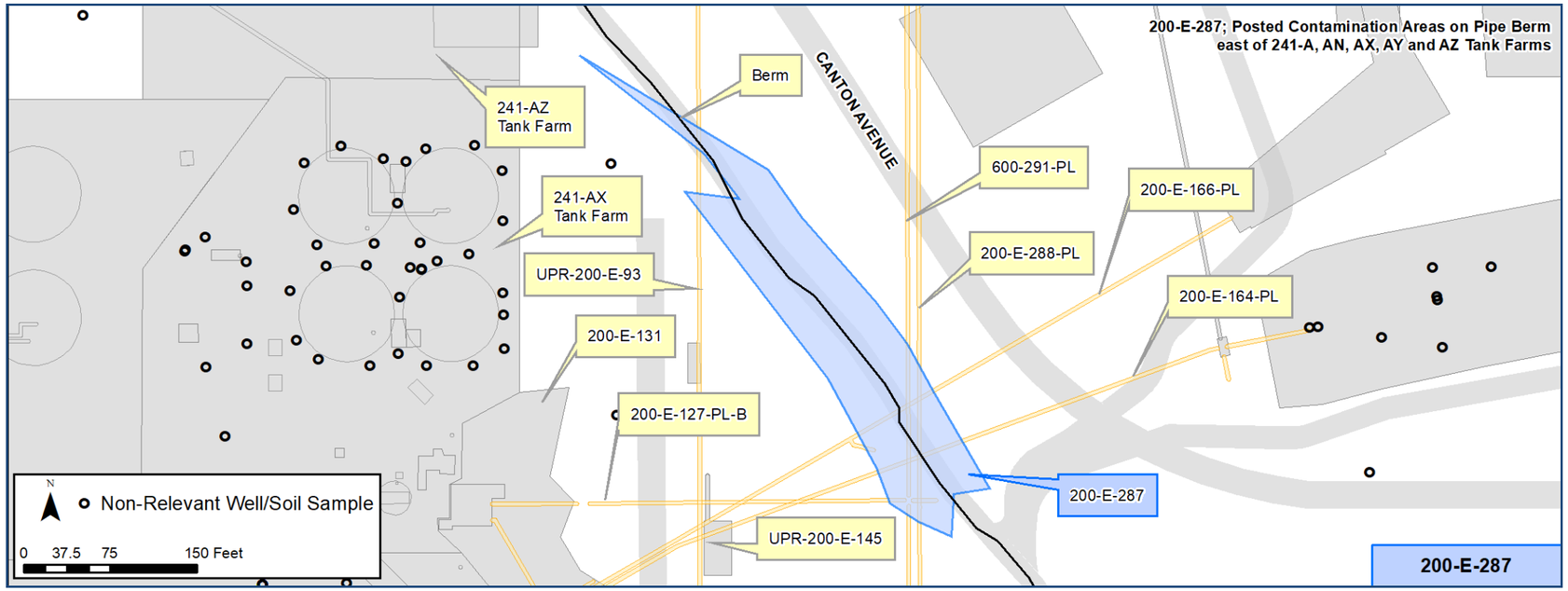
Scoping Summary: 200-E-287 (Contamination Migration)

History

The 200-E-287 waste site is a posted soil contamination area (CA) on a gravel berm. The berm is located on the east side of the 241A tank farm complex; the posted contamination area is located on the portion of the berm east of the 241AX Farm and west of Canton Avenue.

A problem evaluation request (PER) from 2007 describes 30+ contaminated tumbleweed pieces on the east side of the berm, apparently wind blown and trapped on the side of the berm. Similarly, a Fluor Hanford employee reported several contaminated tumbleweed fragments, found between the berm and the tank farm. Both events resulted in expansions of the CA posting on the berm. According to available documentation, the contaminated tumbleweeds appear to be the source of the contamination in this CA.

A field report from 2010 stated that no vegetation growth was visible; it did not discuss the presence of windblown vegetation.



Construction

- No construction data could be located regarding the dimensions of the gravel berm running through the center of this waste site.
- The waste site boundaries are irregular; the site is approximately 60 ft wide and 500 ft long. The boundaries are likely approximate, given the history of expanding the CA postings when new contaminated tumbleweed fragments were identified.

Features Of Interest

- No features of interest were identified.

Relevant Characterization

- A radiological survey from November 2011 returned only background levels of radiation on the east side of the berm (RSIR No. BOS-11-1678).
- No characterization data for the west side of the berm was found.

Waste Streams

- Contamination is believed to have come from windblown tumbleweed fragments.

Misc./Other Relevant Information

- No additional information.

Site Interfaces

Nearby/Intersecting Sites:

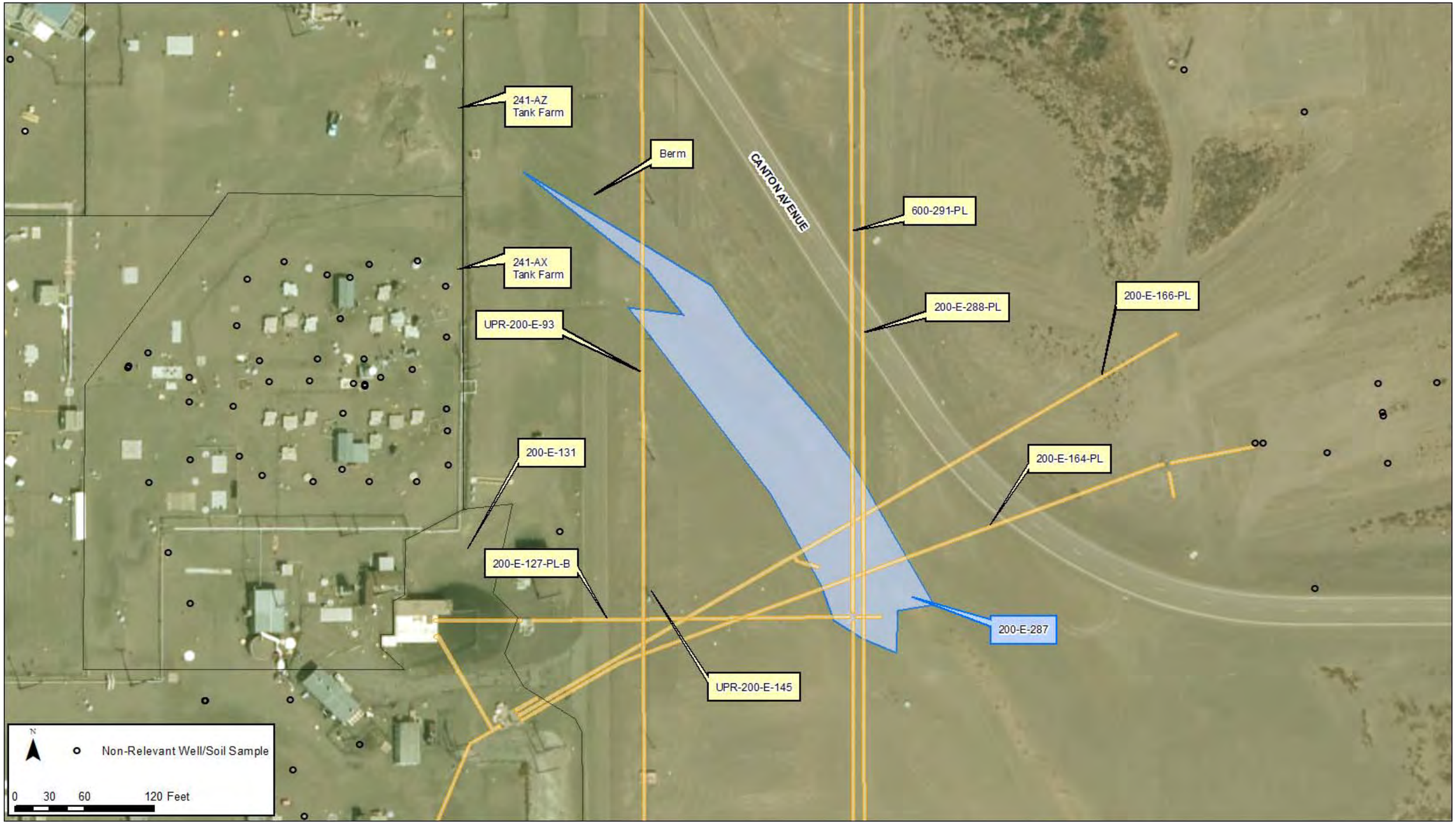
200-IS-1 OU
- 200-E-164-PL
- 200-E-166-PL
- 200-E-127-PL-B
- UPR-200-E-145

OU Unassigned
- 600-291-PL
- 200-E-288-PL
- UPR-200-E-93

WMA A/AX
- 200-E-131 (contaminated soil associated with 241-A Tank Farm Complex)

Facilities
- 241AX
- 241AZ

Scoping Summary: 200-E-287 (Contamination Migration)

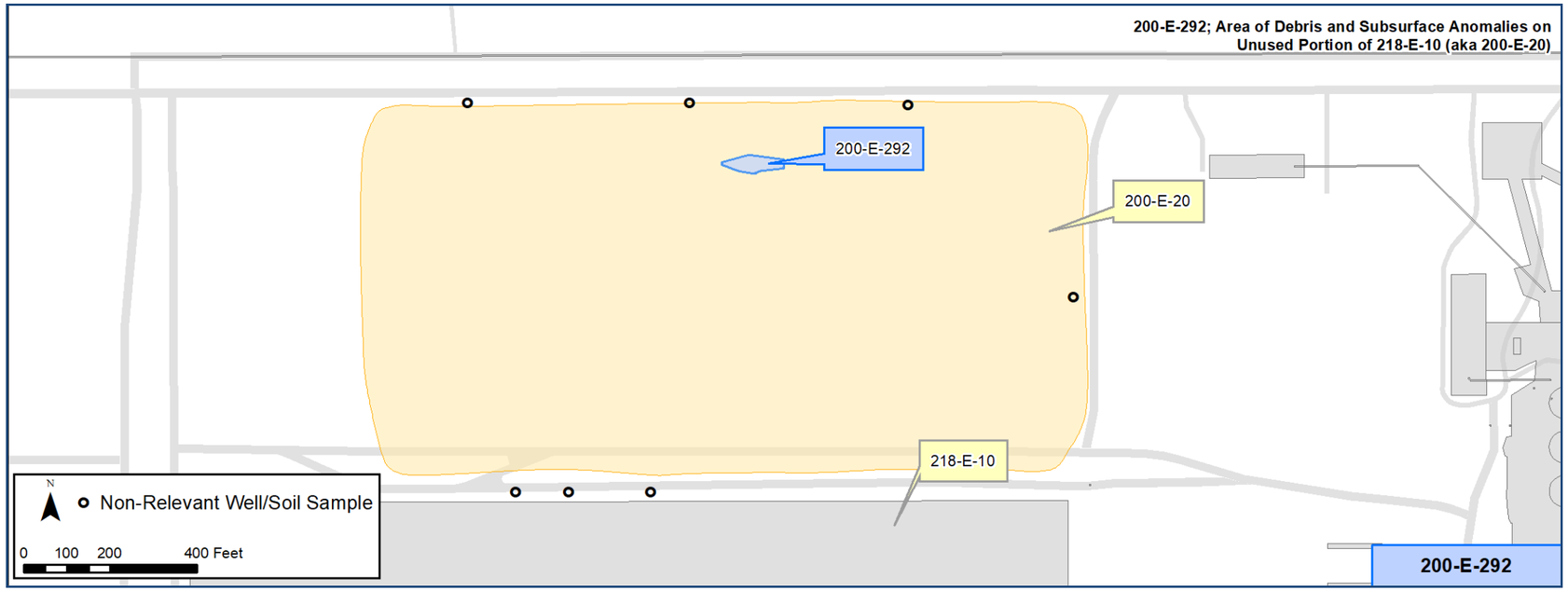


Scoping Summary: 200-E-292 (Dumping Area)

History

The 200-E-292 waste site is an area containing a concentrated amount subsurface debris within the larger unused 200-E-20 area (218-E-10 Annex). A 2008 ground penetrating radar (GPR) survey identified several subsurface anomalies in a concentrated area that became designated as 200-E-292. The site is located within the northern middle portion of 200-E-20. Refer to document SGW-48278 for additional information on the survey of the 200-E-20 area (218-E-10 Annex).

In January-2011, holes dug by shovel to a depth of 1 ft bgs uncovered shallow debris consisting of heavy gauge wire, a nail, chunks of tar, and a large (approx. 2 x 3 ft) section of sheet metal and cobbles with a relatively high ferrous content. A hard, flat, relatively dense, tar-coated, solid surface (not able to be determined if wooden, metal or concrete) that appeared to be reinforced with the same type of heavy-gauge wire was unearthed and noted elsewhere.



Construction

- Roughly 130 x 30 ft (3,900 sq. ft.)

Features Of Interest

- T-posts support a small chain surrounding the 200-E-20 area.
- The larger 200-E-20 area is posted with signs that read "Do Not Enter - 218-E-10 Burial Ground – Authorized Personnel Only."
- The area has revegetated naturally.

Waste Streams

- Waste source is unknown.

Site Interfaces

Origin/Termination

- N/A

Intersecting/Nearby Sites

Unassigned OU

- 200-E-20 (218-E-10 Annex)

200-SW-2

- 218-E-10 Burial Ground

Relevant Characterization

- Radiation surveys were performed during the 1 ft deep excavations in 2011. No radiological contamination was detected.

Misc./Other Relevant Information

- The 200-E-20 area was originally an extension of the 218-E-10 Burial Ground. It was reserved for additional 218-E-10 trenches, but no additional trenches were dug and no waste was discharged in the area.
- In 1980, clean backfill material was taken from 200-E-20's eastern half to surface stabilize the eastern 25 acres of the 218-E-10 Burial Ground.

Scoping Summary: 200-E-292 (Dumping Area)

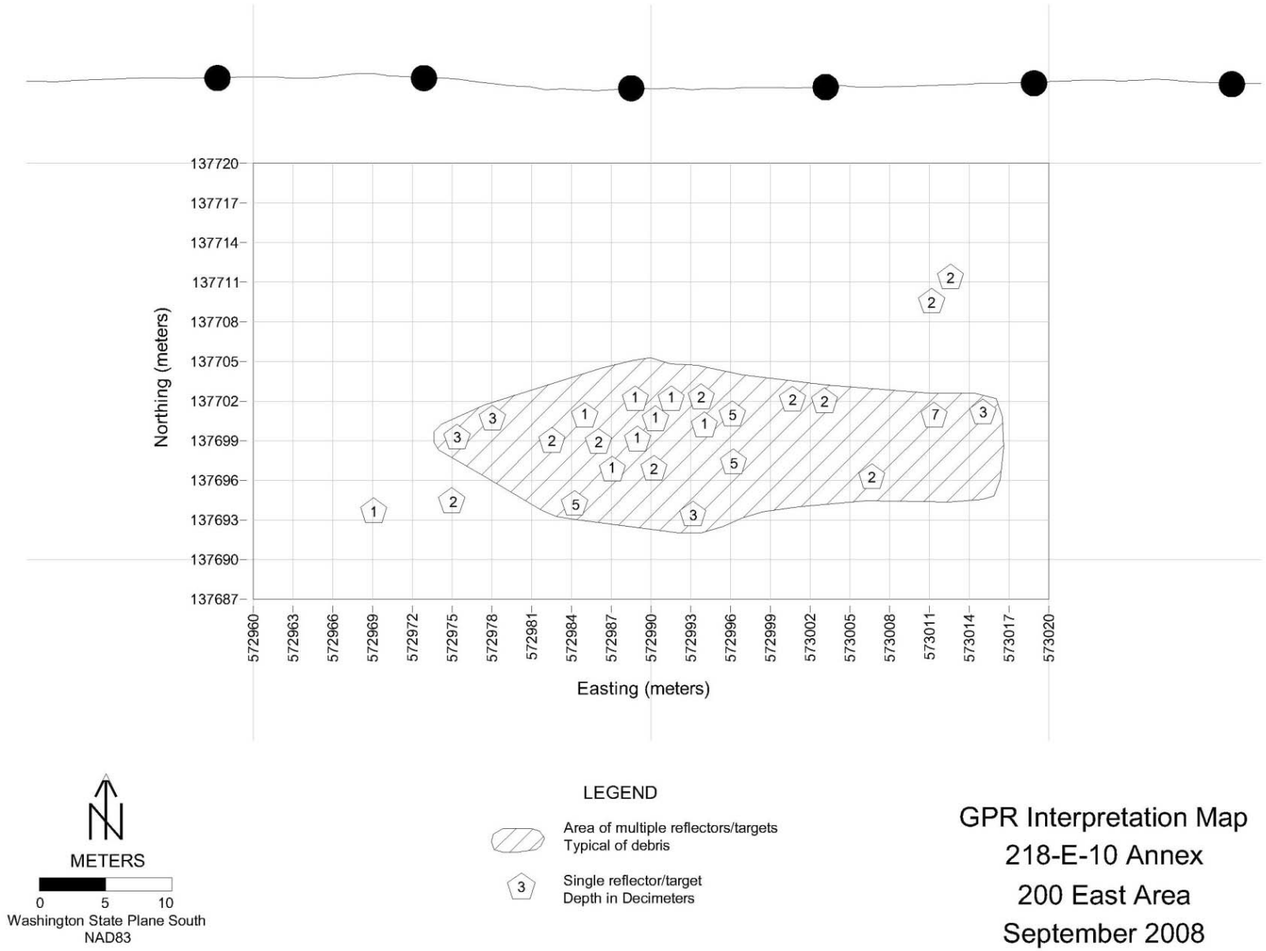


Figure B2. Ground-Penetrating Radar Interpretation Map, 218-E-10 Annex Detail Area, 200 East Area, September 2008

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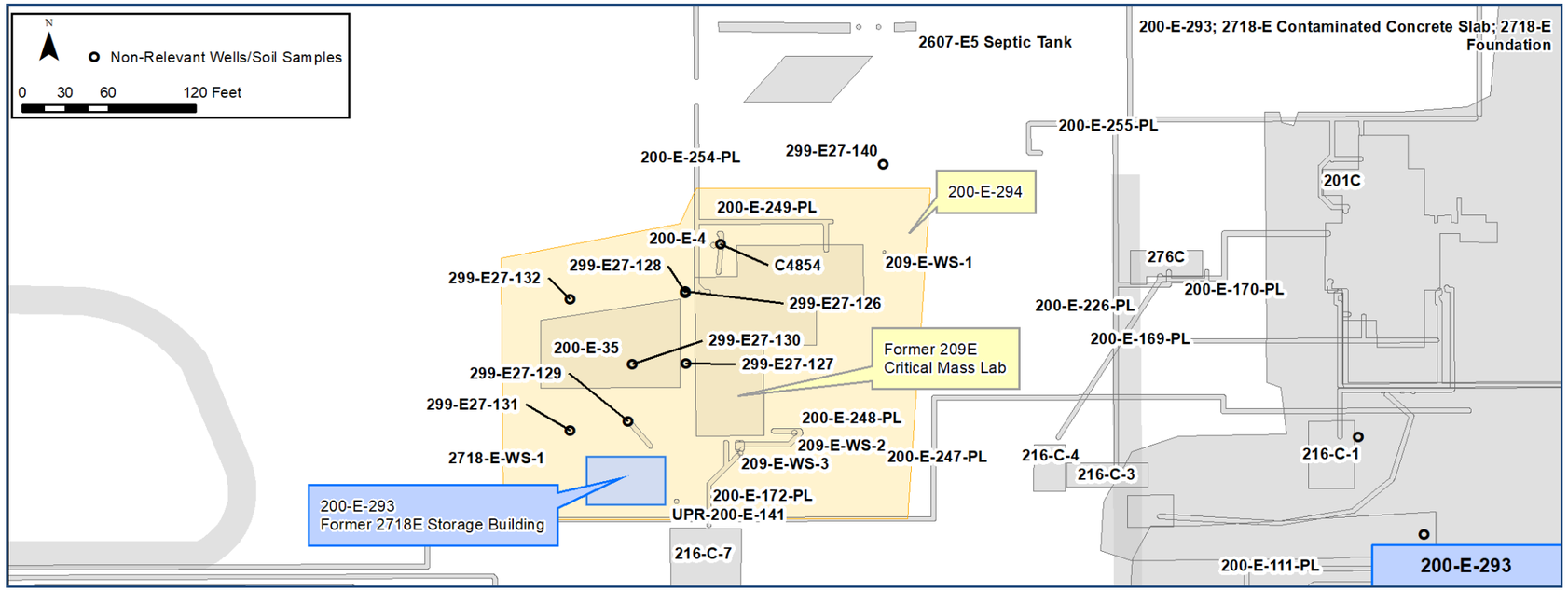
Scoping Summary: 200-E-293 (Foundation)

History

The 200-E-293 waste site is the concrete foundation of the 2718E (Critical Mass Storage Building). This metal building was constructed in 1973 and demolished in November 2011. The 2718E Storage Building supported operations at the 209E Critical Mass Laboratory.

During storage operations, there was one known leak of uranyl nitrate from a corroded drum stored in the southeast corner of 2718E, just outside the building. At the time of the release in September 1984, the spill and associated contaminated media were remediated to background based on field survey measurements (see UN-200-E-141).

In November 2011 the metal structure of the building was removed, an area of fixed depleted uranium contamination on the remaining slab was covered in plastic and plywood. The entire slab was covered with soil. Additionally, approximately 6 in. of gravel from the 209E cover was extended to cover 200-E-293 (see 200-E-294).



Construction

Concrete Pad
Dimension: 53 ft x 34 ft (16.15 m x 7.32 m)
Thickness: Unconfirmed, but likely 4 in.

Features Of Interest

- Although multiple documents indicate that 2718E was served by the 2607-E5 Septic Tank, an investigation in 2010 confirmed that the concrete floor has no floor drains. As such, no sub-slab piping is expected. Additionally no piping running from 2718E to the 2607-E5 Septic Tank, located north of the 209E Building, was found.

Relevant Characterization

- As part of the Criticality Safety Analysis of 209E in January 1989, fixed contamination was identified on the floor of 2718E (see page 3 for details).
- In August 2010 prior to demolition of the building, a survey confirmed the presence of fixed contamination on the floor reading approximately 40,000 cpm. This is unrelated to the known drum leak in 1984.
- Post 209E demolition radiological survey reports show nearby removable alpha readings up to 1,980 dpm/100cm-2

Waste Streams

- 209E Critical Mass Laboratory, specifically:
  - Special Nuclear Materials (SNM)
  - Mixed-TRU solutions
  - TRU waste drums
  - TRU metal boxes
  - TRU High-Efficiency Particulate Air filters
  - Depleted uranium (DU) metal slabs
  - DU oxide
  - DU nitrate solution

Misc./Other Relevant Information

- None identified.

Site Interfaces

Intersecting/Nearby Sites

200-EA-1 OU
- 200-E-4 Dry Well
- 200-E-294 Foundation
- 209-E-WS-2 French Drain
- 200-E-WS-3 Valve Pit
- 2607-E5 Septic Tank

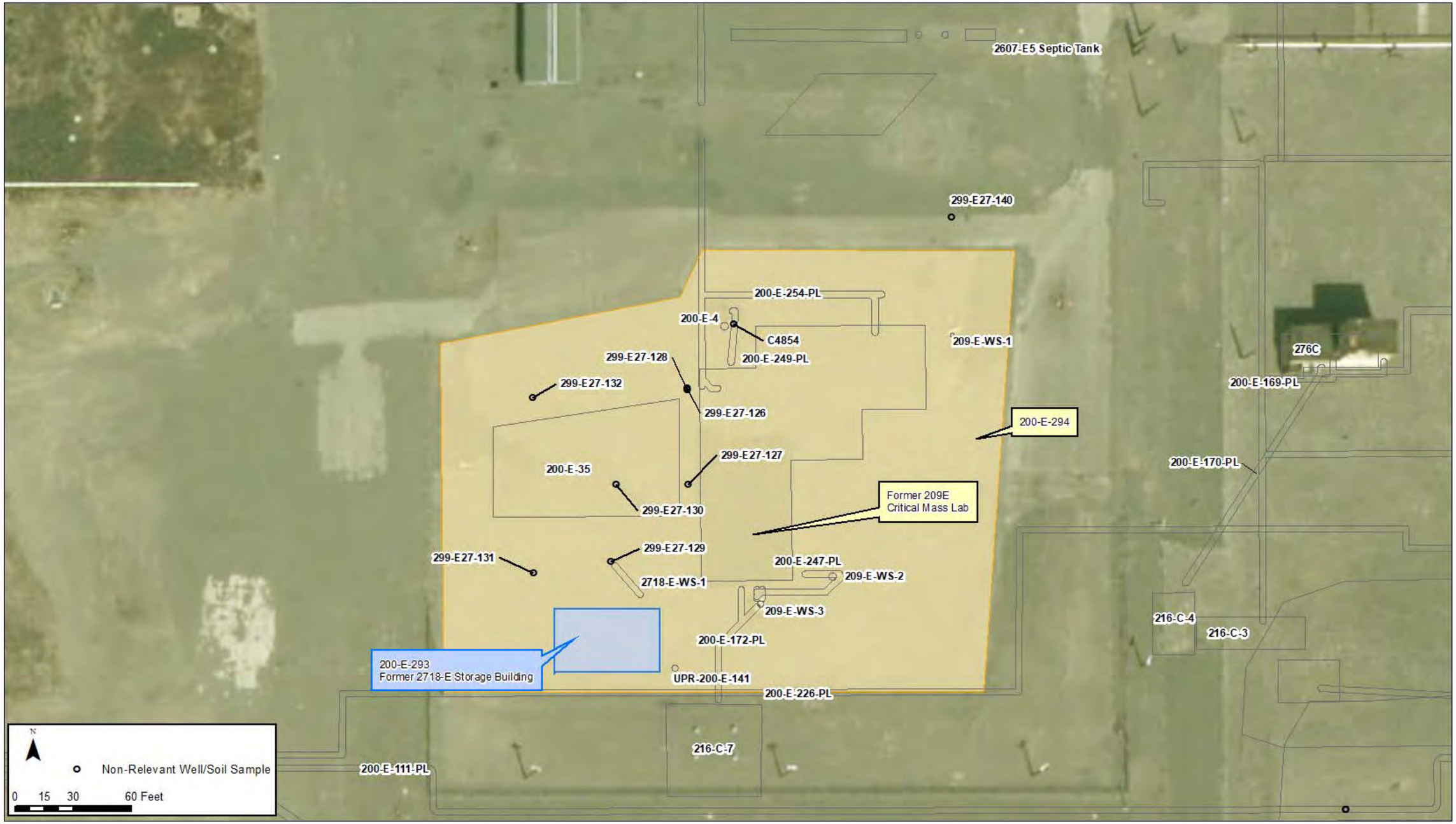
200-IS-1 OU
- 200-E-172-PL
- 200-E-247-PL
- 200-E-248-PL
- 200-E-249-PL
- 200-E-254-PL

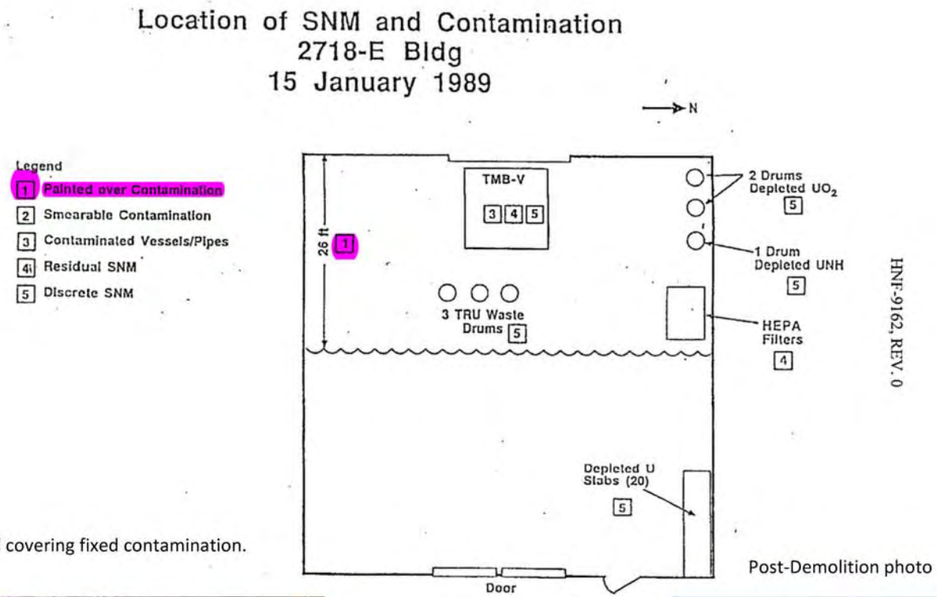
Intersecting/Nearby Sites

Facility (Demolished)
- 2718E Storage Building
- 209E Critical Mass Lab

Rejected from WIDS
- 200-E-35 Storage Pad
- UPR-200-E-141
- 209-E-WS-1 French Drain
- 2718-E-WS-1 French Drain

Scoping Summary: 200-E-293 (Foundation)





C-9

HNF-9162, REV. 0

Pre-Demolition photo of 2718E showing plastic and plywood covering fixed contamination.

Post-Demolition photo of 2718E showing slab covered with gravel.

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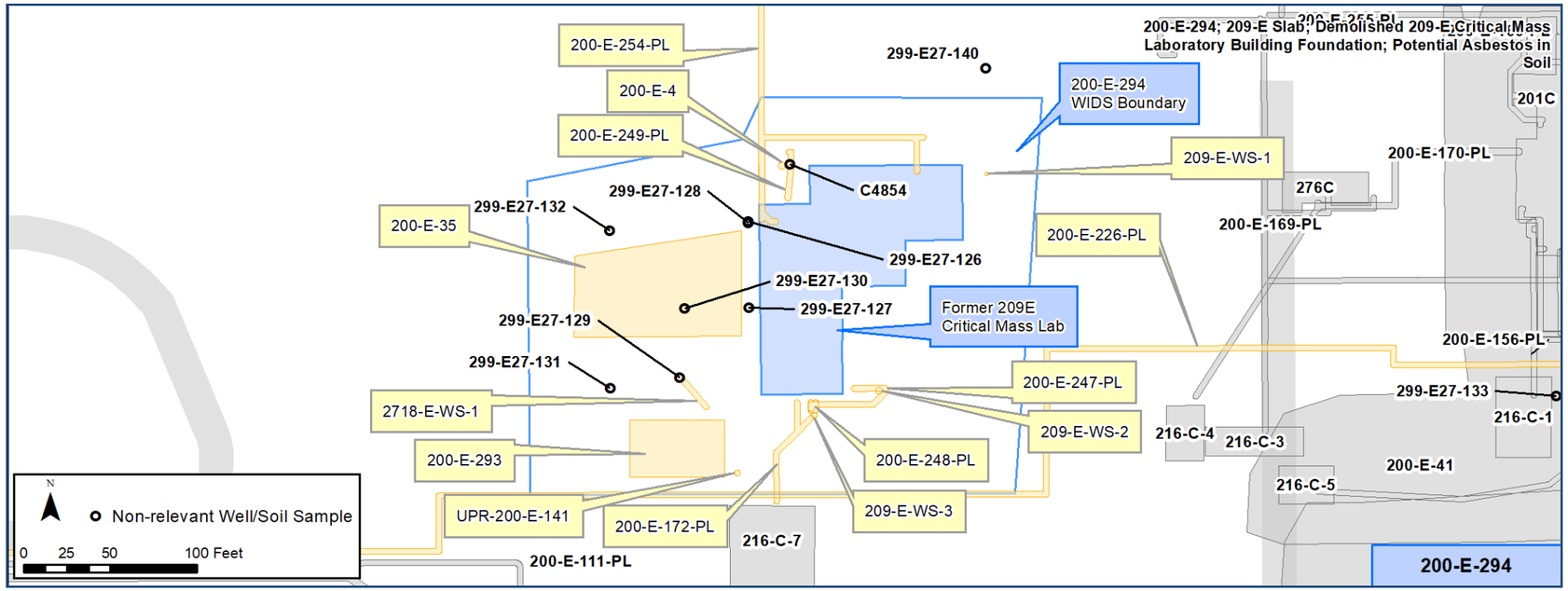
Scoping Summary: 200-E-294 (Foundation)

History

The 200-E-294 waste site is the concrete slab and potentially contaminated piping and soil beneath the slab remaining from the demolition of the 209E Critical Mass Laboratory (CML). The floor slab, along with slabs of other facilities in the vicinity of 209E were covered with gravel; the extent of the stabilized area is depicted by the blue boundary on the plan view.

The 209E Building was an L-shaped reinforced concrete structure that included offices, a control room, shops, an equipment room, a change room, the Mix Room, and the Critical Assembly room (CAR). The CAR, the Mix Room, and the "hot side" of the change room were the only Radiological Areas at the 209E Building. 209E operated from 1960 to 1983 conducting criticality research with plutonium nitrate and enriched uranium solutions. There is documented history of spills and leaks that resulted in contamination of the floor in the CAR and the Mix Room.

The 209E Building was demolished in 2011. Upon completion of demolition and load-out of debris, the floor slab was covered with a minimum of 15 cm (6 in.) clean fill and designated as an URMA.



Construction

209E Building Slab
Size: Approximately 8,979 sq ft
- CAR: 1,156 sq ft
- Mixing Room: 320 sq ft
- Changing Room: 300 sq ft
- Non-rad Areas: 7,200 sq ft

Slab Thickness: 2 ft in the CAR, 4 in. for the rest of the facility

Features Of Interest

- The 209E Building was serviced by a septic system consisting of the 2607-E6 and 2607-E7 components that were properly abandoned per WAC 246-272A-0300 in July 2011.

Relevant Characterization

- As part of the Criticality Safety Analysis of 209E in January 1989, fixed contamination was identified on the floor. An estimated 0.01g of Pu were located outside of tanks, piping, or process equipment (all removed prior to building demolition).
- Post-demolition surveys of the 209E footprint in 2011 indicated removable alpha up to 200,000 dpm/100 cm-2 (D9-1101133)

Waste Streams

- 209E Critical Mass Laboratory, specifically:
  - Special Nuclear Materials (SNM)
  - Mixed-TRU solutions
  - TRU waste drums
  - TRU metal boxes
  - Depleted uranium (DU) metal slabs
  - DU oxide
  - DU nitrate solution
- There is a potential for asbestos in soil as a result of demolition activities; however visual inspections have not identified any.

Misc./Other Relevant Information

- Removal of the 209E structure was conducted under the *Action Memorandum for Decontamination, Deactivation, Decommissioning, and Demolition (D4) Activities for 200 East Tier 2 Buildings/Structures* (DOE/RL-2010-102).
- DOE and Ecology determined that it was appropriate to terminate the remediation activities for the facility while deferring the remediation of the remaining contaminated areas for a future action.

Site Interfaces

Intersecting/Nearby Sites

200-EA-1 OU
- 200-E-4 Dry Well
- 200-E-293 Slab
- 209-E-WS-2 French Drain
- 20-E-WS-3 Valve Pit

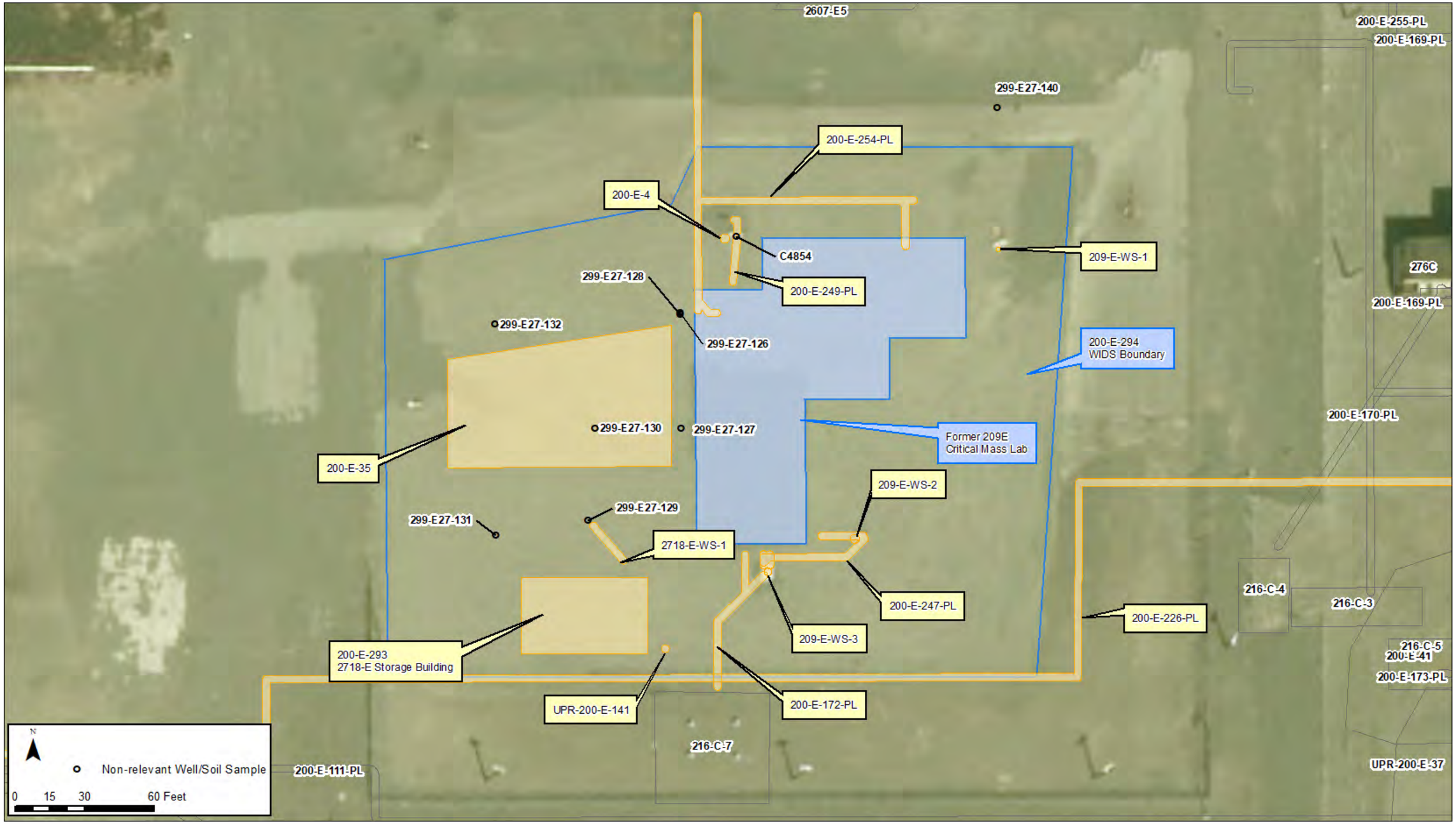
200-IS-1 OU
- 200-E-172-PL
- 200-E-247-PL
- 200-E-248-PL
- 200-E-249-PL
- 200-E-254-PL

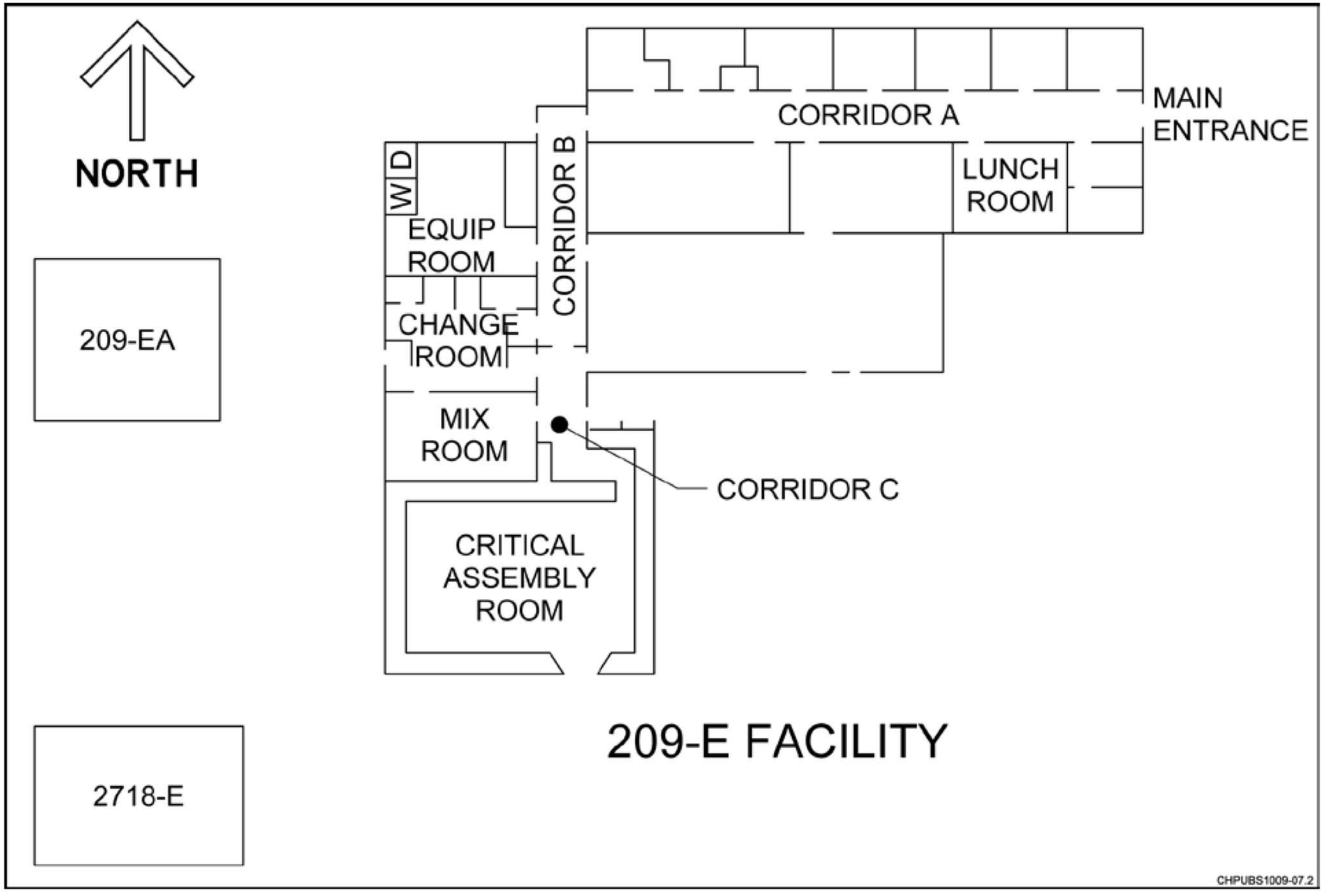
Intersecting/Nearby Sites

Facility (Demolished)
- 2718E Storage Building
- 209E Critical Mass Lab

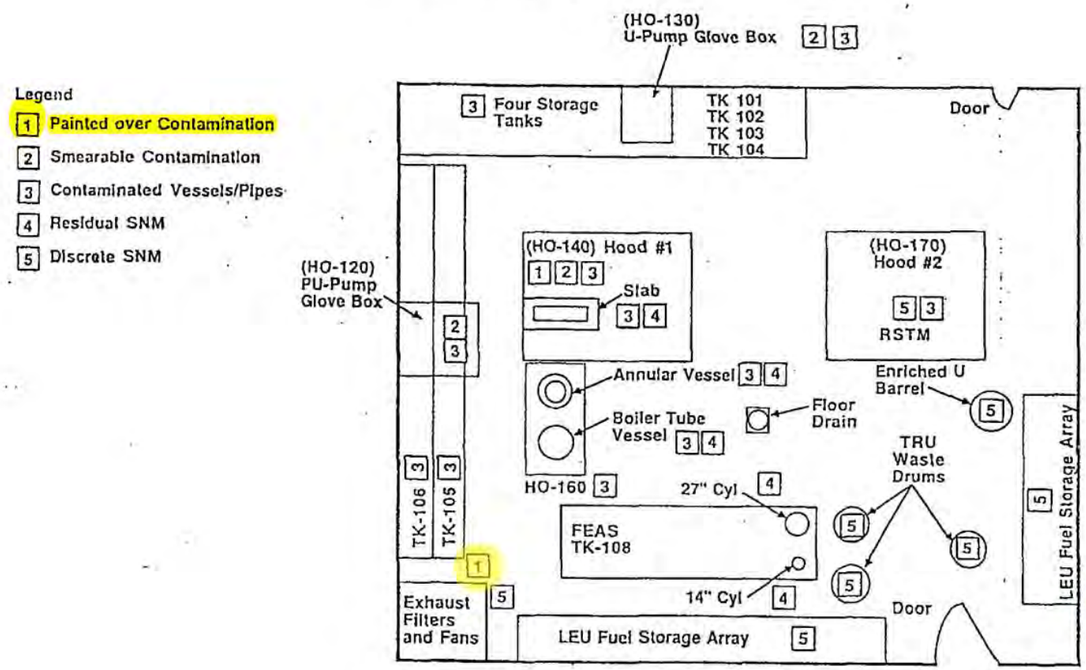
Rejected from WIDS
- 200-E-35 Storage Pad
- UPR-200-E-141
- 209-E-WS-1 French Drain

Scoping Summary: 200-E-294 (Foundation)

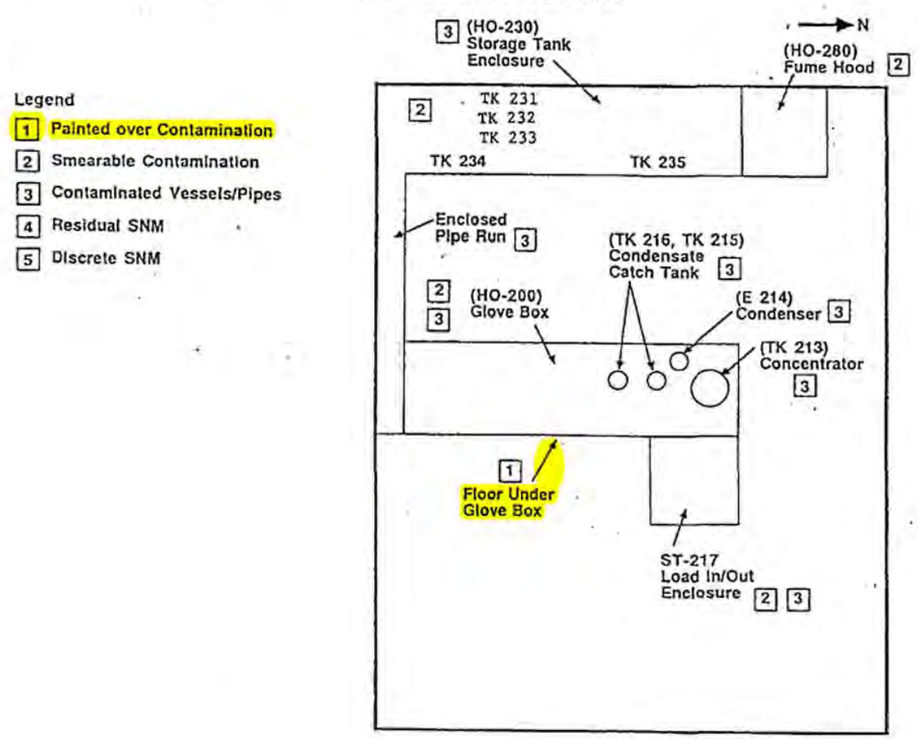



NORTH
209-EA
2718-E
CORRIDOR A
MAIN ENTRANCE
LUNCH ROOM
CORRIDOR B
W D
EQUIP ROOM
CHANGE ROOM
MIX ROOM
CORRIDOR C
CRITICAL ASSEMBLY ROOM
209-E FACILITY
CHPUBS1009-07.2

Location of SNM and Contamination
209-E Critical Assembly Room
15 January 1989



Location of SNM and Contamination
209-E Mix Room



DOE/RL-2011-79, REV. 0

. Photograph of the 209E Facility Prior to D4 Looking Southeast to Northwest

Post Demolition View of the 209E Building Site Looking Southeast to Northwest

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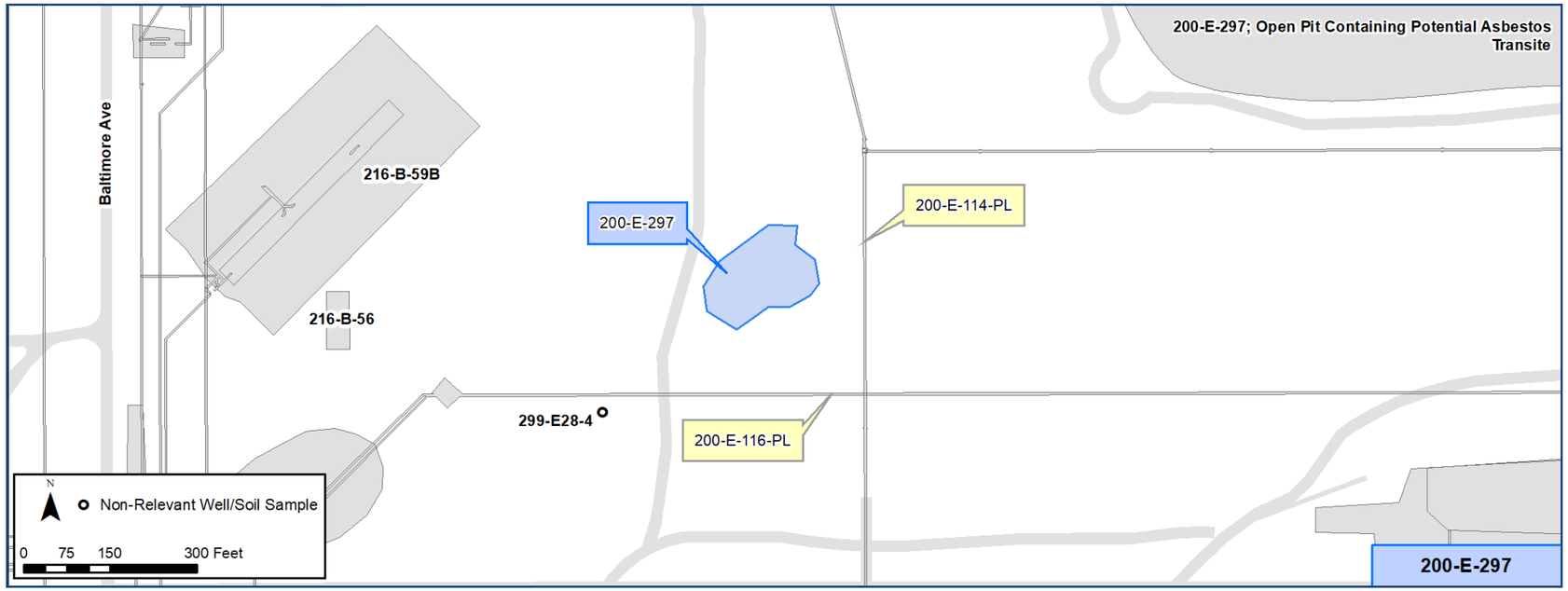
Scoping Summary: 200-E-297 (Dumping Area)

History

The 200-E-297 waste site is an inactive, open pit containing material that resembles fragments of asbestos and miscellaneous building debris. The pit is located east of Baltimore Ave and north of 7th Street. There are no operation dates associated with this site, but it was first noticed in April 2012 during a survey of the 200-E-114 Transfer Line.



Construction

- Width: ~120 ft
- Length: ~120 ft
- Depth: Unknown

Features Of Interest

- Signs that state, "*Caution: Potential Asbestos Hazard; Transite in the Soil; No ground-intrusive or heavy equipment activities in this area unless specifically authorized by controlling project OS&H*" with a contact phone number and required protective clothing listed were placed around the area in June 2012.

Waste Streams

- No waste stream is associated with this site.

Site Interfaces

Intersecting/Nearby Sites:

200-IS-1 OU

- 200-E-114-PL
- 200-E-116-PL

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil.

Misc./Other Relevant Information

- No additional information

Scoping Summary: 200-E-297 (Dumping Area)

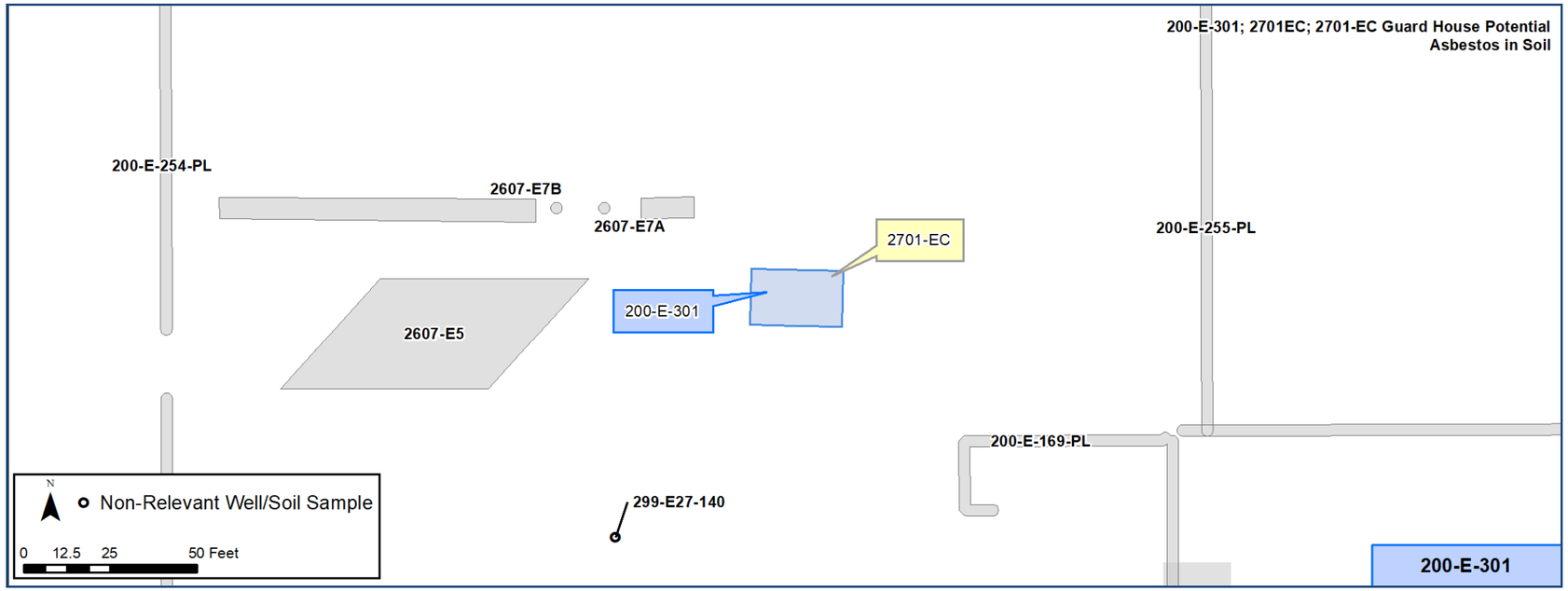
Scoping Summary: 200-E-301 (Dumping Area)

History

The 200-E-301 waste site is the potential asbestos containing material left after the demolition and removal of the 2701EC Guard House at 209E in March 2011. The waste site is located south of 7th Street and northeast of the 209E Facility. The area was leveled and contoured using clean fill material to ensure that no safety hazard remained.

The facility removal actions were performed in accordance with the *Action Memorandum for General Hanford Site Decommissioning Activities (DOE/RL-2010-221)* and the *Removal Action Work Plan for the Central Plateau General Decommissioning Activities (DOE/RL-2010-332)*. The removal action consisted of decontamination, deactivation, and decommissioning (as required), and demolition of the 2701EC Building.

Prior to the demolition of the 2701EC Building, the locations of identified or potential waste sites (including underground pipelines) within the demolition boundary or in immediate proximity to the demolition boundary were researched. It was determined that no documented waste sites were present.



Construction

- Guard Shack Pad (post-demolition)
  - Irregular shape
  - Width: ~14 ft
  - Length: ~16 ft
  - Demolished to slab-on-grade using heavy equipment

Features Of Interest

- Concrete slab foundation

Relevant Characterization

- Pre- and post-demolition radiological surveys were completed; no radiological contamination was detected (< 5,000 dpm/100cm2 beta/gamma).
- Visual inspection of the area revealed no evidence of potential hazardous substances resulting from spills or other events.

Waste Streams

- Asbestos containing materials (i.e., floor tiles) were associated with this facility. However, the *Facility Status Change Form* stated that no waste(s) are expected to be present in underlying soil and no additional actions are anticipated.

Misc./Other Relevant Information

- Wastes associated with the building demolition were characterized under Waste Profile Number WPPRCIF001 and disposed at the Environmental Restoration Disposal Facility (ERDF).
- The Discovery Site Evaluation Checklist (Nov. 2012) states that a field walk down was conducted. If asbestos containing material (ACM) was found within the first few inches of soil, an attempt was made to remove it. Full removal of ACM has not been verified.

Site Interfaces

Origin/Termination

- N/A

Intersecting/Nearby Sites

Unassigned OU

- 2701EC Guard House (Demolished)

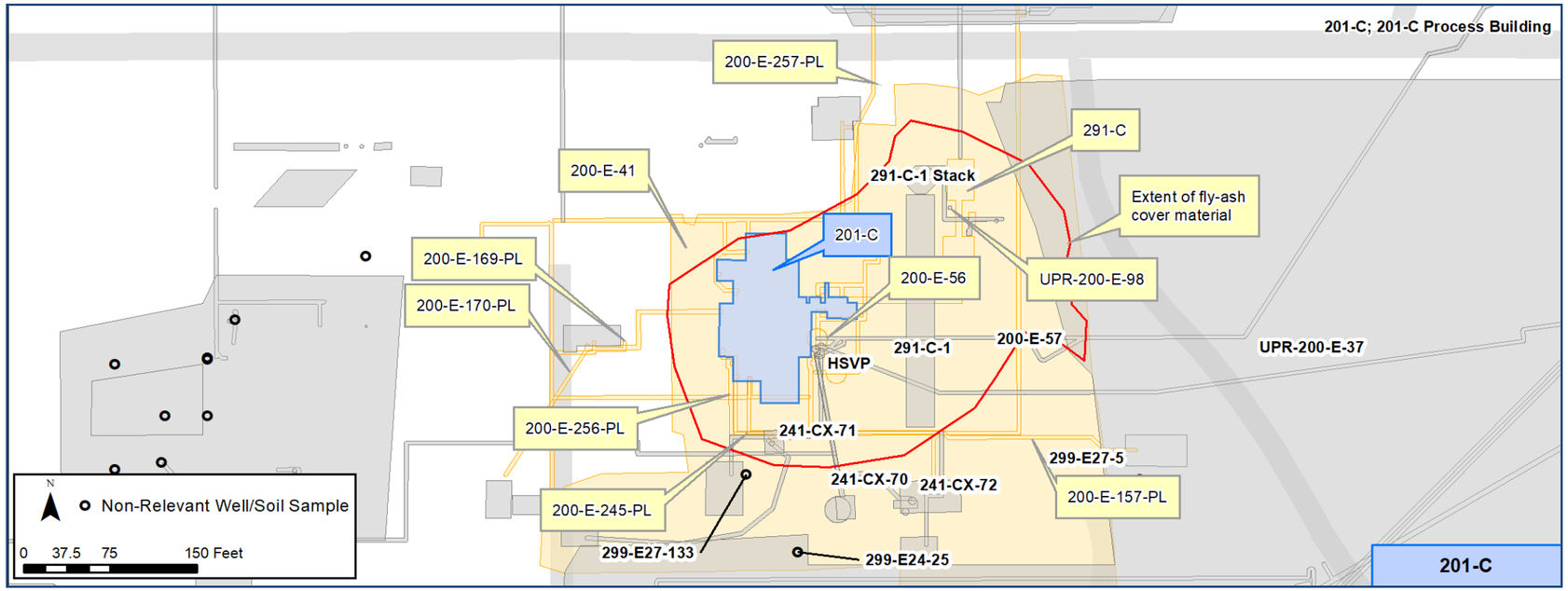
Scoping Summary: 200-E-301 (Dumping Area)

Scoping Summary: 201-C (Process Unit/Plant)

History

The 201-C waste site consists of the remains and below grade features of the decommissioned 201C processing facility that was originally built as a pilot plant for the REDOX process. 201C was the main facility for the Hot Semi-works area and was operational from 1949 until 1967. In 1954 the facility was converted to a pilot plant for the PUREX process until it was temporarily shut down in 1956. In 1961 the facility was reactivated to recover strontium from process wastes. The 201C facility was demolished as part of the Hot Semi-works decommissioning program that began in 1983 and completed in 1987.

Equipment and structural components were placed in the 218-C-9 trench and uncontaminated debris was taken to the central landfill south of the 200 East Area. Subsequently all the Semi-works entombed facilities were to be covered with an engineered earthen barrier with a base layer of ash beneath soil and a surface soil stabilizing mat with re-vegetation. In 1992 the Radiation Area Remedial Action group covered 201-C and most of the Hot Semi-works area with ash (200-E-41). No further stabilization activities have taken place to date.



Construction

- Length: 140 ft
- Width: 80 ft
- Originally extended 30 ft above ground and 30 ft below ground
- Currently dismantled to 10 ft above grade and filled with grout
- All below grade features are filled with grout
- Material: Reinforced concrete, transite, lead shielding

Features Of Interest

- 10 ft deep ash cover
- Grout fill
- Facility consists of three integrated cells, seven process galleries, an exhaust system, a hot shop, an air treatment room and two additional cells connected to the east side of the building

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil

Waste Streams

- PUREX
- REDOX
- Strontium Recovery
- Cerium, technetium, and promethium (and neodymium daughter products) as well as minor amounts of americium and curium were also extracted
- Chemical wastes include solvents and acids
- Entombed building inventory estimated to contain 68.3 Ci of total Pu, 9,000 Ci of Sr-90, 0.2 Ci of Am-241, 3.7 Ci of Pu-238, 4.9 Ci of Pu-239, 2.5 tons of lead

Misc./Other Relevant Information

- UPR-200-E-36 is a 1967 release from pumps that contaminated an area adjacent to 201-C and has been consolidated with the 200-E-41 stabilized area
- 200-E-56 is a 1957 release associated with 200-E-149-PL that occurred adjacent to 201-C
- Non-hazardous fly ash used for shielding and to prevent plants from growing. Hot Semi-works ash came from 200 West Powerhouse where evaluation confirmed it was not hazardous/not a contamination

Site Interfaces

Origin/Termination

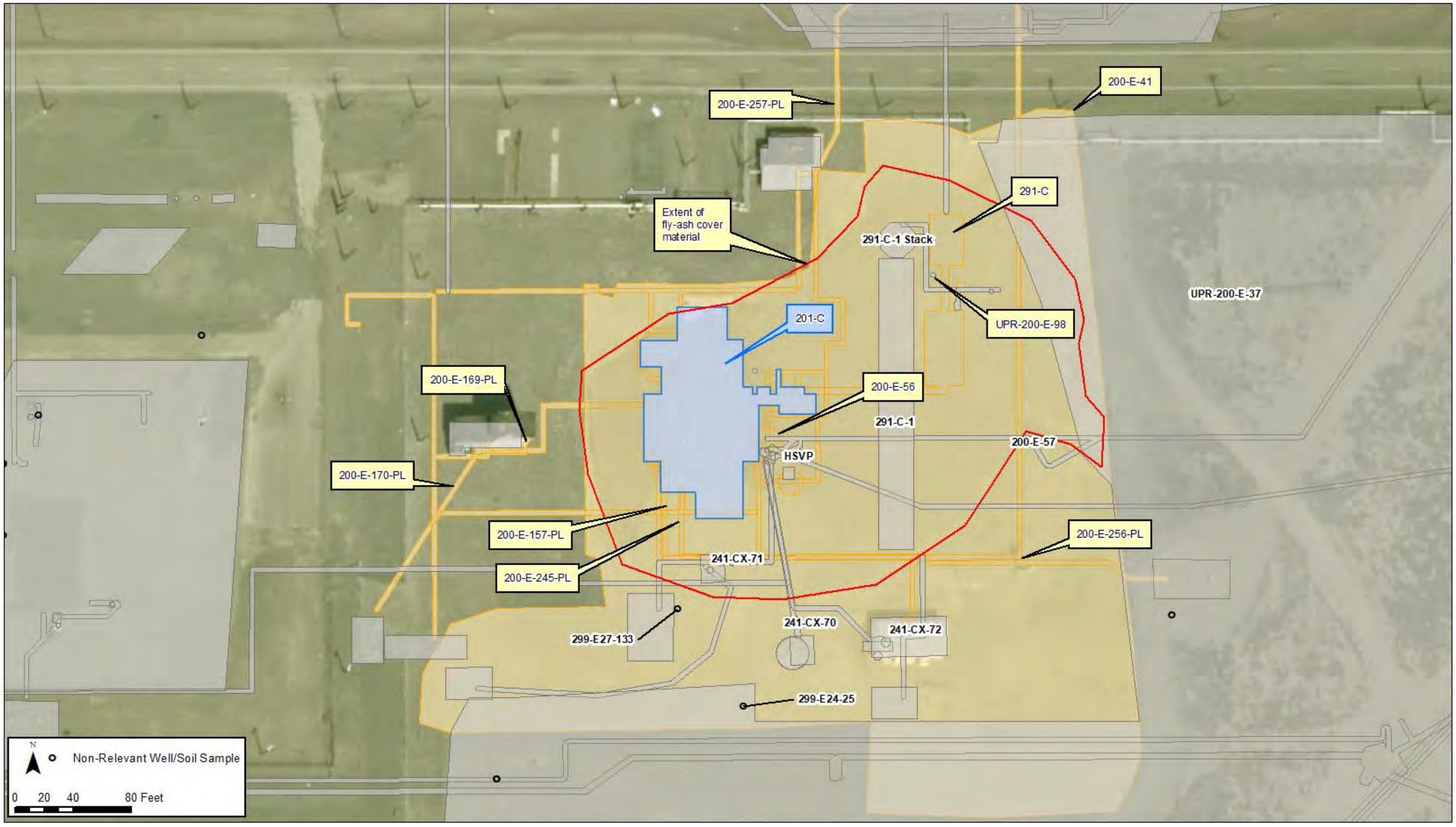
- N/A

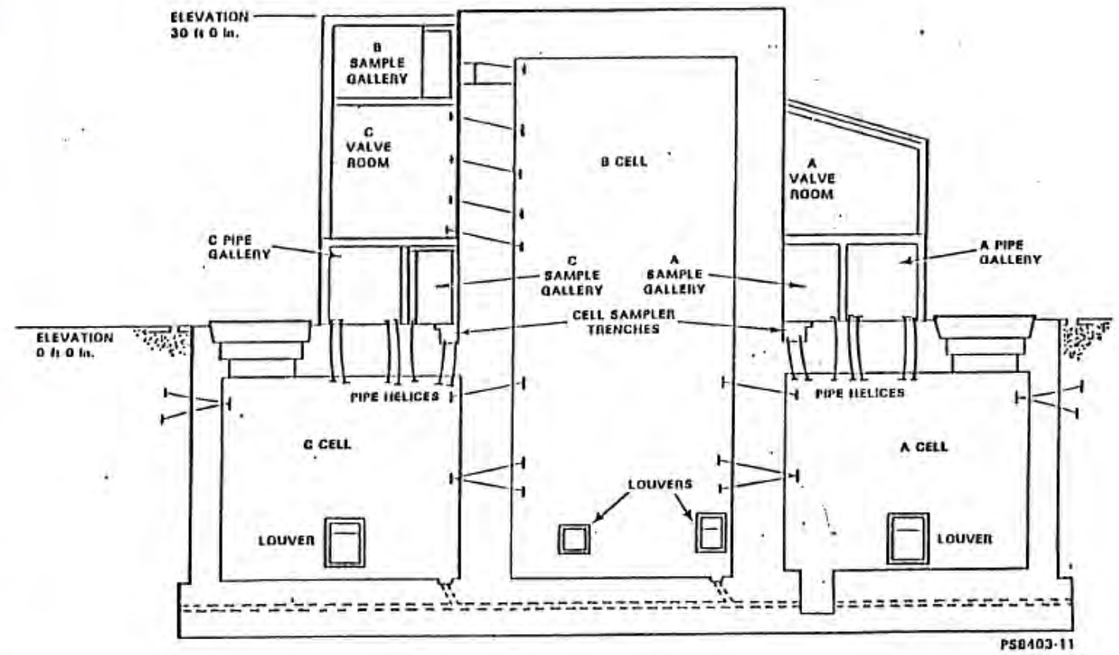
Nearby/Intersecting Sites

200-IS-1 OU
- 200-E-257-PL
- 200-E-169-PL
- 200-E-170-PL
- 200-E-256-PL
- 200-E-245-PL
- 200-E-157-PL

200-EA-1 OU
- 200-E-56
- 200-E-57
- 291-C
- 291-C-1
- UPR-200-E-37
- UPR-200-E-98
- HSVP
- 200-E-41 (stabilized area)

Scoping Summary: 201-C (Process Unit/Plant)





201-C Process Building.

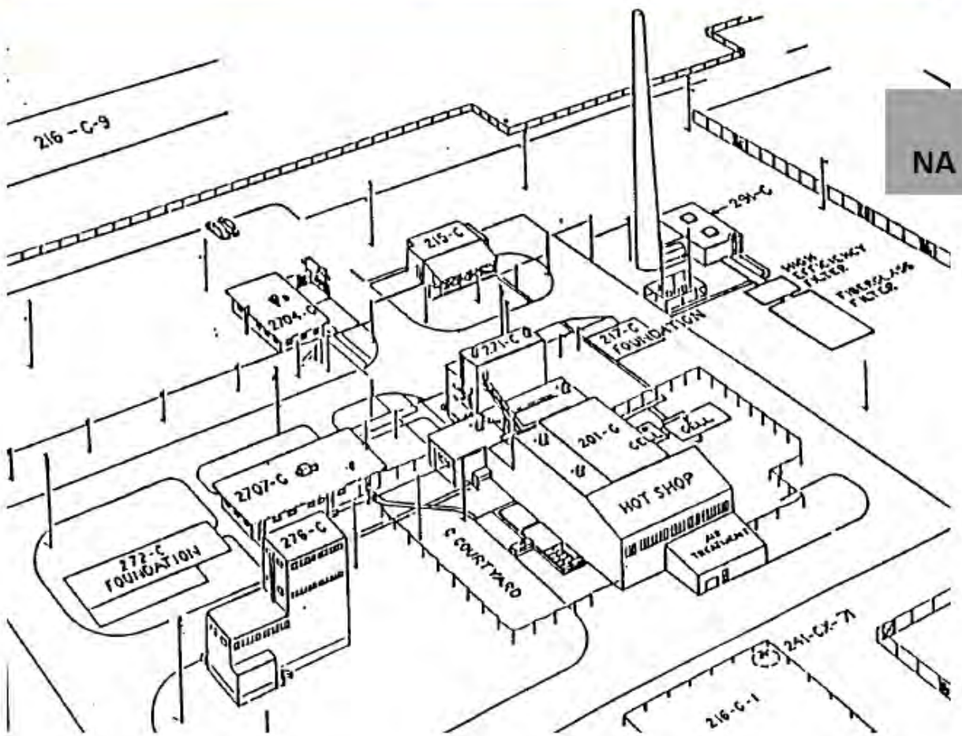
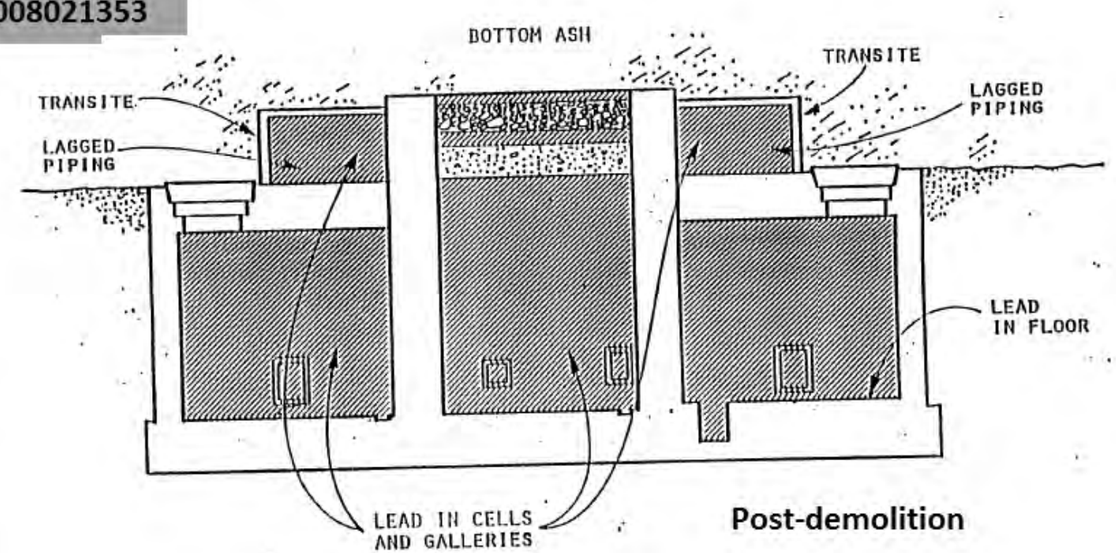


Figure 2
NA - 1008021353



Post-demolition

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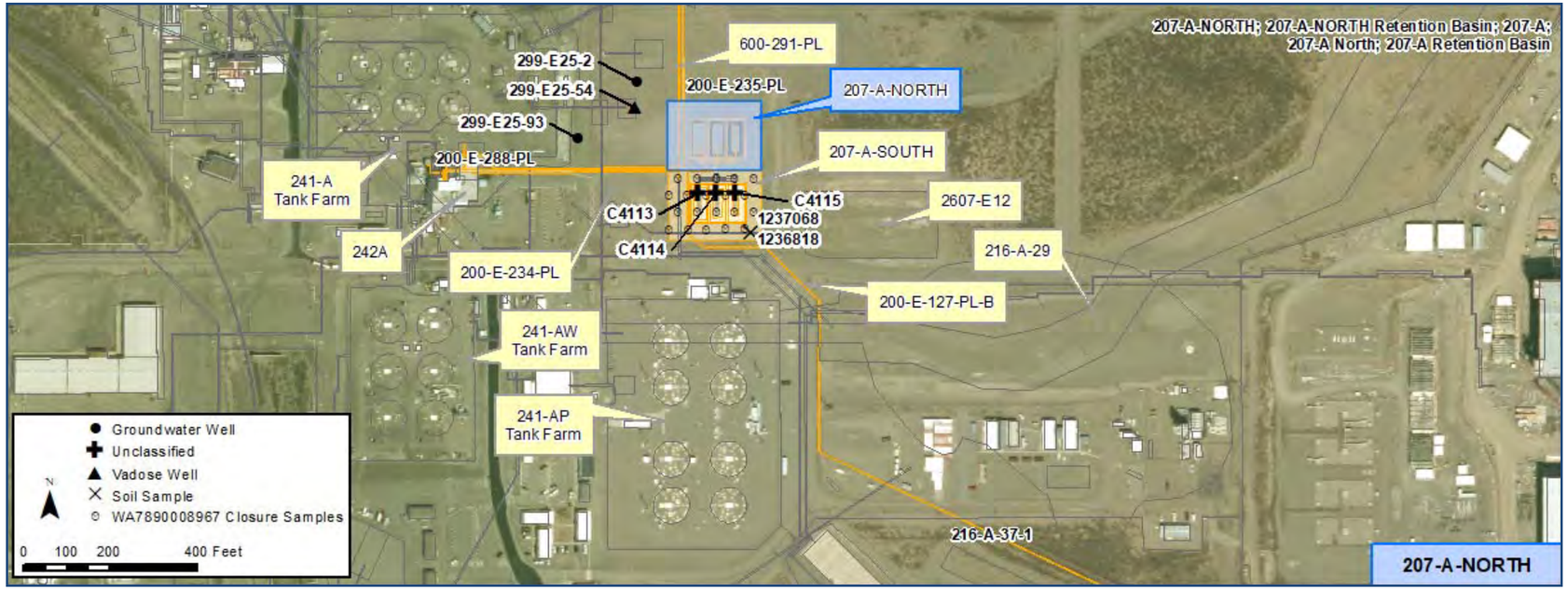
Scoping Summary: 207-A-NORTH (Retention Basin)

History

The 207-A-North waste site is an inactive retention basin comprised of three hypalon-lined concrete storage cells. The retention basin is located in the 200 East Area, east of the 242A Evaporator Building and immediately north of the former 207-A-South retention basin, which was demolished/removed in 2015.

The 207-A-North basin acted as an interim storage basin for non-hazardous/non-radioactive steam condensate from the 242A Evaporator between 1977 and 1999, when the retention basin was isolated and taken out of use. The condensate was transferred into the basin via the 200-E-234-PL pipeline, and then transferred on to the 216-A-25 pond and 216-B-3C pond via the 200-E-127-PL-B pipeline; and, later the 600-E-291-PL TEDF line, which remains active.

During its operational life, the 207-A-North basins were alternately filled, sampled, and then emptied when meeting release specifications. The facility included the capability of returning liquid waste for reprocessing or in-tank storage, if discharge specifications were not met. Currently, the basin is surrounded with posts and chain, but no radiological posting is necessary.



Construction

- Composition: hypalon-lined concrete
  - Hypalon liner added to the 3 concrete basins in 1982.
- Bottom Dimensions, per basin:
  - Length: 55 ft
  - Width: 10 ft
  - Depth: 7 ft
- Per unit, capacity: 70,000 gal
- Total capacity: 210,000 gal

- *See Page 3 for the Civil Plot Plan and Details of the 207-A North (and South) Retention Basin (H-2-69292).*

Features Of Interest

- No features of interest.

Relevant Characterization

- 1988: No perimeter contamination reported.
- 2004: Three characterization boreholes drilled through 207-A South. 44 soil and concrete samples confirmed no dangerous waste constituents existed above analytical clean closure standards (WAC 173-303-618), and only trace amounts of radionuclides present in soil.

Waste Streams

- 1977 to 1999: 242A Evaporator Building steam condensate. The waste was discharged to the pond system via the 200-E-127-PL-B pipeline until 1997, when that line was partially re-purposed and replaced by the 600-291-PL TEDF line.
- ~17 Mgal/yr condensate transferred thru the retention basin.

Misc./Other Relevant Information

- This waste site was previously considered in the 200-MG-2 OU's Engineering Evaluation/Cost Analysis (DOE/RL-2008-45, Rev0), and Remove Treatment Disposal (RTD) was the preferred alternative, but the waste site was removed from that OU prior to action.

Site Interfaces

Site Intersects:

200-IS-1 OU

- 200-E-127-PL-B
- 200-E-234-PL
- 200-E-235-PL
- 200-E-288-PL

OU Unassigned

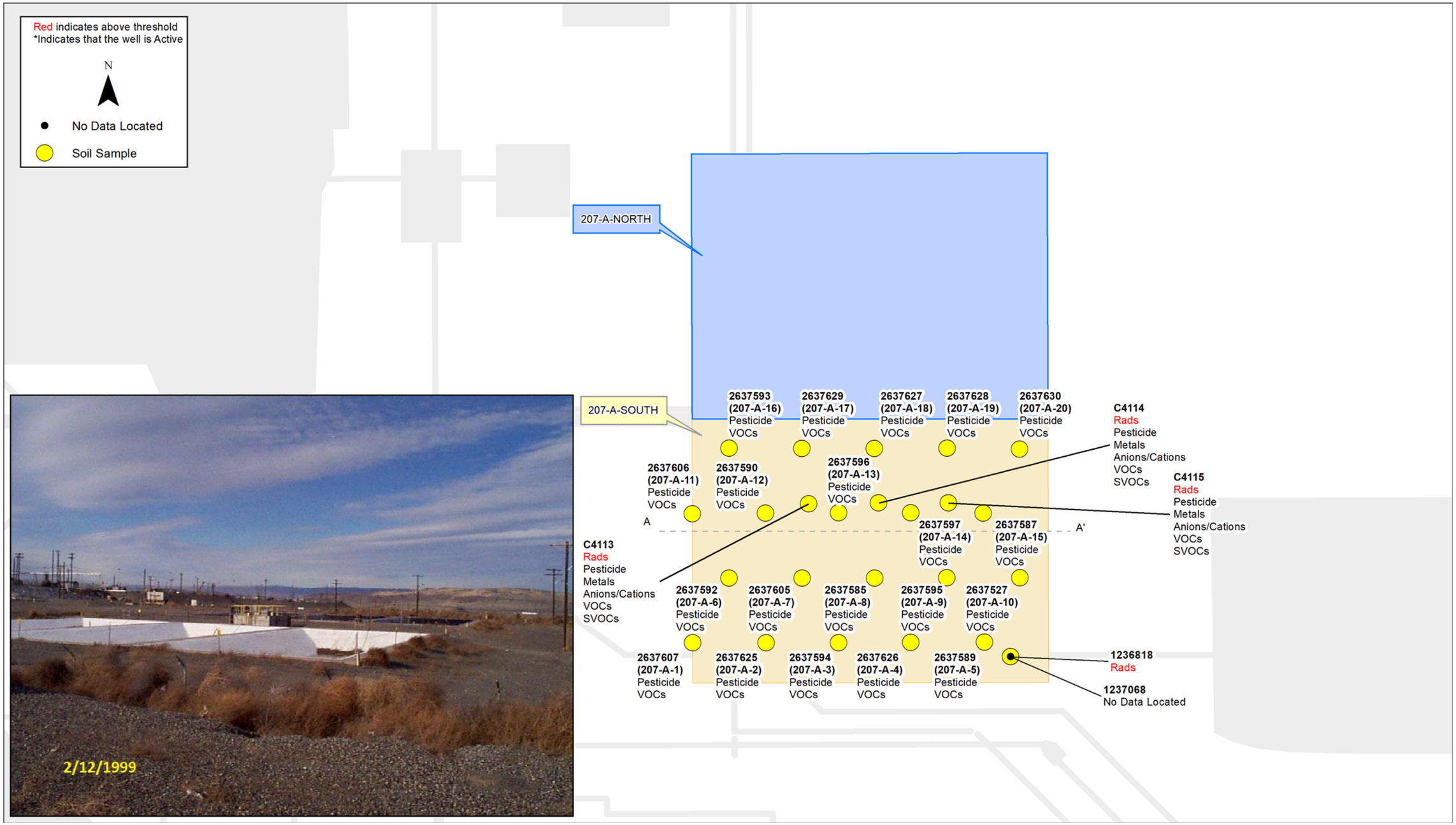
- 600-291-PL (Active; TEDF line)
- 207-A-South (removed)

Not Pictured:

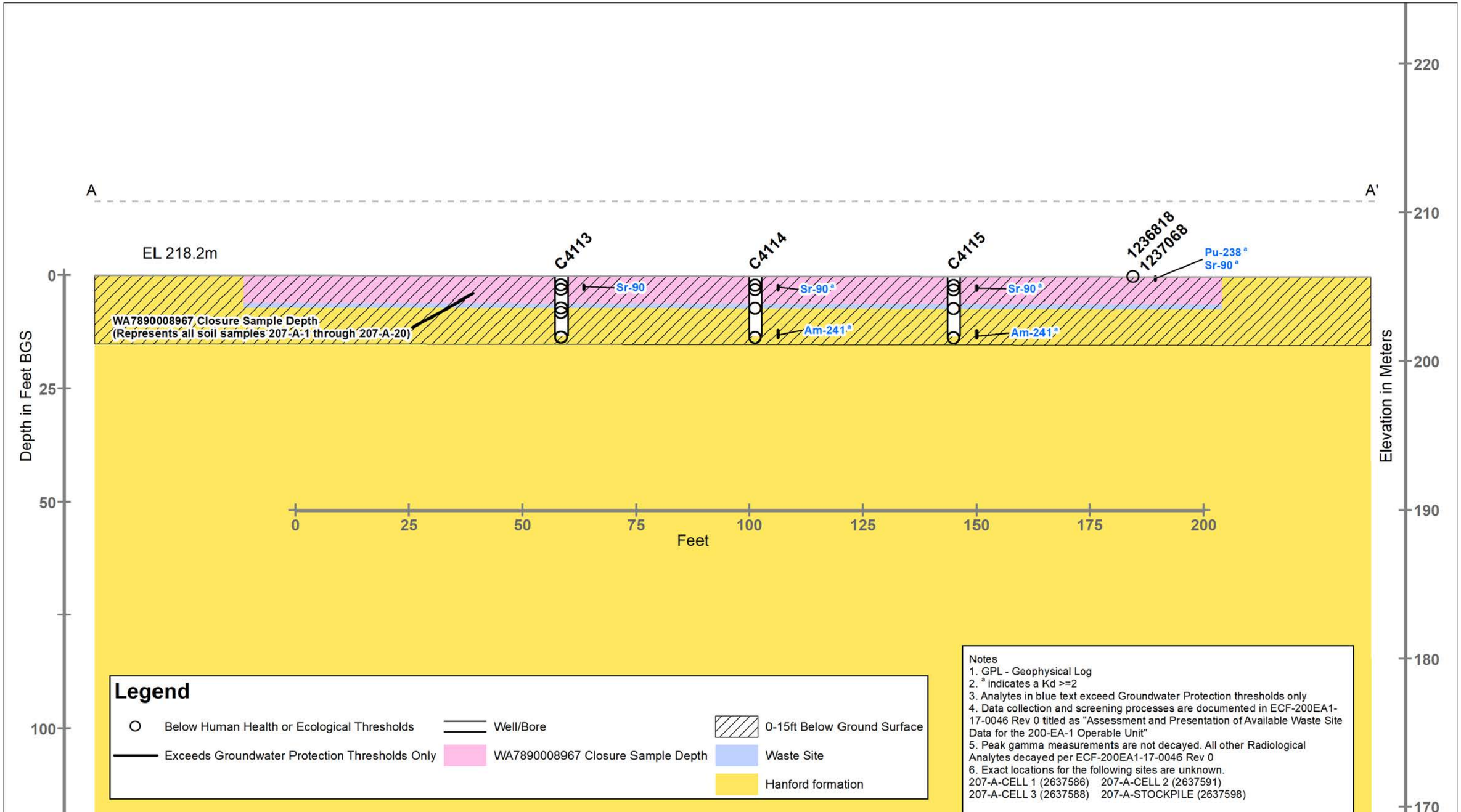
200-CW-1 OU

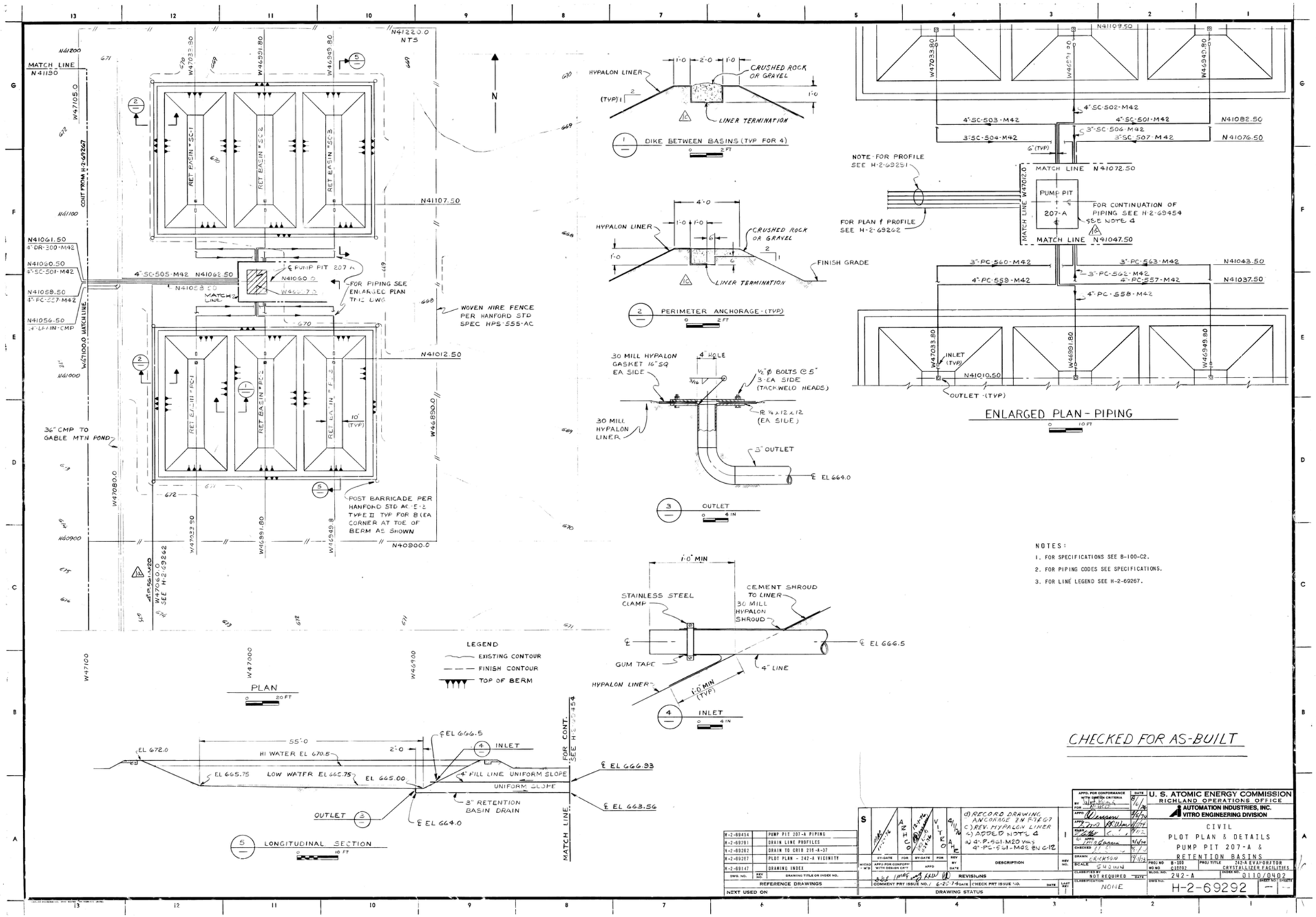
- 216-A-25 (pond)
- 216-B-3C (pond)

Scoping Summary: 207-A-NORTH (Retention Basin)



Scoping Summary: 207-A-NORTH (Retention Basin)




PLAN
ENLARGED PLAN - PIPING
DIKE BETWEEN BASINS (TYP FOR 4)
PERIMETER ANCHORAGE - (TYP)
OUTLET
INLET
LONGITUDINAL SECTION
LEGEND
EXISTING CONTOUR
FINISH CONTOUR
TOP OF BERM
NOTES:
1. FOR SPECIFICATIONS SEE B-100-C2.
2. FOR PIPING CODES SEE SPECIFICATIONS.
3. FOR LINE LEGEND SEE H-2-69267.
CHECKED FOR AS-BUILT
U. S. ATOMIC ENERGY COMMISSION
RICHLAND OPERATIONS OFFICE
AUTOMATION INDUSTRIES, INC.
VITRO ENGINEERING DIVISION
CIVIL
PLOT PLAN & DETAILS
PUMP PIT 207-A &
RETENTION BASINS
H-2-69292

Scoping Summary: 207-A-SOUTH (Retention Basin)

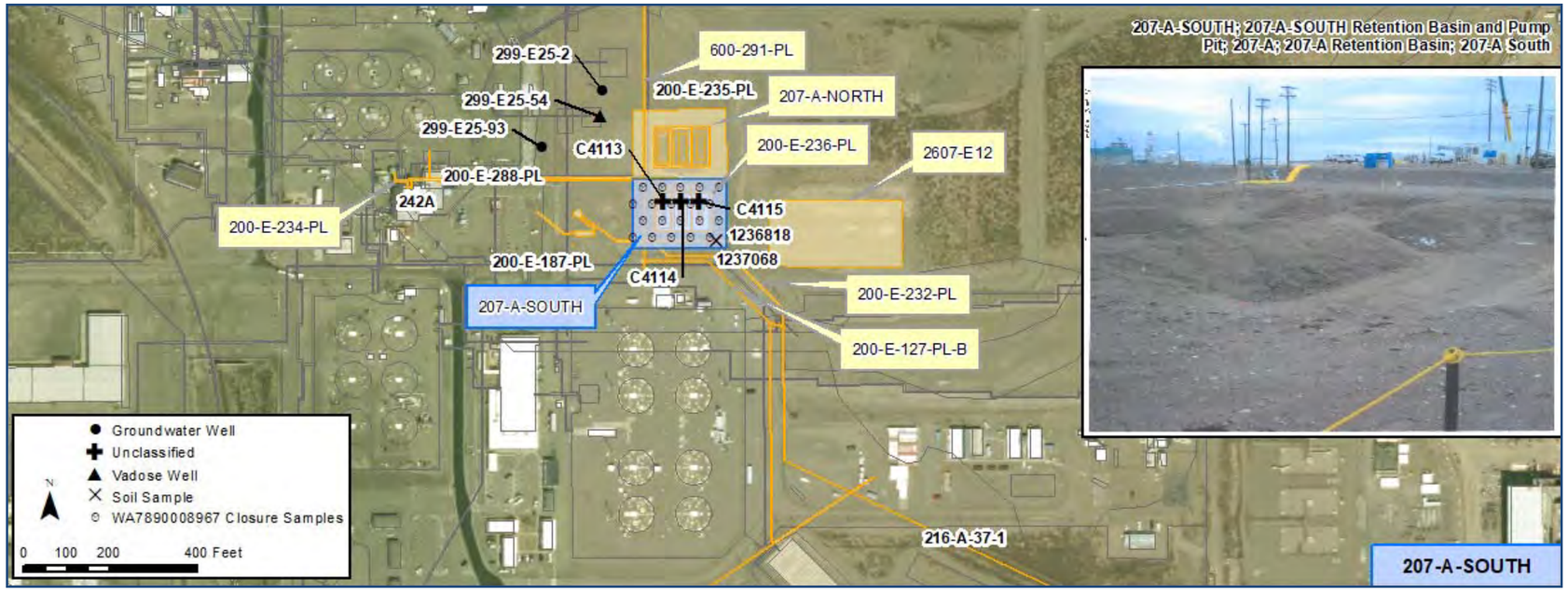
History

The 207-A South waste site was an inactive retention basin located in the 200 East Area, directly east of the 242A Evaporator. The retention basin and its underlying distribution piping network were demolished/removed in 2015.

It consisted of three separate open liquid-effluent storage cells. The cells were fed from the pump pit, situated between 207-A North and 207-A South.

The basin began operations in 1977 and was used for interim storage of the 242A Evaporator process condensate transferred to the basin via the 200-E-234-PL pipeline, and the basin's distribution lines, 200-E-236-PL. The interim storage allowed for sampling and analysis before the condensate was discharged to the 216-A-37-1 crib for final disposition via the 200-E-232-PL pipeline. If the condensate did not meet discharge specifications, the liquid waste was retrieved by the 242A Evapoarator for reprocessing or storage in the tank farm.

The final discharge was in 1989, when it was determined that the process condensate contained mixed waste regulated under WAC 173-303, and the basin was emptied and taken out of use.



Construction

The retention basin is a RCRA TSD Unit, S-2-7, that was designated as an interim status surface impoundment under its RCRA Part A permit. A closure plan for the unit was submitted to the Department of Ecology in 2006, and a revised plan (DOE/RL-2005-89)was submitted in 2015. A Class III permit modification was issued on October 6, 2016, effectively closing the 207-A South retention basin as a Hanford Facility TSD Unit.

While the basin structure has been demolished and removed, its original construction characteristics are below.

- Composition: 3 interim storage cells
- Material: elastomeric-coated concrete, to prevent contaminants from penetrating the concrete
  - No cracks existed in the basins and no leaks had been reported from the basins.
- Bottom Dimensions:
  - Length: 55 ft
  - Width: 10 ft
  - Depth: 7 ft
- A 4-in. fill line entered each basin inside the basin structure
- A 3-in. drain line was present at the bottom of each cell
- Cell Capacity: 70,000 gal
- Total 207-A-South Capacity: 210,000 gal

Features Of Interest

- The open excavation from the TSD closure action has not been backfilled, as of November 28, 2016.

Relevant Characterization

- 2004: TSD unit characterization sampling completed via C4113, C4114, and C4115 boreholes drilled through the concrete basins: 44 samples from depths down to 14 ft bgs. Results indicated no dangerous waste constituents stored in the basin during its operational period exist in basin soil or on concrete structures above analytical clean closure standards, in accordance with WAC 173-303-610.
- *See Page 2 for a depiction of nature and extent of the contamination, as defined by existing data.*

Waste Streams

- 1977 to 1989: 242A Evaporator process condensate that was mostly water containing small quantities of ammonia and inorganic constituents, and trace quantities of volatile organics and radionuclides.
- Stored and discharged ~100 million gallons of process condensate, thought to contain the following constituents: Am-241, Cs-137, tritium, iodine-129, Pr-147, Pu-239, Ru-106, tin-113, and Sr-90.

Misc./Other Relevant Information

- The 2004 characterization activities for the 207-A South retention basin were performed as part of the remedial investigations for the 200-PW-2 and 200-PW-4 Process Waste Operable Units.
- In 2015, in support of the demolition/removal of the retention basin, multiple radiological surveys were conducted prior to, during, and after the action. No activity above background was reported (i.e., <5,000 dpm/100cm2, beta; <500 dpm/100cm2, alpha).

Site Interfaces

Site Intersects:

200-IS-1 OU

- 200-E-127-PL-B
- 200-E-232-PL
- 200-E-234-PL

200-EA-1 OU

- 2607-E12 (septic tank)

OU Unassigned

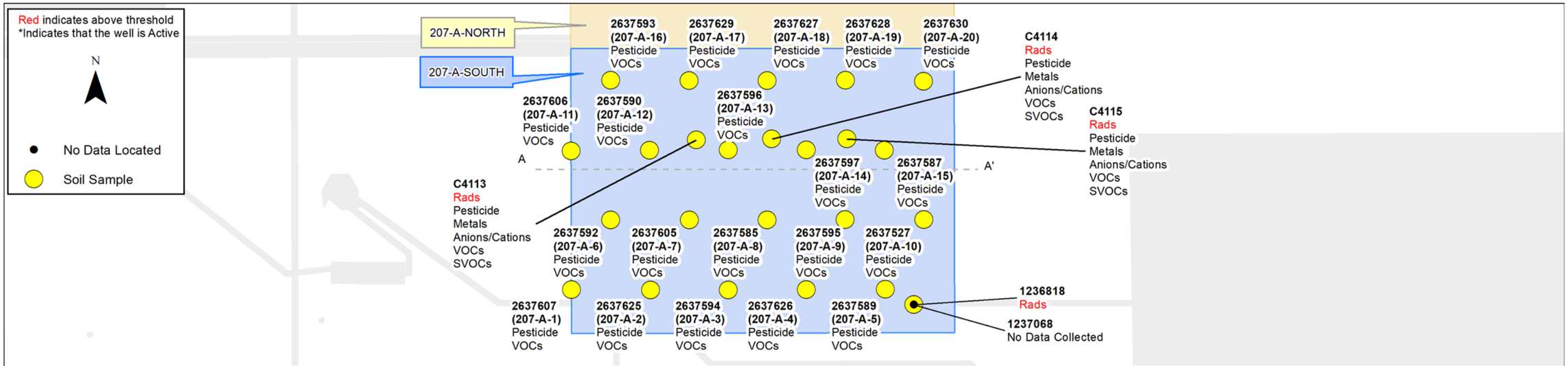
- 200-E-236-PL
- 600-291-PL (Active; TEDF Line)

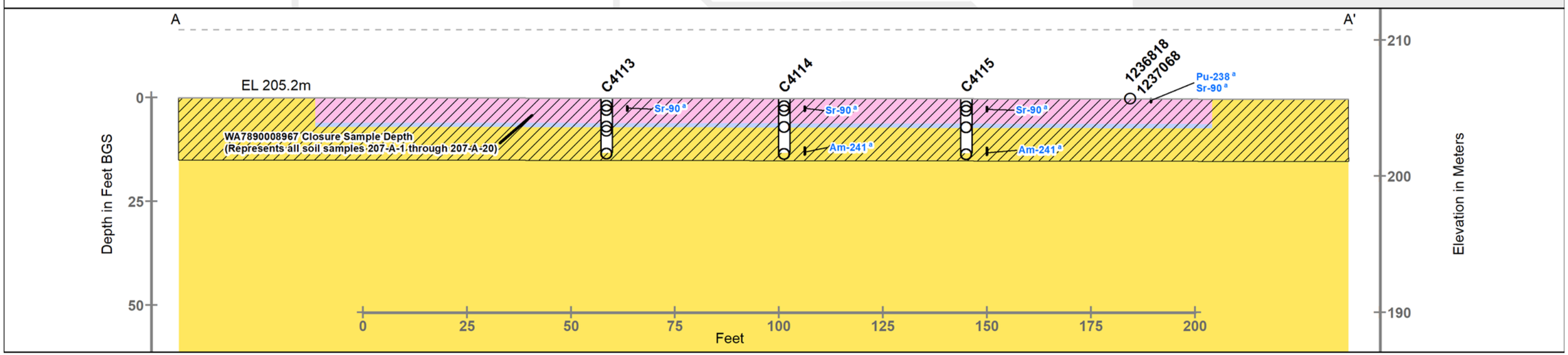
Nearby Sites:

200-IS-1 OU

- 200-E-187-PL
- 200-E-235-PL
- 200-E-288-PL

Scoping Summary: 207-A-SOUTH (Retention Basin)





Legend

- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- Well/Bore
- WA7890008967 Closure Sample Depth
- 0-15ft Below Ground Surface
- Waste Site
- Hanford formation

Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0
6. Exact locations for the following sites are unknown.
207-A-CELL 1 (2637586) 207-A-CELL 2 (2637591)
207-A-CELL 3 (2637588) 207-A-STOCKPILE (2637598)

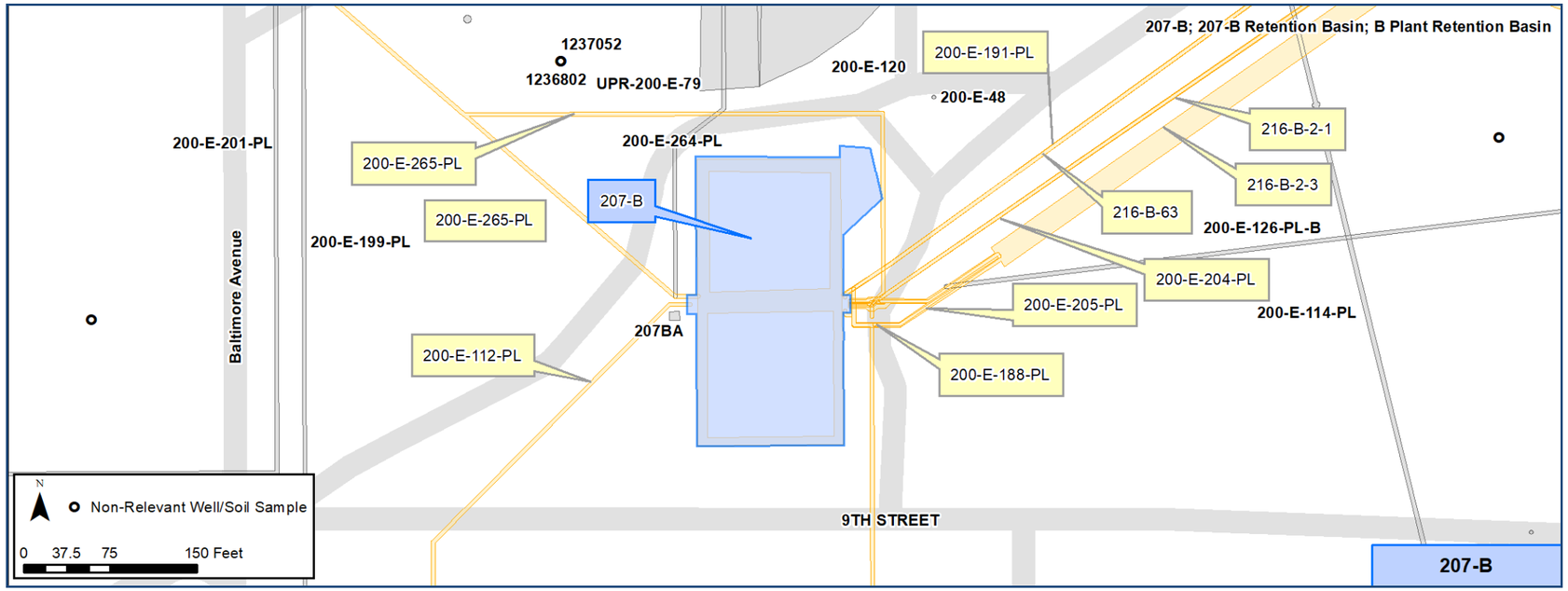
Scoping Summary: 207-B (Retention Basin)

History

The 207-B waste site comprises two inactive retention basins (i.e., north/south) that served as settling basins for B Plant process sewer effluent prior to its discharge into the 216-B-2 Ditch System; and later, to the 216-B-63 Ditch. The retention basin was in use from 1945 to 1997, when it was deactivated and isolated by filling the inlet valve box and outlet drains with concrete.

The concrete basins were contaminated by a number of incidents involving radioactive water releases. In 1953, the residual contamination in the walls was covered with a coat of tar sealant. The most significant release occurred in 1963 from a coil failure in the B Plant cerium-rare earth 6-1 storage tank, inside the 221B (B Plant) Building. General dose rates around the basins ranged from 500 mrem/hr to 2 Rad/hr, and tumbleweeds blown into the nearby 216-B-2-1 ditch were reading up to 50 Rad/hr. In response, the first 1,000 feet of the 216-B-2-1 ditch was dammed and the contaminated water from the 207-B retention basin was flushed into the ditch.

In 2005, a bio-barrier and gravel was laid down over a recurring contamination area in the NE section of the 207-B waste site (see page 2 photo).



Construction

- Composition: 2 concrete basins
- Capacity: ~1M gal (500,000 gal per basin)
- Depth: 6.5 ft
- Bottom Dimensions, per Basin Section:
  - Length: 106 ft
  - Width: 106 ft
- Top Dimensions, total basin:
  - Length: 243 ft
  - Width: 123 ft
- Surface area: 2,076 square ft

Features Of Interest

- The inlet valve pit and outlet drains for 207-B were physically isolated in 1997. The valve pit and outlet drains were filled with concrete.
- In 1953, the retention basin's concrete walls were sealed with a coat of tar to seal-in residual contamination.
- The retention basin is surrounded by a chain-link fence and has posted Contamination Area signs. The NE portion of the waste site is outside the perimeter fence.

Relevant Characterization

- 1963: A sample from the basin was collected and analyzed to estimate the amount of activity released. Results indicated that the contaminated portion of the waste was primarily Ce-144 (30 Ci) and Sr-90 (0.05 Ci).
- 1999: Blown-in tumbleweeds found and disposed from 20 ft-by-20 ft area NE of 207-B; readings to 480,000 dpm beta/gamma.
- 2001: Small area of contamination found, backfilled, and down-posted to URM (no further details located).

Waste Streams

- The retention basins were designed to take only low-level liquid waste streams.
- 1945-1997: 221B Building (B Plant) process cooling water from process equipment jackets via 200-E-112-PL. Normal activities were low.
- 1979-1997: 242B (Radioactive Particle Research Laboratory) non-radioactive liquid waste tank (500-gallon) emptied, periodically, via 200-E-264-PL.
- Cooling water from 241BX/BY Tank Farm via 200-E-265-PL.

Misc./Other Relevant Information

- The total volume discharged to the 216-B-2-1 ditch during the 1963 release was estimated to be 1.3M gallons, of which 1.1M gallons were low activity cooling water. An estimated 0.13 gallons of highly contaminated waste was discharged.
- The Engineering Evaluation/ Cost Analysis for the 200-MG-1 Operable Unit Waste Sites Identified Removal, Treatment, and Dispose (RTD) as the preferred remedial action (DOE/RL-2008-44; Rev. 0).

Site Interfaces

Site Intersects:

200-IS-1 OU

- 200-E-112-PL
- 200-E-126-PL-B
- 200-E-188-PL
- 200-E-191-PL
- 200-E-204-PL
- 200-E-205-PL
- 200-E-264-PL
- 200-E-265-PL

Nearby Sites:

200-EA-1 OU

- 216-B-2-1 (Ditch)
- 216-B-2-2 (Ditch)
- 216-B-2-3 (Ditch)
- 216-B-63 (Ditch)

Nearby Facility:

- 207BA (Cooling Water Sampler Building)

Scoping Summary: 207-B (Retention Basin)

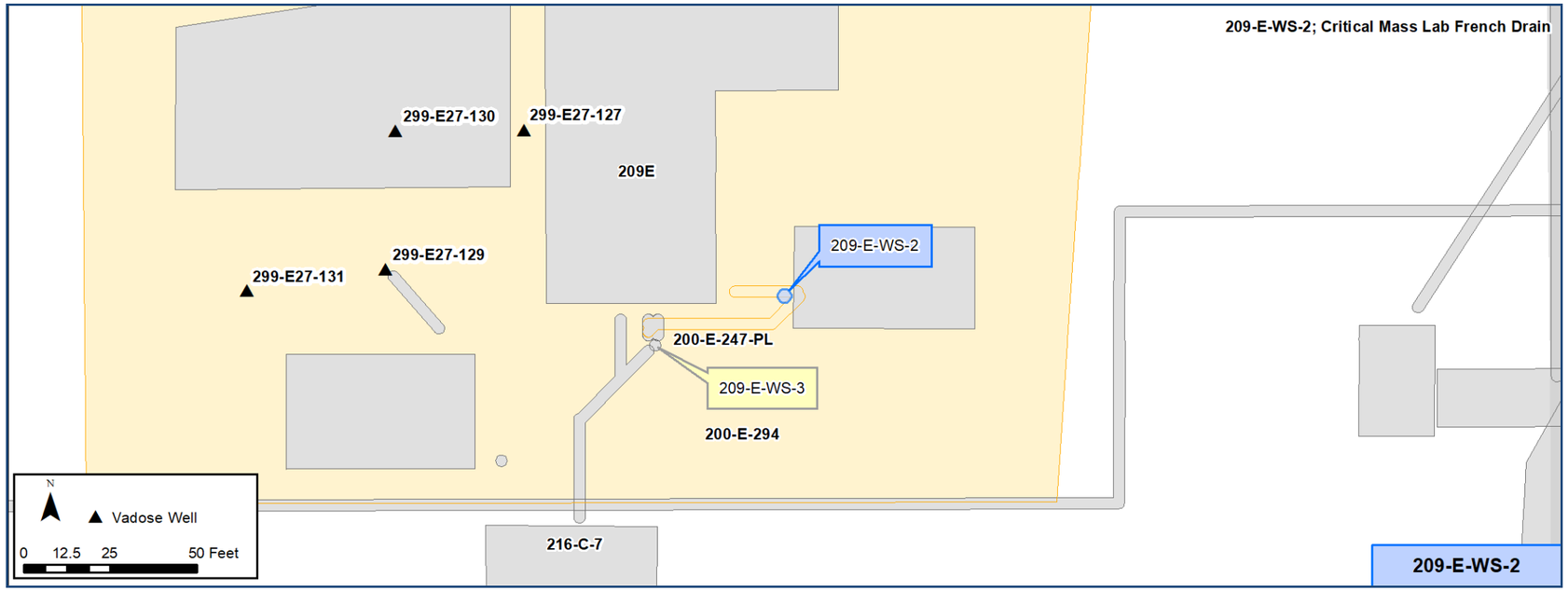
Scoping Summary: 209-E-WS-2 (French Drain)

History

The 209-E-WS-2 waste site is an inactive, underground French Drain that received condensate waste from the 209E Critical Mass Laboratory via the 200-E-247-PL pipeline. The site is located on the southeast corner of 209E.

The French drain's ooperational life was from 1960 until 1985, when the Critical Mass Laboratory became inactive. Condensate from the Laboratory's high-efficiency particulate (HEPA) air filters and heat exchange systems is believed to have been discharged to the French drain.

The Critical Mass Laboratory performed criticality experiments and research from 1960 to 1983, but remained active until 1985. The Lab was prepared for closure and decommissioning in 1987, and was decontaminated and demolished in December 2011. As part of those 2011 demolition activities, this French drain was filled with gravel, and a gravel cap was applied to several waste sites around 209E, including 209-E-WS-2.



Construction

- Diameter: 4 ft
- Depth: 8 ft bgs
- Number of incoming and outgoing pipelines:
  - Incoming Pipelines: 1
  - Outgoing Pipelines: 1
- Unit has a metal cover and is painted yellow
- Collapsed rusted pipe from Heat Exchanger at 209-E
- Stainless steel pipe from clean side of HEPA filters

Features Of Interest

- No features of interest identified

Relevant Characterization

- 2015 radiological survey recorded <5,000 dpm/100 cm-2 for total beta/gamma.

Waste Streams

- Drain Wastes & Cooling Water
  - Contact with radionuclides and nonradiological constituents may have occurred during experimental process operations at 209E (Critical Mass Lab.).

Misc./Other Relevant Information

- The Action Memorandum for Non-Time-Critical Removal Action for 37 Waste Sites in the 200-MG-2 Operable Unit Identified Confirmatory Sampling/No Further Action (CS/NFA) as the preferred remedial action (DOE/RL-2009-37; Rev. 0).
- The 209-E-WS-2 is on the UIC list

Site Interfaces

Origin/Termination

200-IS-1 OU

- 200-E-247-PL

Intersecting/Nearby Sites

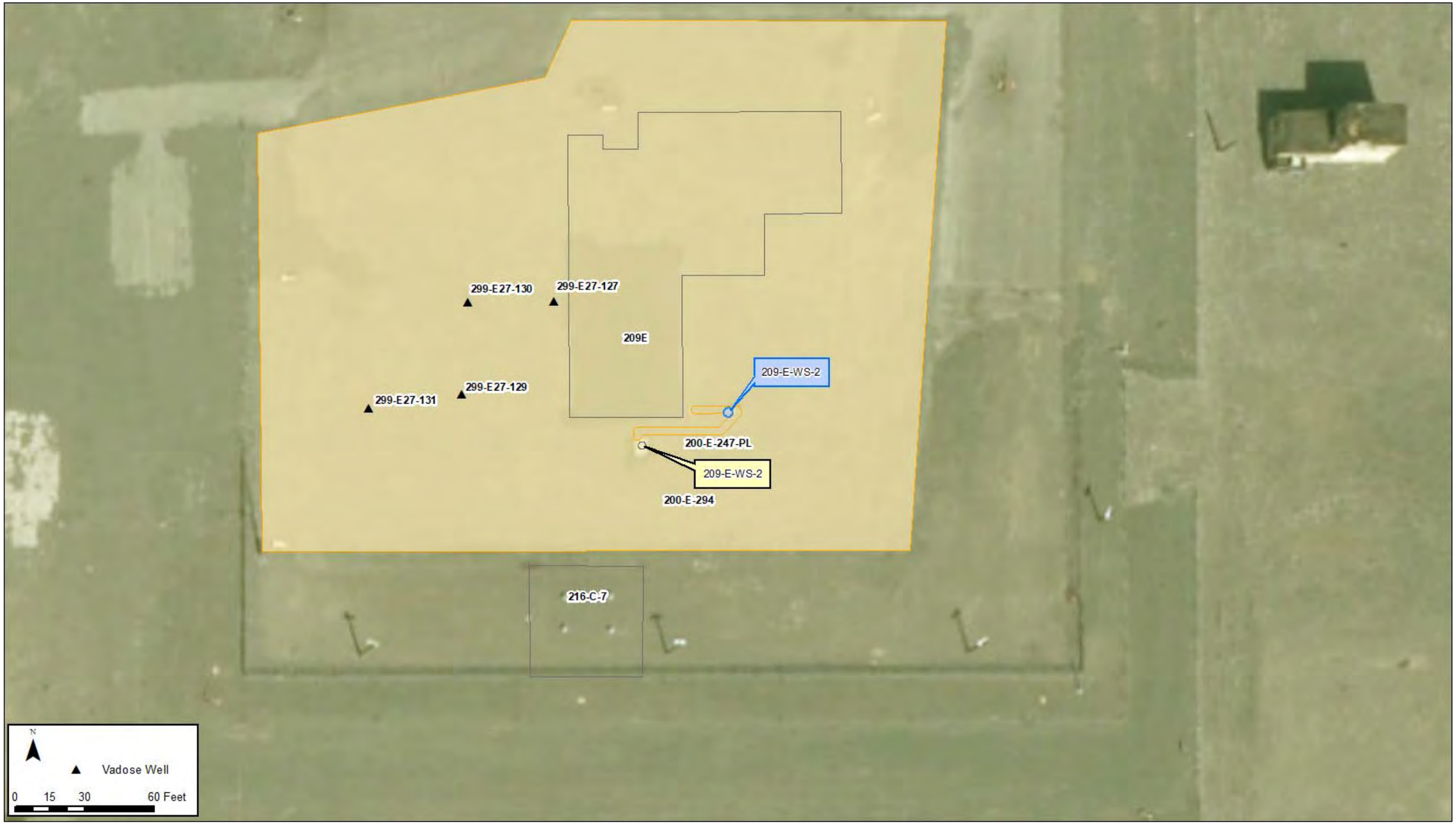
Facility

- 209E (Critical Mass Laboratory)

OU Unassigned

- 200-E-294

Scoping Summary: 209-E-WS-2 (French Drain)



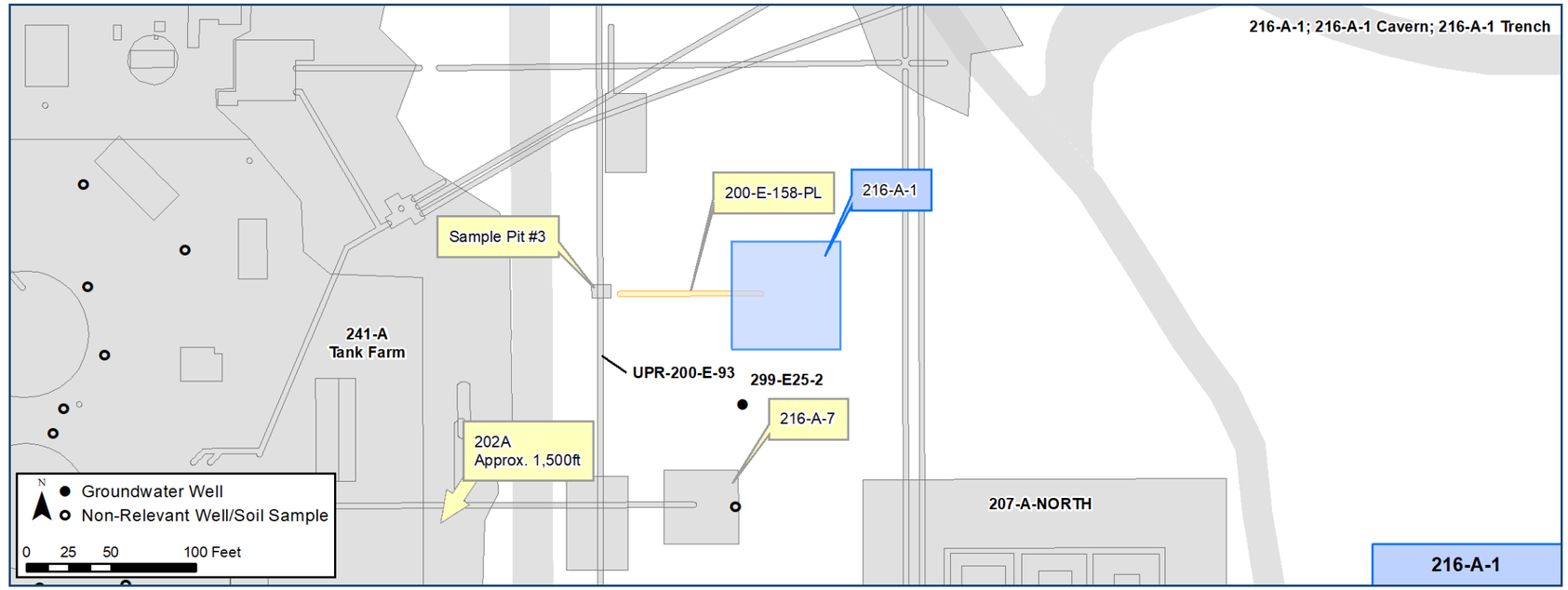
Scoping Summary: 216-A-1 (Crib)

History

The 216-A-1 waste site is an inactive crib that received waste from the 202A PUREX facility via the 200-E-158-PL pipeline from Sample Pit #3. The crib was operational from November to December 1955, when its retention capacity was reached, and the crib was deactivated and backfilled.

The 216-A-1 and 216-A-7 cribs shared a common radiological Surface Contamination Area. In 1992 the area surrounding the cribs was surface scraped, three to six inches deep. The contaminated soil was consolidated on top of both cribs. Clean fill was added and the area was re-posted as an Underground Radioactive Material Area.

200-E-158-PL was abandoned when the crib was deactivated. The status of Sample Pit #3 could not be verified through historical documents.



Construction

- Length: 30 ft
- Width: 30 ft
- Depth: 15 ft
- Side slope - surface to 7 ft bgs: 1:1.5
- Side slope - 7 ft bgs to bottom: 1:2
- Distribution Pipelines: 3
  - One 6 in. perforated Vitrified Clay Pipe (VCP), 30 ft long, 9 ft bgs
  - Two 30 ft lengths of 6 in. perforated VCP placed perpendicularly to the main distribution pipe, forming an H pattern
- Incoming Pipelines: 1
  - One 6 in. inlet VCP, enters crib at the crossbar of the H pattern distribution piping
- Approx. 7.5 ft of course rock fill below distribution pipe
- 4 in. of gravel above distribution pipe
- Two layers of Sisalkraft paper on 2 in. of fine sand
- *See construction and features details in the cut-outs on Page 2.*

Features Of Interest

- 18 to 24 in. clean soil on top of contaminated soil
- One 6 in. VCP strainer, 7.5 ft long, rising vertically from the crib center to 3 ft above grade
- One 18 in. x 18 in. x 8 in. concrete pad supporting the strainer at the crib bottom.

Relevant Characterization

- Well 299-E25-2 GPL maximum gamma detections of 75 cps at 32 ft and 80 cps at 260 ft (1984)
- Surface spots found at 90,000 cpm (1984)
- Spotty surface contamination up to 5,000 cpm in soil and tumbleweed fragments (1985)
- Surface spots found at 3,000 dpm beta (1990)
- Surface radiological survey showed the area to be below detection limits (1991).

Waste Streams

PUREX:

- Depleted uranium waste from the cold start-up run at the 202A PUREX facility
- A 1998 Radionuclide inventory of the 216-A-1 Crib included Sr-90, Cs-137 and U (HNF-1744 pg. ATT B-9)
- 25,995 gal of waste disposed.

Misc./Other Relevant Information

- The UPR-200-E-93 site is associated with former tumbleweed contamination along a fence line and is not associated with the 216-A-1 site.
- The waste site was included in the 200-MG-1 OU Engineering Evaluation/Cost Analysis (EE/CA) (DOE/RL-2008-44, Rev0), and Confirmatory Sampling/No Further Action was the preferred alternative.

Site Interfaces

Origin/Termination:

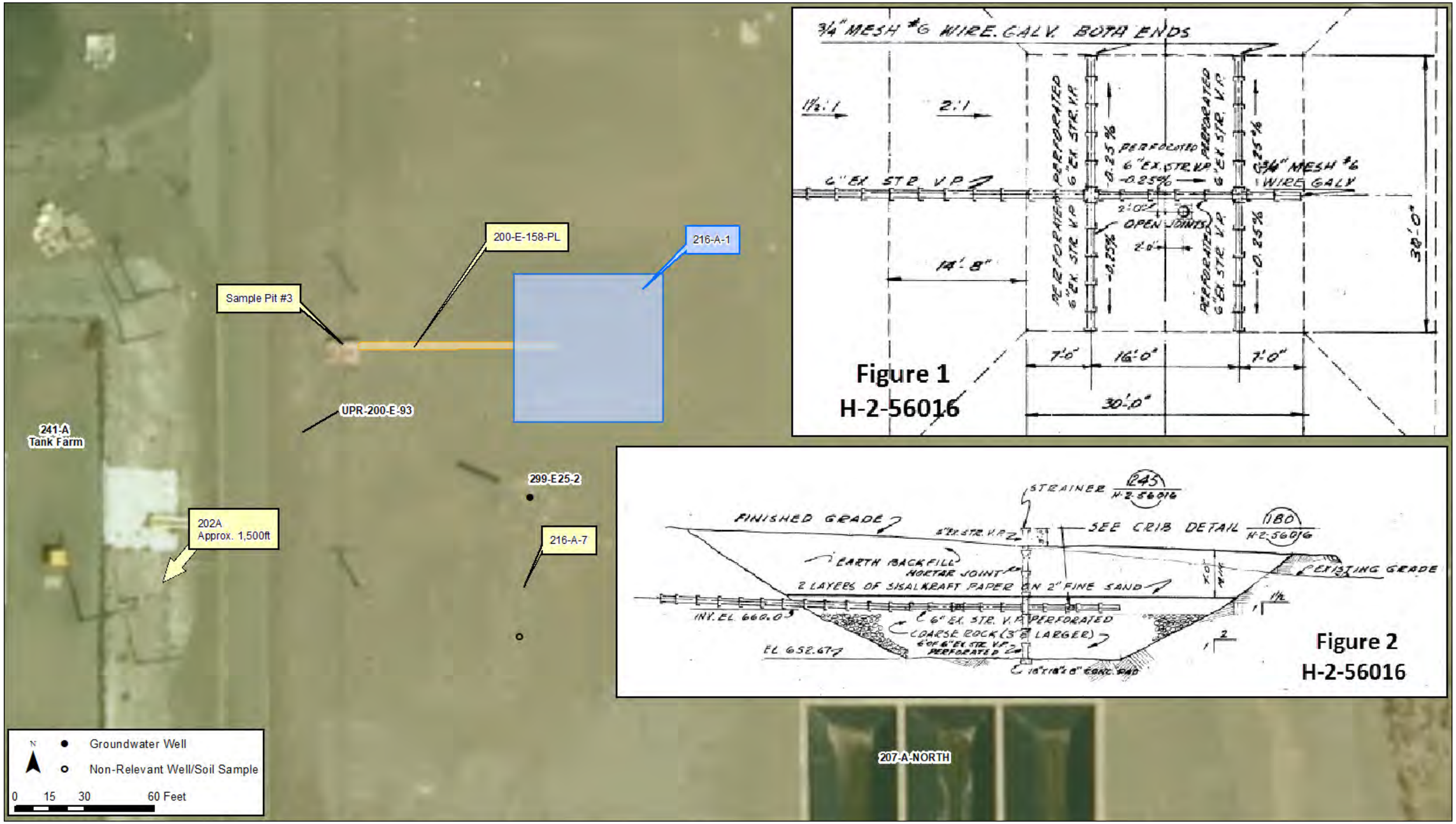
200-IS-1 OU

- 200-E-158-PL

Nearby Sites:

200-PW-3 OU

- 216-A-7 (Cavern)


200-E-158-PL
216-A-1
Sample Pit #3
UPR-200-E-93
241-A
Tank Farm
299-E25-2
202A
Approx. 1,500ft
216-A-7
207-A-NORTH
Groundwater Well
Non-Relevant Well/Soil Sample
0 15 30 60 Feet
Figure 1
H-2-56016
Figure 2
H-2-56016

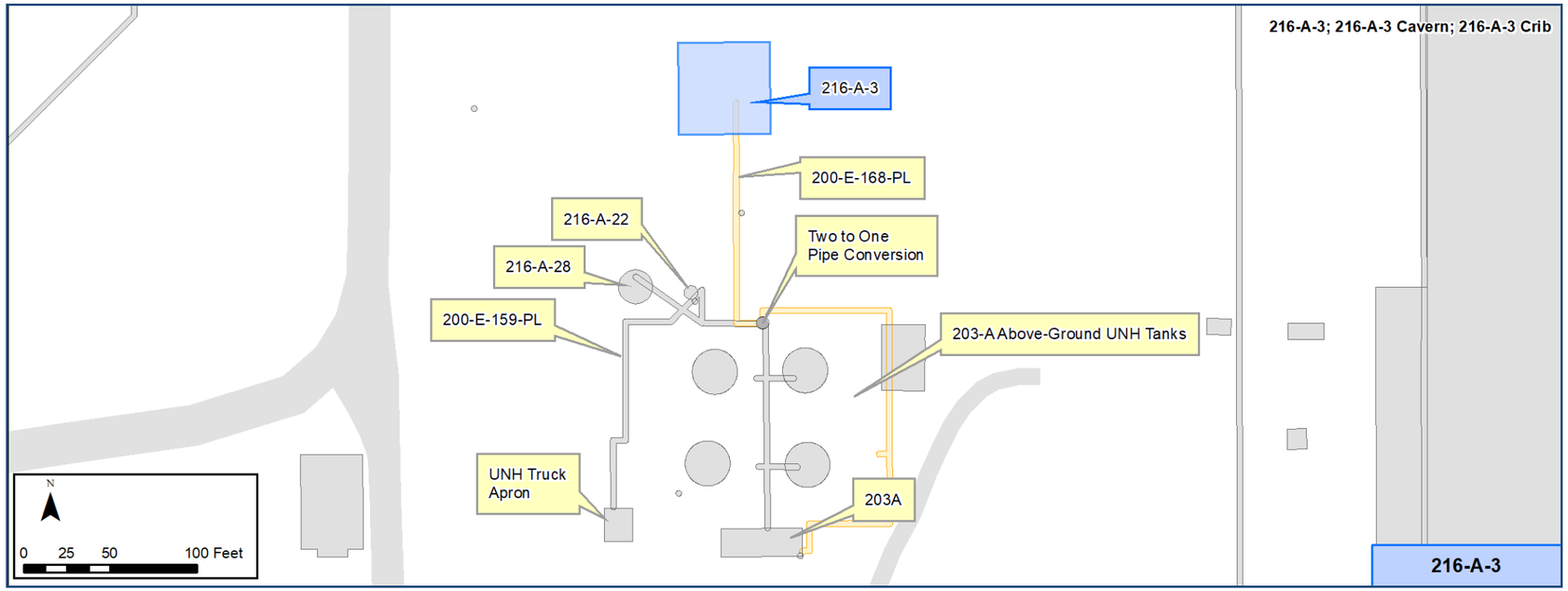
Scoping Summary: 216-A-3 (Crib)

History

The 216-A-3 waste site an inactive, underground crib that operated from 1956 to 1981, receiving waste from the 200-E-168-PL pipeline. It is located directly south of the 275-EA building.

From 1956 to 1967 the crib received silica-gel regeneration waste from the 203A acid pump house, storage pit drainage from the UNH tank farm, and liquid waste from the 203A pump house. In 1967 the silica-gel regeneration waste was discontinued and the site began receiving heating coil condensate from the 203-A tank farm and liquid waste from the 203-A enclosure sumps. The crib was closed in 1981, when waste started being reworked through the uranium cycle and disposed of according to levels of radioactivity.

In 2000, both of the 216-A-3 vent risers were sealed with a blank flange and metal tape as a preventative measure to potential radioactive emissions. A 2016 rad survey detected beta/gamma radiation near background levels.



Construction

- Shape: Truncated Square Pyramid
- Top Side Length: 71.5 ft
- Bottom Side Length: 20 ft
- Depth: ~15 ft bgs
- Side Slope:
  - Surface to 7 ft bgs: 1.5:1
  - 7 ft bgs to ~15 ft bgs 2:1
- Calculated Total Volume: ~260,000 gal
- Fill: 8 ft of gravel (10,000 cu. Ft)
- Material: 2 layers of sisalkraft paper on 2" fine sand separating gravel from backfill
- Number of incoming and outgoing pipelines:
  - Incoming Pipelines: 1
    - Depth: 8 ft bgs
    - Material: Perforated Stainless Steel
- 2-20 ft perforated pipes are placed horizontal and perpendicular to the incoming pipeline to form an H pattern 8 ft bgs.

Features Of Interest

- The crib is marked and posted with Underground Radioactive Material signs.
- 1 strainer and 1 vent show above grade.

Relevant Characterization

- 2013 and 2014 surface radiation surveys detected < 5,000 dpm/100cm-2 beta/gamma.
- A 2016 surface radiation survey detected 480 dpm/100cm-2 beta/gamma.

Waste Streams

- Processes: Drain Wastes & Cooling Water
  - Waste Types: Liquid waste from the 203A Acid Pump House; heating coil condensate from 203-A Tank Farm; silica gel regeneration waste from the 203A Building; uranyl nitrate hexahydrate (UNH) storage pit drainage; and the liquid waste from the 203A Pump House.
- Silica gel wastes transferred to 216-A-3 Crib is estimated at ~805,000 gallons.
- Waste contained uranium and radioisotopes: cesium-137, ruthenium-106 and strontium-90 (See HNF-1744 for complete radionuclide inventory).

Misc./Other Relevant Information

- Previously associated to Operable Units 200-PO-1, 200-PO-2, 200-PW-2 and 200-MG-1
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit determined the preferred removal action to be confirmatory sampling/no further action (CS/NFA) (DOE/RL-2008-44, Rev0).

Site Interfaces

Origin/Termination:

200-IS-1 OU

- 200-E-168-PL

Intersecting/Nearby Sites:

200-EA-1 OU

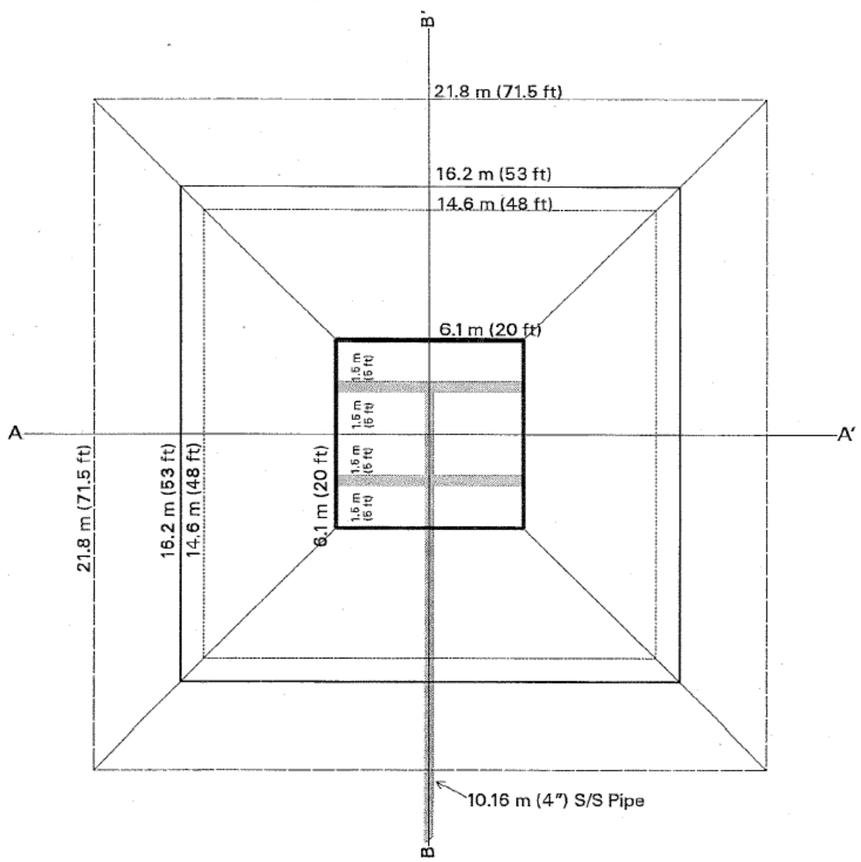
- 216-A-22 French Drain
- 216-A-3 French Drain
- UPR-200-E-17

Facilities

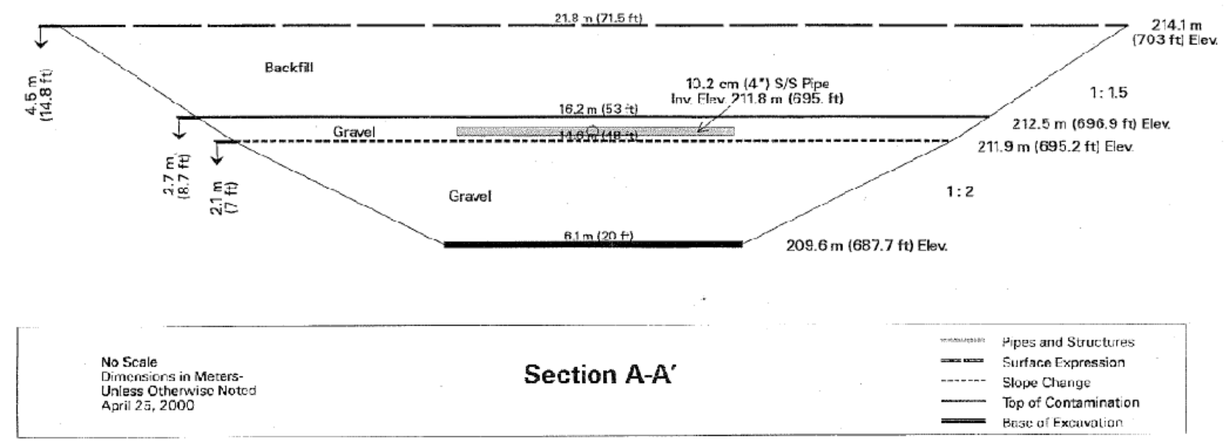
- 203A Acid Pump House
- 203-A Tank Farm

Scoping Summary: 216-A-3 (Crib)

Site: 216-A-3



Site: 216-A-3



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Scoping Summary: 216-A-6, UPR-200-E-21, UPR-200-E-29 (Crib & UPRs)

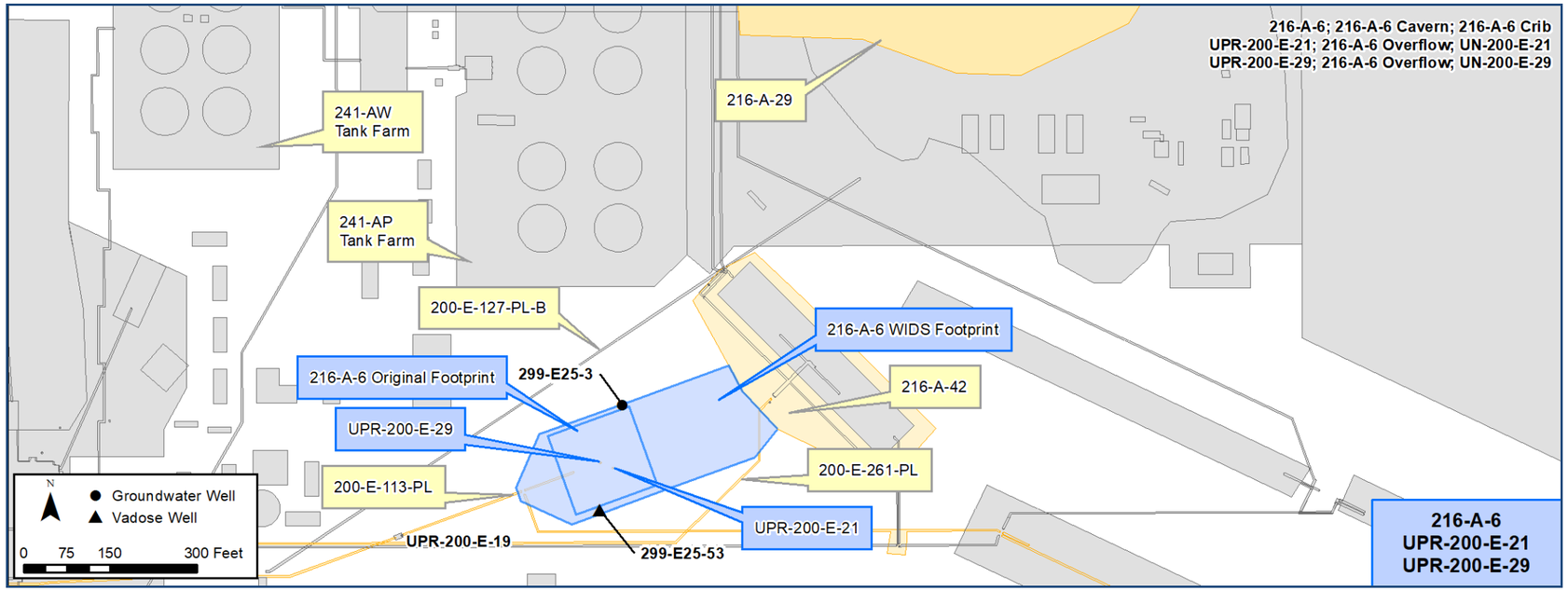
History

The 216-A-6 waste site is an inactive crib that was in use between 1955 and 1970. The crib received PUREX waste from 1955 to 1961, then again from 1964 until it was abandoned in 1966. It was deactivated in 1972.

Periodically, the crib would exceed its flow capacity and contaminate the ground surface:

- In February 1959, the 216-A-6 Crib flooded and contaminated the adjacent area to 500 mRad/hr. This incident created UPR-200-E-21.
- In January 1961, the 216-A-6 Crib flooded and contaminated the adjacent area to 30 Rad/hr at 4 ft. This incident created UPR-200-E-29.

A 1972 report states (RHO-CD-673): In 1966, a trench was dug connecting the crib overflow to the 216-A-29 ditch. The trench was later backfilled, and the contaminated area east of the crib was bladed and the remaining contaminated area was enclosed along with the area on top of the 216-A-6 crib. No additional details located. In 1972, the crib's surface contamination was scraped, then covered with a total of 28 inches of clean material (i.e., sand, a layer of plastic, then more sand and gravel).



Construction

History, continued….

In 1993, interim stabilization of the surface involved an additional surface scrape of the east crib area, then 18 to 24 inches of clean fill added atop.

The unplanned release waste sites, UPR-200-E-21 and UPR-200-E-29, are not separately marked or posted. The crib is posted with Underground Radioactive Material signs.

- Crib contains 91,000 cubic ft coarse gravel fill, backfilled over
- Side slope from surface to 7 ft bgs is 1:1
  - From 7 ft bgs to crib bottom is 2:1
- Depth: to 21 ft bgs
- Top Length: 168 ft
- Top Width: 168 ft
- Bottom Length: 100 ft
- Bottom Width: 100 ft
- Fill Material: Coarse Rock

Page 3 includes a Plan and Section view of Crib 216-A-6 from 1952 (H-2-56016).

Features Of Interest

- 15-in. VCP placed horizontally 12 ft bgs for the length of the crib.
- Five 100-ft lengths of perforated 6-in. VCP are placed perpendicularly to the first pipe at 20-ft intervals.

**See Page 4 for a depiction of the nature and extent of contamination, as defined by existing data.*

Relevant Characterization

- 1973/1974 radiological surface surveys: all ground surface dose rates less than 1 mR/hr.
- 1957-1958: Well 299-E25-3 shows Cs-137 contamination in the groundwater at 740 pCi/L.
- 1971 to 1987: Well 299-E25-3 with Cs-137 concentrations from 32 pCi/L to 6.6 pCi/L.

2013/2014: Annual radiological surveys of the general area noted no action levels exceeded (no detections) (RC-1400147).

Waste Streams

- 1955 to 1961: steam condensate, equipment disposal tunnel floor drainage, water-filled door drainage, and slug storage basin overflow waste from the 202A Building (PUREX).
- 1961 to 1964: Inactive
- 1964 to 1966: crib again received the above effluents, which were low in salt, and neutral to basic.
- Soil Inventory Model from 2007 (RPP-26744) includes 164 kg total U; 36.5 g total Pu; 105 Ci Cs-137; 44 Ci Sr-90; 1,000 kg nitrates

Effluent volume: 898.3 million gallons (HNF-1744)

Misc./Other Relevant Information

- 1970: crib was deactivated by blanking the inlet pipeline to the unit at diversion box; 1972: crib risers cut-off 2 ft below grade and filled with concrete.

In 2004, these three waste sites were included in Draft A of a feasibility study (DOE/RL-2004-24), and capping was the preferred alternative. In 2008, the three sites had been transferred from the 200-CW-5 Operable Unit into the 200-SC-1 OU, and a new interim milestone was set for its RI/FS document completion.

Site Interfaces

Site Intersects:

200-IS-1 OU

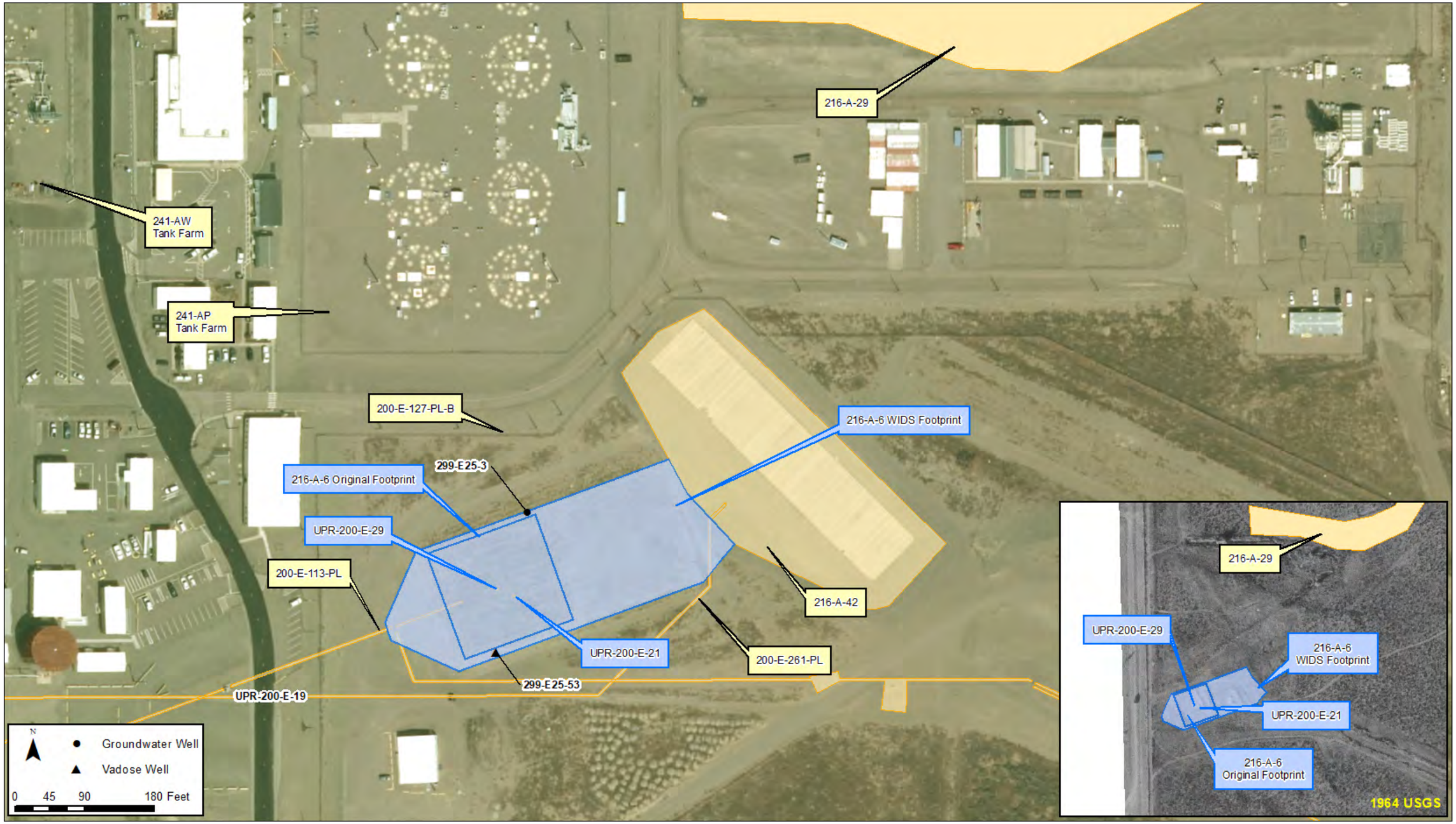
- 200-E-113-PL
- 200-E-261-PL

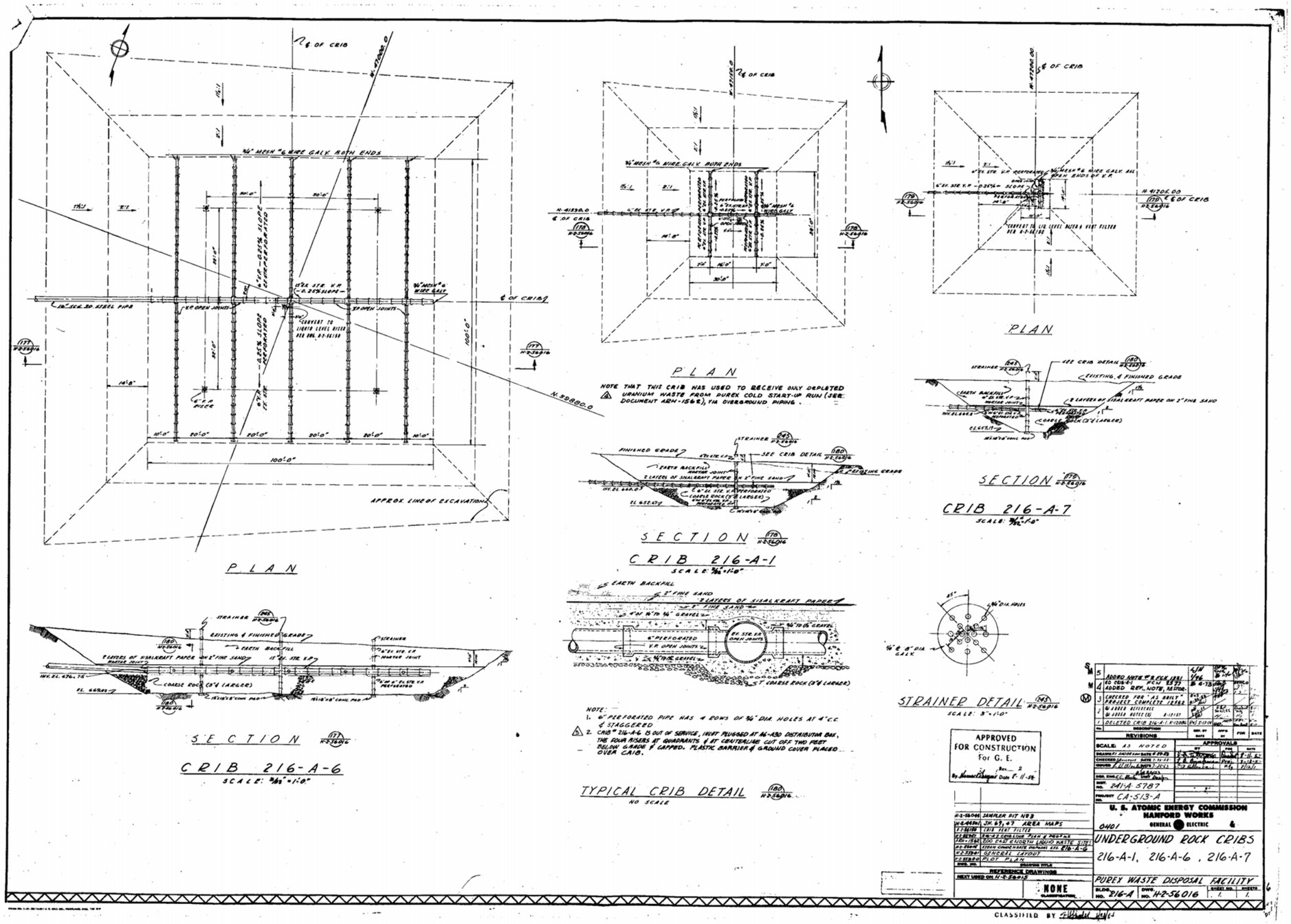
Nearby Sites:

200-EA-1 OU

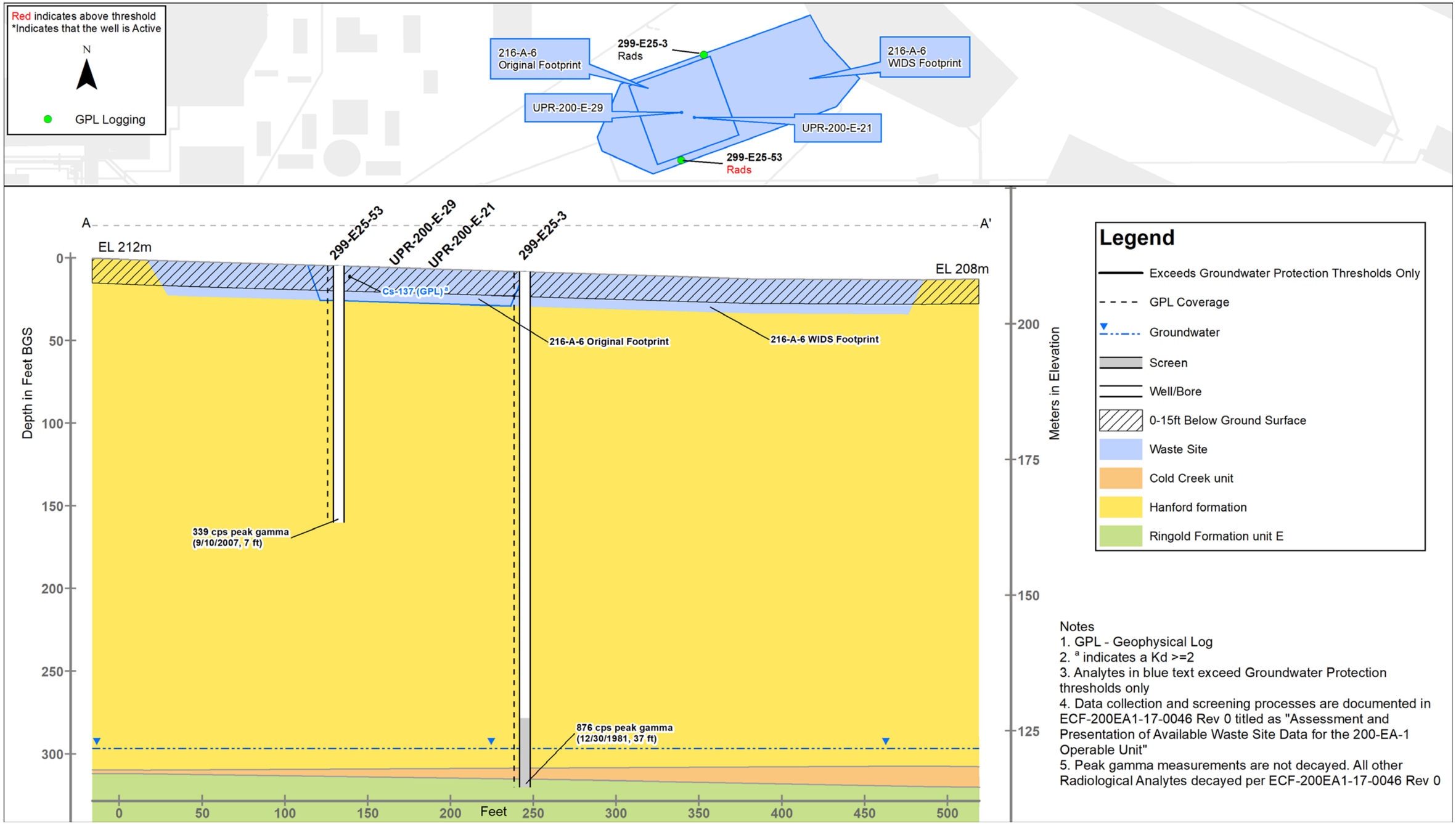
- UPR-200-E-19
- 216-A-42 (retention basin)

216-A-29 (ditch)


216-A-29
241-AW
Tank Farm
241-AP
Tank Farm
200-E-127-PL-B
216-A-6 WIDS Footprint
299-E25-3
216-A-6 Original Footprint
UPR-200-E-29
200-E-113-PL
216-A-42
UPR-200-E-21
200-E-261-PL
299-E25-53
UPR-200-E-19
N
Groundwater Well
Vadose Well
0 45 90 180 Feet
216-A-29
UPR-200-E-29
216-A-6
WIDS Footprint
UPR-200-E-21
216-A-6
Original Footprint
1964 USGS


PLAN
APPROX. LINE OF EXCAVATION
SECTION
CRIB 216-A-6
SCALE: 3/32" = 1'-0"
PLAN
NOTE THAT THIS CRIB WAS USED TO RECEIVE ONLY DEPLETED URANIUM WASTE FROM PUREX COLD START-UP RUN (SEE DOCUMENT ARH-1562), VIA OVERGROUND PIPING.
SECTION
CRIB 216-A-1
SCALE: 3/32" = 1'-0"
NOTE:
1. 6" PERFORATED PIPE HAS 4 ROWS OF 3/4" DIA. HOLES AT 4" C.C. & STAGGERED
2. CRIB # 216-A-6 IS OUT OF SERVICE, INLET PLUGGED AT A6-A30 DISTRIBUTOR BOX, THE FOUR RISERS AT QUADRANTS & AT CENTERLINE CUT OFF TWO FEET BELOW GRADE & CAPPED. PLASTIC BARRIER & GROUND COVER PLACED OVER CRIB.
TYPICAL CRIB DETAIL
NO SCALE
PLAN
SECTION
CRIB 216-A-7
SCALE: 3/32" = 1'-0"
STRAINER DETAIL
SCALE: 3" = 1'-0"
APPROVED FOR CONSTRUCTION For G. E.
U. S. ATOMIC ENERGY COMMISSION HANFORD WORKS
GENERAL ELECTRIC
UNDERGROUND ROCK CRIBS
216-A-1, 216-A-6, 216-A-7
PUREX WASTE DISPOSAL FACILITY
NONE
CLASSIFIED BY

Scoping Summary: 216-A-6, UPR-200-E-21, UPR-200-E-29 (Crib & UPRs)



Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

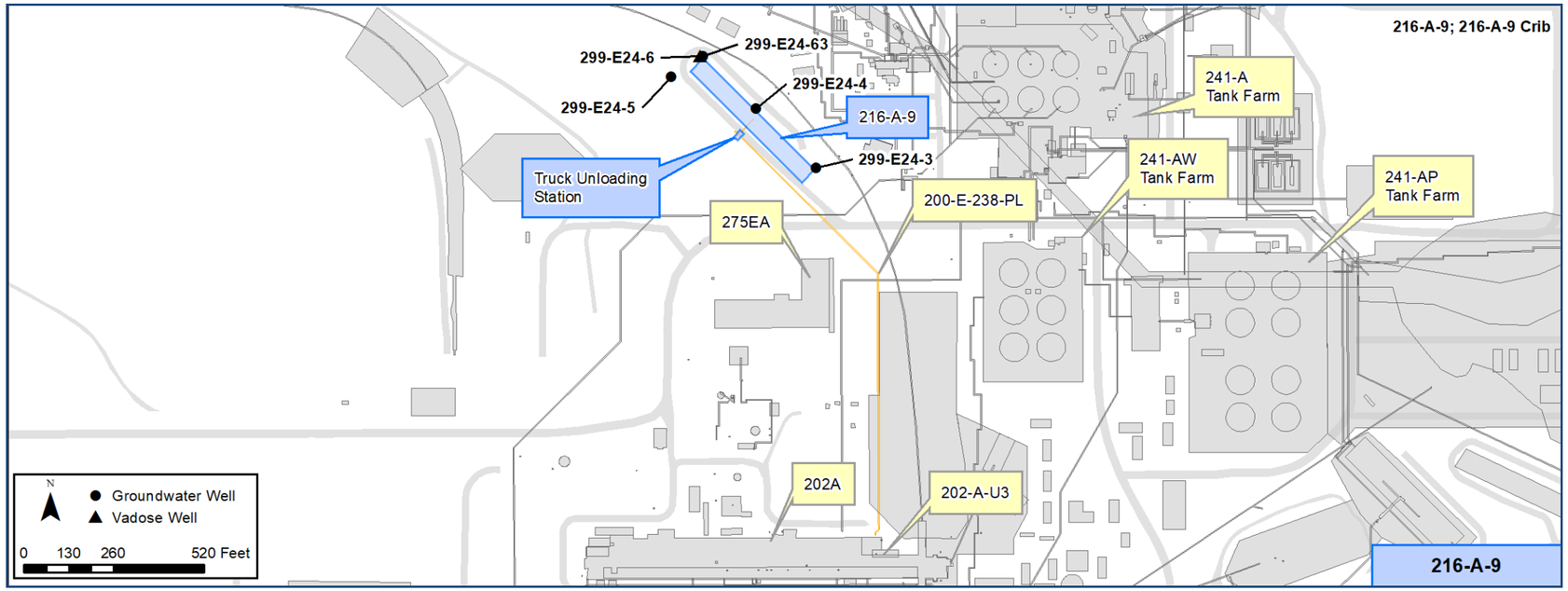
Scoping Summary: 216-A-9 (Crib)

History

The 216-A-9 waste site is an inactive crib and associated former truck unloading station, sometimes referred to as a valve station. The crib was in use from 1956 to 1969 and received waste from the 202A (PUREX) building via the 200-E-238-PL, as well as the truck unloading station for a seven-month period in 1966.

Due to condenser flow surpassing the crib's capacity, the crib was not in use between February 1958 and April 1966. The crib received 259,000,000 gal during its operational life. It was deactivated by blanking the effluent pipe to the unit north of the 202A3 Building after replacing 100 ft of the pipeline that had failed (near the originating facility 202A). Effluents were later re-routed to the 216-A-29 Ditch via the 202A Building chemical sewer.

In 1991, the truck unloading station was interim stabilized. In 1993, filters from the crib's risers were removed, surveyed, and disposed as nonradioactive waste, and the crib surface was covered with 18 to 24 inches of clean fill. The crib was marked as 'stabilized' in a 1995 RARA Summary Report. In 2000, the vent risers were sealed as a preventative measure for potential passive radioactive emissions.



Construction

- Length: 420 ft
- Width: 20 ft
- Depth: 13 ft bgs
- Material: rock
- Piping: 10-in. perforated stainless steel, placed horizontally 9 ft bgs (note: also listed as 4-in. pipe)
- Side slope: 2:1
- Ancillary equipment: Distribution box
- Surface elevation: 694 ft
- Water Table elevation: 404 ft

Features Of Interest

- No features of interest.

Waste Streams

- March-1956 to February-1958: PUREX acid fractionator condensate and condenser cooling water
- April-thru-October, 1966: 185,000 gal N-Reactor decontamination waste, likely acidic, including some solids; via truck unloading station.
- October-1966 to August-1969: inactive
- August-1969: 202A Building acid fractionator condensate.
- 300,000 kg nitrate disposed here.
- Radioactive inventory included: Sr-90, H-3, Cs-137

Site Interfaces

Site Intersect:

200-IS-1 OU

- 200-E-238-PL

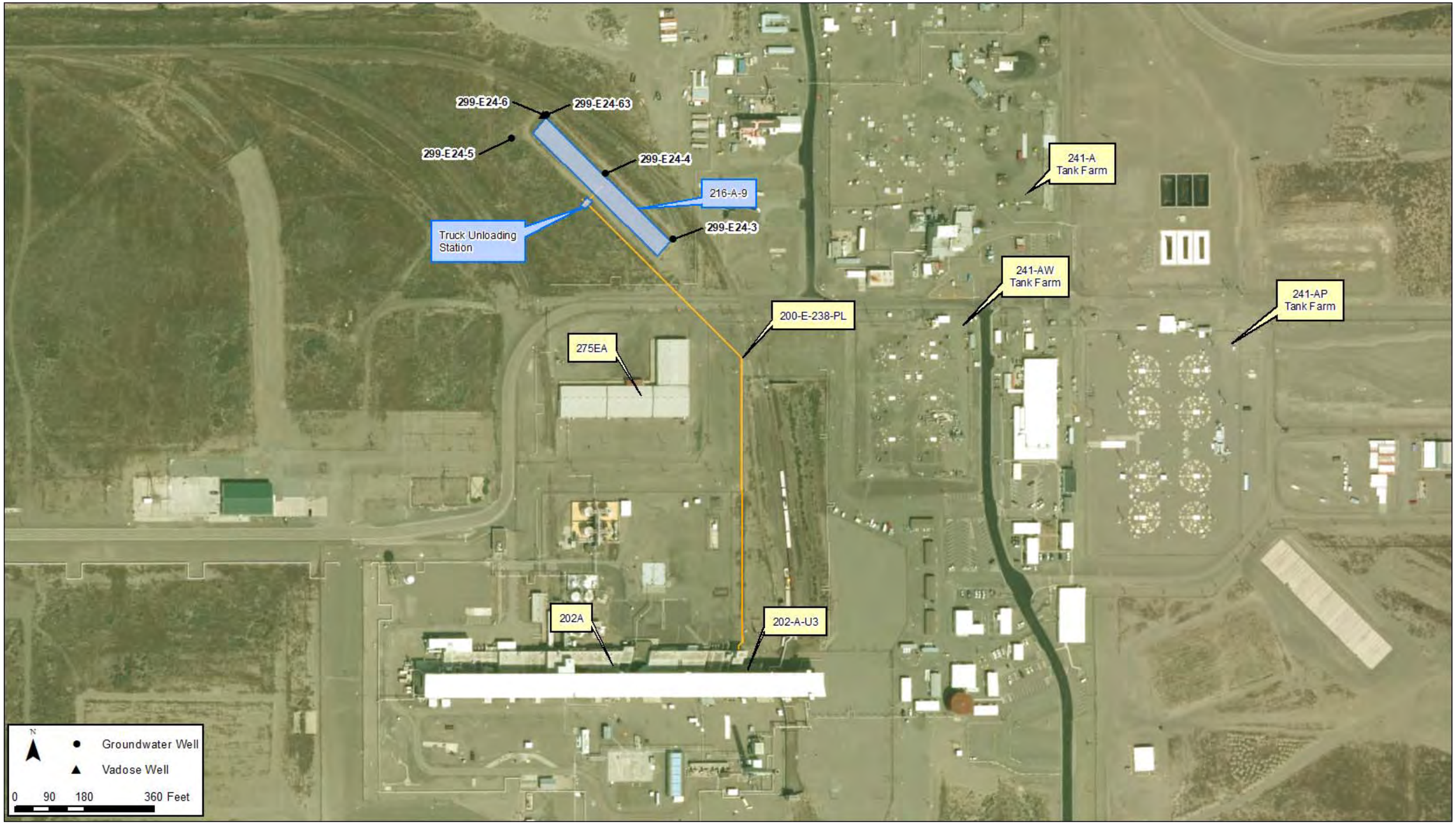
Relevant Characterization

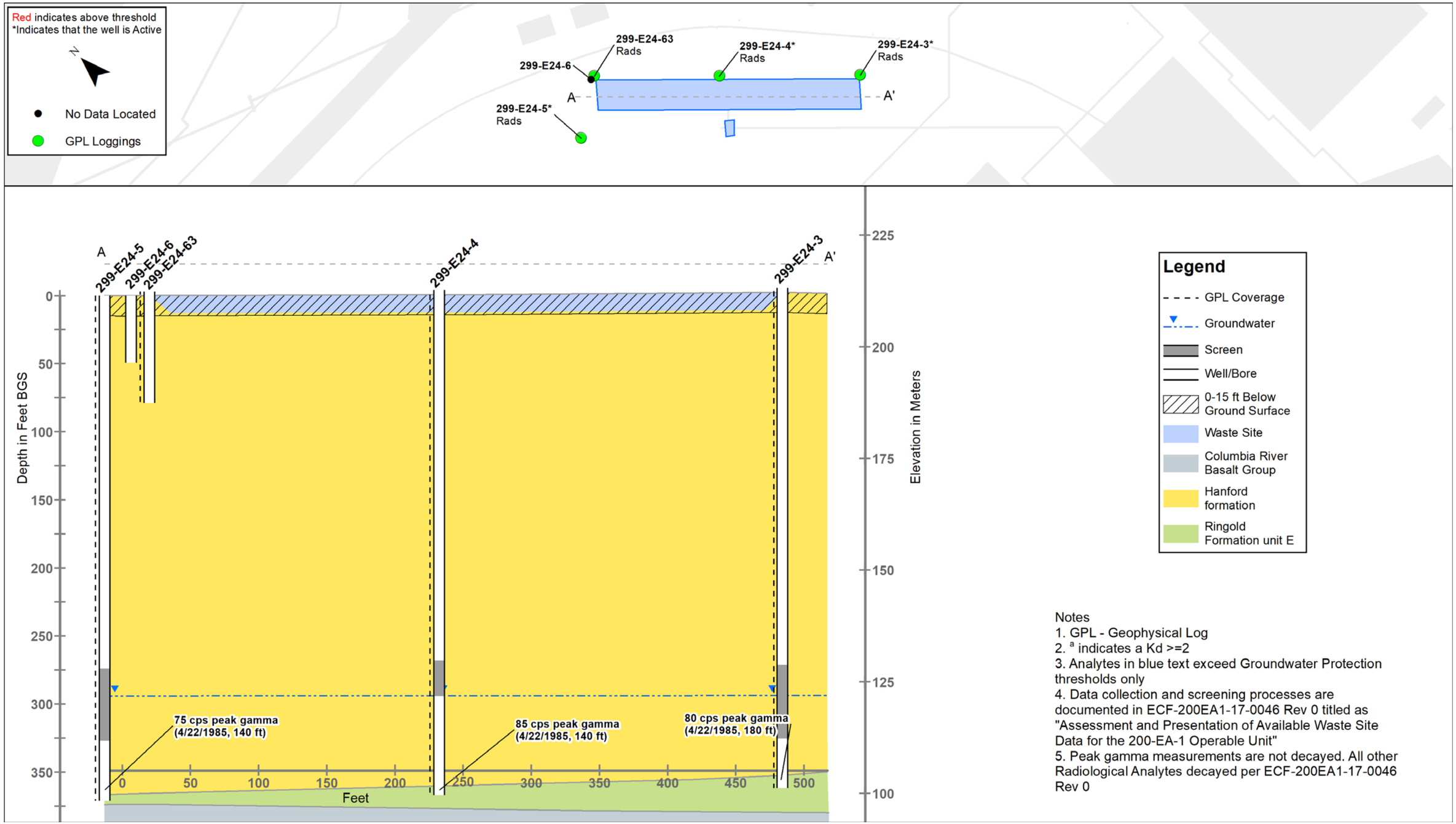
- 1959 scintillation well log: no ground contamination noted.
- 1963 log: small amount of contamination from 30-to-100 ft bgs indicated
- 1976: radiation intensity near background, as monitored from nearby wells.
- During a radiation survey in 1991, contamination was discovered on the surface adjacent to the crib at 30,000 dpm/100cm2, beta; no alpha (*81490-91-WMH-013*).

Misc./Other Relevant Information

- There are no soil samples associated with this site.
- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data.*
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit (DOE/RL-2008-44, Rev. 0) determined the preferred removal action to be Removal, Treatment and Disposal (RTD)

Scoping Summary: 216-A-9 (Crib)





Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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Scoping Summary: 216-A-10 (Crib)

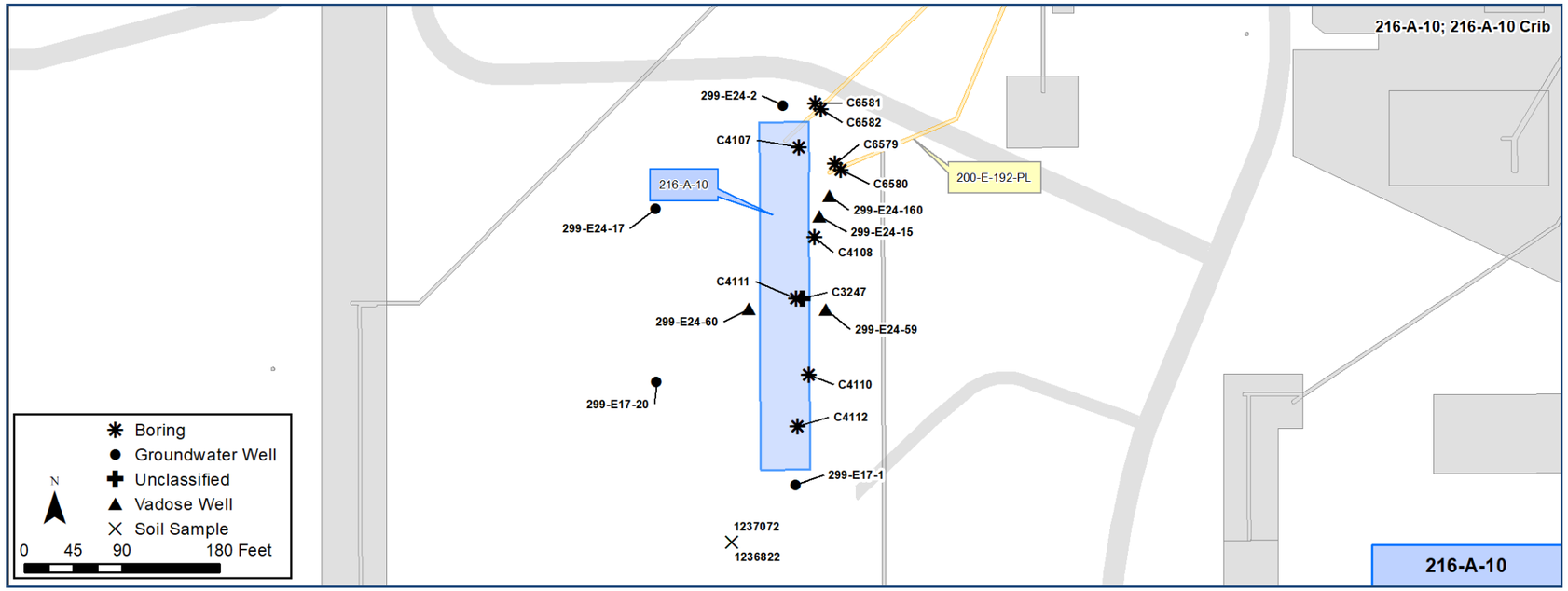
History

The 216-A-10 waste site is an inactive crib that received contaminated 202A Canyon Building PUREX waste between 1961 and April 1, 1987, when the crib was physically isolated and taken out of service. The crib was constructed in 1956.

The crib reportedly received testing water effluent in 1956, then was in use between 1961 and 1978, and again from 1981 to its isolation date. In 1962, the clay distributor pipe to the crib collapsed and caused a surface depression. A replacement line was installed parallel to the failed line; the replacement line failed in 1966.

In 2004, the site was investigated as a TSD unit with one deep borehole and five direct-push holes under the 200-PW-2/4 Work Plan (DOE/RL-2007-02, Rev 0); capping was identified as the preferred remedial alternative in the draft Feasibility Study.

In 2009, the Department of Ecology was formally requested to downgrade the site from TSD unit D-2-2 to a RCRA Past-Practice, due to its isolation date prior to August 1987. In 2010, Ecology concurred (Olinger letter, 3/30/2010). The site is now surrounded with light posts, chain, and posted as Underground Radioactive Material.



Construction

- Excavation Dimensions: 275 ft X 45 ft X 45 ft deep bgs
- Rock fill: 15 ft thick; 414,000 cubic feet - since back-filled over
- Wedge-shaped cross section
- Side slope: 1:1.5
- Crib pipe: one 8-in. diameter SST, horizontally 30 ft bgs
- Water table: 310 ft bgs

- *See Page 4 for 216-A-10 Crib Plan & Details.*

Features Of Interest

Boreholes:

- C3247 (to 324 ft bgs)
- C4107, C4108, C4110, C4111, and C4112 (to 60-to-90 ft bgs)
- C6579, C6580, C6581, and C6582 (to 34 ft bgs)

Groundwater wells used to monitor the crib:

- 299-E17-1, 299-E17-20, 299-E24-2, 299-E24-17 (to 150-to-350 ft bgs)

Vadose wells:

- 299-E24-59, 299-E24-60, 299-E24-160, 299-E24-15

Soil samples:

- 1237072, 1236822.

Relevant Characterization

- 2003: one deep borehole + five direct-push boreholes; majority of radiological and non-radiological contamination detected between 40-to-60 ft bgs. Cs-137 was major radiological contaminant, located between 48-to-84 ft bgs, max concentration at 62 ft bgs.
- Groundwater in vicinity of the crib indicates elevated levels of tritium and nitrate.
- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- Received approximately 848,000,000 gallons of acidic Plutonium-Uranium Extraction process distillate (PPD) and condensate
- Received 138,096,000 pounds of waste in 1986.
- *HNF-1744, ATT C-42*, radioisotopes (decayed to 12/31/98) included:
  - H-3, Co-60, Se-79, Sr-90, Zr-93, Tc-99, Ru-106, Pd-107, Cd-113M, Sb-125, I-129, Cs-137, Pm-147, Sm-151, Eu-152, Eu-154, Ra-226, Th-232, U-234, U-235. Prior documents disagree on radionuclide inventory present.
- 1,900,000 kg Nitric Acid

Misc./Other Relevant Information

- Eu-154 has been detected at depths between 60 ft bgs down to 109 ft bgs in 299-E24-160, 299-E-24-60, and 299-E24-59. The max concentration is 12 pCi/g at 60 ft bgs in 299-E24-60. *This information is not captured in current data sheets, so cannot be verified.*
- 216-A-10 was included in both the the 200-PW-2 and 200-PW-4 OU Feasibility Study (DOE/RL-2004-85, Draft A) and Supplemental Remedial Investigation/Feasibility Study Work Plan (DOE/RL-2007-02 VOL. 1 REV. 0).

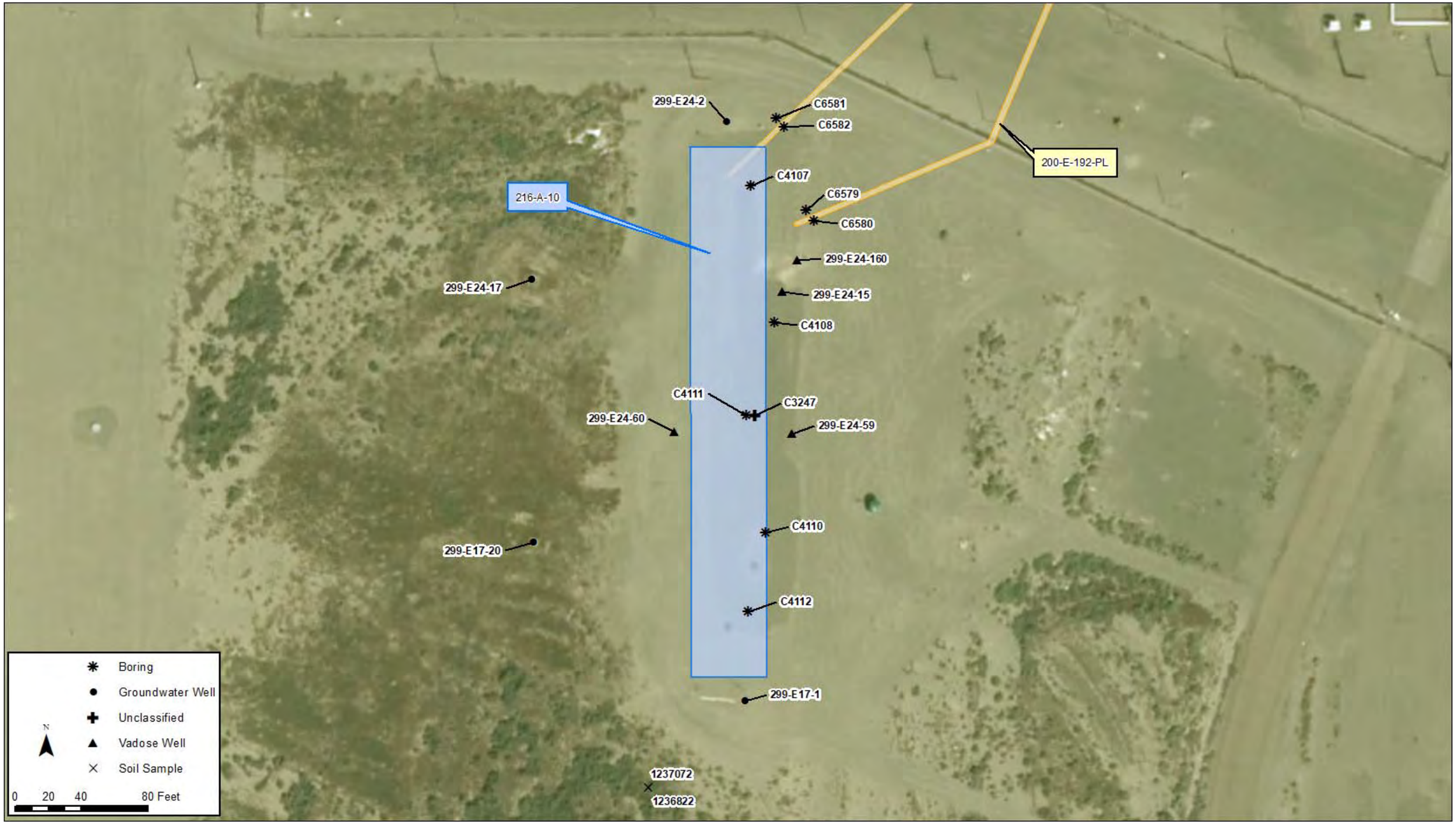
Site Interfaces

Site Intersects:

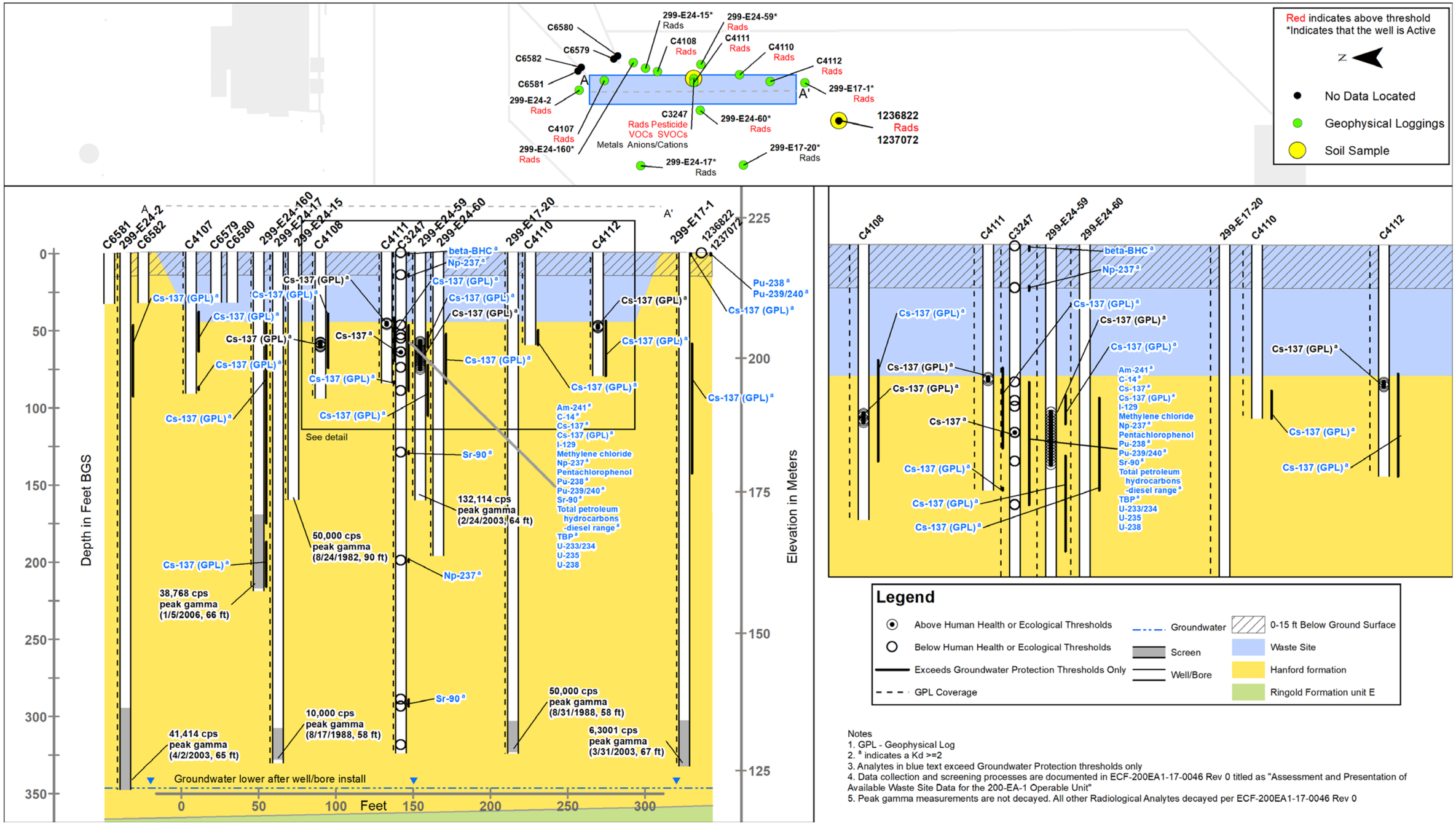
200-IS-1 OU

- 200-E-192-PL (source pipeline)

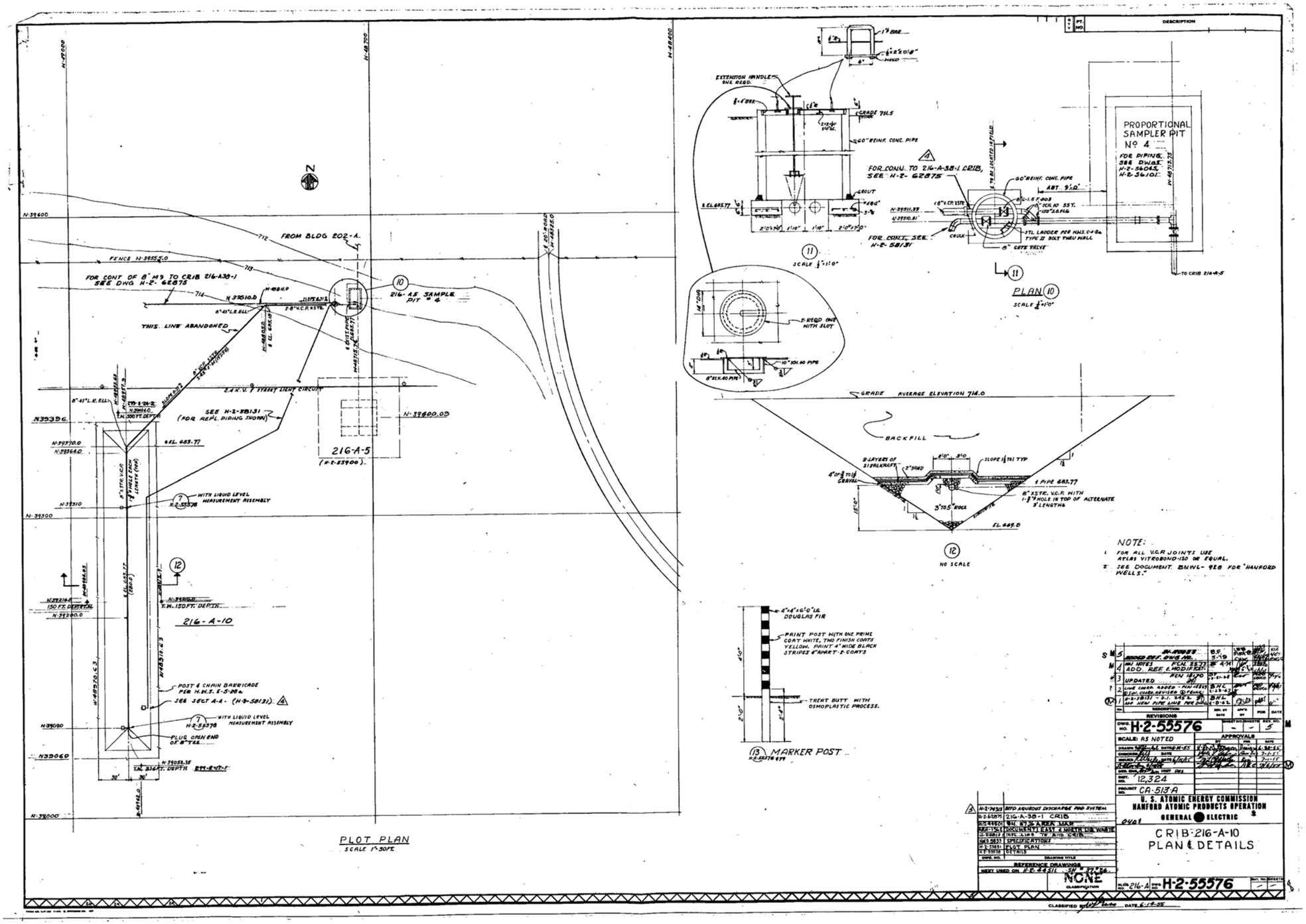
Scoping Summary: 216-A-10 (Crib)



Scoping Summary: 216-A-10 (Crib)



Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

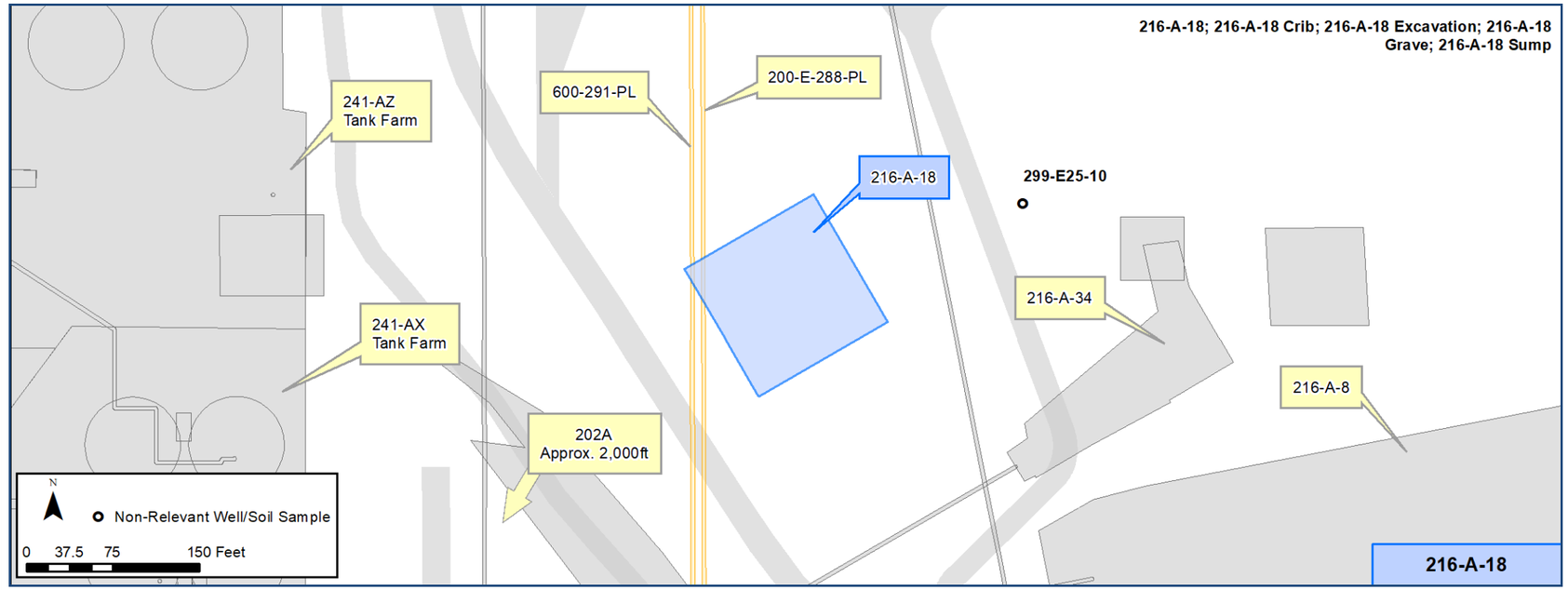

PLOT PLAN
SCALE 1"=50FT.
216-A-10
216-A-5
216-A-5 SAMPLE PIT # 4
FROM BLDG 202-A
THIS LINE ABANDONED
PROPORTIONAL SAMPLER PIT Nº 4
PLAN 10
SCALE 1/4"=1'0"
FOR CONJ. TO 216-A-38-1 CRIB, SEE H-2-62875
60" REINF. CONC. PIPE
BACKFILL
SLOPE 1/1 TYP
NOTE:
1. FOR ALL V.C.R JOINTS USE ATLAS VITROBOND-120 OR EQUAL.
2. SEE DOCUMENT BNWL-928 FOR "HANFORD WELLS."
MARKER POST
TREAT BUTT WITH OSMOPLASTIC PROCESS.
REVISIONS
DWG. NO. H-2-55576
SCALE: AS NOTED
APPROVALS
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
CRIB-216-A-10
PLAN & DETAILS
H-2-55576
NONE
CLASSIFICATION
CLASSIFIED

Scoping Summary: 216-A-18 (Trench)

History

The 216-A-18 waste site is an inactive trench that received waste from the 202A PUREX facility via an aboveground pipeline. The site was operational from November 1955 to January 1956, when it was deactivated due to reaching its retention capacity.

The excavation was intended to be a crib, but the structure was never finished. The site was deactivated by removing the aboveground pipeline and backfilling the excavation. Historical records state that the site was stabilized in 1990, but no description of specific actions taken were located.



Construction

- Length: 80 ft (bottom)
- Width: 80 ft (bottom)
- Depth: 15 ft
- Side Slope: 1:2
- 10,241,253 cubic ft of overburden soil

Although never built, the crib was designed to have the following construction:

- 7 ft of course rock fill on bottom, then approximately 2 ft of gravel with two layers of sisalkraft paper and 2 in. of fine sand
- Incoming Pipelines: 1
  - 16 in. steel pipe
- Distribution Pipelines: Ten
  - 8 in. perforated pipes, forming three box sections on either side of the main inlet pipe

Features Of Interest

- No features noted

Relevant Characterization

- Spots of contamination with up to 60,000 cpm were detected in 1982
- Surface surveys detected no contamination in 1987, 1988 and 1990.

Waste Streams

- PUREX
  - Depleted uranium waste from the cold start-up run in the 202A
- A 1998 Radionuclide inventory of 216-A-18 is available (HNF-1744 pg ATT C-99)
- 1,410 kg of Total U (03/31/1986)
- 730 kg of Nitrate
- 128,915 gal of waste disposed.

Misc./Other Relevant Information

- In the 200-MG-1 OU Engineering Evaluation/Cost Analysis (EE/CA) (DOE/RL-2008-44, Rev0), Confirmatory Sampling No Further Action (CS/NFA) was the preferred alternative here.

Site Interfaces

Origin/Termination:

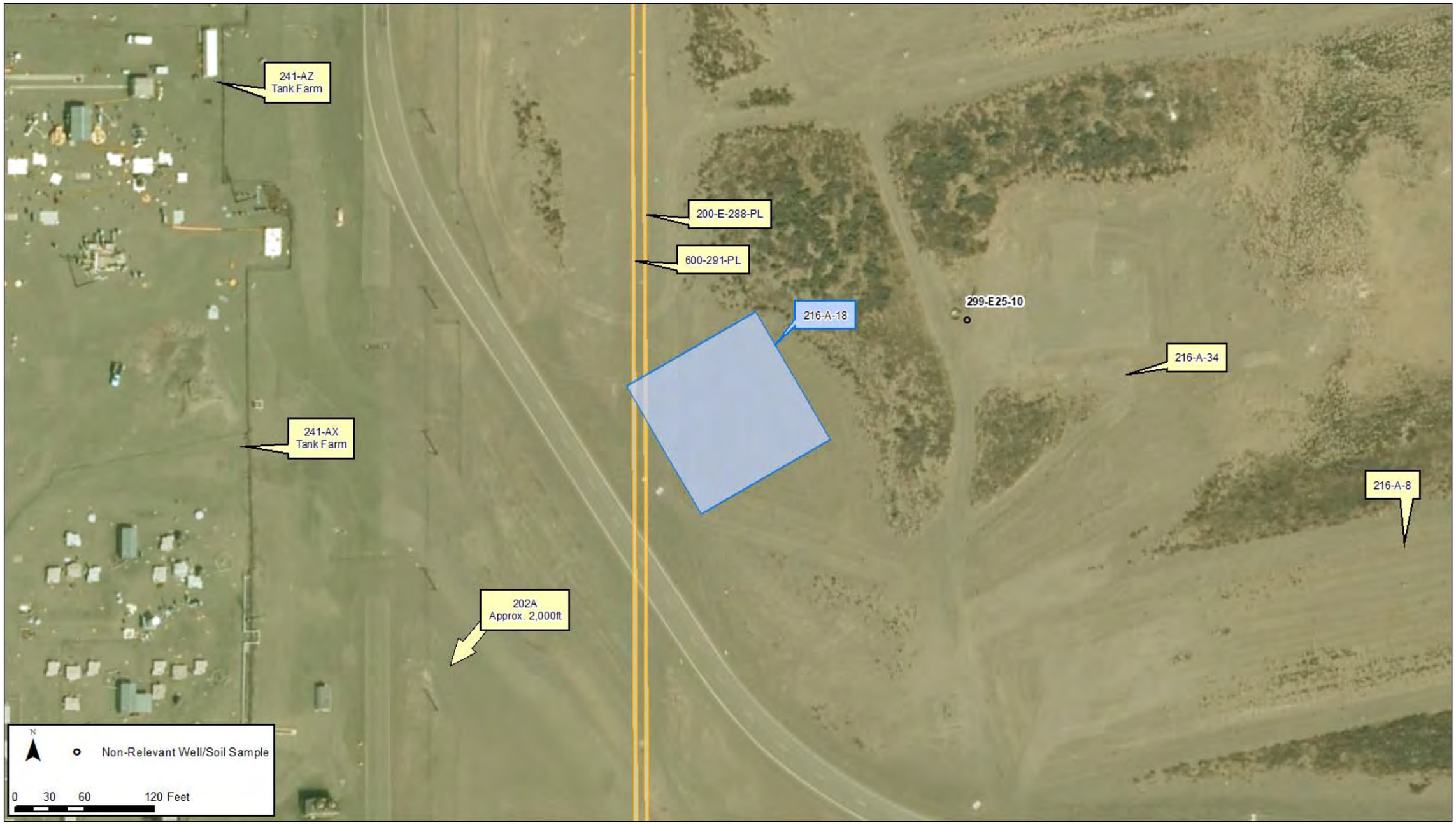
- 202A (PUREX facility)

Intersecting/Nearby Sites:

OU Unassigned

- 200-E-288-PL (active)
- 600-291-PL (active)

Scoping Summary: 216-A-18 (Trench)



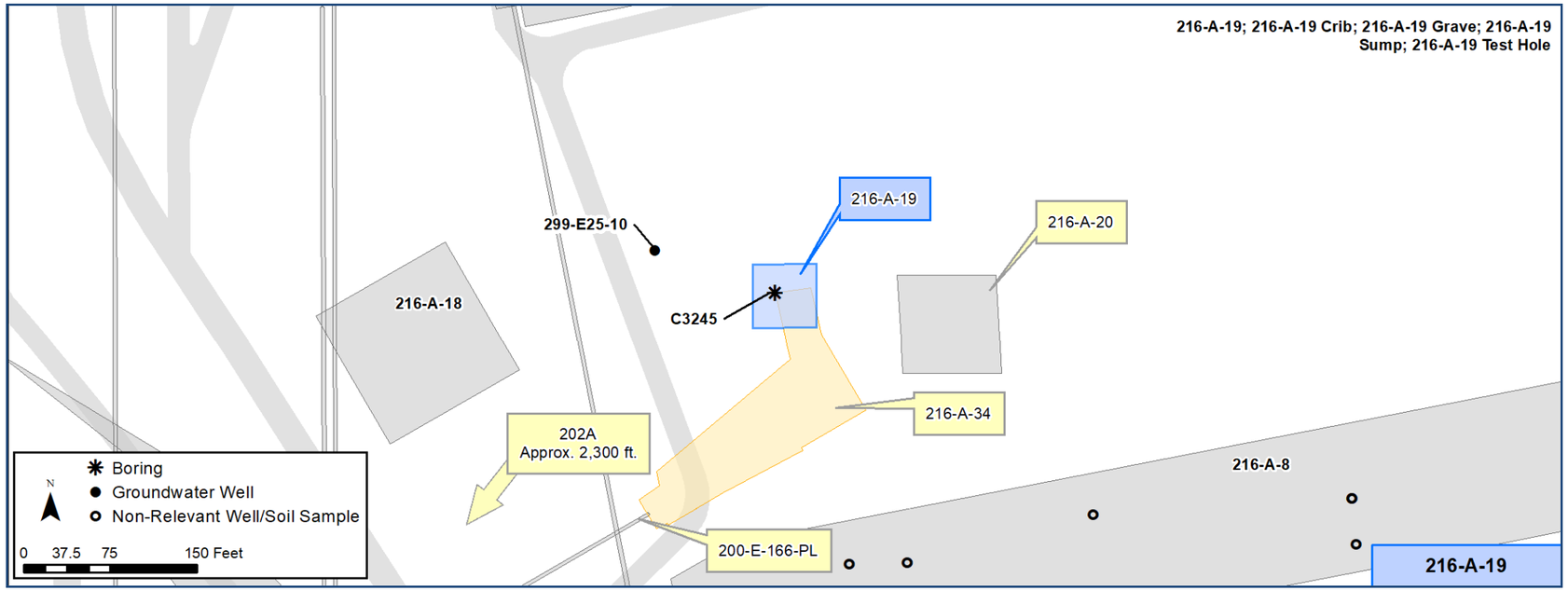
Scoping Summary: 216-A-19 (Trench)

History

The 216-A-19 waste site is an underground, inactive trench that received PUREX startup waste from the 202A PUREX Facility (via above-ground piping) and condenser cooling water from the 241A431 Tank Farm Ventilation House (via the 216-A-34 Ditch). Engineering document H-2-55900 and waste stream information indicate a prior connection between the 216-A-19 Trench and the 216-A-34 Ditch. The extent of this connection is undocumented, but cooling water from 216-A-34 likely migrated to 216-A-19.

The trench was constructed in 1955 and operational from November-1955 to December-1955, when the site's specific retention capacity was reached. The trench was deactivated in 1956 by removing the above-ground piping and backfilling the excavation. In September 1990, the surface of 216-A-19 was stabilized, but the extent of these effort is unknown.

216-A-19 was previously associated with the 200-PW-2 Operable Unit.



Construction

- Length: ~25 ft
- Width: ~25 ft
- Bottom Depth: ~15 ft bgs

Features Of Interest

- In October-2001, the Soil Contamination Area between 216-A-19 and 216-A-34 was stabilized and down-posted to Underground Radioactive Material.
- One concrete identification post labels both the 216-A-19 and 216-A-20 trenches.

Relevant Characterization

- *See Page 4 for a depiction of the nature and extent of contaminatio,n as defined by existing data.*

Waste Streams

- Depleted uranium waste from a cold start-up run in the 202A Building (PUREX start-up waste) and 241A431 Ventilation House contact condenser cooling water
  - Chemicals disposed include: 44,092 lb of Nitrate and 85,320 lb of Uranium
- Based on historical inventory reporting decayed thru 1998 (HNF-1744), waste transferred to the 216-A-19 Trench includes:
  - <3.39E-02 Ci Sr-90, <3.60E-02 Ci Cs-137, <5.67E-15 Ci Ru-106, 1.30E+01 Ci total U, <6.14E-03 Ci total alpha and 1.70E-01 Ci total beta.
  - ~291,000 gallons discharged into the trench

Misc./Other Relevant Information

- The 216-A-19 Trench was evaluated in the 200-PW-2 & 200-PW-4 feasibility study (DOE/RL-2004-85 Draft A) & proposed plan (DOE/RL-2004-86 Draft A). The preferred remedy for this site was Removal, Treatment, and Disposal (RTD). At the time of these reports (2006) the site was determined to exceed groundwater protection/ecological wildlife PRGs for total uranium & groundwater protection PRGs for nitrates. Borehole C3245 was drilled & sampled for these investigations.

Site Interfaces

Origin/Termination:

200-EA-1 OU

- 216-A-34 (Trench)
- 202A above-ground piping (since removed)

Intersecting/Nearby Sites:

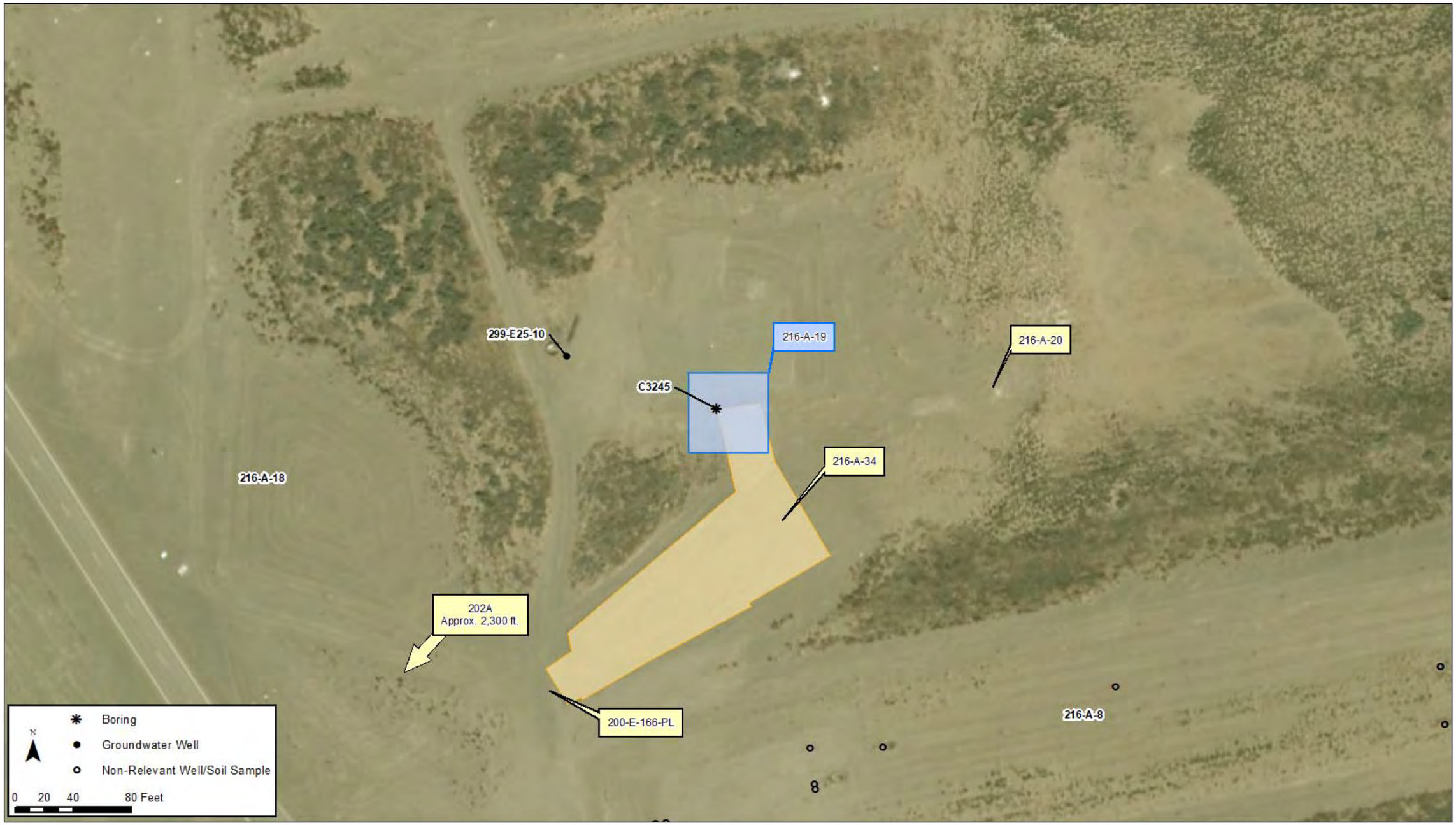
200-EA-1 OU

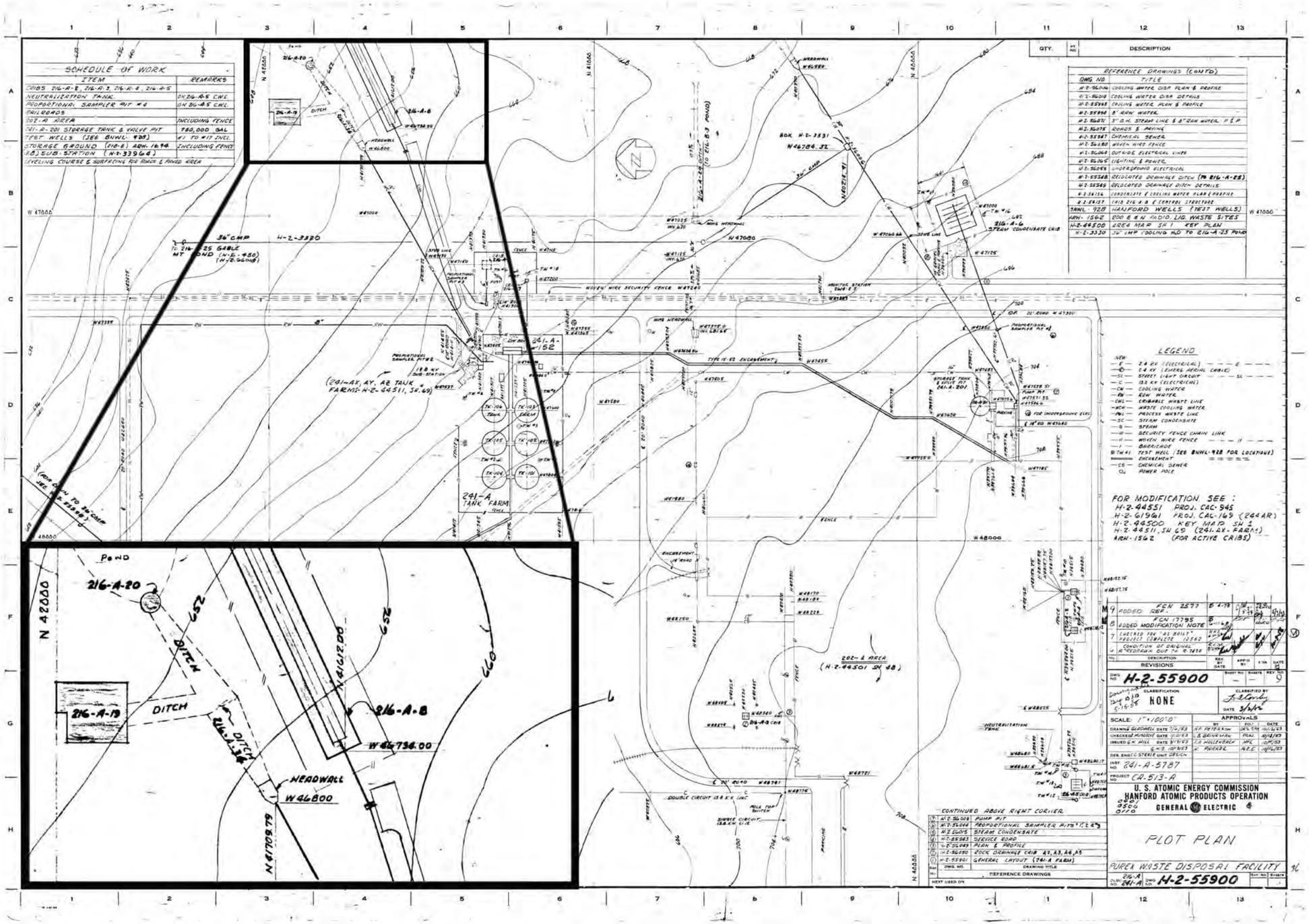
- 216-A-20 (Trench)
- 216-A-8 (Crib)
- 216-A-18 (Crib)

200-IS-1 OU

- 200-E-166-PL

Scoping Summary: 216-A-19 (Trench)




SCHEDULE OF WORK
ITEM
REMARKS
216-A-19
216-A-20
216-A-8
DITCH
N 42000
N 41612.00
W 46734.00
HEADWALL
W 46800
N 41708.79
652
660
241-A-152
241-A TANK FARM
(241-AX, AY, AZ TANK FARMS-H-2-44511, SH. 69)
36" CMP
H-2-3330
BOX H-2-3331
W 46784.32
216-A-6 STEAM CONDENSATE CRIB
W 47000
W 48000
W 47080
W 47125
W 47200
W 47300
W 47400
W 47500
W 47600
W 47700
W 47800
W 47900
W 48000
W 48100
W 48200
W 48300
W 48400
W 48500
W 48600
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W 49100
W 49200
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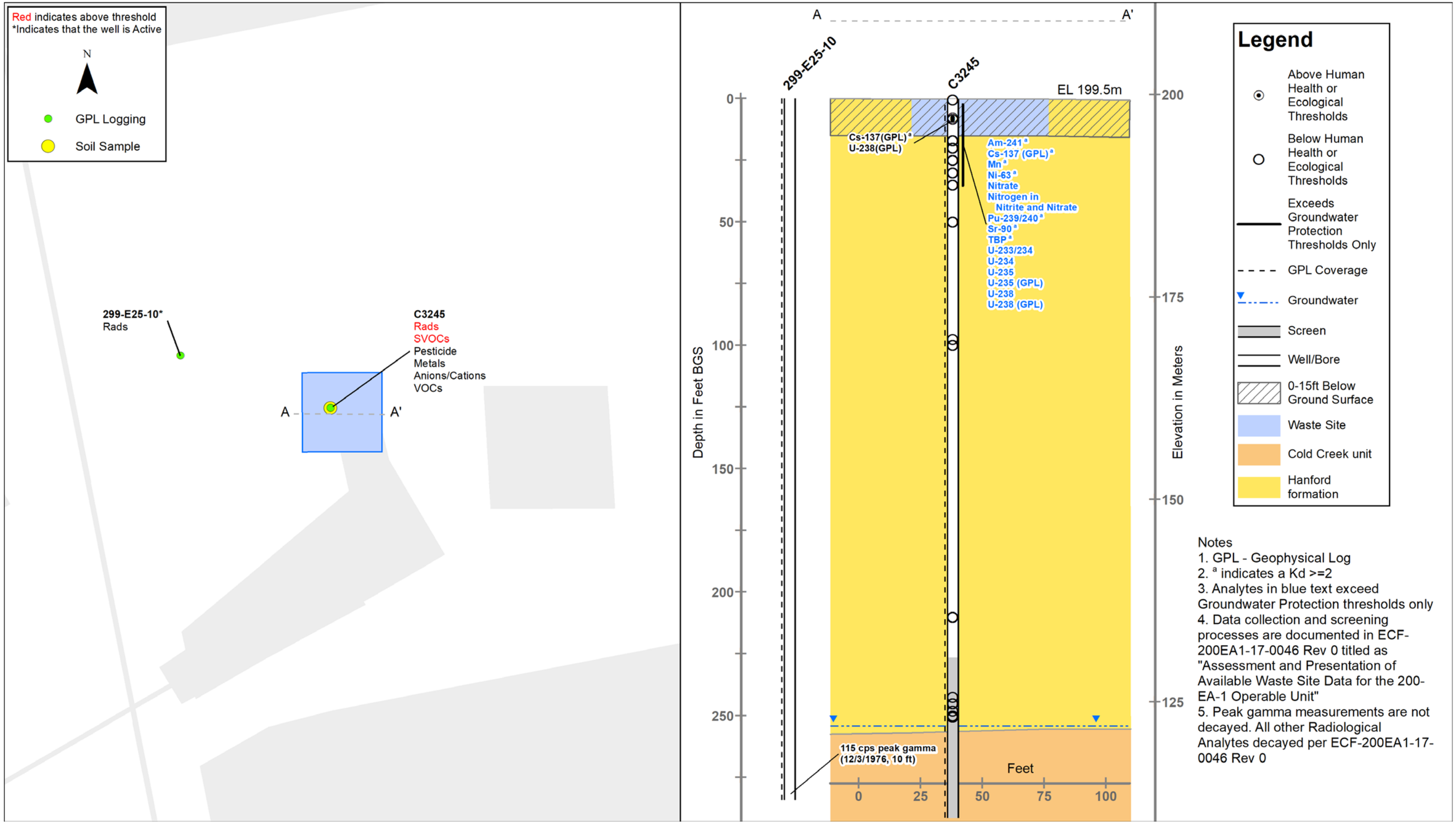
N 13000
N 12000
N 11000
N 10000
N 9000
N 8000
N 7000
N 6000
N 5000
N 4000
N 3000
N 2000
N 1000
N 0000
202-A AREA
(H-2-44501 SH 48)
LEGEND
FOR MODIFICATION SEE :
H-2-44551 PROJ. CAC-945
H-2-61961 PROJ. CAC-169 (244 AR)
H-2-44500 KEY MAP SH 1
H-2-44511, SH 69 (241-AX-FARM)
ARM-1562 (FOR ACTIVE CRIBS)
REFERENCE DRAWINGS (CONT'D)
DWG NO
TITLE
QTY.
DESCRIPTION
REVISIONS
H-2-55900
CLASSIFICATION
NONE
SCALE: 1" = 100'-0"
APPROVALS
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
PLOT PLAN
PUREX WASTE DISPOSAL FACILITY
241-A-5787
CR-513-A
CONTINUED ABOVE RIGHT CORNER
REFERENCE DRAWINGS

Scoping Summary: 216-A-19 (Trench)



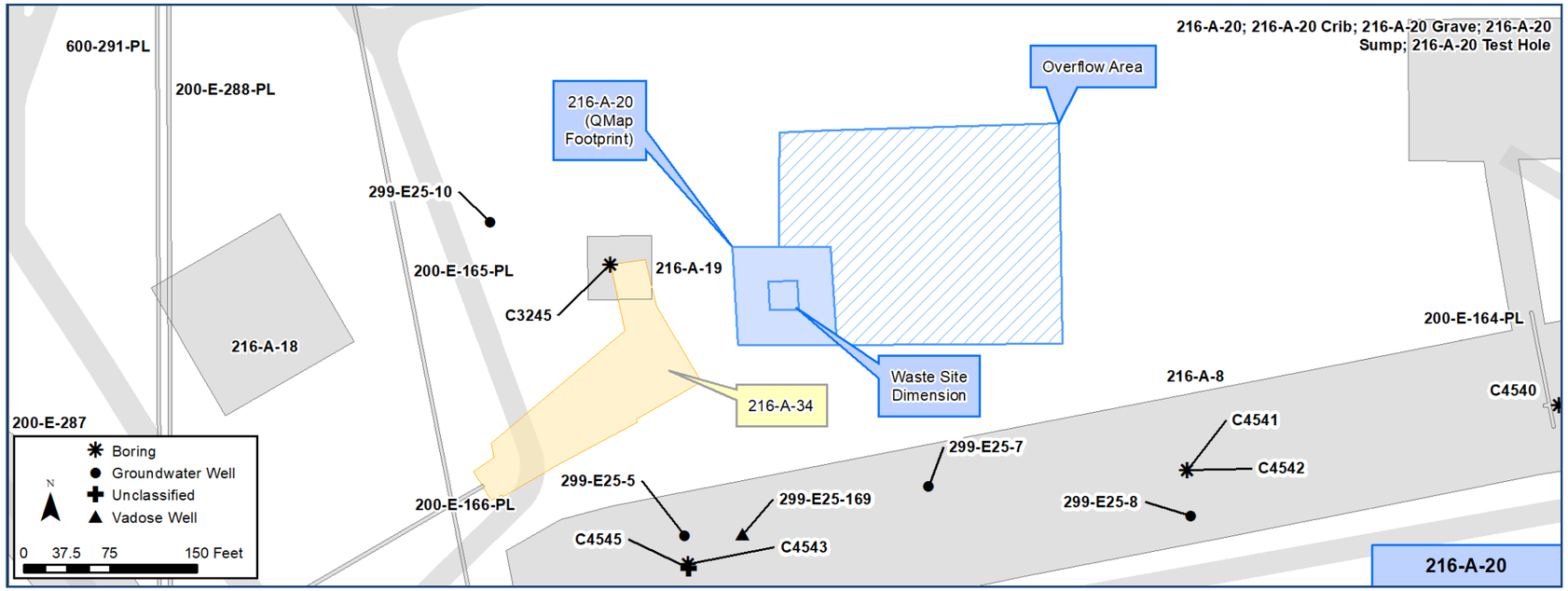
Scoping Summary: 216-A-20 (Trench)

History

The 216-A-20 is an inactive Trench (Test Hole) that received PUREX startup waste and cooling water from the connecting 216-A-34 Ditch.

The Trench was constructed in 1955 and operational from November 1955 to the end of December 1955, when specific retention capacity was reached. During operations the Ditch overflowed, covering an area which ran 100 ft north and 200 ft east of the site. The Trench was deactivated in 1956 by removing the above-ground piping and backfilling with soil.

In September 1990, the surface of 216-A-20 was stabilized and in April 2007 the site was covered with gravel and down posted from a CA to URM.



Construction

- Length: 25 ft
- Width: 25 ft
- Depth: 15 ft
- Volume: 9,375 ft-3
- Cover Thickness: 1-2 ft covering of soil and gravel

Features Of Interest

- Approximate overflow area 100 ft x 200 ft

Waste Streams

- Process: PUREX Plant - Plutonium-Uranium Extraction Process and Cooling Water
- Waste Streams: Depleted uranium waste from cold start-up run in the 202A Building (PUREX start-up waste) and 241A431 (tank farm ventilation house)
- Chemicals disposed includes: 210 kg of Nitrate and 405 kg of Uranium; also received waste containing Cs-137,Ru-106, Sr-90, and plutonium
- Based on historical inventory reporting, total waste transferred was 254,000 gallons and included: 0.034 Ci Sr-90; 1.1E-06 Ci Tc-99; 0.13 Ci Total U; <6.13E-03 total alpha; and 0.17 total beta (Radionuclides decayed to 12/31/98).

Site Interfaces

Origin/Termination:
200-EA-1 OU
- 216-A-34 (Trench)

Intersecting/Nearby Sites:
200-EA-1 OU
- 216-A-19 (Trench)

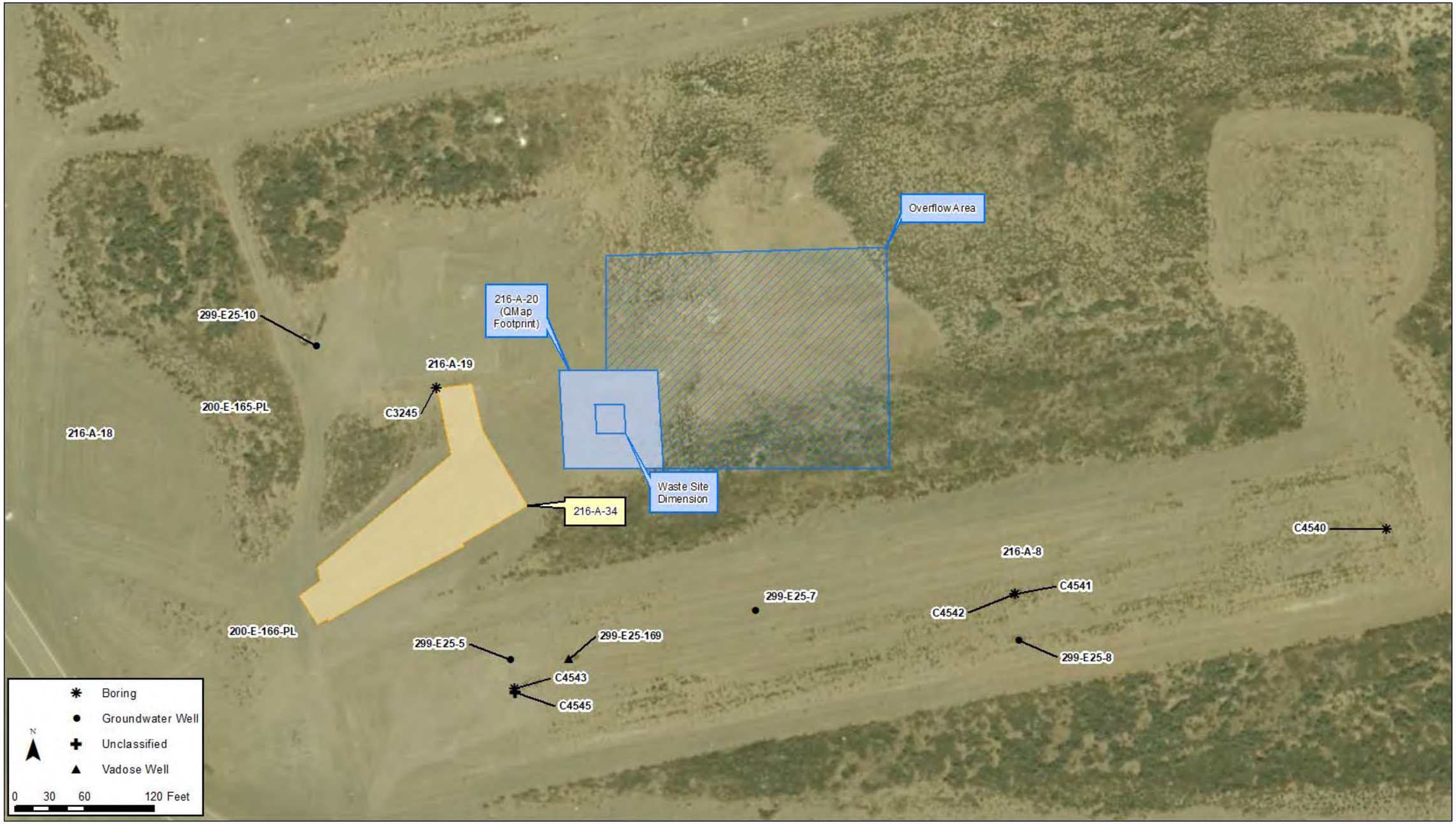
Relevant Characterization

- Radiation surveys in 1990 did not detect contamination
- Other than a few specks of contamination with up to 5,000 c/m, the site suface is below detection limits
- Radionuclides in Sediment Samples (1978; RHO-CD-798 pg. A-10):
  - pCi/g dry weight: 2.7 CE-144; 0.9 Eu-155; 1.4 Ra-226; 1.1 Pu-238; 18.2 Pu-239/240; 4.8 Am-241
  - Below Detection Limits: Ce-141 and Eu-154.

Misc./Other Relevant Information

- Potential for past migration of 216-A-20 liquid discharges to the unconfined aquifer, due to high permeability of soil column (DOE/RL-92-04)
- In the 200-MG-1 OU Engineering Evaluation/Cost Analysis (EE/CA) (DOE/RL-2008-44, Rev0), Confirmatory Sampling/No Action was the preferred alternative here.

Scoping Summary: 216-A-20 (Trench)

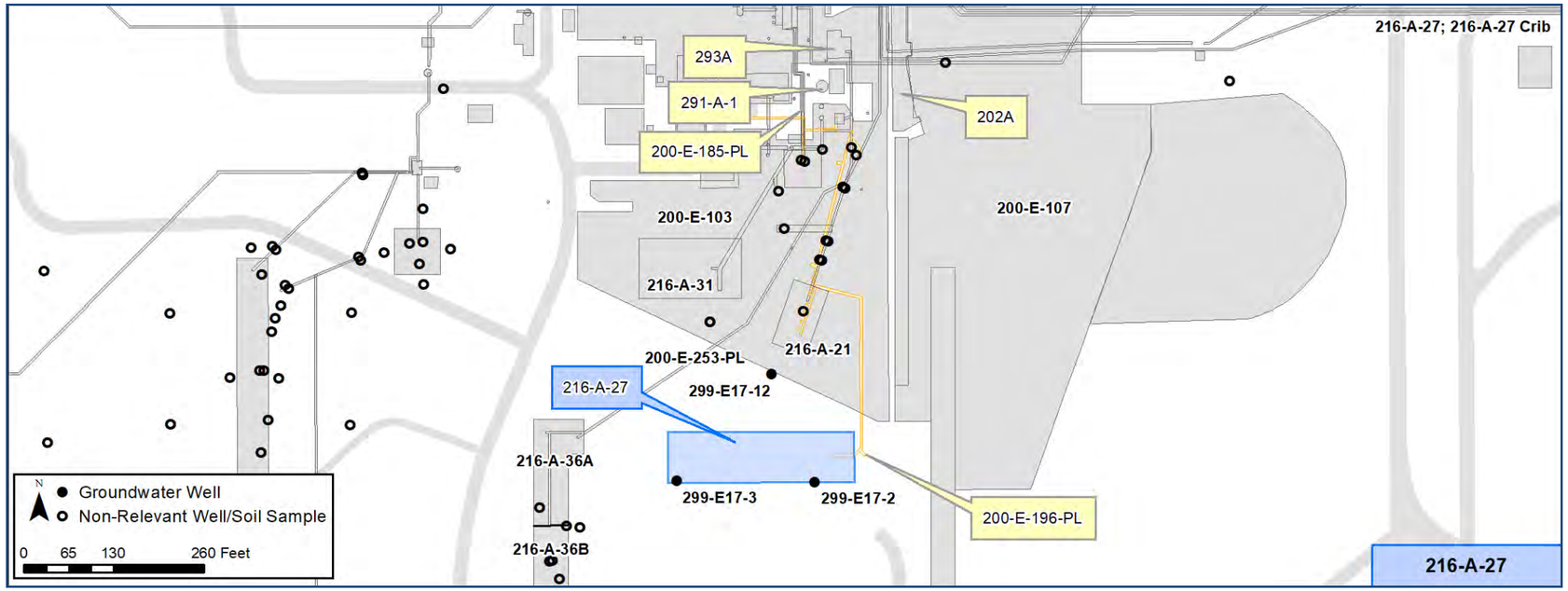


Scoping Summary: 216-A-27 (Crib)

History

The 216-A-27 waste site is an inactive crib that received liquid waste from the PUREX facility via 200-E-196-PL. The crib was constructed to replace the 216-A-21 crib and was operational from 1965 until 1970.

Historical log investigations for the two wells located in the site (299-E17-2 and 200-E17-3) indicated that most of the activity appears to have percolated into the ground near the head end of the crib. In May 1981 a survey found no surface contamination and was posted from "Surface Contamination" to "Underground Radioactive Material Area (URMA)".



Construction

- Length: 200 ft (bottom), 250 ft (top)
- Width: 10 ft (bottom), 60 ft (top)
- Depth: 15 ft bgs
- Side slope is 1:2 for first 10 ft of slope, then 1:1.5 for remaining 15 ft
- 24,000 cu. ft (6 ft deep) of gravel fill in the excavation bottom, and backfilled over to the surface
- Incoming pipes: 1
- Perforated stainless steel at 10 ft bgs (200-E-196-PL)
- *See Page 5 for Crib Details.*

Features Of Interest

- One 8 in. vent with filter
- One 2 in. vent pipe with drain
- One 8 in. gage well with a 16 in. Stevens Recorder Enclosure
- One polyethylene barrier

Relevant Characterization

- Historical records note presence of Sr-90, Cs-137, Pu-239 and Pu-240 (PNL-6456)
- Studies completed in the crib indicate that there is more than the estimated 1590 curies of total beta and presence of long-lived gamma-emitting radionuclides (ARH-ST-156)
- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data*
- *See Page 4 for a Log Data Report from 299-E17-02*

Waste Streams

- PUREX Plant - Plutonium-Uranium Extraction Process Ammonia Scrubber & Laboratory Wastes
  - 293A sump waste
  - 202A PUREX lab cell drainage
  - Laboratory cell wastes
  - 291A1 Stack drainage
  - Low salt and neutral to basic
- 200-E-185-PL waste via 200-E-196-PL included HNO3, Concentrated UNH, and NH4OH
  - Total volume disposed was 6,102,374 gal
- Radionuclide inventory includes Sr-90, Ru-106, Cs-137, and Uranium decayed thru 1998 (HNF-1744).

Misc./Other Relevant Information

- Contamination at the bottom of 299-E17-3 has been attributed to the 216-A-36A Crib
- Data from 1977 indicated contamination has not reached groundwater (ARH-ST-156).

Site Interfaces

Origin/Termination:

200-IS-1 OU

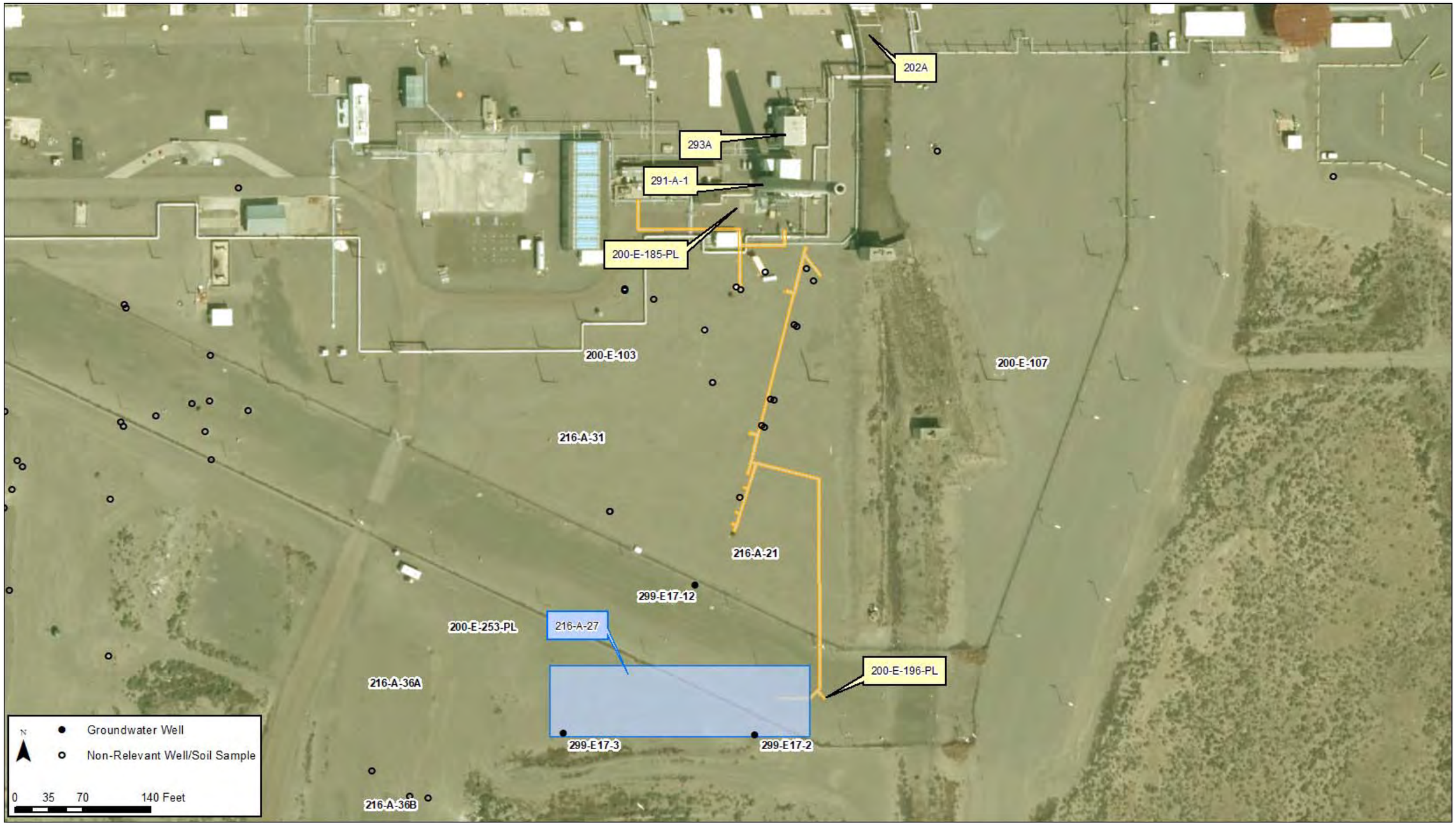
- 200-E-196-PL

Intersecting/Nearby Sites:

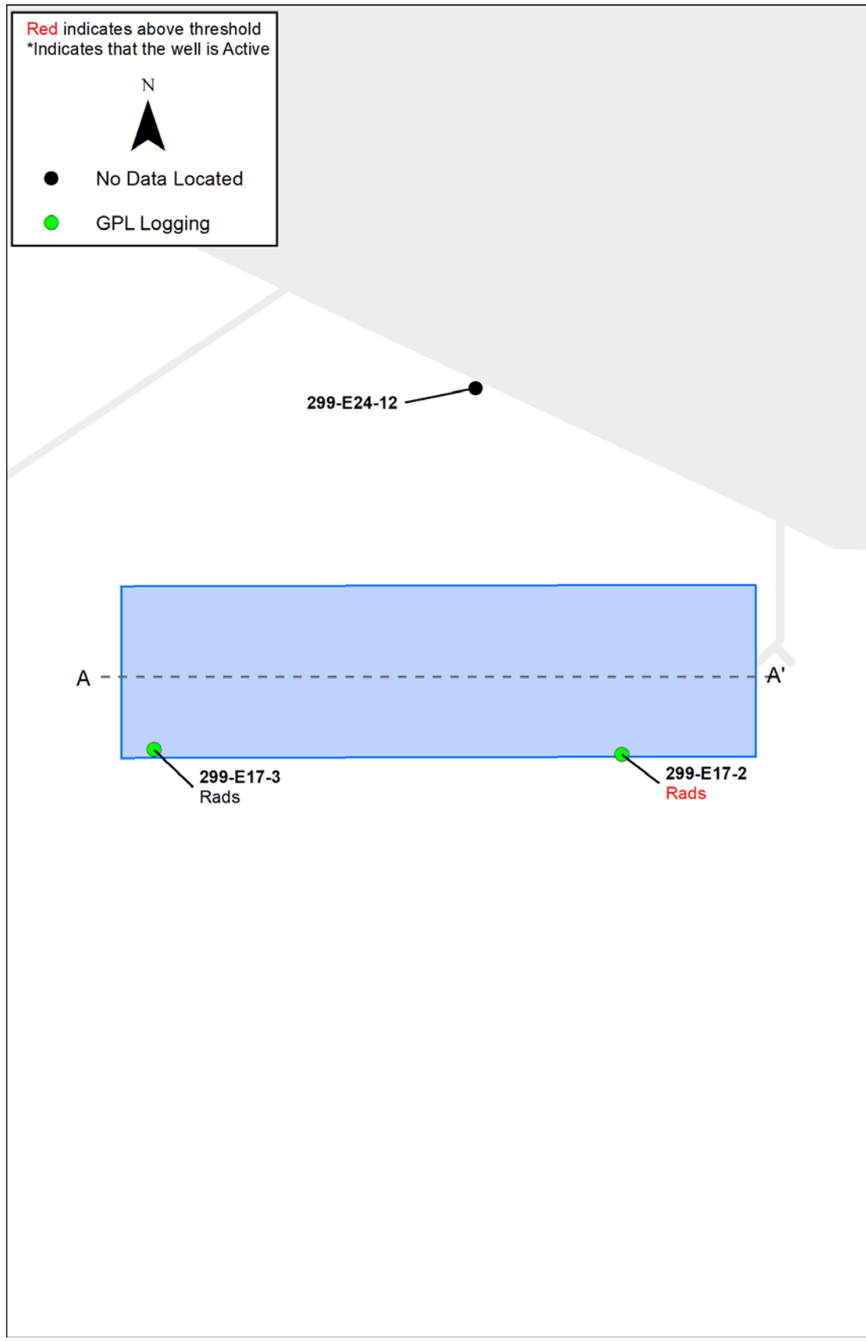
200-EA-1 OU

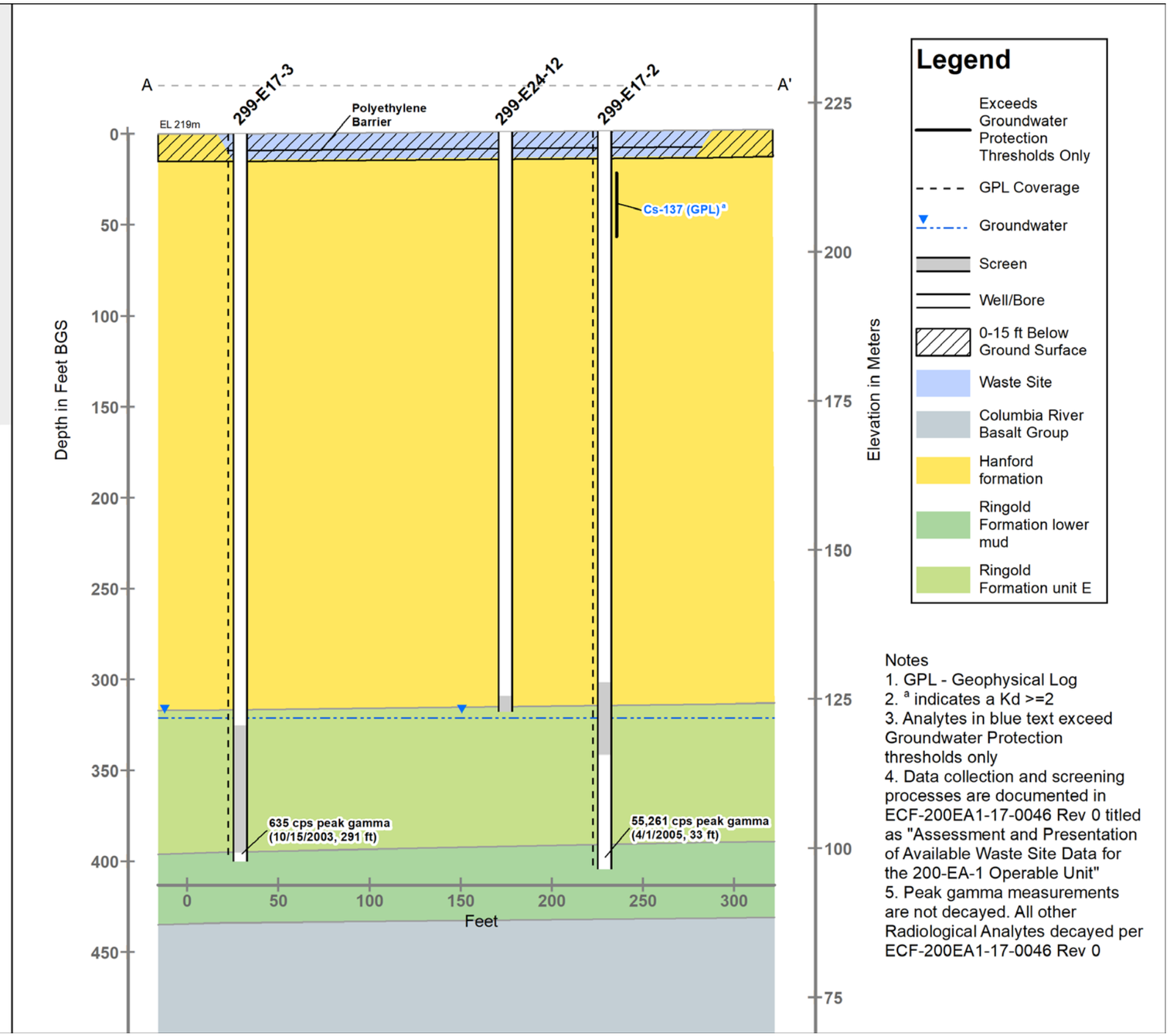
- 216-A-21 (Crib)
- 216-A-36A (Crib)
- 216-A-36B (Crib)

Scoping Summary: 216-A-27 (Crib)

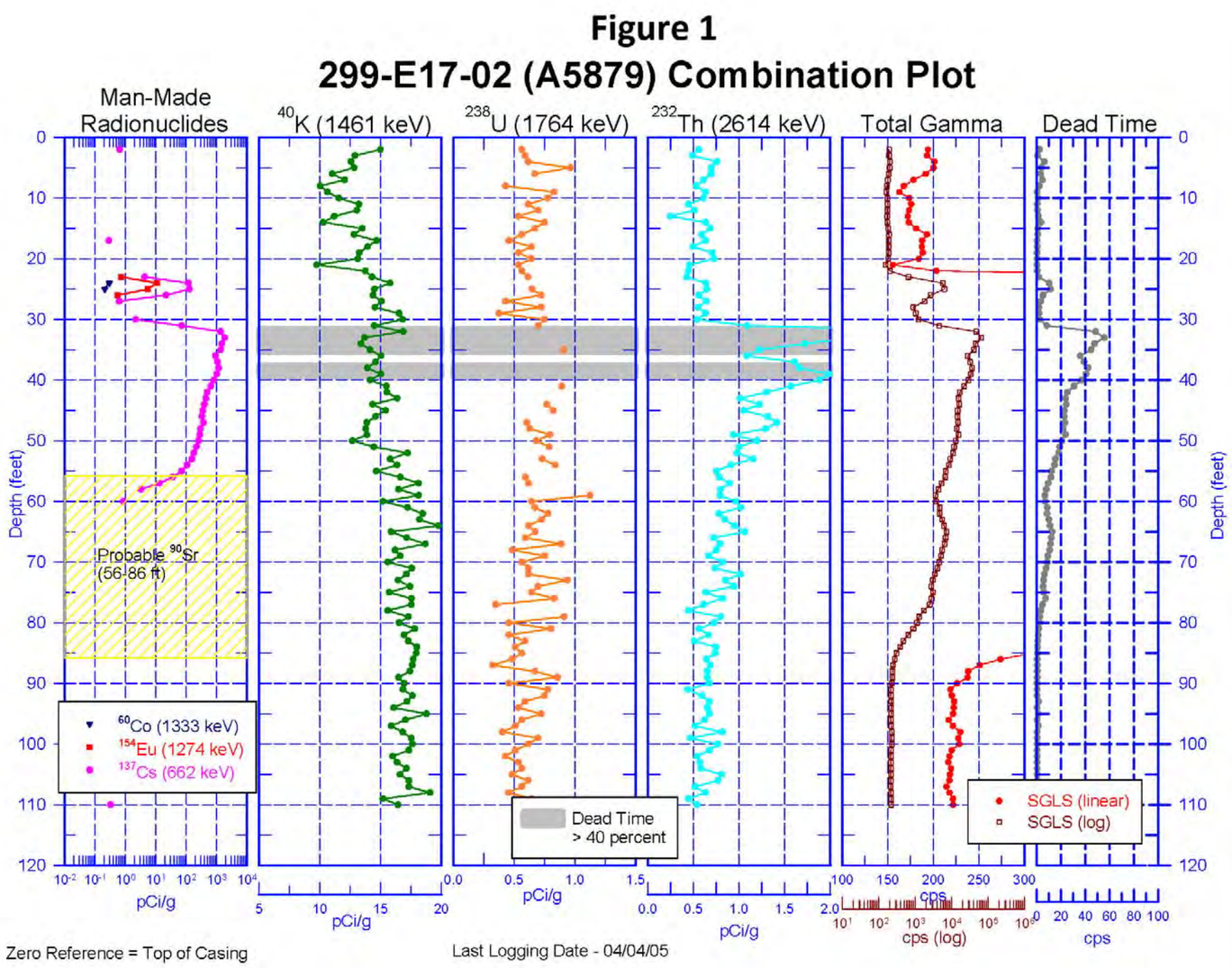


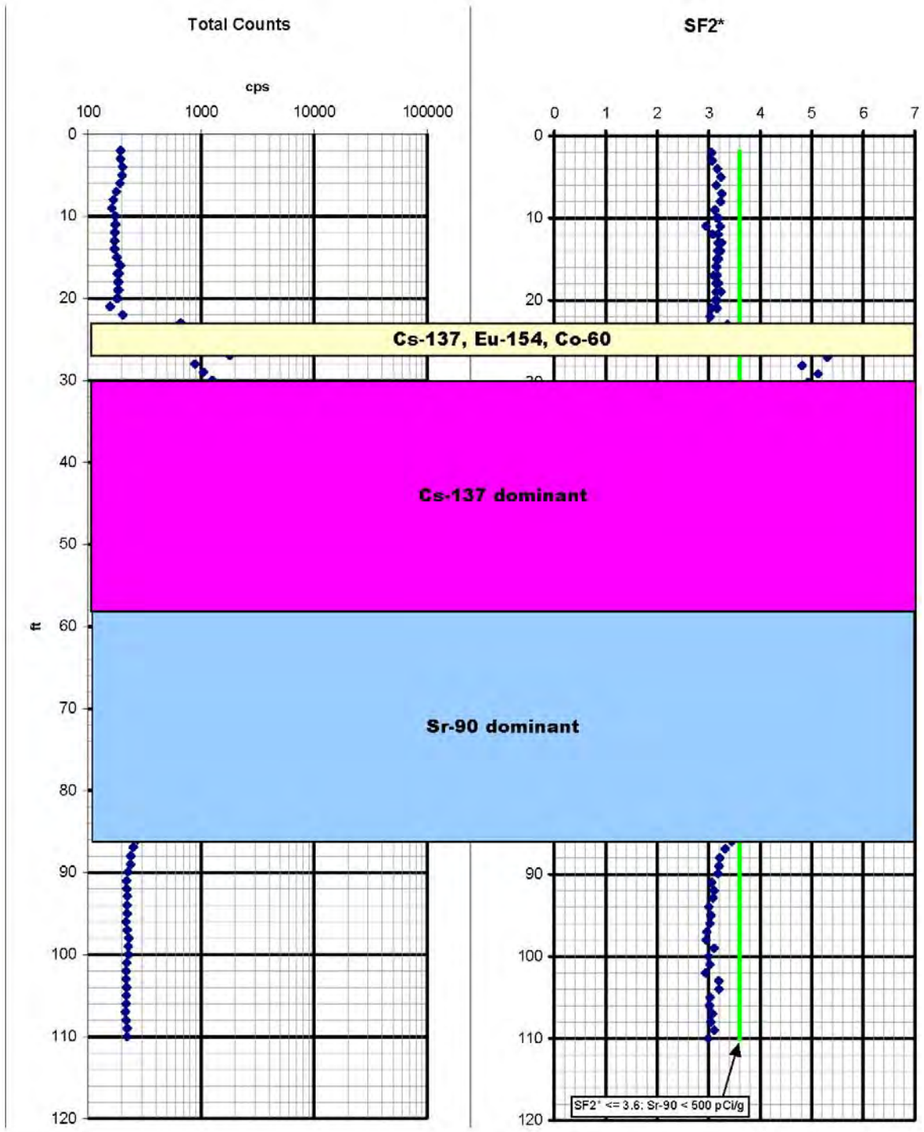
Scoping Summary: 216-A-27 (Crib)





Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0





299-E17-02 (A5879) Log Data Report
DOE-EM/GJ873-2005

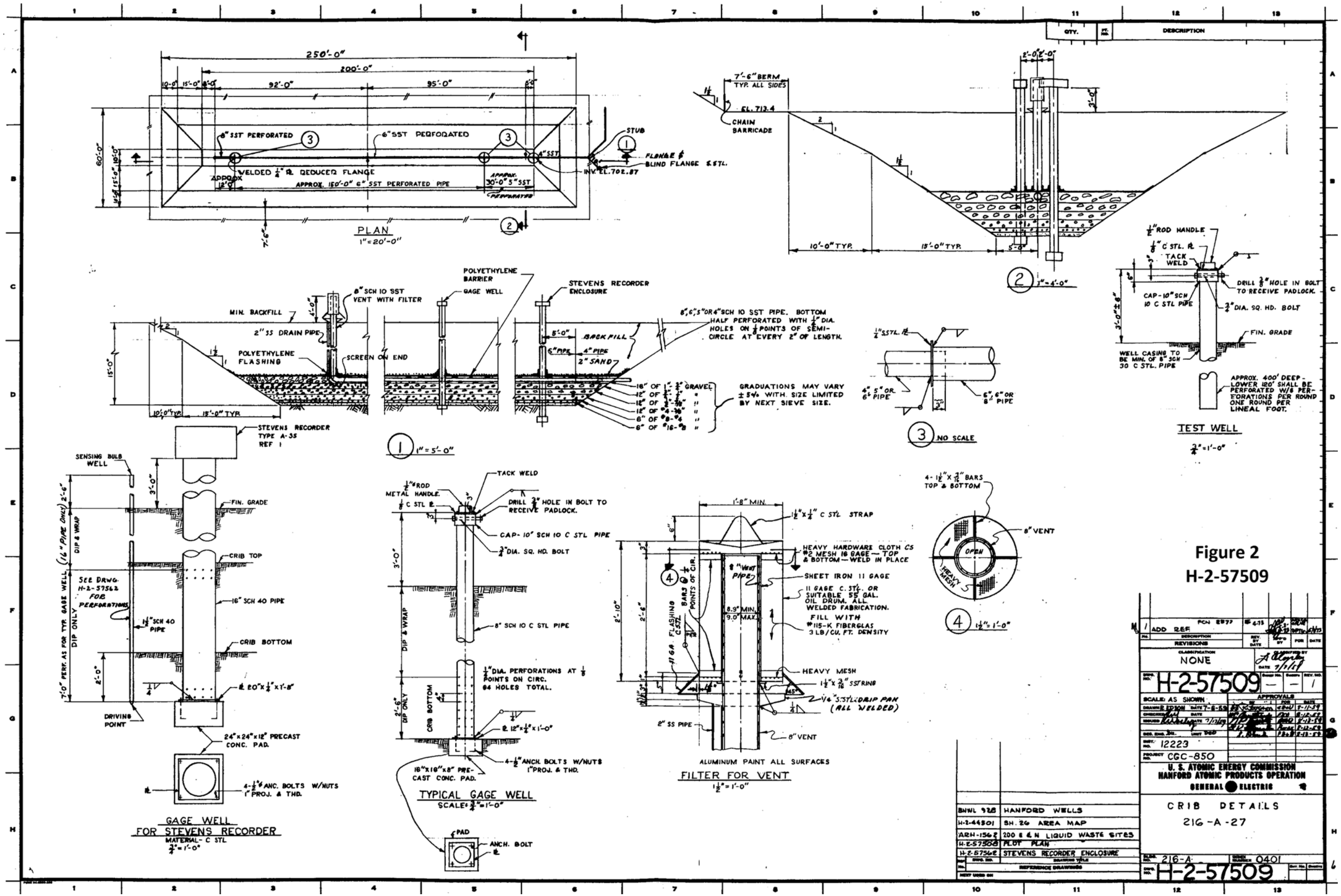


Figure 2
H-2-57509

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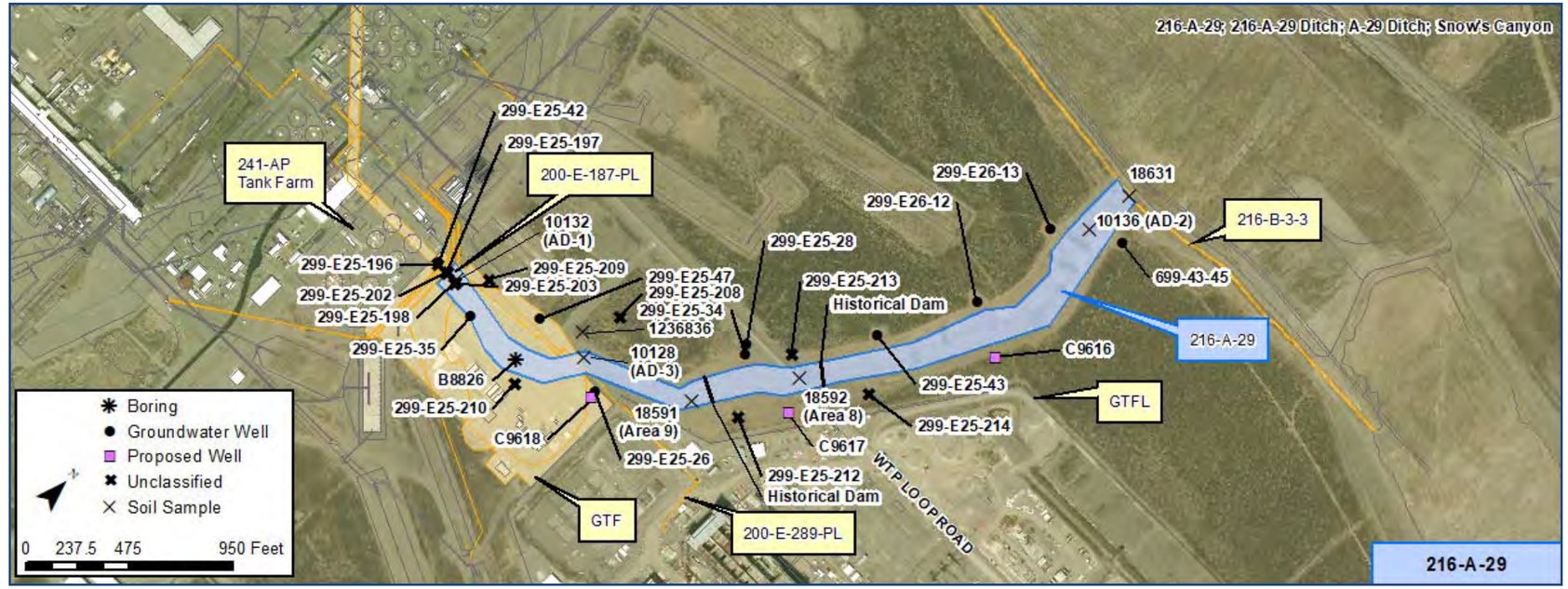
Scoping Summary: 216-A-29 (Ditch)

History

The 216-A-29 waste site is an inactive ditch, sometimes referred to as Snow's Canyon. It received various chemical sewer discharges from the 202A PUREX Plant between 1955 and 1991 via the 200-E-187-PL pipeline. The head of the ditch was in the same location as the 'A' Swamp (200-E-286), which was consolidated into 216-A-29. The ditch was uncovered, unlined, and followed the natural topography of the southeast side of the A Tank Farm, its point of origin. The end of the ditch connects to the 216-B-3-3 Ditch, and finally to the 216-B-3 Pond.

At the beginning of its operation, the ditch received discharge from the PUREX Plant cooling water and chemical sewer. In 1980, the chemical sewer lines were upgraded to allow for monitoring and diversion capabilities. The head of the ditch was modified in 1983 to allow for AP Tank Farm construction. During construction of the Waste Treatment and Immobilization Plant (WTP), an access road across the ditch was added. In addition, an aboveground berm containing water and sewer pipelines were added by creating a ditch and burying the pipes at various places across the ditch. Physical and operational changes were made in 1986 to eliminate the discharge of dangerous wastes to PUREX chemical sewer. In 1991, the ditch was stabilized, back-filled, and re-vegetated.



Construction

- Length: 4,000 ft (1,220 meters)
- Width: 6 ft (1.8 meters)
- Depth (from peak bank elevation): Variable, from 2-to-15 ft
  - Average depth to base of ditch: ~4 to 5 ft
- The proposed LAWPS Baseline Route that would be built in the vicinity of 216-A-29 is shown on page 5

Features Of Interest

- Numerous above-grade pipes crossing the ditch (not pictured)
- Two earthen dams with wooden gate structures to regulate flow.
- Groundwater flow beneath this waste site, and throughout portions of Hanford's Central Plateau, has switched directions. This is due to reduced water discharges throughout the Hanford Site.

Relevant Characterization

- 1971 radiological survey results: 10k to 40k cpm in mud; 1k to 10k in gravel 10 ft up slope from ditch dam; 300 to 5k cpm at water's edge on north side of dam.
- 1991: Traces of radioactivity were detected in broad-leaf plants growing at the water line of the unit.
- Characterization sampling occurred in 1998, test pits in 2002, and again in 2003 when a borehole was drilled. *See Pages 3 and 4 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- Received ~6M gal/day 202A PUREX chemical sewer, acid fractionator condensate, and condenser cooling water:
  - 1955 to 1957: process cooling water and 202A chemical sewer waste. 1957 to 1958: cooling water was re-routed to 216-A-25 Pond. 1958 to 1962: acid fractionator condensate added to waste stream. 1962 to 1963: 202A air sampler vacuum pump seal cooling water added to waste stream. 1963 to 1966: vacuum pump cooling water re-routed to 216-A-35 French Drain.
- Waste was mixed waste: included corrosive (acid and caustic) dangerous waste backwashes.

Misc./Other Relevant Information

- In January 2016, this waste site was placed in a RCRA groundwater quality assessment monitoring program.
- Any acidic and caustic waste that did reach the soil was subsequently neutralized by the calcareous nature of the soils (DOE/RL-2008-53, Rev. 1)

Site Interfaces

Site Intersects:

200-OA-1 OU
- 216-B-3-3 (Ditch)

200-IS-1 OU
- 200-E-187-PL

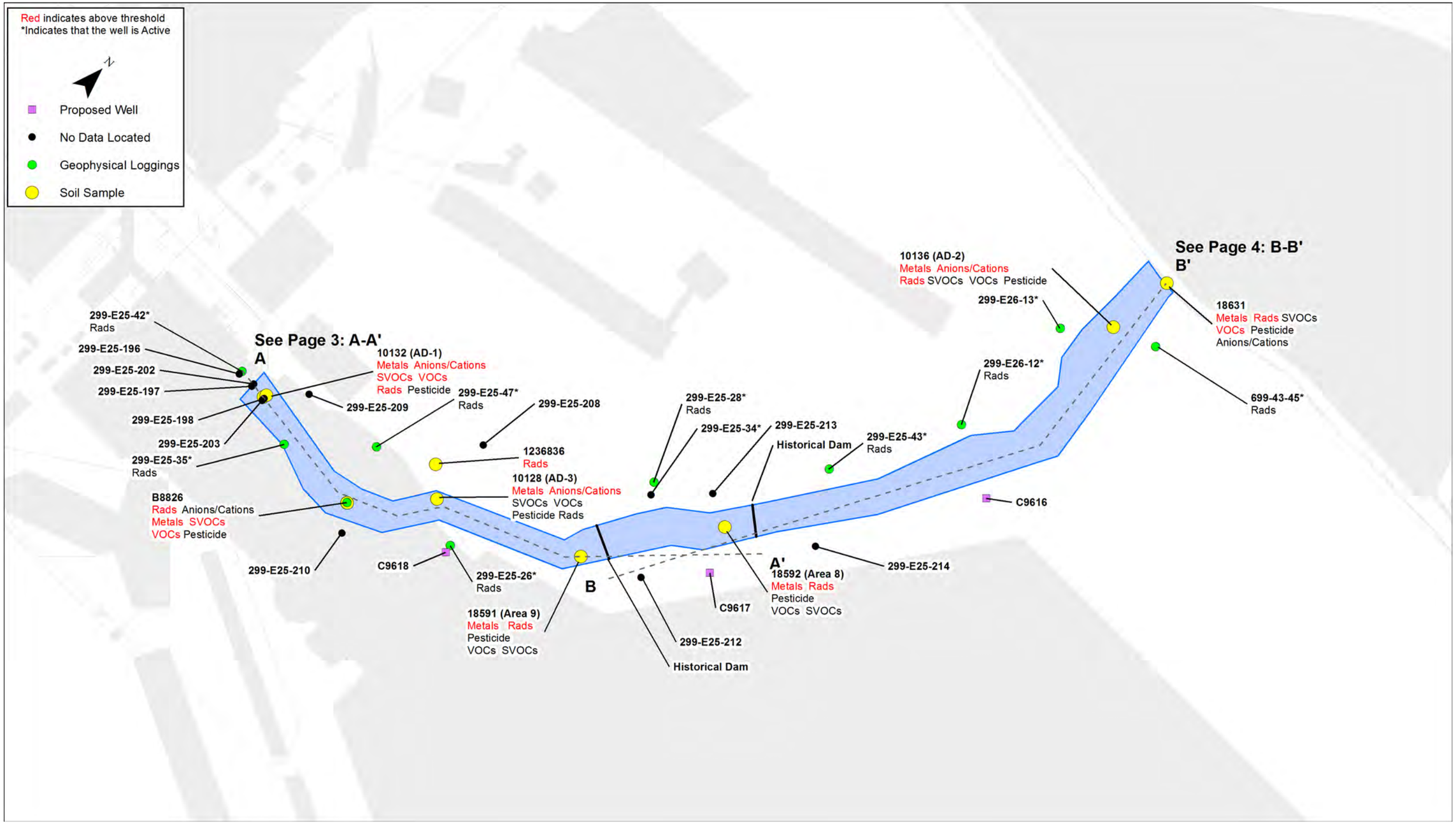
200-CW-1 OU
- 216-B-3 (Pond)

OU Unassigned
- 200-E-289-PL
- GTFL (Burial Ground)

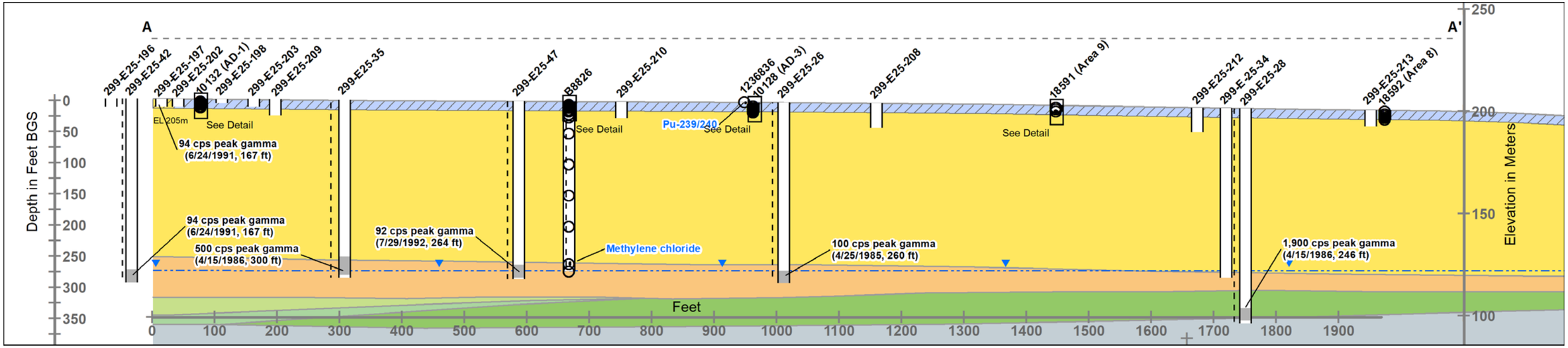
- WTP Loop Rd
- GTF (Inactive Process Unit)

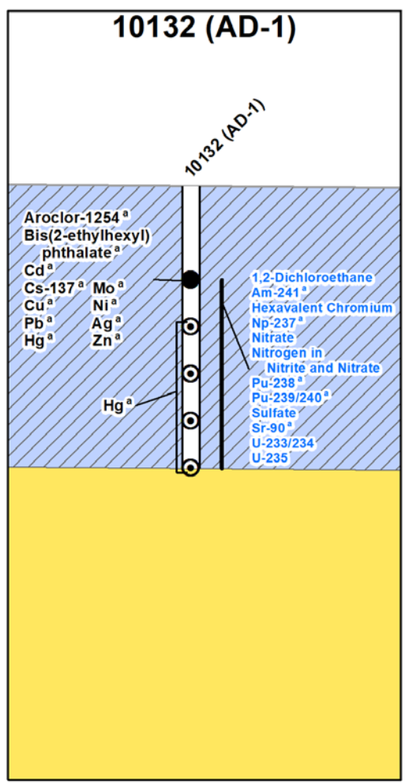
Consolidated into 216-A-29 (not pictured):
- 200-E-286 (A Swamp)
- UPR-200-E-51

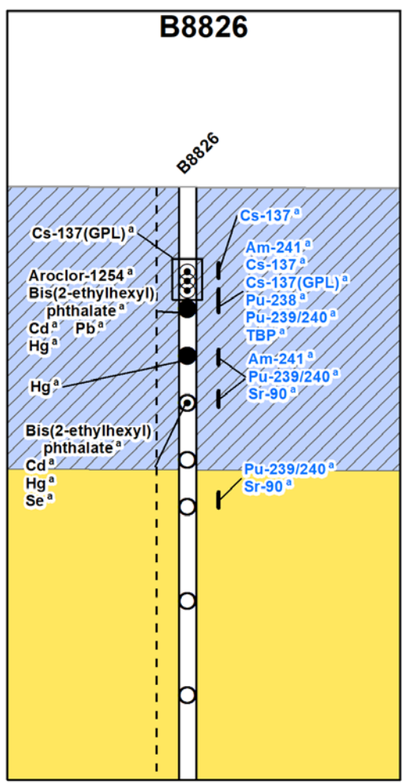
Scoping Summary: 216-A-29 (Ditch)

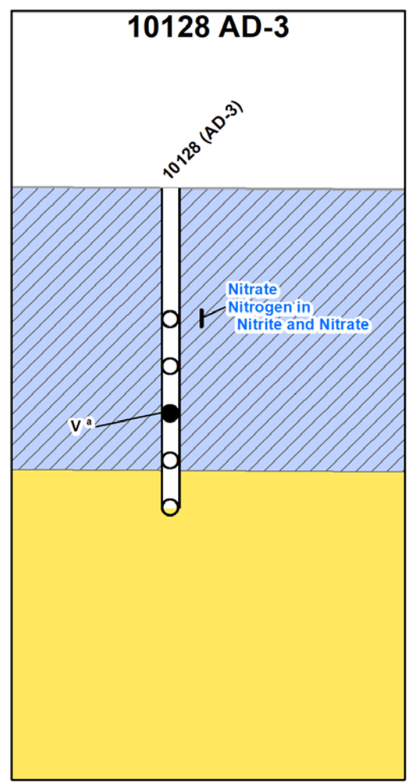


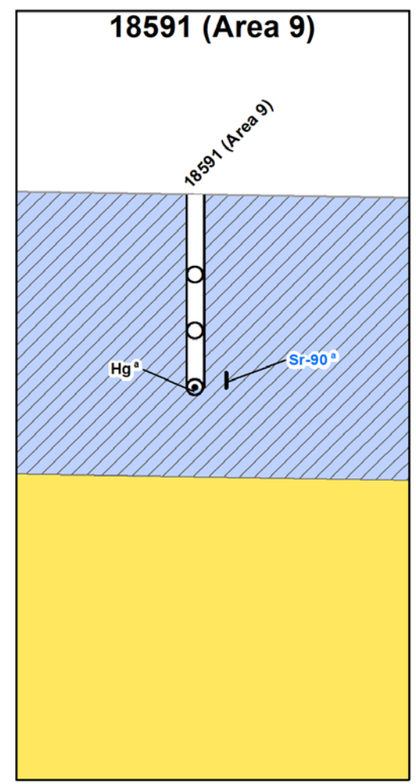
Scoping Summary: 216-A-29 (Ditch)









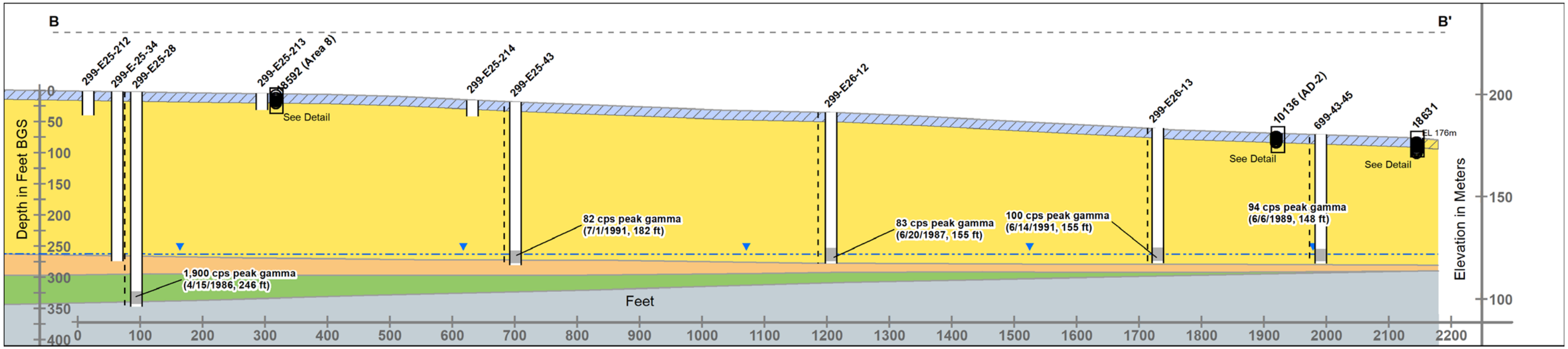


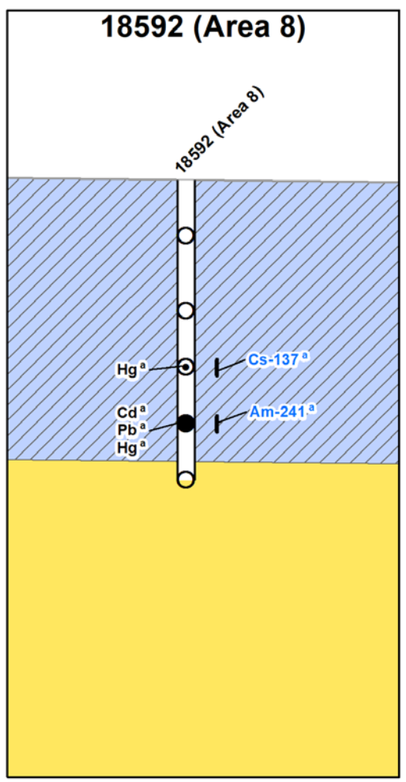
Legend

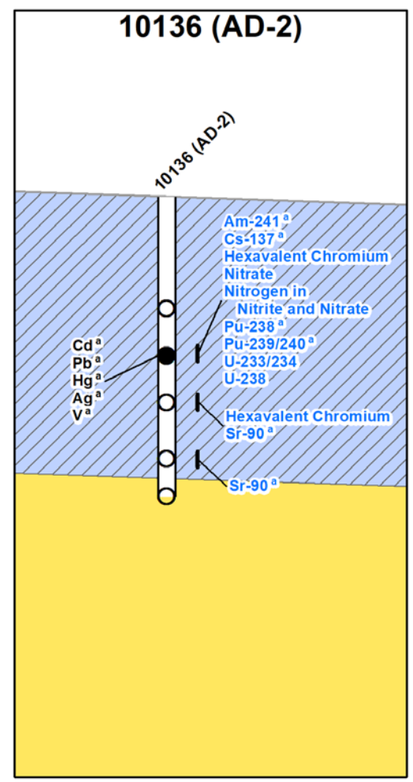
- 5x Above Human Health or Ecological Thresholds
- Above Human Health or Ecological Thresholds
- Below Human Health or Ecological Thresholds
- Exceeds Groundwater
- GPL Coverage
- Groundwater
- Screen
- Well/Bore
- 0-15ft Below Ground Surface
- Waste Site
- Cold Creek unit
- Columbia River Basalt Group
- Hanford formation
- Ringold Formation lower mud
- Ringold Formation unit A
- Ringold Formation unit E

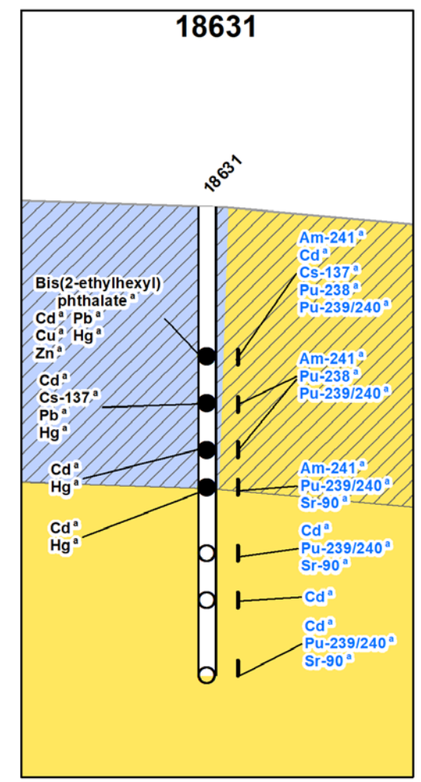
Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

Scoping Summary: 216-A-29 (Ditch)





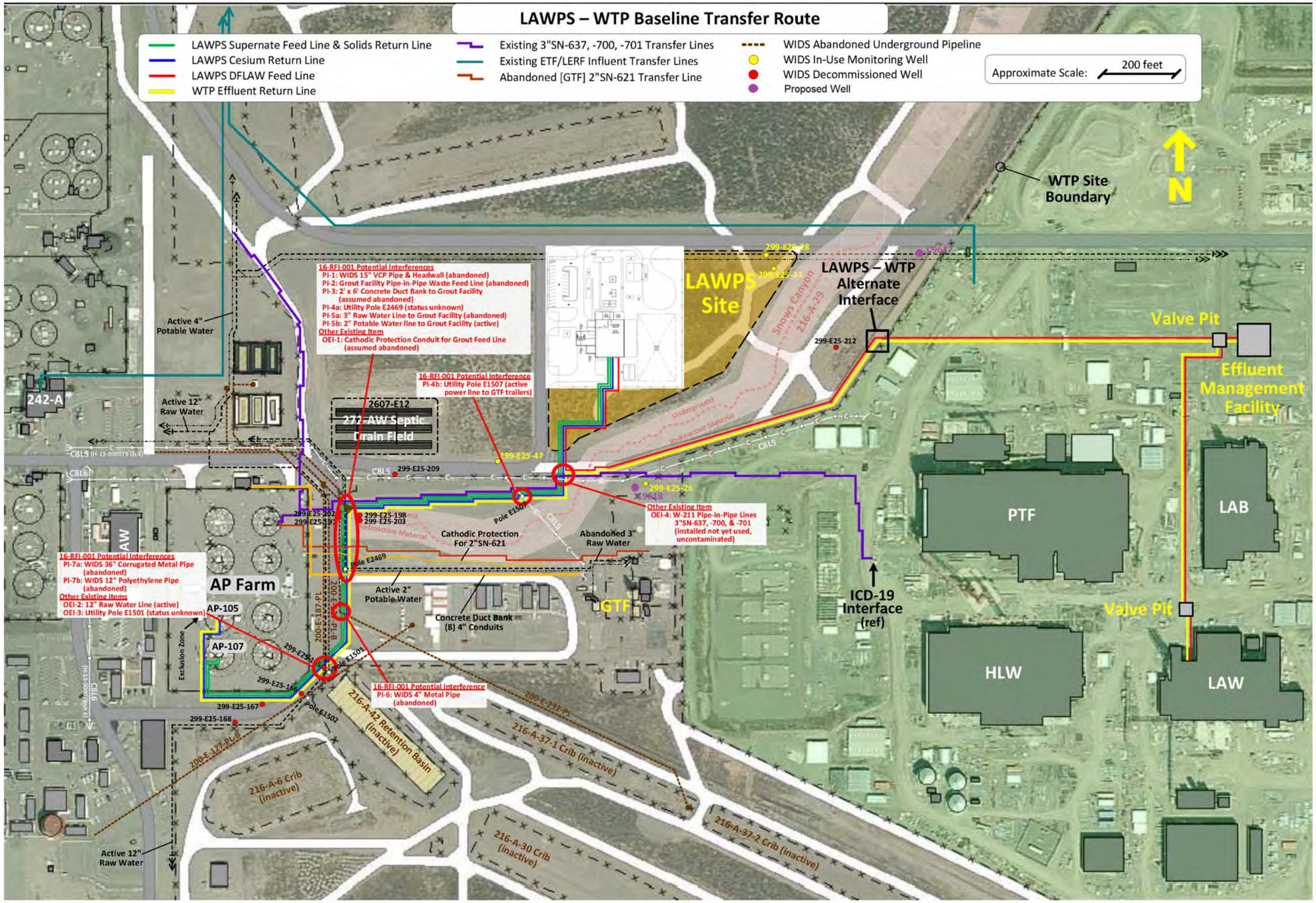




Legend

- 5x Above Human Health or Ecological Thresholds
- Above Human Health or Ecological Thresholds
- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- GPL Coverage
- Groundwater
- Screen
- Well/Bore
- 0-15ft Below Ground Surface
- Waste Site
- Cold Creek unit
- Columbia River Basalt Group
- Hanford formation
- Ringold Formation unit A

Notes
1. GPL - Geophysical Log
2. a indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0


LAWPS – WTP Baseline Transfer Route
LAWPS Supernate Feed Line & Solids Return Line
LAWPS Cesium Return Line
LAWPS DFLAW Feed Line
WTP Effluent Return Line
Existing 3"SN-637, -700, -701 Transfer Lines
Existing ETF/LERF Influent Transfer Lines
Abandoned [GTF] 2"SN-621 Transfer Line
WIDS Abandoned Underground Pipeline
WIDS In-Use Monitoring Well
WIDS Decommissioned Well
Proposed Well
Approximate Scale: 200 feet
N
WTP Site Boundary
LAWPS Site
LAWPS – WTP Alternate Interface
Valve Pit
Effluent Management Facility
PTF
LAB
HLW
LAW
ICD-19 Interface (ref)
GTF
AP Farm
AP-105
AP-107
242-A
Active 4" Potable Water
Active 12" Raw Water
Active 2" Potable Water
Cathodic Protection For 2"SN-621
Abandoned 3" Raw Water
Concrete Duct Bank (8) 4" Conduits
2607-E12
272-AW Septic Drain Field
216-A-42 Retention Basin (inactive)
216-A-6 Crib (inactive)
216-A-37-1 Crib (inactive)
216-A-30 Crib (inactive)
216-A-37-2 Crib (inactive)
Exclusion Zone
16-RFI-001 Potential Interferences
PI-1: WIDS 15" VCP Pipe & Headwall (abandoned)
PI-2: Grout Facility Pipe-in-Pipe Waste Feed Line (abandoned)
PI-3: 2' x 6' Concrete Duct Bank to Grout Facility (assumed abandoned)
PI-4a: Utility Pole E2469 (status unknown)
PI-5a: 3" Raw Water Line to Grout Facility (abandoned)
PI-5b: 2" Potable Water line to Grout Facility (active)
Other Existing Item
OEI-1: Cathodic Protection Conduit for Grout Feed Line (assumed abandoned)
16-RFI-001 Potential Interference
PI-4b: Utility Pole E1507 (active power line to GTF trailers)
Other Existing Item
OEI-4: W-211 Pipe-in-Pipe Lines 3"SN-637, -700, & -701 (installed not yet used, uncontaminated)
16-RFI-001 Potential Interferences
PI-7a: WIDS 36" Corrugated Metal Pipe (abandoned)
PI-7b: WIDS 12" Polyethylene Pipe (abandoned)
Other Existing Items
OEI-2: 12" Raw Water Line (active)
OEI-3: Utility Pole E1501 (status unknown)
16-RFI-001 Potential Interference
PI-6: WIDS 4" Metal Pipe (abandoned)
Pole E1507
Pole E2469
Pole E1501
Pole E1502
299-E25-212
299-E25-47
299-E25-209
299-E25-26
299-E25-198
299-E25-203
299-E25-202
299-E25-197
299-E25-166
299-E25-167
299-E25-168
C8L5
C8L6
C9L6
200-E-187-PL
200-E-127-PL-B
200-E-232-PL
Snows Canyon
216-A-29
Underground Radioactive Material

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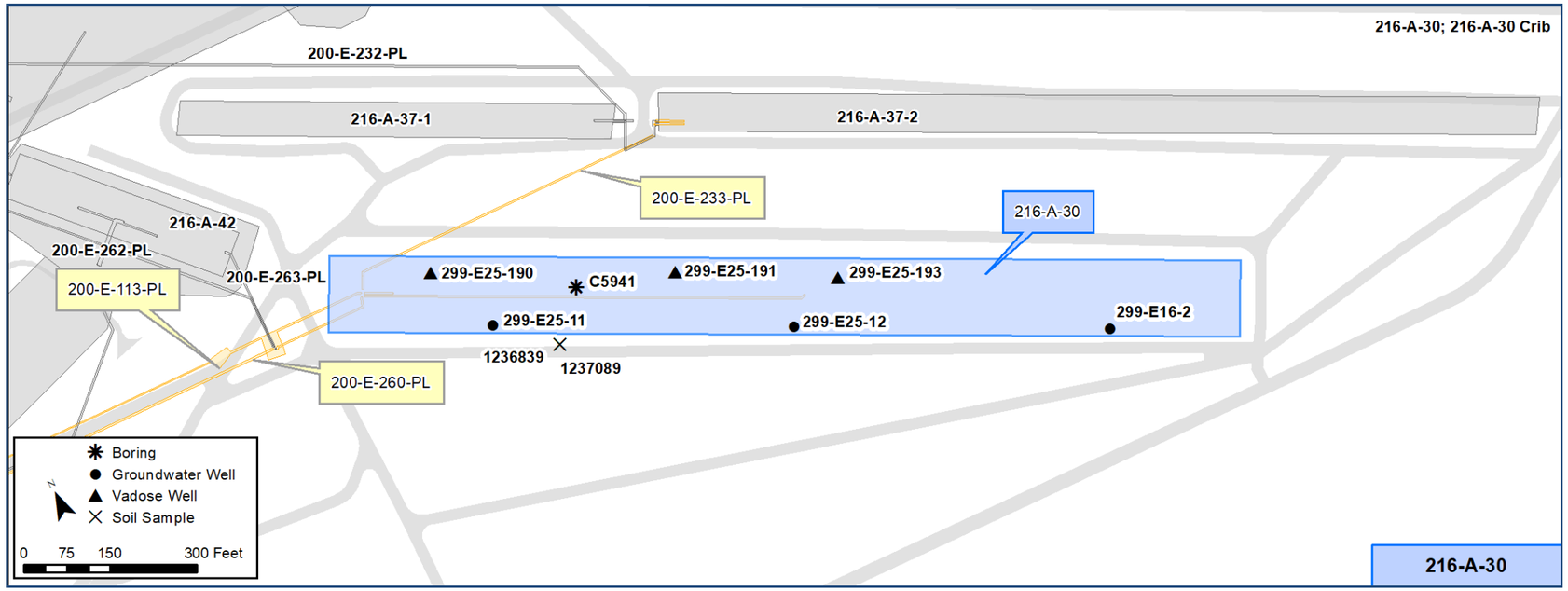
Scoping Summary: 216-A-30 (Crib)

History

The 216-A-30 waste site is an inactive crib that received steam condensate from the 202A building (PUREX). It was in use from 1961 to 1965; inactive from 1965 to 1970; and, re-activated from 1970 to 1992, when the 216-A-6 crib was retired. TPA Milestone M-17-22A required crib shutdown by June 1992 and provides rationale for the site not being a TSD.

During the winter of 1971, an alkaline deposit formed over the crib's surface from vapors emitted thru the unit's porous soil. Radiation surveys revealed surface and tumbleweed radiation present. An exploratory excavation was made in 1972, and dose rates as high as 800 mRad/hr at 4 ft were encountered. Corrective actions later that year included covering the ground with layers of sand and plastic.

The crib was permanently isolated in 1995, when the distribution box was filled with concrete. In 2001, gravel was added to the posted contamination areas (CA) and the area was down-posted to Underground Radioactive Materials Area.



Construction

Bottom Dimensions

- Length: 1,400 ft
- Width: 10 ft
- Depth: to 12 ft bgs
- Material: 5 ft of gravel fill
- Volume: 5,300 cubic ft
- Slope: variable from 1.5:1 to 2:1 to 1.5:1

- *See Page 3 for Sections & Details of the 216-A-30 Crib.*

Features Of Interest

- Conflicting source information, but most likely two distribution pipes: one 15-in. corrugated perforated pipe running 4 ft bgs to crib's center; one 16-in. steel pipe - running parallel to the other - 4 ft bgs to the crib's center, then angling 45 degrees, changing to a 15-in corrugated perforated pipe running 7 to 8 ft bgs to the end of crib.
- Two 8-in. carbon-steel gage wells from crib bottom to 3 ft above ground surface
- 15-in. vent riser from distribution pipe to 3 ft above grade
- Two 16x16x8-in. pads supporting the gage wells
- Water Table: 297 ft bgs.

Relevant Characterization

- *See Page 4 for a depiction of the nature and extent of contamination, as defined by existing data.*
- 1971 radiation survey: surface from 4,000 to 6,000 dpm beta/gamma; A few tumbleweeds were found measuring 12,000 dpm beta/gamma.
- Growing contaminated tumbleweeds atop crib:
  - 2002: max to 120,000 dpm/100cm2
  - 2008: max to 150,000 dpm/100cm2.

Waste Streams

- 1961 to 1965/1970 to 1992: received PUREX steam condensate, equipment disposal tunnel floor and water-filled door drainage, and the slug storage basin overflow waste from 202A; low salt, and neutral to basic.
- Received ~2 billion gallons liquid effluent
- Soil Inventory Model (SIM) constituents of interest from 2007 (RPP-26744):
  - Cr: 6,045 kg; F: 1,128 kg; NO3: 208,200 kg; U-Total: 656.4 kg; Pu-239: 30.72 Ci; Pu-240: 10.73 Ci.
- A characterization borehole (C5941) was drilled in 2008 to better understand constituent concentrations.

Misc./Other Relevant Information

- The crib was evaluated in a feasibility study for the 200-CW-5 OU (DOE/RL-2004-24, Rev0) that identified capping as the preferred alternative for the crib.
- *Page 2 includes a photo of the crib surface taken in 2007.*

Site Interfaces

Site Intersects:

200-IS-1 OU

- 200-E-113-PL
- 200-E-233-PL
- 200-E-260-PL

Nearby Sites:

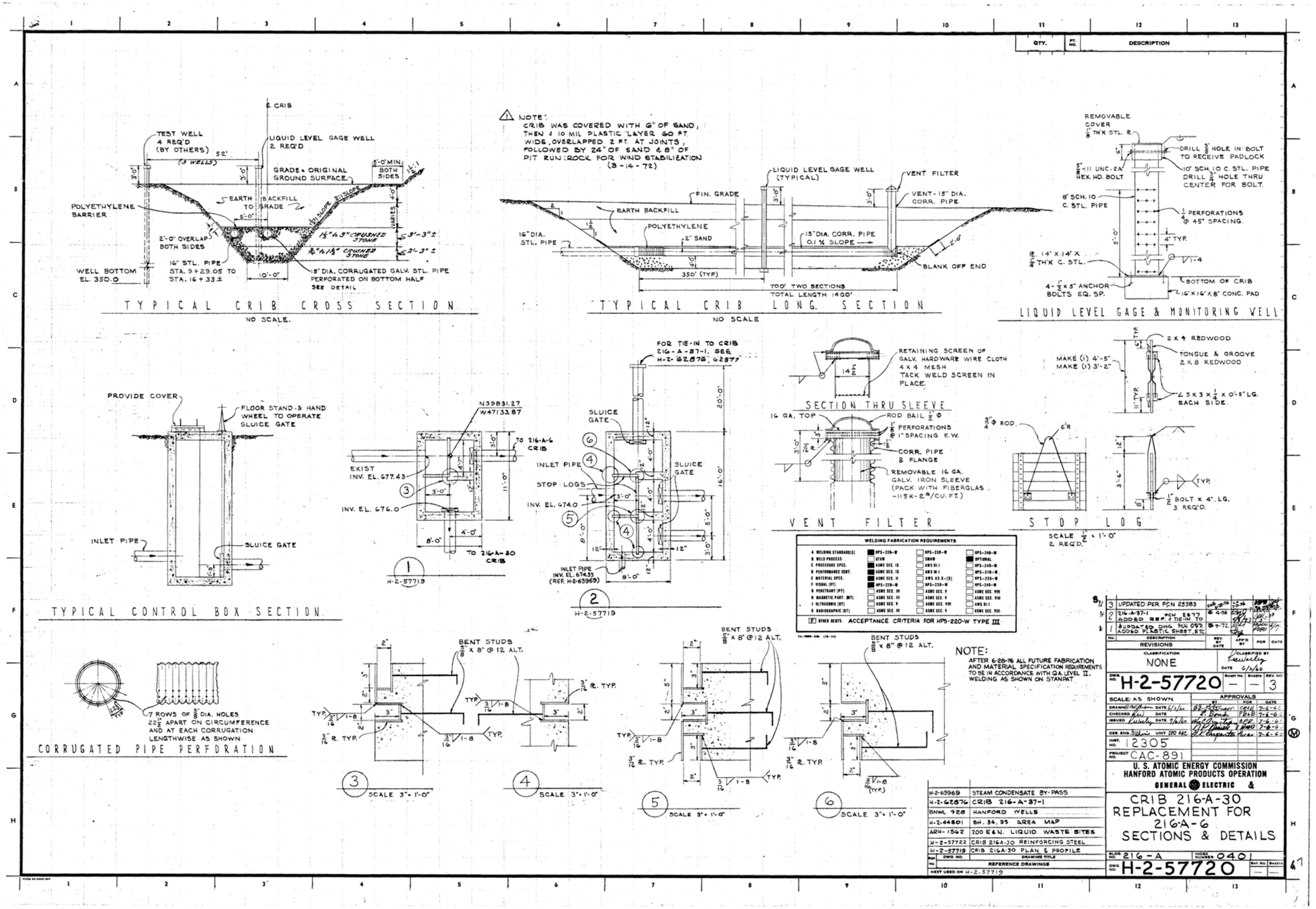
200-IS-1 OU

- 200-E-263-PL
- 200-E-262-PL
- 200-E-232-PL

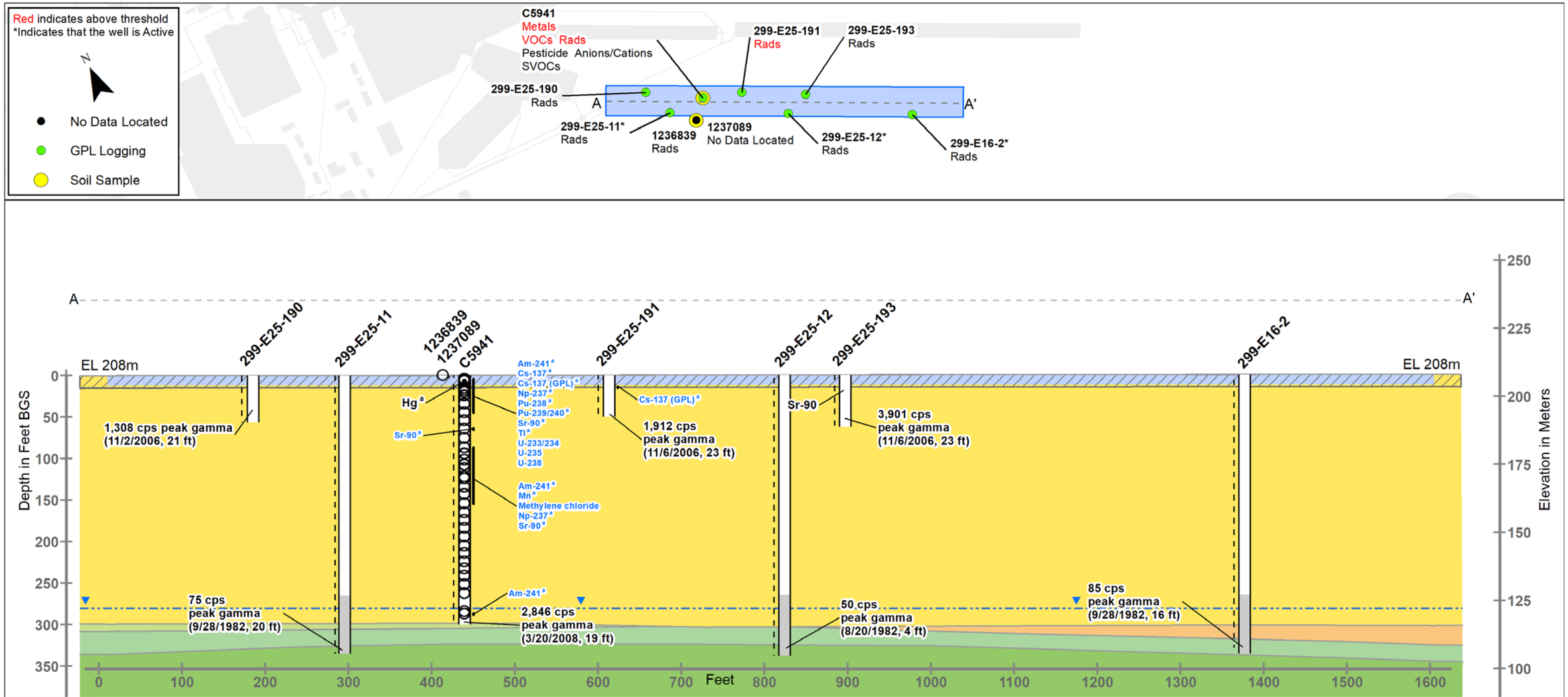
200-EA-1 OU

- 216-A-42 (Retention Basin)
- 216-A-37-1 (Crib)
- 216-A-37-2 (Crib)

Scoping Summary: 216-A-30 (Crib)


TYPICAL CRIB CROSS SECTION
NO SCALE.
TYPICAL CRIB LONG. SECTION
NO SCALE
LIQUID LEVEL GAGE & MONITORING WELL
TYPICAL CONTROL BOX SECTION
CORRUGATED PIPE PERFORATION
SECTION THRU SLEEVE
VENT FILTER
STOP LOG
SCALE 3" = 1'-0"
SCALE 1/2" = 1'-0"
NOTE:
AFTER 6-28-76 ALL FUTURE FABRICATION AND MATERIAL SPECIFICATION REQUIREMENTS TO BE IN ACCORDANCE WITH Q.A. LEVEL II. WELDING AS SHOWN ON STANPAT
WELDING FABRICATION REQUIREMENTS
REVISIONS
UPDATED PER PCN 25383
ADDED REF. & TIE-IN TO
UPDATED DWG. PCN 0972
ADDED PLASTIC SHEET, ETC
CLASSIFICATION
NONE
H-2-57720
SCALE: AS SHOWN
APPROVALS
12305
CAC-891
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
CRIB 216-A-30
REPLACEMENT FOR
216-A-6
SECTIONS & DETAILS
216-A
040
H-2-57720
H-2-63969 STEAM CONDENSATE BY-PASS
H-2-62876 CRIB 216-A-37-1
BNWL 928 HANFORD WELLS
H-2-44801 SH. 34, 35 AREA MAP
ARH-1542 200 E & W. LIQUID WASTE SITES
H-2-57722 CRIB 216A-30 REINFORCING STEEL
H-2-57719 CRIB 216A-30 PLAN & PROFILE
REFERENCE DRAWINGS
NEXT USED ON H-2-57719

Scoping Summary: 216-A-30 (Crib)



Legend

- Above Human Health or Ecological Thresholds
- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- GPL Coverage
- Groundwater
- Screen
- Well/Bore
- 0-15ft Below Ground Surface
- Waste Site
- Cold Creek unit
- Columbia River Basalt Group
- Hanford formation
- Ringold Formation lower mud
- Ringold Formation unit A
- Ringold Formation unit E

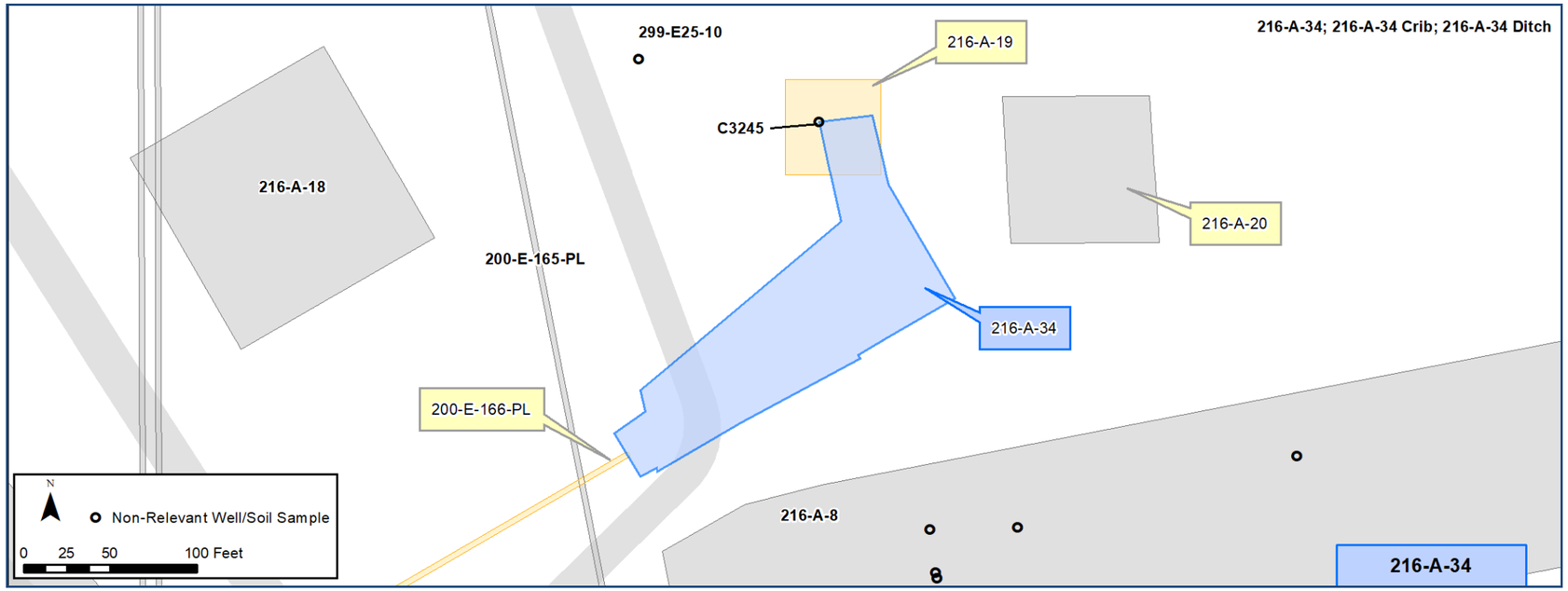
Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

Scoping Summary: 216-A-34 (Ditch)

History

The 216-A-34 waste site is an inactive ditch that received condenser cooling water from the 241A431 Building (tank farm ventilation house) via the 200-E-166-PL Pipeline. Engineering document H-2-55900 and waste stream information indicate a physical connection between the 216-A-34 Ditch and the 216-A-19 Trench, but no confirming documentation exists. It is located east of the 200 East Area perimeter fence and north of the 216-A-8 Crib.

The trench was constructed in 1955 and operational from November-1955 to December-1957, when it was terminated due to the potential for release of contamination to the environment. The pipeline to the ditch was valved out, the ditch was backfilled, and the waste was rerouted to the 216-A-8 Crib. In September-1990, the surface of 216-A-34 was stabilized.



Construction

- Headwall
  - Width: ~3 ft at west end opening to 10 ft at east end
  - Length: ~15 ft - tapers off to ditch
  - Wall Height: ~3 ft at west end to 1.5 ft at east end
  - Incoming Pipelines: 1
- Ditch
  - Length: 280 ft
  - Width: 10 ft at west end (headwall) and 30 ft at east end
  - Bottom Depth: ~6 ft
  - Side Slope: 2:1
  - Ditch dimensions are not known for certain. Engineering drawing H-2-55900 and waste stream information indicate that the 216-A-34 Ditch may have been extended to both the 216-A-19 and 216-A-20 Trenches.

Features Of Interest

- Posted: Underground Radioactive Material Area signs.

Relevant Characterization

- A 2016 surface radiation survey found no contamination exceeding action levels.

Waste Streams

- 241A431 Building contact condenser cooling water
  - Waste described as low-activity
  - Contains <1 Ci total beta activity
  - Unknown amount of total waste discharged.

Misc./Other Relevant Information

- The Feasibility Study for the 200-PW-2 / 200-PW-4 OUs Identified "maintain existing soil cover, monitored natural attenuation, and institutional controls" as the preferred remedial action for 216-A-34 (DOE/RL-2004-85, Draft A).
- In the 200-MG-1 OU Engineering Evaluation/Cost Analysis (EE/CA) (DOE/RL-2008-44, Rev0), Remove Treatment Dispose (RTD) was the preferred alternative.

Site Interfaces

Origin/Termination:

200-IS-1 OU

- 200-E-166-PL

Intersecting/Nearby Sites:

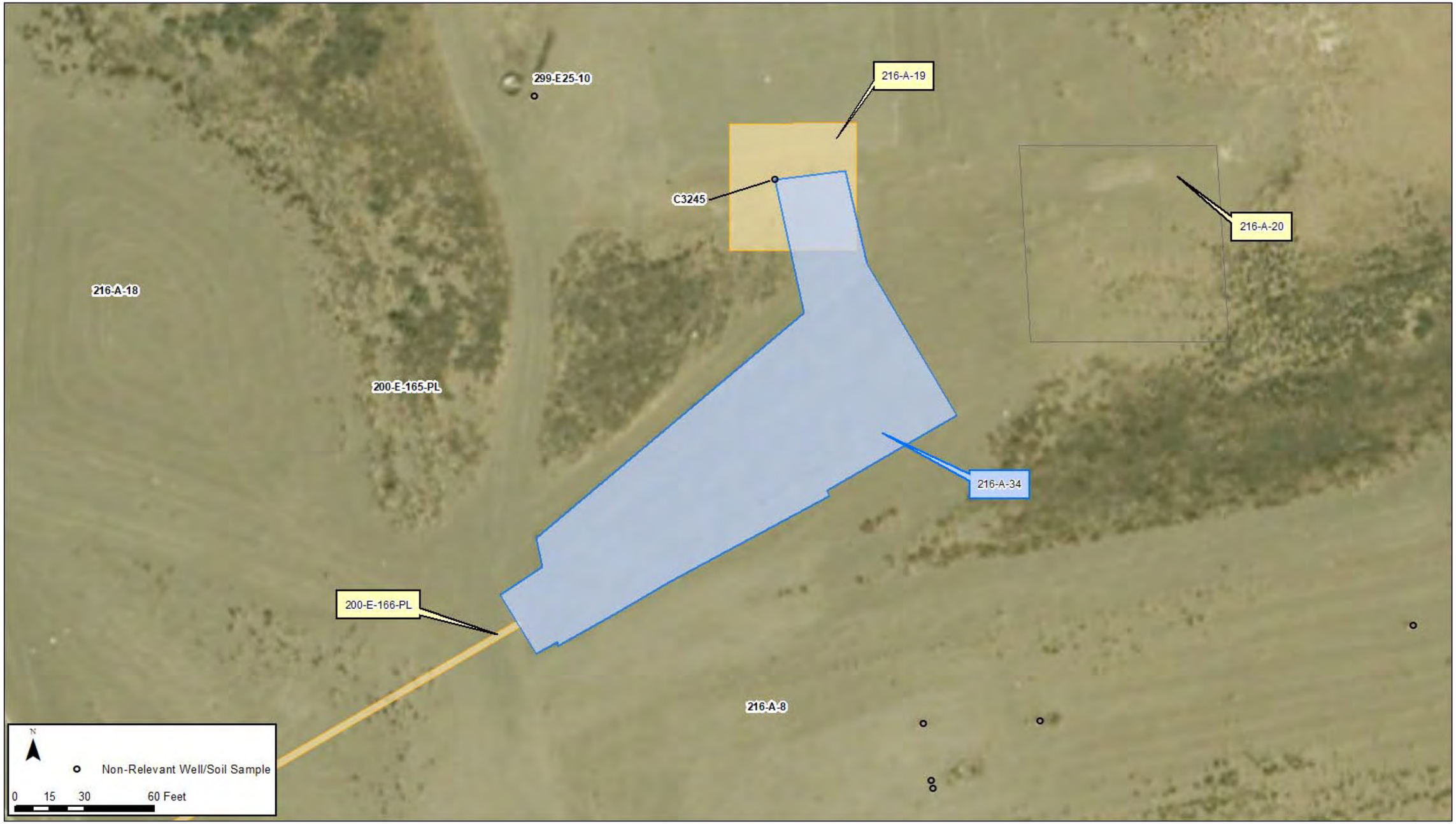
200-EA-1 OU

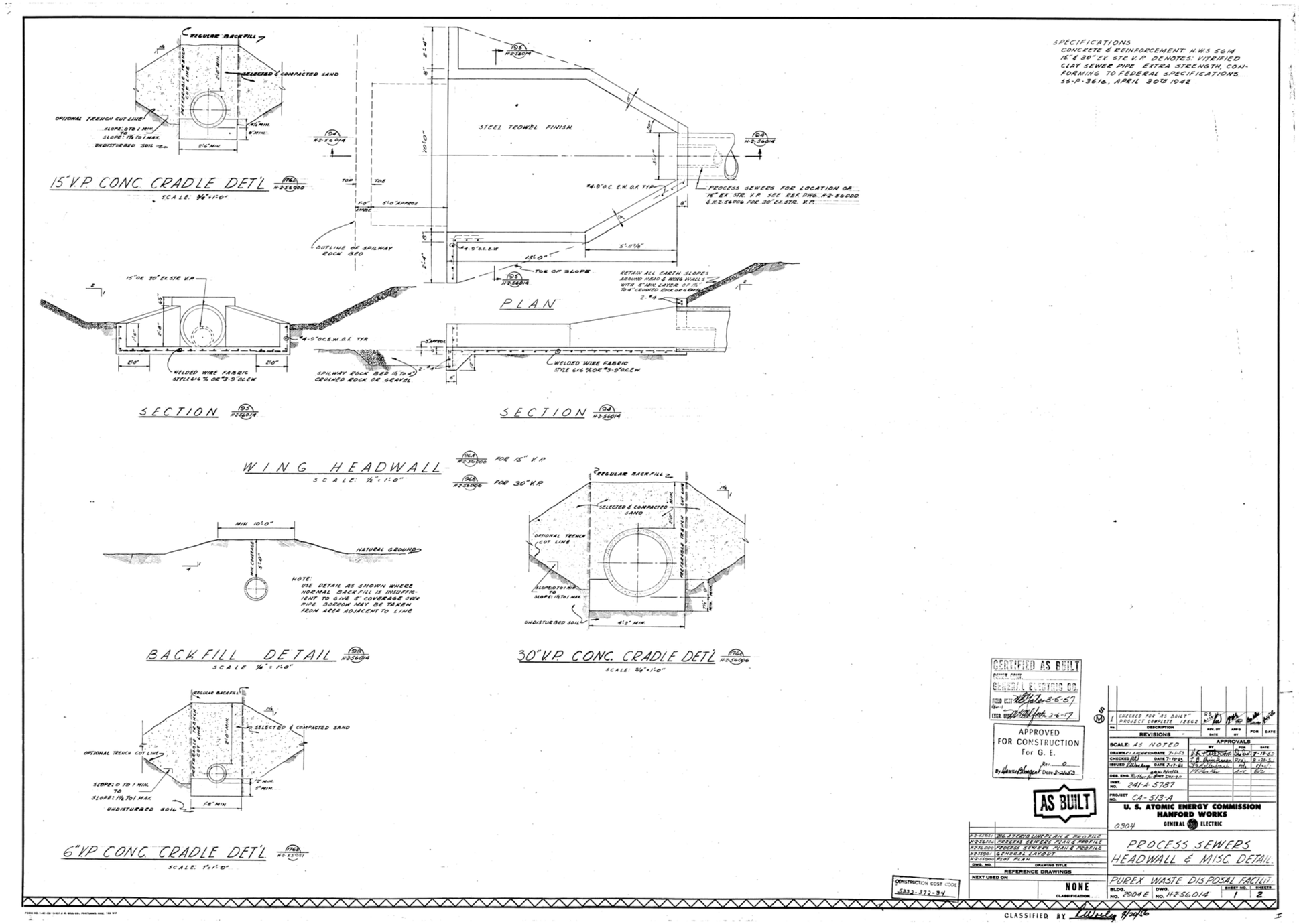
- 216-A-19 (Trench)
- 216-A-8 (Crib)
- 216-A-18 (Crib)
- 216-A-20 (Trench)

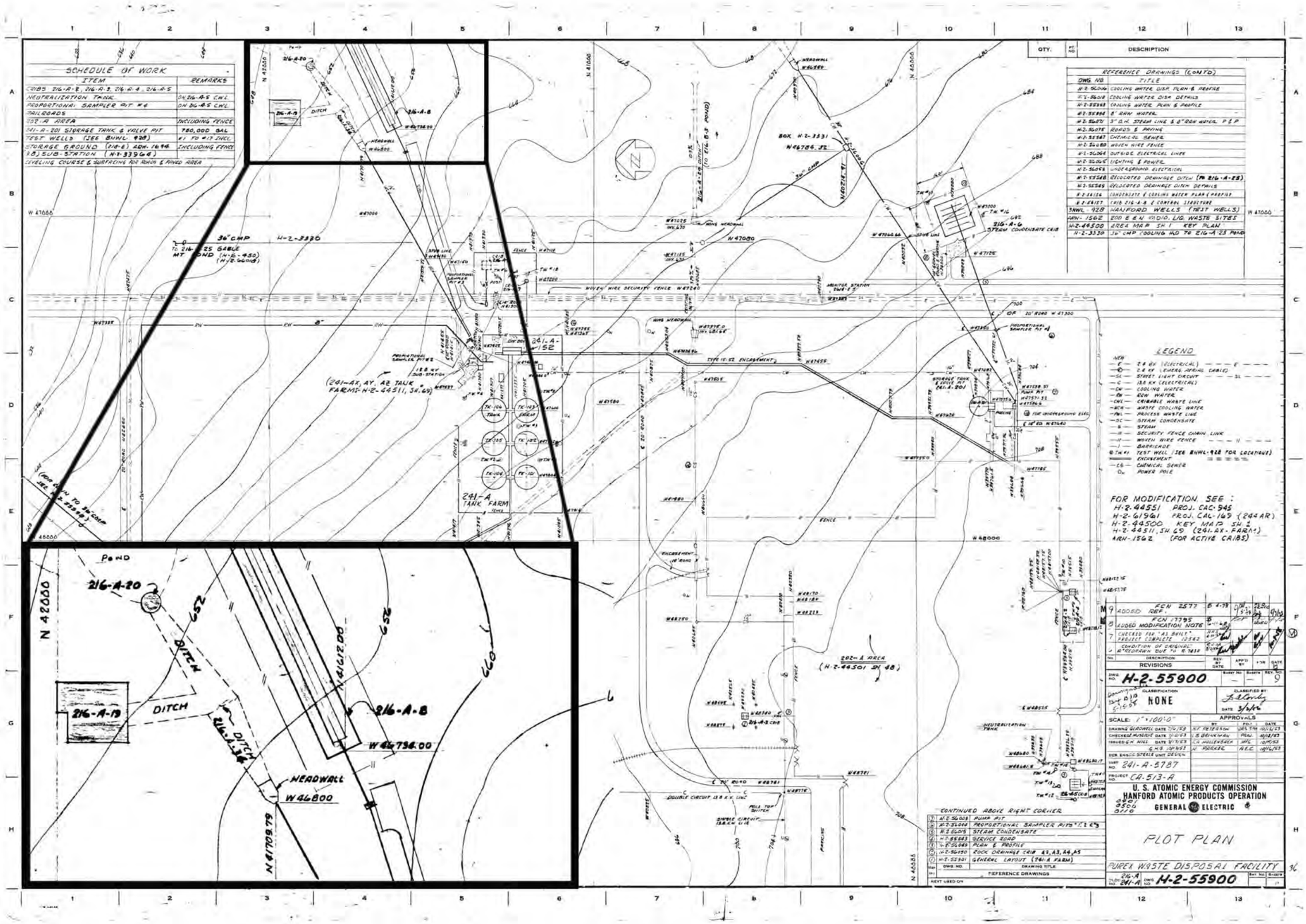
200-IS-1 OU

- 200-E-165-PL

Scoping Summary: 216-A-34 (Ditch)




15" VP CONC CRADLE DET'L
SCALE: 3/4"=1'-0"
REGULAR BACKFILL
SELECTED & COMPACTED SAND
OPTIONAL TRENCH CUT LINE
SLOPE: 0 TO 1 MIN. TO SLOPE: 1½ TO 1 MAX.
UNDISTURBED SOIL
STEEL TROWEL FINISH
PROCESS SEWERS FOR LOCATION OF 15" EX STR. V.P. SEE REF. DWG. H-2-56000 & H-2-56006 FOR 30" EX. STR. V.P.
OUTLINE OF SPILWAY ROCK BED
TOE OF SLOPE
RETAIN ALL EARTH SLOPES AROUND HEAD & WING WALLS WITH 6" MIN. LAYER OF 1½" TO 4" CRUSHED ROCK OR GRAVEL
PLAN
SECTION
SECTION
WELDED WIRE FABRIC STYLE 6x6 W4 OR #3-9" O.C.E.W.
SPILWAY ROCK BED 1½" TO 4" CRUSHED ROCK OR GRAVEL
WING HEADWALL
SCALE: 1/4"=1'-0"
FOR 15" V.P.
FOR 30" V.P.
MIN. 10'-0"
NATURAL GROUND
NOTE: USE DETAIL AS SHOWN WHERE NORMAL BACKFILL IS INSUFFICIENT TO GIVE 5' COVERAGE OVER PIPE. BORROW MAY BE TAKEN FROM AREA ADJACENT TO LINE
BACKFILL DETAIL
SCALE 1/4"=1'-0"
30" VP CONC. CRADLE DET'L
SCALE: 3/4"=1'-0"
6" VP CONC. CRADLE DET'L
SCALE: 1"=1'-0"
SPECIFICATIONS
CONCRETE & REINFORCEMENT H.W.S. 5614
15" & 30" EX. STR. V.P. DENOTES: VITRIFIED CLAY SEWER PIPE EXTRA STRENGTH, CONFORMING TO FEDERAL SPECIFICATIONS SS-P-361a, APRIL 30TH 1942
CERTIFIED AS BUILT
GENERAL ELECTRIC CO.
APPROVED FOR CONSTRUCTION For G. E.
AS BUILT
CONSTRUCTION COST CODE 5332-372-34
NONE
REFERENCE DRAWINGS
U. S. ATOMIC ENERGY COMMISSION
HANFORD WORKS
GENERAL ELECTRIC
PROCESS SEWERS HEADWALL & MISC. DETAIL
PUREX WASTE DISPOSAL FACILITY
BLDG. NO. 2904 E
DWG. NO. H-2-56014
SCALE: AS NOTED
CA-513-A
CLASSIFIED BY


SCHEDULE OF WORK
ITEM
REMARKS
216-A-20
DITCH
216-A-19
216-A-18
W46734.00
HEADWALL
W46800
N 42000
N 41012.00
N 41709.79
652
660
PLOT PLAN
PUREX WASTE DISPOSAL FACILITY
H-2-55900
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
NONE
REVISIONS
REFERENCE DRAWINGS
LEGEND
FOR MODIFICATION SEE :

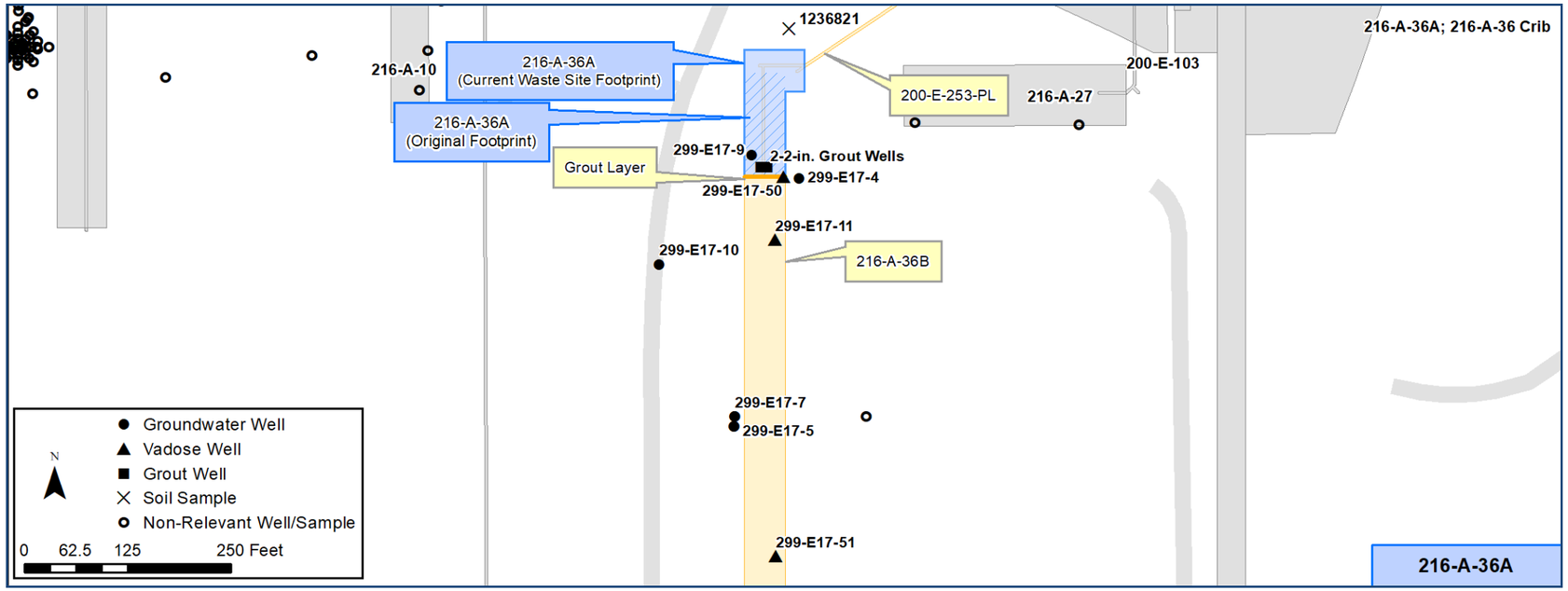
Scoping Summary: 216-A-36A (Crib)

History

The 216-A-36A waste site is an inactive underground crib that received Ammonia Scrubber Distillate (ASD) waste from the PUREX facility via the 200-E-253-PL pipeline. The crib was constructed by September 1965 and operational until March 1966, when it was isolated due to contaminant migration concerns.

Shortly after activation it was noted that significant quantities of fission products were being flushed to the crib. In December 1965 a test well was drilled and the investigation concluded that approximately 400,000 curies of gross activity was in the soil. The northern portion of the crib was abandoned by inserting a solid pipe inside the perforated pipe to extend the discharge. The crib was divided by inserting a grout gravel layer using two grout wells.

The isolated portion of the crib became 216-A-36A. The remaining portion was renamed 216-A-36B and operated until 1987. 216-A-36A was surface stabilized with six inches of clean gravel in May 2010.



Construction

- Length: 100 ft (bottom)
- Width:
  - 85 ft Top
  - 7.5 ft Bottom (north end)
  - 11 ft Bottom (south end)
- Depth: 22 ft
- Overburden Depth: 19.5 ft
- Side Slope: 1:1.5
- Excavation has 3 ft of gravel fill containing 4,500 cubic ft of material
- Incoming Pipes: 1
  - One 5-in Stainless Steel solid pipe inside a 6-in perforated pipe placed horizontally approx. 21 ft below grade (200-E-253-PL).

Features Of Interest

- Plastic barrier separates gravel from the overlying backfill; site has been backfilled to original grade with 6-in of surface gravel
- One 8-in VCP gauge well with riser, crib bottom to above grade on a 2'x2'x1' concrete block (200-E17-50)
- Three risers (locations not found on drawings)
- Two 2-in grout wells co-located with vertical grout barrier
- Three groundwater monitoring wells 299-E17-9 (325 ft), 299-E17-4 (400 ft), 299-E17-10 (325 ft).

Relevant Characterization

- Risers were found contaminated from 10,000 to 25,000 cpm direct and smearable to 20,000 cpm. Soil by a riser was contaminated at 2,000 cpm (September 1984)
- A riser had a dose rate of 10 mr/hr and smearable at 8,000 cpm. A dirt sample from under the riser was 6,000 cpm (May 1985). Riser locations were not found in the historical record, see pg 2 for May 2010 photo of one riser
- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- PUREX Plant - Plutonium-Uranium Extraction Process ASD: Ammonia Scrubber Distillate - Low in salt and neutral to basic containing large amounts of uranium. *(Note: No ammonia was identified as detected in the HEIS data.)*
- 282,664 gal of waste discharged to crib
- 135,000 curies total discharged Oct 1965- Jan 1966, including 610 Ci of Cs-137 and 625 Ci Sr-90 (NA - 1008031007)
- Radionuclides inventory decayed thru Dec 1998 includes 789 Ci of Sr-90 and 687 Ci of Cs-137 (HNF-1744 pg ATT C-102).

Misc./Other Relevant Information

- Location of the original test well drilled in December 1965 has not been confirmed
- Data from 299-E17-4 and 299-E17-9 indicates potential for groundwater contamination (ARH-ST-156)
- Four additional wells in the vicinity of 216-A-36B
- 216-A-36A and 36B are surrounded by posts and chain; both posted as URMA.

Site Interfaces

Intersecting/Nearby Sites:

200-IS-I OU

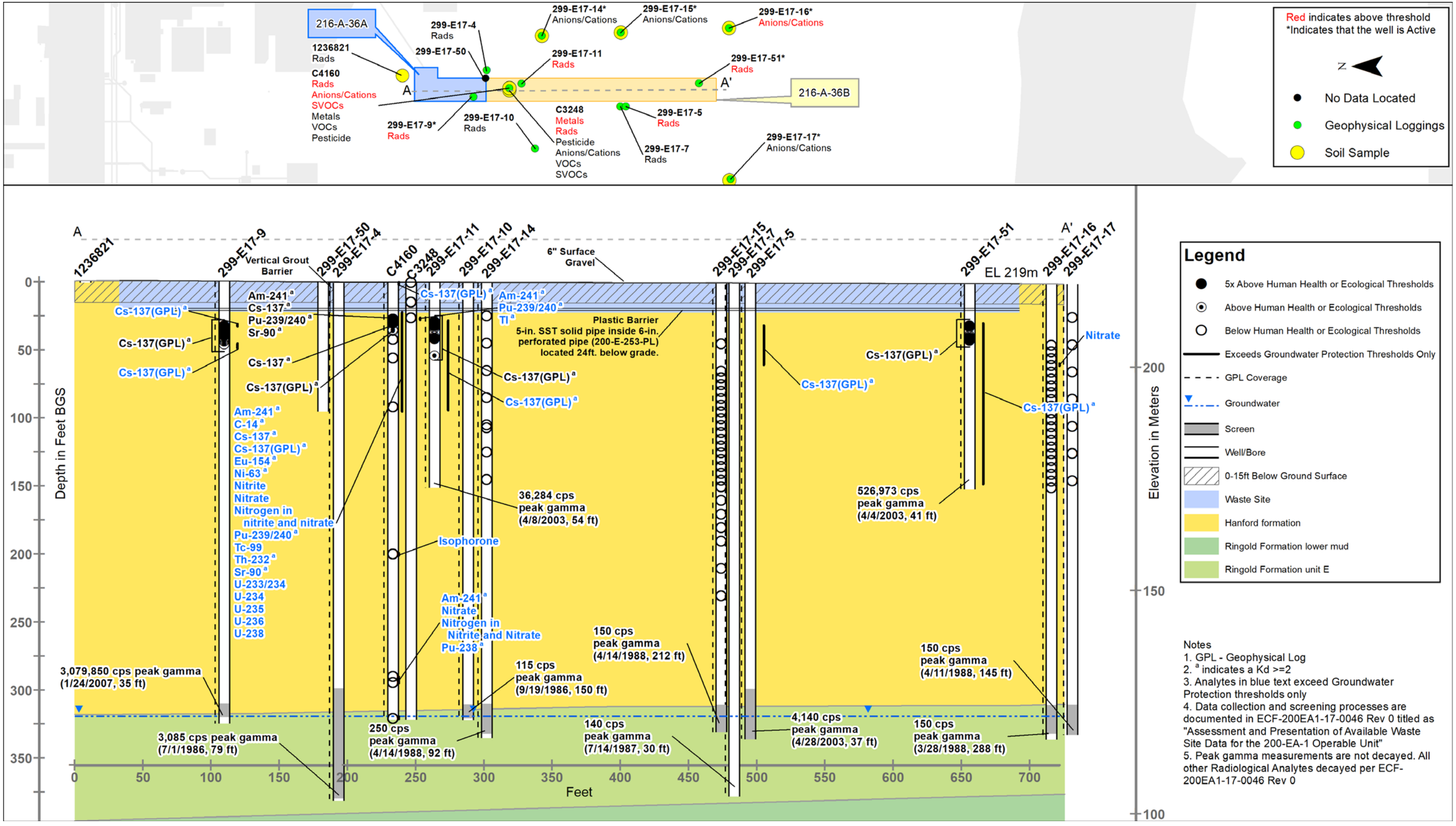
- 200-E-253-PL

200-EA-1 OU

- 216-A-36B (Crib)

Scoping Summary: 216-A-36A (Crib)

Scoping Summary: 216-A-36A (Crib)



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Scoping Summary: 216-A-36B (Crib)

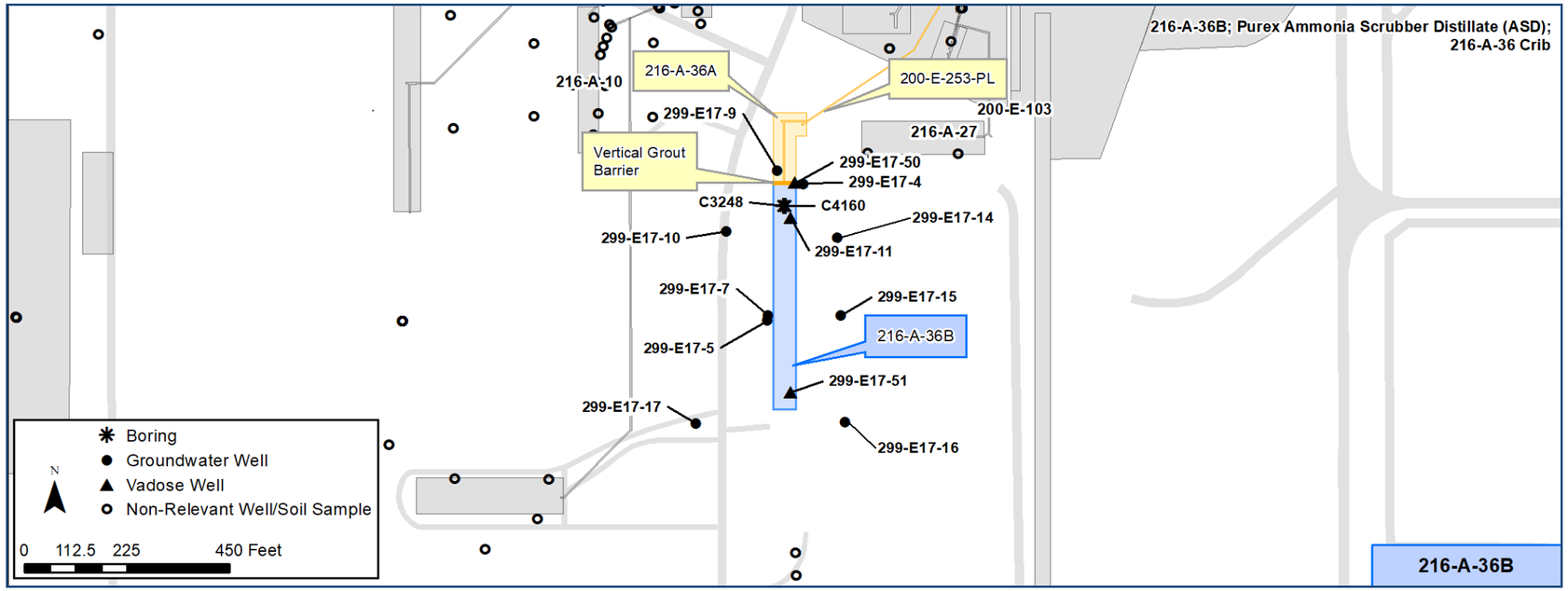
History

The 216-A-36B waste site is an inactive underground crib that received Ammonia Scrubber Distillate (ASD) waste from the PUREX facility via the 200-E-253-PL pipeline. The crib is south of the 202A PUREX building and adjacent to the 216-A-36A crib.

When the 216-A-36A crib was abandoned in March 1966, the 216-A-36B crib was created by extending the discharge pipeline from the A side to the B side and separating the sections with a grout injected into the gravel layer.

216-A-36B crib was initially operational from 1966 to 1972. The crib was not operational from October 1972 to November 1982 while the PUREX process was shut down. It resumed operation at the end of 1982 and continued until November 1987. The crib was isolated in 1987 and all subsequent ASD effluent was transferred to underground storage tanks.

The ASD drain piping was rerouted, the crib backfilled and surface stabilized with gravel. TSD unit closure characterization activities were performed under the 200-PW-2/4 operable unit (DOE/RL-2004-25, Draft A).



Construction

- Length: 500 ft (bottom)
- Width: 11 ft (bottom)
- Depth: 24 ft bgs
- Overburden Depth: 23 ft
- Side Slope: 1:1.5
- Excavation has 22,000 cubic ft of gravel fill
- Incoming Pipes: 1
  - One stainless steel perforated pipe placed horizontally at 23 ft bgs - transitions 6 in. to 5 in. to 4 in.
- Bottom gravel layer with plastic barrier
- 6 in. top gravel layer
- *See Page 4 for crib details.*

Features Of Interest

- One 8 in. VCP gage well (liquid-level monitoring riser) from crib bottom to 3.5 ft above grade
- One 8 in. SST vent riser with an internal tube filter; attached to the distribution line, extends 3 ft above grade
- Vertical grout barrier on north end
- Two boreholes: C3248 and C4160
- Two vadose wells: 299-E17-11 and 299-E17-51.

Relevant Characterization

- 100,000 cpm on the north riser (1988)
- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- PUREX Plant - Plutonium-Uranium Extraction Process. ASD - Low in salt and neutral to basic containing large amounts of uranium
- Abnormal discharge 5/21-5/28/1970 of 480,000 gal included 20.5 lbs. of U, 0.18 lbs. of Pu, 4,390 Ci of Ru-106, 5,800 Ci of Ce-144 and 15,900 Ci of Total Beta
- Waste volume 83,742,540 gal until 1972 (cumulative amount of the operational period was not located)
- Radionuclide inventory, decayed to Dec 1998, includes: Sr-90, Cs-137, Tc-99, U, Pu-239/40, Pu-241, Am-241 (HNF-1744 pg ATT C-46)
- Chemical contaminants include ammonium fluoride, ammonium nitrate, ammonium dichromate.

Misc./Other Relevant Information

- After closure this site will be monitored by the 200-PO-1 Groundwater OU.
- The Closure Plan for the crib (DOE/RL-2005-90, Draft A) states that the proposed strategy for the crib is TSD unit clean closure and no concentration of TSD unit constituents to exceed clean closure levels in soil.

Site Interfaces

Origins/Terminations:

200-IS-1 OU

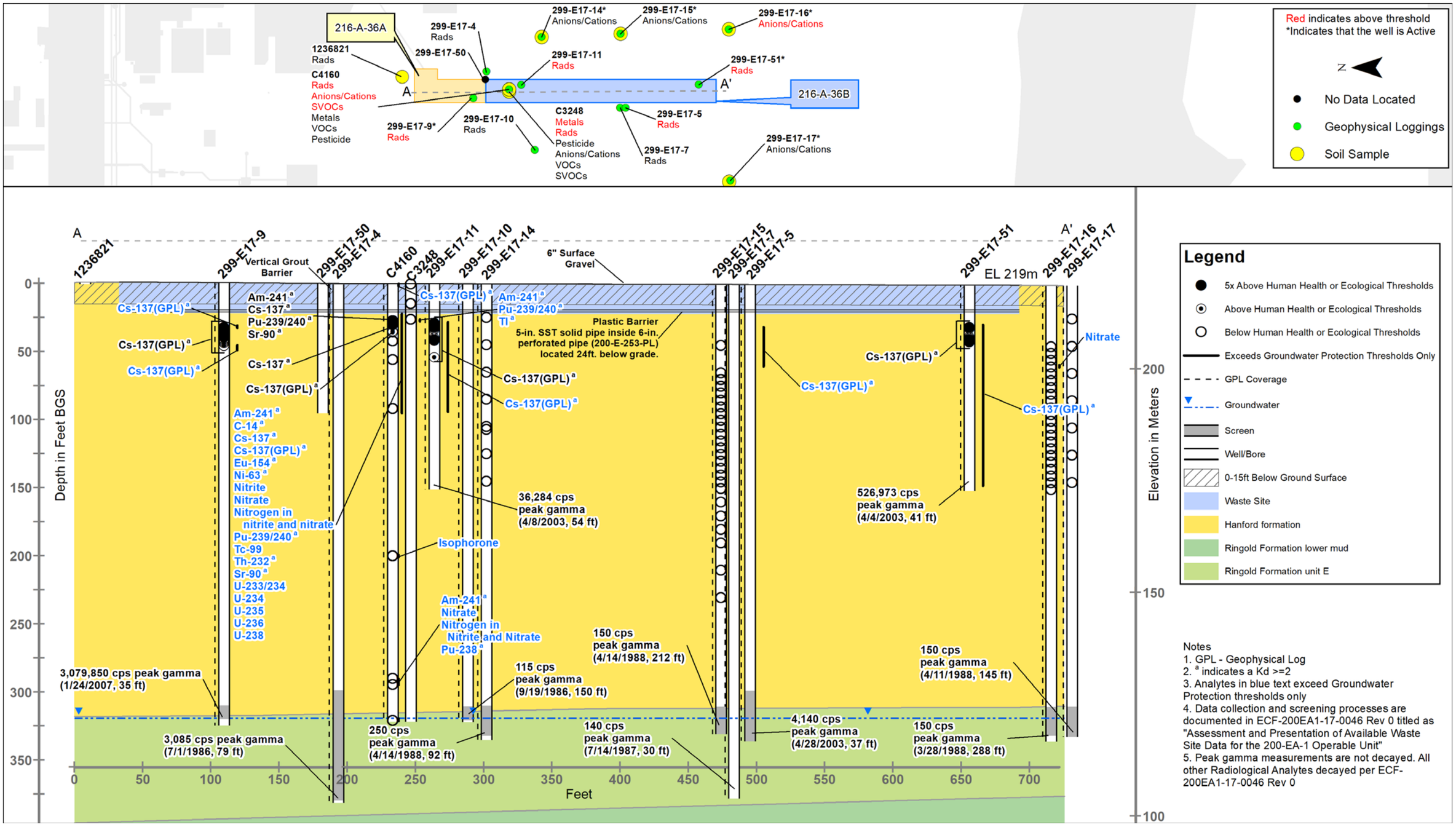
- 200-E-253-PL

Intersecting/Nearby Sites:

200-EA-1 OU

- 216-A-36A (Crib)

Scoping Summary: 216-A-36B (Crib)


216-A-36A
216-A-36B
1236821
Rads
C4160
Rads
Anions/Cations
SVOCs
Metals
VOCs
Pesticide
299-E17-4
Rads
299-E17-50
299-E17-9*
Rads
299-E17-10
Rads
299-E17-14*
Anions/Cations
299-E17-15*
Anions/Cations
299-E17-16*
Anions/Cations
299-E17-11
Rads
C3248
Metals
Rads
Pesticide
Anions/Cations
VOCs
SVOCs
299-E17-5
Rads
299-E17-7
Rads
299-E17-51*
Rads
299-E17-17*
Anions/Cations
A
A'
Red indicates above threshold
*Indicates that the well is Active
N
No Data Located
Geophysical Loggings
Soil Sample
Vertical Grout Barrier
6" Surface Gravel
EL 219m
Plastic Barrier
5-in. SST solid pipe inside 6-in. perforated pipe (200-E-253-PL) located 24ft. below grade.
Depth in Feet BGS
Elevation in Meters
Feet
Cs-137(GPL)[a]
Am-241[a]
Cs-137[a]
Pu-239/240[a]
Sr-90[a]
Tl[a]
C-14[a]
Eu-154[a]
Ni-63[a]
Nitrite
Nitrate
Nitrogen in nitrite and nitrate
Tc-99
Th-232[a]
U-233/234
U-234
U-235
U-236
U-238
Isophorone
Nitrogen in Nitrite and Nitrate
Pu-238[a]
3,079,850 cps peak gamma (1/24/2007, 35 ft)
3,085 cps peak gamma (7/1/1986, 79 ft)
250 cps peak gamma (4/14/1988, 92 ft)
36,284 cps peak gamma (4/8/2003, 54 ft)
115 cps peak gamma (9/19/1986, 150 ft)
150 cps peak gamma (4/14/1988, 212 ft)
140 cps peak gamma (7/14/1987, 30 ft)
4,140 cps peak gamma (4/28/2003, 37 ft)
526,973 cps peak gamma (4/4/2003, 41 ft)
150 cps peak gamma (4/11/1988, 145 ft)
150 cps peak gamma (3/28/1988, 288 ft)
Legend
5x Above Human Health or Ecological Thresholds
Above Human Health or Ecological Thresholds
Below Human Health or Ecological Thresholds
Exceeds Groundwater Protection Thresholds Only
GPL Coverage
Groundwater
Screen
Well/Bore
0-15ft Below Ground Surface
Waste Site
Hanford formation
Ringold Formation lower mud
Ringold Formation unit E
Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

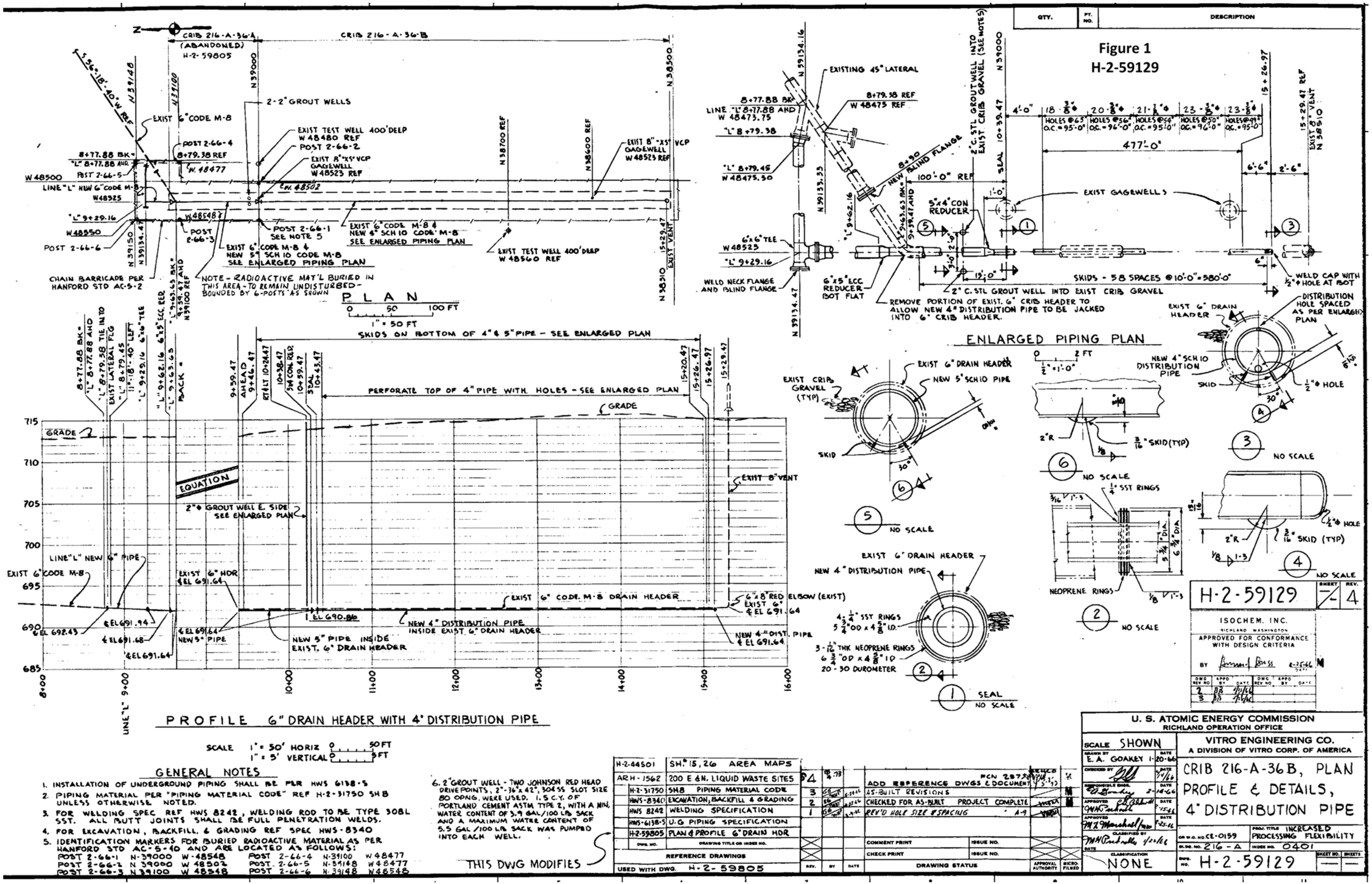


Figure 1
H-2-59129
PLAN
PROFILE 6" DRAIN HEADER WITH 4" DISTRIBUTION PIPE
ENLARGED PIPING PLAN
GENERAL NOTES
1. INSTALLATION OF UNDERGROUND PIPING SHALL BE PER HWS 6138-S
2. PIPING MATERIAL PER "PIPING MATERIAL CODE" REF H-2-31750 SHB UNLESS OTHERWISE NOTED.
3. FOR WELDING SPEC REF HWS 8242, WELDING ROD TO BE TYPE 308L SST. ALL BUTT JOINTS SHALL BE FULL PENETRATION WELDS.
4. FOR EXCAVATION, BACKFILL, & GRADING REF SPEC HWS-8340
5. IDENTIFICATION MARKERS FOR BURIED RADIOACTIVE MATERIAL AS PER HANFORD STD AC-5-40 AND ARE LOCATED AS FOLLOWS:
POST 2-66-1 N-39000 W-48548
POST 2-66-2 N 39000 W 48502
POST 2-66-3 N 39100 W 48548
POST 2-66-4 N-39100 W 48477
POST 2-66-5 N-39148 W 48477
POST 2-66-6 N-39148 W 48548
6. 2" GROUT WELL - TWO JOHNSON RED HEAD DRIVE POINTS, 2"-36"x 42", 304 SS SLOT SIZE 80 OPNG. WERE USED. 1.5 C.Y. OF PORTLAND CEMENT ASTM TYPE 2, WITH A MIN. WATER CONTENT OF 3.9 GAL/100 LB SACK AND A MAXIMUM WATER CONTENT OF 5.5 GAL/100 LB SACK WAS PUMPED INTO EACH WELL.
THIS DWG MODIFIES
H-2-44501 SH. 15, 26 AREA MAPS
ARH-1562 200 E & N. LIQUID WASTE SITES
H-2-31750 SHB PIPING MATERIAL CODE
HWS-8340 EXCAVATION, BACKFILL & GRADING
HWS 8242 WELDING SPECIFICATION
HWS-6138-S U.G PIPING SPECIFICATION
H-2-59805 PLAN & PROFILE 6" DRAIN HDR
REFERENCE DRAWINGS
USED WITH DWG. H-2-59805
ADD REFERENCE DWGS & DOCUMENT
AS-BUILT REVISIONS
CHECKED FOR AS-BUILT PROJECT COMPLETE
REV'D HOLE SIZE & SPACING
COMMENT PRINT
CHECK PRINT
DRAWING STATUS
U. S. ATOMIC ENERGY COMMISSION
RICHLAND OPERATION OFFICE
VITRO ENGINEERING CO.
A DIVISION OF VITRO CORP. OF AMERICA
CRIB 216-A-36B, PLAN PROFILE & DETAILS, 4" DISTRIBUTION PIPE
H-2-59129
ISOCHEM. INC.
APPROVED FOR CONFORMANCE WITH DESIGN CRITERIA
NONE

Scoping Summary: 216-A-37-1 (Crib)

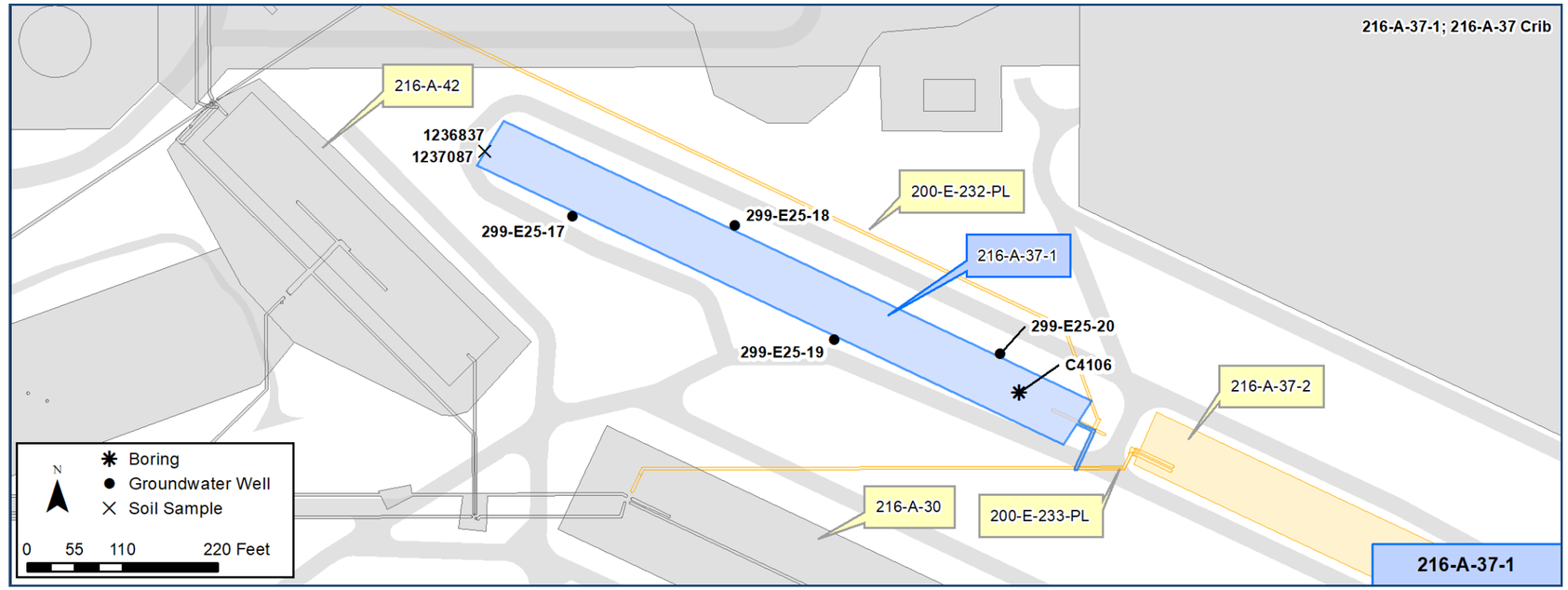
History

The 216-A-37-1 waste site is an inactive crib that received process condensate waste from the 242A Evaporator building via the 207-A South Retention Basin thru the 200-E-232-PL pipeline between 1977 and 1989.

In 2000, the crib's vent risers were sealed as a preventative measure for potential passive radioactive emissions.

Based on previously collected data in the Remedial Investigation Report for the 200-PW-2 and 200-PW-4 operable units (DOE/RL-2004-25, Draft A), the TSD unit (D-2-10) meets clean closure performance standards for TSD unit dangerous waste constituents without further physical closure activities. The data also show that TSD unit operations and TSD unit constituents (e.g., ammonia) did not impact groundwater. However, non-TSD constituents are present in the soil and groundwater. The *216-A-37-1 Crib Closure Plan (D-2-10)* (DOE/RL-2005-88, Rev. 0) presents additional information on the TSD closure for this site.

The crib is marked with concrete AC-540 posts and Underground Radioactive Material signs.



Construction

- Length: 700 ft (bottom)
- Width: 10 ft (bottom)
- Depth: 11 ft bgs
- Side Slope: 1:1
- Material: Gravel

- Water table: 295 ft bgs

- Description: The gravel structure has a 10-in. diameter corrugated galvanized steel perforated distributor pipe located horizontally in the crib, at 7 ft bgs.
- The excavation contains 5 ft of gravel fill with a volume of 150 cubic meters (5,300 cubic ft) and has been backfilled over.
- See page 2 for an aerial view and as-built features of the crib.

Features Of Interest

- Four groundwater monitoring wells (295 ft bgs): 299-E25-17, 299-E25-18, 299-E25-19, 299-E25-20
- Distribution box at head end of crib, to divert waste to 216-A-30 Crib (Note: the box was filled with gravel in 2007)
- 10-in. corrugated, galvanized, perforated pipe located horizontally 7 ft bgs.

Relevant Characterization

- 2000: The crib surface is not radiologically-contaminated
- 2003 borehole C4106: Sampling identifed Cs-137 as only man-made radionuclide present, with a maximum detection at 10 ft bgs (30 pCi/g). Radiological field surveys revealed background level counting rates throughout the length of the borehole; no organic vapors were detected.
- 2015: Two soil samples, 1236837 and 1237087.
- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- 242A Evaporator building process condensate waste, designated as a mixed waste by the WAC due to the presence of halogenated and nonhalogenated solvents, and for the ammonia toxicity. It was mostly water containing small quantities of ammonia and inorganic constituents and trace quantities of volatile organics and radionuclides (WHC-EP-0342, Addendum 15).
  - As of 1985, radionuclides present included: H-3, Sr-90, Ru-106, Cs-137, and Pm-147 (See HNF-1744, ATT C-47).
- Approximately 99.59M gal were discharged to the crib.

Misc./Other Relevant Information

- Groundwater beneath this crib and other PUREX cribs is monitored on a regional basis, as part of the 200-PO-1 Groundwater Operable Unit. In 2015, the four groundwater monitoring wells were sampled at least semi-annually; the only item of note was a pH change from January to September of 8.54 to 8.42 in one well (DOE/RL-2016-12, Rev. 0).

Site Interfaces

Site Intersects:

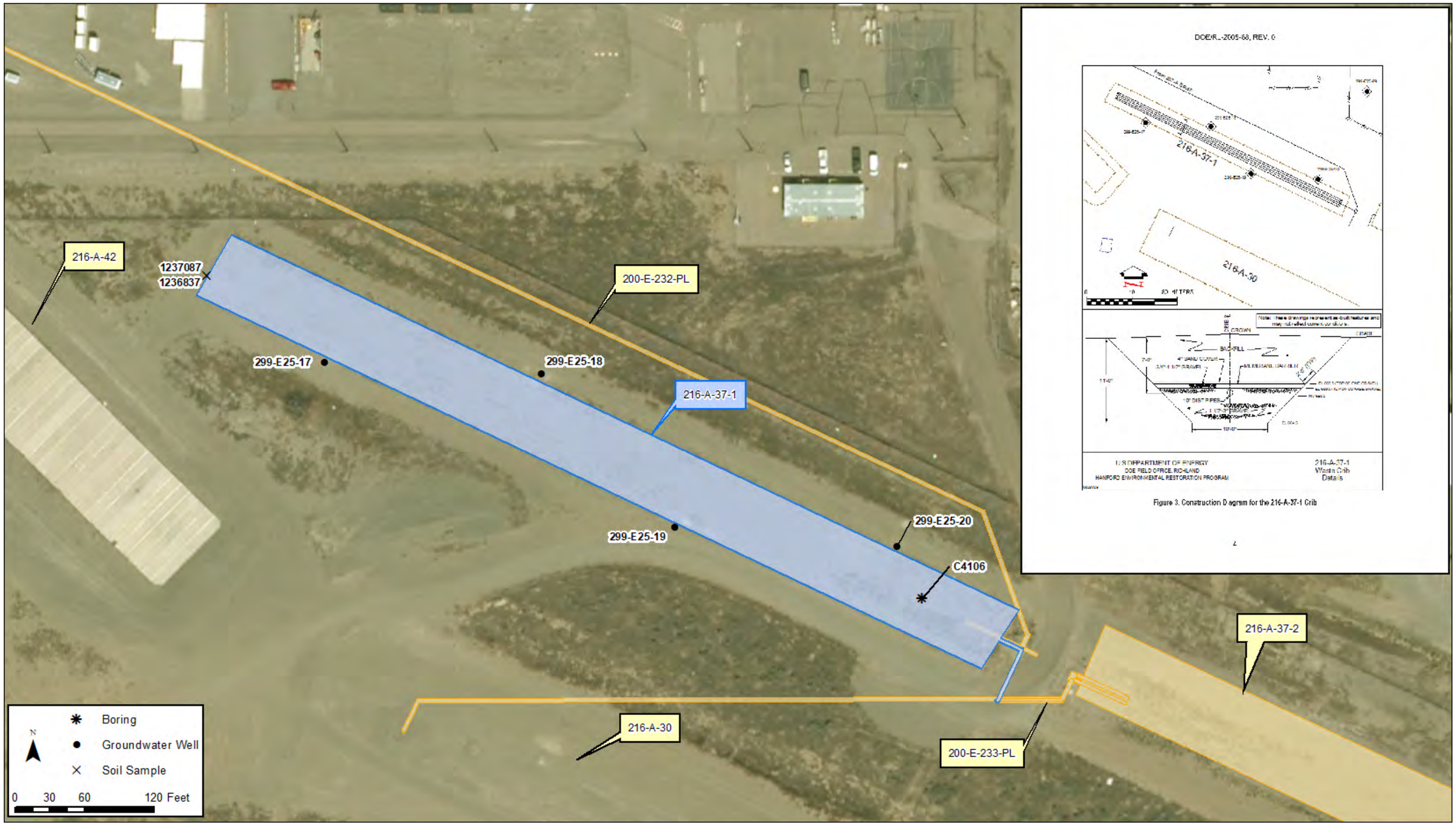
200-IS-1 OU
- 200-E-232-PL
- 200-E-233-PL

200-EA-1 OU
- 216-A-37-2 (Crib)

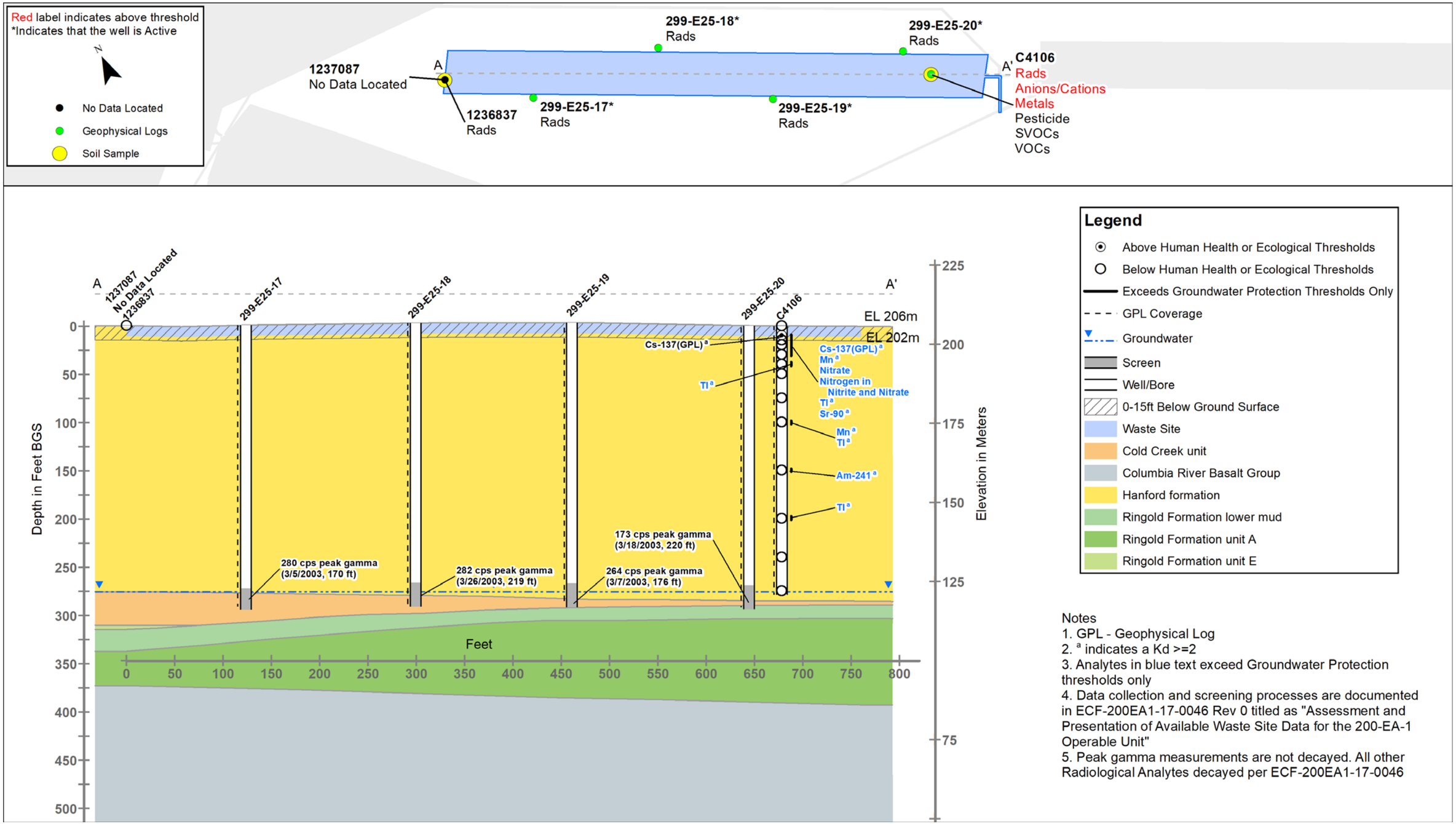
Nearby Sites:

200-EA-1 OU
- 216-A-30 (Crib)
- 216-A-42 (Crib)

Scoping Summary: 216-A-37-1 (Crib)



Scoping Summary: 216-A-37-1 (Crib)



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Scoping Summary: 216-A-37-2 (Crib)

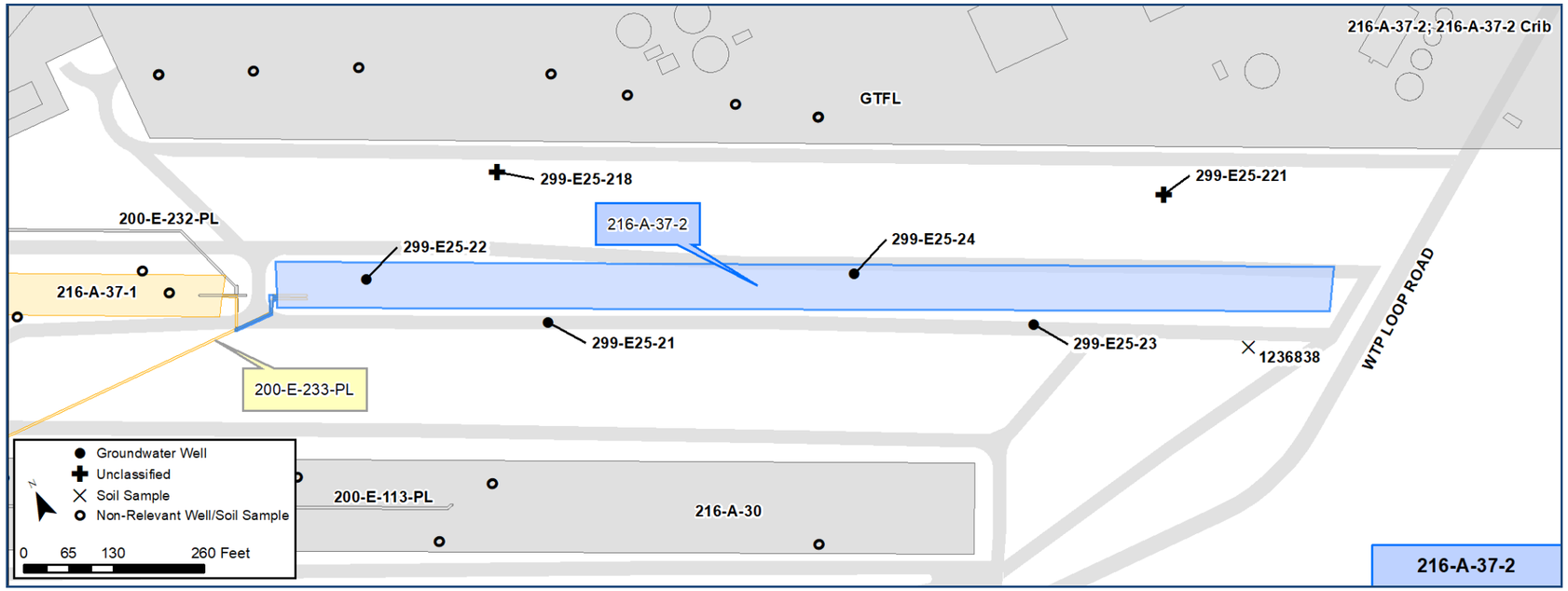
History

The 216-A-37-2 waste site is an inactive crib that received steam condensate waste from the 202A PUREX facility via the 200-E-233-PL pipeline. This crib was built as a replacement for the 216-A-30 crib, and operated from 1984 to 1991.

The TPA Milestone M-17-22A required that the PUREX steam condensate discharge to the 216-A-37-2 crib be discontinued by June 1992. The crib was permanently isolated in 1995, when its distribution box was filled with concrete.

In 2000, the vent risers were sealed as a preventive measure against passive radioactive emissions. In 2007, clean gravel was placed over the crib's concrete distribution box, and the area was marked with Underground Radioactive Material Area (URMA) signs. A photo of the gravel placement is provided on Page 2.

The 216-A-37-2 crib received the same waste stream as 216-A-30; therefore, characterization efforts already conducted at 216-A-30 may be used to support characterization here. The crib is currently marked with concrete AC-540 post and URMA signs. The crib is not a RCRA TSD unit.



Construction

Bottom Dimensions:
- Length: 1,400 ft
- Width: 10 ft
- Slope: 1.5:1
- Depth: to 16 ft bgs
- Material: gravel-filled

Top Dimension:
- Width: ~46 ft

Features Of Interest

- Two steel drain pipes:
  - one is perforated and runs length of unit
  - one is not perforated, runs west-to-east to center of unit, ~5 ft above bottom of crib.
- Gravel bed on crib bottom has been covered with 20-mil PVC barrier cover.
- Distribution box at west end of crib
- Gage well (2), sealed with metal tape in 2000
- Vent pipe, from distribution pipe up to 3 ft above grade.

Relevant Characterization

- Borehole C4106 drilled to water table at neighboring crib 216-A-37-1 and provides data on deeper contamination. Borehole C5941 drilled at 216-A-30, also relevant here.
- 1991 Radiological Survey: 500 dpm/100cm2 (alpha); 200 dpm/100cm2 (beta).
- *See Page 4 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- Received ~288,000,000 gallons liquid waste
- 1984-1986; 1988-1991: received PUREX steam condensate, equipment disposal tunnel floor and water-filled door drainage, and the slug storage basin overflow waste from 202A; low salt, and neutral to basic.
- Constituents of interest: Uranium, Tritium, Nitrate, Fluoride, Cs-137, Sr-90, and Plutonium.
  - The crib's radionuclide inventory was documented in HNF-1744 (ATT B-5, ATT C-47&48).

Misc./Other Relevant Information

- The site was a part of the Remedial Investigation Report and Feasibility Study for the 200-CW-5, 200-CW-2, 200-CW-4, and 200-SC-1 Operable Units (DOE/RL-2003-11 and DOE/RL-2004-24, Draft A), where capping was identified as the preffered alternative for 216-A-37-2.
- The effluent volume discharged to the crib is more than 30 times the soil column capacity (DOE/RL-2004-24).

Site Interfaces

Site Intersect:

200-IS-1 OU
- 200-E-233-PL (pipeline)

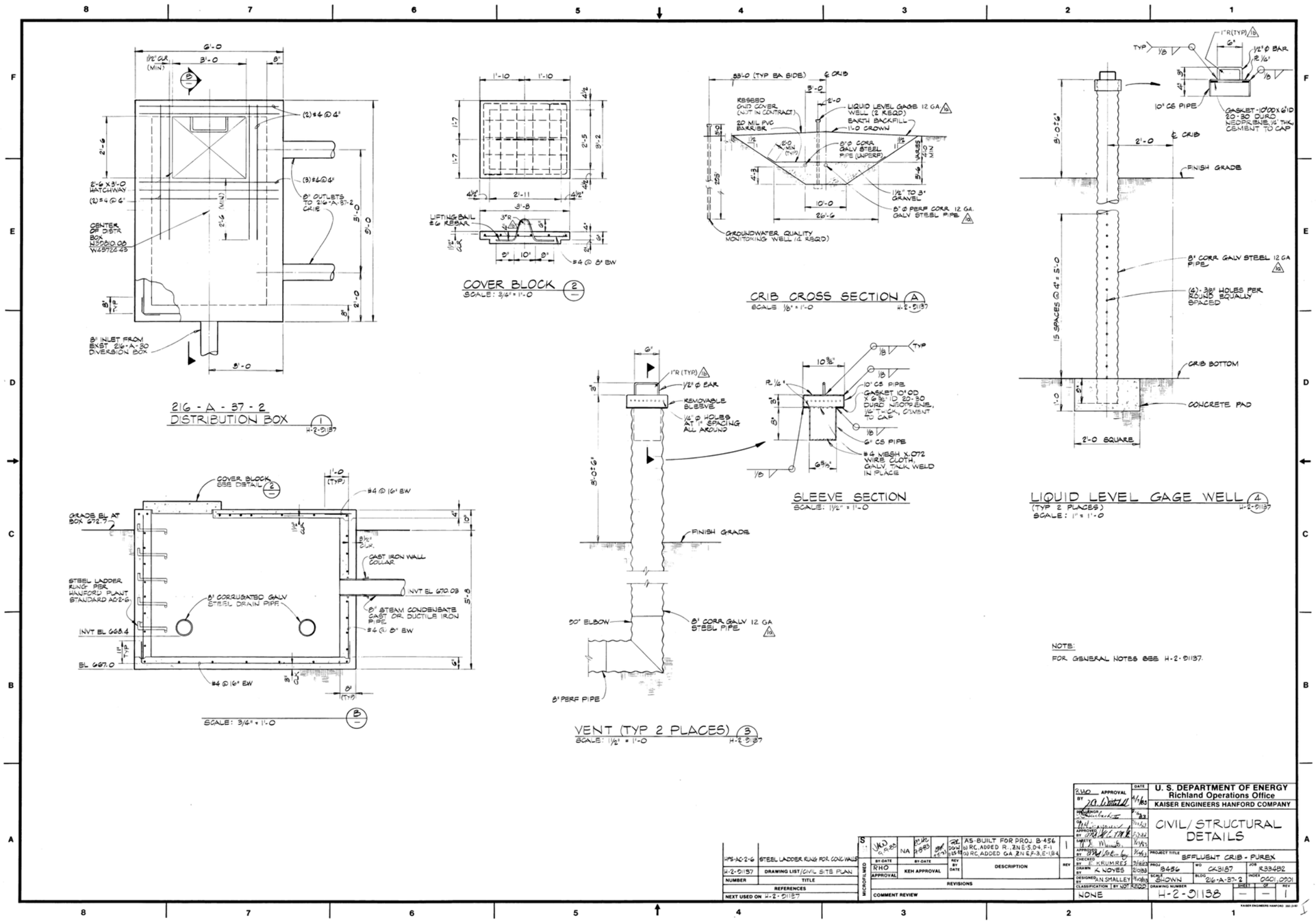
Nearby Sites:

200-IS-1 OU
- 200-E-113-PL (pipeline)
- 200-E-232-PL (pipeline)

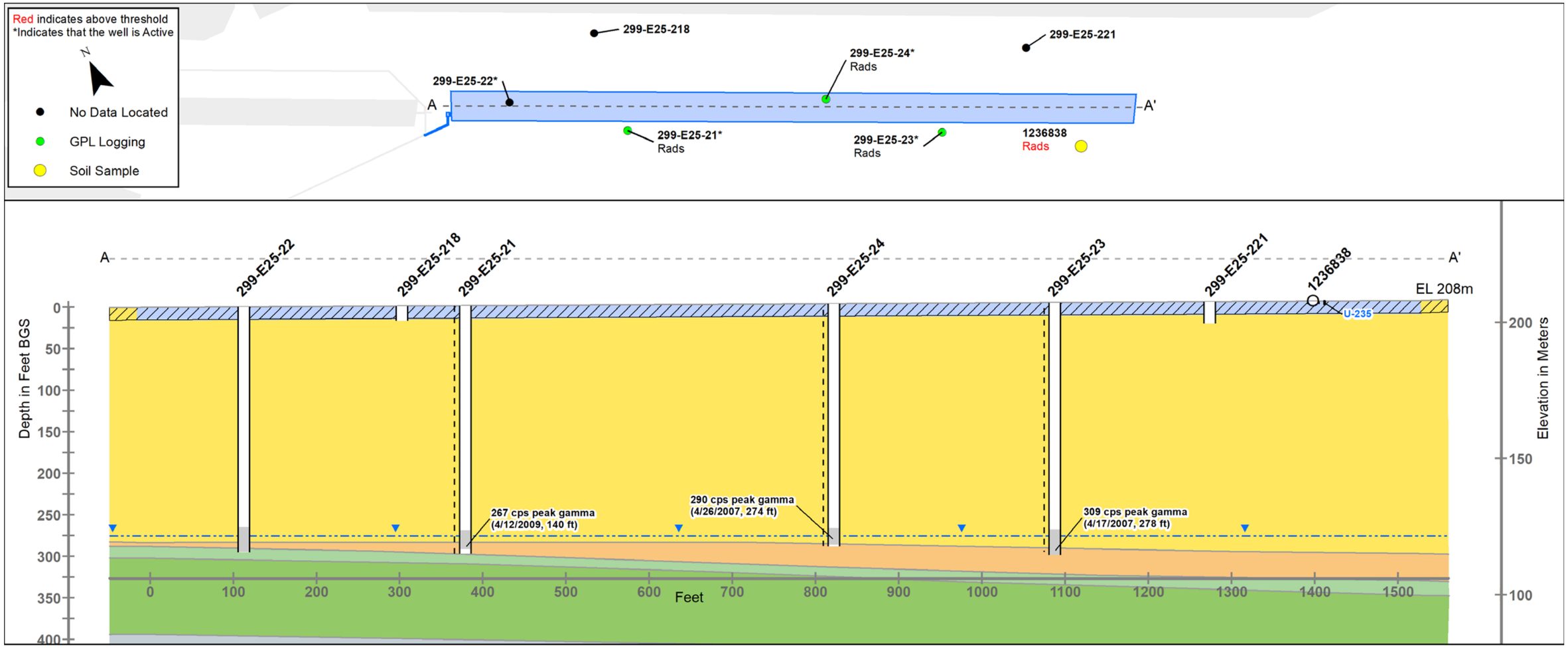
200-EA-1 OU
- 216-A-30 (crib)
- 216-A-37-1 (crib)

- GTFL (Grout Treatment Facility Landfill)
- WTP Loop Road

Scoping Summary: 216-A-37-2 (Crib)


216-A-37-2 DISTRIBUTION BOX
COVER BLOCK
CRIB CROSS SECTION
SLEEVE SECTION
LIQUID LEVEL GAGE WELL
VENT (TYP 2 PLACES)
NOTE:
FOR GENERAL NOTES SEE H-2-91137.
U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY
CIVIL/STRUCTURAL DETAILS
PROJECT TITLE EFFLUENT CRIB - PUREX
H-2-91138

Scoping Summary: 216-A-37-2 (Crib)



Legend

- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- GPL Coverage
- Groundwater
- Screen
- Well/Bore
- 0-15ft Below Ground Surface
- Waste Site
- Cold Creek unit
- Columbia River Basalt Group
- Hanford formation
- Ringold Formation lower mud
- Ringold Formation unit A

Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

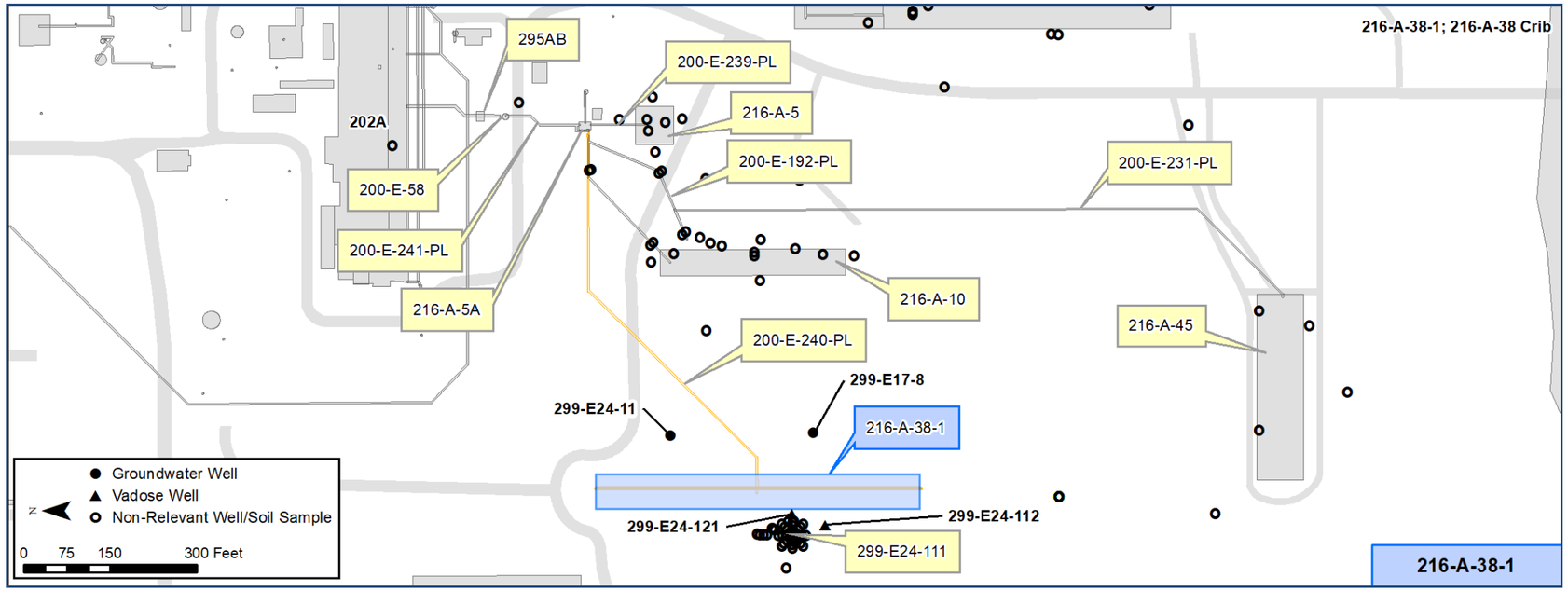
Scoping Summary: 216-A-38-1 (Crib)

History

The 216-A-38-1 waste site is an inactive, underground crib that was built as a replacement for the 216-A-10 Crib after it began to show signs of strontium-90 saturation. The crib was never activated, though, because it was seen as undersized and a potential constraint for a nearby project. It is located 600 ft southwest of 202A (PUREX Facility). The crib's engineering document was approved in 1967, but the actual construction date is unknown. The 200-E-240-PL piping was added no later than 1980 to transport waste from 202A to the crib; however, the pipeline was never used.

The crib was isolated in 1989, when deactivation measures were taken to shut down the 200-E-58 Neutralization Tank and its associated cribs; 216-A-10, 216-A-45 and 216-A-5. The 216-A-45 Crib acted as the replacement for 216-A-10 instead of 216-A-38-1.

There is a radionuclide migration test site (299-E24-111) to the west of 216-A-38-1. The site consists of 8 concentric rings of observation wells (32 total) that do not relate to 216-A-38-1.



Construction

- Bottom Width: 15 ft
- Bottom Length: 520 ft
- Depth: 37 ft bgs
- Side Slope 1:1
- Fill: 5 ft of gravel (50,000 cu. ft) then backfilled to grade
- Number of incoming and outgoing pipelines
  - Incoming Pipelines:1
    - Depth: ~33 ft bgs
- A 6-in perforated stainless steel distribution pipe that reduces to 4-in runs the length of the crib

Features Of Interest

- The crib was posted as an Underground Radioactive Material area in 1980, due to the fact that underground piping (200-E-240-PL) had been installed and connected the crib to the PUREX process
- The crib is surrounded by light posts and a chain. There are no concrete AC-540 markers or signs to label the site.
- A 1999 image shows 4 risers
  - likely consists of 1 vent, 2 wells, and 1 unknown
  - Current status of these risers is unknown.

Relevant Characterization

- In 2013 and 2016, radiation surveys done with mobile instruments detected no contamination above background levels.
- No surface contamination has ever been identified during routine surveillance.
- In 2007, geophysical logging data from 299-E24-112 found nothing above normal variances in contamination.
- The collection of wells identified south of the crib are the Sisson & Lu test site, 299-E-24-111 (no contaminants).

Waste Streams

- Research suggests this crib was never utilized.

Misc./Other Relevant Information

- Previously associated with Operable Units 200-PO-2, 200-MW-1 and 200-MG-2.
- The Engineering Evaluation/Cost Analysis for the 200-MG-2 Operable Unit (DOE/RL-2008-45, Rev0) determined confirmatory sampling/no action (CS/NA) as the preferred remedial action.
- The cluster of wells to the west are related to a nearby test facility and have very limited documentation.

Site Interfaces

Origin/Termination:

200-IS-1 OU

- 200-E-240-PL

Nearby/Intersecting Sites:

200-EA-1 OU

- 216-A-10 Crib
- 216-A-5 Crib
- 216-A-45 Crib
- 299-E24-111 (experimental test well site)
- 200-E-58 (neutralization tank)

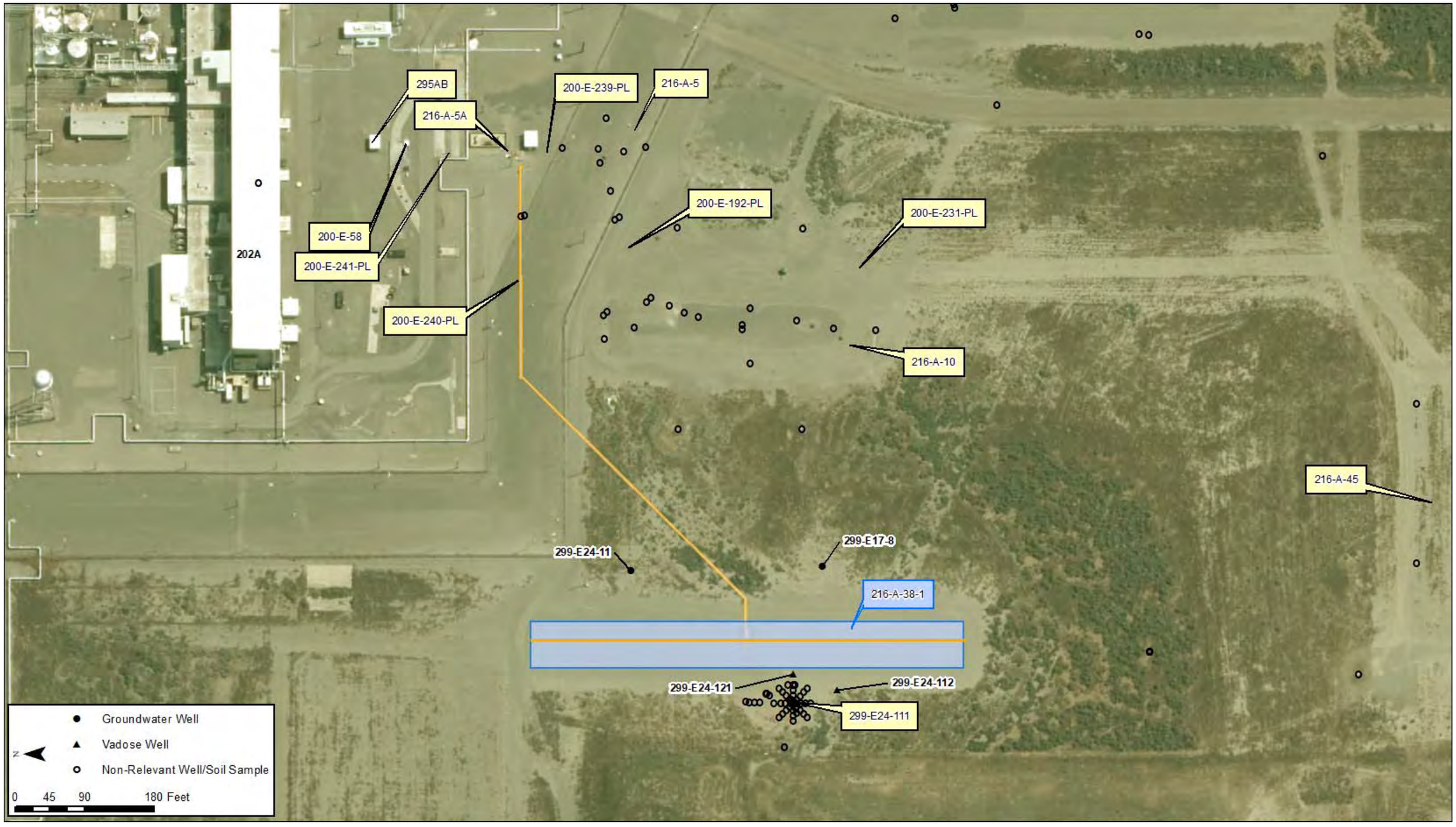
200-IS-1 OU

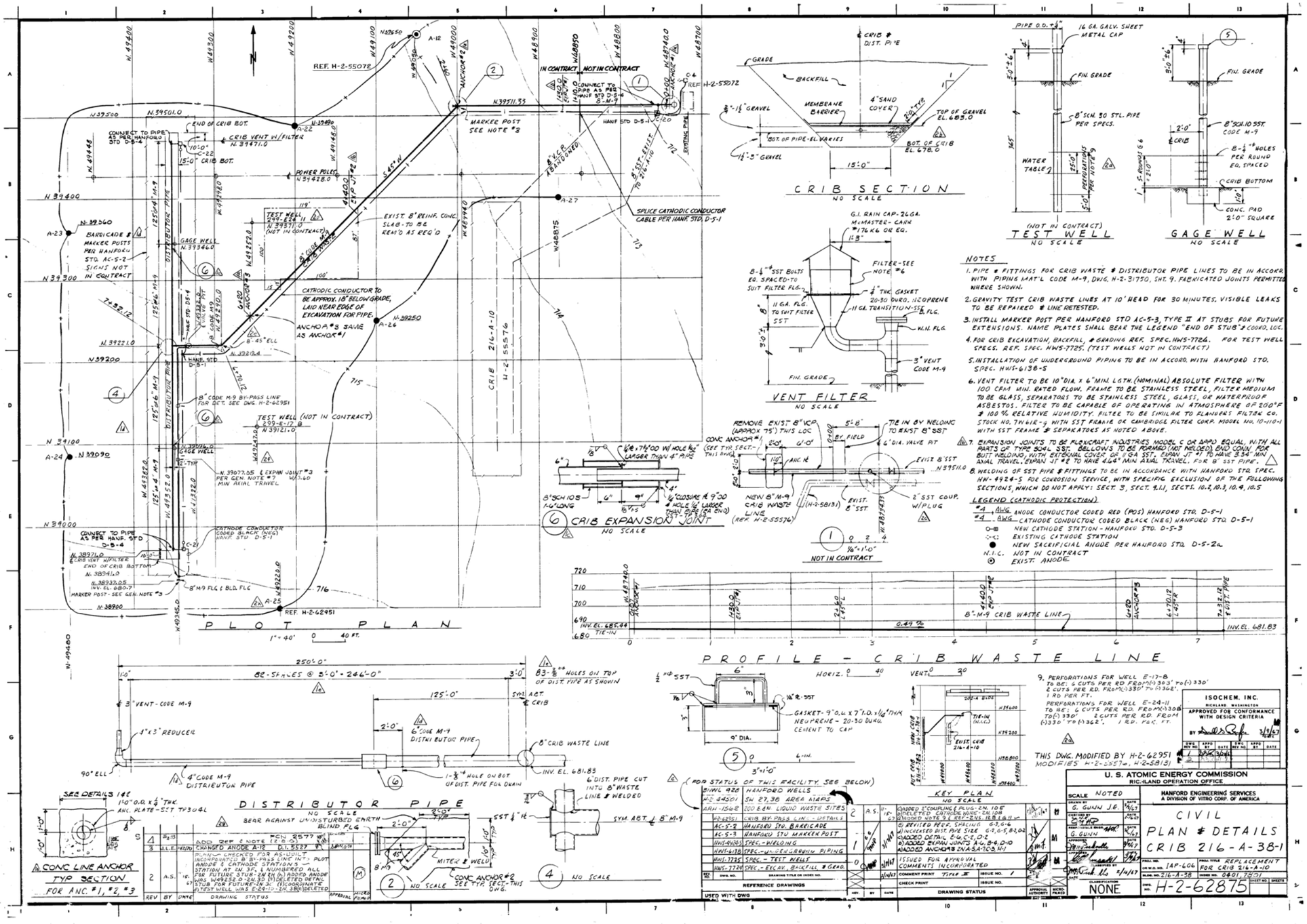
- 200-E-231-PL
- 200-E-192-PL
- 200-E-239-PL
- 200-E-241-PL

OU Unassigned

- 216A5A (proportional sampler pit #4)
- 295AB (PDD sample station)

Scoping Summary: 216-A-38-1 (Crib)




PLOT PLAN
CRIB SECTION
TEST WELL
GAGE WELL
VENT FILTER
CRIB EXPANSION JOINT
PROFILE - CRIB WASTE LINE
DISTRIBUTOR PIPE
KEY PLAN
NOTES
ISOCHEM. INC.
U. S. ATOMIC ENERGY COMMISSION
RIC-LAND OPERATION OFFICE
HANFORD ENGINEERING SERVICES
CIVIL
PLAN & DETAILS
CRIB 216-A-38-1
NONE
H-2-62875

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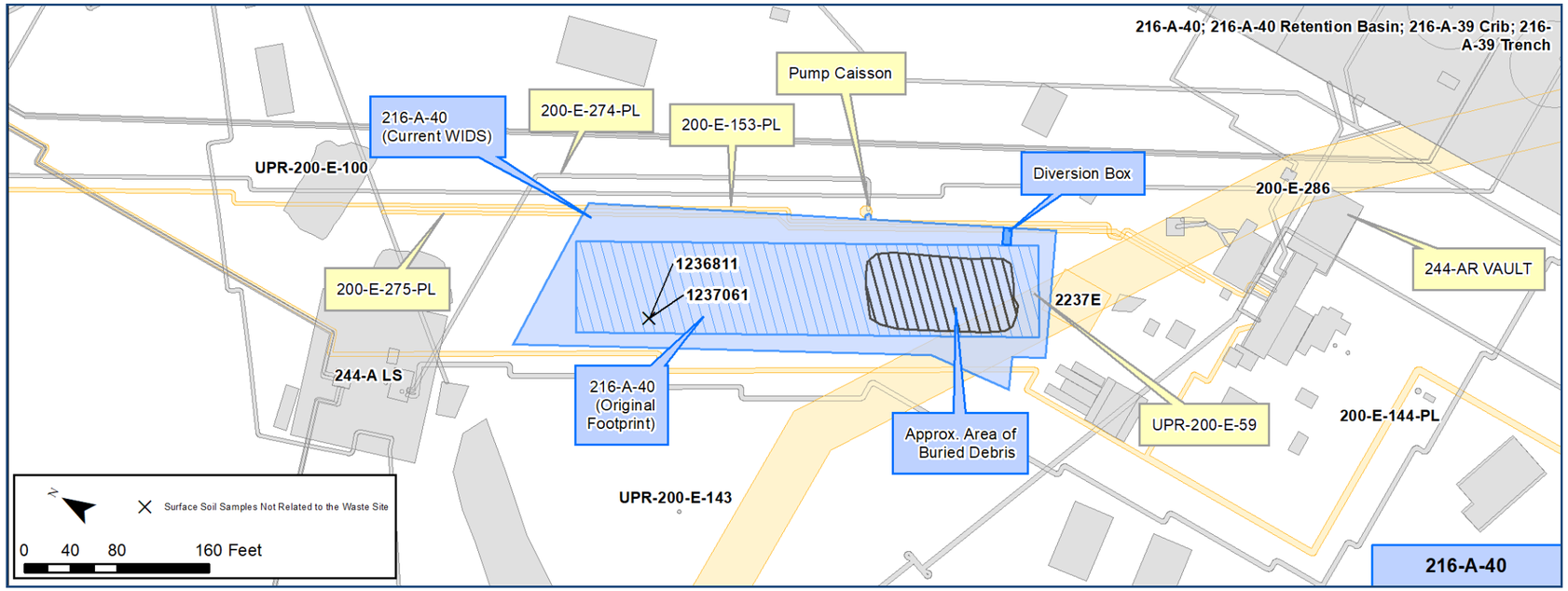
Scoping Summary: 216-A-40 (Retention Basin)

History

The 216-A-40 waste site is an inactive and demolished retention basin that consists of consolidated debris, a diversion box and pump caisson. Located between the 244-A Lift Station and the 244-AR Vault, the basin received diverted contaminated water from the vault. The basin was constructed in 1968 and operational until 1979, when it was removed from service due to bladder failure. In 1994 the basin was isolated, reduced in size and interim stabilized.

When removed from service, contamination from inside the open basin had affected the surrounding area via wind and animal related migration. During isolation the pump and diverter valve motor were removed, while the pump caisson and diversion box were abandoned in place. Demolition debris (bladders, floats, interior piping, sump) were consolidated in the south end of the basin. Soil from the adjacent UPR-200-E-143 and UPR-200-E-100 was scraped into the end of the basin. The entire basin was backfilled to grade. Contaminated cooling water and steam condensate from the vault were diverted to the basin via a diversion box with a motor driven diverter valve. Each bladder was equipped with a sump and pipeline connected to the pump caisson, which connected to 200-E-274-PL that routed the water into the tank farm system via the lift station.



Construction

Original Construction
- Length: 400 ft
- Bottom Width: 20 ft
- Top Width: Approx. 74 ft
- Depth: 16 ft
- Side Slope: 1:1.5
- Divided into three sections by two soil berms; south and middle sections lined with a bladder, the north section unlined (see figures pg 3)

Current GIS Waste Site Shape
- Length: 460 ft (longest side)
- Width: 138 ft (widest side)

Features Of Interest

- One 12-in. distribution pipe, 12 ft bgs horizontally through the south end of the site
  - 5 ft pipe section connected perpendicular
- Two collapsible 200,000 gal capacity hypalon rubber bladders with concrete sump and 3-in pipeline each
- One diversion box, inlet isolated with concrete, valve motor removed (see 200-E-275-PL)
- One pump, outlet pipes cut and capped
- See figures pg. 3

Relevant Characterization

- UPR-200-E-59 contaminated mud found in swallow nest at 244-AR Vault and outside the basin bladder
  - Mud sample from the top of basin bladder contained 120 pCi/g of Cs-137 and 116 of Co-60 (1979)
  - Values decayed to year 2016 are 52 pCi/g of Cs-137 (over threshold) and 1.02 pCi/g of Co-60
- In 1992, 400,000 dpm alpha and 4.5 mrem/hr beta/gamma near the basin (WHC-CM-3-4)
- 3,000 dpm beta/gamma (2009)

Waste Streams

- Contaminated water from the 244-AR Vault
- 244-AR Vault waste streams included:
  - PUREX Plant - Plutonium-Uranium Extraction Process
  - CWP1/2: Aluminum cladding waste
  - CWZr1/2: Zirconium cladding waste
  - Waste generated during the 221B (B Plant) waste fractionization of PAW by solvent extraction
- Basin was highly contaminated with PUREX acid sludge during failure of a cooling coil in the 001-AR tank in the 244-AR Vault
- 249,907 gal received

Misc./Other Relevant Information

- The reduced footprint of the basin was capped with gravel and posted as an URMA - the remaining portion was released from radiological control in 1994
- The current waste site shape matches old contamination area data rather than the physical shape of the basin

Site Interfaces

Origin/Terminations

- N/A

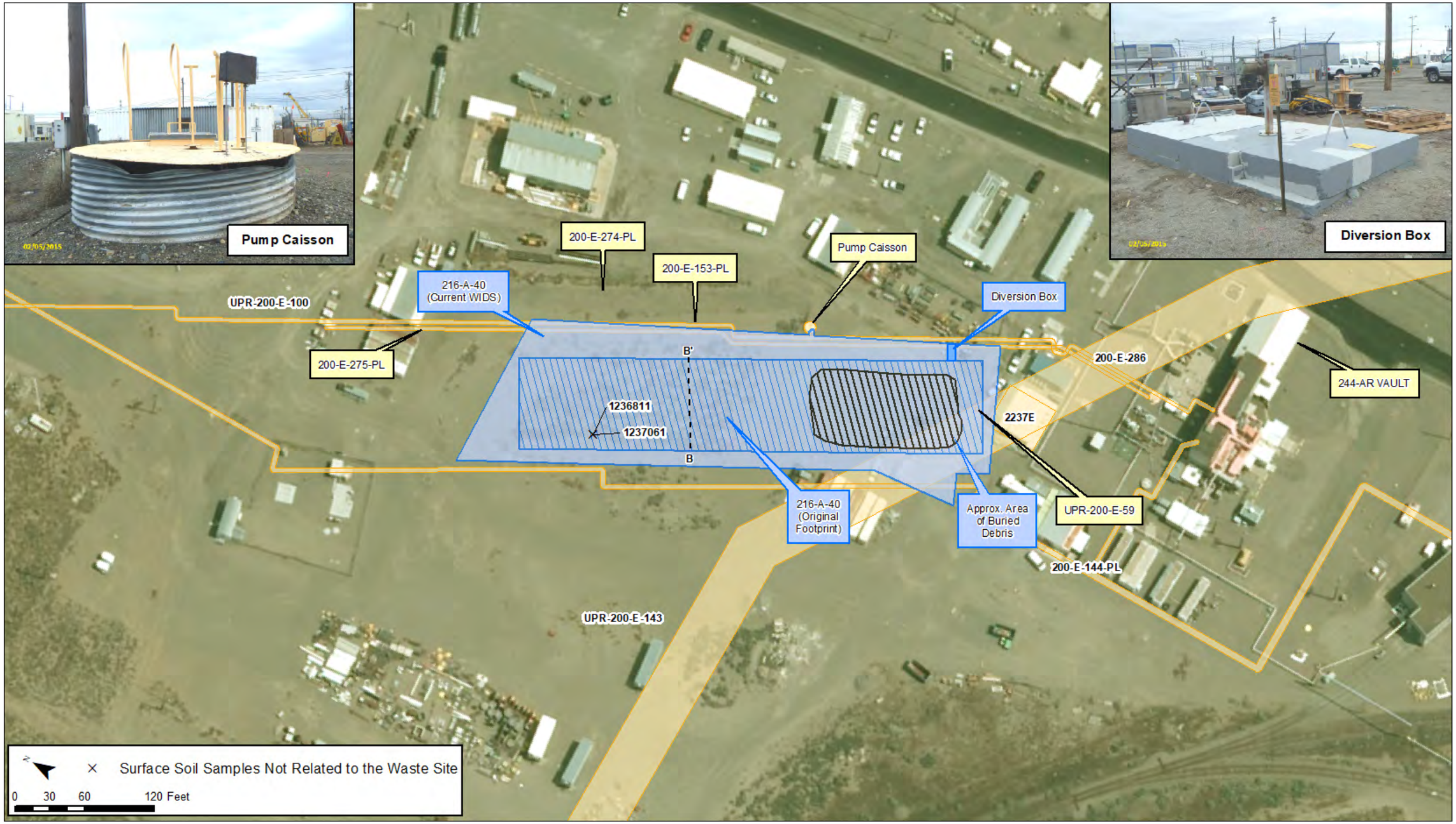
Intersecting/Nearby Sites

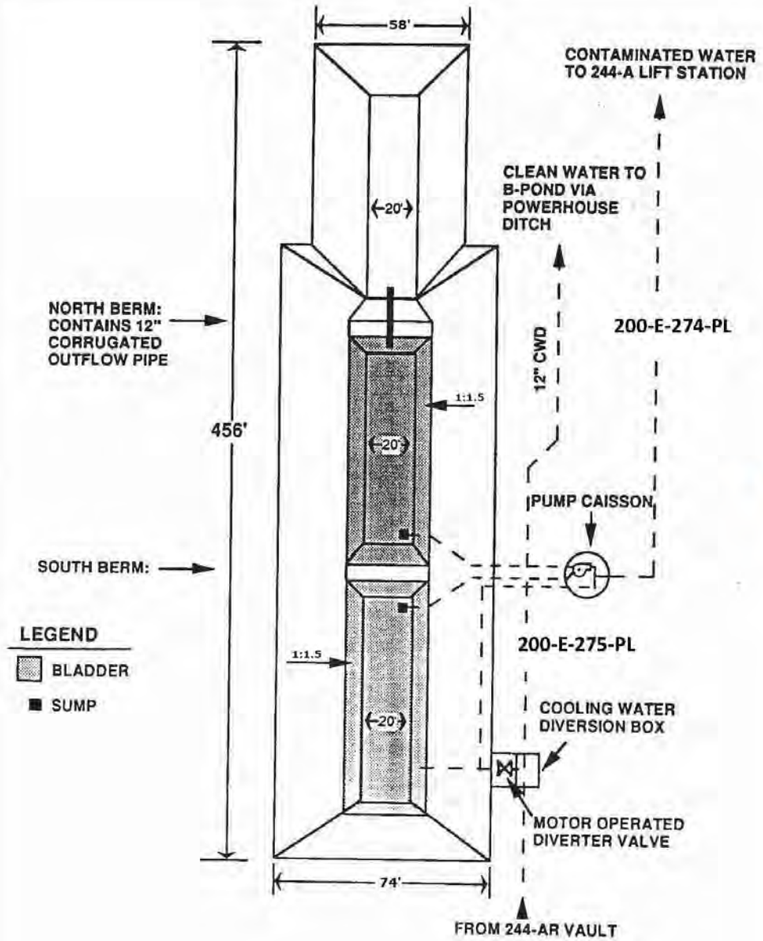
200-IS-1 OU
- 200-E-274-PL
- 200-E-275-PL
- 200-E-144-PL
- 200-E-153-PL
- UPR-200-E-100

200-EA-1
- UPR-200-E-143

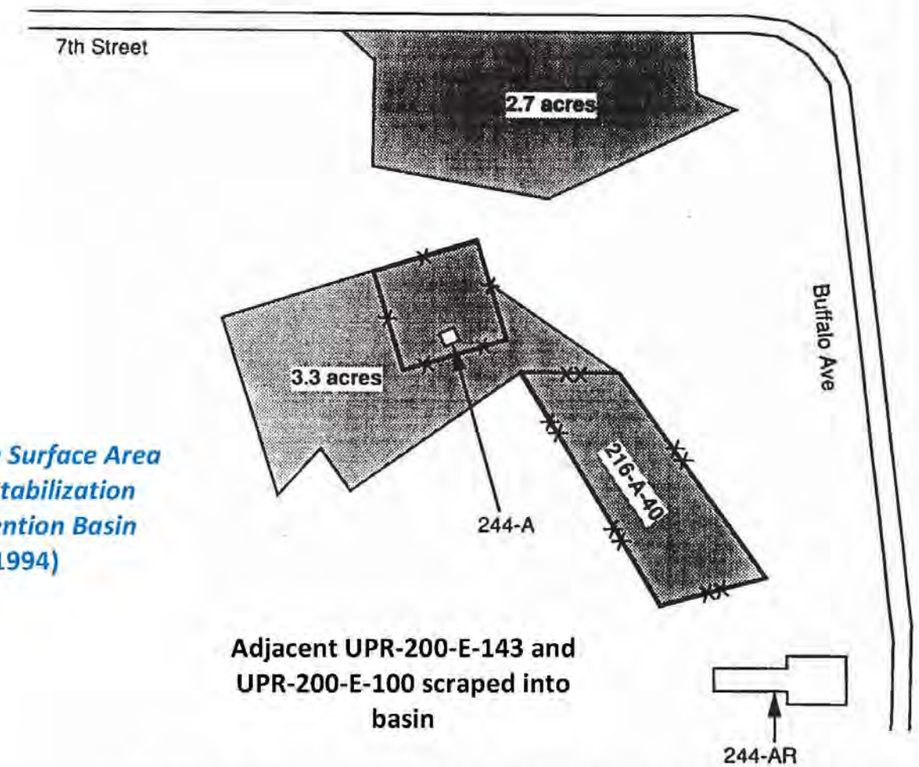
- 200-E-286 (rejected)
- UPR-200-E-59 (rejected)
- 2237E

Scoping Summary: 216-A-40 (Retention Basin)

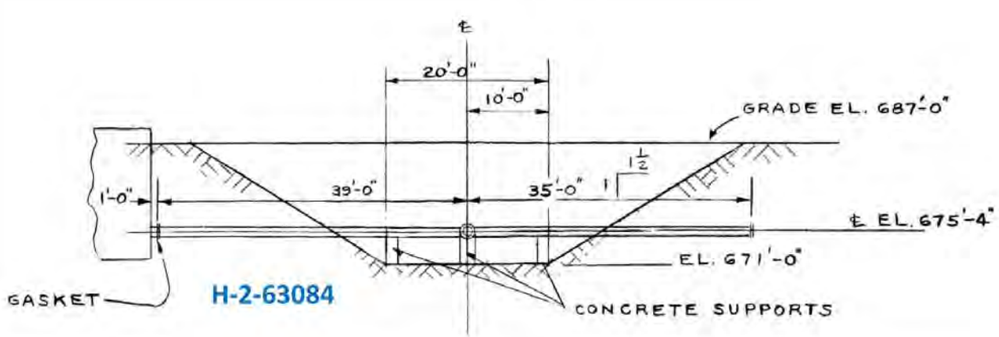




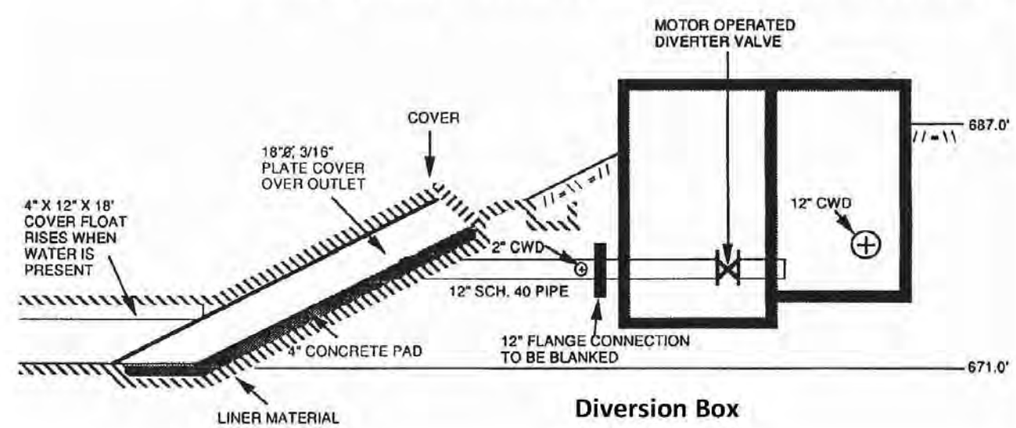
Figures adapted from *Radioactive Surface Area Reduction and Contamination Stabilization Program Plan for 216-A-40 Retention Basin* (D.A. De Lucchi, January 1994)



SURFACE CONTAMINATION AREAS



H-2-63084



Diversion Box

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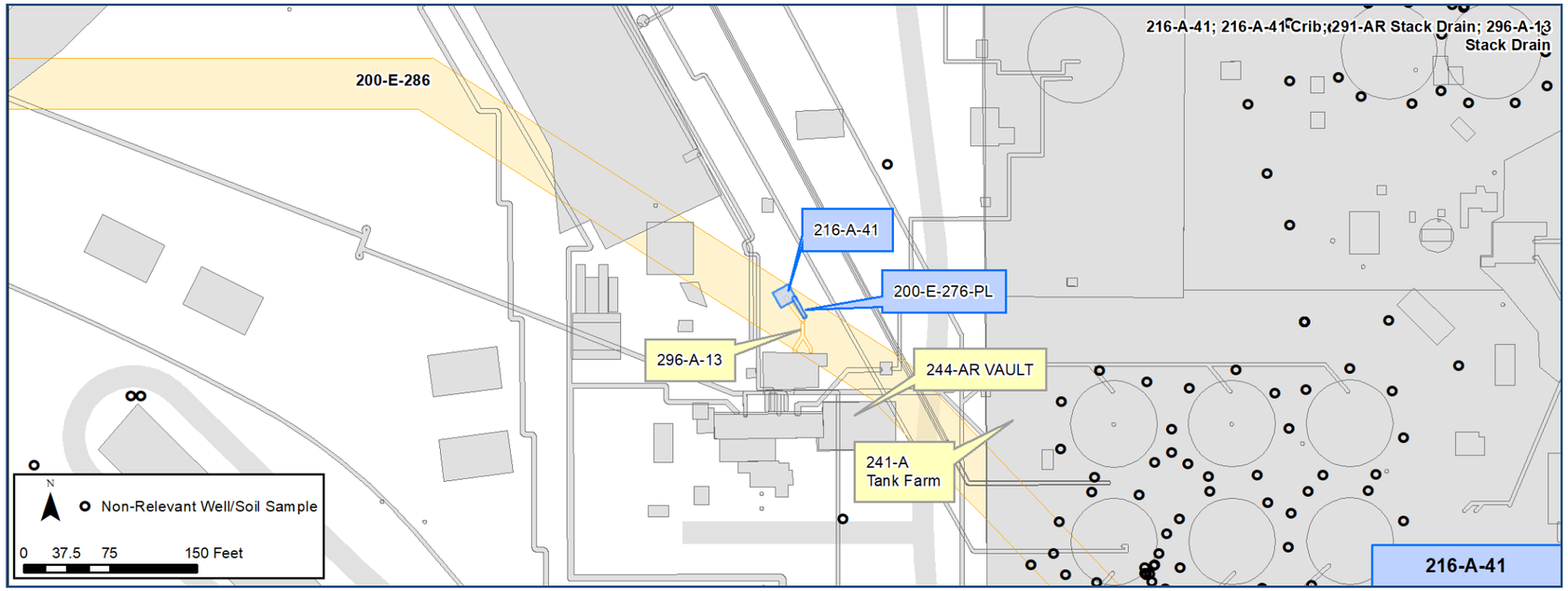
Scoping Summary: 216-A-41 (Crib)

History

The 216-A-41 waste site is an inactive underground Crib that received condensate drainage waste from the 296-A-13 Stack via the 200-E-276-PL pipeline. The Crib is located west of the 241-A Tank Farm and northwest of the 296-A-13 stack. The site was constructed by January 1968 and operational until 1974, when it was deactivated. The Crib was deactivated by removing the stack drainage piping from the 296-A-13 Stack and then rerouting the drainage to the vessel vent seal pot system of the 244-AR Vault.



Construction

- Length:
  - Top: 21 ft (approximate)
  - Bottom: 10 ft
- Width:
  - Top: 21 ft (approximate)
  - Bottom: 10 ft
- Depth: 6.5 ft at center
- Side Slope: 1:1
- Incoming Pipes: 1
- Six 8x8x16 in. bond beam concrete blocks placed end to end form the dispersion structure 4 ft bg
- Excavation has 2 ft of gravel fill containing 290 cubic ft of material
- One inlet pipe from the 296-A-13 Stack
- 20-mil polyethylene barrier separating the gravel from the backfill
- *See Figure 1, pg 3*

Features Of Interest

- No features of interest identified

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil

Waste Streams

- Drain Wastes & Cooling Water
  - PUREX Stack Drain Wastes
    - 2,600 gal of drainage waste discharged to Crib
    - According to RHO-CD-673, the waste was potentially slightly acidic and contained less than 1 curie total beta activity
    - Potential contaminants of concern (Stenner) may be Tritium, Cobalt-60, Strontium-90, and Cesium-137
    - No annual volumes were located

Misc./Other Relevant Information

- According to a 1999 site walk down, the area is covered with gravel and there is no visible evidence of the Crib at the location shown in H-2-61975
- The Action Memorandum for Non Time-Critical Removal Action for 200-MG-2 Operable Unit determined the preferred removal action for the site to be confirmatory sampling/no further action (CS/NFA) (DOE/RL-2009-37, Rev. 0)

Site Interfaces

Origin/Termination

- N/A

Intersecting/Nearby Sites

200-IS-1 OU

- 200-E-276-PL

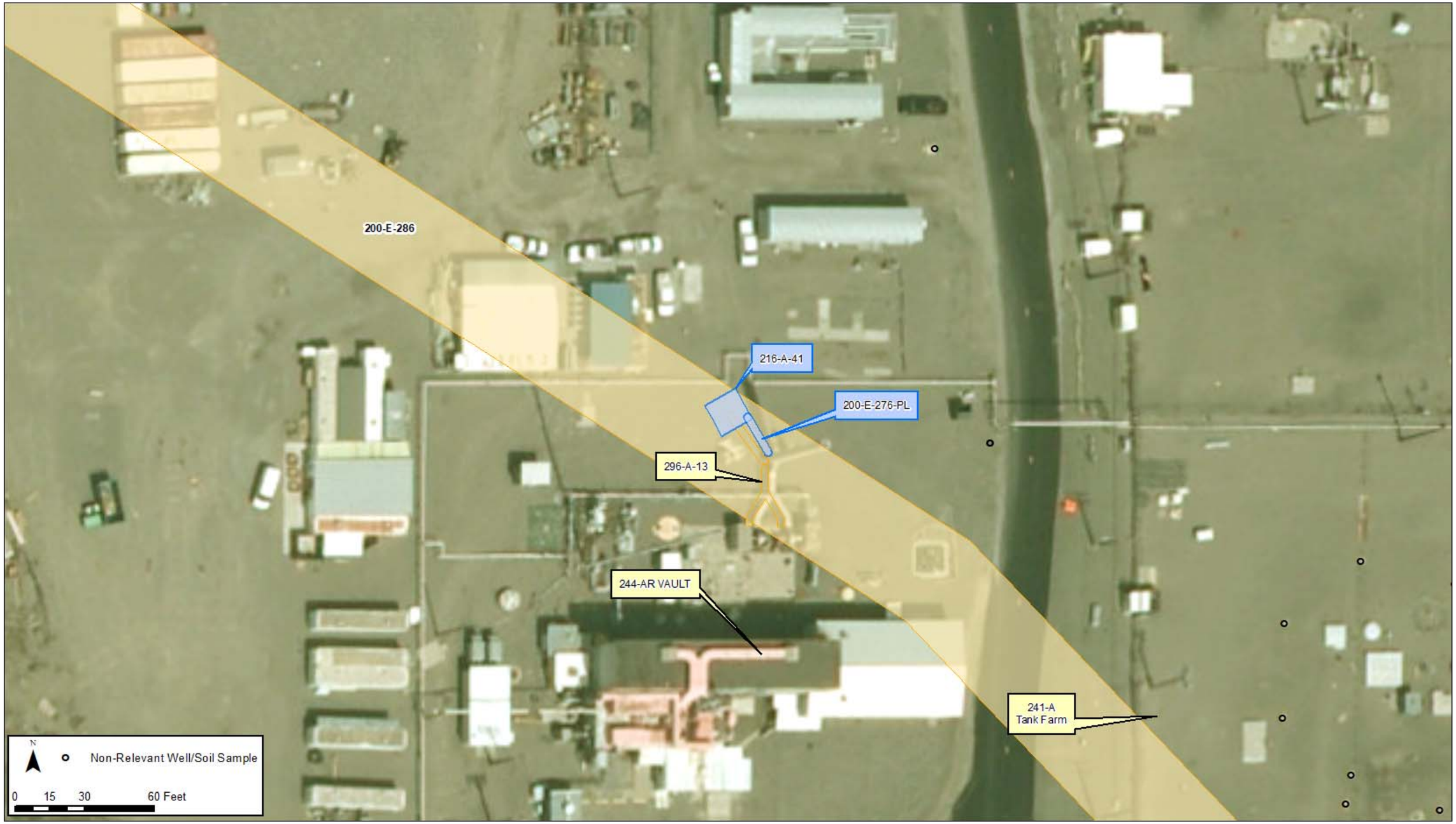
200-EA-1 OU

- 296-A-13

OU Unassigned

- 200-E-286

Scoping Summary: 216-A-41 (Crib)



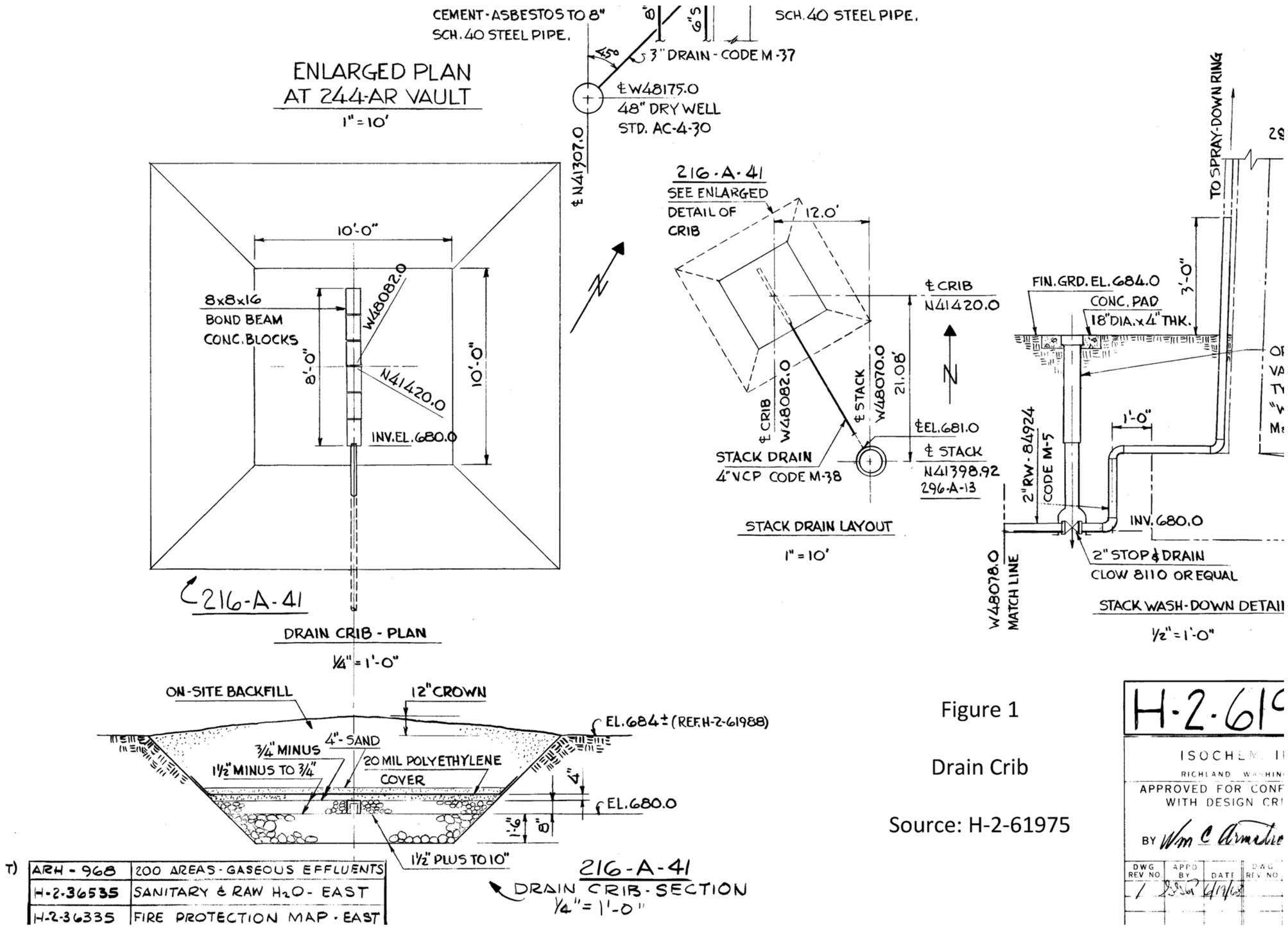


Figure 1

Drain Crib

Source: H-2-61975

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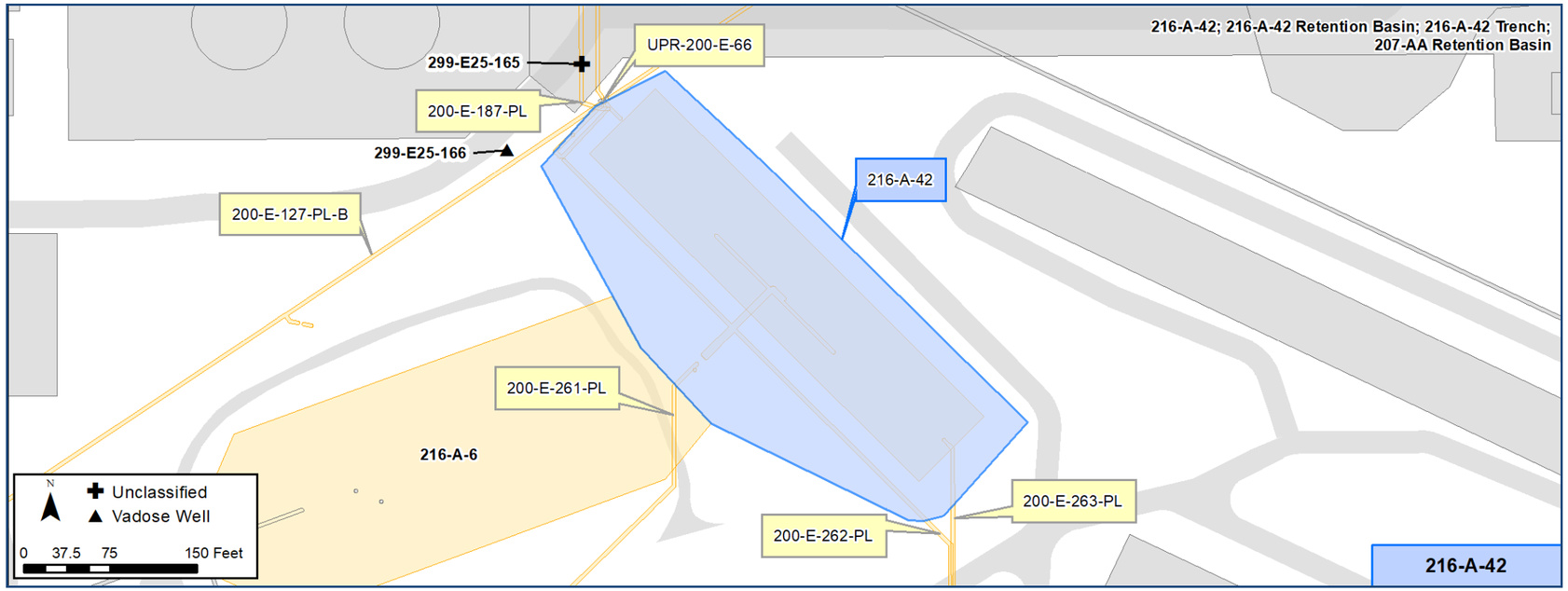
Scoping Summary: 216-A-42 (Retention Basin)

History

The 216-A-42 waste site is an inactive retention basin that was constructed to hold PUREX cooling water or steam condensate that was contaminated above standard release limits. Located east of PUREX and directly east of the 216-A-6 Crib, the retention basin was operational from 1978 to 1997. It consists of a rubber-lined trench divided into three holding basins by two internal berms. It includes a built-in recovery system that provided the capability of pumping solutions back into the PUREX facility for reprocessing, or to cribs for disposal.

In 1984, liquid in the retention basin evaporated, and dried contaminated particles were spread by wind to surrounding surface locations (see UPR-200-E-66). A radiation survey identified contamination around the perimeter of the basin, both inside and outside of the posted radiation zone. The radioactivity levels are provided in the Relevant Characterization section. The basin was flushed after this UPR event, and concrete blocks were installed above the basin later in 1984.



Construction

History, continued….

In 1997, as part of the end-point criteria associated with the deactivation of the PUREX facility, the pipelines from each basin section were isolated, and the pump station was sealed. In 2001, the retention basin was interim stabilized by covering each SCA and CA with clean fill, and backfilling a pump pit, diversion box, and valve pit (i.e., 200-E-262-PL). Afterwards, the site was down-posted to an Underground Radioactive Material Area (URMA).

The retention basin is not a RCRA TSD unit.

- Waste site area: ~1 acre
- Retention basin top length: 402 ft
- Retention basin top width: 78 ft
  - Bottom Length: 342 ft
  - Bottom Width: 30 ft
- Depth: 23 ft
- Material: Rubber-lining
- Cover: Concrete blocks
- Capacity: >1,600,000 gallons

Features Of Interest

- South end of each basin section includes an 8-in. steam condensate pipe (i.e., 200-E-263-PL).
- North end of each basin section includes a 36-in. cooling water pipe (i.e., 200-E-262-PL).
  - Both lines enter basin at 10 ft below grade.
- Pump station, diversion box, and valve box (i.e., 200-E-262-PL)
- *Page 3 shows the structural sections and details of the retention basin.*

Relevant Characterization

- 1984: a radiological survey reported 40,000 cpm beta on the ground within the retention basin fence, and smear samples from the basin walls and floor ranged from 200 to 100,000 cpm. The maximum activity detected outside the fence, between the fence and the road, was 3,000 cpm.
- 1988: Radiological survey identified contamination spots at the south edge of the retention basin up to 200,000 dpm. 1998: Radiological survey of the 216-A-42 perimeter fence did not identify any contamination.

Waste Streams

- Received chemically or radioactively-contaminated liquid from the PUREX chemical sewer line (200-E-187-PL), cooling water line (200-E-127-PL-B), and steam condensate lines (200-E-263-PL).

Misc./Other Relevant Information

- The retention basin is associated with and the contamination source of UPR-200-E-66.
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit (DOE/RL-2008-44, Rev. 0) determined the preferred removal action to be Removal Treatment Disposal (RTD)

Site Interfaces

Site Intersects:

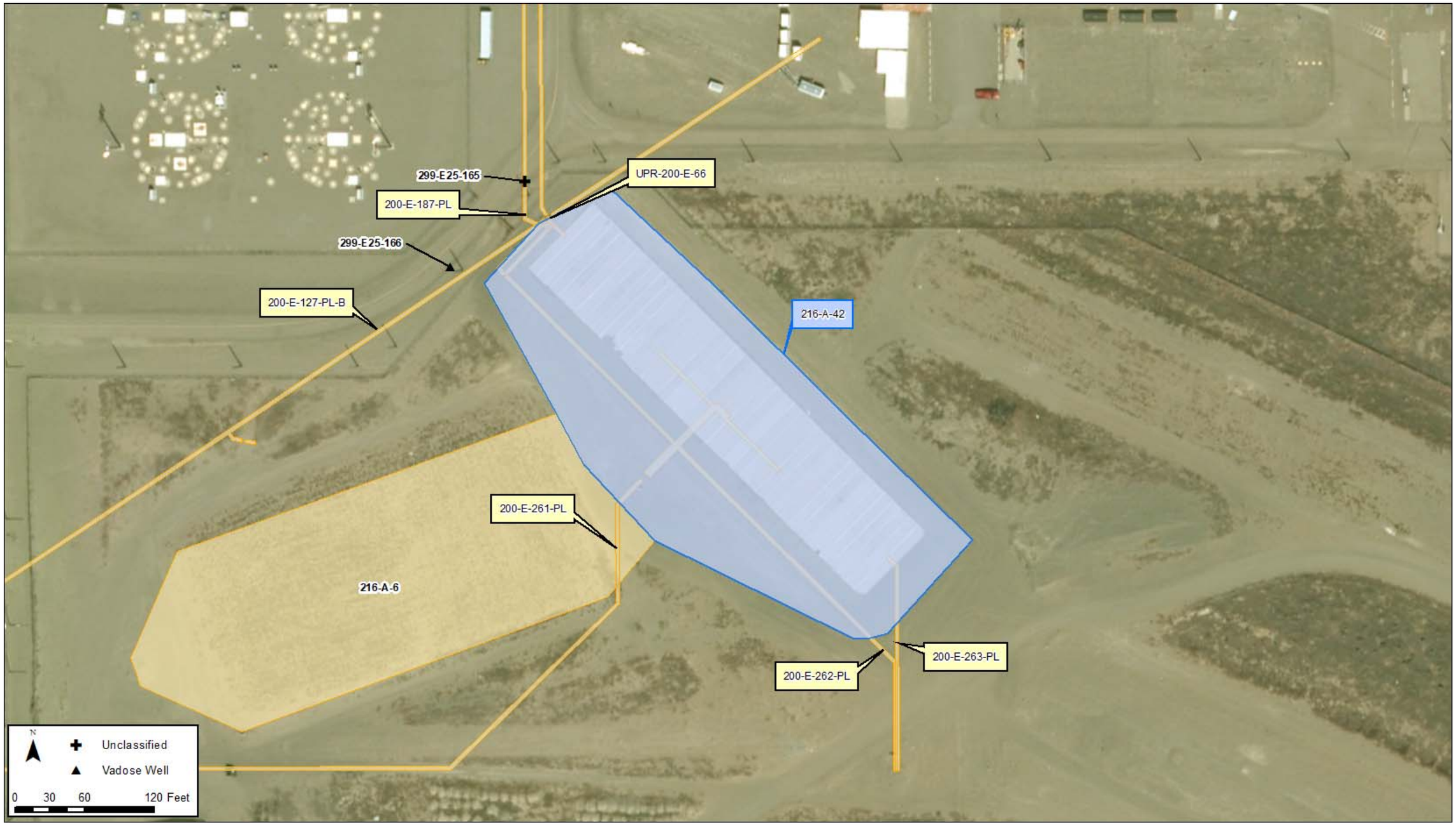
200-EA-1 OU

- UPR-200-E-66 (unplanned release)
- 216-A-6 (Crib)

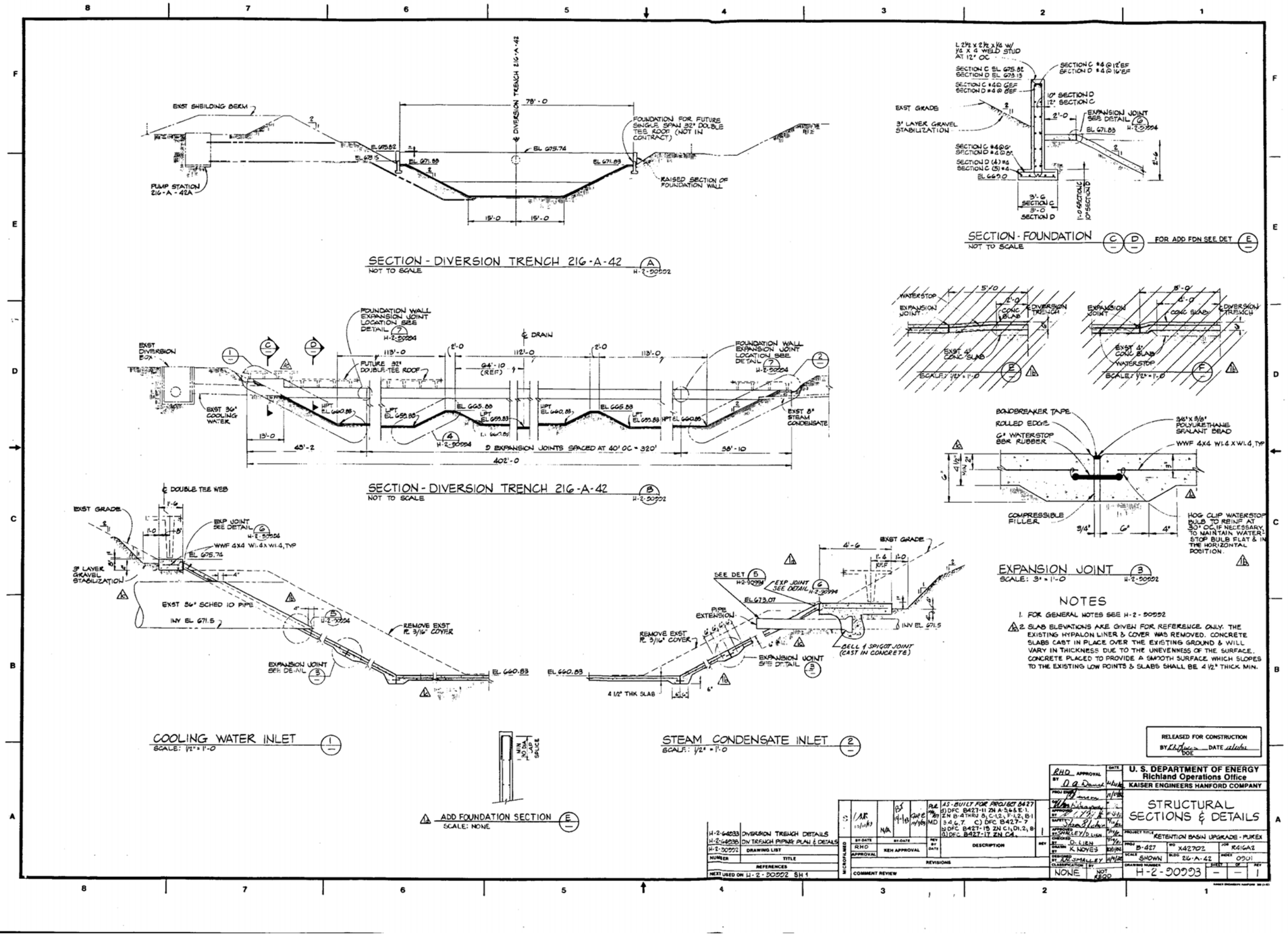
200-IS-1 OU

- 200-E-262-PL (pipeline, pump station, valve box, diversion box)
- 200-E-261-PL
- 200-E-263-PL
- 200-E-127-PL-B
- 200-E-187-PL

Scoping Summary: 216-A-42 (Retention Basin)



Scoping Summary: 216-A-42 (Retention Basin)



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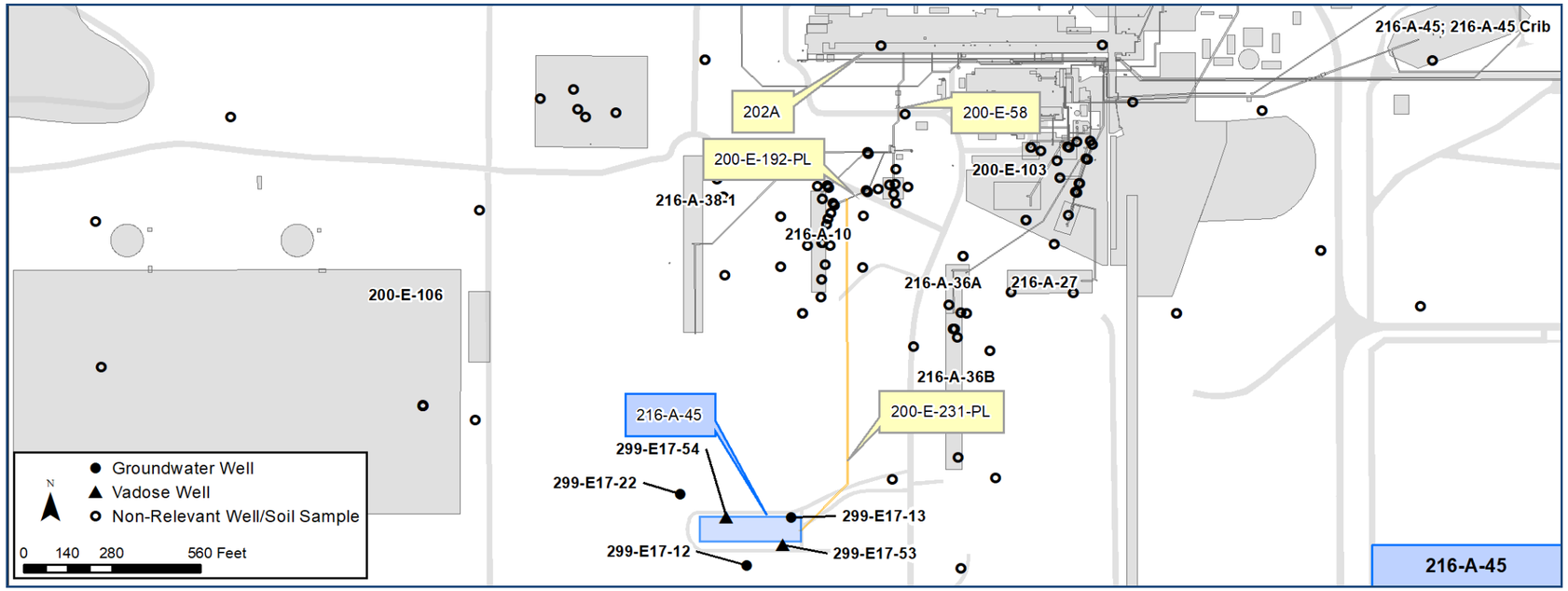
Scoping Summary: 216-A-45 (Crib)

History

The 216-A-45 waste site is an inactive crib that received process condensate from the 202A PUREX facility via the 200-E-231-PL pipeline. The crib was constructed by 1986 and operational from 1987 to 1989, when the 200-E-231-PL was cut and capped at its connection with 200-E-192-PL and the waste stream was routed to storage tanks.

The crib received PUREX waste via a valve pit in the Proportional Sampler Pit #4. A neutralization tank (200-E-58) operated upstream to preclude the discharge of process condensate outside the range of 2.0 and 12.5 pH units to the 216-A-45 crib. In April 1987, more than 5 lbs of pure nitric acid in approximately 885 gallons of water was discharged to the 216-A-45 crib with a pH greater than 2.0. The release was neutralized by adding additional carbonate to the 200-E-58 neutralization tank.

The site is currently surrounded with light post and chain and posted as an Underground Radioactive Material Area.



Construction

- Length: 310 ft
- Width: 60 ft
- Depth: 44.5 ft
- Overburden: 38 ft
- Area: 18,600 sq. ft
- Incoming Pipelines: 1
- Outgoing Pipelines: 0
- Distribution Pipelines: 5 (4 in. diameter, perforated, fiberglass reinforced)
- *See Page 4 for crib details.*

Features Of Interest

- One distribution box with five 4 in. distribution pipes connected that run the length of the crib
- 6 ft of gravel aggregate on the bottom
- Two 4 in. vent risers in the feeder pipeline header that taper to 6 in. for the top 5.5 ft (1.5 ft above ground), capped with screened U-Bends.
- Three 4 in. liquid level gage wells in the gravel bottom for monitoring crib levels
- Covered with 4 in. of sand, a 10 mil PVC membrane vapor barrier and 6 in. of crushed gravel; back filled with coarse gravel.

Relevant Characterization

- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data*
  - No significant radionuclide detections were observed in the GPL data.

Waste Streams

- PUREX Plant - Plutonium-Uranium Extraction Process
  - Process condensate from the 202A PUREX building
  - 27,209,721 gallons of effluent
- Radionuclide inventory decayed to December 1998 includes: 6.74E-03 Ci of Sr-90, 7.9E-03 Ci of Cs-137, 2.25E-03 Ci Total U (*RPP-72644 notes 7.817 kg, Total-U*), 5.5E-02 Ci Total Alpha, 0.11 Ci Total Beta (HNF-1744, pg ATT C-48).

Misc./Other Relevant Information

- The 216-A-45 crib was constructed under project B-548 as an replacement for the 216-A-10 crib.
- The site was previously included in the 200-PW-2 Operable Unit and in a 2006 proposed plan (DOE/RL-2004-86, Draft A) the preferred remedy was an engineered surface barrier due to an expectation of deep mobile contamination.

Site Interfaces

Origin/Termination:

200-IS-1 OU

- 200-E-231-PL

Intersecting/Nearby Sites:

200-IS-1 OU

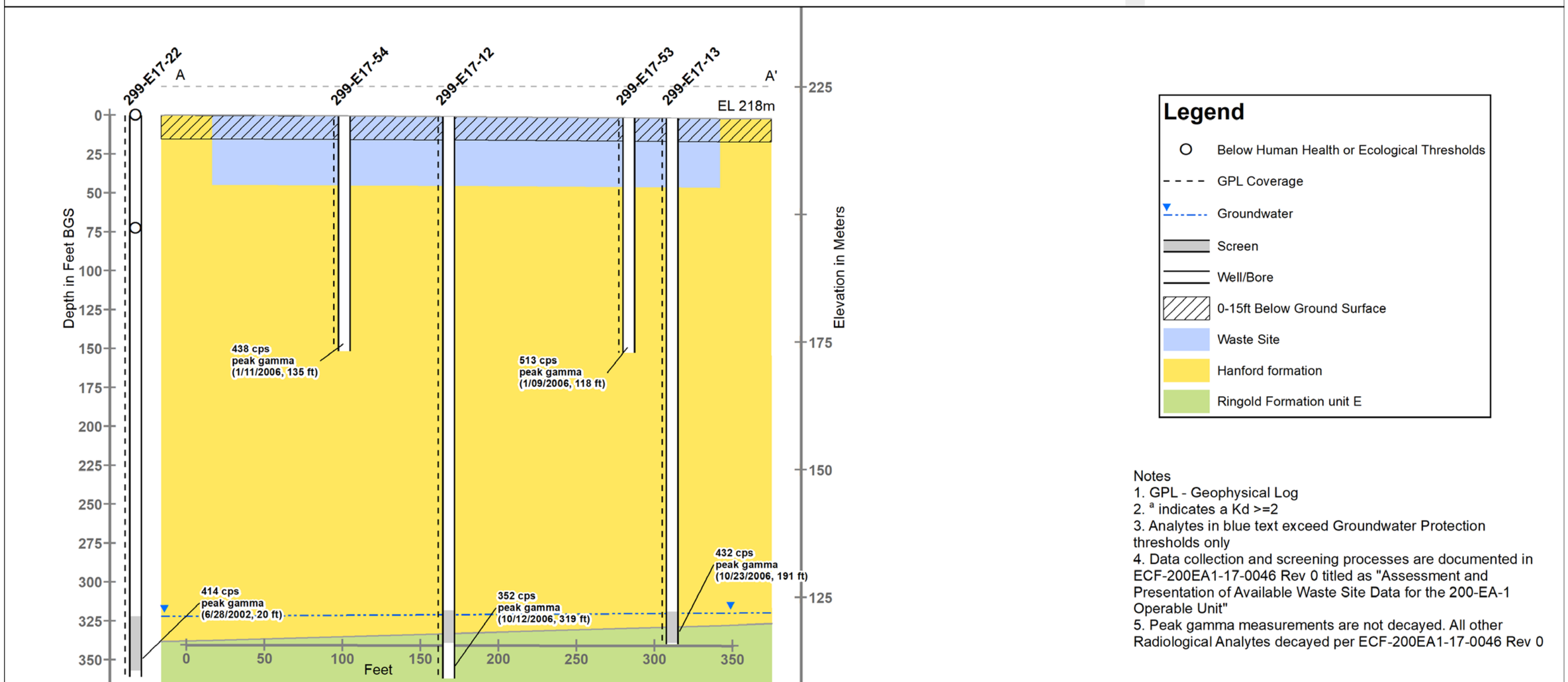
- 200-E-192-PL

200-EA-1 OU

- 200-E-58 (Neutralization Tank)

Scoping Summary: 216-A-45 (Crib)

Scoping Summary: 216-A-45 (Crib)



Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

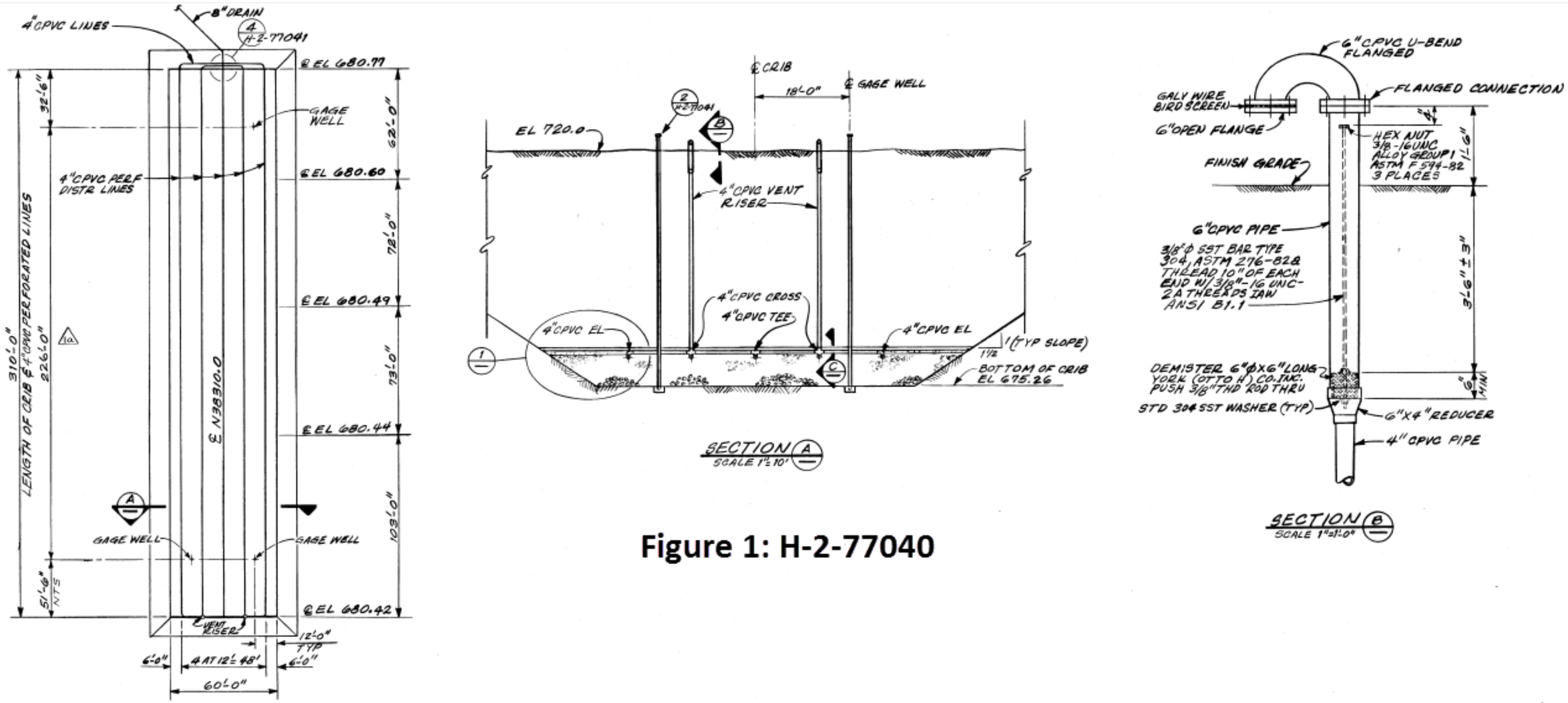


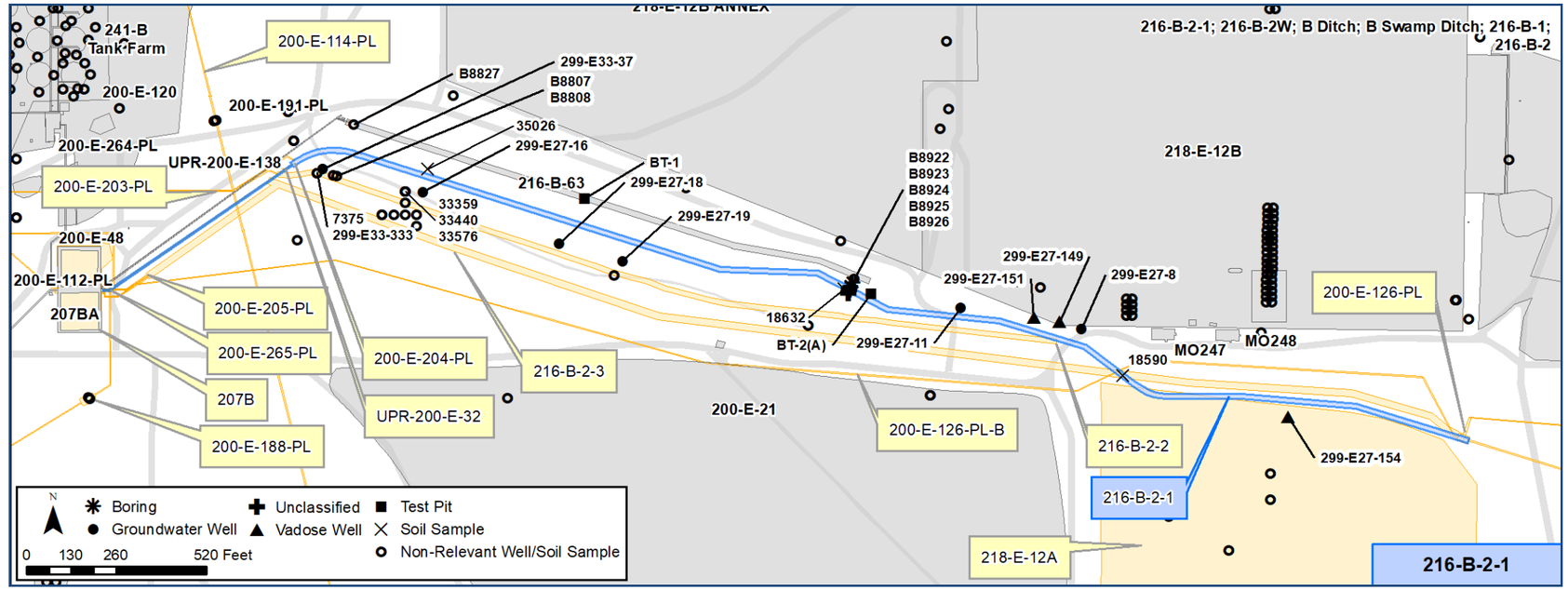
Figure 1: H-2-77040

Scoping Summary: 216-B-2-1 (Ditch)

History

The 216-B-2-1 waste site is an inactive and stabilized ditch, also referred to as the 'B Swamp' Ditch. The head-end of the ditch is located at the 207-B Retention Basin. In use from 1945 thru 1963, it was an open ditch that conveyed liquid waste from the 221B Building (B Plant) and 241-CR Vault to the 216-B-3-1 Ditch and 216-B-3 Pond. In 1963, the retention basins north of B Plant were contaminated due to the failure of the coil in the B Plant cerium-rare earth 6-1 storage tank, inside the 221B Building. General dose rates around the basins were 500 mRad/hr, and tumbleweeds blown into the ditch reading up to 50 Rad/hr. After damming off the first 1,000 feet of the 216-B-2-1 ditch, the contaminated water from the 207-B retention basin was flushed into the ditch. The contaminated portion of the ditch was later backfilled, and the ditch was removed from operations.

A sample from the basin was collected and analyzed to estimate the amount of activity released. Results indicated that the contaminated waste was primarily Ce-144 (30 Ci) (~283-day half life) and Sr-90 (0.05 Ci). The total volume of liquid discharged to the ditch during this event was estimated to be 1.3 million gallons, of which 1.1 million gallons were low activity cooling water. An estimated 0.13 gal of highly contaminated waste was discharged.



Construction

History, continued….

Contaminated surfaces in the ditch were scraped clean and covered with clean fill; and, a new ditch (216-B-2-2) was dug parallel to this ditch, with the final 1,000 feet of the two ditches commingled.

In the early 1973, the 216-B-2-1 ditch was raised to grade with clean fill, a 32-foot wide by 2,400-foot long plastic sheet was added to inhibit bio-intrusion into the ditch, and then covered with 18 inches of sand and 4 inches of gravel.

The ditch is now located within a larger, posted Underground Radioactive Material Area (URMA) that also includes the 216-B-2-2 and 216-B-2-3 stabilized ditches. This larger area was surface stabilized in 1987.

In 2015, 28,000 square feet of bio-barrier material and gravel were added to portions of the surface where growing contaminated tumbleweeds were discovered.

- Length: 3,500 ft
- Width: 15 ft
- Depth: 6 ft
- Slope: 1:2.5

Features Of Interest

- No features of interest.

Relevant Characterization

- 1984: Routine inspection identified spotty contamination in weeds and soil between ditches, to maximum contamination at 8,000 cpm. One contamination spot outside fence on west side of site was discovered, at 30,000 cpm.
- 2009: Annual radiological survey identified 30 growing tumbleweeds with maximum contamination at 600,000 dpm/100 cm2, beta-gamma; no alpha. *Note: Since addition of bio-barrier, no new tumbleweed growth discovered.*

Waste Streams

- 1945-1963: 221-B Building steam condensate, process cooling water, and chemical sewage.
- 1952-1963: 241-CR Vault cooling water.
- 1963 coil leak incident: 1.3M gallons of effluent, including 1.1M gallons of low-activity level cooling water.
- Estimated total volume conveyed thru ditch: over 39 billion gallons.
- Radionuclide inventory, decayed thru 1985:
  - Sr-90: 476 Ci
  - Cs-137: 0.344 Ci

Misc./Other Relevant Information

- The 1963 coil leak that caused 216-B-2-1 Ditch closure was initially identified as UPR-200-E-32. That waste site has since been consolidated into the 216-B-2-1 site.
- The EE/CA for the 200-MG-1 Operable Unit Waste Sites Identified Removal, Treatment, and Dispose (RTD) as the preferred remedial action (DOE/RL-2008-44; R0).
- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data.*

Site Interfaces

Site Intersects:

200-IS-1 OU
- 200-E-126-PL-B
- 200-E-126-PL
- 200-E-188-PL
- 200-E-205-PL
- 200-E-265-PL
- 200-E-204-PL
- 200-E-114-PL
- 200-E-203-PL

200-EA-1 OU
- 207-B (Retention Basin)
- 216-B-2-2 (Ditch)
- 216-B-2-3 (B Pond Ditch)
- UPR-200-E-32 (Consolidated into 216-B-2-1)

200-SW-2 OU
- 218-E-12A (Burial Ground)

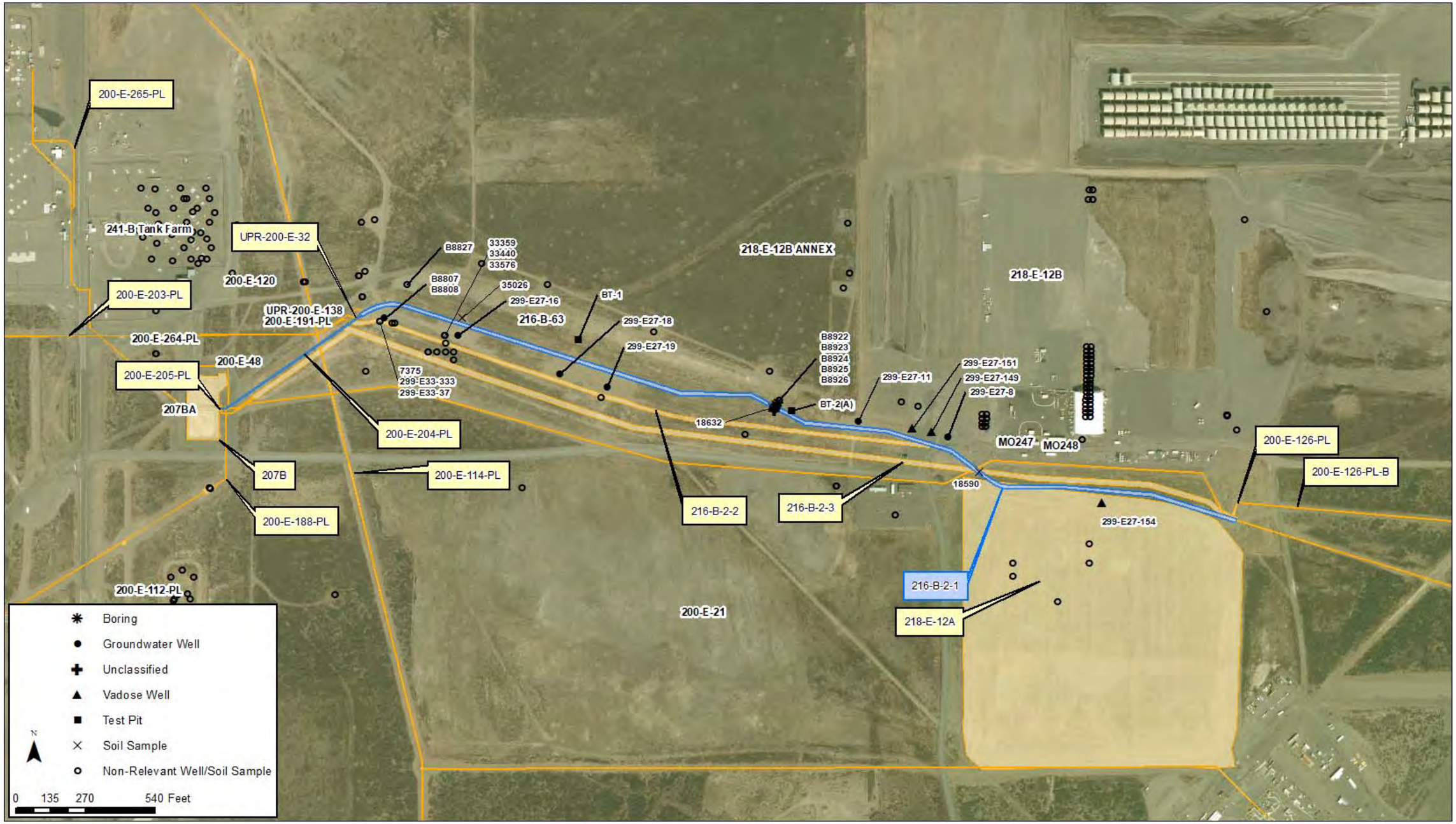
Nearby Sites:

200-IS-1 OU
200-E-191-PL

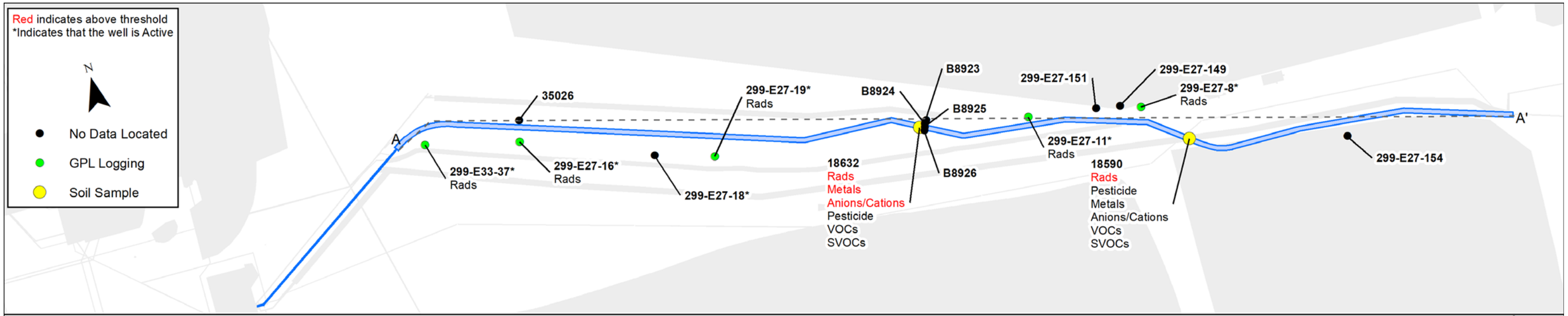
200-EA-1 OU
- 216-B-63 (Ditch)

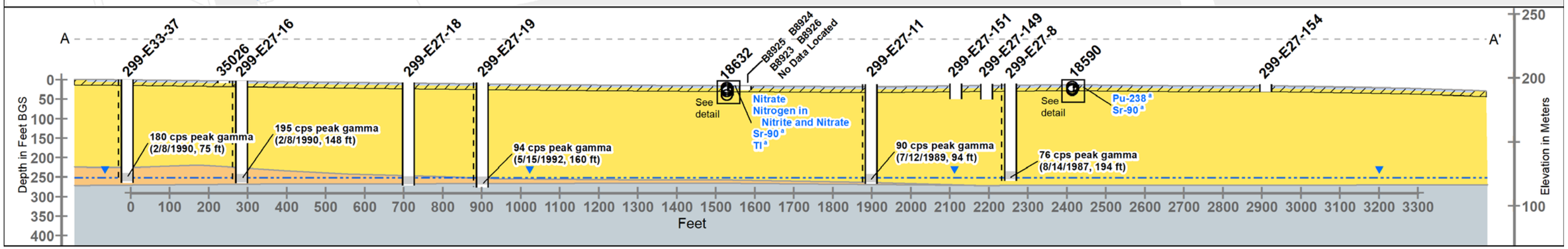
200-SW-2 OU
218-E-12B (Burial Ground)

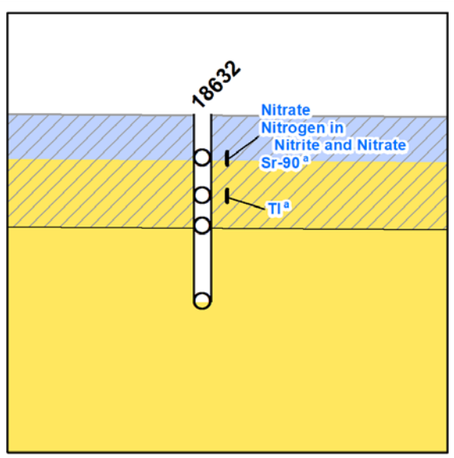
Scoping Summary: 216-B-2-1 (Ditch)

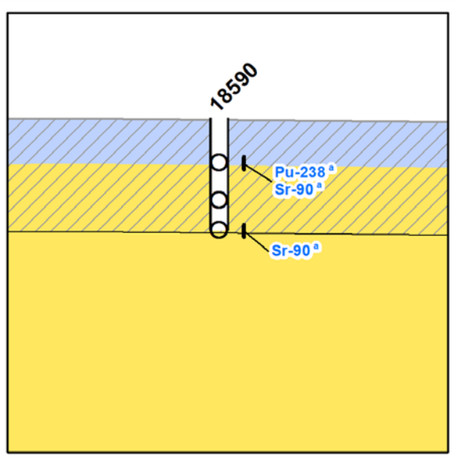


Scoping Summary: 216-B-2-1 (Ditch)









Legend

- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- GPL Coverage
- Groundwater
- Screen
- Well/Bore
- 0-15ft Below Ground Surface
- Waste Site
- Cold Creek unit
- Columbia River Basalt Group
- Hanford formation

Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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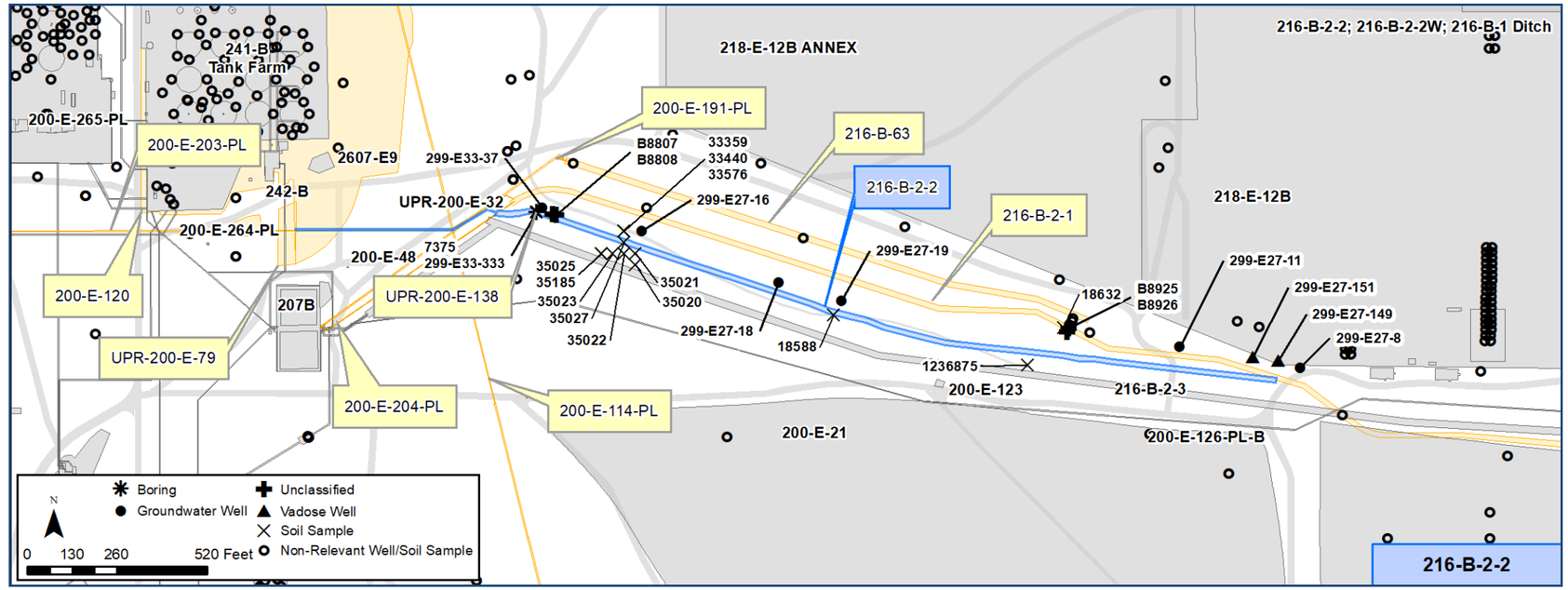
Scoping Summary: 216-B-2-2 (Ditch)

History

The 216-B-2-2 waste site is an inactive stabilized ditch that replaced the 216-B-2-1 Ditch in 1963. The 216-B-2 Ditch System was designed to convey cooling water from 200 East Area plants to the 216-B-3 Pond and 216-A-25 Pond. The 216-B-2-2's inlet pipelines were 200-E-203-PL and 200-E-204-PL. This ditch was active until May 1970, when it was replaced by the third of the three ditches in the system, the 216-B-2-3 Ditch.

In March 1970, approximately 950 Ci of Sr-90 were released to the ditch as a result of UPR-200-E-138; also released to the ditch: ~1 Ci Cs-137 and ~48 Ci Ce-144 (RHO-CD-673). The next day, three earthen dams were built in the open ditch to keep as much of the contamination as possible from entering the 216-B-3 Pond. The three dams helped the ditch act as multiple settling ponds during subsequent B Plant pipe flushing. Later that year, the ditch was backfilled to grade with clean fill.

In 1973, 2,400 feet of the ditch was covered with sand and plastic root liner to prevent additional vegetation after growing Russian Thistle and Willows were found with internal beta/gamma up to 3,000 cpm. In 1986, the ditch was re-stabilized with 2 more feet of added soil.



Construction

History, continued….

The ditch is now located within a larger, posted Underground Radioactive Material Area (URMA) that also includes the 216-B-2-1 and 216-B-2-3 stabilized ditches. This larger area was surface stabilized in 1987.

In 1997/1998, a borehole (299-E33-333) was drilled through the most contaminated portion of the ditch and down to groundwater for characterization. This site was selected as a representative site for the 216-B-3 and 216-A-25 ponds, as well as the 216-B-2 ditches, as it was expected to contain typical to higher contamination levels.

In 2015, 28,000 square feet of bio-barrier material and gravel were added to portions of the surface where growing contaminated tumbleweeds were discovered.

- Length: 3,500 ft
- Width: 8 ft (top); 3 ft (bottom)
- Slope: 1:2.5
- Depth: 6 to 8 ft deep
- Composition: unlined, earthen ditch

Features Of Interest

- No features of interest.

*The Engineering Evaluation/ Cost Analysis for the 200-MG-1 Operable Unit Waste Sites Identified Removal, Treatment, and Dispose (RTD) as the preferred remedial action (DOE/RL-2008-44, Rev. 0)

Relevant Characterization

- 1997/1998 Borehole 299-E33-333, drilled to 254 ft bgs: radiological contamination limited to uppermost 15 ft bgs, including man-made radionuclides Sr-90 (4,710 pCi/g max), Cs-137 (100 pCi/g max), and Eu-154 (1.29 pCi/g max). Majority of contamination detected from 8-to-10.5 ft bgs, and from 13-to-15 ft bgs. No contamination was detected below 15 ft bgs.
- *See page 3 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- 1963-to-1970: Process cooling water, steam condensate, and chemical sewer from the 221-B Processing Plant; 241-CR Vault cooling water.
- 1968-to-1970: In-tank-solidification (ITS) cooling water from the 241-B Tank Farm.
- Radionuclide inventory (in Curies), decayed thru 1986: Sr-90 161; Cs-137 0.0342. No presence of Ce-144 was detected as far back as 1973, after its 1970 release into the ditch.

Misc./Other Relevant Information

- This ditch, along with 216-B-2-1 and 216-B-2-3, as well as the 216-B-3 Pond and 216-A-25 Pond were originally investigated as the Gable Mountain Pond/B-Pond and Ditches Cooling Water Group (200-CW-1 OU) in an RI Report (DOE/RL-2000-35, Rev.0). Characterization efforts focused on the 216-B-2-2 ditch, as it was expected to contain typical to higher levels of contamination at the ditch's head end as the rest of the group's waste sites.

Site Interfaces

Site Intersects:

200-IS-1 OU
- 200-E-203-PL
- 200-E-204-PL
- 200-E-114-PL
- 200-E-203-PL
- 200-E-191-PL
- UPR-200-E-79

200-EA-1 OU
- 216-B-2-1 (Ditch)
- 216-B-63 (Ditch)
- UPR-200-E-32 (consolidated into 216-B-2-1)

WMA B/BX/BY
- 200-E-120 (Contaminated Soil)

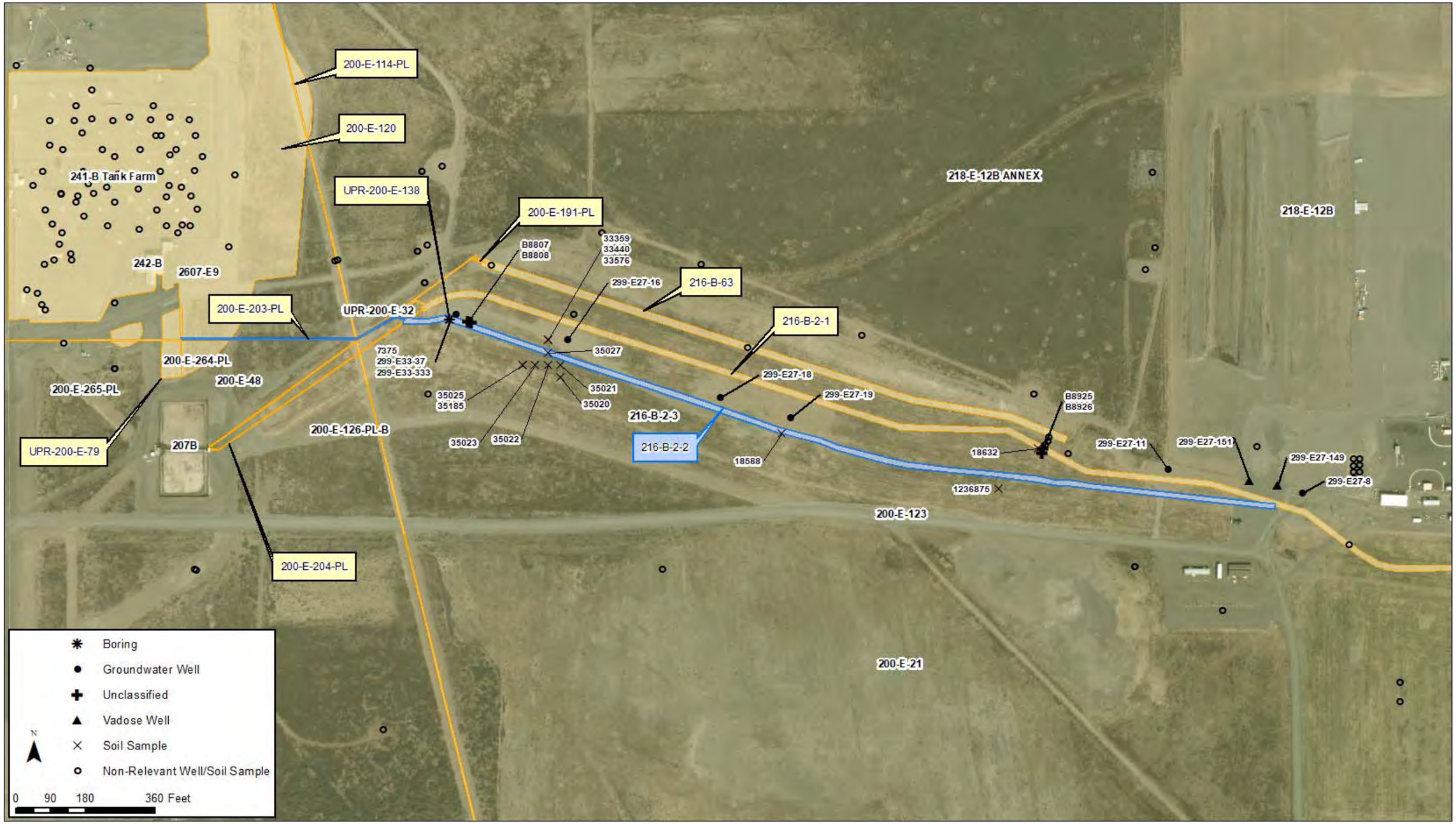
OU Unassigned
- UPR-200-E-138

Nearby Sites:

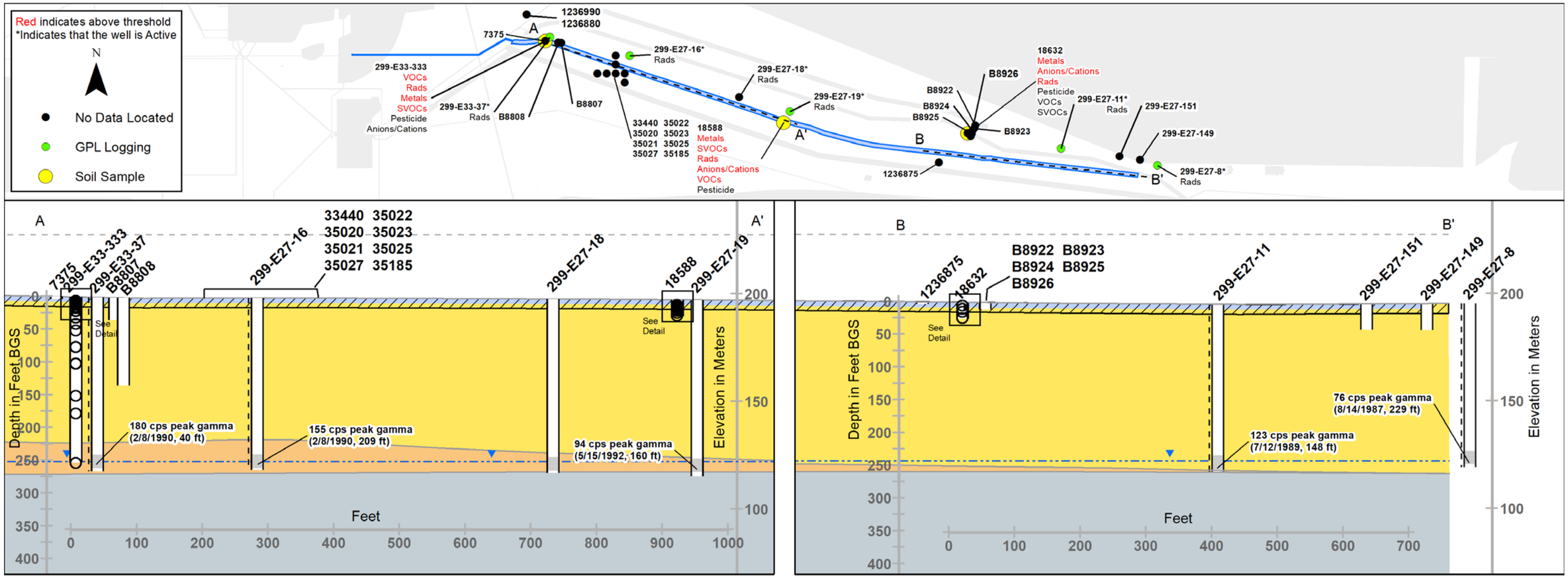
200-IS-1 OU
- 200-E-126-PL-B
- 200-E-126-PL
- 200-E-188-PL
- 200-E-205-PL

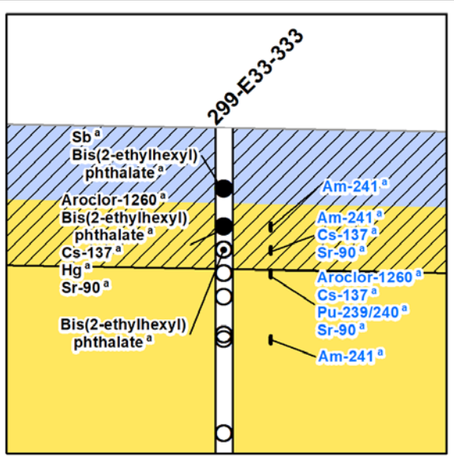
200-EA-1 OU
- 207-B (Retention Basin)
- 216-B-2-3 (B Pond Ditch)

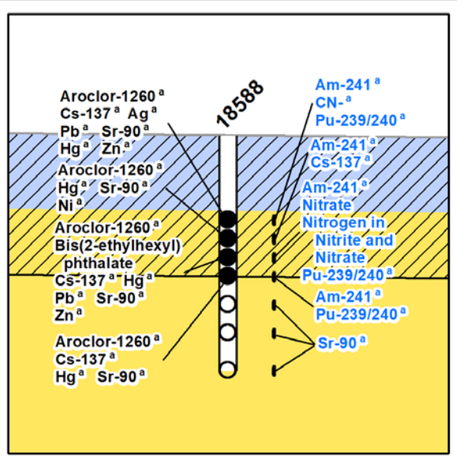
Scoping Summary: 216-B-2-2 (Ditch)

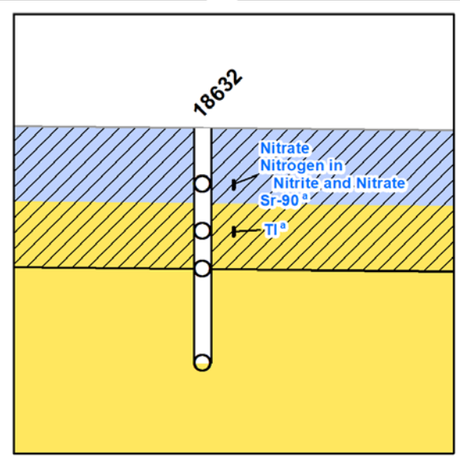


Scoping Summary: 216-B-2-2 (Ditch)









Legend

- 5x Above Human Health or Ecological Thresholds
- Above Human Health or Ecological Thresholds
- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- GPL Coverage
- Groundwater
- Screen
- Well/Bore
- 0-15ft Below Ground Surface
- Waste Site
- Cold Creek unit
- Columbia River Basalt Group
- Hanford formation

Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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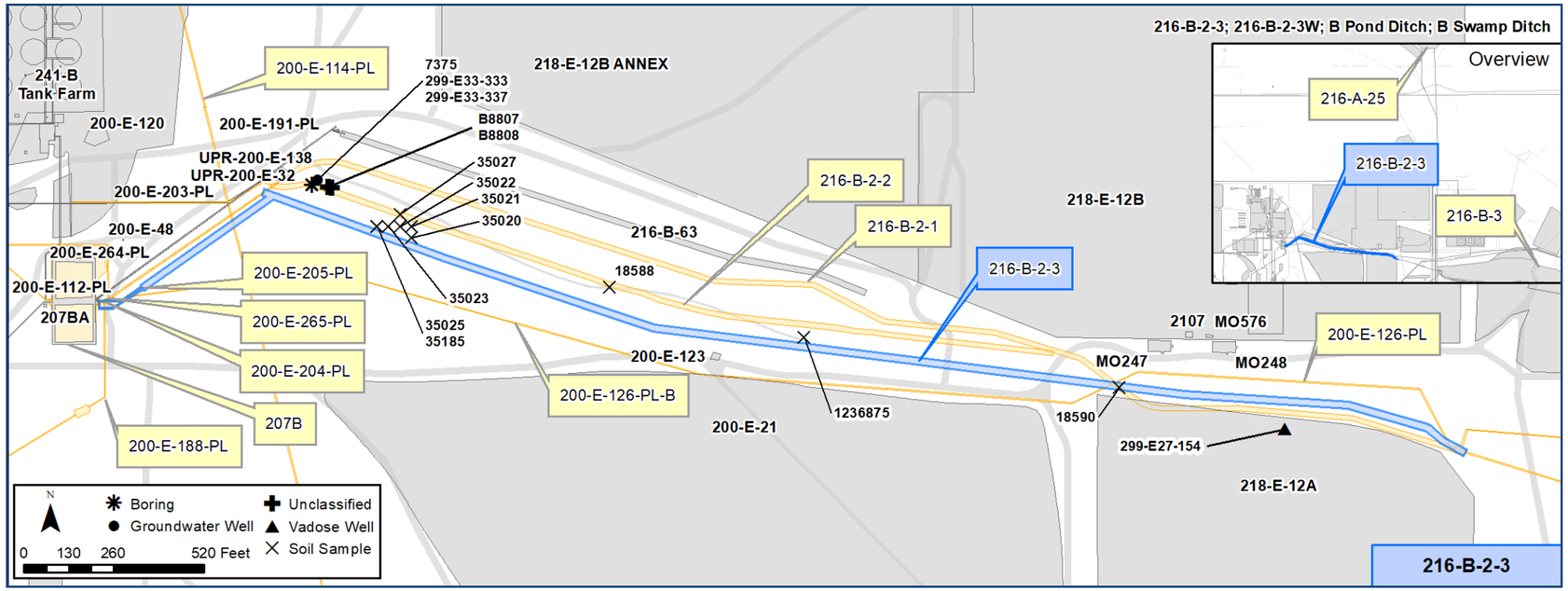
Scoping Summary: 216-B-2-3 (Ditch)

History

The 216-B-2-3 waste site is an inactive and stabilized ditch that replaced the 216-B-2-2 Ditch in 1970. Two underground pipelines that comprise the 200-E-205-PL waste site drained to the 216-B-2-3 Ditch; the ditch, in turn, drained to the 216-B-3 Pond. One inlet line was a tie-in from the B Plant process sewer line (200-E-188-PL) and drained directly to the 216-B-2-3 ditch. The other inlet originated at the 207-B Retention Basin's outlet valve box, where the head-end of the ditch is located.

The 216-B-2 Ditch System, which include the 216-B-2-1, 216-B-2-2, and 216-B-2-3 ditches, conveyed cooling water from the 200 East Area plants to the 216-B-3 and 216-A-25 Ponds. The 216-B-2-3 ditch was the third of three unlined ditches, and active until 1987, when it was backfilled and surface stabilized.

The ditch was replaced with an underground pipe installed parallel to the ditch, 200-E-126-PL. The ditch is now located within a larger stabilized footprint, posted Underground Radioactive Material Area (URMA), that also includes the 216-B-2-1 and 216-B-2-2 stabilized ditches. This larger area was surface stabilized in 1987.



Construction

- Slope: 1:2.5
- Depth: 8 ft
- Length: 4,000 ft
- Width: 20 ft (Top)
- Width: 6 ft (Bottom)

Features Of Interest

- The 200-E-126-PL pipeline that replaced the 216-B-2-3 ditch intersects each of the three ditches in the 216-B-2 Ditch System.

Relevant Characterization

- 2014: Three tumbleweeds growing atop 216-B-2-3 (later disposed). Contamination up to 65,000 dpm/100cm2.
- Radioactivity detected while the ditch was active was generally less than 200 cpm, GM probe.
- The Engineering Evaluation/ Cost Analysis for the 200-MG-1 Operable Unit Waste Sites Identified Removal, Treatment, and Dispose (RTD) as the preferred remedial action (DOE/RL-2008-44, Rev. 0)

Waste Streams

- 1970-1973: Received 241BY tank farm condenser cooling water.
- 1970-1987: Received 241-CR Vault and 221B (B Plant) cooling water.

Misc./Other Relevant Information

- This ditch, along with 216-B-2-1 and 216-B-2-2, and the 216-B-3 and 216-A-25 ponds, was originally investigated as the Gable Mountain Pond/B-Pond and Ditches Cooling Water Group (200-CW-1 OU) in an RI Report (DOE/RL-2000-35). Characterization efforts focused on the 216-B-2-2 ditch, as it was expected to contain typical to higher levels of contamination at the ditch's head end as the rest of the group's waste sites.

Site Interfaces

Site Intersects:

200-IS-1 OU
- 200-E-114-PL
- 200-E-188-PL
- 200-E-204-PL
- 200-E-205-PL
- 200-E-265-PL
- 200-E-126-PL
- 200-E-126-PL-B

200-EA-1 OU
- 207-B (Ret. Basin)
- 216-B-2-1 (Ditch)

Nearby Sites:

200-EA-1 OU
- 216-B-2-2 (Ditch)
- 216-B-63 (Ditch)

200-IS-1 OU
- 200-E-112-PL
- 200-E-264-PL
- 200-E-191-PL
- 200-E-203-PL

Nearby Sites:

200-SW-2 OU
218-E-12A (Bur. Ground)
218-E-12B (Bur. Ground)

OU Unassigned
- 200-E-21 (Active; Borrow Area)
- UPR-200-E-138 (Consolidated)
- UPR-200-E-32 (Consolidated)

Scoping Summary: 216-B-2-3 (Ditch)

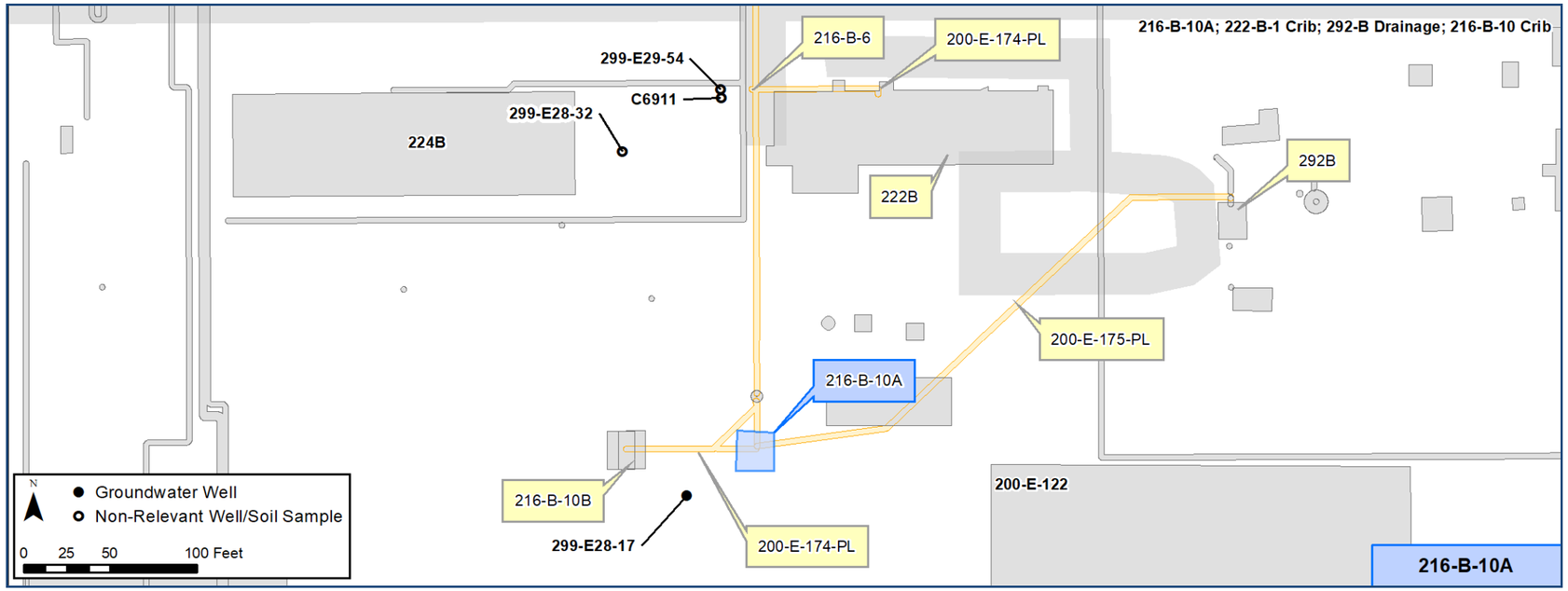
Scoping Summary: 216-B-10A (Crib)

History

The 216-B-10A waste site is an inactive, underground crib that received decontamination sink and sample slurper waste from the 222B office building via the 200-E-174-PL pipeline, and floor drainage from the 292B building (stack monitor station) via the 200-E-175-PL pipeline. Waste from the 216-B-10A crib cascaded to the 216-B-10B crib via the 200-E-174-PL pipeline. Both cribs are located southwest of the 222B building. The 216-B-10A crib was constructed by 1949 and operational until 1958.

From 1949 to 1951, the 216-B-10A crib received decontamination sink and sample slurper waste from the 222B building and floor drainage from the 292B building.

In 1951, the decontamination sink and sample slurper waste from the 222B building was terminated and the effluent pipeline to the crib was blanked off at the decontamination sink. The cribs continued to receive waste from the floor drainage in the 292B building until 1969, at which time the pipeline between the two cribs was blanked and rerouted to the 221B building.



Construction

- Crib Box
  - Length: 12 ft
  - Width: 12 ft
  - Height: 4 ft
  - Depth:
    - Bottom of structure: 20 ft bgs
    - Top of structure: 16 ft bgs
  - Side slope: 1:1
  - Material: Wooden structure in an excavation
  - Number of incoming and outgoing pipelines:
    - Incoming Pipelines: 2
    - Outgoing Pipelines: 1
- Excavation:
  - Length: 14 ft at bottom, 54 ft at top
  - Width: 14 ft at bottom, 54 ft at top
  - Depth: 20 ft bgs

Features Of Interest

- One 2-in stainless steel vent pipe with a blank flange from crib to 8 ft above grade
- One 3.5-in stainless steel liquid level and sample riser from crib to 4 ft above grade
- One 3.5-in stainless steel pipe with a tee and bend to 216-B-10B at approx. 8 ft bgs (200-E-174-PL)
- See attached Figure 1.

Relevant Characterization

- Data from well 299-E28-17 shows radiation levels at or below background levels.

Waste Streams

- Decontamination sink and sample slurper waste from 222B facility
- Floor drainage from 292B facility
- Acidic liquid waste, TRU and fission products, nitric acid, and sodium dichromate were also disposed to the crib.
- This crib received 2.6 million gallons of waste.

Misc./Other Relevant Information

- Waste from 222B was previously disposed to the 216-B-6 reverse well
- This site has previously been associated with 200-LW-1, 200-LW-2, and 200-BP-6 operable units
- Site visits in 1991 found that the earth over the top of the unit had subsided approx. 3 ft, which may indicate deterioration of the wooden crib box structure

Site Interfaces

Origin/Termination:

200-IS-1 OU

- 200-E-174-PL
- 200-E-175-PL

Intersecting/Nearby Sites:

200-EA-1 OU

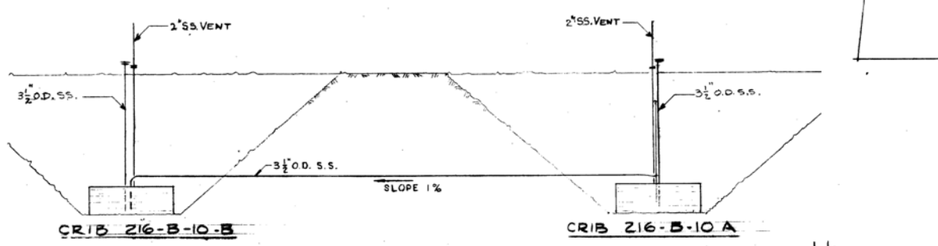
- 216-B-10B (Crib)
- 216-B-6

OU Unassigned

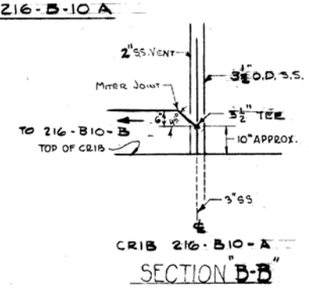
- 222B (Office Building)
- 292B (Stack Monitor Station)

Scoping Summary: 216-B-10A (Crib)

Figure 1
H-2-1649



SECTION "A-A"
SCALE: 1"=10'-0"



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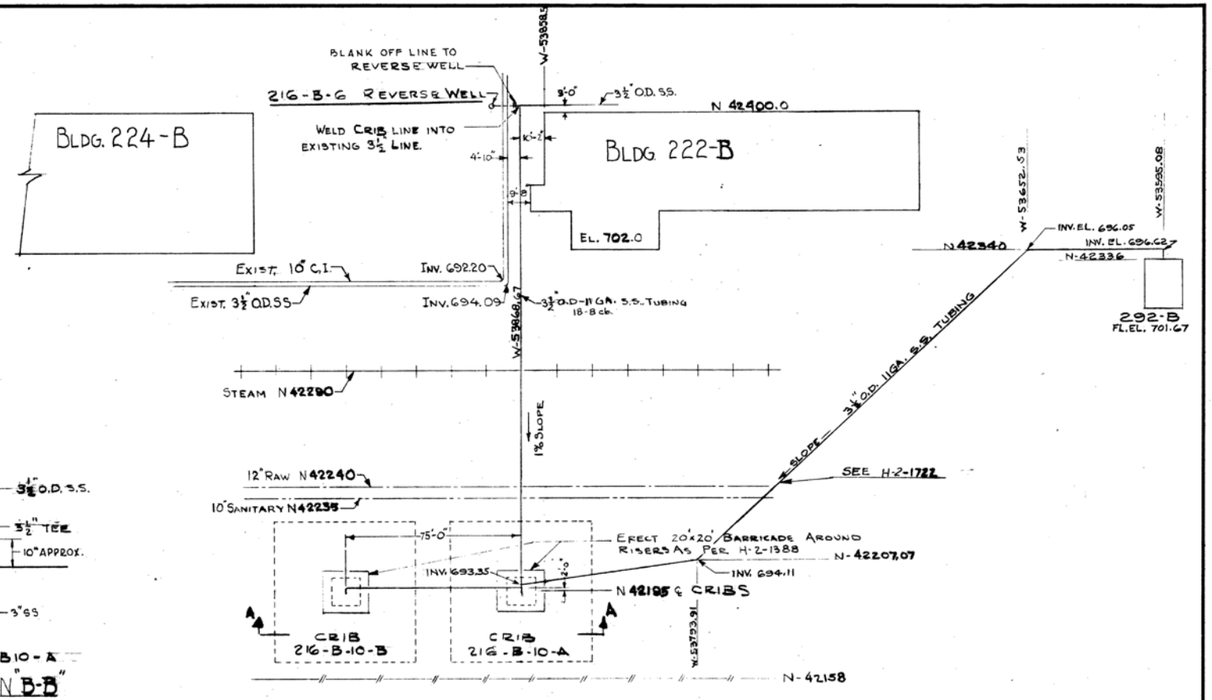
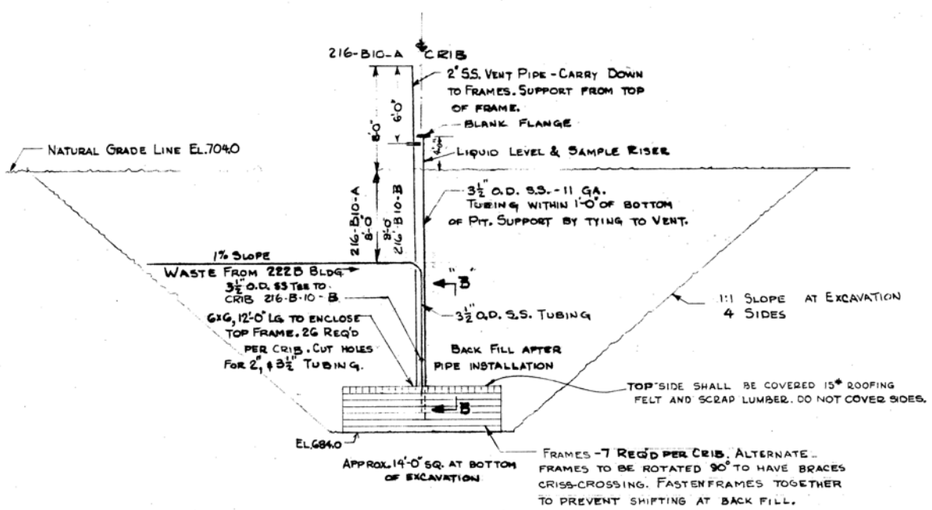
NO SCALE



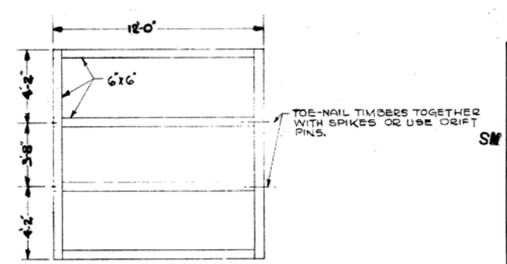
LOCATION PLAN
SCALE: 1"=30'-0"

GENERAL NOTES

1. A FIELD CHECK OF THE DISTANCE FROM BOTTOM OF CRIBS TO TOP OF FLANGE ON THE LIQUID LEVEL & SAMPLE RISER TO BE MADE BEFORE BACKFILLING
2. THE LIQUID LEVEL IN CRIBS TO BE DETERMINED BY MEANS OF AN ELECTRODE AND PORTABLE AMMETER AS USED BY THE "S" DIVISION



DETAIL AT CRIB LOCATION
SCALE: ½" = 1'-0"
(SEE ALSO SECTION "A-A" ON DWG "H-2-1722")



FRAME DET.
SCALE: ½" = 1'-0"
7 REQ'D PER CRIB
PAINT WITH ONE HEAVY COAT OF CREOSOTE.

NONE

NO.	DESCRIPTION	BY	DATE	APPD.	DATE	APPD.
3	ADD REF FCN 2577 WAS BLDG. 200-E		4-78			
2	ADDED REF. DWG		10-26-49			
1	ADD 292-B & 3½" DRAIN TO CRIB		10-25-49			

REVISIONS

SCALE: As Shown		APPROVALS BY	DEPT.	DATE
DRAWN BY	1-17-49		S	1/27/49
CHECKED BY	DATE 1/19/49			1/24/49
	DATE 1-17-49			1/28/49
				1/28/49
			AEC	1-28-49
ENG. REP. NO. 2466			Proj.	1-31-49
PROJECT NO.			Engr.	2-1-49

0401 GENERAL ELECTRIC CO.
HANFORD WORKS

216-B-10-A & 216-B-10-B CRIBS

BLDG. NO'S 216-B | DWG. NO. H-2-1649

DWG. NO.	TITLE
ARH-1562	200 E & W LIQUID WASTE SITES
H-2-44501	SH. #86 AREA MAP
H-2-1722	292-B DRAIN LINE FOR CONTAMINATED WASTE
H-2-353	216-T-2, 216-T-3 REVERSE WELL
W 73578	REAR BLDG "B" OUTSIDE LINES ARRGT.
MAP 2890	"B" PLANT AREA

REFERENCE DRAWINGS

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Scoping Summary: 216-B-10B (Crib)

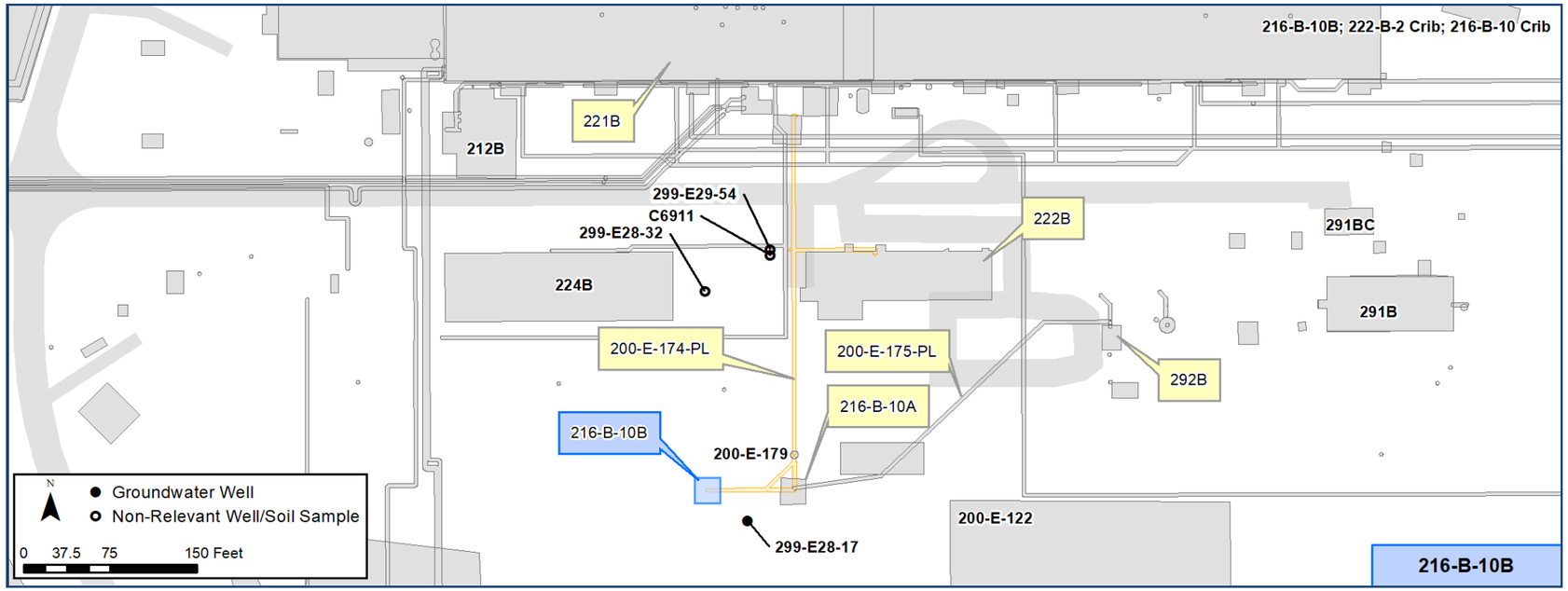
History

The 216-B-10B waste site is an inactive, underground crib that received process effluent waste from the 222B office building, 292B stack monitor station, and 221B B Plant via the 200-E-174-PL and 200-E-175-PL pipelines. The crib was operational from 1949 to 1973.

From 1949 to 1951, the 216-B-10B Crib received decontamination sink and sample "slurper" waste from the 222B Building and floor drainage from the 292B Building. The waste was first delivered to the 216-B-10A Crib via the 200-E-174-PL and 200-E-175-PL pipelines, and then cascaded to the 216-B-10B Crib via the 200-E-174-PL pipeline.

In 1951, the decontamination sink and sample slurper waste from the 222B Building was terminated and the effluent pipeline to the crib was blanked off at the decontamination sink. The cribs continued to receive waste from the floor drainage in the 292B Building until 1969, at which time the pipeline between the two cribs was blanked and rerouted to the 221B Building.

From 1969 to 1973, the 216-B-10B Crib directly received decontamination sink and shower waste from the 221-B Building. The pipeline to the crib was disconnected in 1973.



Construction

- Crib Box
  - Length: 12 ft
  - Width: 12 ft
  - Height: 4 ft
  - Depth:
    - Bottom of structure: 20 ft bgs
    - Top of structure: 16 ft bgs
  - Side slope: 1:1
  - Material: Wooden structure in an excavation
  - Number of incoming/outgoing pipelines: 2

- Excavation:
  - Length: 14 ft at bottom, 54 ft at top
  - Width: 14 ft at bottom, 54 ft at top
  - Depth: 20 ft bgs

Features Of Interest

- One 2 in. stainless steel vent pipe with a blank flange from crib to 8 ft above grade
- One 3.5 in. stainless steel liquid level and sample riser from crib to 4 ft above grade
- One 3.5 in. stainless steel pipe with a tee and bend to 216-B-10B at approx. 8 ft bgs (200-E-174-PL)
- See attached Figure 1.

Relevant Characterization

- Data from well 299-E28-17 shows soil radiation levels at or below background levels

Waste Streams

- Decontamination sink and shower waste from the 221B building (B Plant)
- Cascaded waste from crib 216-B-10A
  - Decontamination sink and sample slurper waste from 222B facility
  - Floor drainage from 292B facility
  - Acidic liquid waste, TRU and fission products, nitric acid, and sodium dichromate were also disposed to the crib.
  - This crib received 7,800 gallons of waste (the amount from overflow from 216-B-10A is not specified).

Misc./Other Relevant Information

- This site has previously been associated with 200-LW-1 and 200-LW-2 operable units

Site Interfaces

Origin/Termination:

200-IS-1 OU

- 200-E-174-PL

Intersecting/Nearby Sites:

200-EA-1 OU

- 216-B-10A (crib)

200-IS-1 OU

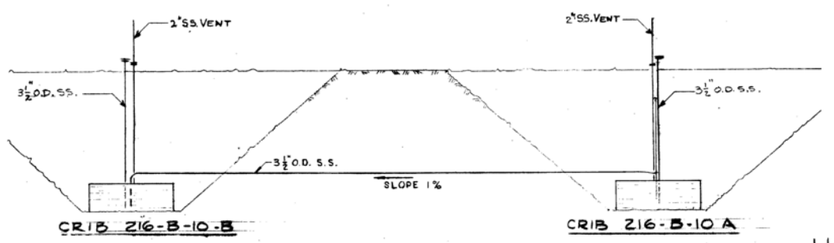
- 200-E-175-PL

Facilities

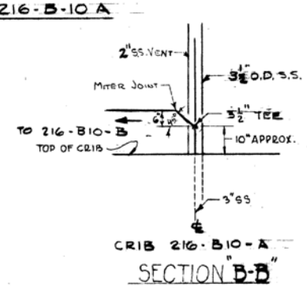
- 221B (B Plant)
- 222B (office building)
- 292B (stack monitor station)

Scoping Summary: 216-B-10B (Crib)

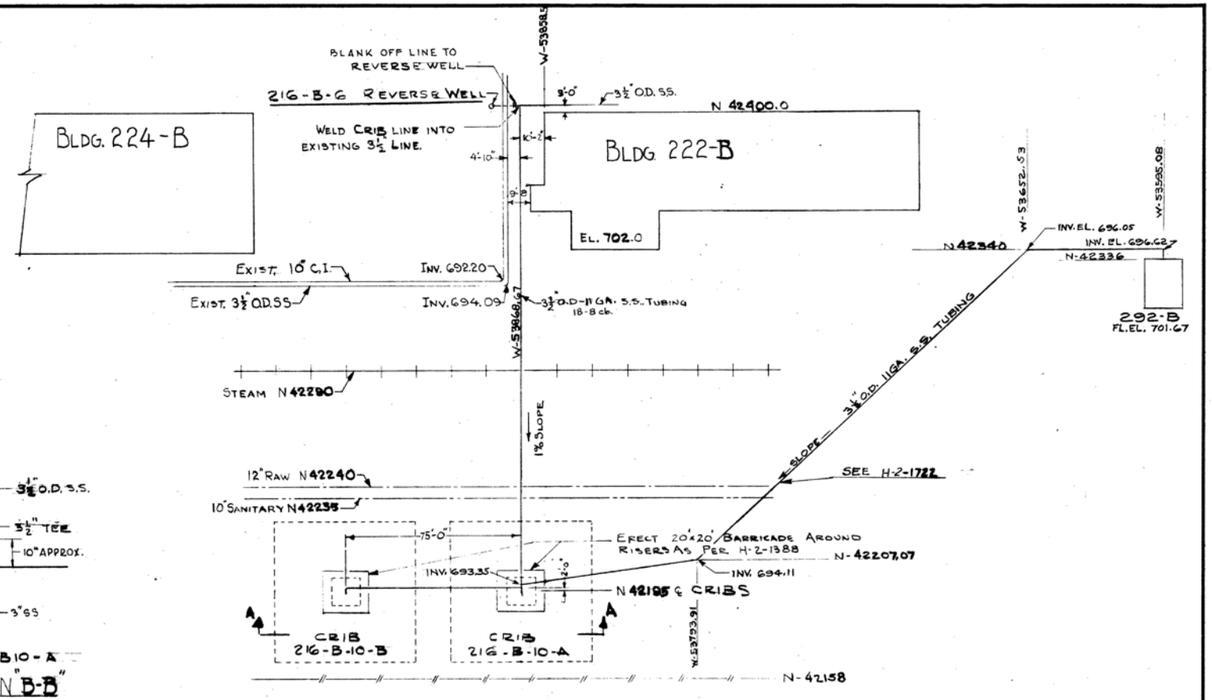
Figure 1
H-2-1649



SECTION "A-A"
SCALE: 1"=10'-0"



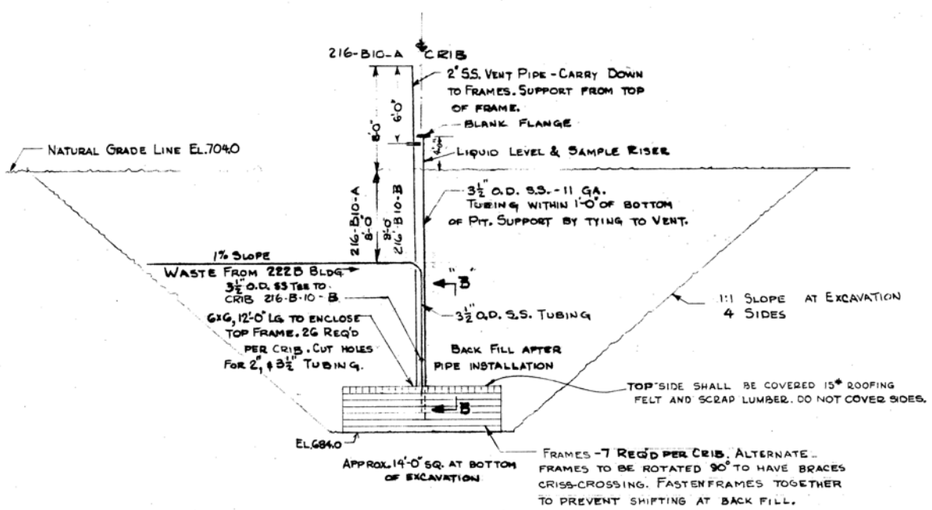
SECTION "B-B"
NO SCALE



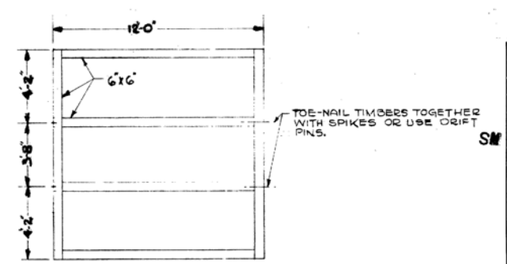
LOCATION PLAN
SCALE: 1"=30'-0"

GENERAL NOTES

1. A FIELD CHECK OF THE DISTANCE FROM BOTTOM OF CRIBS TO TOP OF FLANGE ON THE LIQUID LEVEL & SAMPLE RISER TO BE MADE BEFORE BACKFILLING
2. THE LIQUID LEVEL IN CRIBS TO BE DETERMINED BY MEANS OF AN ELECTRODE AND PORTABLE AMMETER AS USED BY THE "S" DIVISION



DETAIL AT CRIB LOCATION
SCALE: ½" = 1'-0"
(SEE ALSO SECTION "A-A" ON DWG # H-2-1722)



FRAME DET.
SCALE: ½" = 1'-0"
7 REQ'D PER CRIB
PAINT WITH ONE HEAVY COAT OF CREOSOTE.

NONE

NO.	DESCRIPTION	BY	DATE	APPD.	DATE	APPD.
3	ADD REF. FCN 2577 WAS BLDG. 200-E		4-78			
2	ADDED REF. DWG		10-26-49			
1	ADD 292-B & 3½" DRAIN TO CRIB		10-25-49			

REVISIONS

SCALE: As Shown		APPROVALS BY	DEPT.	DATE
DRAWN BY	1-17-49		S	1/27/49
CHECKED BY	DATE 1/19/49			1/24/49
	DATE 1-19-49			1/28/49
				1/28/49
			AEC	1-28-49
ENG. REP. NO. 2466			Proj.	1-31-49
PROJECT NO.			Engr.	2-1-49

0401 GENERAL ELECTRIC CO.
HANFORD WORKS

216-B-10-A & 216-B-10-B CRIBS

BLDG. NO'S 216-B | DWG. NO. H-2-1649

DWG. NO.	TITLE
ARH-1562	200 E & W LIQUID WASTE SITES
H-2-44501	SH. #86 AREA MAP
H-2-1722	292-B DRAIN LINE FOR CONTAMINATED WASTE
H-2-353	216-T-2, 216-T-3 REVERSE WELL
W 73578	REAR BLDG "B" OUTSIDE LINES ARRGT.
MAP 2890	"B" PLANT AREA

REFERENCE DRAWINGS

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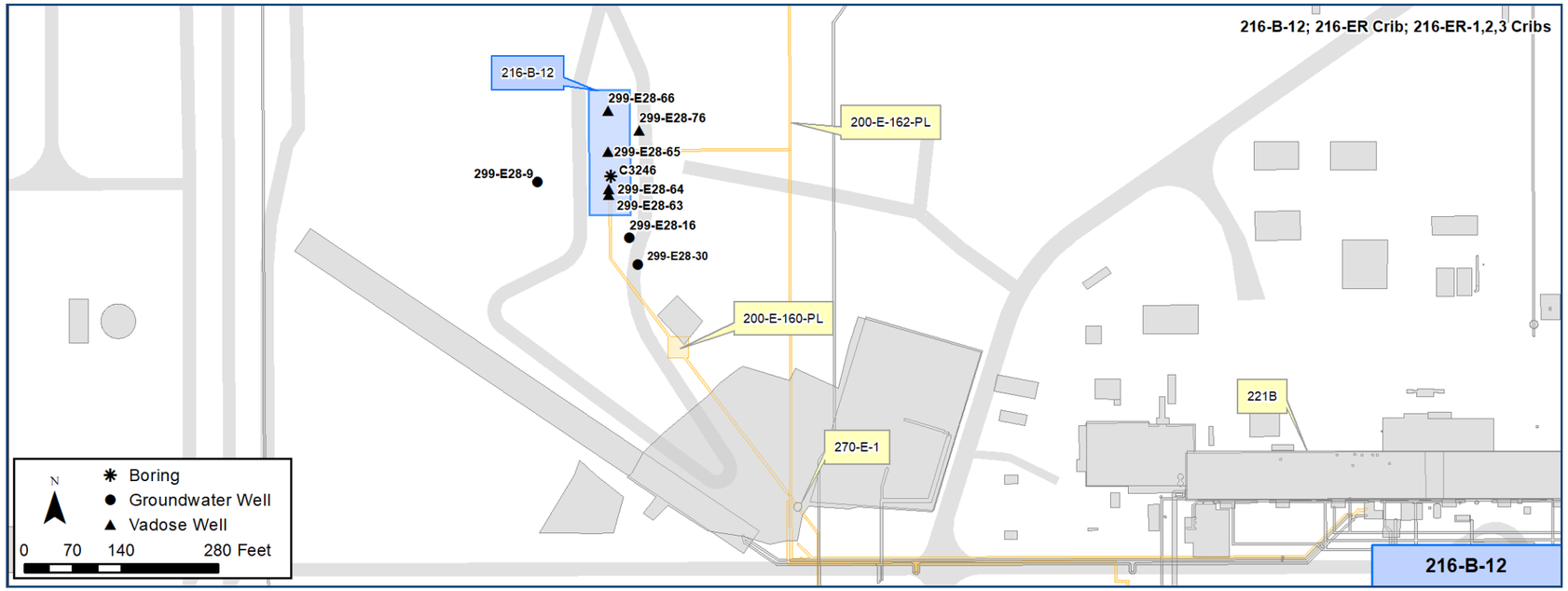
Scoping Summary: 216-B-12 (Crib)

History

The 216-B-12 waste site is an inactive crib that received radioactive process sewer waste from B-Plant and U-Plant process condensate via lines 200-E-162-PL and 200-E-160-PL.

The crib was in use from 1952 to 1957, then again from 1967 to 1973, when the crib collapsed and was immediately abandoned. It was backfilled shortly thereafter, and the fill-line (200-E-160-PL) was capped with concrete. The 200-E-162-PL was also capped with concrete.



Construction

Dimensions:

- Length, at grade: 180 ft
- Width, at grade: 60 ft
- Length, at base: 161 ft
- Width, at base: 51 ft
- Depth: 0-to-30 ft bgs, including 15 ft of crushed stone at base (feeder lines at a depth of ~17ft)

Three wooden boxes:

- Length: 16 ft
- Width: 16 ft
- Depth: 10 ft
- Section 1 is Fill Box
- Section 2 and Section 3 are Overflow Boxes
- Each wooden box has a test riser, blind flange, and vent filer
  - Section 3 includes a Conductor Reel Assembly

Features Of Interest

- No features of interest.

Relevant Characterization

1976 Scintillation Probes: Radioactive contaminants detected in crib sections 1&2, 10 ft bgs; in section 3, 22 ft bgs. Maximum radiation intensity occurs from base of crib, 30 ft bgs, to >60 ft bgs.

2003: borehole C3246 was drilled to 308 ft bgs:

- Cs-137 was detected from ground surface (0.3 pCi/g) down to 268 ft bgs (0.2 pCi/g); max at 35 ft (121,000 pCi/g).

2008: Geophysical logs indicate additional Cs-137 contamination present.

Waste Streams

- Highly acidic process condensate from evaporators in 221U (U Plant) and 224U (Concentration Facility U03 Plant), construction waste (1967, only) and 221B (B Plant) process condensate neutralized with limestone.
  - The waste was low in salt, and basic to neutral.
  - 160 million gallons recieved
- 1976 Crib waste inventory included the following radioisotopes: Pu-239/240, Sr-90, Ru-106, Cs-137, Co-60, and Uranium. Ammonium nitrate was also disposed here.
  - *See HNF-1744; ATT C-53, for details.*
- 2003 Borehole: only man-made radionuclides present in the hole were Cs-137, U-238, and Eu-154.

Misc./Other Relevant Information

Geophysical log summary information:

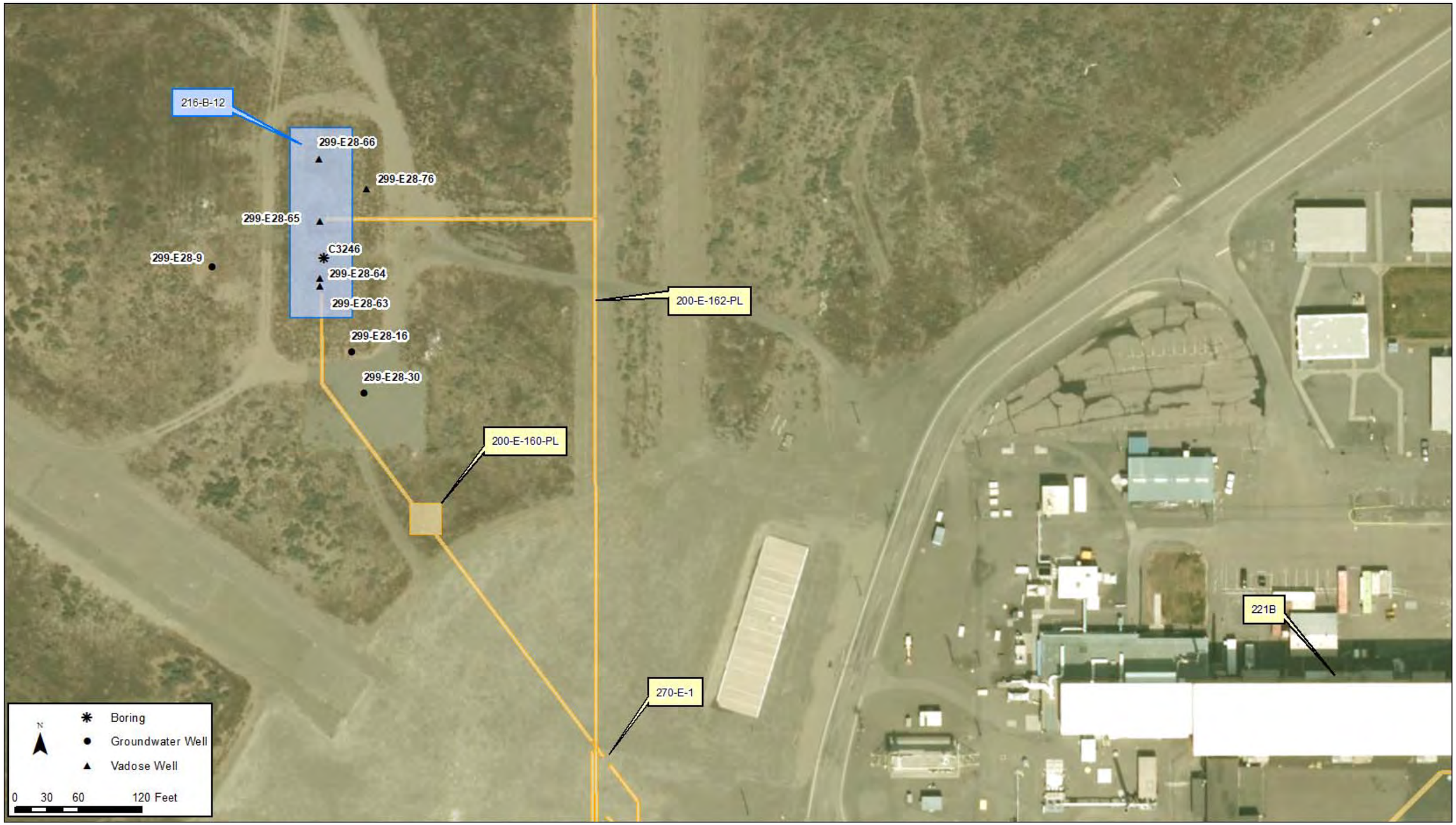
- 299-E28-16, 299-E28-65, and 299-E-28-66: significant amounts of man-made radiation detected between 1968-1976 throughout the boreholes, with higher activity from 49-to-118 ft bgs in 1968, then 90-to-124 ft bgs in 1976, suggesting downward radiation moving deeper over time.
- *See Page 4 for a depiction of the nature and extent of contamination, as defined by existing data.*

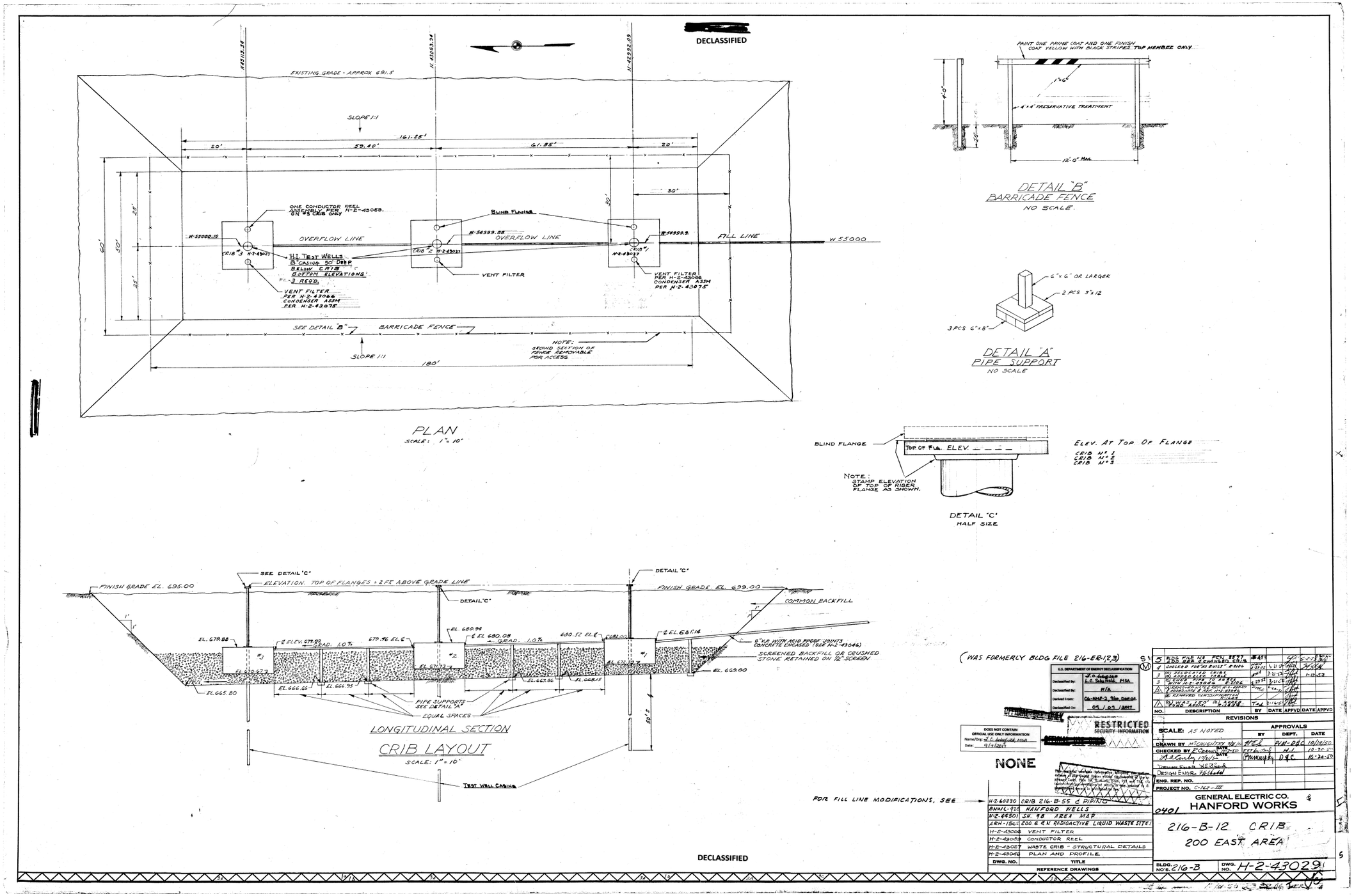
Site Interfaces

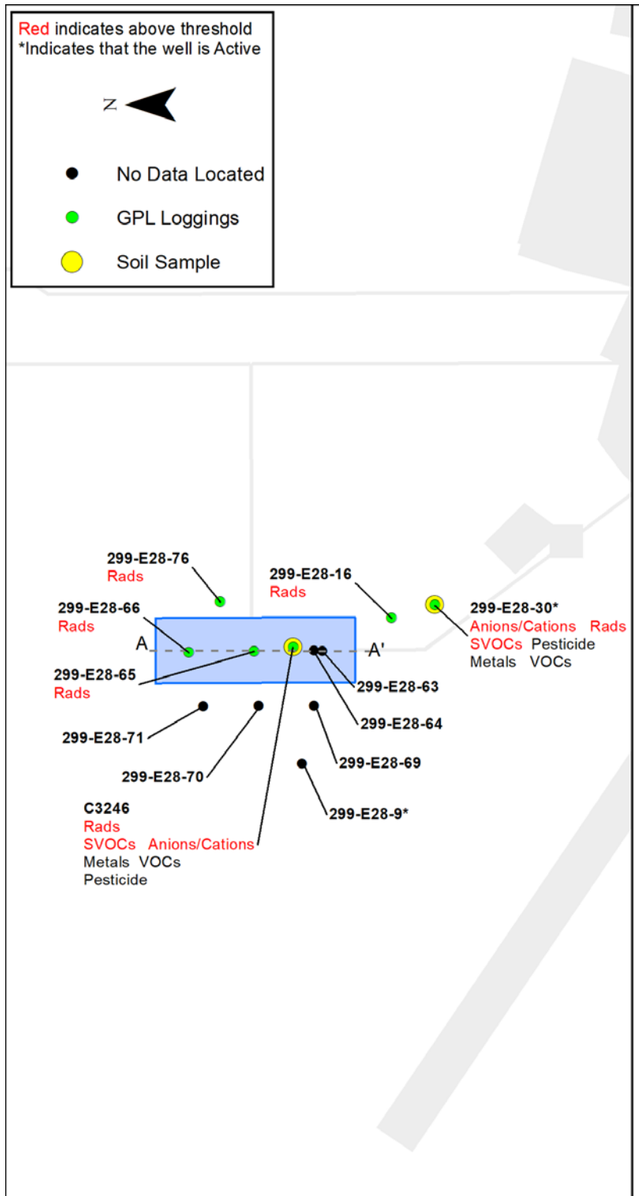
Site Intersects:

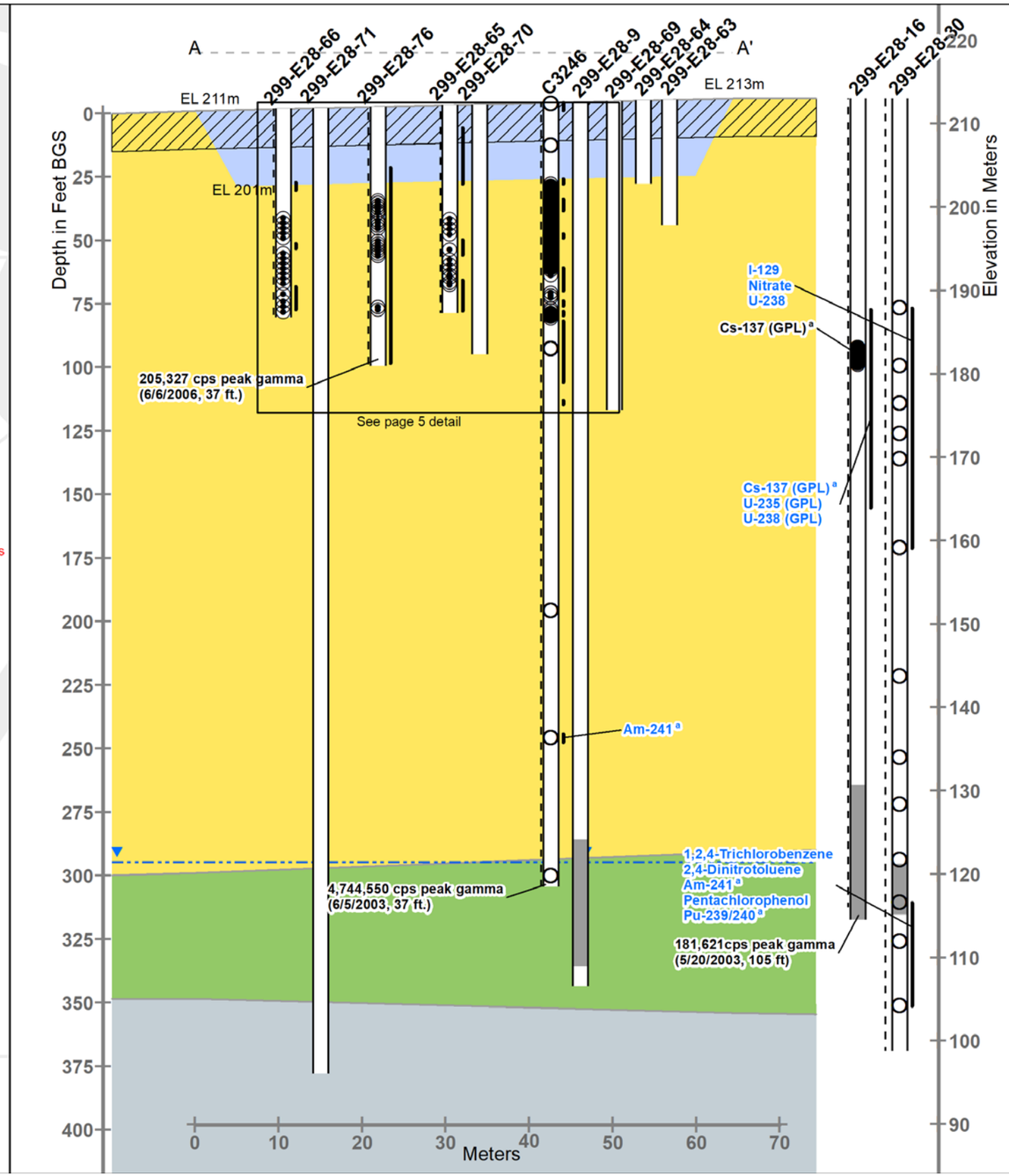
200-IS-1 OU

- 200-E-160-PL (pipeline)
- 200-E-162-PL (pipeline)


216-B-12
299-E28-66
299-E28-76
299-E28-65
C3246
299-E28-9
299-E28-64
299-E28-63
299-E28-16
299-E28-30
200-E-162-PL
200-E-160-PL
221B
270-E-1
Boring
Groundwater Well
Vadose Well
N
0 30 60 120 Feet


DECLASSIFIED
EXISTING GRADE - APPROX 691.5
SLOPE 1:1
161.25'
20'
59.40'
61.85'
20'
30'
ONE CONDUCTOR REEL ASSEMBLY PER H-2-43059. ON #3 CRIB ONLY
BLIND FLANGE
OVERFLOW LINE
OVERFLOW LINE
FILL LINE
W 55000
CRIB #3
CRIB #2
CRIB #1
H.I. TEST WELLS 8" CASING 50' DEEP BELOW CRIB BOTTOM ELEVATIONS 3 REQD.
VENT FILTER
VENT FILTER PER H-2-43066 CONDENSER ASSM PER H-2-43075
SEE DETAIL "B"
BARRICADE FENCE
NOTE: REMOVE SECTION OF FENCE REMOVABLE FOR ACCESS
SLOPE 1:1
180'
PLAN
SCALE: 1" = 10'
PAINT ONE PRIME COAT AND ONE FINISH COAT YELLOW WITH BLACK STRIPES. TOP MEMBER ONLY
1"x6"
4"x4" PRESERVATIVE TREATMENT
12'-0" MAX.
DETAIL "B"
BARRICADE FENCE
NO SCALE
6"x6" OR LARGER
2 PCS 3"x12
3 PCS 6"x8"
DETAIL "A"
PIPE SUPPORT
NO SCALE
BLIND FLANGE
TOP OF FLG. ELEV.
NOTE: STAMP ELEVATION OF TOP OF RISER FLANGE AS SHOWN.
ELEV. AT TOP OF FLANGE
CRIB No. 1
CRIB No. 2
CRIB No. 3
DETAIL "C"
HALF SIZE
SEE DETAIL "C"
ELEVATION TOP OF FLANGES = 2 FT. ABOVE GRADE LINE
FINISH GRADE EL. 695.00
FINISH GRADE EL. 699.00
COMMON BACKFILL
EL. 679.88
EL. 680.94
EL. 681.14
EL. 665.80
EL. 669.00
8" V.C.P. WITH ACID PROOF JOINTS CONCRETE ENCASED (SEE H-2-43046)
SCREENED BACKFILL OR CRUSHED STONE RETAINED ON 1/2" SCREEN
PIPE SUPPORTS SEE DETAIL "A"
EQUAL SPACES
LONGITUDINAL SECTION
CRIB LAYOUT
SCALE: 1" = 10'
TEST WELL CASING
FOR FILL LINE MODIFICATIONS, SEE
(WAS FORMERLY BLDG FILE 216-EB-12,3)
RESTRICTED SECURITY INFORMATION
NONE
SCALE: AS NOTED
GENERAL ELECTRIC CO.
HANFORD WORKS
216-B-12 CRIB
200 EAST AREA
BLDG. NO'S. 216-B
DWG. NO. H-2-43029
DECLASSIFIED



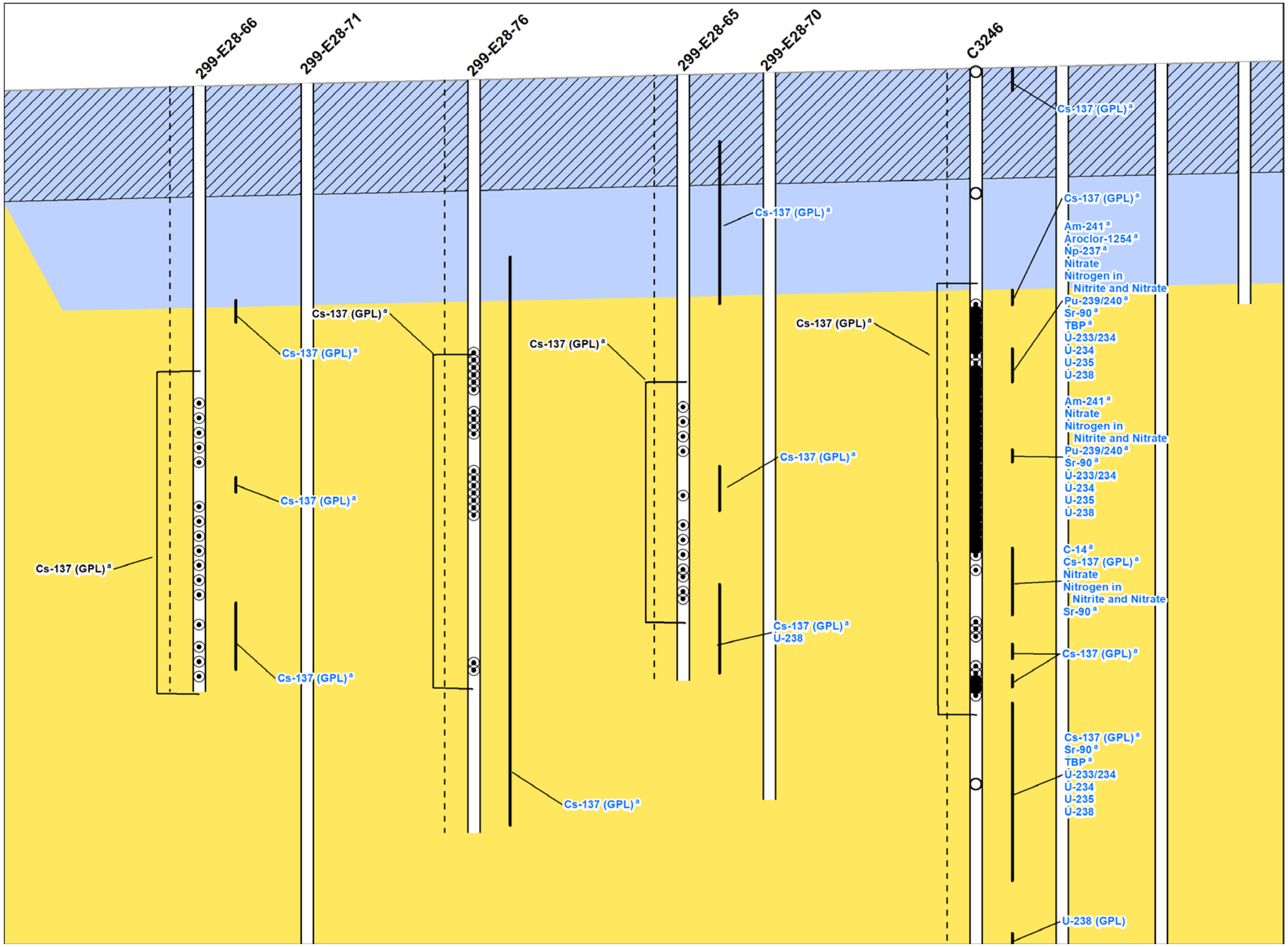


Legend

- 5x Above Human Health or Ecological Thresholds
- Above Human Health or Ecological Thresholds
- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- GPL Coverage
- Groundwater
- Screen
- Well/Bore
- 0-15ft Below Ground Surface
- Waste Site
- Columbia River Basalt Group
- Hanford formation
- Ringold Formation unit A

Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

Scoping Summary: 216-B-12 (Crib)



Legend

- 5x Above Human Health or Ecological Thresholds
- Above Human Health or Ecological Thresholds
- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- GPL Coverage
- Groundwater
- Screen
- Well/Bore
- 0-15ft Below Ground Surface
- Waste Site
- Columbia River Basalt Group
- Hanford formation
- Ringold Formation unit A

Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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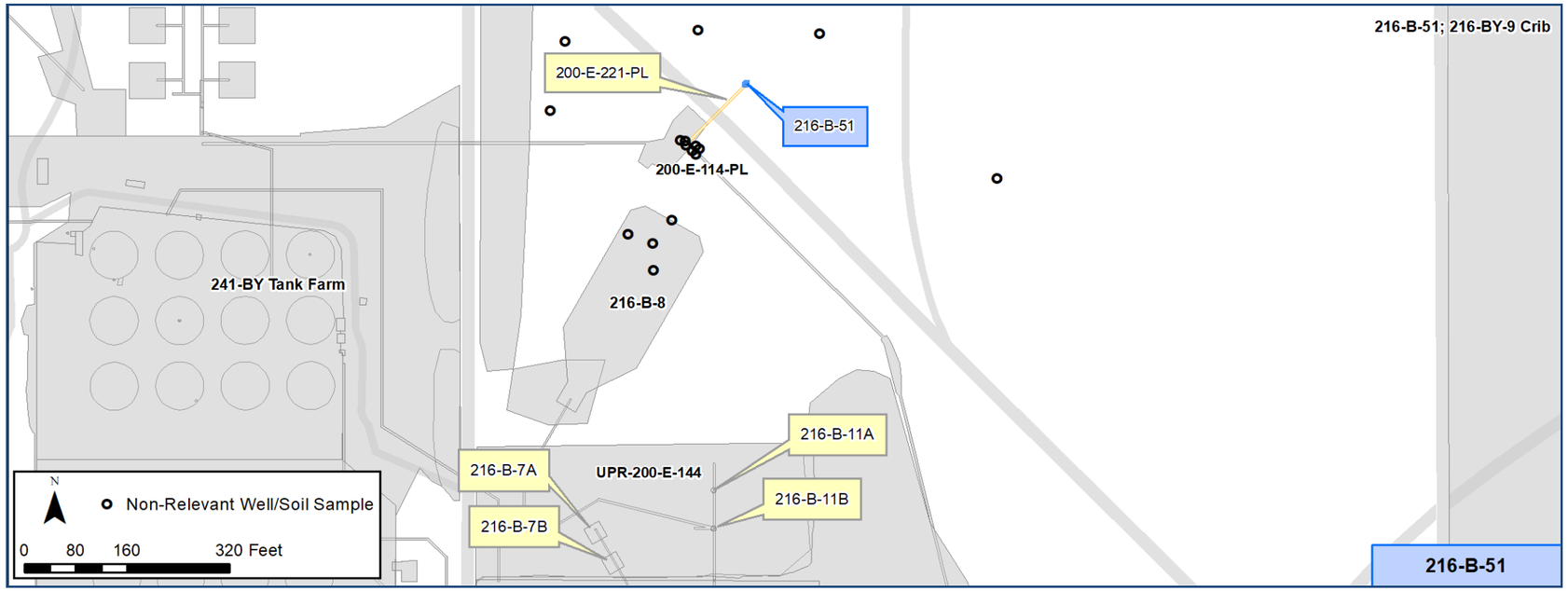
Scoping Summary: 216-B-51 (French Drain)

History

The 216-B-51 waste site is Underground Radioactive Material Area (URMA) consisting of a French drain that received scavenged tributyl phosphate flush drainage from the BC Pipeline (200-E-114-PL) via the two drain lines that make up 200-E-221-PL. The French drain was active from January 1956 to January 1958.

The 216-B-51 French drain was previously located in the middle of the original extent of UPR-200-E-144 (25 acres) that was assumed to originate from 241B and 241BY tank farm activities. In 1992 the contamination area was surface stabilized and the French drain was posted as an URMA. The contaminated soil on and around 216-B-51 was removed and placed into the current extent of UPR-200-E-144; the consolidated area to the south that surrounds the 216-B-7A/B and 216-B-11A/B cribs.



Construction

- Depth: 14 ft bgs, 1 ft above ground
- Diameter: 5 ft
- Material: Concrete
  - Sections of concrete pipe stacked vertically
  - Filled with 13 ft of gravel

Features Of Interest

- Wooden cover with vent holes
- One perforated riser in center of french drain, 14 ft length

Waste Streams

- U Plant - Uranium Recovery and Scavenging (URP)
  - TBP: Tributyl phosphate waste
    - Scavenged tri-butyl phosphate supernatant via the 241BY tank farm (1956-1958)
    - Estimated <10 Ci total Beta (RHO-CD-673)
    - Received 264 gal

Site Interfaces

Origins/Terminations

N/A

Intersecting/Nearby Sites

200-IS-1 OU

- 200-E-221-PL

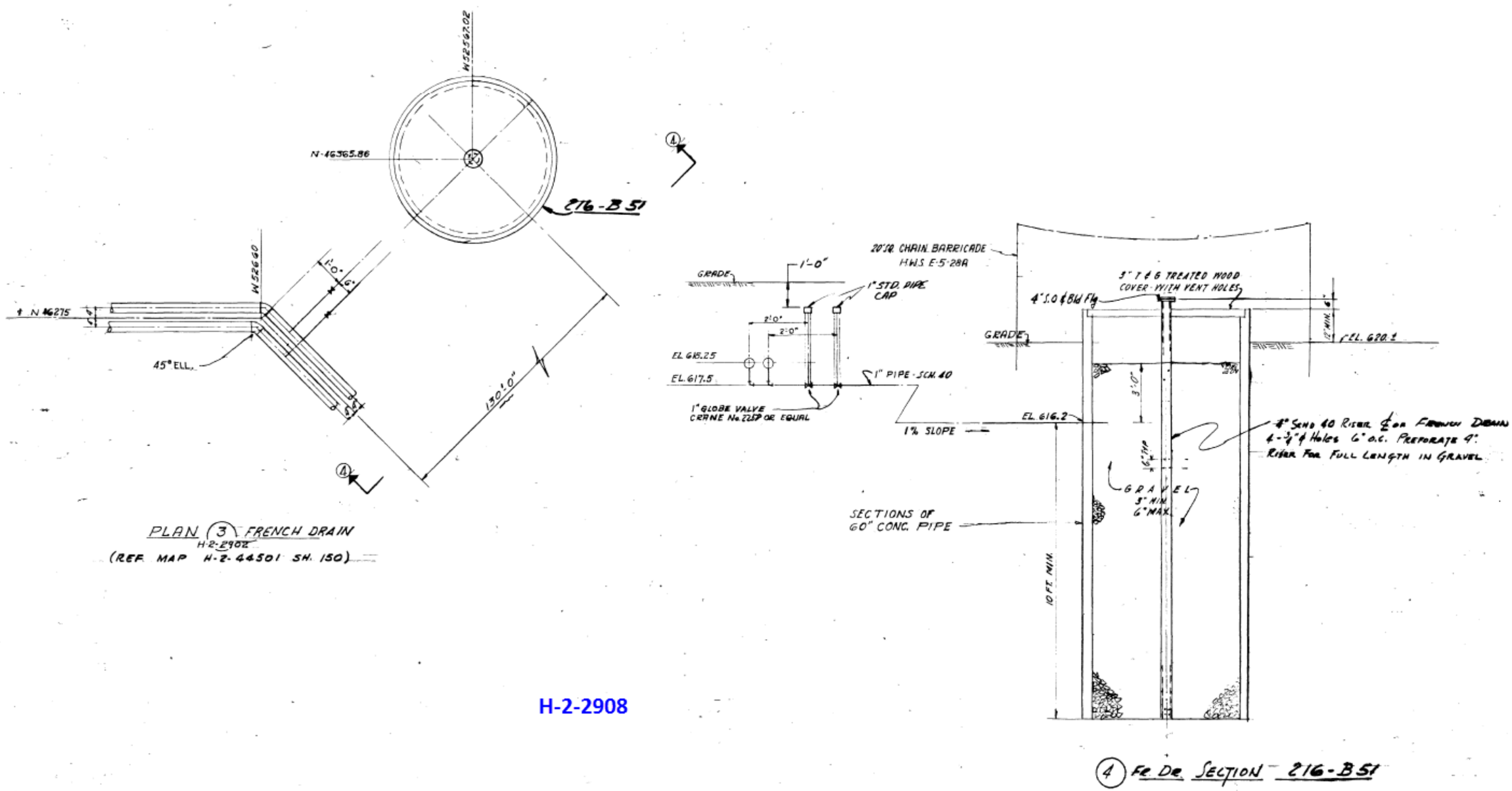
Relevant Characterization

- Apr 2006 rad survey found fixed contamination on the exterior walls and cover of the french drain
  - 18,000 dpm beta/gamma
  - Assigned and posted as a Fixed Contamination Area (FCA)

Misc./Other Relevant Information

- On the UIC Permit and requires excavation for final permit disposition.
- Integrated with a portion of the 200-E-114-PL (200-IS-1) that is identified for an RTD early action.

Scoping Summary: 216-B-51 (French Drain)


W 526.02
N-46365.86
216-B-51
W 526.60
1'-0"
6"
N 46275
45° ELL.
130'-0"
PLAN (3) FRENCH DRAIN
H-2-2902
(REF. MAP H-2-44501 SH. 150)
GRADE
1'-0"
1" STD. PIPE CAP
2'-0"
2'-0"
EL. 615.25
EL. 617.5
1" PIPE - SCH. 40
1" GLOBE VALVE CRANE No. 2257 OR EQUAL
1% SLOPE
EL. 616.2
SECTIONS OF 60" CONC. PIPE
10 FT. MIN.
20'-0" CHAIN BARRICADE H.W.S. E-5-28A
3" T & G TREATED WOOD COVER WITH VENT HOLES
4" S.O. & BW Fly
GRADE
12" MIN.
EL. 620.1
3'-0"
6" MIN.
GRAVEL 3" MIN. 6" MAX.
4" SCHD 40 RISER & FOR FRENCH DRAIN 4-3/4" ϕ HOLES 6" O.C. PERFORATE 4" RISER FOR FULL LENGTH IN GRAVEL
(4) FR. DR. SECTION 216-B-51

H-2-2908

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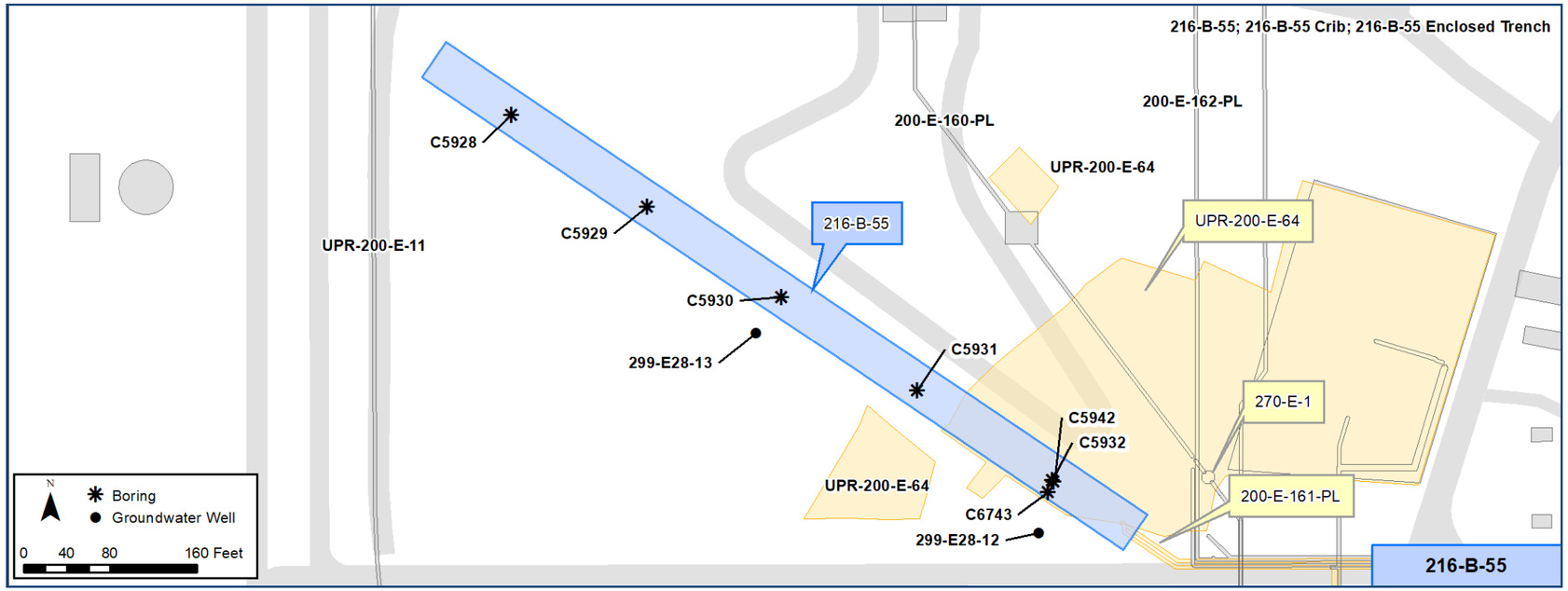
Scoping Summary: 216-B-55 (Crib)

History

The 216-B-55 waste site is an inactive, underground crib that received steam condensate waste from the 221B Building (B Plant) via the 200-E-161-PL pipeline. The site is located west of the 221B Building and north of 7th Street.

The crib was constructed in 1967 and operational from 1967 to 1991, when discharges to the crib were eliminated. The site is a covered trench that was used for the disposal of condensates from heating coils in process tanks.

Operation of the crib was continuous except during 1987 when the crib was not used. TPA milestone M-17-15 required all discharges to the crib must cease by September 1991. In 1996 the crib was isolated by removing a portion of the inlet pipe and capping the pipe. In July 2000, the vent risers were sealed.



Construction

- Length: 750 ft
- Width: 10 ft (at bottom)
- Depth: 13 ft (approximate)
- Side Slope: 1.5:1 at base, 2:1 at top
- 1,800 cu yds of gravel
- 19,500 sq ft of membrane barrier
- Incoming Pipelines: 2 (cut and capped off)

Features Of Interest

- Groundwater wells:
  - 299-E28-12
    - 8-in. diameter, 368 ft deep
  - 299-E28-13
    - 8-in. diameter, 349 ft deep
- A perforated, 30-in. galvanized pipe runs the length of the crib at 3ft above the bottom
- The site had two gage wells, extending from the crib bottom to approximately 3 ft, of 8-in. steel pipe with a galvanized sheet metal cap
- Two 16-in. x 16-in. x 8-in. concrete blocks below crib bottom support the two gage wells.

Relevant Characterization

- In 2007, subcontractors installed five direct-push boreholes
- Samples collected in 2008 reported readings of Cs-137 above 90 pCi/g, with a maximum reading of 91,000 pCi/g at a depth of 16 ft at C5932.
- *See pg 5 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- Steam Condensate (low-level liquid waste) from 221B Building (B Plant)
  - Condensate from E-23-3 concentrator, cooling coil discharge from TK28-4, TK31-1 and TK31-6 process tanks
  - Total effluent volume discharge: 325,000,000 gal
  - Radioisotopes include: Am-241, Co-60, Cs-137, Pu-139, Ru-106, Sr-90, and Ur (See pg 4 for complete soil inventory model)
  - Low in salt and neutral to basic pH.

Misc./Other Relevant Information

- No additional information.

Site Interfaces

Origin/Termination

200-IS-1 OU

- 200-E-161-PL

Intersecting/Nearby Sites

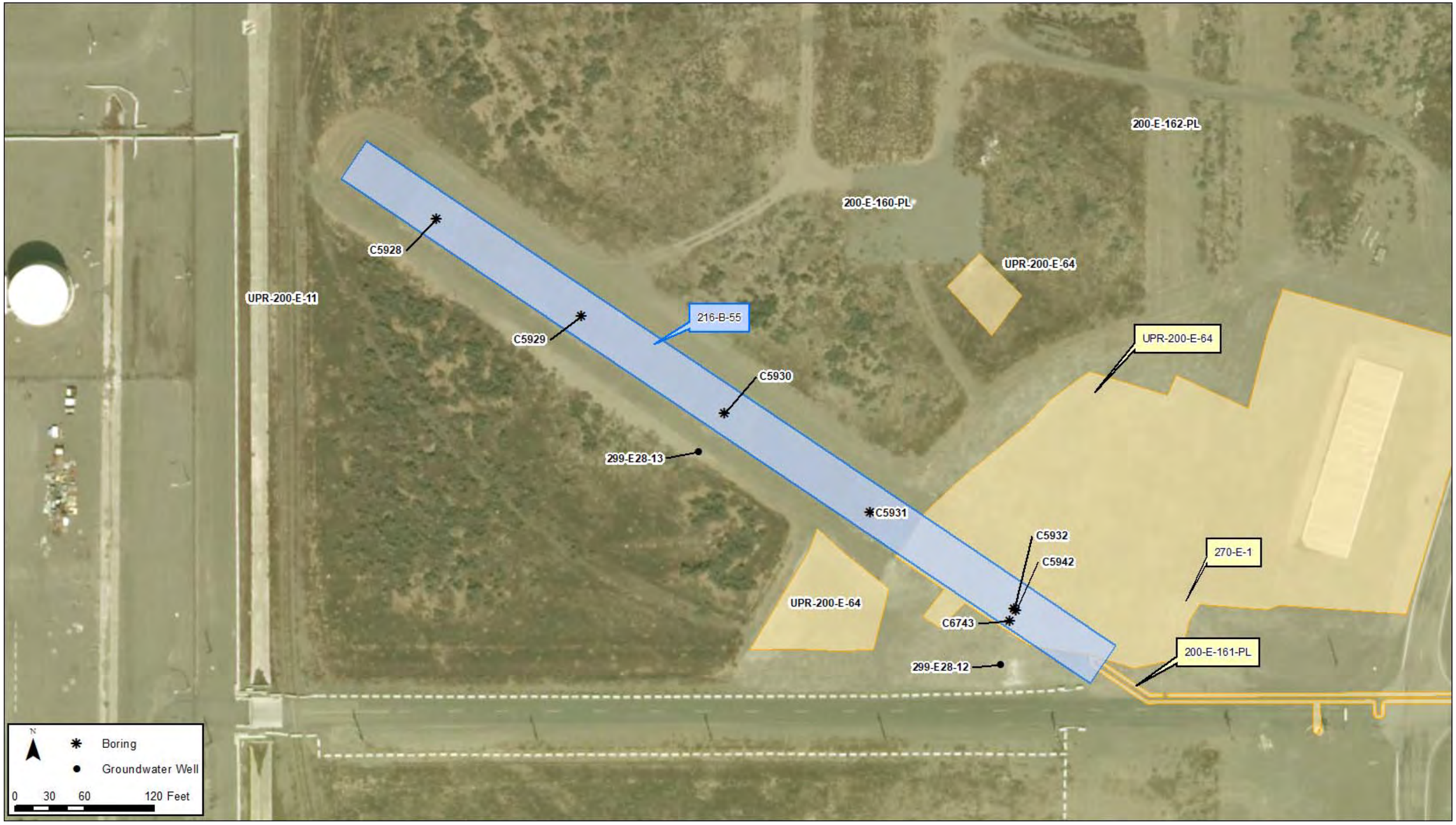
200-EA-1 OU

- UPR-200-E-64

200-IS-1 OU

- 200-E-160-PL
- 200-E-162-PL

Scoping Summary: 216-B-55 (Crib)



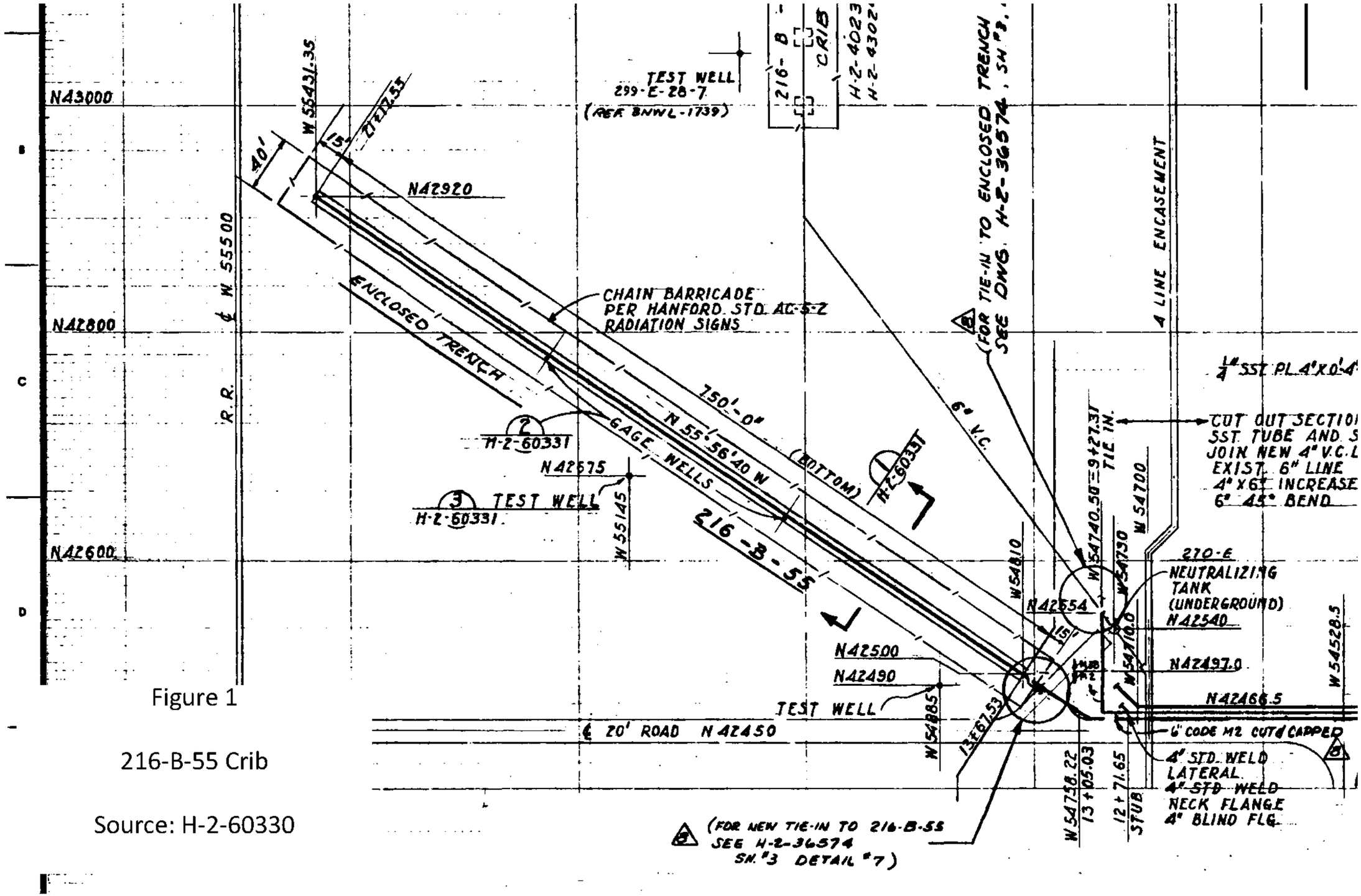


Figure 1

216-B-55 Crib

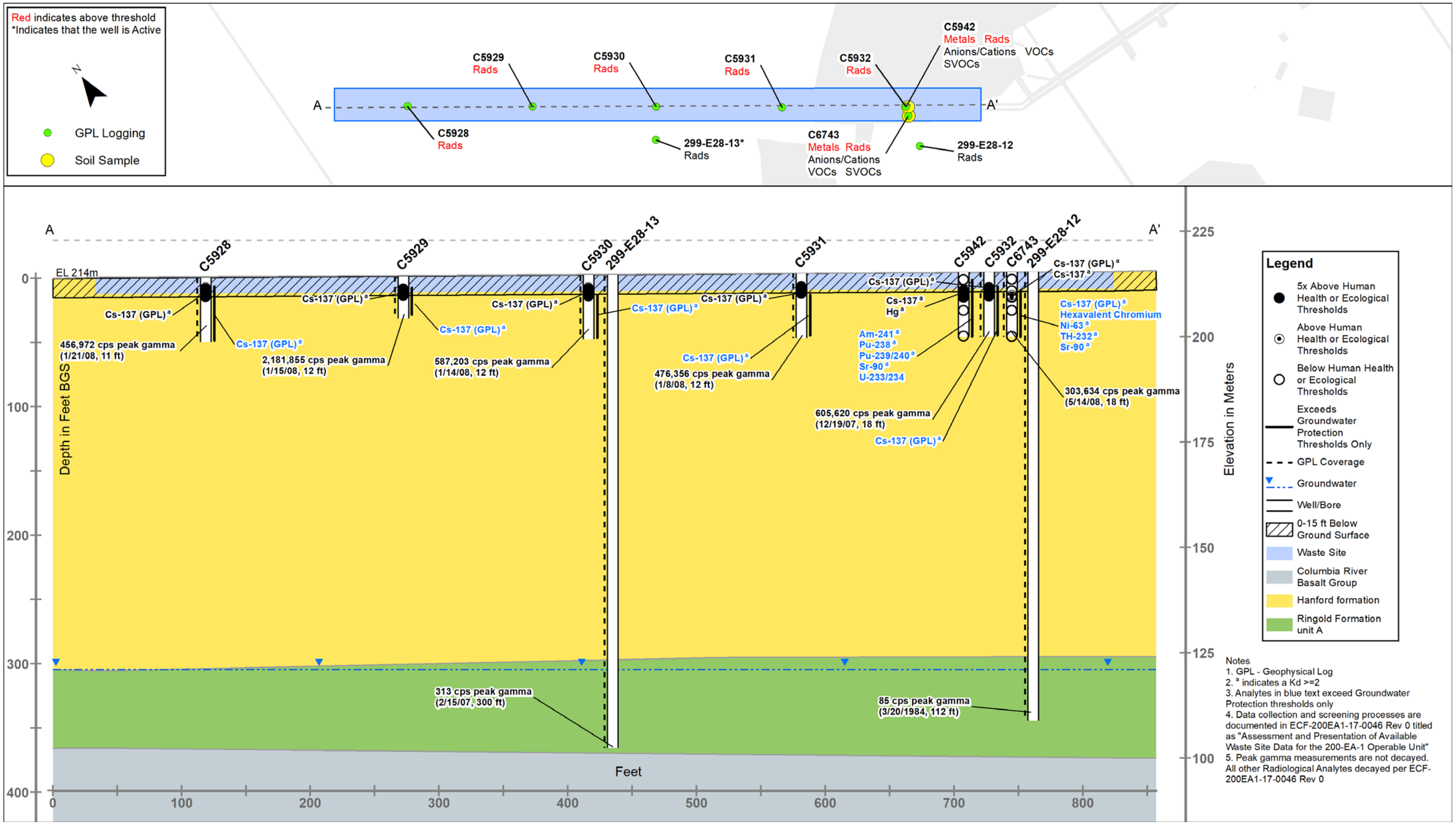
Source: H-2-60330

Table AD1-7. Data-Needs Priority Summary – Model Group 6 – 216-B-55 Crib (200-CW-5/2/4/200-SC-1) (RL/FH) (CPP) (EPA). (2 Pages)

Background	
Site Identification	216-B-55 Crib
Site Location	200 East Area; B Plant Zone; west of 225-B and north of 7th Street
Type of Site	Crib
Operating History	The site is marked with concrete AC-540 markers and posted with Underground Radioactive Material signs. The unit is filled with approximately 1380 m^3 (1,800 yd^3) of gravel. A perforated 30 cm (30-in.) diameter galvanized pipe runs the length of the unit, 0.9 m (3 ft) above the bottom. The site had two gage wells of 20 cm (8-in.) steel pipe with a galvanized sheet metal cap. Each well extended from the crib bottom to approximately 0.9 m (3 ft) above grade. The crib was constructed with 19,500 ft^2 of membrane barrier. The site received 1.23 billion liters of steam condensate from 221-B. The crib is adjacent to an area of reoccurring, spreading contamination known as UPR-200-E-64. (WIDS) The crib is 228 m long by 3.1 m wide (750 ft by 10 ft) (WIDS). The depth is uncertain, but appears to be approximately 13 ft deep (H-2-60330). The crib operated from 1967 to 1991 (WIDS). Soil Inventory Model – 216-B-55 (RPP-26744).

Na (kg) 2.490E+03	Al (kg) 9.318E-02	Fe (kg) 4.231E+01	Cr (kg) 1.474E-02	Bi (kg) 9.513E-06	La (kg) 0.000E+00	Hg (kg) 2.936E-06	Zr (kg) 1.259E-06	Pb (kg) 6.649E+00
Ni (kg) 9.903E-04	Ag (kg) 0.000E+00	Mn (kg) 6.044E+00	Ca (kg) 2.273E+04	K (kg) 8.958E+02	NO3 (kg) 6.045E+02	NO2 (kg) 3.579E-01	CO3 (kg) 9.067E+04	PO4 (kg) 5.572E-03
SO4 (kg) 1.245E+04	Si (kg) 2.974E+03	F (kg) 1.596E+02	Cl (kg) 1.058E+03	CCl4 (kg) 0.000E+00	Butanol (kg) 1.754E-08	TBP (kg) 0.000E+00	NPH (kg) 0.000E+00	NH3 (kg) 3.772E-03
Fe(CN)6 (kg) 0.000E+00	H-3 (Ci) 1.770E-04	C-14 (Ci) 3.399E-05	Ni-59 (Ci) 6.417E-06	Ni-63 (Ci) 6.098E-04	Co-60 (Ci) 3.926E-04	Se-79 (Ci) 4.049E-06	Sr-90 (Ci) 2.197E-04	Y-90 (Ci) 2.197E-04
Zr-93 (Ci) 2.412E-04	Nb-93m (Ci) 1.947E-04	Tc-99 (Ci) 1.291E-03	Ru-106 (Ci) 3.687E-10	Cd-113m (Ci) 2.523E-04	Sb-125 (Ci) 5.996E-05	Sn-126 (Ci) 1.683E-05	I-129 (Ci) 7.634E-07	Cs-134 (Ci) 1.353E-07
Cs-137 (Ci) 1.433E-01	Ba-137m (Ci) 1.354E-01	Sm-151 (Ci) 5.316E-02	Eu-152 (Ci) 9.925E-06	Eu-154 (Ci) 7.391E-04	Eu-155 (Ci) 3.411E-04	Ra-226 (Ci) 1.890E-10	Ra-228 (Ci) 8.757E-09	Ac-227 (Ci) 1.119E-09
Pa-231 (Ci) 3.058E-09	Th-229 (Ci) 4.858E-11	Th-232 (Ci) 1.353E-10	U-232 (Ci) 2.324E-09	U-233 (Ci) 1.434E-07	U-234 (Ci) 9.993E-08	U-235 (Ci) 4.173E-09	U-236 (Ci) 2.723E-09	U-238 (Ci) 9.357E-08
U-Total (kg) 2.805E-04	Np-237 (Ci) 4.206E-06	Pu-238 (Ci) 1.969E-06	Pu-239 (Ci) 4.575E-05	Pu-240 (Ci) 1.061E-05	Pu-241 (Ci) 8.933E-05	Pu-242 (Ci) 7.363E-10	Am-241 (Ci) 6.433E-05	Am-243 (Ci) 3.694E-08
Cm-242 (Ci) 2.269E-07	Cm-243 (Ci) 6.970E-09	Cm-244 (Ci) 1.739E-07						

Scoping Summary: 216-B-55 (Crib)



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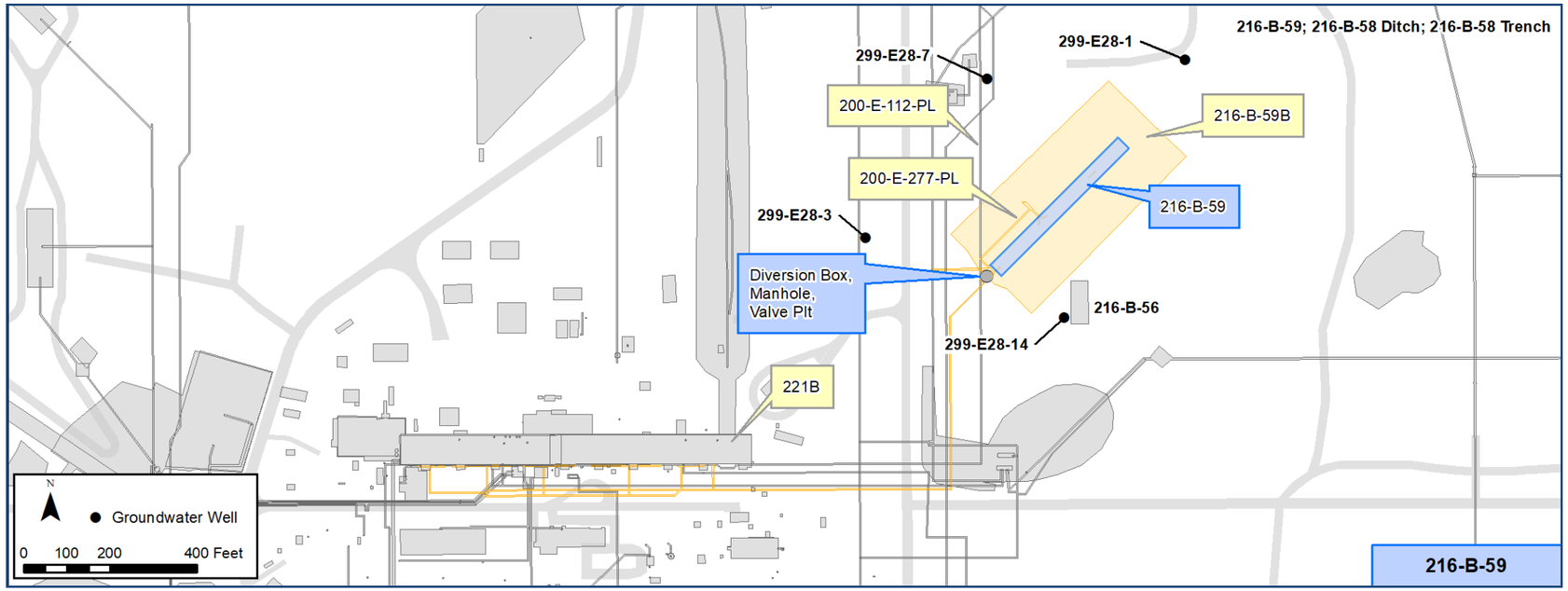
Scoping Summary: 216-B-59 (Trench)

History

The 216-B-59 waste site, located approximately 700 ft northeast of the 221B Facility (B Plant), is an inactive, underground trench that received diverted cooling water from the 221B Plant via the 200-E-277-PL pipeline. The trench was constructed in 1967 to receive the cooling water when its radionuclide concentrations were above those allowed for discharge to existing ponds. The trench received only one single discharge in 1968.

The 216-B-59 Trench was upgraded in 1974 to a retention basin, and was given the waste site identification number 216-B-59B. During construction of 216-B-59B, the trench was almost entirely excavated, removing soil down 14 to 15 feet below ground surface (4 to 5 ft below inlet pipe discharge depth).

The excavated soil was used to create berms on either side of the new retention basin. A portion from the original trench was left to create an overflow area that was eventually filled with soil during a 1983 upgrade. A 2012 radiological survey detected radiation near background levels at surface level.



Construction

- Length: 400 ft
- Depth ~14 ft bgs
- Bottom Width: 20 ft
- Side Slope: 2:1
- Fill: ~4 ft of gravel (backfilled to grade)
- Number of incoming and outgoing pipelines:
  - Incoming Pipelines:1
    - Depth: ~10 ft bgs

Features Of Interest

- Enclosed by a 6 ft chain link fence
- Area is posted URMA
- Manhole (connects to 200-E-112-PL process sewer)
- Valve pit
- Diversion box

Relevant Characterization

- A 1989 surface radiation survey detected no contamination.
- A 2012 surface radiation survey detected < 5000 dpm/100 cm-2 beta/gamma.
- See pg 3 for a depiction of the nature and extent of contamination, as defined by existing data

Waste Streams

- 221B (B Plant) Cooling Water
- Received a single discharge of ~126,000 gal in March 1968.
- Waste likely contained radiological constituents Sr-90 & Cs-137 with total beta of 8.32E-02.

Misc./Other Relevant Information

- Previously associated with Operable Units 200-BP-5, 200-BP-6, 200-CW-1 and 200-MG-1.
- 216-B-59 and 216-B-59B are often grouped together and discussed as one site.
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit determined the preferred removal action to be Removal Treatment and Disposal (RTD). This decision was based on an analogous site evaluation.

Site Interfaces

Origin/Termination

200-IS-1 OU

- 200-E-277-PL

Nearby/Intersecting Sites

200-EA-1 OU

- 216-B-59B Retention Basin

200-IS-1 OU

- 200-E-112-PL

Facility

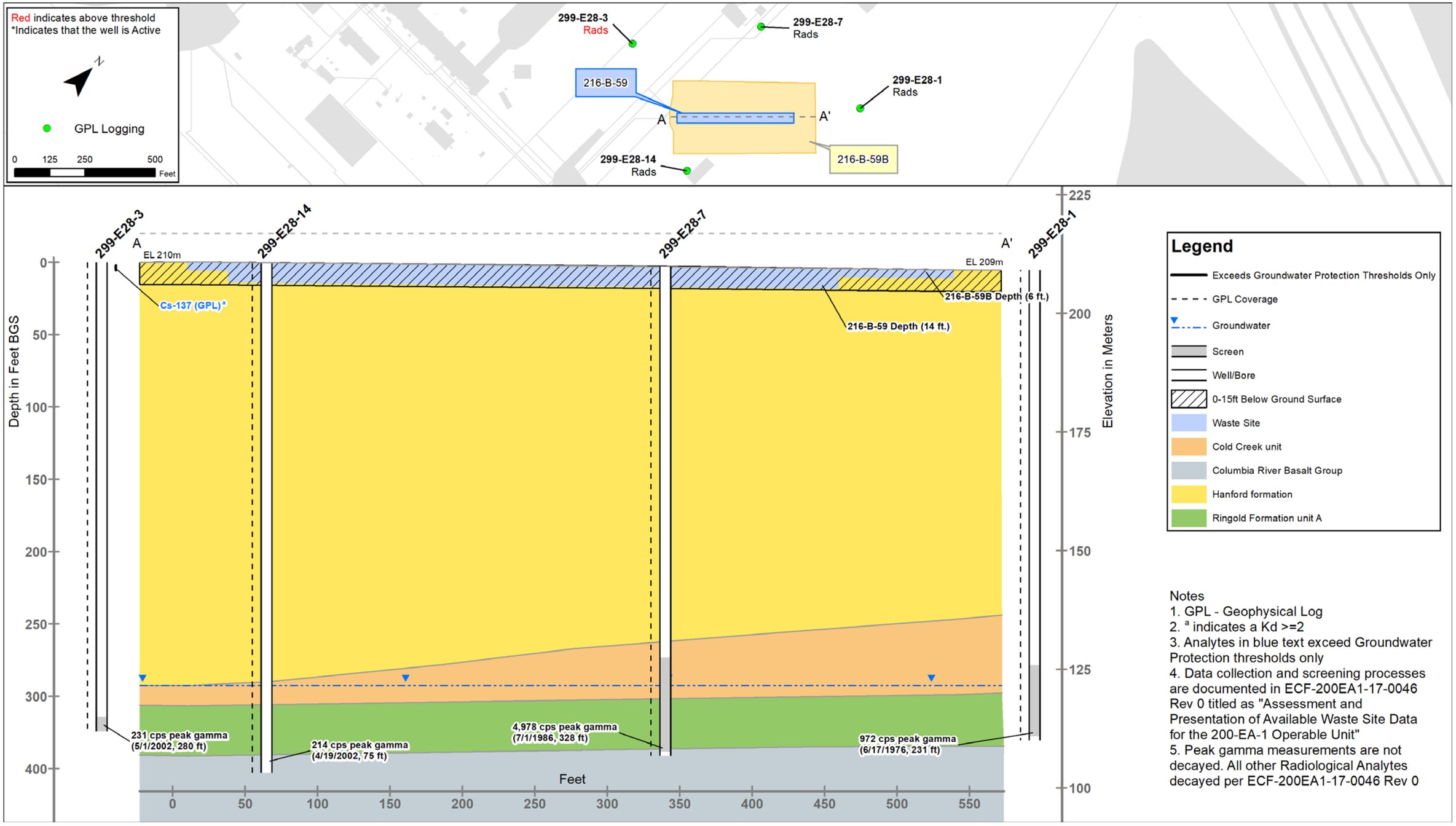
- 221B Building (B Plant)

OU Unassigned

- 216-B-56 Crib (never used)

Scoping Summary: 216-B-59 (Trench)

Scoping Summary: 216-B-59 (Trench)



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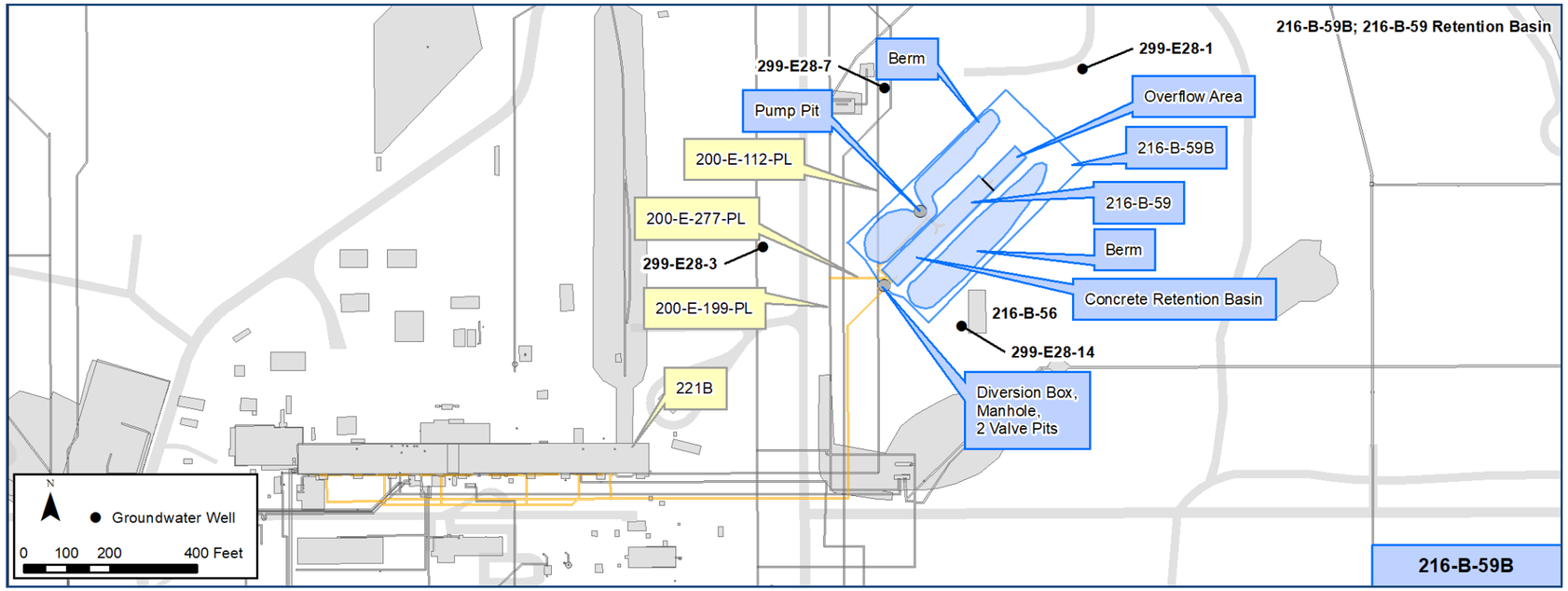
Scoping Summary: 216-B-59B (Retention Basin)

History

The 216-B-59B waste site is an inactive, underground retention basin that was designed to receive 221B (B Plant) cooling water with radionuclide concentrations above those allowed for disposal in the B Pond system. It received waste via the 200-E-277-PL Pipeline and is located approximately 700 ft northeast of the 221B Facility.

In 1974, the original 216-B-59 Trench was converted into a retention basin with a hypalon liner, and assigned site code 216-B-59B. During construction of the retention basin, the 216-B-59 Trench was excavated 4 to 5 feet below the original discharge depth, with the exception of the northeast portion that was left to create an overflow area. In 1978, the 299-E-277-PL Pipeline was connected to the 200-E-199-PL Pipeline and a new valve pit was added, allowing waste to be directed to the 241-B Tank Farm for storage and back to 221-B for reprocessing. In 1983, the hypalon liner was replaced with a concrete liner and cover, and the overflow area was filled with soil. In 1997, the 216-B-59B Retention Basin was isolated by filling the diverter box and manhole with concrete, removing the 2-in ball valve downstream from the retention basin's discharge lines, and installing blind flanges at both ends of the pipe. A 2012 rad survey detected radiation near background levels.



Construction

- Length: 307 ft
- Cover Width: 50 ft
- Bottom Width: 20 ft
- Depth: ~6 ft bgs
- Side Slope: 1:2
- Number of incoming and outgoing pipelines:
  - Incoming Pipelines: 2
    - Pipeline: 1
      - 16" inlet pipe
      - Depth: ~1.5 ft bgs
    - Pipeline: 2
      - 1" pump pit drain pipe
      - Depth: At grade
  - Outgoing Pipelines: 1
    - 3" floor drain pipe
    - Depth: ~6.5 ft bgs

- 216-B-59 and 216-B-59B are often grouped together and discussed as a single waste site.

Features Of Interest

- Enclosed by a 6 ft chain link fence
- Area is posted URMA
- Concrete cover (307' x 50')
- 2 valve pits
- Diversion box
- Pump pit
- Manhole (connects to 200-E-112-PL process sewer)
- 2 berms to north and south of retention basin
  - Spoils of 216-B-59 trench excavation

Relevant Characterization

- A 1989 surface radiation survey detected no contamination.
- A 2012 surface radiation survey detected < 5000 dpm/100 cm-2 beta/gamma.
- *See pg 5 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- 221-B Plant Cooling Water
- Waste likely contained radiological constituents Cs-137, Sr-90, U-238 and Tc-99 and non-radiological constituents As, Cd, Pb, Hg, Se, and PCB (Aroclor-1254).

Misc./Other Relevant Information

- Previously associated with Operable Units 200-BP-5, 200-BP-6, 200-CW-1 and 200-MG-1.
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit determined the preferred removal action to be Removal Treatment and Disposal (RTD) (DOE/RL-2008-44, Rev0). This decision was based on an analogous site evaluation.

Site Interfaces

Origin/Termination

200-IS-1 OU

- 200-E-277-PL

Nearby/Intersecting Sites

200-EA-1 OU

- 216-B-59 Trench

200-IS-1 OU

- 200-E-199-PL
- 200-E-112-PL

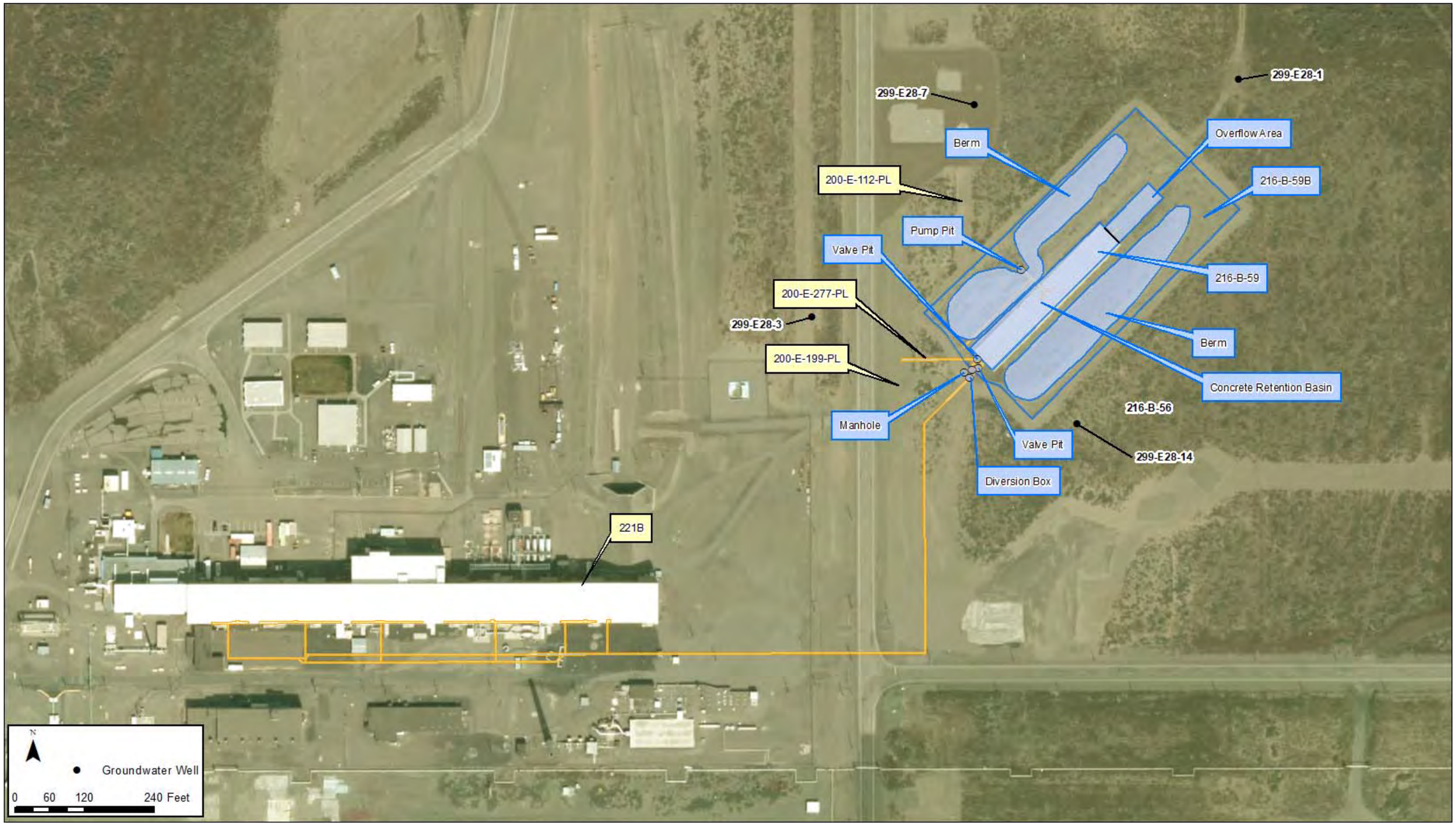
Facility

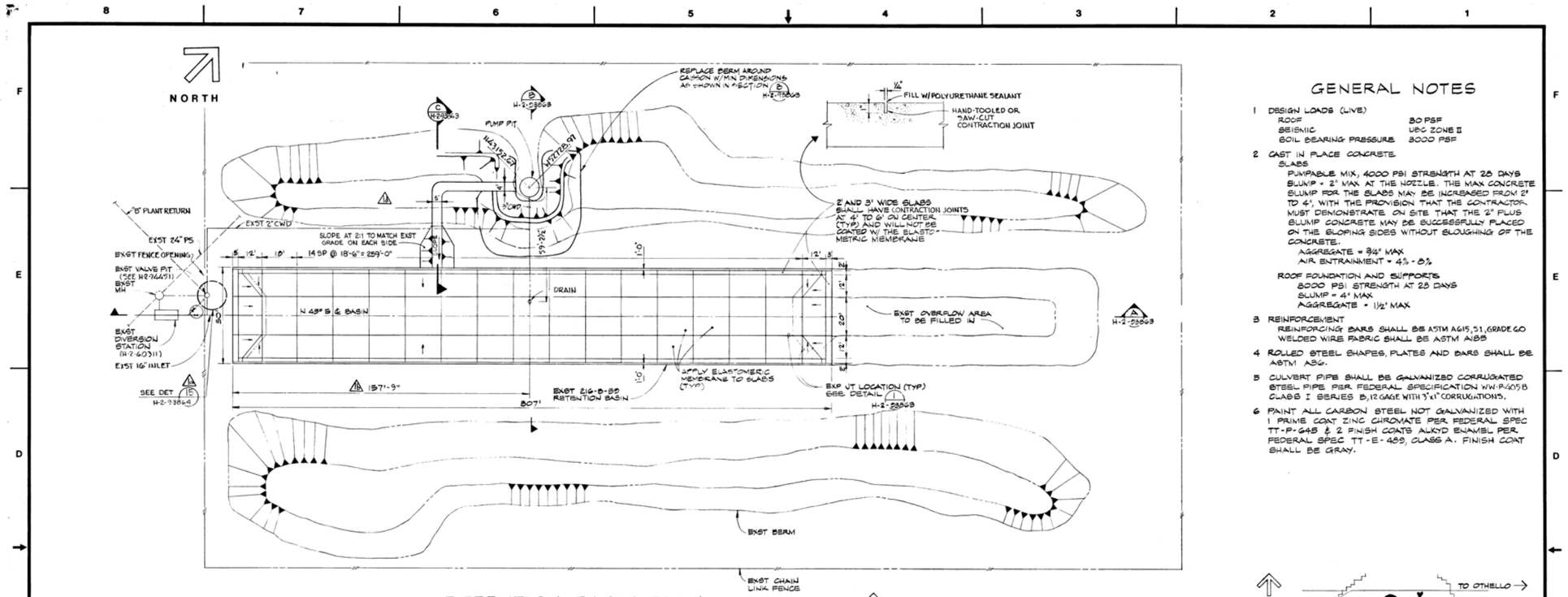
- 221B Building (B Plant)

OU Unassigned

- 216-B-56 Crib (never used)

Scoping Summary: 216-B-59B (Retention Basin)





RETENTION BASIN PLAN

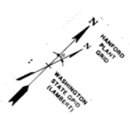
SCALE: 1" = 20'

GENERAL NOTES

1. DESIGN LOADS (LIVE)
   - ROOF — 30 PSF
   - SEISMIC — UBC ZONE II
   - SOIL BEARING PRESSURE — 3000 PSF
2. CAST IN PLACE CONCRETE
   - SLABS
     - PUMPABLE MIX, 4000 PSI STRENGTH AT 28 DAYS SLUMP = 2" MAX AT THE NOZZLE. THE MAX CONCRETE SLUMP FOR THE SLABS MAY BE INCREASED FROM 2" TO 4", WITH THE PROVISION THAT THE CONTRACTOR MUST DEMONSTRATE ON SITE THAT THE 2" PLUS SLUMP CONCRETE MAY BE SUCCESSFULLY PLACED ON THE SLOPING SIDES WITHOUT SLOUGHING OF THE CONCRETE.
       - AGGREGATE = 3/8" MAX
       - AIR ENTRAINMENT = 4% - 8%
   - ROOF FOUNDATION AND SUPPORTS
     - 3000 PSI STRENGTH AT 28 DAYS
     - SLUMP = 4" MAX
     - AGGREGATE = 1 1/2" MAX
3. REINFORCEMENT
   - REINFORCING BARS SHALL BE ASTM A615, S1, GRADE 60
   - WELDED WIRE FABRIC SHALL BE ASTM A185
4. ROLLED STEEL SHAPES, PLATES AND BARS SHALL BE ASTM A36.
5. CULVERT PIPE SHALL BE GALVANIZED CORRUGATED STEEL PIPE PER FEDERAL SPECIFICATION WW-P-405B CLASS I SERIES B, 12 GAGE WITH 3"x1" CORRUGATIONS.
6. PAINT ALL CARBON STEEL NOT GALVANIZED WITH 1 PRIME COAT ZINC CHROMATE PER FEDERAL SPEC TT-P-645 & 2 FINISH COATS ALKYD ENAMEL PER FEDERAL SPEC TT-E-489, CLASS A. FINISH COAT SHALL BE GRAY.

DRAWING LIST

DRAWING NUMBER	DRAWING INDEX	DRAWING TITLE
H-2-93862	0000, 0110	CIVIL - DWG LIST & SITE PLAN
H-2-93863	0401, 0501	CIVIL/STRL-SECTIONS & DETAILS
H-2-93864	0401, 0501	CIVIL/STRL-DETAILS
H-2-93867	0500, 0501	STRL - ROOF PLAN & DETAILS
H-2-93869	7000, 8400	PIPING - 216-B 59 RETENTION BASIN MODIFICATION
H-2-93870	8403	PIPING - PLAN, SECTION & DETAILS 216-B-59 PUMP PIT
H-2-93871 SHT 1	8409	PIPING - SECTIONS & DETAILS
H-2-93871 SHT 2	8409	PIPING - SECTIONS & DETAILS
H-2-93873	7301, 7401, 7501, 8001	ELECTRICAL - PLANS AND DETAILS
H-2-93874	7201, 7302, 7404	ELECTRICAL - DIAGRAMS & DETAILS
B-487-C1		CONSTRUCTION SPECIFICATION



EQUATIONS TO CONVERT COORDINATES FROM HANFORD PLANT GRID TO WASHINGTON STATE GRID (LAMBERT)

$N_L = 405,302.04 - W_H \sin 0 + N_H \cos 0$

$E_L = 2,295,325.01 - W_H \cos 0 - N_H \sin 0$

WHERE: 0 = 0° - 08' - 49.577"

N_H = NORTHING ON HANFORD PLANT GRID

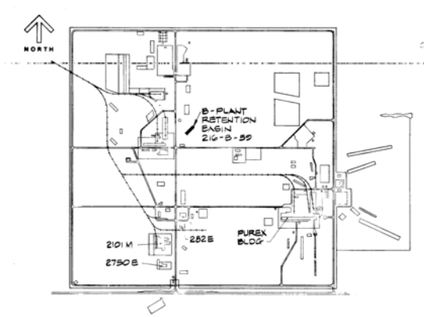
W_H = WESTING ON HANFORD PLANT GRID

N_L = NORTHING ON WASH. STATE GRID

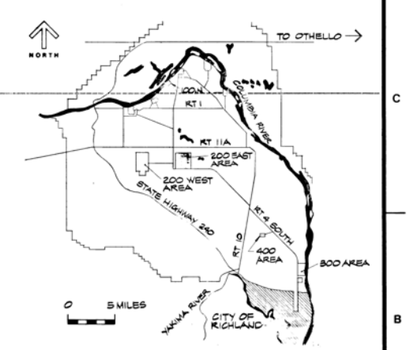
E_L = EASTING ON WASH. STATE GRID

CVI LIST

EPN IDENT	DESCRIPTION	REF DWG	CVI NO.
	BASIN WATER TRANSFER PUMPS (216-B59-P1 & P2)	H-2-93869	



KEY MAP
200 EAST AREA
NO SCALE



VICINITY MAP
NO SCALE

NUMBER	TITLE
H-2-87861	CIVIL PLOT PLAN & DETAILS 221-B EFFLUENT CONTROL

DRAWING TRACEABILITY LIST

NUMBER	TITLE
H-2-60311	CLG WTR HDR-DIV STA PLAN & DETS
H-2-74451	RETEN BASIN 216-B 59 LN REROUTE

DRAWING LIST

REFERENCES

NEXT USED ON

REV	BY-DATE	BY-DATE	REV BY DATE	DESCRIPTION
M	K L Lane 1-17-95	NA	2-1-95	AS-BUILT FOR PROJ B-487
	RHO	KEH APPROVAL		a) DFC B-487-11 Z E6
	APPROVAL			c) REC/CHG Z B-6 ADDED CVI
				b) DFC B-487-1 Z D-7
				b) DFC B-487-6 Z E-8

REVISIONS

COMMENT REVIEW

MICROFILMED

	DATE
ENGINEERING APPROVAL BY	6/9/95
PROJ ENGR	6/9/95
APPROVED BY	6/19/95
SAFETY	6/19/95
APPROVED BY	6/19/95
CHECKED BY	6/19/95
DRAWN BY K. NOYES	6/19/95
DESIGNED BY S. Langevin	6/19/95
CLASSIFICATION BY NONE NOT REQD	

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

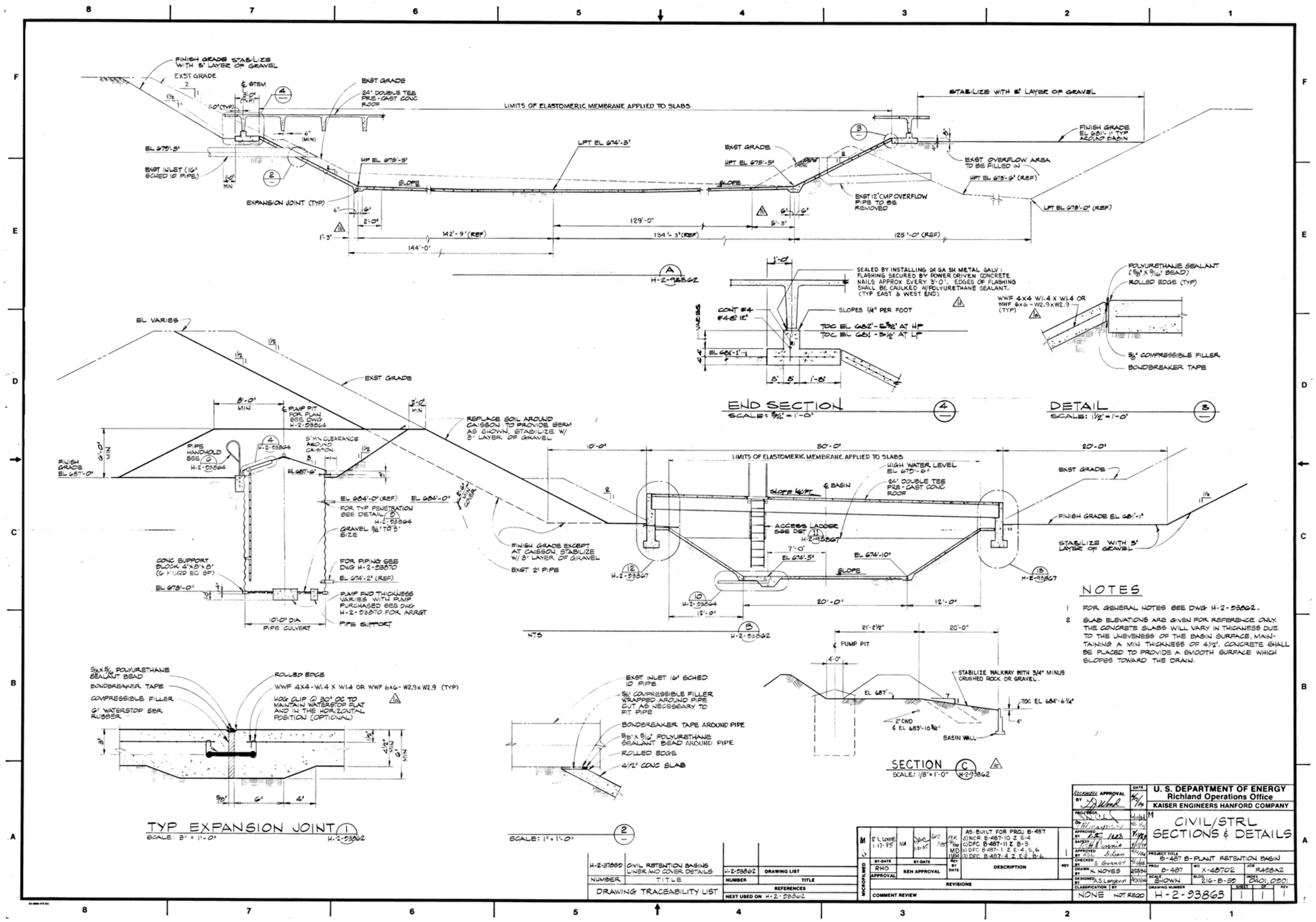
M CIVIL
DWG LIST & SITE PLAN

PROJECT TITLE: B-487 B-PLANT RETENTION BASIN

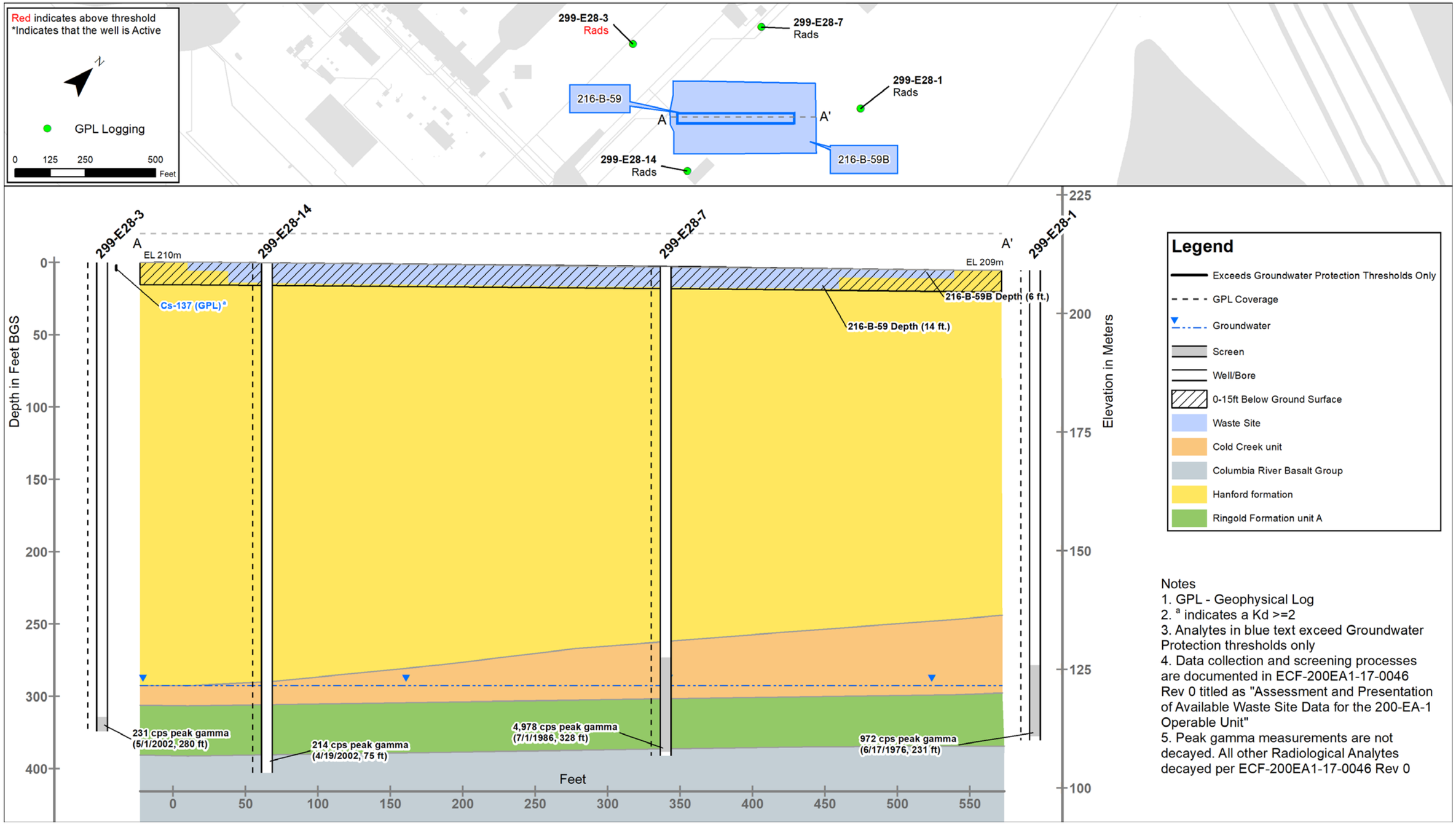
PROJ	WO	JOB
B-487	X-48702	445842

SCALE	BLDG	INDEX
SHOWN	216-B-59	0000, 0110

DRAWING NUMBER	SHEET	OF	REV
H-2-93862	1	1	1


END SECTION
DETAIL
TYP EXPANSION JOINT
SECTION
NOTES
1 FOR GENERAL NOTES SEE DWG H-2-93862.
2 SLAB ELEVATIONS ARE GIVEN FOR REFERENCE ONLY. THE CONCRETE SLABS WILL VARY IN THICKNESS DUE TO THE UNEVENESS OF THE BASIN SURFACE, MAINTAINING A MIN THICKNESS OF 4½". CONCRETE SHALL BE PLACED TO PROVIDE A SMOOTH SURFACE WHICH SLOPES TOWARD THE DRAIN.
U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY
CIVIL/STRL SECTIONS & DETAILS
B-487 B-PLANT RETENTION BASIN
H-2-93863
DRAWING TRACEABILITY LIST
H-2-93862 CIVIL RETENTION BASINS LINER AND COVER DETAILS

Scoping Summary: 216-B-59B (Retention Basin)



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Scoping Summary: 216-B-62 (Crib)

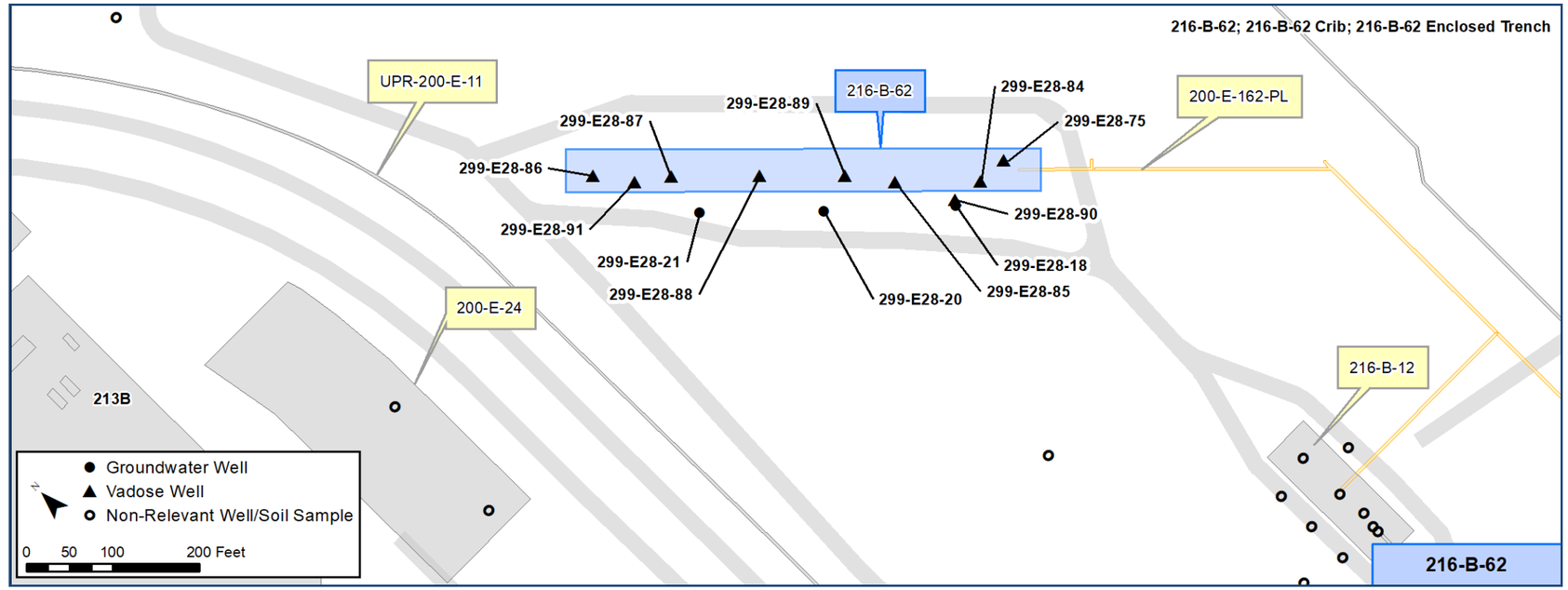
History

The 216-B-62 waste site is an inactive crib that received alkaline, low salt, radioactive process condensate liquid waste from the B Plant via the 200-E-162-PL pipeline.

The crib was constructed in 1969 and put on standby until 1973, when it replaced the retired 216-B-12 Crib. In 1983, the crib was the subject of a waste disposal evaluation, as monitoring data indicated that Cs-137 had migrated approximately a third of the distance from the crib bottom to the water table. Additional characterization showed the bulk of the Cs-137 inventory was contained within 55 feet of ground surface.

The crib remained in use until September 1991, when it was retired, per TPA milestone M-17-26. To isolate the crib, the valve in 221BF (Condensate Effluent Discharge Facility) was removed and replaced with a blind flange.

During a routine radiation survey in 1997, two riser cap interiors had smearable contamination from 3,000-6,000, and 1,000-1,500 dpm (type of radiation not noted in documentation). The surrounding ground surface and vegetation had none.



Construction

- Length: 500 ft
- Width: 10 ft
- Depth: 15 ft bgs
- Gravel fill, at bottom of trench: 4 ft deep
- Gravel is covered with plastic sheets, then a layer of sand, and the rest of the trench is back-filled with the material removed from the trench

- Ground Elevation: 697 ft
- Water Table: 289 ft bgs

- *Page 3 includes Sections & Details of the Enclosed Trench 216-B-62, from 1967 (H-2-34525).*

Features Of Interest

- Perforated, 6-in. fiberglass-reinforced epoxy pipe runs the length of the crib, 3 ft from the bottom in the gravel.
- Three crib risers, one for venting, one to monitor liquid levels in crib, and one connected to distributor pipe.

Relevant Characterization

- Annual routine radiological suface surveys above the crib have no detections.
- 1983 investigation into the crib and potential for Cs-137 mobilizing downward suggested crib could be used for 20 more years with no long-term groundwater impacts. The bulk of Cs-137 contamination was from 10-to-60 ft bgs.
- *See pages 4 and 5 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- Received ~74,496,000 gal alkaline, low salt, radioactive process condensate waste from B Plant; included ammonium.
- 1998 radionuclide curies inventory included: 6.03E+1 of Sr-90, 1.09E+02 of Cs-137, 5.24E-13 of U-233, 2.02E-11 of U-235, 2.28E-03 of Pu-239/40 and <1.01E-01 of Am-241.

Misc./Other Relevant Information

- An evaluation of crib waste in 1983 revealed groundwater monitoring well 299-E28-18 required remedial repair to prevent additional crib wastes from reaching the water table by migrating down the well casing. The well was not providing an accurate picture of waste migration through the sediment column.

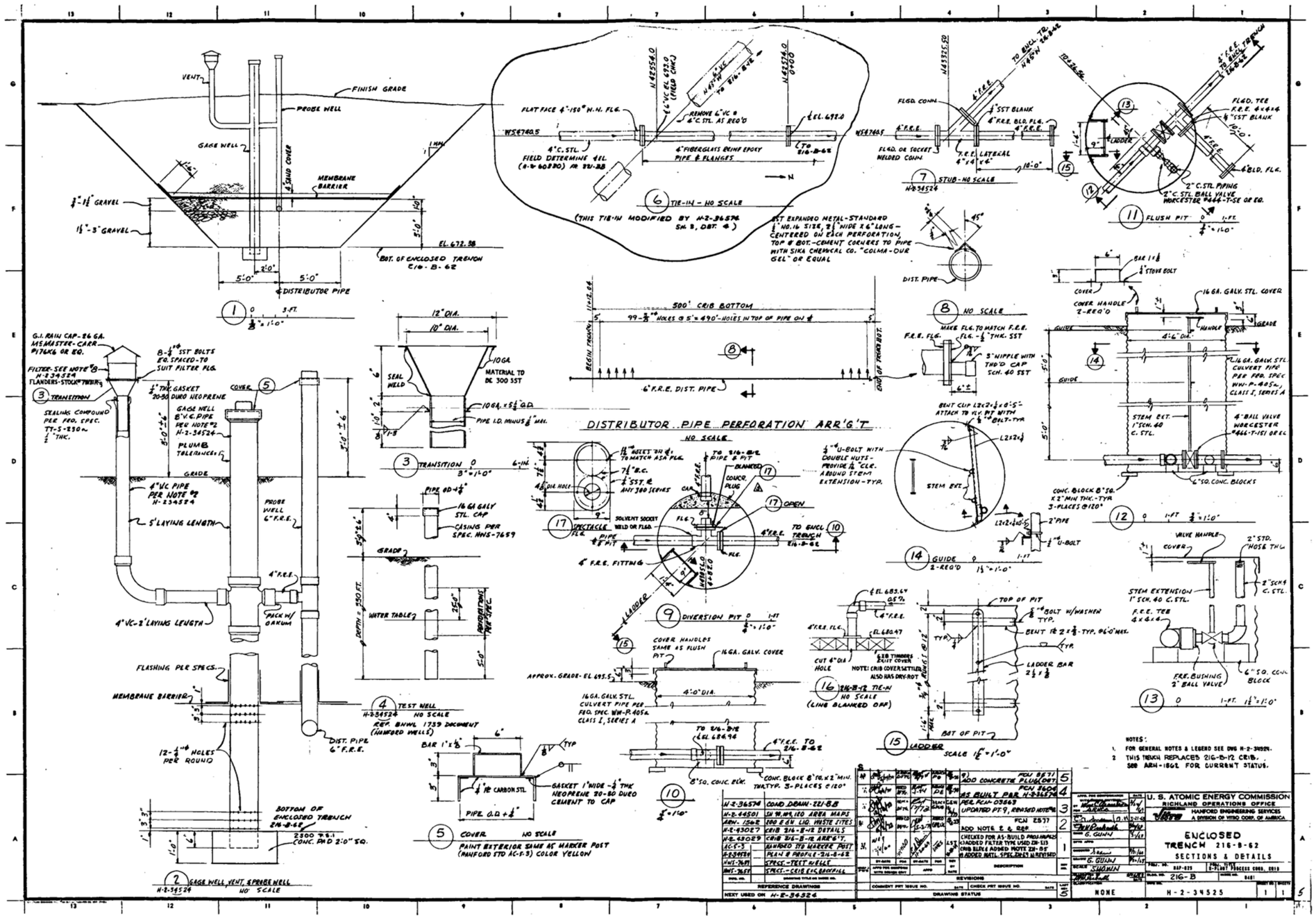
Site Interfaces

Site Intersect:
200-IS-1 OU
- 200-E-162-PL

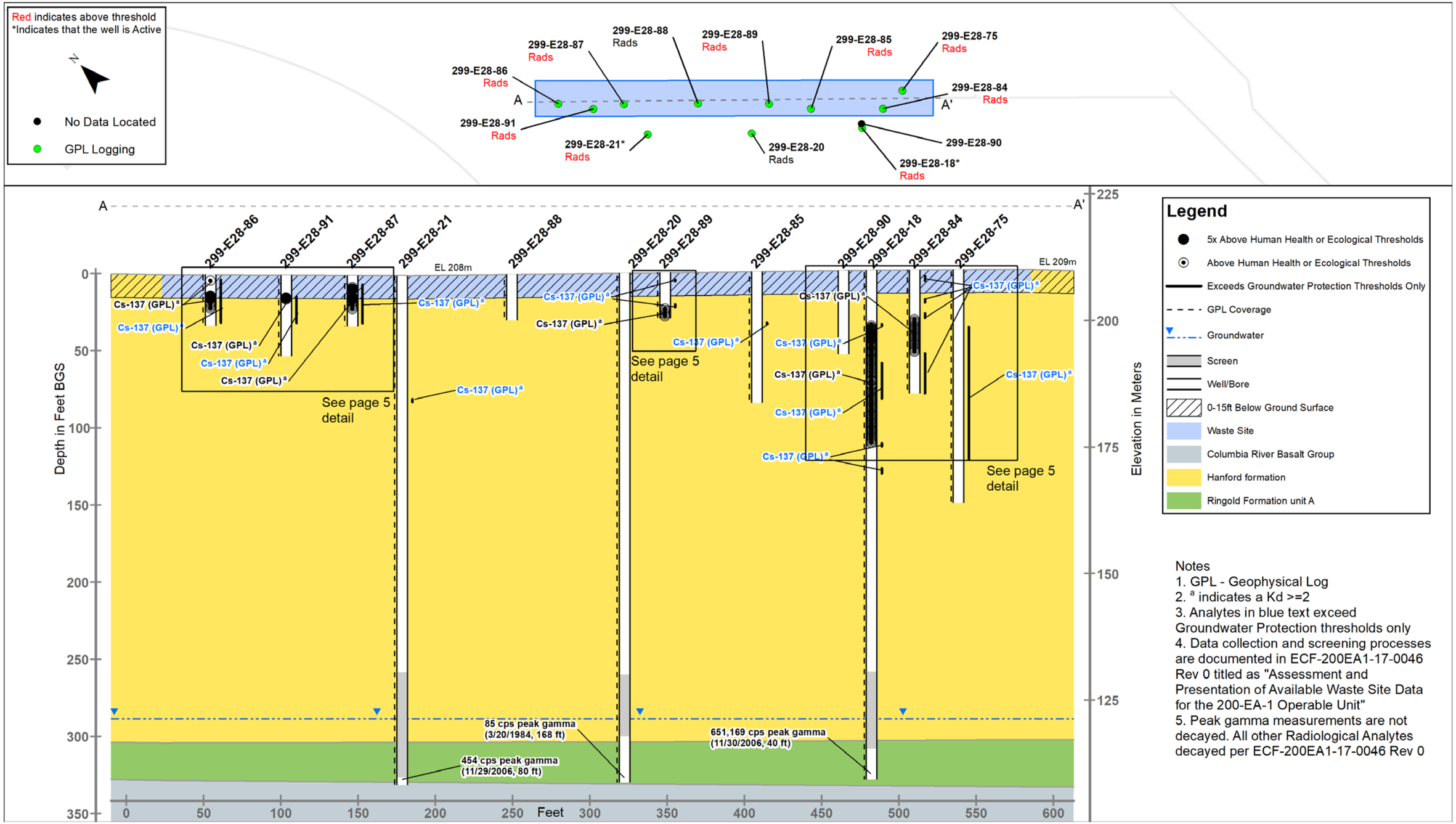
Nearby Sites:
200-OA-1 OU
- UPR-200-E-11 (Railroad Track Contamination Spread)

- 200-E-24 (Active; Septic System)

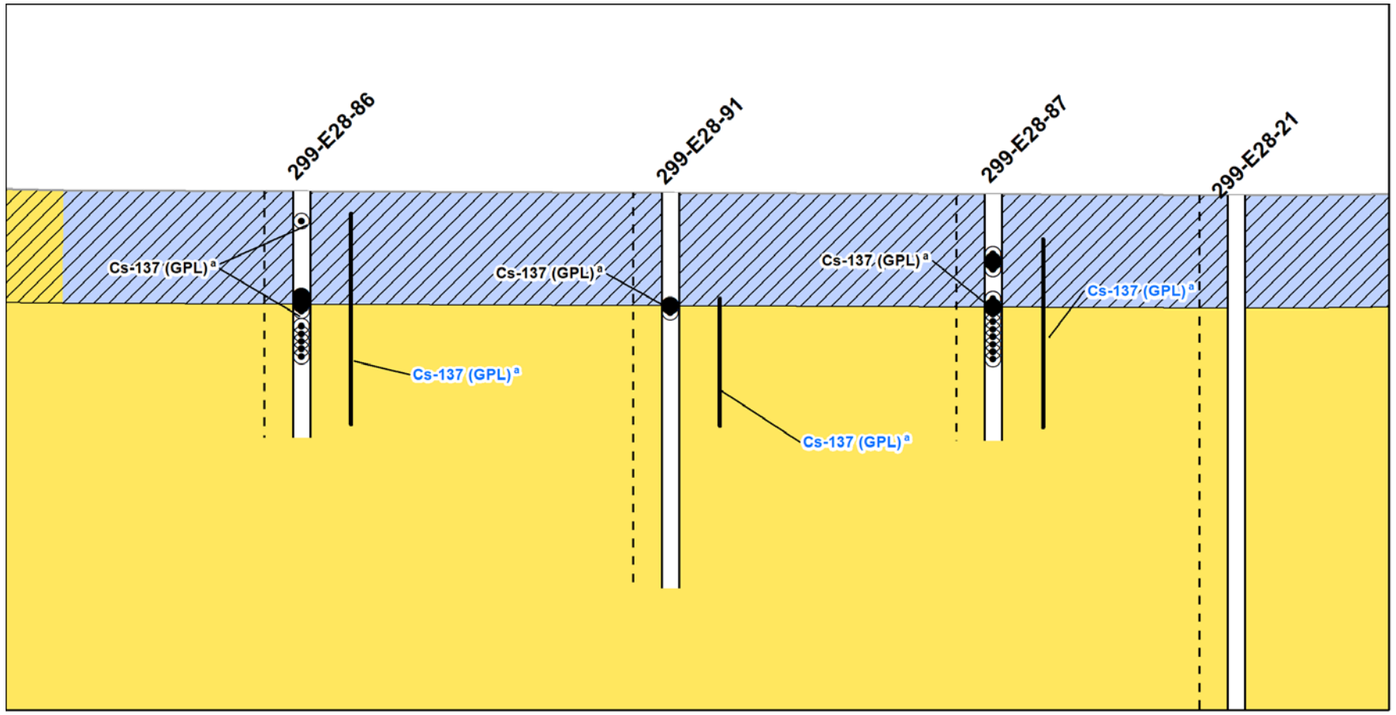
Scoping Summary: 216-B-62 (Crib)

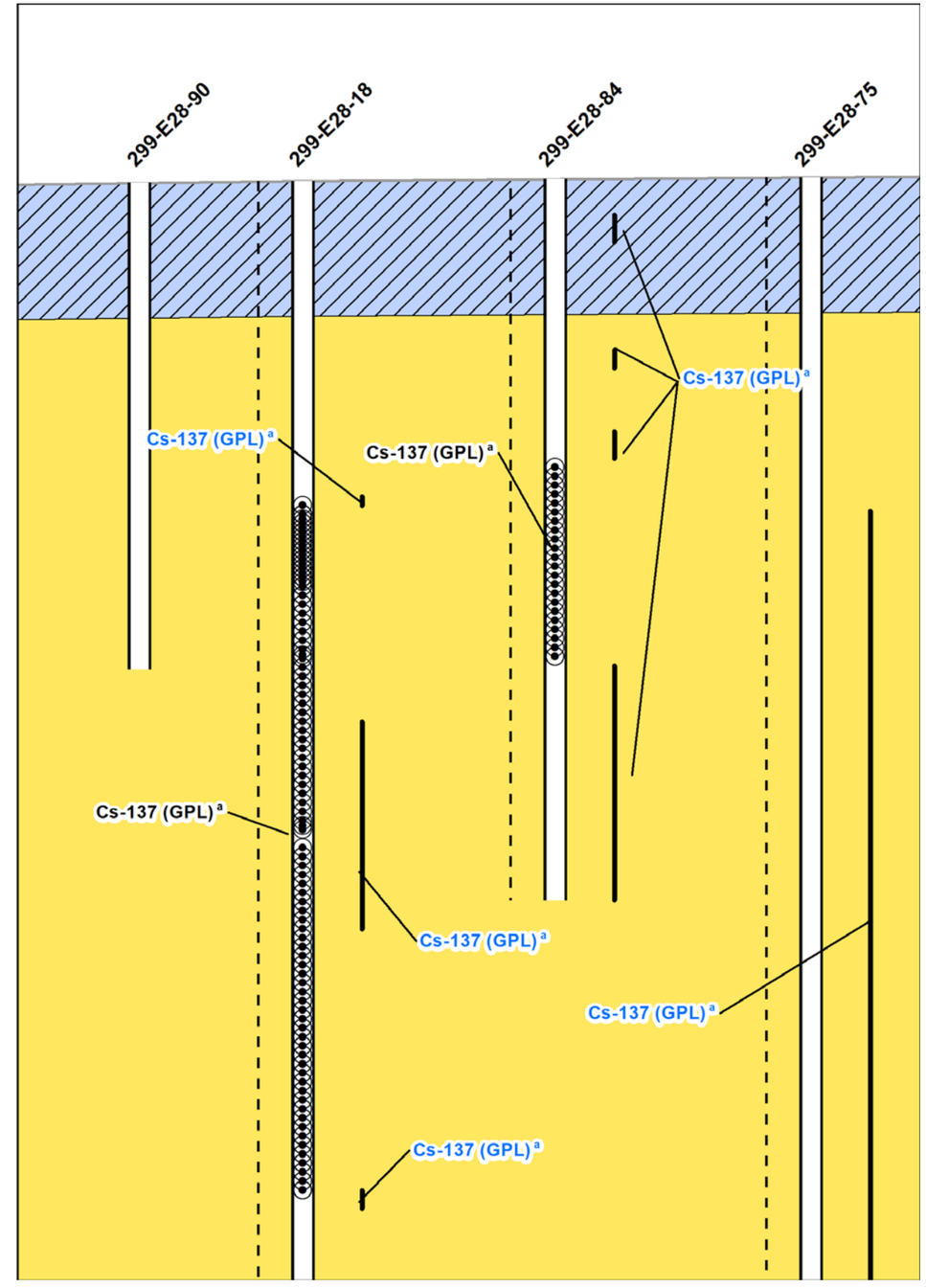

DISTRIBUTOR PIPE PERFORATION ARR'G'T
NO SCALE
U.S. ATOMIC ENERGY COMMISSION
RICHLAND OPERATIONS OFFICE
HANFORD ENGINEERING SERVICES
ENCLOSED TRENCH 216-B-62
SECTIONS & DETAILS
216-B
NONE
H-2-34525
REVISIONS
DRAWING STATUS
REFERENCE DRAWINGS
NEXT USED ON H-2-34526
NOTES:
1. FOR GENERAL NOTES & LEGEND SEE DWG H-2-34524.
2. THIS TRENCH REPLACES 216-B-12 CRIB. SEE ARH-1862 FOR CURRENT STATUS.

Scoping Summary: 216-B-62 (Crib)



Scoping Summary: 216-B-62 (Crib)

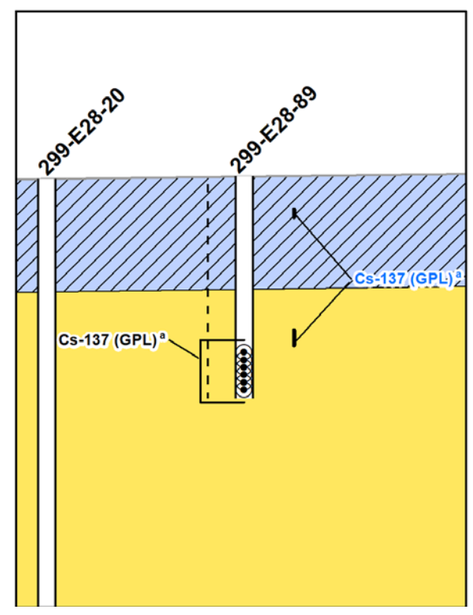




Legend

- 5x Above Human Health or Ecological Thresholds
- Above Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- GPL Coverage
- Well/Bore
- 0-15ft Below Ground Surface
- Waste Site
- Hanford formation

Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0



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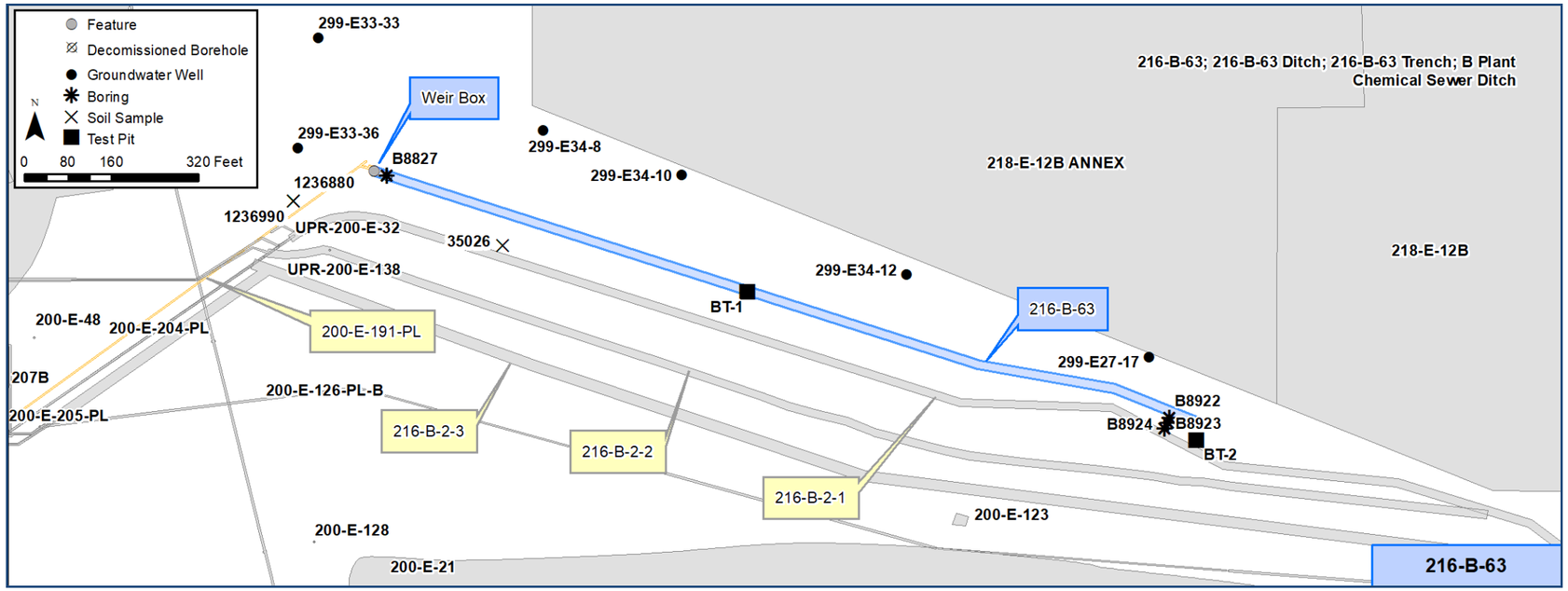
Scoping Summary: 216-B-63 (Ditch)

History

The 216-B-63 waste site is an inactive percolation trench that received cooling water and chemical sewer waste via the 200-E-191- PL pipeline from the B Plant Facility. The trench was constructed in the 1960s and operational from 1970 to 1992, when all discharges to the trench were ceased and rerouted into the 216-B-3 Pond. In August 1970, the trench was dredged out with readings at approximately 3,000 cpm. Dangerous waste (D0002) was received from 1970-85. In March and April of 1987, there were two incidental releases of corrosive, nitric acid waste that may have discharged into the ditch. By December 1994, the ditch was backfilled with clean fill and permanently isolated by filling the weir box at the head of the ditch with concrete.

In 2003 the trench was investigated pursuant to the 200-CS-1 OU RI/FS Work Plan and RCRA TSD Sampling Plan (DOE/RL-99-44). This plan was approved by Ecology in October of 2000. The data collected and associated risk assessment were documented originally in the RI Report (DOE/RL-2004-17, Rev. 0) and updated in the FS approved for public release in 2008 (DOE/RL-2005-63, Rev.0). The RI/FS data indicate that the trench meets clean closure standards. A closure/postclosure plan (DOE/RL-2006-11, Rev. 1) was submitted in 2008. A revised closure plan is being prepared.



Construction

- Length: 1,600 ft
- Width:
  - 38 ft Top
  - 8 ft Bottom
- Depth: 10 ft
- Side Slope: 1.5:1

Features Of Interest

- 5 ft of 16-in carbon steel pipe horizontally at crib head
- One weir box at crib head filled with concrete
- Clean soil/gravel cover
- 6 wells in current groundwater monitoring network (DOE/RL-2008-60 Rev. 1)
- ~1ft depth of bottom rock fill, full ditch width, for 10 ft (See figures pg 2)

Relevant Characterization

- In 2002, rad survey records of soil with total beta readings at 410 cpm (6 ft deep) & 1,500 cpm at 7.5 ft.
- In 2003, multiple bucket readings of soil, highest measure of total beta at 254 cpm.
- See pg 3 for a depiction of the nature and extent of contamination, as defined by existing data.
- For additional nature and extent of contamination refer to characterization data associated with 216-B-2-1 and 216-2-2.

Waste Streams

- Waste Source: B Plant - Bismuth Phosphate Process (BiPO4) and Drain Wastes & Cooling Water (1970-1992)
- Major Sources from B Plant (221B, 222B, 225B, 271B) and 2902B High Tank that includes: chemical sewer waste, cooling water, air-compressor after-coolers, steam condensate, demineralizer effluent (1970-1992)
- Dangerous waste (D0002) was received from 1970-85
- Cumulative waste volume: 2.1 billion gal
- Radionuclides inventory includes: Sr-90, Cs-137, Tc-99, Pu-239/40, U-233, U-235, Am-241 (decayed to Dec 1998; see HNF-1744 pg ATT C-30).
- Radiological discharges to trench: total beta discharge of 8.7 curies and 16.7 pounds of uranium

Misc./Other Relevant Information

- June 2014 RCRA Closure Plan concluded there was no specific evidence of impact to groundwater from hazardous waste disposed in the trench (DOE/RL-2006-11, Rev. 1)
- The 216-B-2-2 was investigated in 2000. Data indicates rad and metal contamination

Site Interfaces

Origin/Termination

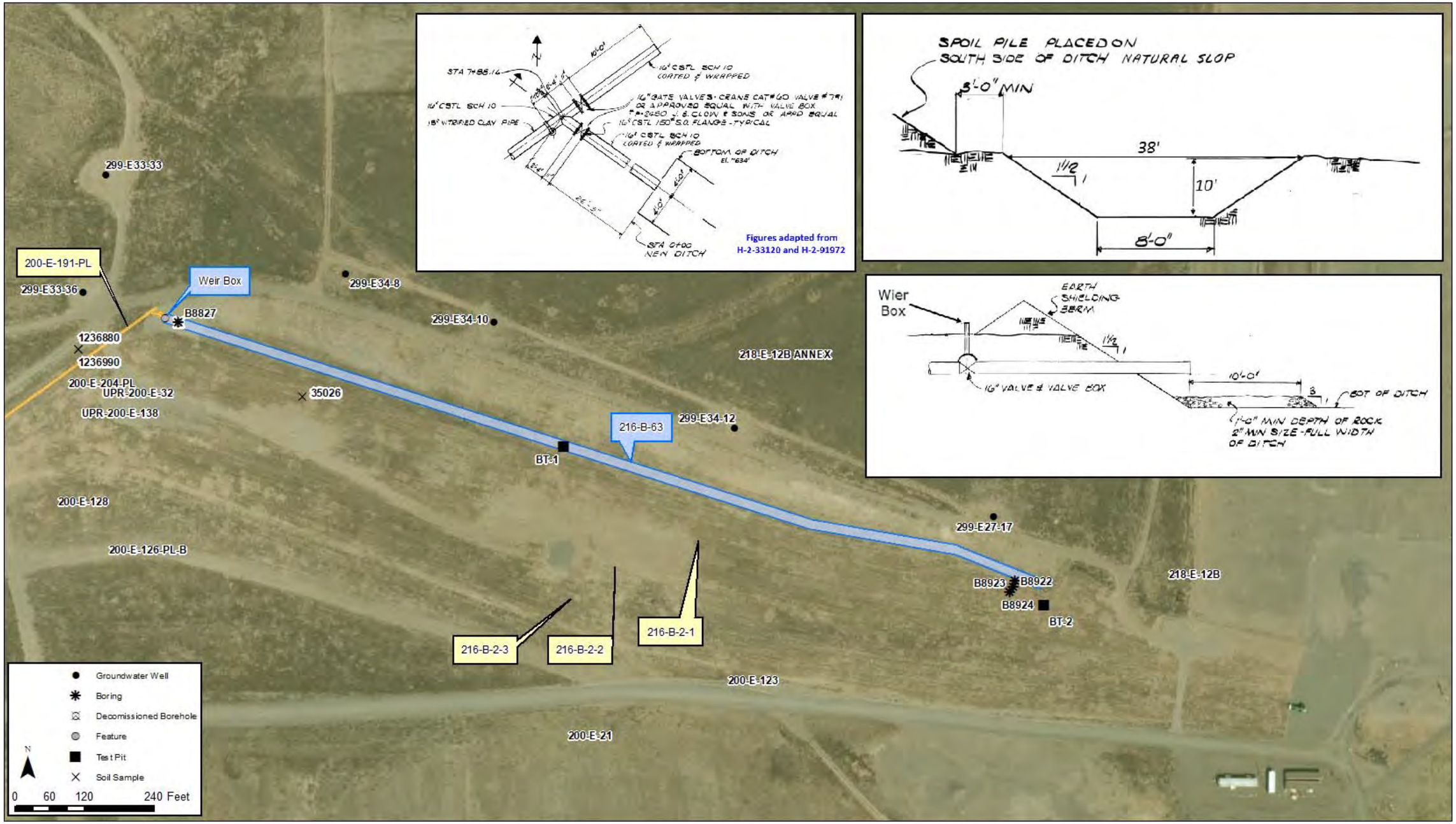
200-IS-1

- 200-E-191-PL

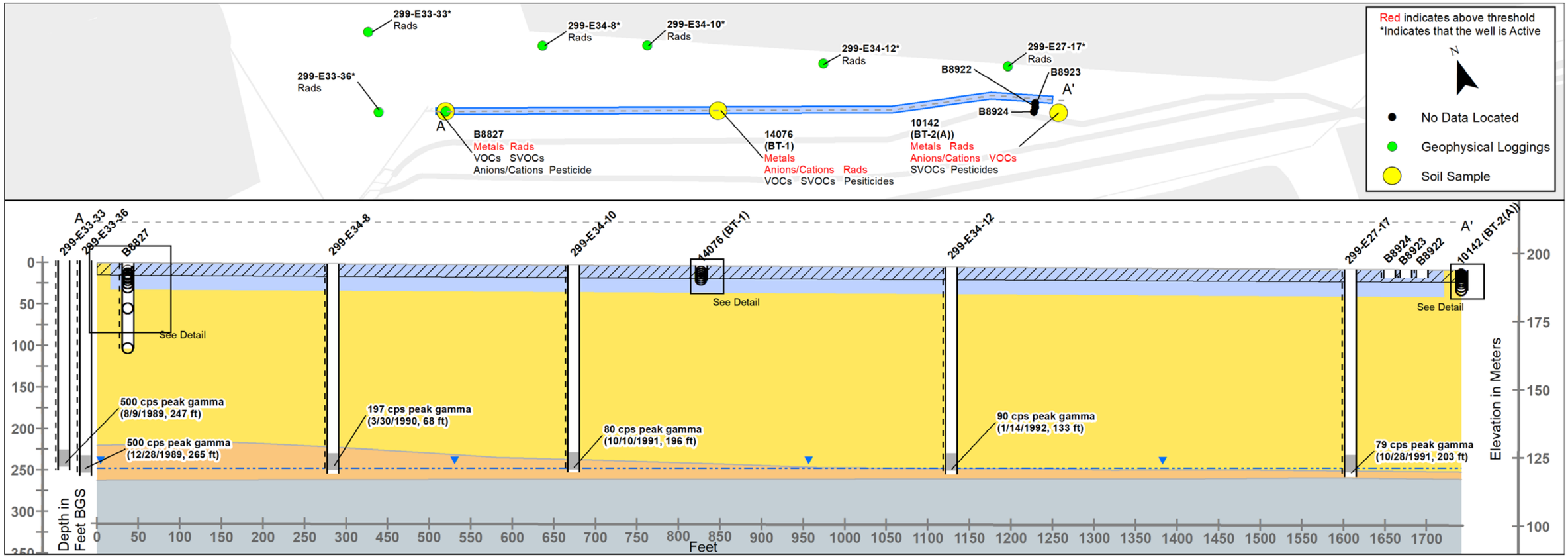
Intersecting/Nearby Sites

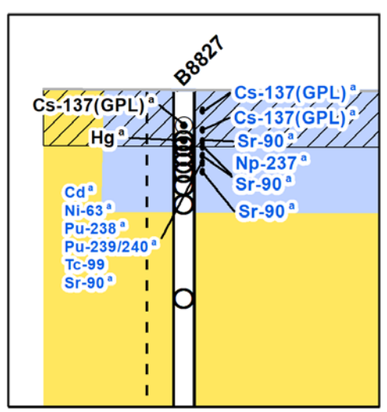
200-EA-1

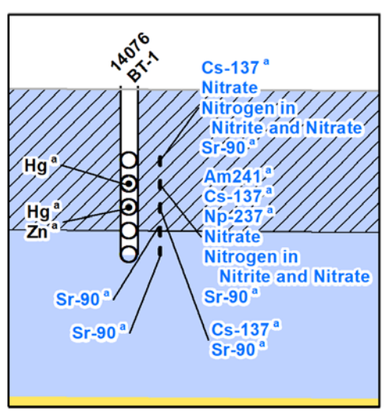
- 216-B-2-1
- 216-B-2-2
- 216-B-2-3

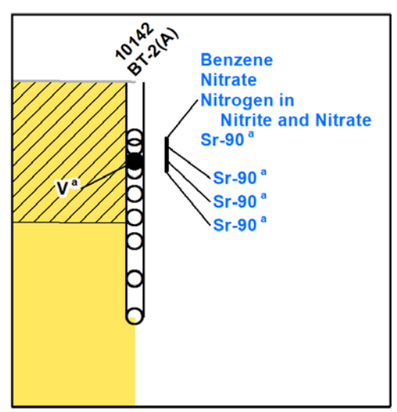

Figures adapted from H-2-33120 and H-2-91972
SPOIL PILE PLACED ON SOUTH SIDE OF DITCH NATURAL SLOP
5'-0" MIN
38'
1 1/2 1
10'
8'-0"
Wier Box
EARTH SHIELDING BERM
16" VALVE & VALVE BOX
10'-0"
BOT OF DITCH
1'-0" MIN DEPTH OF ROCK 2" MIN SIZE - FULL WIDTH OF DITCH
299-E33-33
200-E-191-PL
299-E33-36
Weir Box
B8827
299-E34-8
299-E34-10
1236880
1236990
200-E-204-PL
UPR-200-E-32
UPR-200-E-138
35026
218-E-12B ANNEX
216-B-63
299-E34-12
BT-1
200-E-128
299-E27-17
200-E-126-PL-B
B8923
B8922
B8924
BT-2
218-E-12B
216-B-2-3
216-B-2-2
216-B-2-1
200-E-123
200-E-21
Groundwater Well
Boring
Decomissioned Borehole
Feature
Test Pit
Soil Sample
N
0 60 120 240 Feet

Scoping Summary: 216-B-63 (Ditch)









Legend

- 5x Above Human Health or Ecological Thresholds
- Above Human Health or Ecological Thresholds
- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- GPL Coverage
- Groundwater
- Screen
- Well/Bore
- 0-15ft Below Ground Surface
- Waste Site
- Cold Creek unit
- Columbia River Basalt Group
- Hanford formation

Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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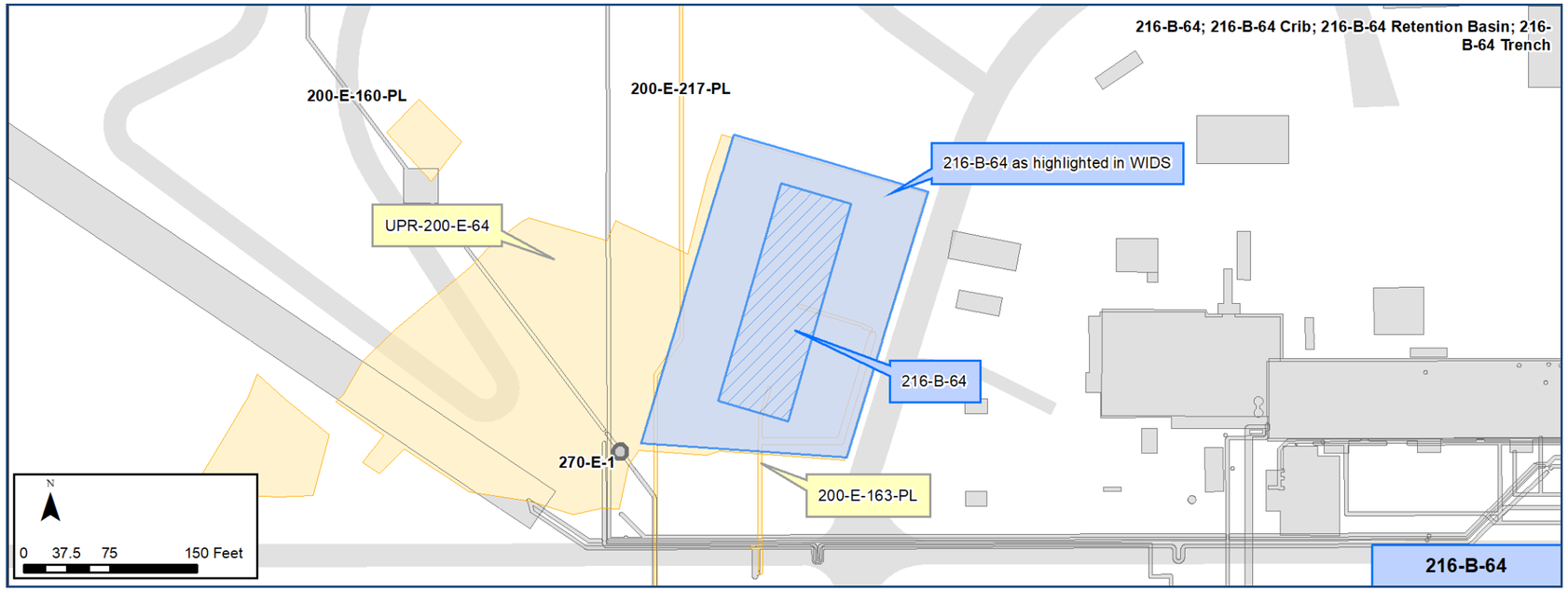
Scoping Summary: 216-B-64 (Retention Basin)

History

The 216-B-64 waste site is an inactive, underground Emergency Retention Basin that was designed to receive steam condensate waste from the B Plant Facility via the 200-E-163-PL pipeline. The basin is located west of the 221B building (B Plant). The basin was constructed in 1974 and considered operational from 1974 to 1997, when it was deactivated and posted as a Soil Contamination Area (SCA).

Aside from an initial test, the basin was unused and kept in a standby condition to support emergency use, which was never needed. In 2001, the site was backfilled with clean fill material as part of the stabilization efforts associated with UPR-200-E-64. The basin's concrete roof was not covered. The area surrounding the basin was radiologically surveyed and reposted with Underground Radioactive Material signs.



Construction

- Length: 167 ft
- Width: 42 ft
- Depth: 14 ft
- Side Slope: 2:1
- Capacity: 50,000 gal
- Material: Concrete
- Number of incoming and outgoing pipelines:
  - Incoming Pipelines: 1
  - Outgoing Pipelines: 1
- Divided into two 20-ft by 65-ft sections, each with a liner placed on 3 in. of sand

Features Of Interest

- Two large rubber bladders, flow gates, and pump to transfer condensate water to 216-B-55 or 221B
- During the 2001 UPR-200-E-64 stabilization efforts, electrical service to the instrument rack (located between Atlanta Avenue and 216-B-64) and pump pit was disconnected, and the area was covered with clean fill material.
- The swab riser, located just west of the middle of the 216-B-64 western boundary fence that is associated with UPR-200-E-64, was filled with foam, flattened, and buried in place.

Relevant Characterization

- A 1985 radiological survey reported spotty contamination to 20,000 cpm inside the north, west and south fences of 216-B-64, as well as contaminated anthills and spots to 12mrad/hr and the swab riser pipe west of the site to 30 mrad/hr
- A 2012 radiological survey included the 216-B-64 Basin and did not encounter any biological hazards.

Waste Streams

- Capable of receiving steam condensate waste from 221B (B Plant). Retention basin was not used except for an initial test (no waste was introduced to the system)

Misc./Other Relevant Information

- The site is marked with URM signs
- The site is associated with UPR-200-E-64, radiological speck contamination that spans an approximately 2-acre area and includes the retention basin. The source of the contamination is believed to be a swab riser associated with an underground tank farm line, and the contaminated soil migrated to the area via wind and animal (harvester ants) intrusion.

Site Interfaces

Origin/Termination

OU Unassigned

- 200-E-163-PL (rejected site)

Intersecting/Nearby Sites

200-EA-1 OU

- 270-E-1
- UPR-200-E-64

200-IS-1 OU

- 200-E-160-PL
- 200-E-217-PL

Scoping Summary: 216-B-64 (Retention Basin)

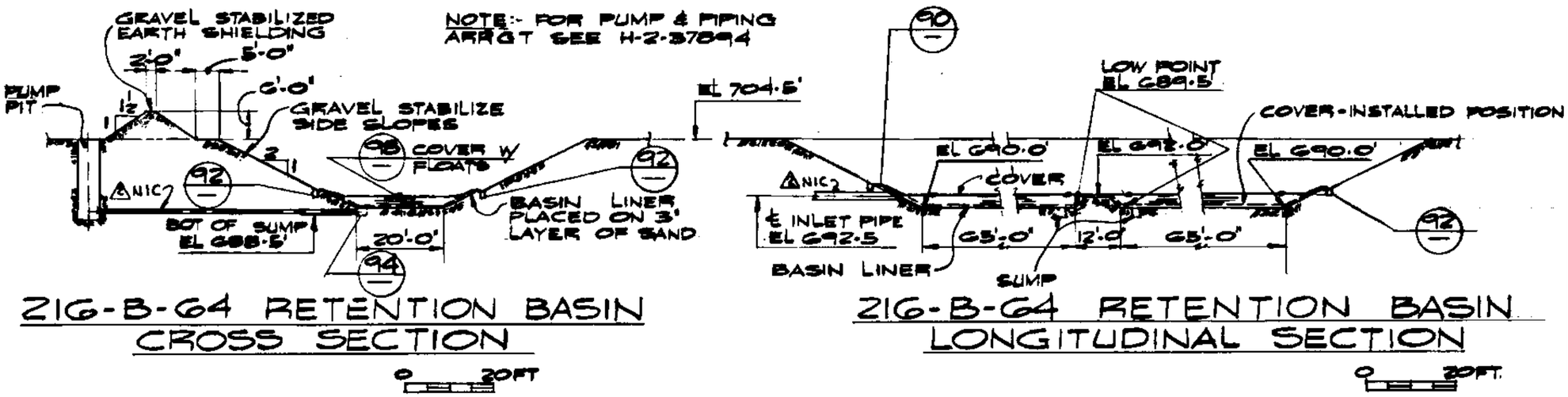


Figure 1
Cross Section and Longitudinal Section of 216-B-64

Source: H-2-37859

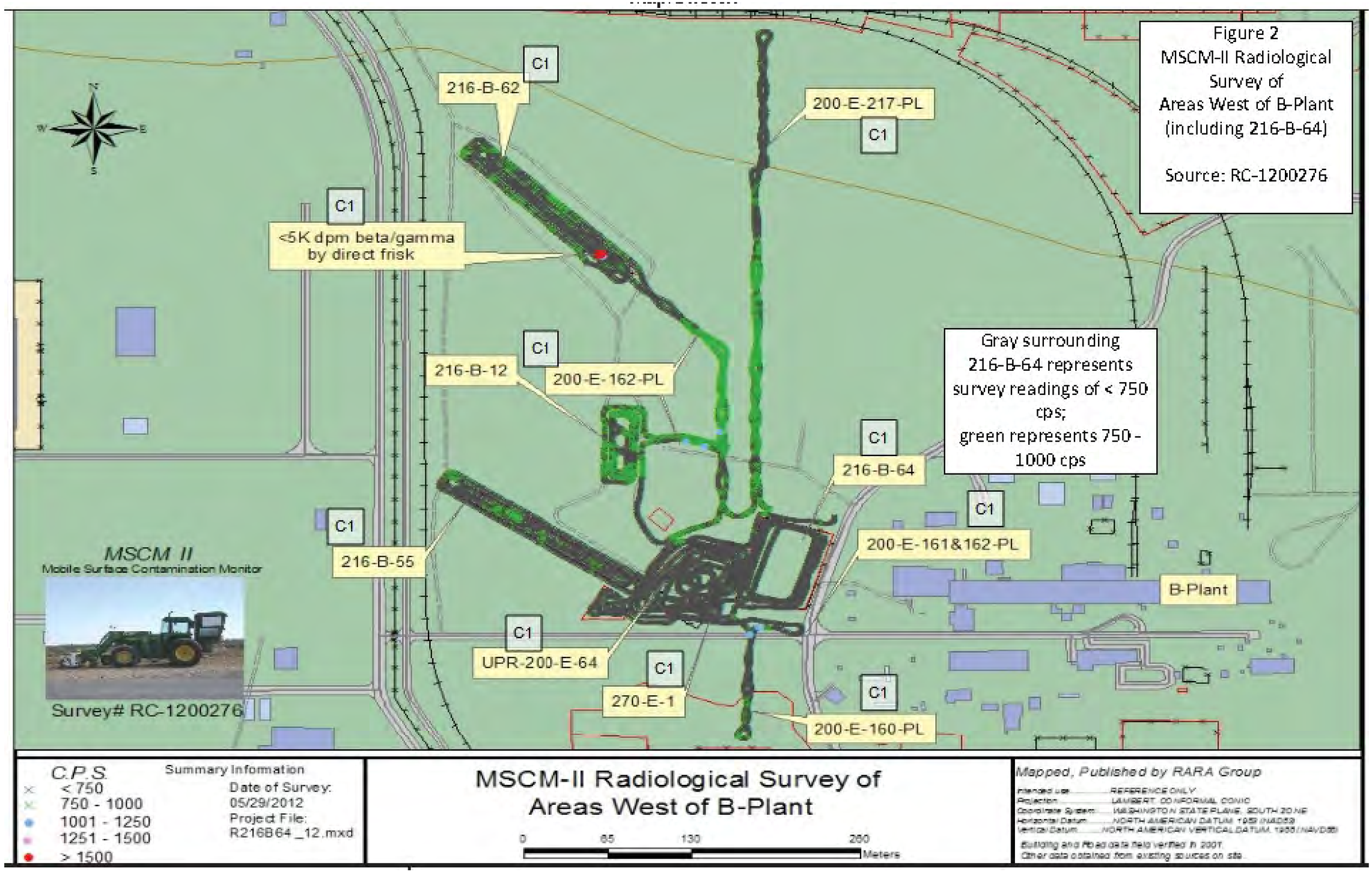
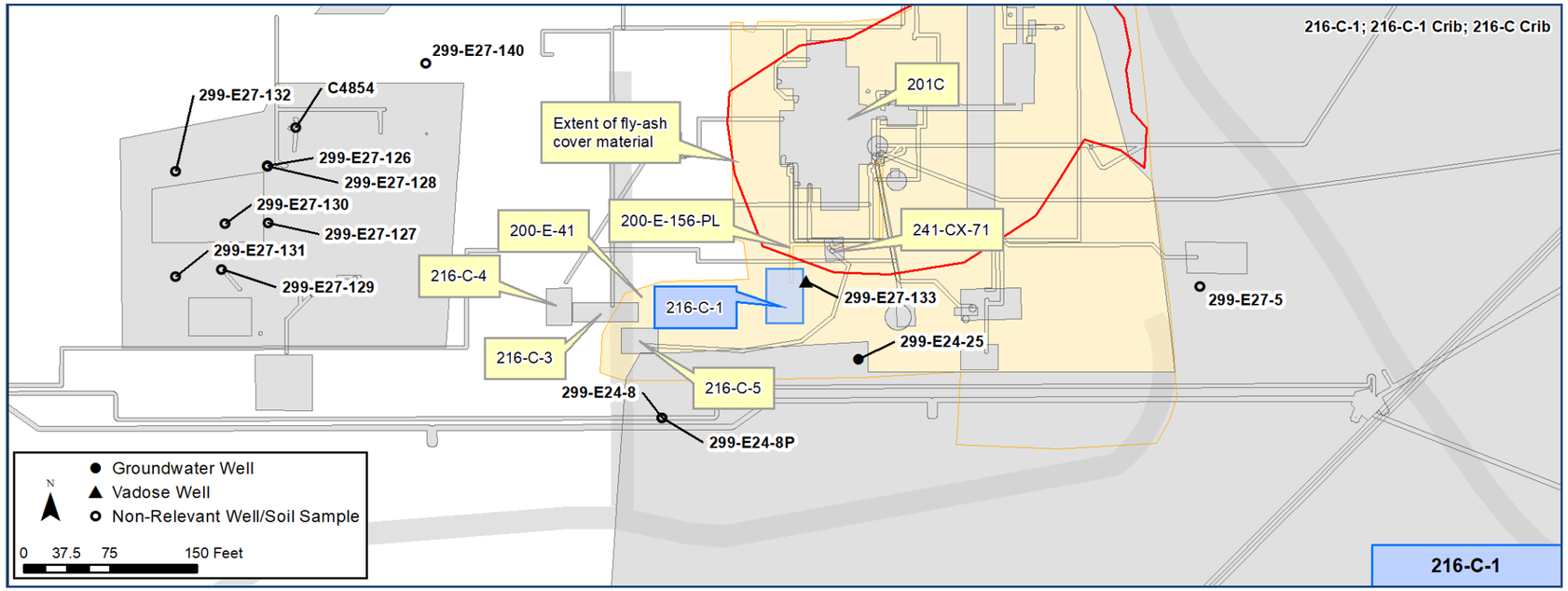


Figure 2
MSCM-II Radiological Survey of Areas West of B-Plant (including 216-B-64)
Source: RC-1200276
216-B-62
C1
200-E-217-PL
C1
<5K dpm beta/gamma by direct frisk
C1
216-B-12
C1
200-E-162-PL
Gray surrounding 216-B-64 represents survey readings of < 750 cps; green represents 750 - 1000 cps
C1
216-B-64
C1
200-E-161&162-PL
C1
216-B-55
MSCM II
Mobile Surface Contamination Monitor
Survey# RC-1200276
B-Plant
C1
UPR-200-E-64
C1
270-E-1
C1
200-E-160-PL
C.P.S.
< 750
750 - 1000
1001 - 1250
1251 - 1500
> 1500
Summary Information
Date of Survey: 05/29/2012
Project File: R216B64_12.mxd
MSCM-II Radiological Survey of Areas West of B-Plant
0 65 130 260
Meters
Mapped, Published by RARA Group
Intended use: REFERENCE ONLY
Projection: LAMBERT CONFORMAL CONIC
Coordinate System: WASHINGTON STATE PLANE, SOUTH ZONE
Horizontal Datum: NORTH AMERICAN DATUM 1983 (NAD83)
Vertical Datum: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)
Building and Road data field verified in 2007.
Other data obtained from existing sources on site.

Scoping Summary: 216-C-1 (Crib)

History

The 216-C-1 waste site is an inactive, underground crib that received PUREX and REDOX process condensate and high salt cold run waste from the 201-C Process Building via the 200-E-156-PL Pipeline. All Waste sent to the 216-C-1 Crib was first routed through the 241CX71 Acid Waste Neutralization Tank. From 1953 to 1955 the crib received high salt cold run waste and process condensate and from 1955 to 1957 the crib received only high salt cold run waste. The crib is located south of 7th Street and east of the 209-E Facility. The site began operation in 1953 and was deactivated in 1957, when its specific retention capacity was reached. The effluent pipeline was valved out. The 201C (Hot Semiworks) building went through three operational modes. From 1949 to 1954 it operated as a pilot plant for the REDOX process, from 1954 to 1956 it operated as a pilot plant for the PUREX process, and in 1961 it operated as a strontium recovery facility.
In 1979 the surface of the crib was stabilized. The top 4 inches of the crib's surface was bladed off; the ground was covered with a 4-in sand pad; ureabor herbicide was applied at 500 pounds/acre; 10-mil plastic sheeting was installed over the area; a 12-inch pad of sand was installed over the plastic; and the surface was stabilized with 4 inches of pit run gravel. Between December-1999 and January-2000 the crib was surface stabilized with clean backfill material and gravel.



Construction

- Crib structure made from:
  - Concrete ties
    - 8 ft by 8-in by 8-in
  - Spacer blocks
    - 8 ft by 8-in by 4-in
  - Roof slabs
    - 3.7 ft by 8 ft by 6-in
- Length: ~23 ft
- Width: 8 ft
- Top of Structure Depth: ~7.5 ft
- Bottom of Structure Depth: ~13 ft bgs
- Height: 5.5 ft
- Fill: 5 ft of gravel filled in around the structure from bottom (4,200 cubic feet)
- Number of incoming and outgoing pipelines:
  - Incoming Pipelines: 1

Features Of Interest

- The site is located inside a larger posted Underground Radioactive Material area known as 200-E-41 (Stabilized Hot Semiworks Area).
- A yellow cement crib marker, labeled 216-C-1, is located inside the chained 241CX71 tank area.
- Crib location is marked with 4 orange stakes (using GPS)
- 8" well casing
  - Location: Center of crib (not 299-E27-133)
  - Extends from ~4 ft above discharge point to 25 ft below crib bottom (not visible)

Relevant Characterization

- 1988 and 2014 radiological surveys found surface radiation levels in this area to be below background levels.
- See Page 3 for a depiction of the nature and extent of contamination as defined by existing data.

Waste Streams

- PUREX and REDOX process condensate and cold run waste from 201-C
  - Hot shop sink waste
  - Coil and condenser cooling water
  - High in salt and neutral/basic
  - 15,000 kg nitric acid
  - ~6,180,000 gal of total waste discharged
- Based on historical inventory reporting (HNF-1744) waste transferred to the 216-C-1 Crib includes:
  - 6.91E+1 Ci Sr-90, < 3.69E-2 Ci Cs-137, 3.89E-11 Ci Ru-106, 9.81E-2 Ci total U, 4.91E-1 Ci total alpha and 1.73E+2 Ci total beta
  - (Radionuclides decayed through Dec-31-1998)

Misc./Other Relevant Information

- Previously associated with Operable Units 200-SO-1 and 200-PW-2.
- The Feasibility Study for the 200-PW-2 OU (DOE/RL-2004-85) Identified Removal, Treatment, and Disposal (RTD) as the preferred remedial action. This decision was based on an analogous waste site evaluation.

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-156-PL

Intersecting/Nearby Sites

200-EA-1

- 216-C-3 Crib
- 216-C-4 Crib
- 216-C-5 Crib

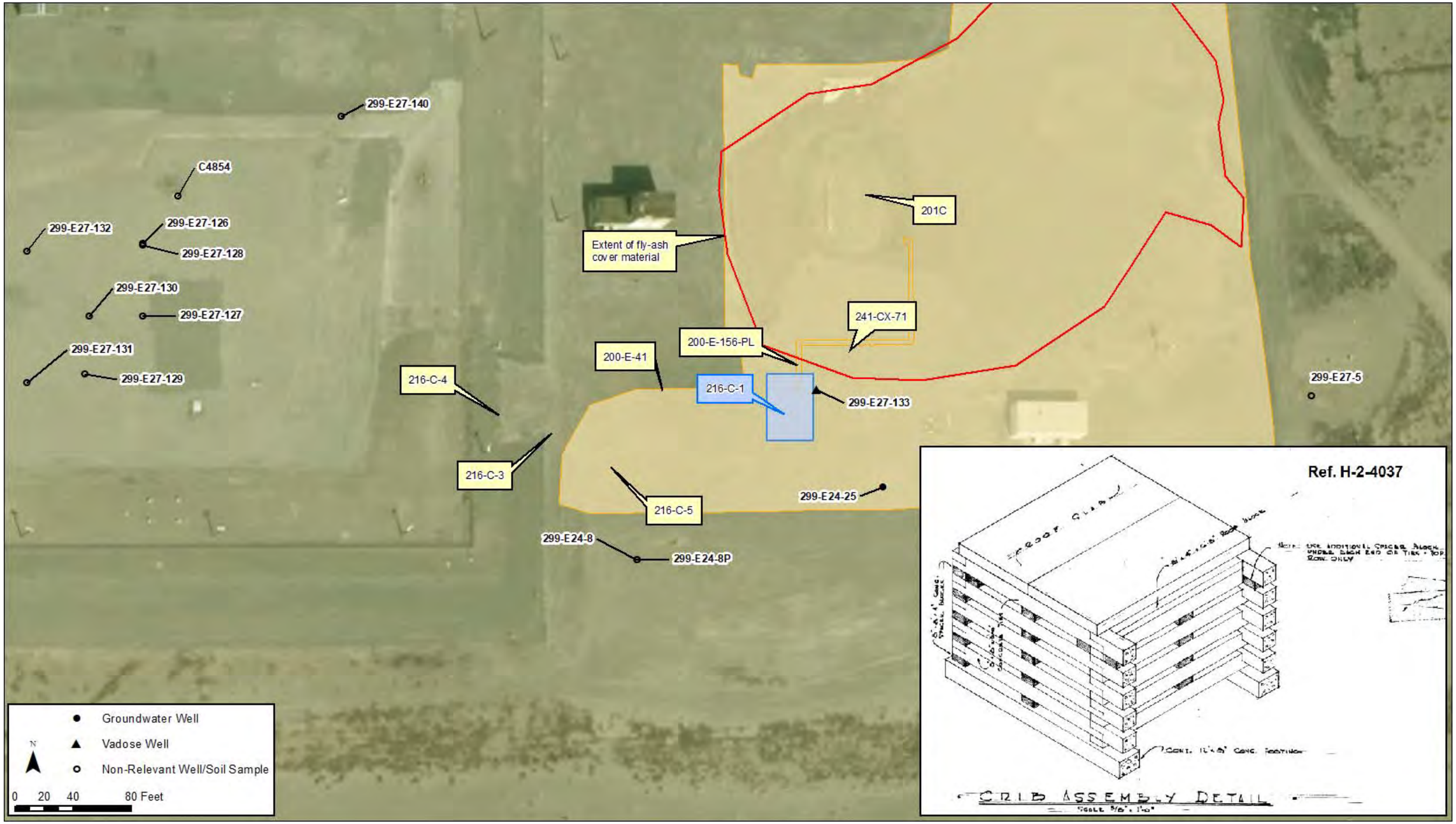
Unassigned OU

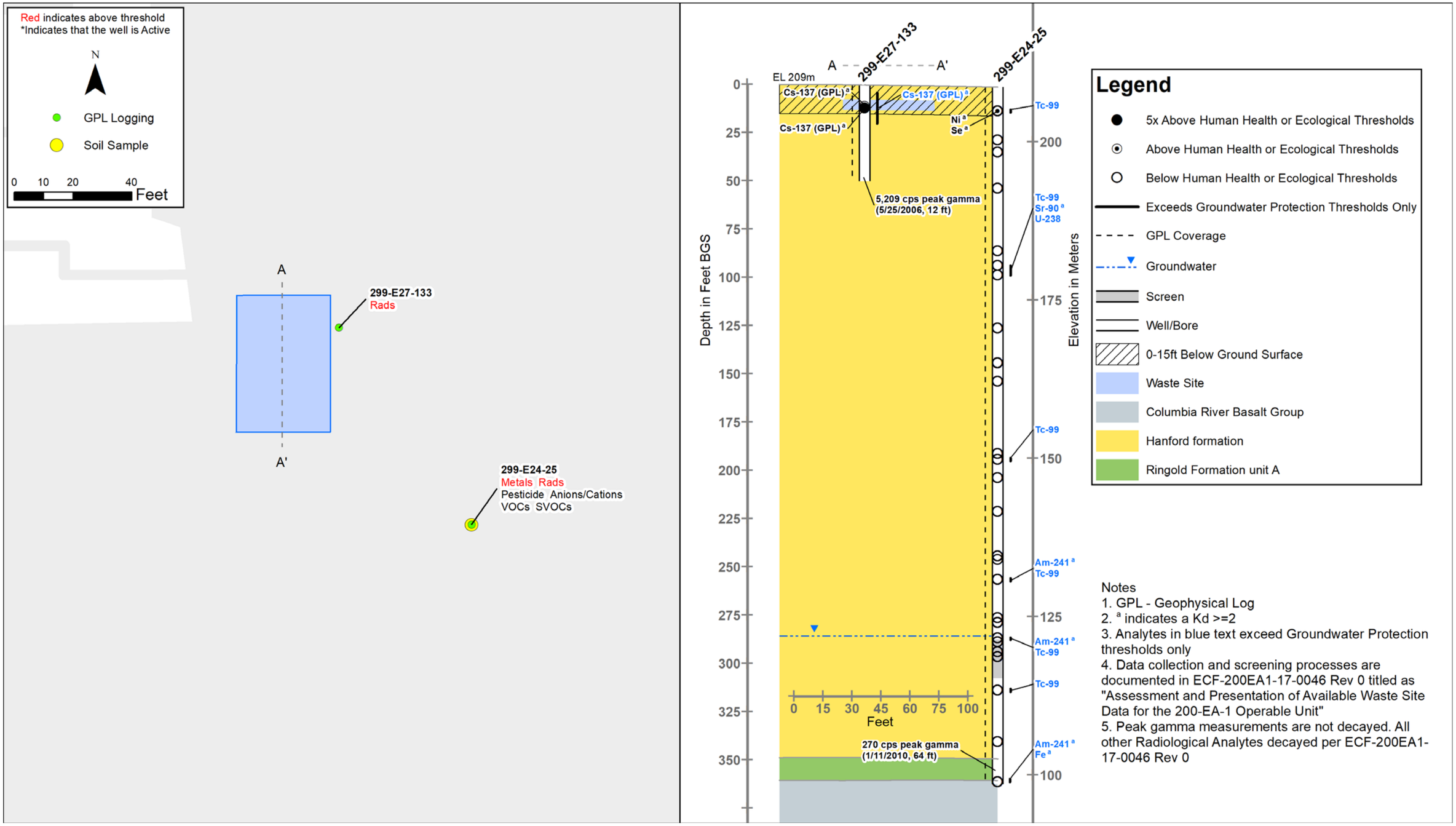
- 200-E-41 Stabilized Hot Semiworks Area
- 201C Process Building (Hot Semiworks)

Facility

- 241CX71 Acidic Waste Neutralization Tank

Scoping Summary: 216-C-1 (Crib)




Red indicates above threshold
*Indicates that the well is Active
N
GPL Logging
Soil Sample
0 10 20 40
Feet
A
A'
299-E27-133
Rads
299-E24-25
Metals Rads
Pesticide Anions/Cations
VOCs SVOCs
EL 209m
299-E27-133
299-E24-25
Cs-137 (GPL)[a]
Ni[a]
Se[a]
Tc-99
5,209 cps peak gamma
(5/25/2006, 12 ft)
Tc-99
Sr-90[a]
U-238
Am-241[a]
Fe[a]
270 cps peak gamma
(1/11/2010, 64 ft)
Depth in Feet BGS
Elevation in Meters
Legend
5x Above Human Health or Ecological Thresholds
Above Human Health or Ecological Thresholds
Below Human Health or Ecological Thresholds
Exceeds Groundwater Protection Thresholds Only
GPL Coverage
Groundwater
Screen
Well/Bore
0-15ft Below Ground Surface
Waste Site
Columbia River Basalt Group
Hanford formation
Ringold Formation unit A
Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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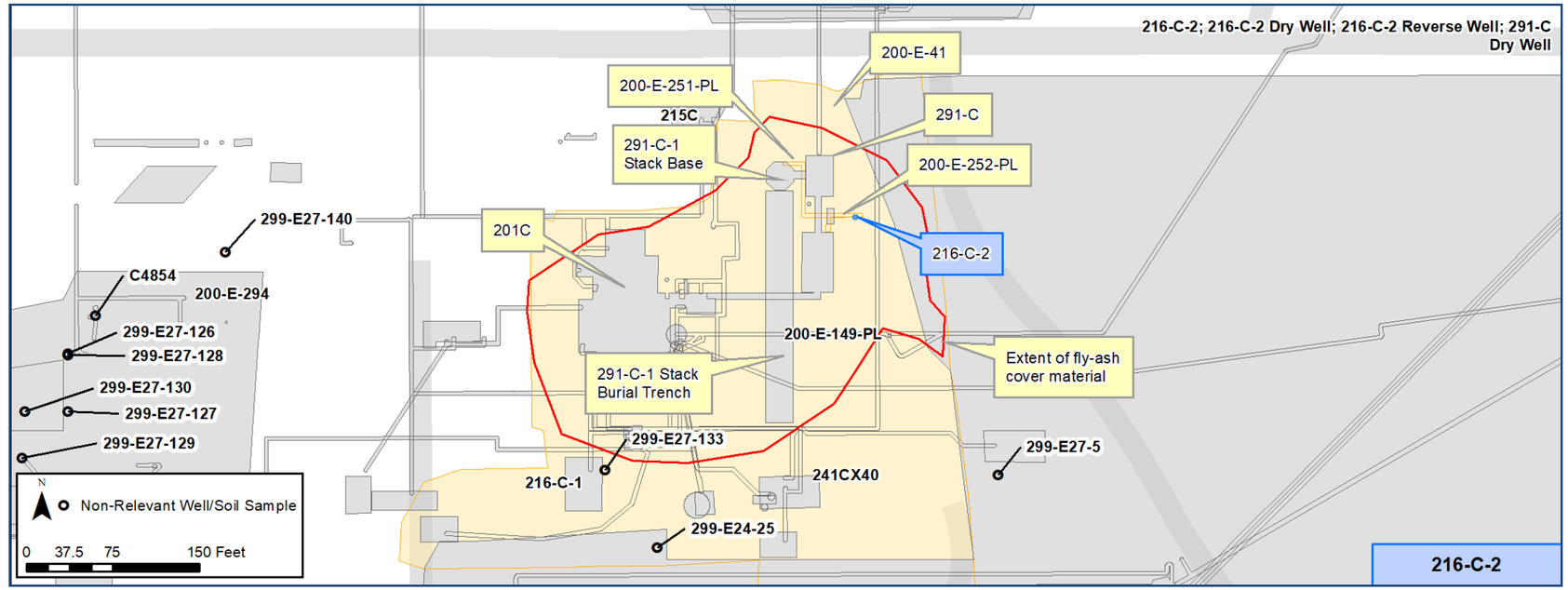
Scoping Summary: 216-C-2 (Injection/Reverse Well)

History

The 216-C-2 waste site is a reverse well in the Hot Semiworks area that received drainage from the 291-C-1 Stack, 291C Ventilation Filter and Fan House via 200-E-251-PL and 200-E-252-PL. The well was in operation by 1953 until 1988 when it was buried in place with the demolished 291-C-1 stack. The well was sealed with concrete and the casing was cut off at ground level. Pipelines 200-E-251-PL and 200-E-252-PL were cut and capped, with the partial removal of 200-E-251-PL.

The Hot Semiworks area was subsequently covered with 3 ft of fly ash barrier and is posted as an Underground Radioactive Material Area (200-E-41). The reverse well is not marked and cannot be distinguished from the rest of the surface stabilized area.



Construction

- Diameter: 12 in
- Material: Steel pipe
- Depth: 1 ft above grade to 40 ft bgs
- Bottom 25 ft was perforated
- Incoming pipes: 2

Features Of Interest

- One flange cap welding to casing
- Concrete collar at grade
- One crook necked vent pipe, 1.5 ft above grade, sealed with metal tape

Relevant Characterization

- 1984 sediment sample from the 291-C stack contained 280 pCi/g Sr-90, .098 pCi/g of Cs-137 and 0.062 pCi/g of plutonium
- 1985 Gamma Energy Analysis detector readings from inside the 291-C-1 stack
  - Maximum of .137 µCi/sq cm Cs-137 and 8.7 µCi/sq cm Sr-90 estimated for the stack base
  - 8,500 mRad/hr stack base area

Waste Streams

- 201-C Building
  - REDOX
  - PUREX
  - Recover strontium from process wastes
  - Cerium, technetium, and promethium (and neodymium daughter products) as well as minor amounts of americium and curium were also extracted
- 291-C-1 stack condensate drainage
- 291CR Ventilation Filter seal water and 291C Fan House drainage
- Low salt and neutral to basic

Misc./Other Relevant Information

- The 216-C-2 site was included in the Remedial Investigation Report for 200-MW-1 Operable Unit (DOE/RL-2005-62, Draft A)

Site Interfaces

Origins/Terminations

200-EA-1 OU
- 291-C-1 Stack

OU Not Assigned
- 291C Fan House
- 291CR Ventilation Filter

Intersecting/Nearby Sites

200-IS-1
- 200-E-151-PL
- 200-E-252-PL

OU Not Assigned
- 200-E-41 (stabilized area)
- 201-C (facility)

Scoping Summary: 216-C-2 (Injection/Reverse Well)

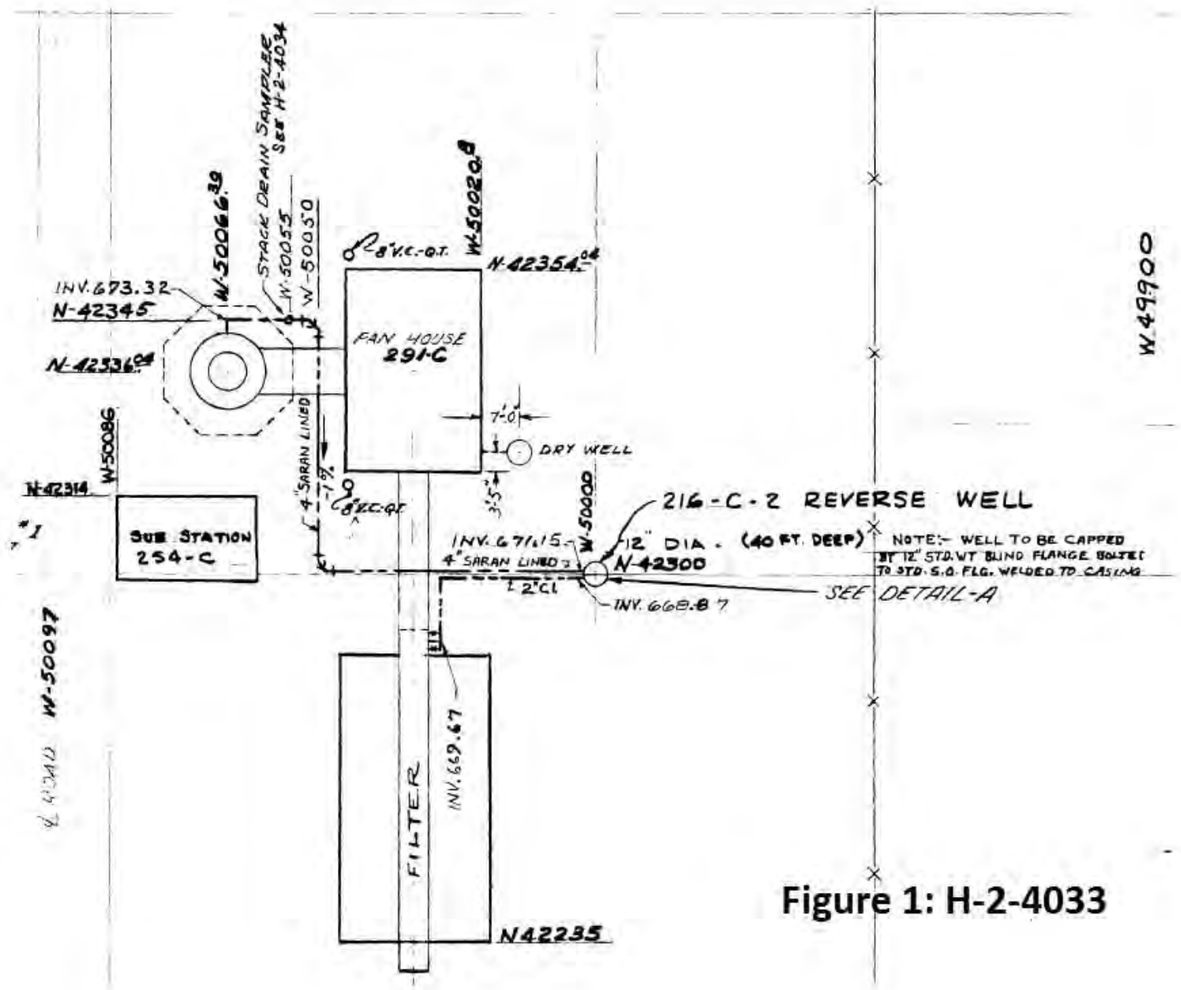
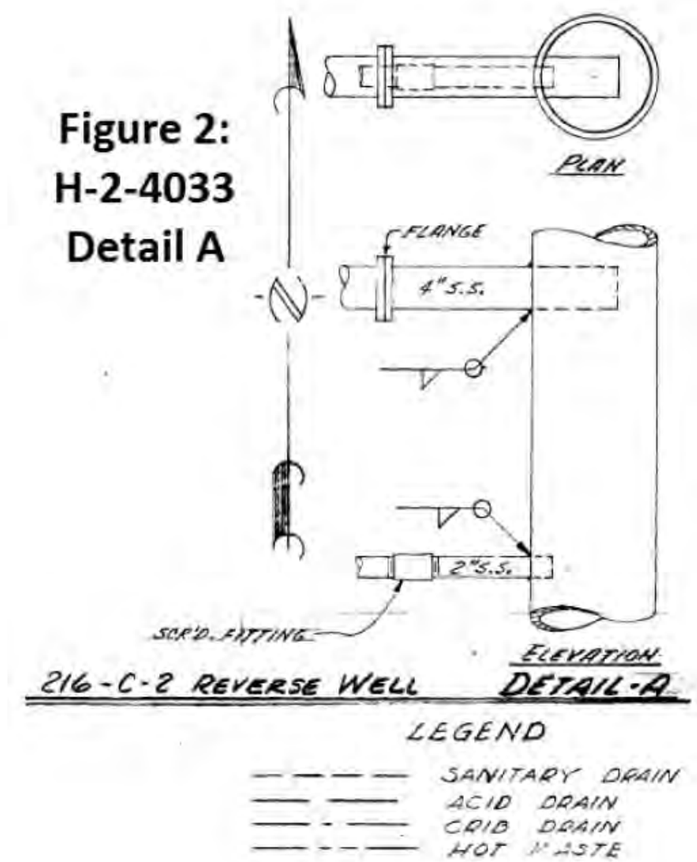


Figure 1: H-2-4033

Figure 2: H-2-4033 Detail A



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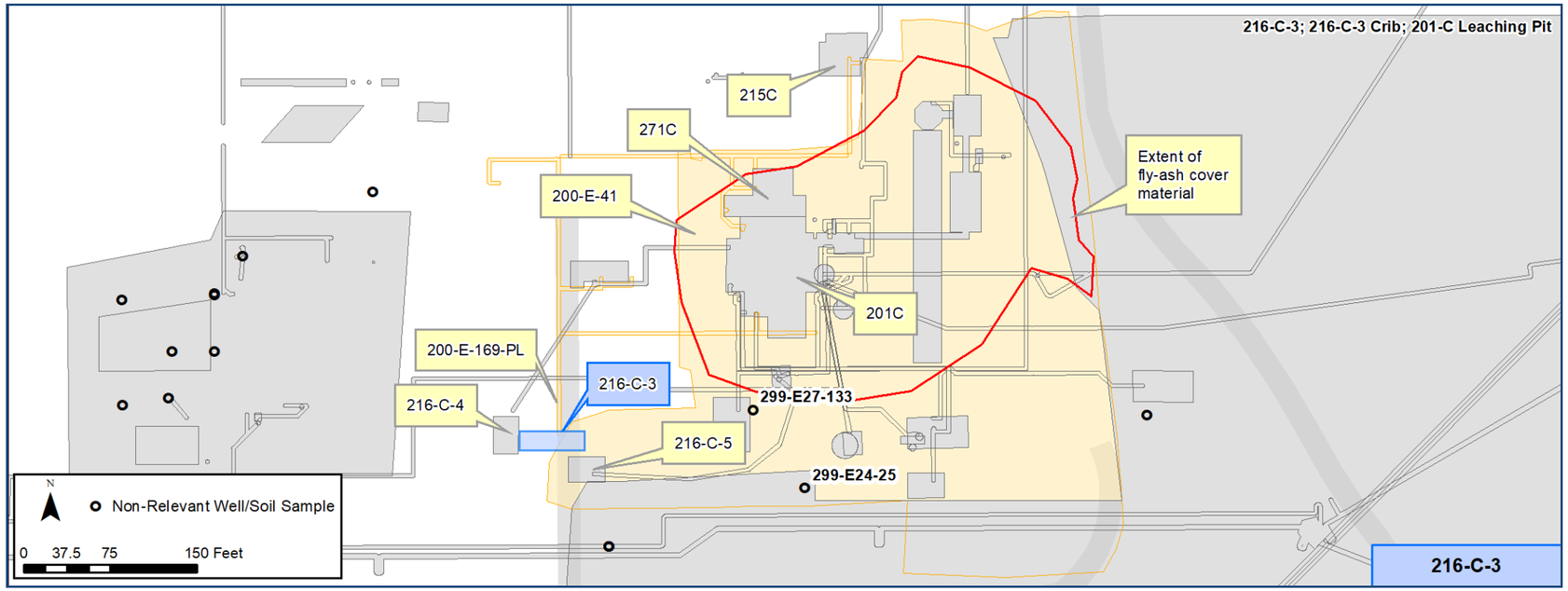
Scoping Summary: 216-C-3 (Crib)

History

The 216-C-3 waste site is an inactive, underground crib that received acidic radioactive REDOX process waste from the 201-C Process Building, 215C Gas Preparation Building and 271C Aqueous Makeup Control Building via the 200-E-169-PL Pipeline. It is located 400 ft south of 7th Street, southwest of 201-C. The crib began operation in 1953 and was deactivated in 1954 when it's specific retention capacity was reached. The incoming pipeline was blanked and the excavation was backfilled with sand and gravel. The 201-C building went through three operational modes. From 1949 to 1954 it operated as a pilot plant for the REDOX process, from 1954 to 1956 it operated as a pilot plant for the PUREX process, and in 1961 it operated as a strontium recovery facility.

In 1979 the surface of the crib was stabilized. The top 4 inches of the crib's surface was bladed off; the ground was covered with a 4-in sand pad; ureabor herbicide was applied at 500 pounds/acre; 10-mil plastic sheeting was installed over the area; a 12-inch pad of sand was installed over the plastic; and the surface was stabilized with 4 inches of pit run gravel. Between December-1999 and January-2000 the crib was surface stabilized again with clean backfill material and gravel.



Construction

- No structure associated with this crib
- Bottom Length: 50 ft
- Bottom Width: 10 ft
- Depth: 10 ft bgs
- Side Slope: 1:1
- Number of incoming and outgoing pipelines:
  - Incoming pipelines: 1
    - Depth: ~8 ft bgs (supported by welded wire)

Features Of Interest

- Identified with a single AC-540 concrete marker post.
- Location marked by GPS using orange stakes
- Part of the Underground Radioactive Material area known as 200-E-41 (Stabilized Hot Semiworks Area).
- A 1 ft thick road runs across the site.

Relevant Characterization

- A 1991 surface radiation survey found no contamination above detection limits.

Waste Streams

- Received acidic radioactive REDOX process wastes from the 201-C, 215-C and 271-C buildings.
  - ~1,320,000 gal total waste discharged
  - 20 kg nitrate
- Based on historical inventory reporting (HNF-1744) waste transferred to the 216-C-3 Crib includes:
  - 6.49 Ci Sr-90, < 3.44E-2 Ci Cs-137, 1.71E-13 Ci Ru-106, 1.51E-2 Ci total U, 6.14E-02 total alpha and 1.62E+1 Ci total beta
  - (Radionuclides decayed through Dec-31-1998)

Misc./Other Relevant Information

- 271-C was demolished in 1987.
- Previously associated with Operable Units 200-MG-1, 200-SO-1 and 200-PW-2.
- The Feasibility Study for the 200-PW-2 OU (DOE/RL-2004-85) and Engineering Evaluation/Cost Analysis for the 200-MG-1 OU (DOE/RL-2008-44) both Identified Removal, Treatment, and Disposal (RTD) as the preferred remedial action. These decisions were based on analogous waste site evaluations.

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-169-PL

Intersecting/Nearby Sites

200-EA-1

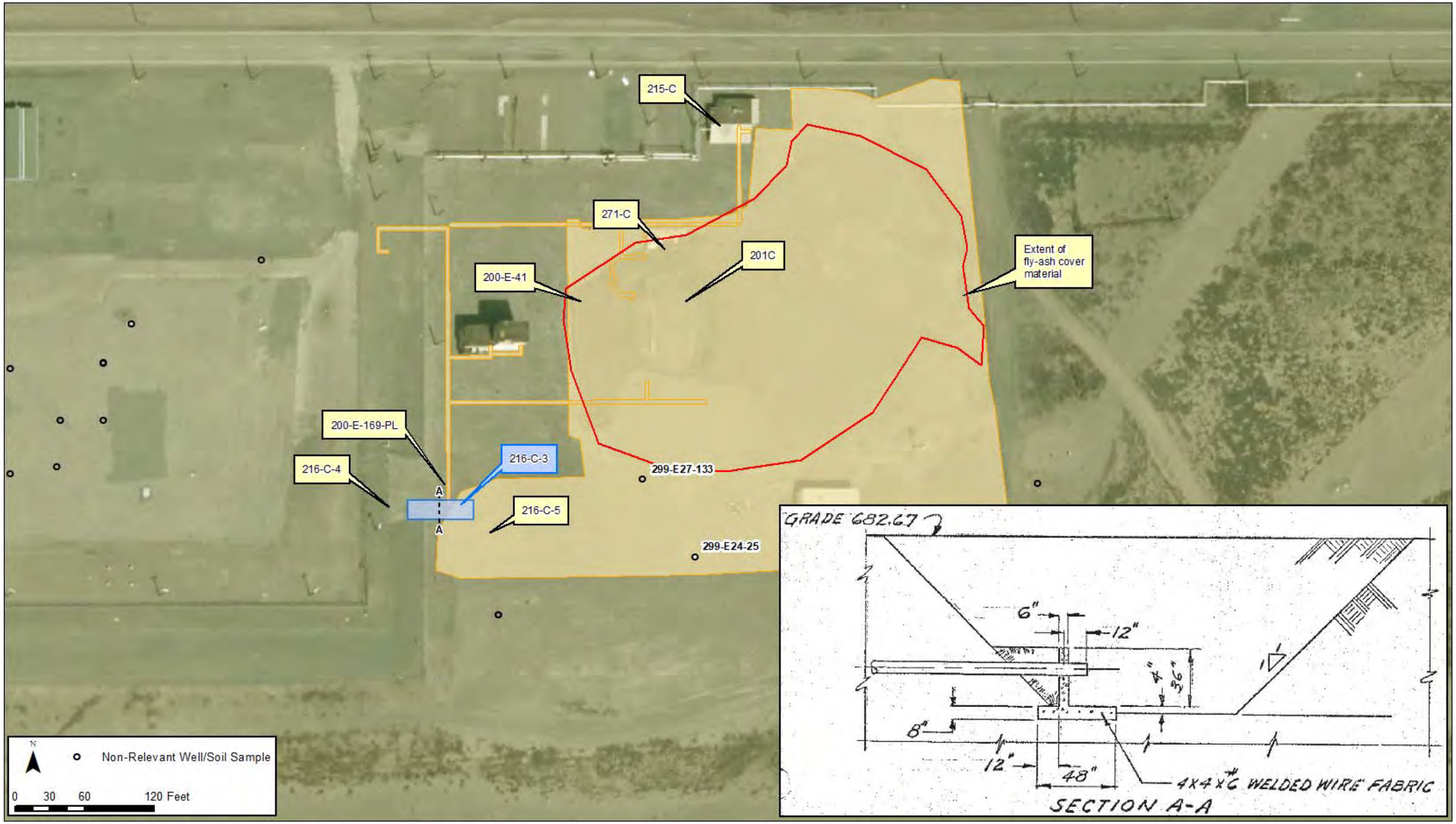
- 216-C-4 Crib
- 216-C-5 Crib

- 215C Gas Preparation Building
- 271C Aqueous Makeup Control Building

OU Unassigned

- 200-E-41 Stabilized Hot Semiworks Area
- 201-C Process Building

Scoping Summary: 216-C-3 (Crib)



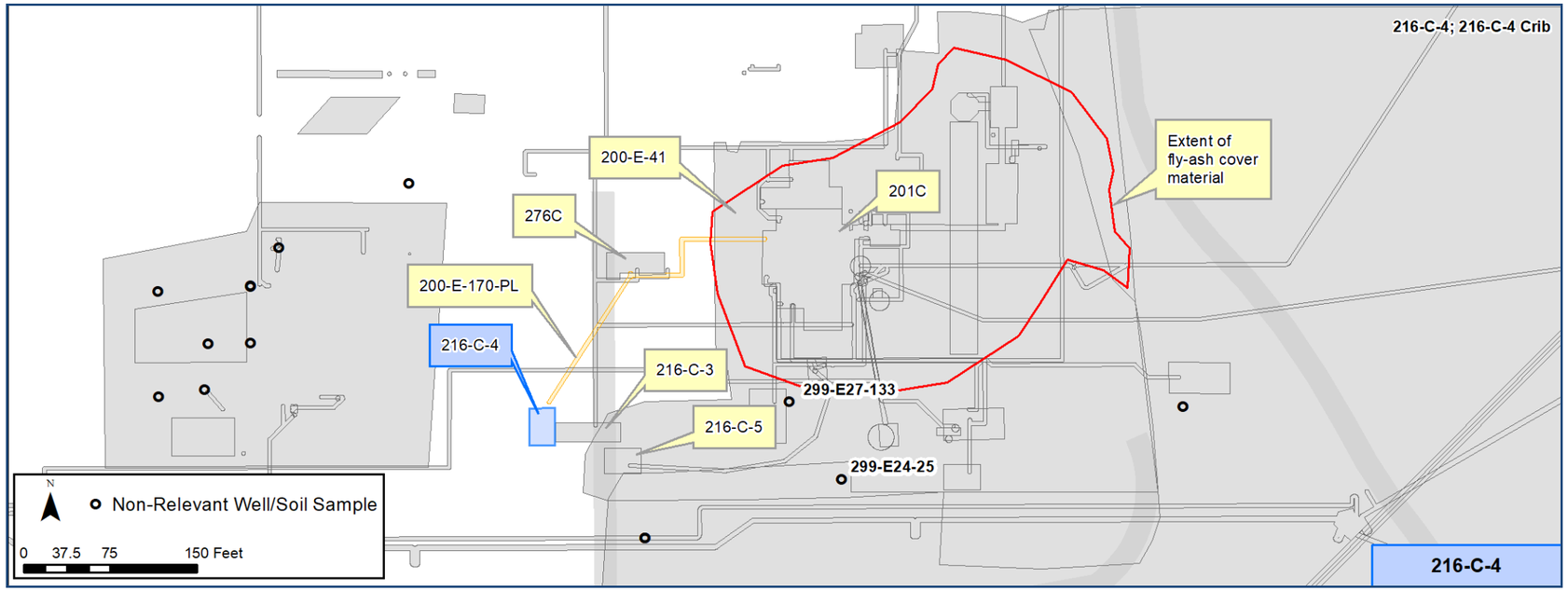
Scoping Summary: 216-C-4 (Crib)

History

The 216-C-4 waste site is an inactive, underground crib that received contaminated organic waste from 201-C through the 276C Solvent Handling Building via the 200-E-170-PL Pipeline. It is located south of 7th street and west of 216-C-3. The crib was constructed in 1954 and operational from 1955 to 1965, when it reached its specific retention capacity and was deactivated by valving out the effluent pipeline. From 1954 to 1956 201-C operated as a pilot plant for the PUREX process and in 1961 it was converted to a strontium recovery facility.

In 1979 the surface of the crib was stabilized against wind erosion and plant root invasion. The top 4 inches of the crib's surface was bladed off; the ground was covered with a 4-in sand pad; ureabor herbicide was applied at the rate of 500 pounds/acre; 10-mil plastic sheeting was installed over the entire area; a 12-inch pad of sand was installed over the plastic; and the surface was stabilized with 4 inches of pit run gravel.

Between December-1999 and January-2000 the crib was surface stabilized with clean backfill material and gravel. A portion of the security fence was removed to provide access to the crib for sterilization activities and future surveillance.



Construction

- No structure associated with this crib
- Depth: 16 ft bgs
- Width: 10 ft
- Length: 20 ft
- Side Slope: 1:1
- Fill: 6 ft gravel (2,600 cubic feet) then backfilled
  - 2 layers of Sisal Kraft paper separate gravel from backfill
- Number of incoming and outgoing pipelines
  - Incoming pipelines: 1
    - Depth: ~11.5 ft bgs
- Two 20 ft 6-in galvanized, corrugated, perforated pipes form an H-pattern perpendicular to the inlet pipe. Risers are located at the end of each pipe (4 total).

Features Of Interest

- Crib is marked and posted with Underground Radioactive Material signs.
- An access area has been created by removing part of the 209-E security fence.
- 1 riser pipe shows above grade in SE corner of crib.
- Part of the Underground Radioactive Material area known as 200-E-41 (Stabilized Hot Semiworks Area).

Relevant Characterization

- A 1988 surface radiation survey found no contamination above detection limits.

Waste Streams

- Radiologically contaminated, low-level, low-salt, neutral to basic organic wastes from the PUREX and strontium recovery processes.
  - 24,000 kg (~7,900 gal) kerosene and 14,000 kg TBP
  - ~45,000 gal total waste discharged
- Based on historical inventory reporting (HNF-1744) waste transferred to the 216-C-4 Crib includes:
  - 9.56 Ci Sr-90, < 3.52E-2 Ci Cs-137, 1.10E-12 Ci Ru-106, 1.51E-2 Ci total U, 6.14E-2 total alpha and 2.31E+1 Ci total beta.
  - (Radionuclides decayed through Dec-31-1998)

Misc./Other Relevant Information

- Previously associated with Operable Units 200-SO-1, 200-PW-3 and 200-MG-2.
- Both the 200-MG-2 Engineering Evaluation/Cost Analysis (DOE/RL-2008-45) and Action Memorandum (DOE/RL-2009-37 Rev. 0) support confirmatory sampling/no action (CS/NA) for the 216-C-4 Crib.

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-170-PL

Intersecting/Nearby Sites

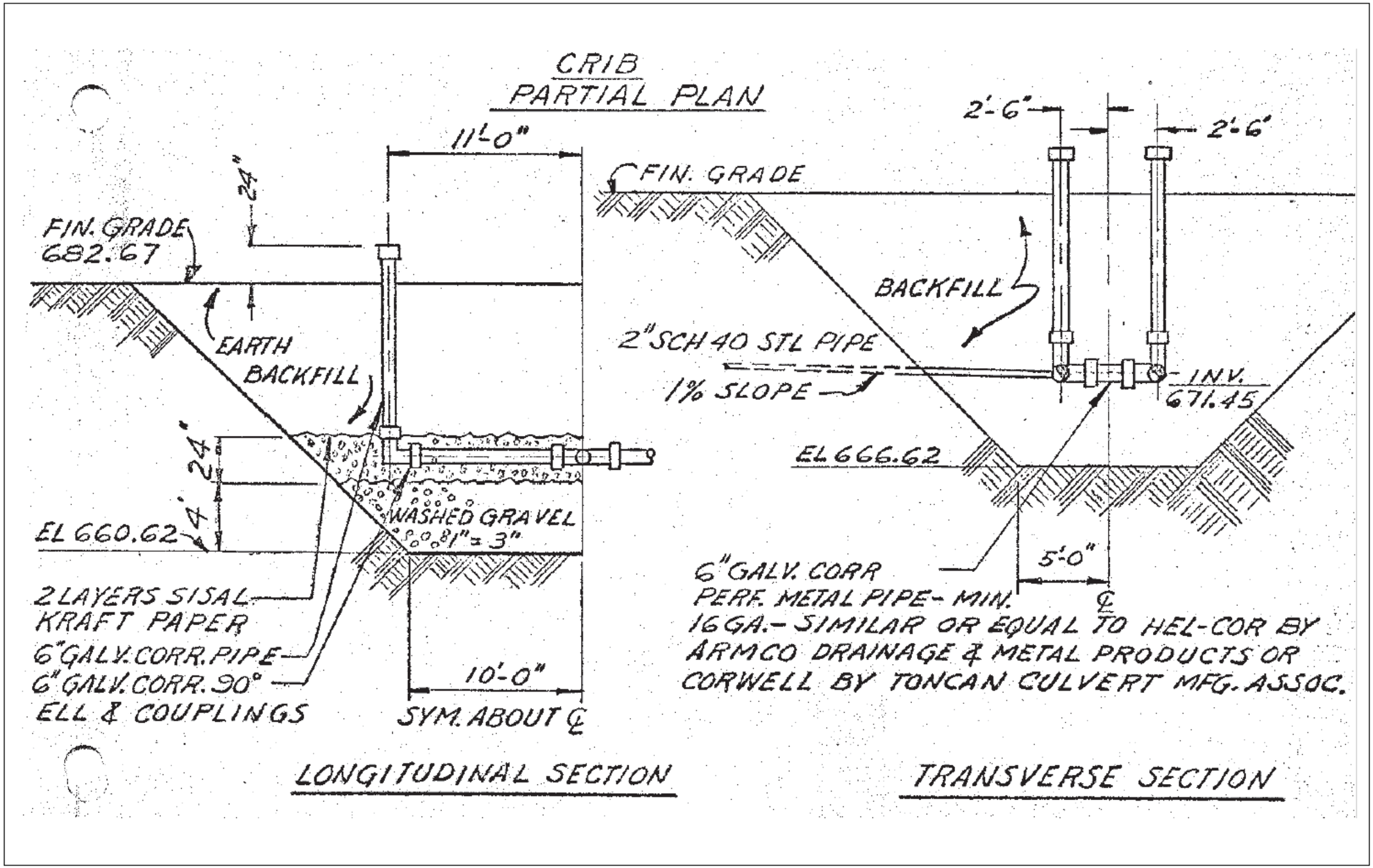
200-EA-1

- 216-C-3 Crib
- 216-C-5 Crib

OU Unassigned

- 200-E-41 Stabilized Hot Semiworks Area
- 201-C Process Building

200-E-41
201C
Extent of fly-ash cover material
276-C
200-E-170-PL
216-C-4
216-C-3
216-C-5
299-E27-133
299-E24-25
N
Non-Relevant Well/Soil Sample
0 30 60 120 Feet


CRIB
PARTIAL PLAN
11'-0"
24"
FIN. GRADE
682.67
EARTH
BACKFILL
4'-24"
EL 660.62
WASHED GRAVEL
1"-3"
2 LAYERS SISAL
KRAFT PAPER
6" GALV. CORR. PIPE
6" GALV. CORR. 90°
ELL & COUPLINGS
10'-0"
SYM. ABOUT ℄
LONGITUDINAL SECTION
2'-6"
2'-6"
FIN. GRADE
BACKFILL
2" SCH 40 STL PIPE
1% SLOPE
INV.
671.45
EL 666.62
5'-0"
℄
6" GALV. CORR
PERF. METAL PIPE - MIN.
16 GA. - SIMILAR OR EQUAL TO HEL-COR BY
ARMCO DRAINAGE & METAL PRODUCTS OR
CORWELL BY TONCAN CULVERT MFG. ASSOC.
TRANSVERSE SECTION

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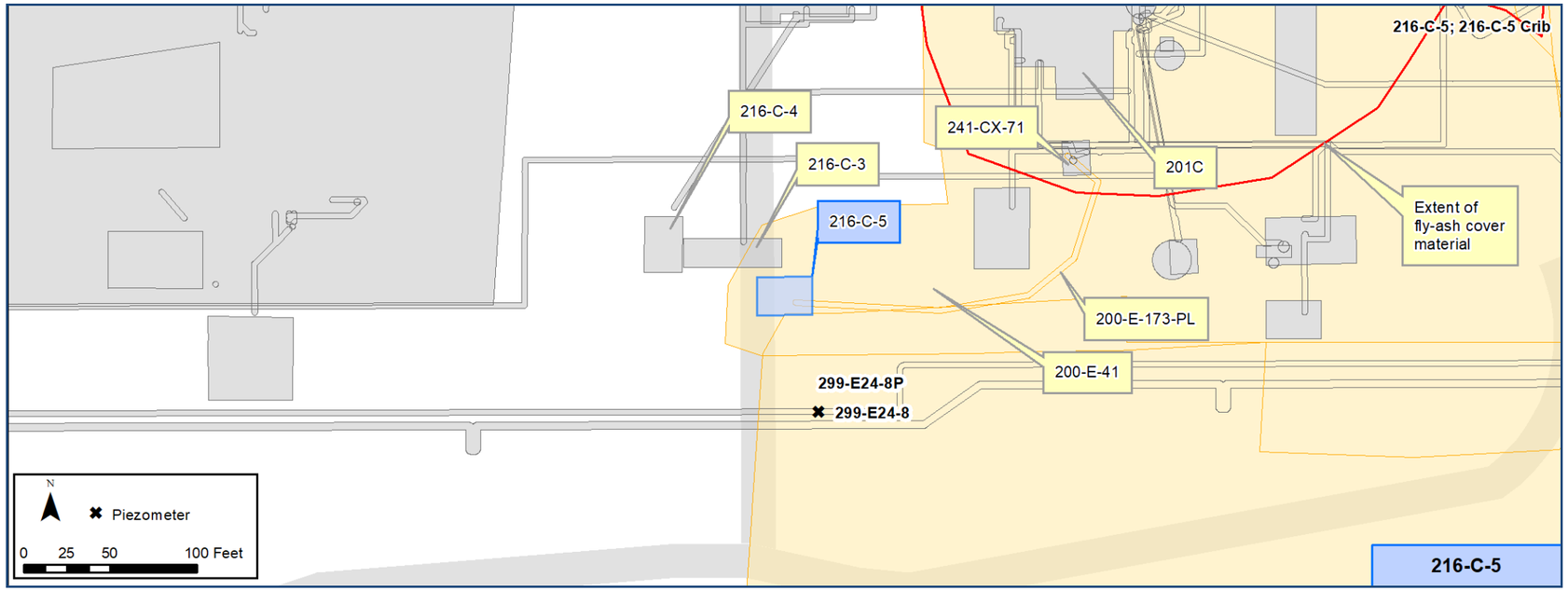
Scoping Summary: 216-C-5 (Crib)

History

The 216-C-5 waste site is an inactive, underground crib that received cold run waste and PUREX process condensate from the 201-C Process Building. Waste was transported via the 200-E-173-PL Pipeline after being neutralized in the 241-CX-71 Neutralization Tank. The crib is located south of 7th street, adjacent to the 216-C-3 Crib. The 216-C-5 crib was operational from March-1955 to June-1955, when the site reached its specific retention capacity and was subsequently deactivated by valving out the effluent pipeline.

In 1979 the surface of the crib was stabilized against wind erosion and plant root invasion. The top 4 inches of the crib's surface was bladed off; the ground was covered with a 4-in sand pad; ureabor herbicide was applied at the rate of 500 pounds/acre; 10-mil plastic sheeting was installed over the entire area; a 12-inch pad of sand was installed over the plastic; and the surface was stabilized with 4 inches of pit run gravel.

Between December-1999 and January-2000 the crib was surface stabilized with clean backfill material and gravel.



Construction

- No structure associated with this crib
- Depth: 16 ft bgs
- Width: 10 ft
- Length: 20 ft
- Side Slope: 1:1
- Fill: 6 ft of gravel (2,600 cubic feet) then backfilled
  - 2 layers of Sisal Kraft paper separate gravel from backfill
- Number of incoming and outgoing pipelines
  - Incoming pipelines: 1
    - Depth: ~11.5 ft bgs
- Two 20 ft 6-in galvanized, corrugated, perforated pipes form an H-pattern perpendicular to the inlet pipe. Risers are located at the end of each pipe (4 total) and blanked below grade.

Features Of Interest

- Waste site is marked with five concrete AC-540 markers and Underground Radioactive Material signs
- The site is located inside a larger posted Underground Radioactive Material area known as 200-E-41 (Stabilized Hot Semiworks Area).
- 4 risers show above grade.

Relevant Characterization

- A 1992 surface radiation survey found no radiation above detection limits.
- Nearby monitoring well 299-E24-8 (A4758) saw spikes in Cs-137 shortly prior to 1959, but has since declined to background levels. Documentation linking this to the 216-C-5 crib was not found.

Waste Streams

- 201-C high salt cold run waste and PUREX process condensate
  - 8,000 kg nitrate and 3,000 kg sodium
  - ~10,000 gal of total waste discharged
- Based on historical inventory reporting (HNF-1744) waste transferred to the 216-C-5 Crib includes:
  - 3.39E+0 Ci Sr-90, < 3.60E-2 Ci Cs-137, 2.84E-13 Ci Ru-106, 1.81E-2 Ci total U, 6.14E-2 Ci total alpha and 8.51E+0 Ci total beta
  - (Radionuclides decayed through Dec-31-1998)
- Waste entering 241-CX-71 was highly acidic.

Misc./Other Relevant Information

- In 1986 a 1 foot section of pipe was removed 60 feet east of the head end of the crib. Both ends of the pipeline were filled with grout.
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Identified Confirmatory Sampling/No Action(CS/NA) as the preferred remedial action (DOE/RL-2008-44).
- The 201-C Process Building acted as a PUREX pilot plant from 1954-1956.

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-173-PL

Intersecting/Nearby Sites

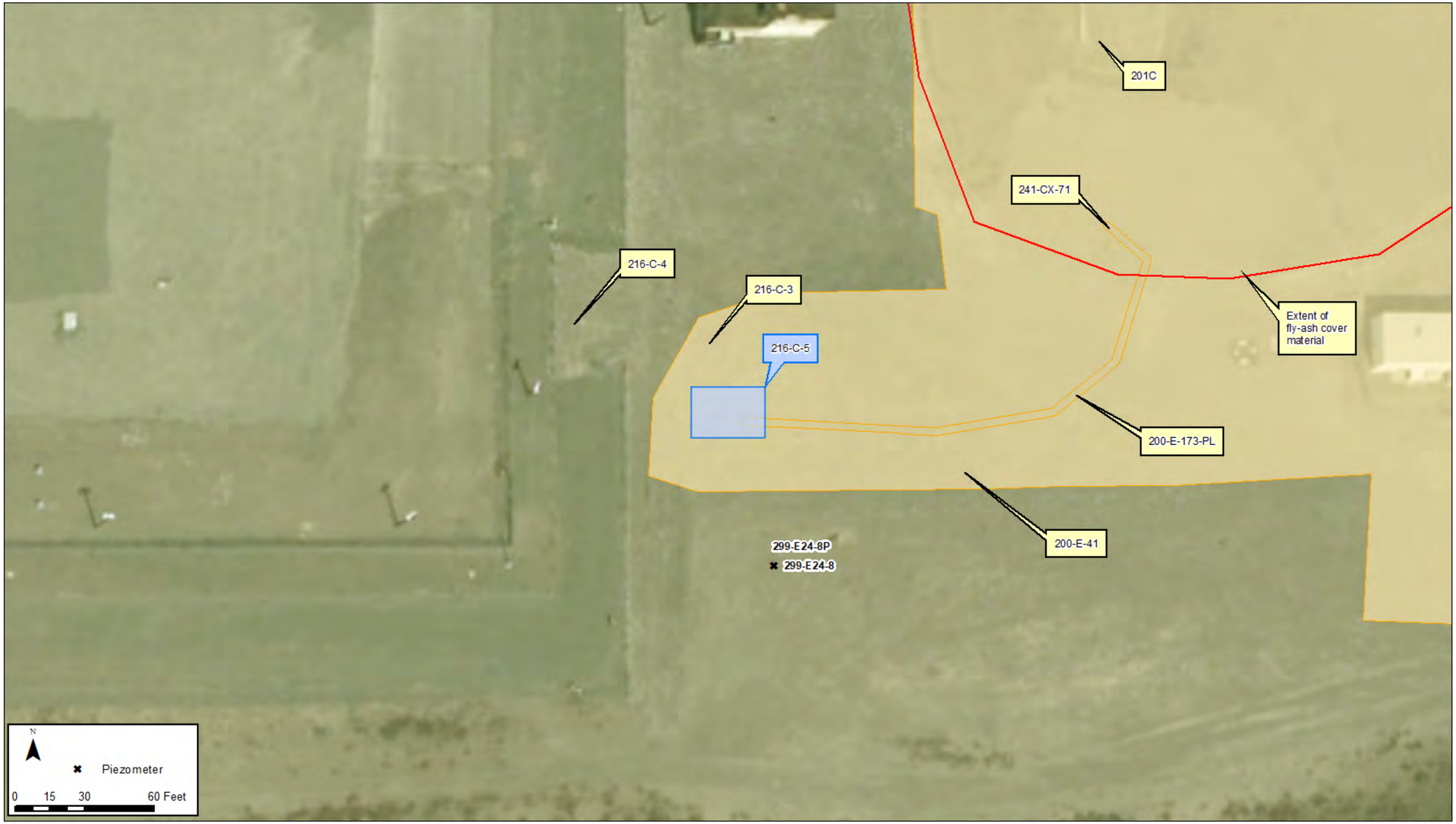
200-IS-1

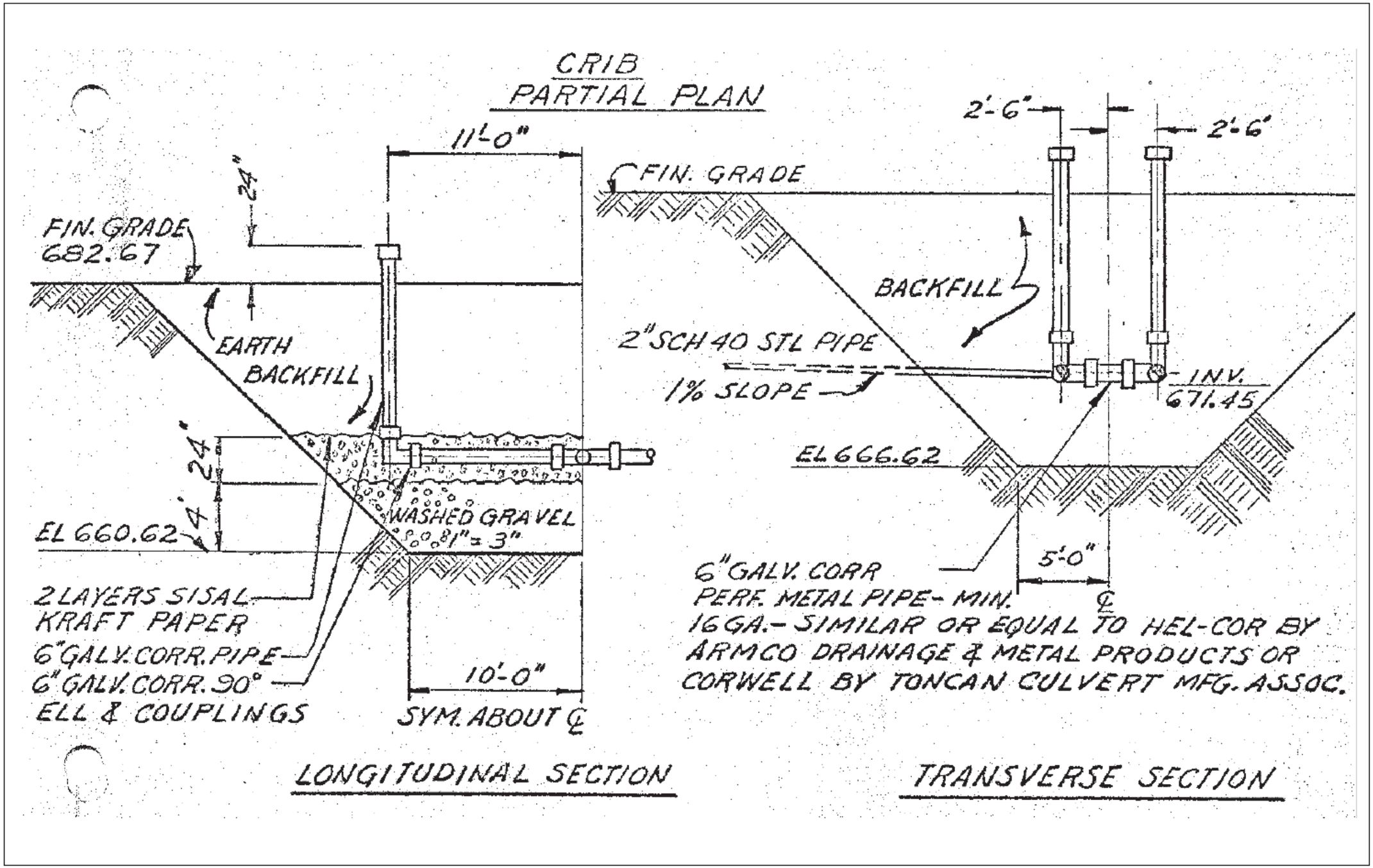
- 241-CX-71 Neutralization Tank
- 216-C-3 Crib
- 216-C-4 Crib

OU Unassigned

- 200-E-41 Stabilized Hot Semiworks Area
- 201-C Process Building

Scoping Summary: 216-C-5 (Crib)




CRIB
PARTIAL PLAN
11'-0"
24"
FIN. GRADE
682.67
EARTH
BACKFILL
4'-24"
EL 660.62
WASHED GRAVEL
1"-3"
2 LAYERS SISAL
KRAFT PAPER
6" GALV. CORR. PIPE
6" GALV. CORR. 90°
ELL & COUPLINGS
10'-0"
SYM. ABOUT ℄
LONGITUDINAL SECTION
2'-6"
2'-6"
FIN. GRADE
BACKFILL
2" SCH 40 STL PIPE
1% SLOPE
INV.
671.45
EL 666.62
5'-0"
℄
6" GALV. CORR
PERF. METAL PIPE - MIN.
16 GA. - SIMILAR OR EQUAL TO HEL-COR BY
ARMCO DRAINAGE & METAL PRODUCTS OR
CORWELL BY TONCAN CULVERT MFG. ASSOC.
TRANSVERSE SECTION

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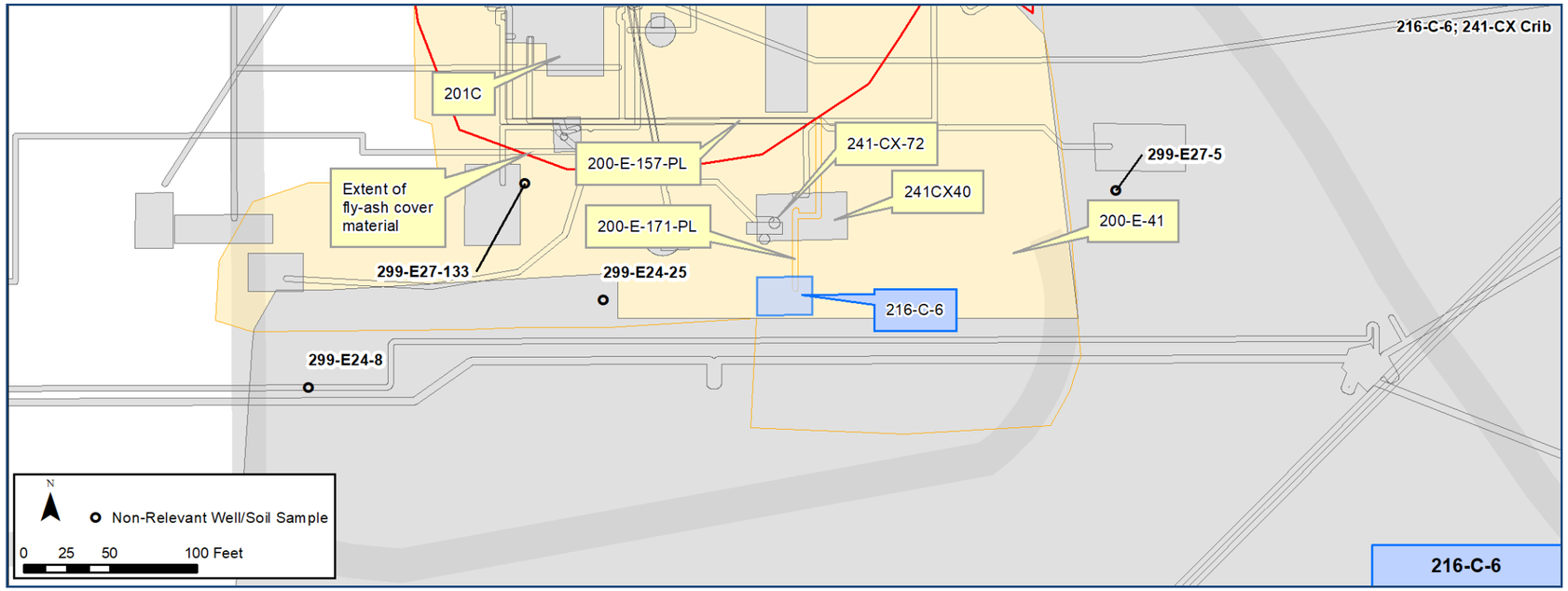
Scoping Summary: 216-C-6 (Crib)

History

The 216-C-6 waste site is an inactive, underground crib that received REDOX, PUREX, and strontium recovery process condensate from the 201-C Building and 241-CX-72 Storage Tank Vault floor drain via the 200-E-171-PL Pipeline. The site is located just south of the 241-CX-72 Storage Tank. The crib operated from 1955 to 1964, when it was isolated by blanking the 200-E-171-PL Pipeline and decommissioning the 241-CX-72 Storage Tank.

The 201-C Building went through three operational modes. From 1949 to 1954 it operated as a pilot plant for the REDOX process, from 1954 to 1956 it operated as a pilot plant for the PUREX process, and in 1961 it operated as a strontium recovery facility.

In 1979 the surface of the crib was stabilized against wind erosion and plant root invasion. The top 4 inches of the crib's surface was bladed off; the ground was covered with a 4-in sand pad; ureabor herbicide was applied at the rate of 500 pounds/acre; 10-mil plastic sheeting was installed over the entire area; a 12-inch pad of sand was installed over the plastic; and the surface was stabilized with 4 inches of pit run gravel.



Construction

- No structure associated with this crib
- Depth: 16 ft bgs
- Width: 10 ft
- Length: 20 ft
- Side Slope: 1:1 (to surface)
- Fill: 6 ft of gravel (2,600 cubic feet) then backfilled
  - 2 layers of Sisal Kraft paper separate gravel from backfill
- Number of incoming and outgoing pipelines
  - Incoming pipelines: 1
    - Depth: ~11.5 ft bgs
- Two 20 ft 6-in galvanized, corrugated, perforated pipes form an H-pattern perpendicular to the inlet pipe. Risers are located at the end of each pipe (4 total) and show above grade.

Features Of Interest

- 4 metal vents with vent covers extend 3 ft above grade.
- 4-5 concrete posts mark crib location
- The site is located inside a larger posted Underground Radioactive Material area known as 200-E-41 (Stabilized Hot Semiworks Area).

Relevant Characterization

- A 1988 surface radiation survey found no radiation above detection limits.

Waste Streams

- PUREX, REDOX, and strontium recovery process condensate
  - Acidic
  - 330 kg nitrate
  - ~140,000 gal of total waste discharged
- Based on historical inventory reporting (HNF-1744) waste transferred to the 216-C-6 Crib includes:
  - 2.33E+1 Ci Sr-90, < 3.77E-2 Ci Cs-137, 5.63E-11 Ci Ru-106, 1.51E-5 Ci total U, 6.14E-3 Ci total alpha, and 5.81E+1 Ci total beta
  - (Radionuclides decayed through Dec-31-1998)

Misc./Other Relevant Information

- Previously associated with Operable Units 200-SO-1, 200-MG-1 and 200-PW-5.
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Identified Confirmatory Sampling/No Action(CS/NA) as the preferred remedial action (DOE/RL-2008-44). This decision was based on an analogous waste site evaluation.

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-171-PL

Intersecting/Nearby Sites

200-IS-1

- 241-CX-72 Storage Tank
- 200-E-157-PL

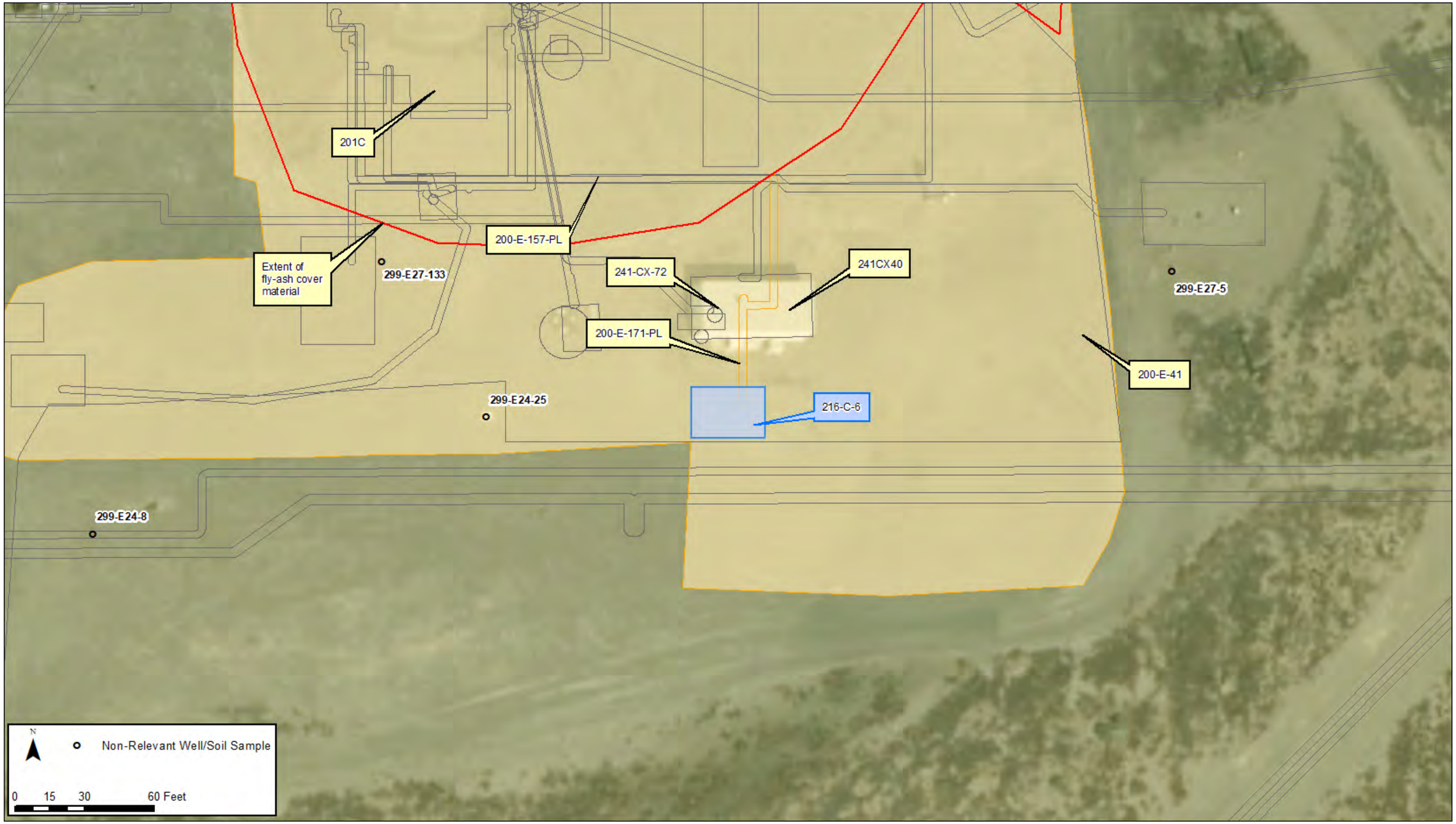
Unassigned OU

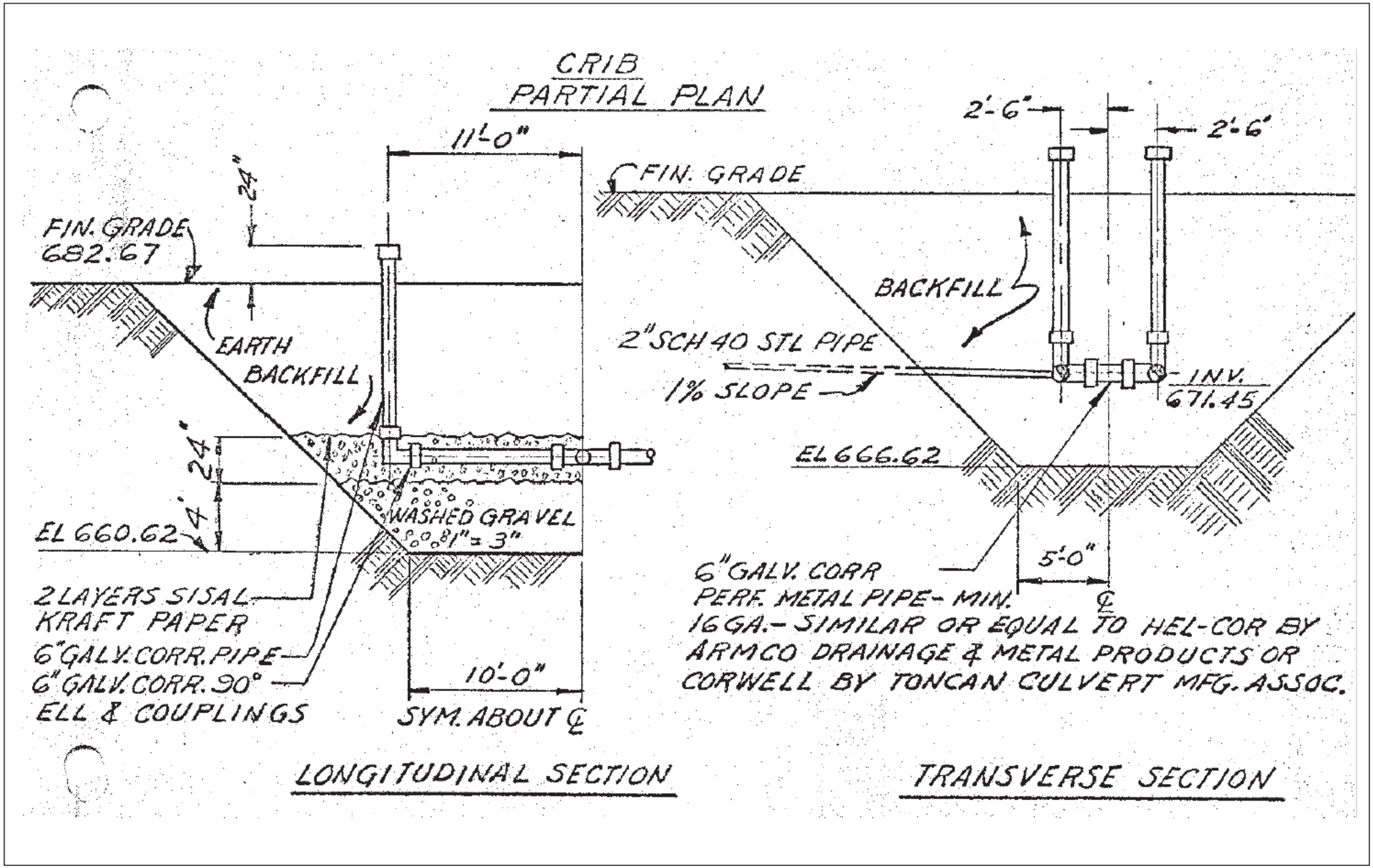
- 200-E-41 Stabilized Hot Semiworks Area
- 201-C Process Building

Facility

- 241CX40 Grout Removal Building

Scoping Summary: 216-C-6 (Crib)




CRIB
PARTIAL PLAN
11'-0"
24"
FIN. GRADE
682.67
EARTH
BACKFILL
4'-24"
EL 660.62
WASHED GRAVEL
1"-3"
2 LAYERS SISAL
KRAFT PAPER
6" GALV. CORR. PIPE
6" GALV. CORR. 90°
ELL & COUPLINGS
10'-0"
SYM. ABOUT ℄
LONGITUDINAL SECTION
2'-6"
2'-6"
FIN. GRADE
BACKFILL
2" SCH 40 STL PIPE
1% SLOPE
INV.
671.45
EL 666.62
5'-0"
℄
6" GALV. CORR
PERF. METAL PIPE - MIN.
16 GA. - SIMILAR OR EQUAL TO HEL-COR BY
ARMCO DRAINAGE & METAL PRODUCTS OR
CORWELL BY TONCAN CULVERT MFG. ASSOC.
TRANSVERSE SECTION

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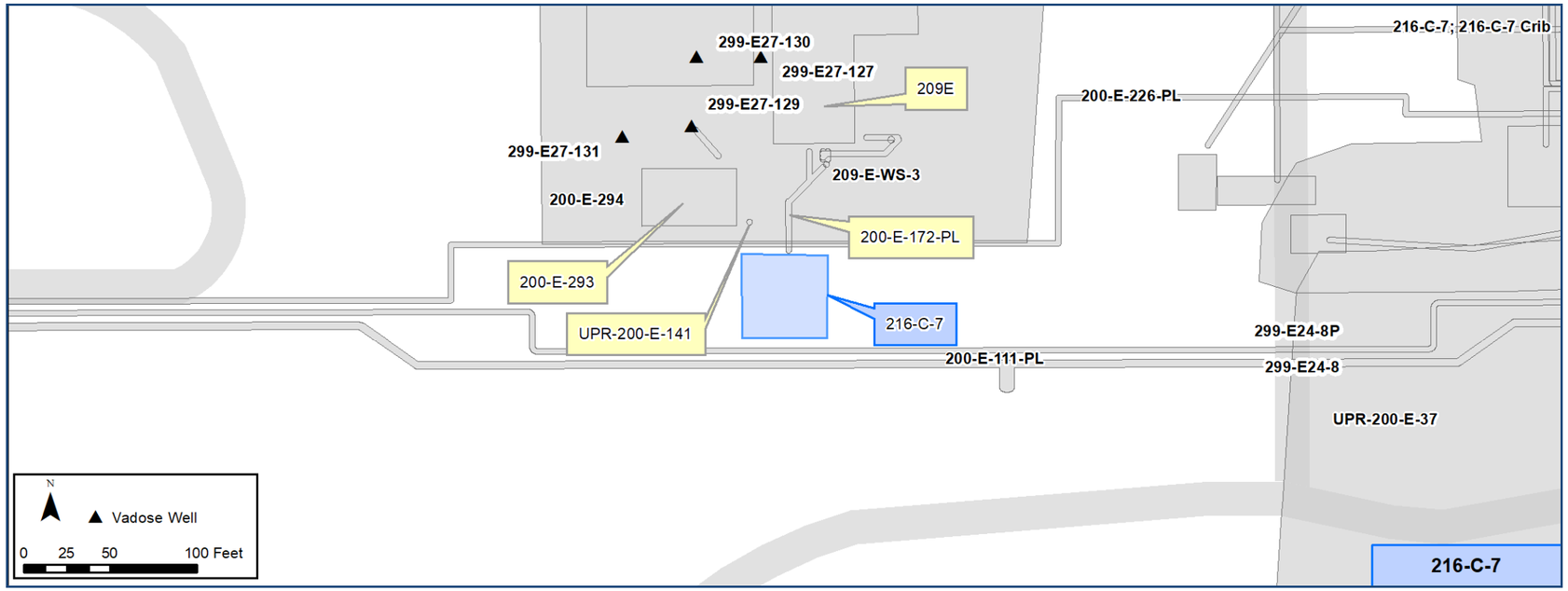
Scoping Summary: 216-C-7 (Crib)

History

The 216-C-7 waste site is an inactive, underground percolation crib that received radioactive liquid waste from the 209E Critical Mass Laboratory (Hot Semiworks). The 209E Building was designed to perform critical mass experiments using plutonium nitrate solutions and enriched uranium. Following an experiment, the reflector tank waste was discharged to a 60-gallon buried valve pit/hold-up tank (209-E-WS-3) to be sampled. If the waste were below levels of concern, it was discharged to the 216-C-7 Crib via a 2-inch diameter stainless steel pipeline (200-E-172-PL), that connected to a 6-inch diameter perforated vitrified clay distribution pipeline.

The 216-C-7 crib was constructed between 1959 and 1960, and was operational from 1961 until it was placed on standby in 1983. The 216-C-7 Crib is located southwest of the demolished 209E Building, and is posted with Underground Radioactive Material signs.



Construction

- Length:
  - Top: 40 ft
  - Bottom: 20 ft
- Width:
  - Top: 40 ft
  - Bottom: 20 ft
- Depth: 10 ft bgs
- Side Slope: 1:1
- 6-in. perforated vitrified clay pipe
- Covering: Gravel fill over a 6 mm polyethylene sheeting (Contains 4,100 cu. ft of gravel fill)

Features Of Interest

- 4 vent risers

Relevant Characterization

- 2015 radiological survey report did not identify problems with Underground Radioactive Material Area (URMA), which included the soil and vent risers of 216-C-7 (<5,000 dpm/100 cm-2 of total beta/gamma)

Waste Streams

- 209E Laboratory Waste (Hot Semiworks Zone)
  - 209E reflector water
  - Connections to the crib from the 209E Building included: Neutron shield tank, slab tank, floor drains, cleanouts, sinks, valve pit/hold-up tank (209-E-WS-3), valve box, and vent risers (acidic waste)
- ~16,000 gallons disposed through the crib
- Based on historical inventory reporting (HNF-1744) waste transferred to the 216-C-7 Crib includes:
  - <4.13E-02 Ci Sr-90, < 4.33E-02 Ci Cs-137, 2.14E-11 Ci Ru-106, <3.33E-05 Ci total U, 6.77E-02 Ci total alpha and 2.13E-01 Ci total beta

Misc./Other Relevant Information

- Reflector tank water was discharged to the crib via 200-E-172-PL and a 60-gal buried valve pit/hold-up tank (209-E-WS-3)
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Identified Remove Treat and Dispose (RTD) as the preferred remedial action (DOE/RL-2008-44, Rev. 0).

Site Interfaces

Origin/Termination

200-IS-1 OU

- 200-E-172-PL

Intersecting/Nearby Sites

200-IS-1 OU

- 200-E-111-PL
- 200-E-226-PL

OU Unassigned

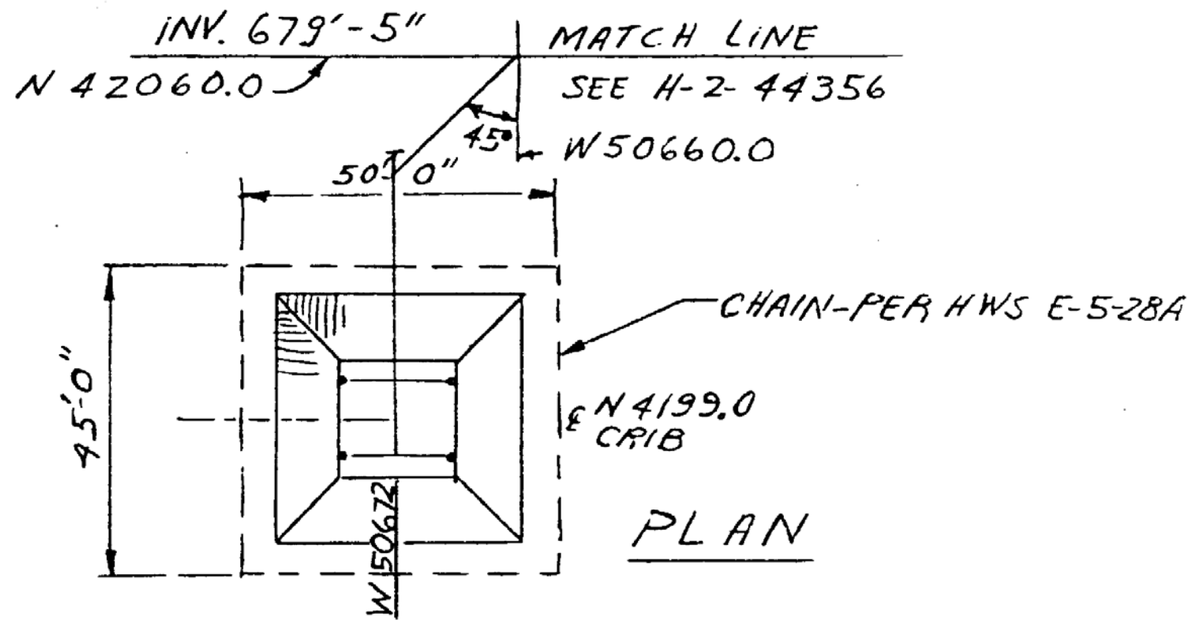
- 200-E-293 (Concrete Slab)
- 200-E-294
- UPR-200-E-141

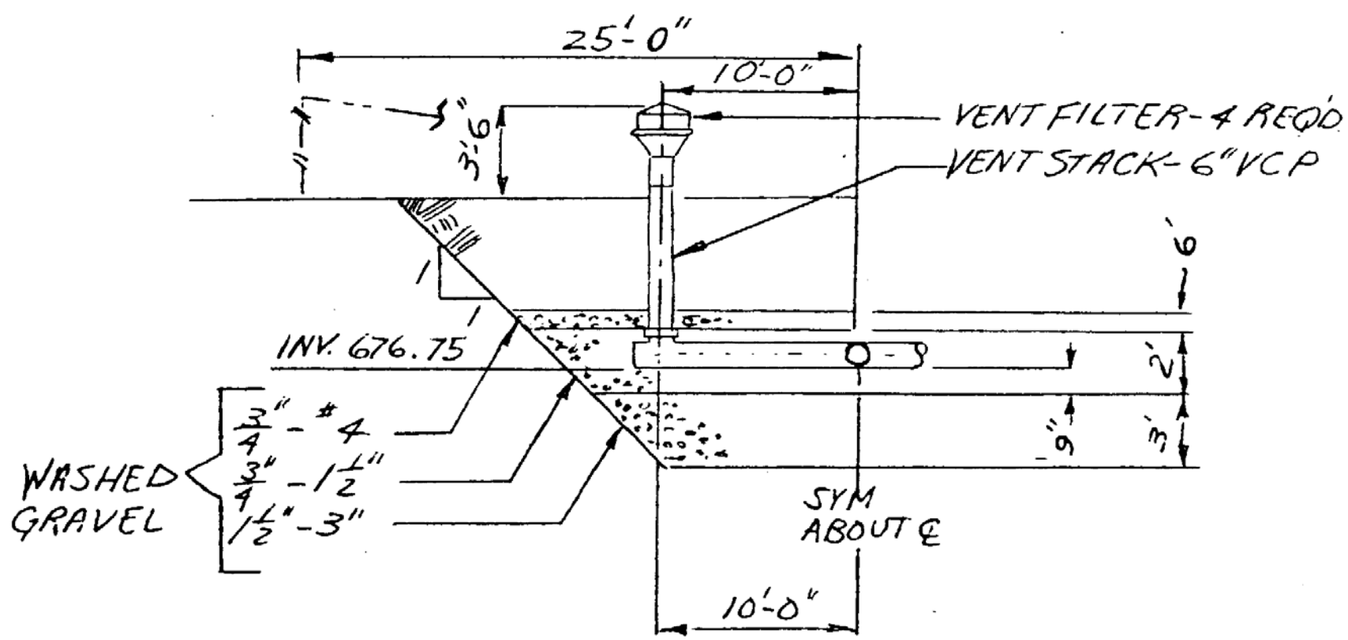
Scoping Summary: 216-C-7 (Crib)

Figure 1

216-C-7 Crib

Source: H-2-44336





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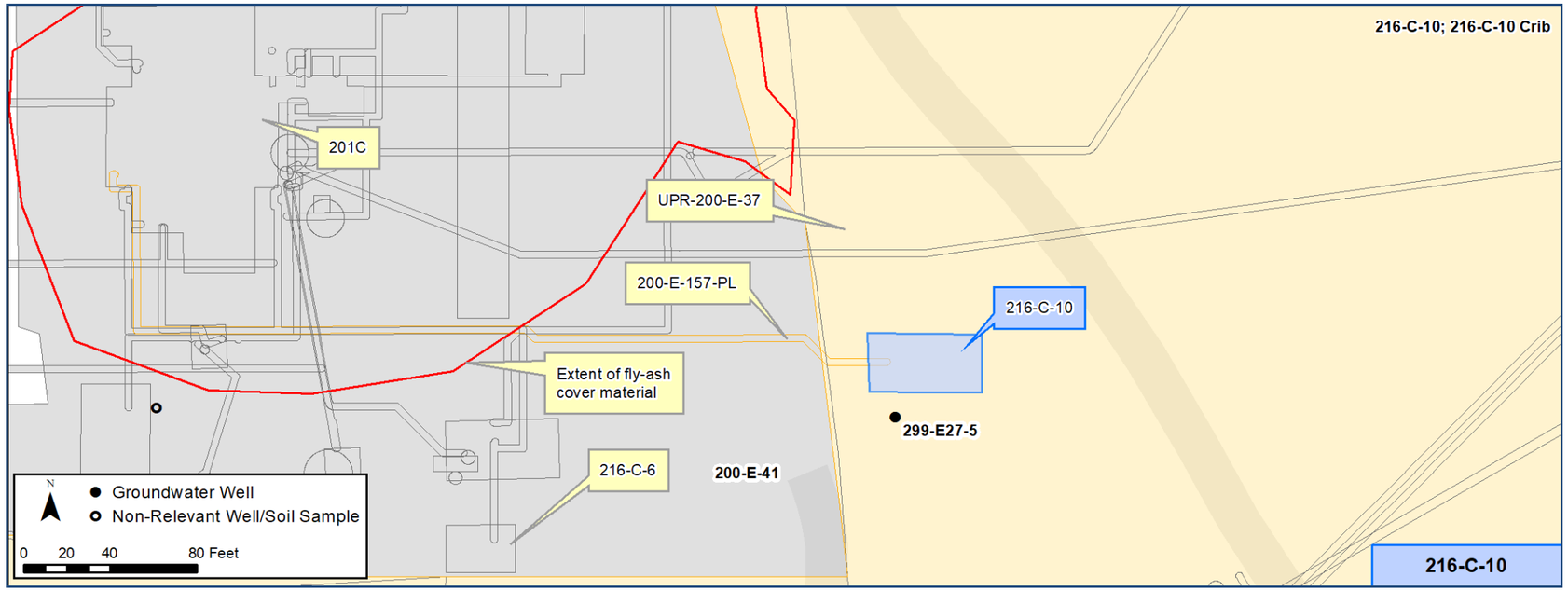
Scoping Summary: 216-C-10 (Crib)

History

The 216-C-10 waste site is an inactive, underground crib that received process condensate from the 201C Process Building (Hot Semiworks) via the 200-E-157-PL Pipeline. The crib is located south of 7th Street and southeast of 201C. It began operation in 1964 (as a replacement for 216-C-6) and closed in 1969. However, it likely did not receive waste after 201C was shut down and retired in 1967. No specific deactivation measures are noted for 216-C-10 aside from 201C being retired and later dismantled in 1984.

In 1989 the crib was surface stabilized. The "Surface Contamination" postings were removed and the site was reposted as "Underground Radioactive Material." In July-2000, the vent risers were sealed as a preventative measure for potential passive radioactive emissions.

A 2014 radiation survey found direct readings of 20,000 dpm/100cm2 beta/gamma over the crib's soil. In 2015, gravel was added to cover contamination and prevent the growth of tumbleweeds. A 2016 surface radiation survey detected no contamination above background levels.



Construction

- No structure associated with this crib
- Bottom Length: 32.5 ft
- Bottom Width: 5 ft
- Depth: ~7 ft bgs (before unknown amount of gravel was added)
- Side Slope: 1:1.5 (to surface)
- Fill: 4 ft of gravel (1,700 cubic ft.) then backfilled
- Number of incoming and outgoing pipelines:
  - Incoming pipelines: 1

Features Of Interest

- The site is marked with concrete AC-540 markers and Underground Radioactive Material signs.
- Located within the larger UPR-200-E-37 waste site.
- 3 risers (sealed)

Relevant Characterization

- 2013, 2015 and 2016 surface radiation surveys detected < 5000 dpm/100cm2 beta/gamma.
- A 2014 surface radiation survey found direct readings of 20,000 dpm/100cm2 beta/gamma.
- A 1992 surface radiation survey found no radiation above detection limits.
- See Page 3 for a depiction of the nature and extent of contamination as defined by existing data.

Waste Streams

- 201C strontium recovery process condensate (Hot Semiworks)
  - Acidic
  - Estimated to have contained 600 kg nitric acid
  - ~237,000 gal total waste discharged
- Based on historical inventory reporting (HNF-1744) waste transferred to the 216-C-10 Crib includes:
  - 2.78E+1 Ci Sr-90, < 6.93E-2 Ci Cs-137, 1.85E-10 Ci Ru-106, < 1.51E-5 Ci total U, < 9.21E-3 Ci total alpha and 6.91E+1 Ci total beta
  - (Radionuclides decayed through Dec-31-1998)

Misc./Other Relevant Information

- Previously associated with Operable Units 200-SO-1, 200-MG-1 and 200-PW-4.
- Located within UPR-200-E-37 (contamination east of Hot Semiworks).
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit identified Confirmatory Sampling/No Action (CS/NA) as the preferred remedial action (DOE/RL-2008-44). This decision was supported by sites with similar characteristics.

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-157-PL

Intersecting/Nearby Sites

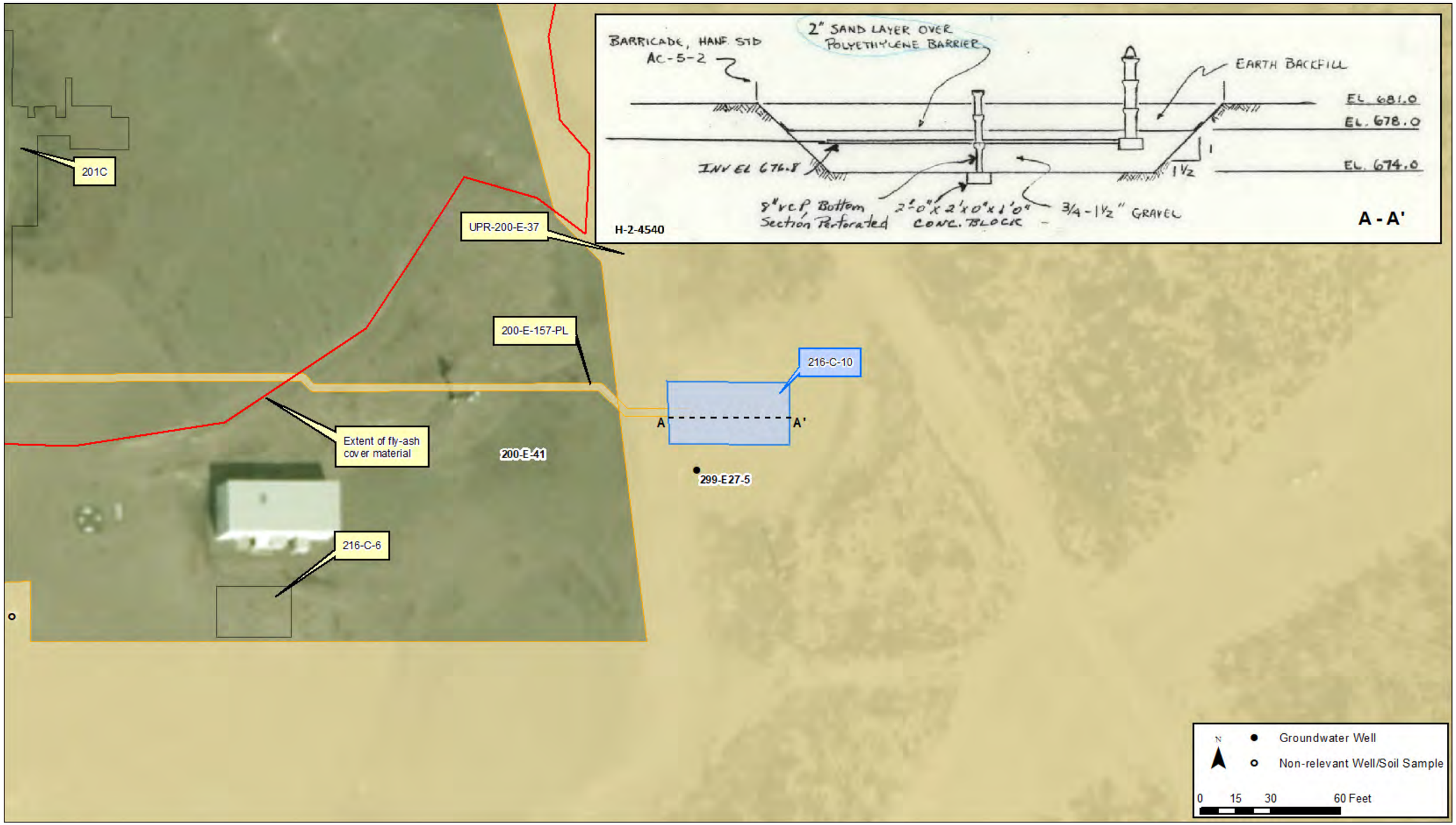
200-EA-1

- 216-C-6
- UPR-200-E-37 (contamination east of Hot Semiworks)
- 200-E-41 (stabilized area)

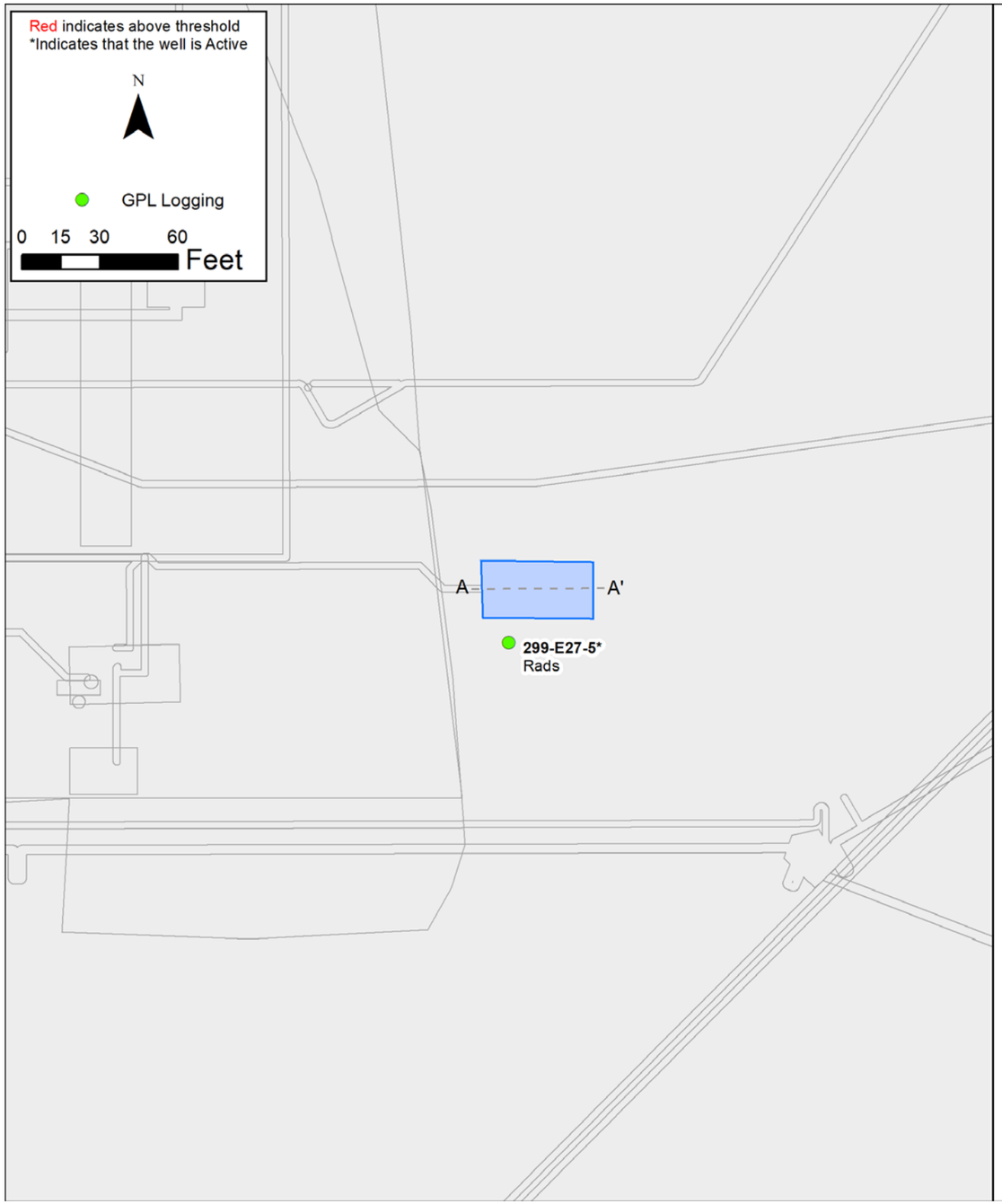
Unassigned OU

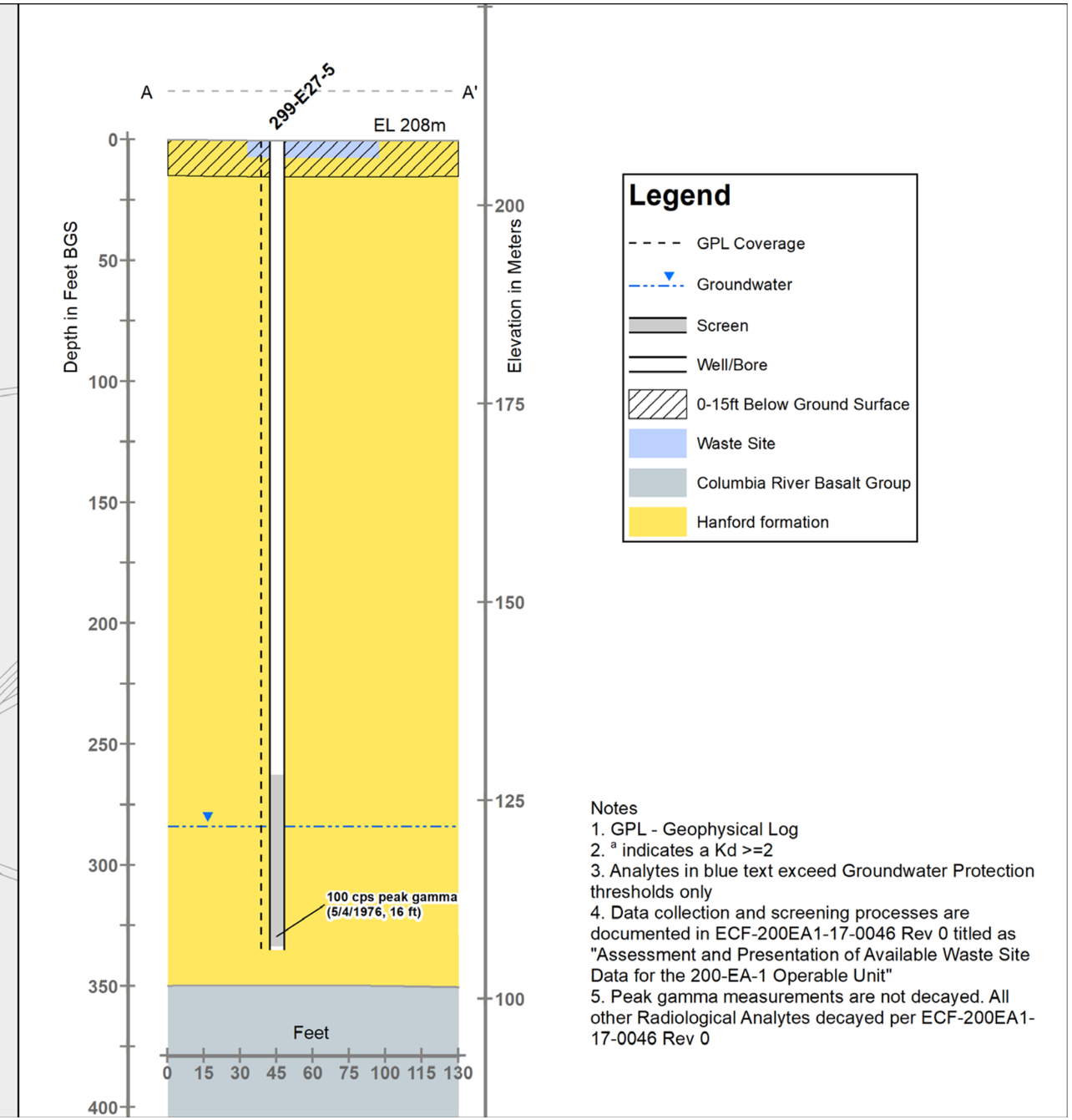
- 201C Process Building (Hot Semiworks)

Scoping Summary: 216-C-10 (Crib)



Scoping Summary: 216-C-10 (Crib)





Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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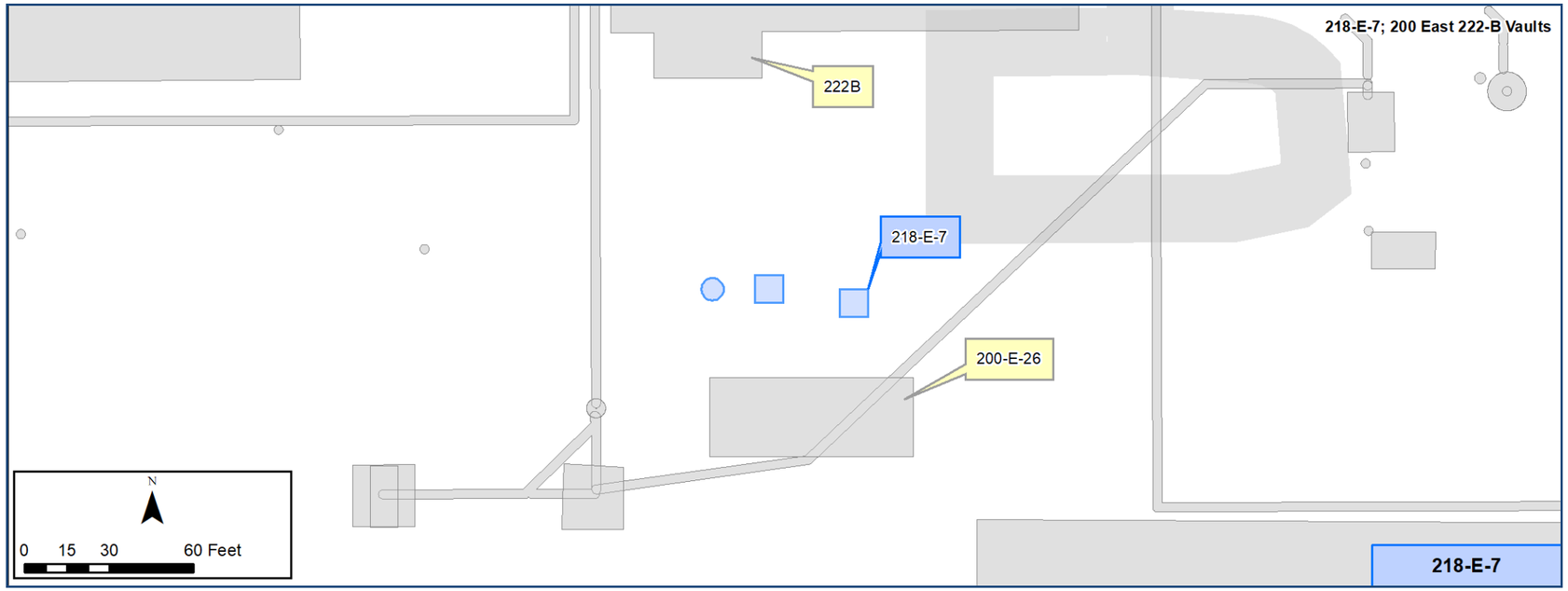
Scoping Summary: 218-E-7 (Burial Vault)

History

The 218-E-7 waste site is an inactive set of three underground burial vaults that received laboratory waste from the 222B office building in the 200 East Area. The burial vaults are south of the building and were in use between 1945 and 1952.

In 1995, the vault disposal chutes were removed and the center and eastern vaults were excavated to 10 ft bgs to determine cave-in potential. The center box yielded wood scraps with live termites, in addition to the hinges and lock for the chute. The Eastern box excavation revealed little sign of a structure. The vault disposal chutes may have been previously removed, as excavations were based on GPS coordinates. The excavations were re-graded with existing fill. The third vault (a culvert pipe) was not checked.

At this time in 1995, it was determined that the center box had been filled with dirt when it was taken out of use, and that the Eastern box was likely a few feet further east than originally posted. Upon completion of the excavation work, an additional 12 to 18 inches of clean soil was added to the surface area of the site to raise the surface area of these vaults to higher than the surrounding landscape to prevent future run-on.



Construction

Vault Specifications

Eastern & Center Vaults:

- Vault Tops: 5 ft bgs (original surface level)
- Length: 10 ft
- Width: 10 ft
- Depth: 12 ft deep; no floor
- Material: 2 in-by-12 in wooden planking

Replacement Vault (Western Vault):

- Vault Top: 3 ft bgs (original surface level)
- Material: Concrete Culvert Pipe Encasement
- Diameter: 8 ft
- Depth: 25 ft
- Top of Encasement: 9-in pre-cast concrete cover
- Bottom of Encasement: 12-in thick concrete floor

- Page 2 includes a pop-out drawing of the three disposal chutes.
- H-2-757 is included as Page 3; it shows the plans for this dry waste disposal site.
- H-2-75398, Sheet 1 is included as Page 4; it shows the site's stabilization plans from 1980.

Features Of Interest

- No features of interest identified.

Relevant Characterization

- In 1988, it was reported the contents of the site were radioactive, mixed fission product/transuranic (MFP/TRU) waste. Radionuclides present within the waste include:
  - Uranium
  - Plutonium
  - Sr-90
  - Ru-106
  - Cs-137

Waste Streams

- Solid laboratory wastes from 222B Building, approximately 6,000 cubic ft.
- Radionuclide inventory, decayed thru 12/31/1990 (BHI-00881, Rev. 0):
  - Gross Data
    - Uranium: 1.0e+003 g
    - Plutonium: 1.0 g
  - Isotope Data
    - Sr-90: 4.36 Ci
    - Ru-106: 2.48e-11 Ci
    - Cs-137: 4.956 Ci.

Misc./Other Relevant Information

- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Waste Sites identified Removal, Treatment, and Disposal (RTD) as the preferred remedial action (DOE/RL-2008-44; Rev. 0).

Site Interfaces

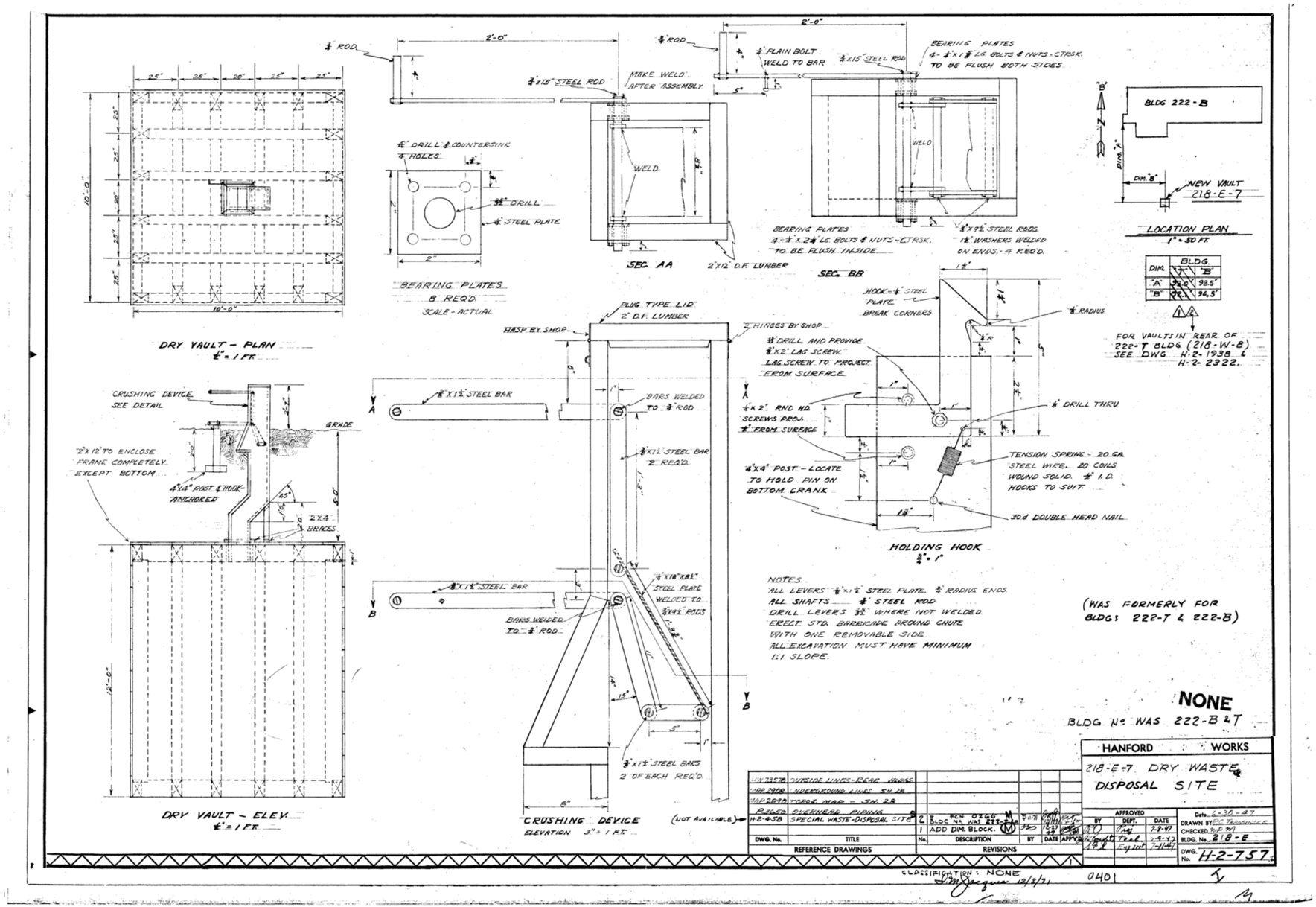
Nearby Sites

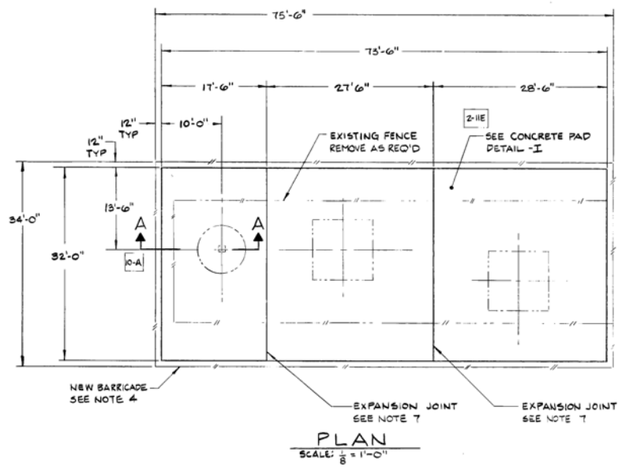
200-EA-1 OU

- 200-E-26 (Heavy Equipment Storage Area)

- 222B (Office Building)

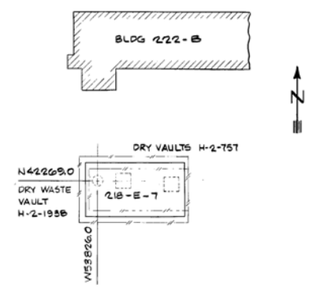
Scoping Summary: 218-E-7 (Burial Vault)


DRY VAULT - PLAN
1" = 1 FT.
DRY VAULT - ELEV.
1" = 1 FT.
CRUSHING DEVICE
ELEVATION 3" = 1 FT.
SEC. AA
SEC. BB
BEARING PLATES
8 REQ'D.
SCALE - ACTUAL
HOLDING HOOK
3/4" = 1"
LOCATION PLAN
1" = 50 FT.
BLDG 222-B
NEW VAULT
218-E-7
FOR VAULTS IN REAR OF
222-T BLDG (218-W-8)
SEE DWG. H-2-1938 &
H-2-2322.
(WAS FORMERLY FOR
BLDGS 222-T & 222-B)
NONE
BLDG No. WAS 222-B & T
NOTES
ALL LEVERS 3/8"x1 1/2" STEEL PLATE. 3/8" RADIUS ENDS.
ALL SHAFTS 3/4" STEEL ROD
DRILL LEVERS 3/8" WHERE NOT WELDED.
ERECT STD. BARRICADE AROUND CHUTE
WITH ONE REMOVABLE SIDE.
ALL EXCAVATION MUST HAVE MINIMUM
1:1 SLOPE.
HANFORD WORKS
218-E-7 DRY WASTE
DISPOSAL SITE
H-2-757
REFERENCE DRAWINGS
REVISIONS
CLASSIFICATION: NONE



PLAN

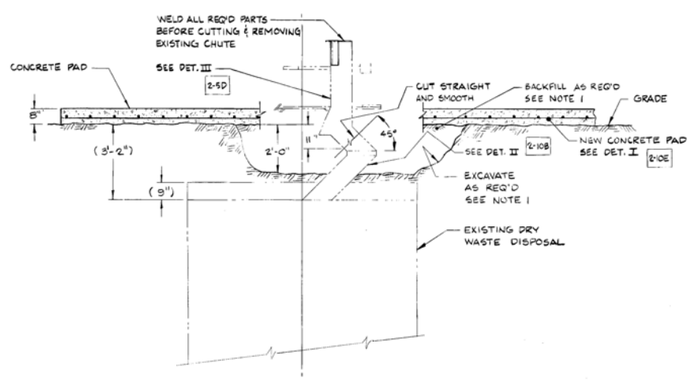
SCALE: 1/8" = 1'-0"



PLOT PLAN

GENERAL NOTES

1. STANDARD SPECIFICATION FOR EXCAVATION, BACKFILL AND FINISH GRADING, SEE HPS-550-AC.
2. BATCHING AND DELIVERY OF CONCRETE SHALL CONFORM TO HPS-510-AC.
3. PLACING OF REINFORCED CONCRETE SHALL CONFORM TO HPS-512-AC AND SHALL INCLUDE:
   a. EARTH COVER SEE RHO-CD-72
   b. CONCRETE SPECIFICATIONS:
      1. 4000 PSI - COMPRESSIVE STRENGTH AT 28 DAYS
      2. MAX. AGGREGATE SIZE SHALL BE 1½"
      3. SLUMP RANGE TO BE 3"-6"
      4. REBAR STEEL TO BE ASTM-A615 GRADE 60
   c. CONCRETE SHALL HAVE A ROUGH BROOM FINISH
   d. JOINTS AND EDGES OF UNFORMED SURFACES ARE TO BE LEFT UNFINISHED.
4. CHAIN BARRICADE SHALL BE INSTALLED AROUND CONCRETE SLAB PER AC-5-2 AND AS NOTED THIS DRAWING.
5. RADIOLOGICAL SIGNS SHALL BE PLACED AS NOTED ON AC-5-2. SIGN TYPE AND WORDING SHALL BE IN ACCORDANCE WITH AC-3-25 "UNDERGROUND RADIATION".
6. ADDITIONAL INFORMATION CAN BE FOUND IN THE WORK PROCEDURE FOR INTERIUM STABILIZATION OF 218-E-7 BURIAL GROUND. DOI01WP0111
7. EXPANSION JOINTS TO BE ½" x 8" x 92'-0" PREFORMED, BITUMINOUS TYPE, ASTM-D994.



SECTION A-A 12F

SCALE: ½" = 1'-0"

WELDING AND INSPECTION REQUIREMENTS

FABRICATION	1. WELDING STANDARD	☐ ASME ☐ AWS ☒ AWS D1.1/D1.3 ☒ HWS-CRD263-OPTIONAL (IN HOUSE)	
	2. PROCEDURE SPEC. & PERFORMANCE CERT.	☒ ASME SECTION IX ☒ AWS D1.1 ☐	
	3. FILLER MATERIAL	☒ ASME SECT II/AWS A5 ☐	
INSPECTION	4. VISUAL (VT)	☒ WELDING STD. IN (1) ☐ FITUP ☒ SPP-250-C (IN HOUSE) ☐ ROOT PASS ☒ FINAL	
	5. PENETRANT (PT)	☐ WELDING STD. IN (1) ☐	
	6. MAGNETIC PART. (MT)	☒ WELDING STD. IN (1) ☒ SPP-220-B (IN HOUSE)	
	7. ULTRASONIC (UT)	☐ WELDING STD. IN (1) ☐	
	8. RADIOGRAPH (RT)	☐ WELDING STD. IN (1) ☐	
	9. LEAK TEST (LT)	☐ WELDING STD. IN (1) ☐	

☒ OTHER REQTS. MT ALL WELDS, FINAL PAS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON,
DECIMALS ANGLES FRACTIONS
—— ±1° ±1/8
DO NOT SCALE PRINT

THIS DRAWING HAS BEEN REVIEWED BY A DESIGN REVIEW BOARD

SR. TILCH	11 DEC 87	0
CHAIRMAN	DATE	REVISION NO.

QUALITY ASSURANCE LEVEL-I

DRAWING APPROVALS	DATE
MANAGER QUALITY ASSURANCE	8/90
ENG.	
MANAGER	10/80
ENG.	8/30/90
MANAGER ENGINEERING	8/30
MANAGER	10/80
DRAWN RITCH	8/80

U. S. Department of Energy
Richland Operations Office

Rockwell Hanford Operations
Richland, Washington 99352

STABILIZATION OF 218-E-7 DRY WASTE DISPOSAL SITE

CLASSIFICATION	BY	SCALE	DRAWING NO.	BLDG NO.	SHEET NO.	SHEETS
O NONE	NOT REQ'D	1/8"=1'-0" & NOTED	H-2-75398	222-B 0401	1	2

DWG NO.	DRAWING TITLE
H-2-44501	AREA MAP- 200E-B-PLANT FAC
H-2-1938	CRUSHING DEVISE FOR DRY WASTE
H-2-1936	218-E-7 & 218-W-B DRY WASTE
H-2-757	218-E-7 DRY WASTE DISPOSAL SITE

REFERENCE DRAWINGS

NEXT USED ON H-2-1938, H-2-44501

REV. NO.	QUALITY ASSURANCE	RESPONSIBLE ENGINEER	DRAFTING	CHKD DATE	REV DATE	DESCRIPTION	LAST REV.
0							

REVISION APPROVALS

COMMENT PRT ISSUE NO. 2 10/24/80 DATE | CHECK PRT. ISSUE NO. 1 10/24/80 DATE

REVISIONS

DRAWING STATUS D1-C-309

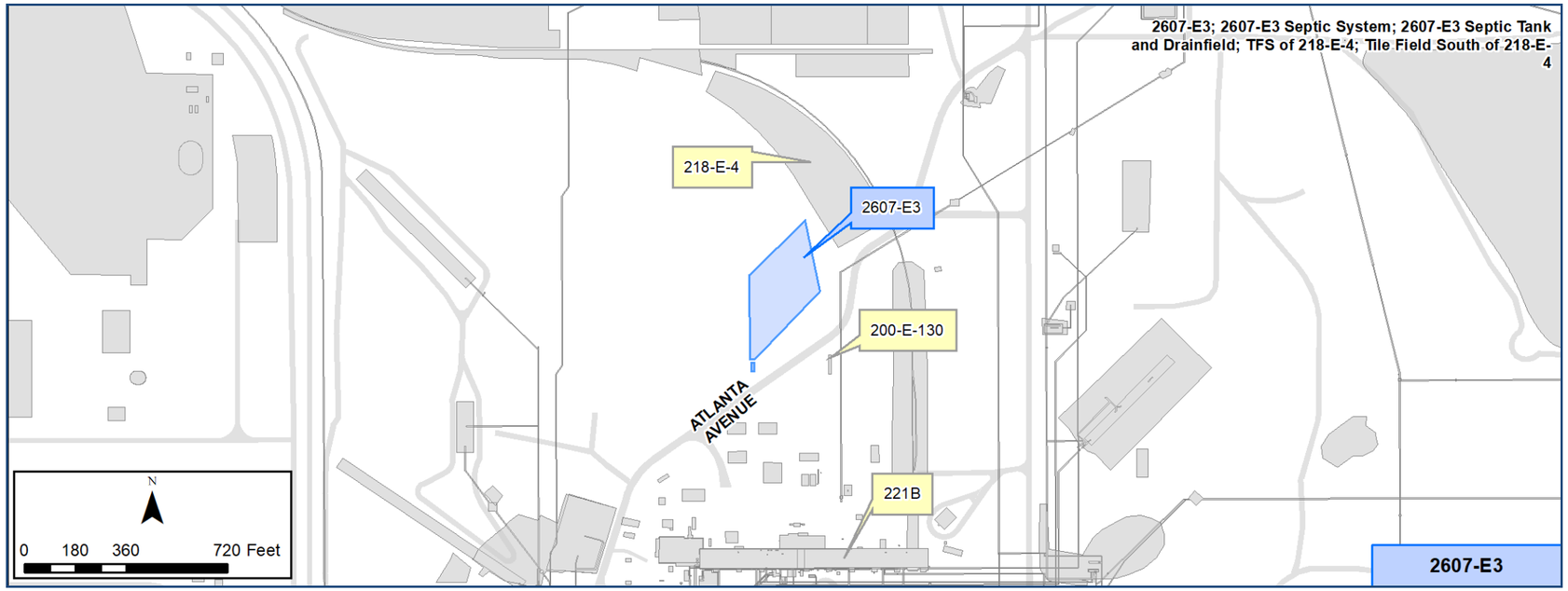
Scoping Summary: 2607-E3 (Septic Tank)

History

The 2607-E3 waste site is an abandoned septic tank and drain field located north of B Plant and south of the 218-E-4 Equipment Burial Ground. The septic tank and drain field received only human and sanitary waste from sinks and toilets located within the B Plant complex.

The drain field, sometimes referred to as the Tile Field South of 218-E-4 but formally consolidated into 2607-E3, received non-hazardous sanitary sewage from B Plant facilities between 1944 and 1997, when a new regional system replaced this septic setup. At least one document suggests the septic system was constructed in 1948, four years later than other reports.

The septic tank was abandoned in 1997 in accordance with WAC 246-272A-0300; it was pumped out and filled with soil.



Construction

Septic Tank specifications:

- Material: reinforced concrete
- Height: 12.5 ft
- Drawing W-71192, Rev 31, includes detailed dimensional specifications for this 292-person capacity tank. The drawing is included as Page 3.

Tile Field specifications:

- Material: 4-in. VCP
- Drain tile minimum: 8 linear ft/person
- Laterals: open-jointed, spaced 8 ft apart

Features Of Interest

- No features of interest identified.

Relevant Characterization

- 2005: Records review identified no sample data collected upon septic abandonment.

Waste Streams

- 1944-to-1997: 292-person capacity septic system that received approximately 14.4 cubic meters of sanitary wastewater and sewage per day from the B Plant facilities.
- The B Plant Source Aggregate Area Management Study Report (DOE/RL-92-05) states that the septic tank and drain field are not known to contain hazardous- or radiological waste.

Misc./Other Relevant Information

- In a non-time critical removal action EE/CA for the 200-MG-1 Operable Unit Waste Sites that identified the most appropriate alternative here to be confirmatory sampling/no further action (CS/NFA), but no follow-up records for this site were located (DOE/RL-2008-44, Rev. 0)

Site Interfaces

Nearby Sites

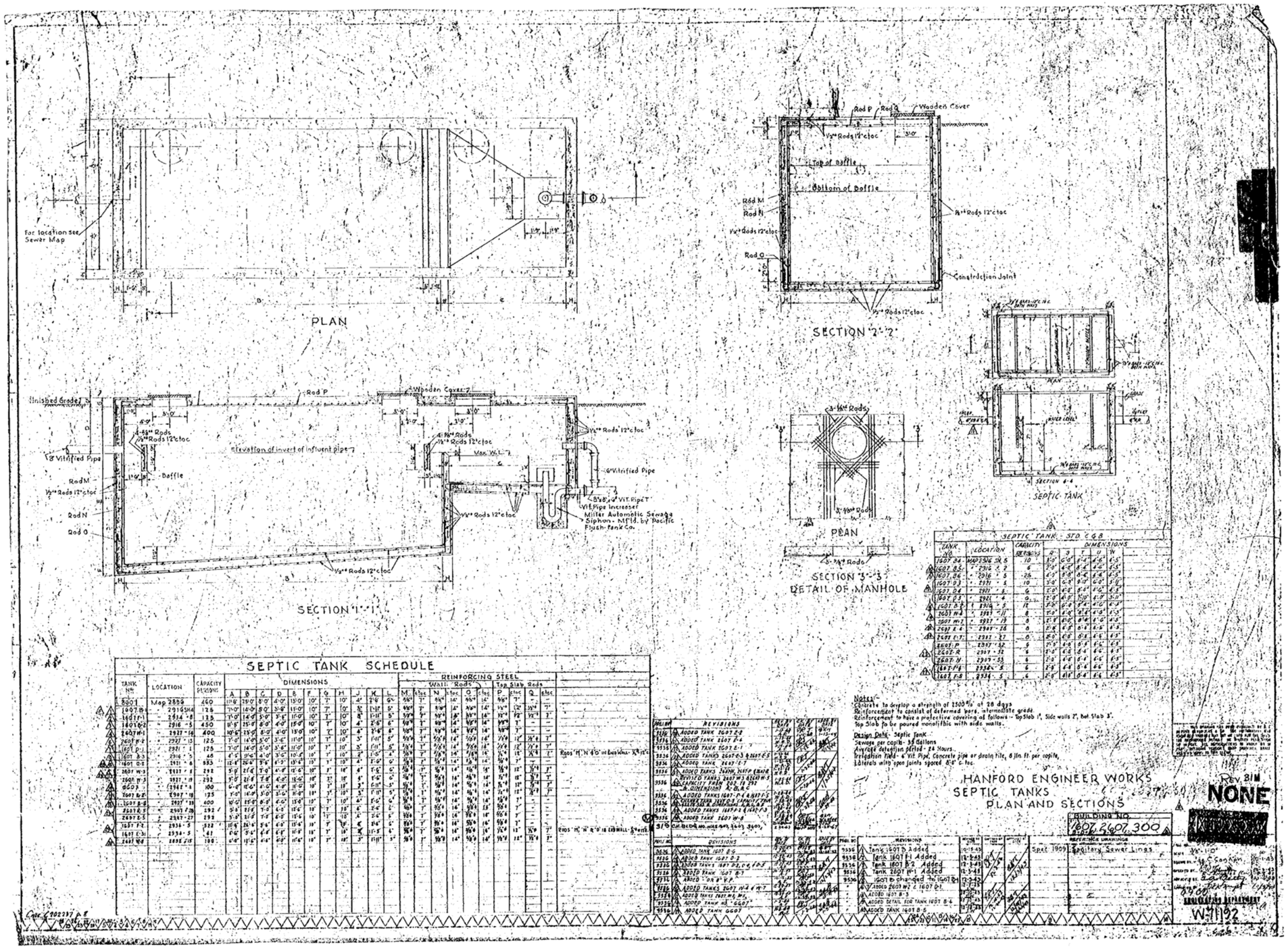
200-SW-2 OU

- 218-E-4 (Equipment Burial Ground)

200-EA-1 OU

- 200-E-130 (Stabilized Area)

Scoping Summary: 2607-E3 (Septic Tank)


PLAN
SECTION "2"-"2"
SECTION "1"-"1"
PLAN
SECTION "3"-"3"
DETAIL OF MANHOLE
SEPTIC TANK
SEPTIC TANK SCHEDULE
HANFORD ENGINEER WORKS
SEPTIC TANKS
PLAN AND SECTIONS
NONE
W-71192

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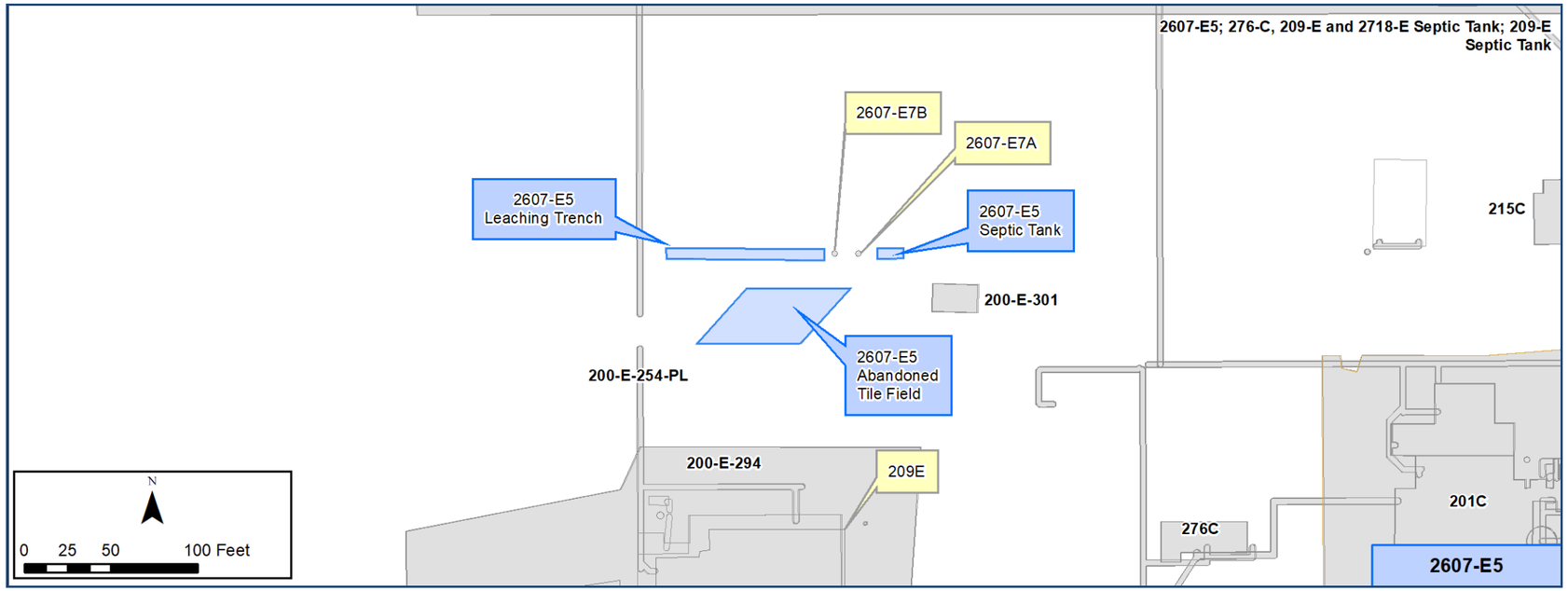
Scoping Summary: 2607-E5 (Septic Tank)

History

The 2607-E5 waste site is an inactive underground septic tank, leaching trench and abandoned tile field that received sanitary wastewater and sewage from the Critical Mass facilities near 209E (Critical Mass Lab) in the Hot Semiworks area. The septic tank was constructed in 1954 and operational until it was isolated in 2011. The tank was properly isolated per WAC 246-272A-0300 by pumping out the waste, flushing the tank, destroying the lid and filling the tank with soil and gravel. The tile field was abandoned and replaced with the leaching trench circa 1963.

The 2607-E5 septic system was originally constructed for buildings 2704C (Office Admin and Gate House) and 2707C, from which a 4 inch tile sewer line ran to the septic tank and tile field outside the Hot Semiworks exclusion area. Later modifications added two small in-line septic tanks (2607-E7A and 2607-E7B) and tied the 209E into the the system. Mobile offices that have since been removed were also connected to the 2607-E5 system at various points in its operational history.



Construction

Septic Tank
- Length: 17 ft
- Width: 7 ft 4 in.
- Height: 6 ft 2 in.
- Depth:
  - Bottom of structure approx. 11.5 ft bgs
  - Top of structure approx. 7 ft bgs
- Volume: 14,377 gal
- Material: Concrete
- Floor and side walls 8 in. thick
- Cieling wall 6 in. thick

Leaching Trench
- Length: 75 ft
- Width: 5 ft (bottom)
- Depth: Approx. 12 ft
- Side Slope: 1.5:1

Tile Field
- Length: 50 ft (6-lines a total of 300 ft)
- Material: Vitrified Clay, Open Joint
- Slope: -0.3%

Features Of Interest

Septic Tank
- Two 24" diameter manholes
- One 1,047 gal dosing siphon
- See Figure 2

Leaching Trench
- Three rows of 8" x 8" x 16" bond beam concrete blocks
- 2 ft of cobble fill below concrete blocks
- 1 ft of gravel, a polyethylene cover, and backfill to 1 ft above grade cover the trench
- One distribution box at the eastern end of the trench
- See Figure 1

Relevant Characterization

- 209E (Critical Mass Lab) sewage samples (1996):
  - Sludge - 1.69 pCi/g of Cs-137
  - Composite liquid - 47 pCi/liter total Alpha, 49 pCi/liter total Beta, and 12 pCi/liter Cs-137
  - Location of samples not specified

Waste Streams

- Sanitary wastewater and sewage from 209E (Critical Mass Lab) and 2704C (Office Admin and Gate House)
  - Records indicate that this effluent was disposed of separately from the chemical and production wastes
- Records indicate possible waste stream from the 276C Solvent Recovery Tank - supporting documentation to confirm this association was not located

Misc./Other Relevant Information

- Records indicate possible waste stream from the 2718E (Critical Mass Laboratory Storage) - 2010 investigation confirmed no connection
- 2607-E5 septic system is located in a radiation zone
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Waste Sites identified Confirmatory Sampling/No Further Action (CS/NFA) as preferred remedial action (DOE/RL-2008-44; Rev. 0).

Site Interfaces

Origin/Termination

- N/A

Intersecting/Nearby Sites

200-EA-1
- 2607-E7A
- 2607-E7B

Scoping Summary: 2607-E5 (Septic Tank)

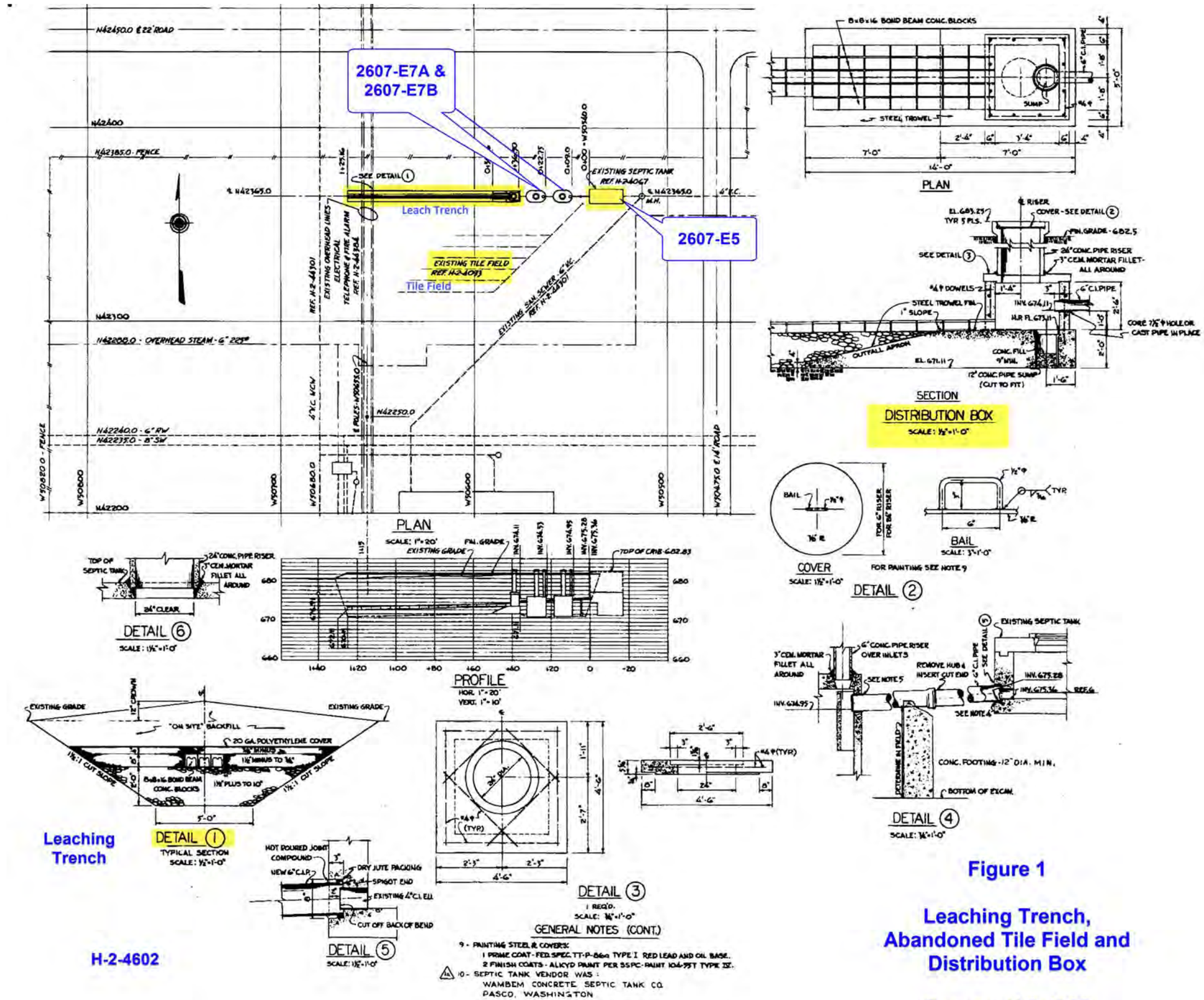


Figure 1

Leaching Trench, Abandoned Tile Field and Distribution Box

Source: H-2-4602

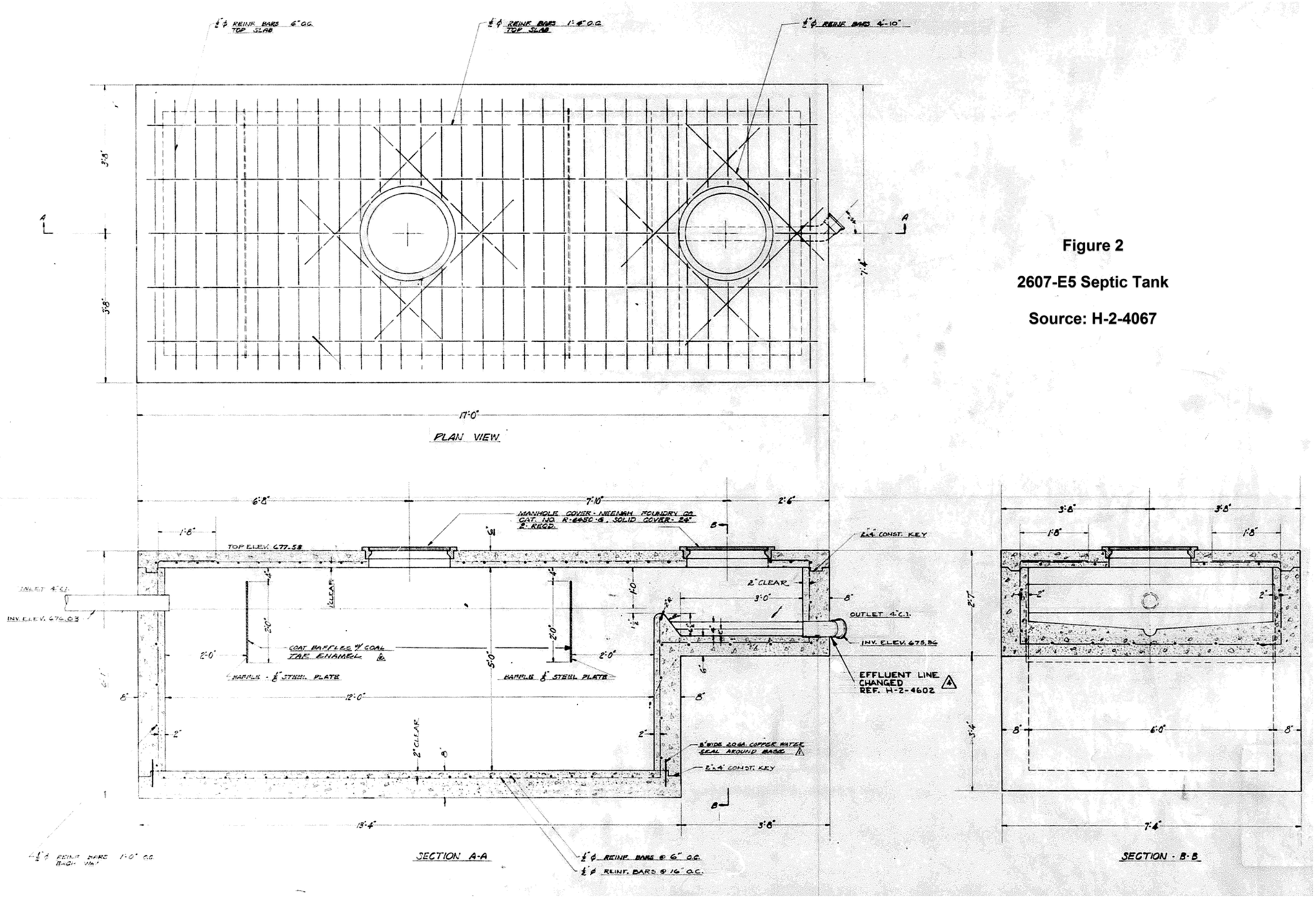


Figure 2

2607-E5 Septic Tank

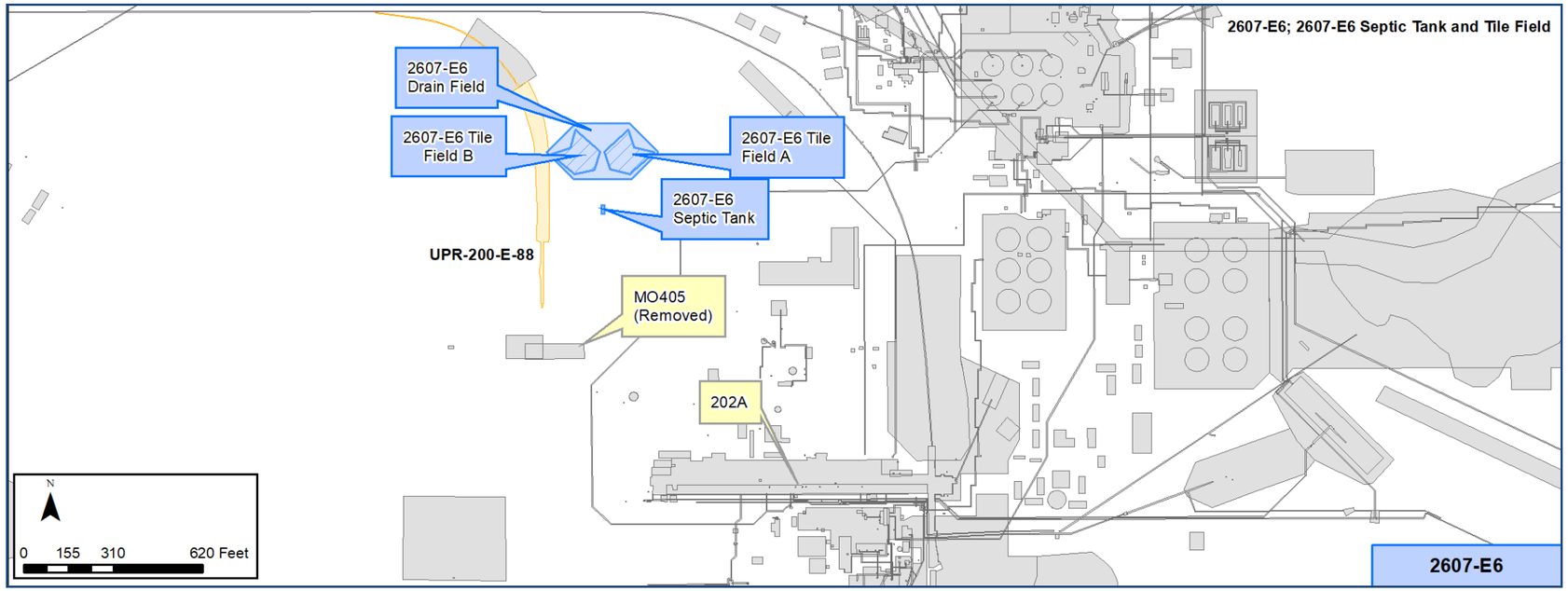
Source: H-2-4067

Scoping Summary: 2607-E6 (Septic Tank)

History

The 2607-E6 waste site is an inactive underground septic tank and two tile drain fields that received sanitary sewage from the 202A Purex facility and Mobile Office 405. The tank and field were constructed in 1953, began receiving waste in 1954 and were no longer in service in 1997. An operational end date was not located, though the site was documented as still receiving sewage in 1987.

The septic tank was abandoned in place in accordance with WAC 246-272-18501, pumped, filled with soil and the cover removed. The drain field area consists of two tile fields, A and B, both of which are vegetated and at grade. Reclassification of the 2607-E6 waste site to Closed Out was requested in 2001, but it is still listed as Accepted in the WIDS database (8/31/2016).



Construction

Septic Tank

- Length: 28 ft 4 in.
- Width: 9 ft 8 in.
- Height: 17 ft 10 in
- Depth: 17 ft 4 in. bgs
- Top 6 in. above grade
- Volume: Not located
- Material: Concrete with steel reinforced walls
- Top 6 in. thick, Floor 1 ft thick
- Side walls 10 in. thick
- Incoming pipelines: 1
- Outgoing pipelines: 1

Tile Fields

- Total Perimeter
  - Length: Approx. 145 ft
  - Width: Approx. 140 ft
- 8 in. central distribution pipe
  - Length: 105 ft
  - Slope: 4 in. per 100 ft
- Sixteen 6 in. lateral pipes on each side
  - Length:65 ft each
  - Slope 2 in. per 100 ft

Features Of Interest

Septic Tank

- One manhole with cover 3 ft diameter
- One 8 in. vitrified clay inlet pipe
- One 8 in. vitrified clay outlet pipe
- Surrounded by a wooden barricade

Tile Fields

- Surrounded by a wooden barricade
- Surface is vegetated
- Three layer bedding of coarse gravel, fine gravel and backfill
- One Diversion box - see Figure 1

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil

Waste Streams

- PUREX Plant
  - Sanitary wastewater and sewage
- Non-Contaminated Fluids
  - Sanitary wastewater and sewage from MO405
- 11,491 gal/day

Misc./Other Relevant Information

- Biota characterization samples are available in site associated characterization records, apart of the "200 Area Ecological Study - Phase I Animals"
- The Engineering Evaluation/ Cost Analysis for the 200-MG-1 Operable Unit Waste Sites identified Confirmatory Sampling/No Further Action (CS/NFA) as the preferred remedial action (DOE/RL-2008-44; Rev. 0).

Site Interfaces

Origin/Termination

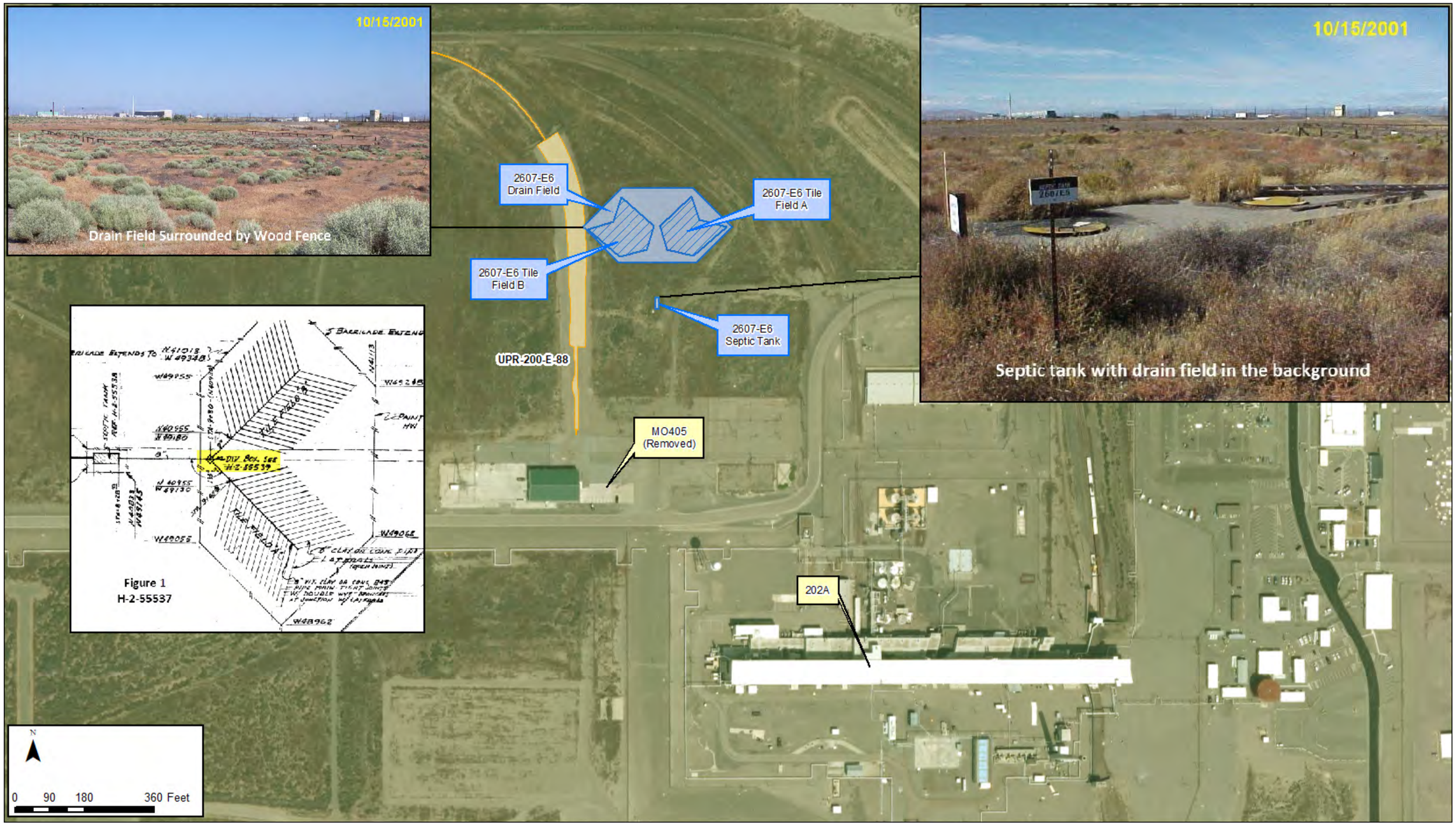
- N/A

Intersecting/Nearby Sites

200-EA-1 OU

- UPR-200-E-88

Scoping Summary: 2607-E6 (Septic Tank)

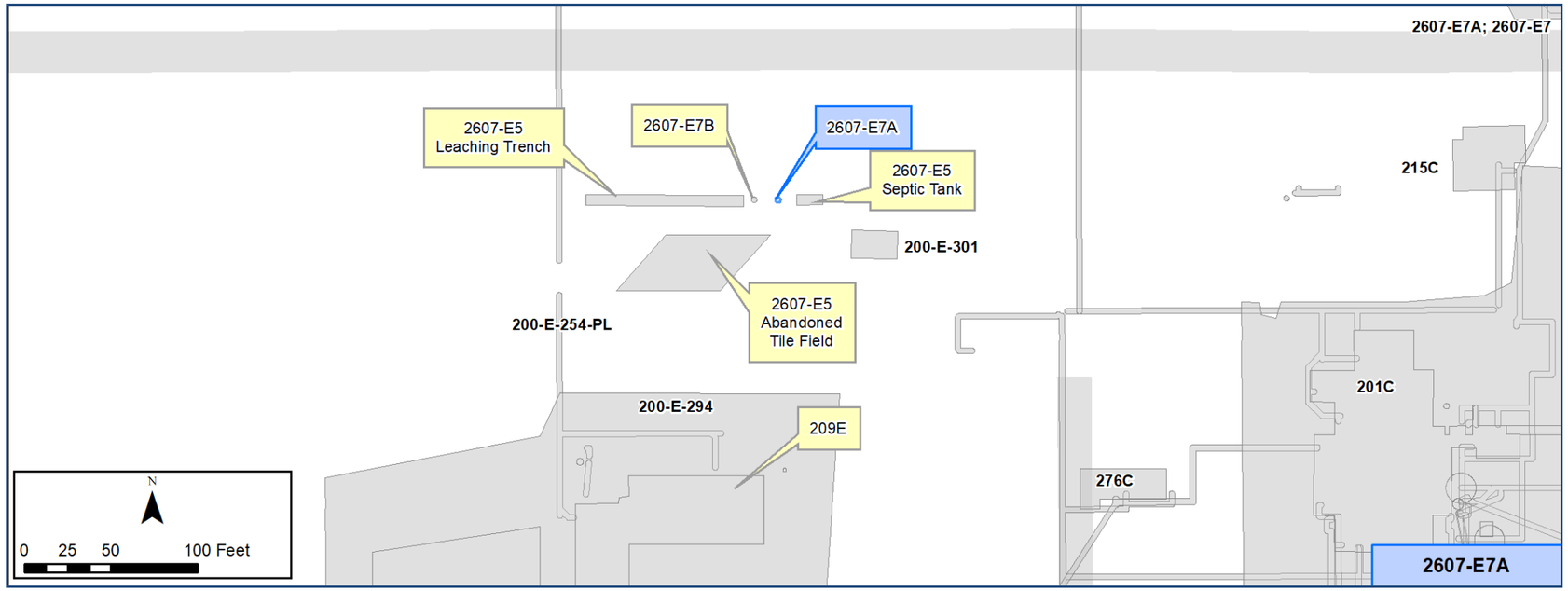


Scoping Summary: 2607-E7A (Septic Tank)

History

The 2607-E7A waste site is an inactive underground septic tank that received sanitary wastewater and sewage from the Critical Mass facilities near 209E (Critical Mass Lab) Hot Semiworks area. The septic tank was constructed in 1963 and was operational until 2011, when it was isolated. The tank was properly isolated per WAC 246-272A-0300 by pumping out the waste, flushing the tank, destroying the lid and filling the tank with soil and gravel.

2607-E7A and 2607-E7B tanks were placed in-line with the existing 2607-E5 tank when the 209E facility was tied into the septic system. 2607-E7A drains to the 2607-E5 sanitary leaching trench. Mobile offices that have since been removed were also connected to the septic system at various points in its operational history.



Construction

- Length: 8 ft 9 in.
- Width: 5 ft 6 in.
- Height: 8 ft 4 in.
- Depth:
  - Bottom of structure: Approx 11.5 ft bgs
  - Top of structure: Approx. 7.5 ft bgs
- Volume: 240 gal
- Material: Concrete
- Walls 6 in. thick
- Number of incoming/outgoing pipelines: 1

Features Of Interest

- One 24 in. diameter cover
- One 6 in. concrete riser
- One 24 in. concrete riser
- One 6 in. cast iron pipe

Waste Streams

- Sanitary wastewater and sewage from 209E (Critical Mass Lab) and 2704C (Office Admin and Gate House) facilities
  - Records indicate that this effluent was disposed of separately from the chemical and production wastes
- Estimated rate of waste generation was 1.64 cu m/d

Site Interfaces

Origin/Termination

- N/A

Intersecting/Nearby Sites

200-EA-1
- 2607-E5
- 2607-E7B

Relevant Characterization

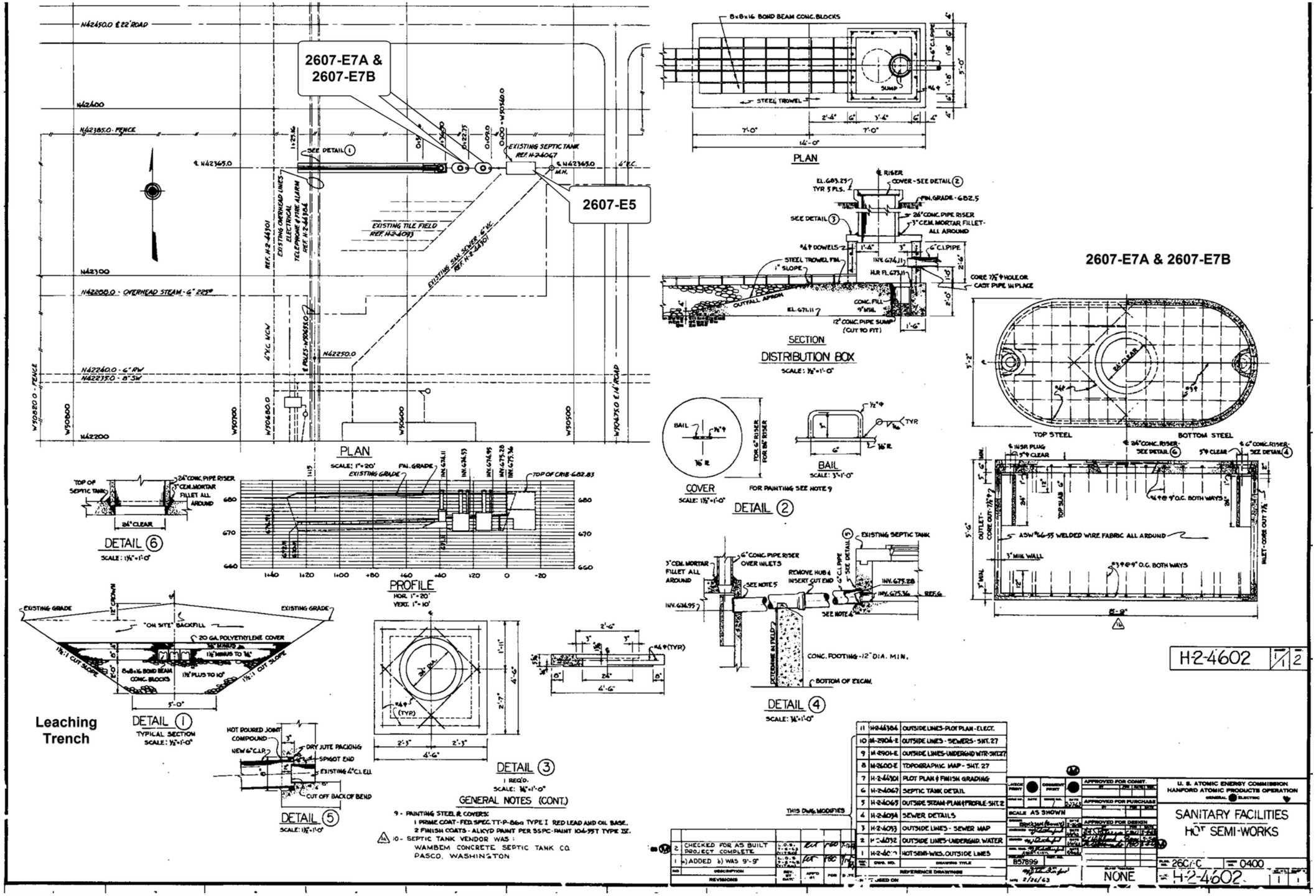
- 209E sewage samples (1996)
  - Sludge - 1.69 pCi/g of Cs-137
  - Composite liquid - 47 pCi/liter total Alpha, 49 pCi/liter total Beta, and 12 pCi/liter Cs-137
  - Location of samples not specified

Misc./Other Relevant Information

- 2607-E7A septic system is located in a radiation zone
- The Engineering Evaluation/ Cost Analysis for the 200-MG-1 Operable Unit Waste Sites identified Confirmatory Sampling/No Further Action (CS/NFA) as the preferred remedial action (DOE/RL-2008-44; Rev. 0).

Scoping Summary: 2607-E7A (Septic Tank)

Scoping Summary: 2607-E7A (Septic Tank)



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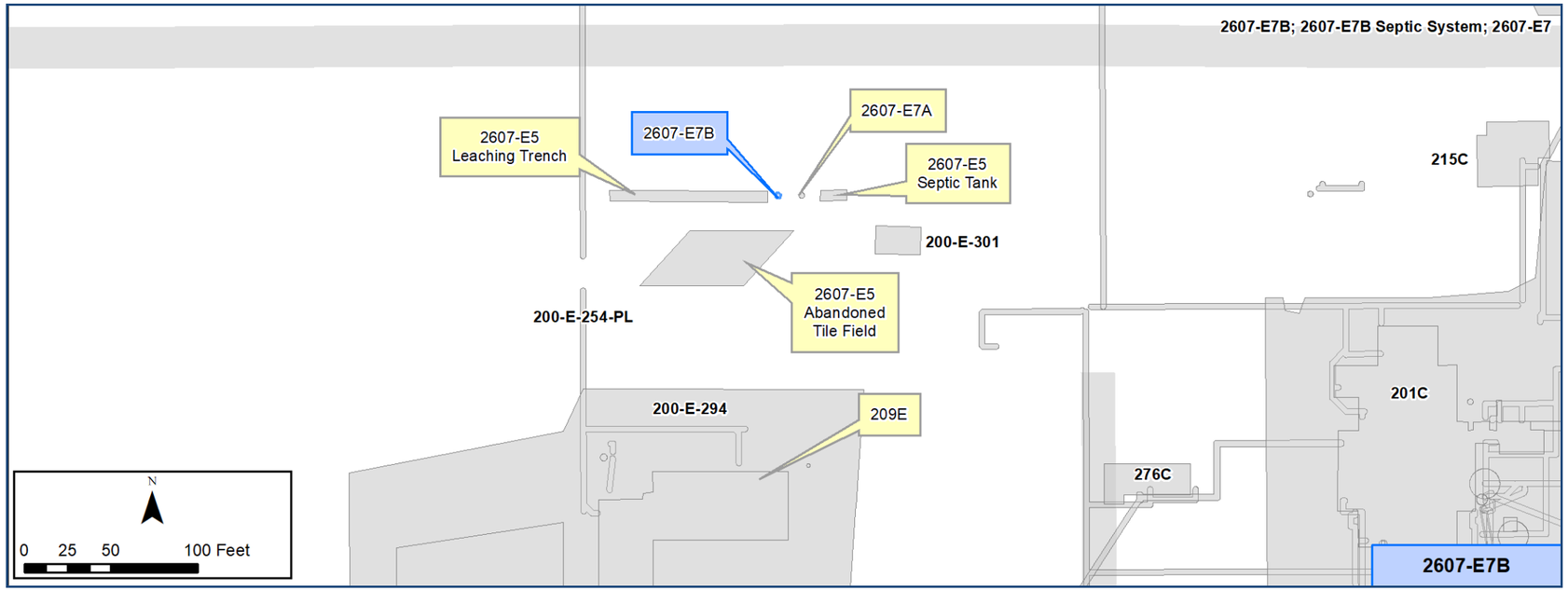
Scoping Summary: 2607-E7B (Septic Tank)

History

The 2607-E7B waste site is an inactive underground septic tank that received sanitary wastewater and sewage from the Critical Mass facilities near 209E (Critical Mass Lab) in the Hot Semiworks area. The septic tank was constructed in 1963 and was operational until it was isolated in 2011. The tank was properly isolated per WAC 246-272A-0300 by pumping out the waste, flushing the tank, destroying the lid and filling the tank with soil and gravel.

2607-E7A and 2607-E7B tanks were placed in-line with the existing 2607-E5 tank when the 209E facility was tied into the septic system. 2607-E7B drains to the 2607-E5 sanitary leaching trench. Mobile offices that have since been removed were also connected to the septic system at various points in its operational history.



Construction

- Length: 8 ft 9 in.
- Width: 5 ft 6 in.
- Height: 8 ft 4 in.
- Depth:
  - Bottom of structure: Approx. 11.5 ft bgs
  - Top of structure: Approx. 7.5 ft bgs
- Volume: 240 gal
- Material: Concrete
- Walls 8 in. thick
- Floors 6 in. thick
- Number of incoming/outgoing pipelines: 1

Features Of Interest

- One 24 inch diameter cover
- One 6 in. concrete riser
- One 24 in. concrete riser
- One 6 in. cast iron pipe

Relevant Characterization

- 209-E sewage samples (1996)
  - Sludge - 1.69 pCi/g of Cs-137
  - Composite liquid - 47 pCi/liter total Alpha, 49 pCi/liter total Beta, and 12 pCi/liter Cs-137
  - Location of samples not specified

Waste Streams

- Sanitary wastewater and sewage from 209E and 2704C (Office Admin and Gate House) facilities
  - Records indicate that this effluent was disposed of separately from the chemical and production wastes
- Estimated rate of waste generation was 1.64 cu m/d

Misc./Other Relevant Information

- 2607-E7B septic system is located in a radiation zone
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Waste Sites identified Confirmatory Sampling/No Further Action (CS/NFA) as preferred remedial action (DOE/RL-2008-44; Rev. 0).

Site Interfaces

Origin/Termination

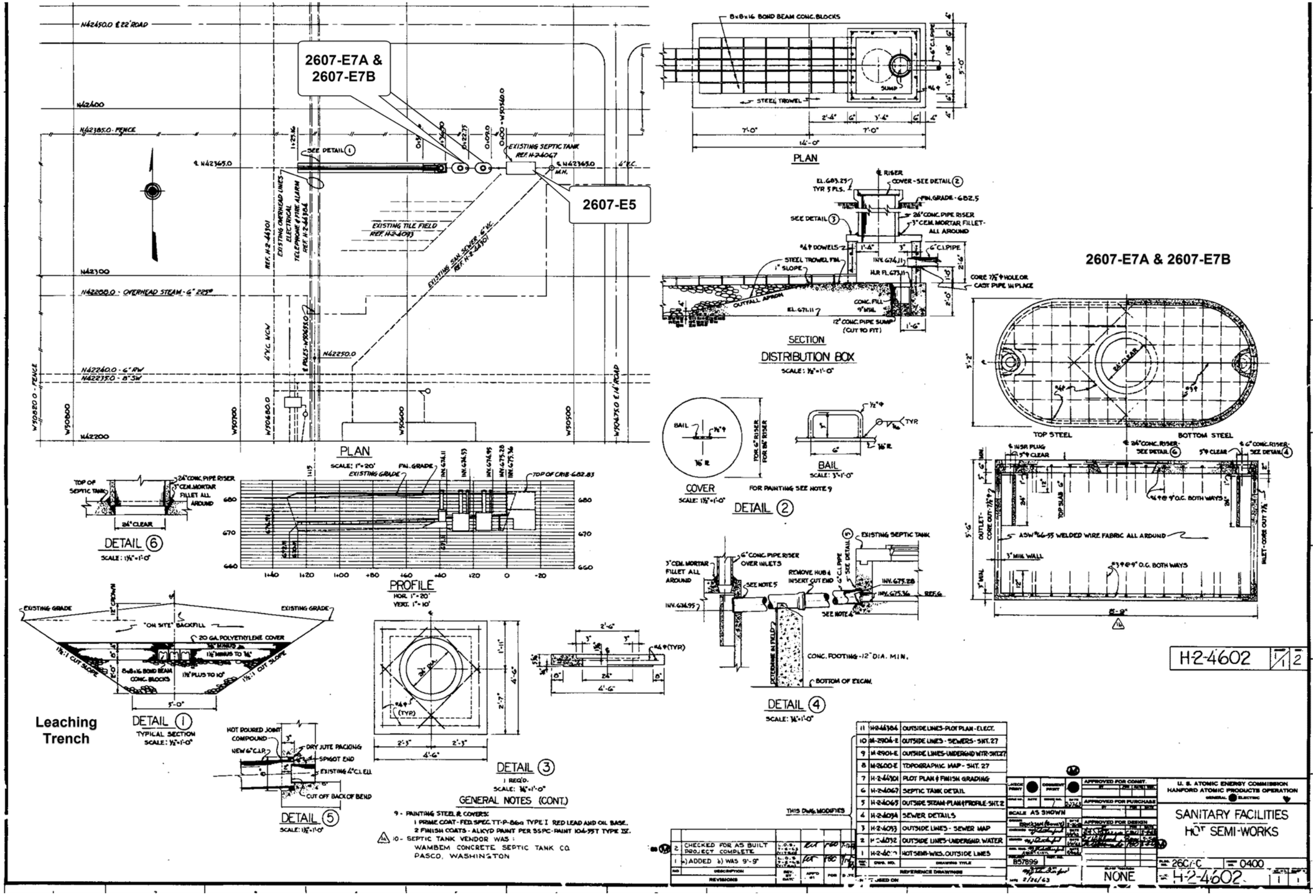
- N/A

Intersecting/Nearby Sites

200-EA-1
- 2607-E5
- 2607-E7A

Scoping Summary: 2607-E7B (Septic Tank)

Scoping Summary: 2607-E7B (Septic Tank)



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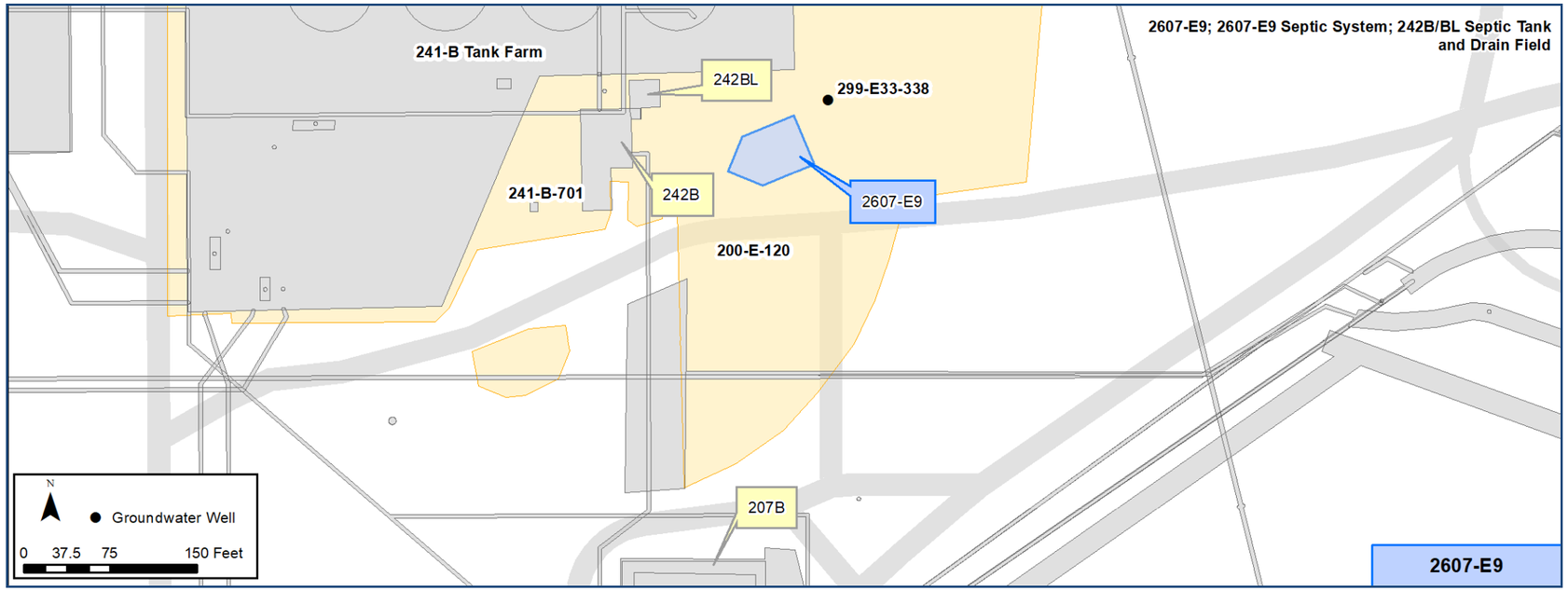
Scoping Summary: 2607-E9 (Septic Tank)

History

The 2607-E9 waste site is an inactive, underground septic tank and associated drain field that received sanitary wastewater and sewage from buildings 242B (Radioactive Particle Research Laboratory) and 242BL (Cask Loading Building). The tank and field are east of the 242B Building and north of the 207-B Retention Basin.

The septic tank was constructed by 1951 and was operational from 1951 to at least 1993. By 1996, the septic tank was no longer in use and in 1999 it was abandoned. The tank was found to have less than two feet of water and no remaining sludge; it was back filled with sand per WAC 246-272-18501 guidelines without being emptied. At the time of abandonment, there was insufficient material for samples to be taken, but rad surveys showed no contamination.



Construction

Septic Tank:

- Length: Not located
- Width: Not located
- Depth: Not located
- Volume: 500 gal
- Material: Steel
- Number of incoming and outgoing pipelines:
  - Incoming Pipelines: 1
  - Outgoing Pipelines: 1

Drain Field (estimated):

- Length: Approx. 40-60 ft
- Width: 40 ft
- Total Area: 2000 sq ft
- 1 central distribution pipe
  - 5 lateral pipes on each side

Features Of Interest

- Drain Field
  - 4 in cast iron inlet pipe

Relevant Characterization

- Well 299-E33-338 (approximately 36 ft NE of the waste site) showed no constituent measurements above threshold
- The septic tank was located in 1999 using a guzzler, and a survey of the guzzler tube (both wet and dry) found no contamination.
- Surface contamination warning signs can be found at the waste site, probable source is the 241B Tank Farm

Waste Streams

- Sanitary wastewater and sewage from 242B (Radioactive Particle Research Laboratory) and 242BL (Cask Loading Building)

Misc./Other Relevant Information

- Records mention a small Contamination Area near the waste site that is a portion of the 200-E-120 contamination migration (from 241-B tank farm)
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Waste Sites identified Confirmatory Sampling/No Further Action (CS/NFA) as the preferred remedial action (DOE/RL-2008-44; Rev. 0).

Site Interfaces

Origin/Termination

- N/A

Intersecting/Nearby Sites

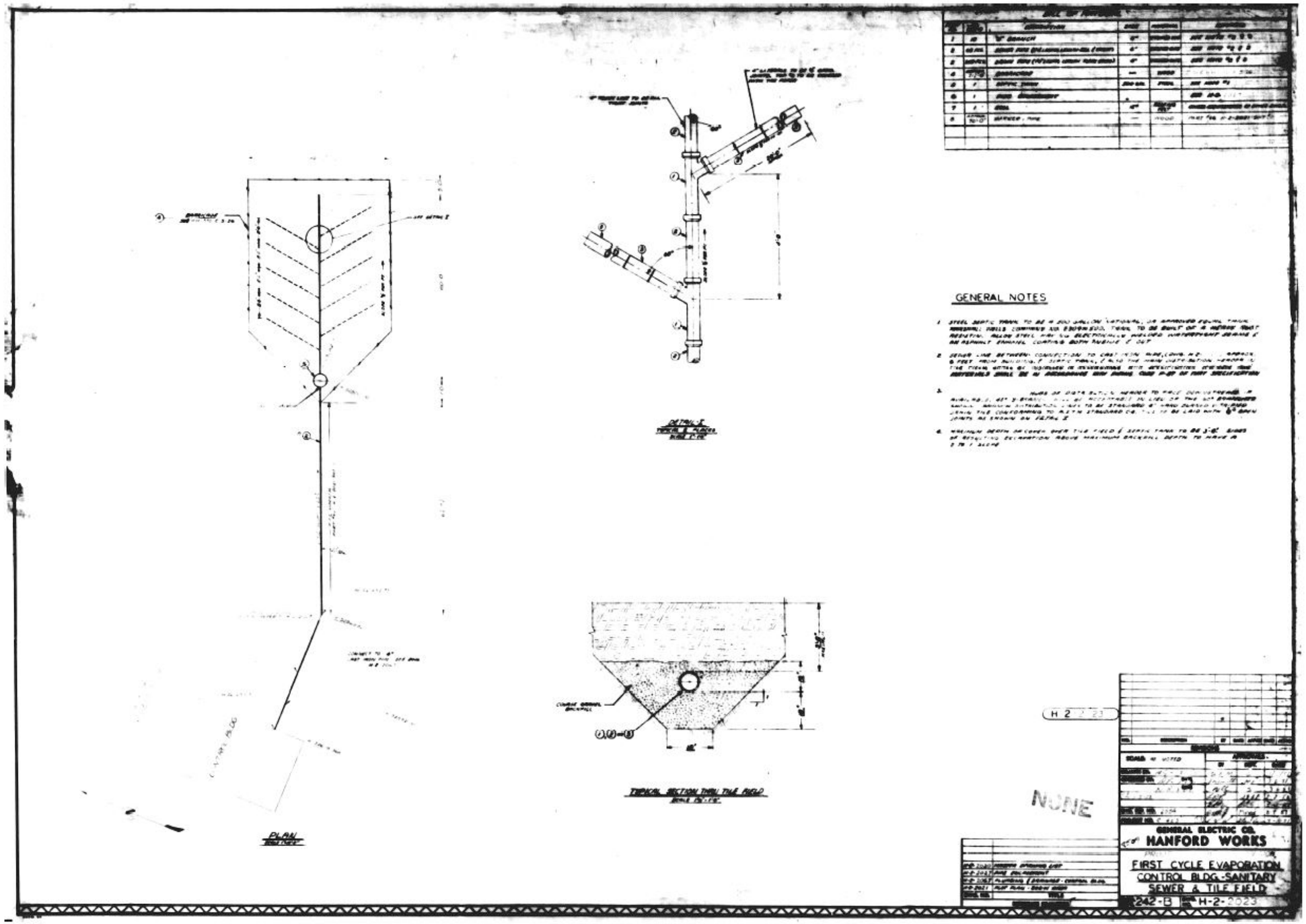
200-EA-1

- 200-E-120

Facilities

- 241B
- 242B (Radioactive Particle Research Laboratory)
- 242BL (Cask Loading Building)

Scoping Summary: 2607-E9 (Septic Tank)


GENERAL NOTES
PLAN
NONE
GENERAL ELECTRIC CO.
HANFORD WORKS
FIRST CYCLE EVAPORATION
CONTROL BLDG.-SANITARY
SEWER & TILE FIELD
242-B
H-2-2023

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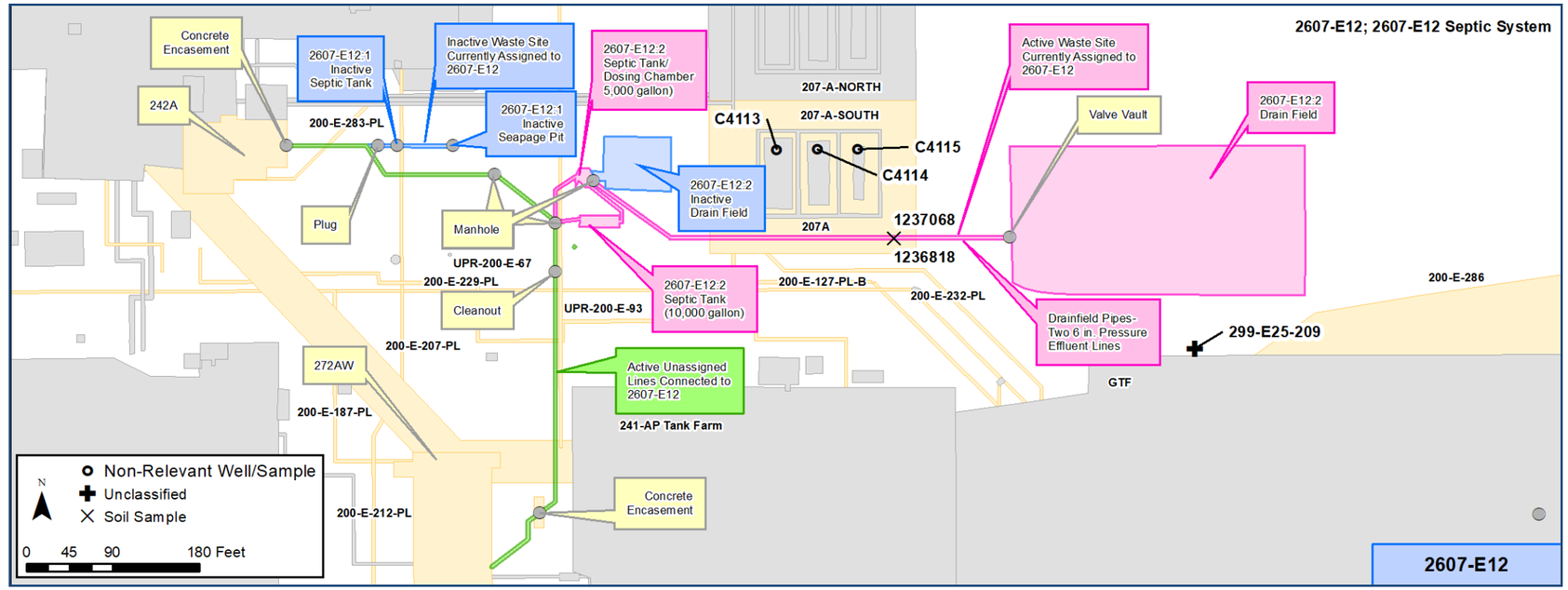
Scoping Summary: 2607-E12 (Septic Tank)

History

The 2607-E12 waste site consists of the original inactive 242A septic tank and seepage pit (2607-E12:1), two newer septic tanks and two drain fields (2607-E12:2), and the pipeline between the dosing chamber and drain field. The septic system serviced sanitary wastewater and sewage from buildings 242A (Evaporator), 272AW (Tank Farm Operations Support) and adjacent trailer units.

The original 242A septic system, 2607-E12:1, was constructed in 1974 and was operational until 1982, when it was abandoned and rerouted to 2607-E12:2. The pipeline connecting into the original septic tank was plugged and the septic tank was pumped out and filled with sand.

The active 2607-E12:2 septic system began operations in 1982 to expand additional service for 272AW and other nearby facilities. The original site consisted of a 5,000 gallon septic tank and drain field west of 207-A South retention basin. By 1990, the original septic tank was converted into a dosing chamber when a new 10,000 gallon septic tank was installed to the south. As a part of the expansion, the original drainage field was replaced by two 6 in. pipes that diverted waste from the dosing chamber into the trench-like drain field to the east of the 207-A Retention Basins.



Construction

2607-E12:1 (pg 3 for engineering drawings)

- Inactive Septic Tank: Unknown Dimensions (filled with sand)
  - Incoming pipe: 6 in. VCP from 242A (plugged prior to intake)
  - Outgoing pipe: 4 in. VCP to seepage pit
- Inactive Seepage Pit: 5 ft diameter (filled with gravel)
  - Incoming pipe: 4 in. from septic tank

2607-E12:2 (pg 4, 5 & 6 for engineering drawings)

- Active Dosing Chamber (5,000 gal): 20 ft x 9.33 ft x 7.5 ft
  - Material: 4 in. Waterstop Western Plastics
  - Incoming pipe: 8 in. steel from 10,000 gal tank
  - Outgoing pipes: two - 6 in. steel to active drain field
  - 1 plugged inlet and 1 plugged outlet
- Inactive Drain Field: 40 ft x 70 ft (six - 4 in. Pipes)
- Active Septic Tank (10,000 gal): Dimensions Unknown
  - Material: fiberglass reinforced plastic
  - Incoming pipe: 6 in. steel from 242A and 272AW
  - Outgoing pipe: 8 in. steel to dosing chamber
- Active Drain field (3 separate fields): 300 ft x 20 ft (20 ft between each field)
  - Covering of 1-2 ft soil/fill over a layer of geotextile fabric
  - 5 rows of 3 in. risers for each drain field

Features Of Interest

- Stainless Steel pipe from 272AW to Septic Tank:
  - 425 ft of 6 in; Depth: ~4 ft
  - Concrete Encasement (near 272AW building)
  - 1- Cleanout
- VCP and Stainless Steel pipe from 242A to Septic Tank:
  - ~200 ft of 6 in (VCP) & 75 ft of 8 in. (SS); Depth: 3-6 ft
  - Concrete Encasement (near 242A building)
  - 2 - Manholes
- Stainless Steel pipes from Dosing Chamber to Valve Vault:
  - ~450 ft of two 6 in (SS); Depth: 2-7 ft
  - Valve Vault (adjacent to active drain field)

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil.

Waste Streams

- Sanitary waste water from:
  - 272AW, 242A, and 241AP building
  - Surrounding trailer connections: MO-266, MO-267, MO-268, MO-393, MO-996, 241A Tank Farm
- Characteristics of the sanitary waste water from the 200 Areas are considered to be similar to residential sanitary waste
- There are no known process or radioactive waste streams entering the septic system

Misc./Other Relevant Information

- Previously associated with Operable Units 200-ST-1 and 200-MG-1.
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit (DOE/RL-2008-44, Rev. 0) determined the preferred removal action to be confirmatory sampling/no further action (CS/NFA)

Site Interfaces

Origin/Termination

Facility

- 242A (Evaporator)
- 272AW (Tank Farm Operations Support)

Intersecting/Nearby Sites

200-EA-1

- 207-A-NORTH (Retention Basin)
- 207-B (Retention Basin)

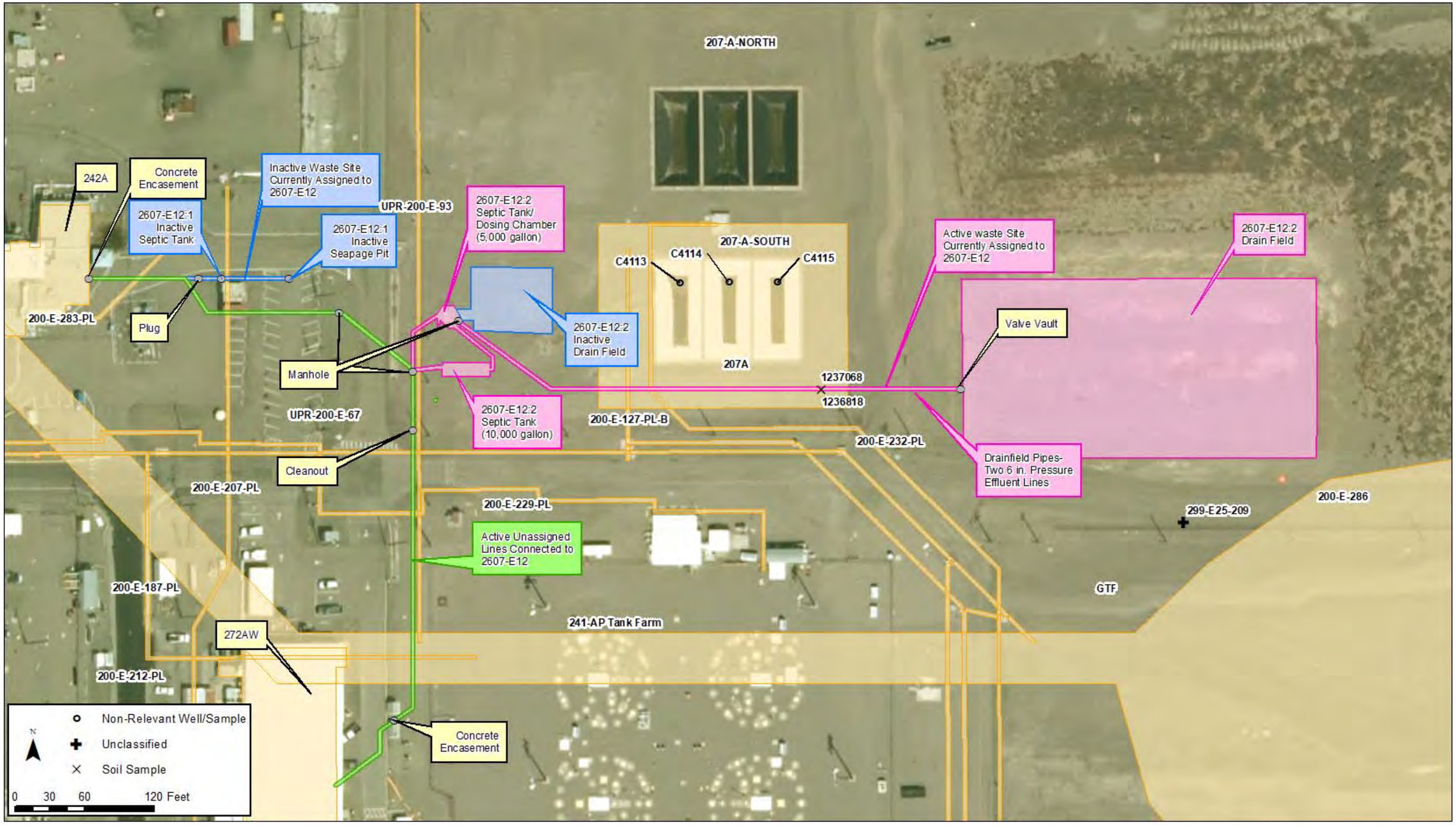
200-IS-1

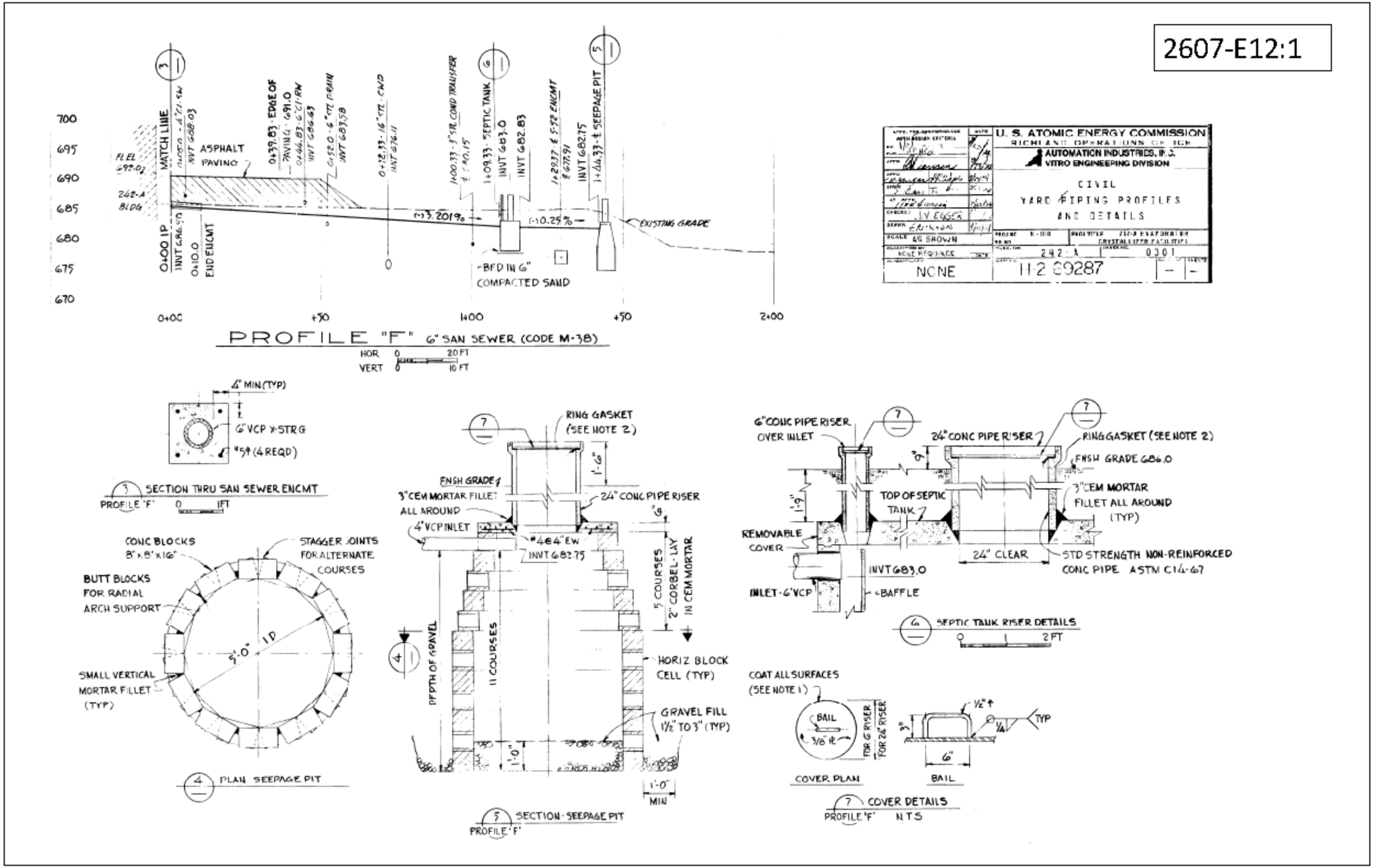
- 200-E-187-PL
- 200-E-207-PL
- 200-E-229-PL
- 200-E-232-PL
- 200-E-283-PL
- 200-E-127-PL-B
- UPR-200-E-67

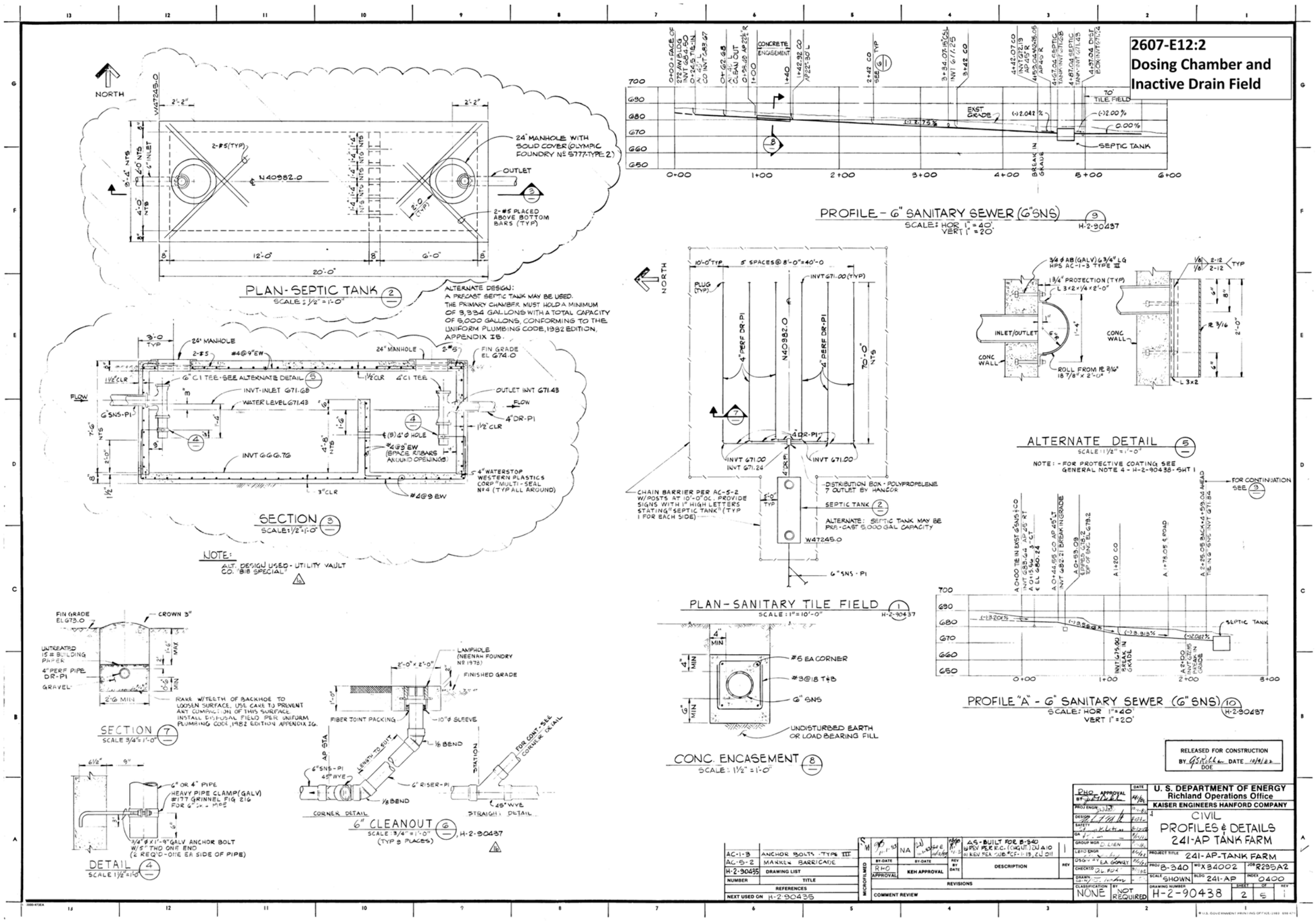
OU Unassigned

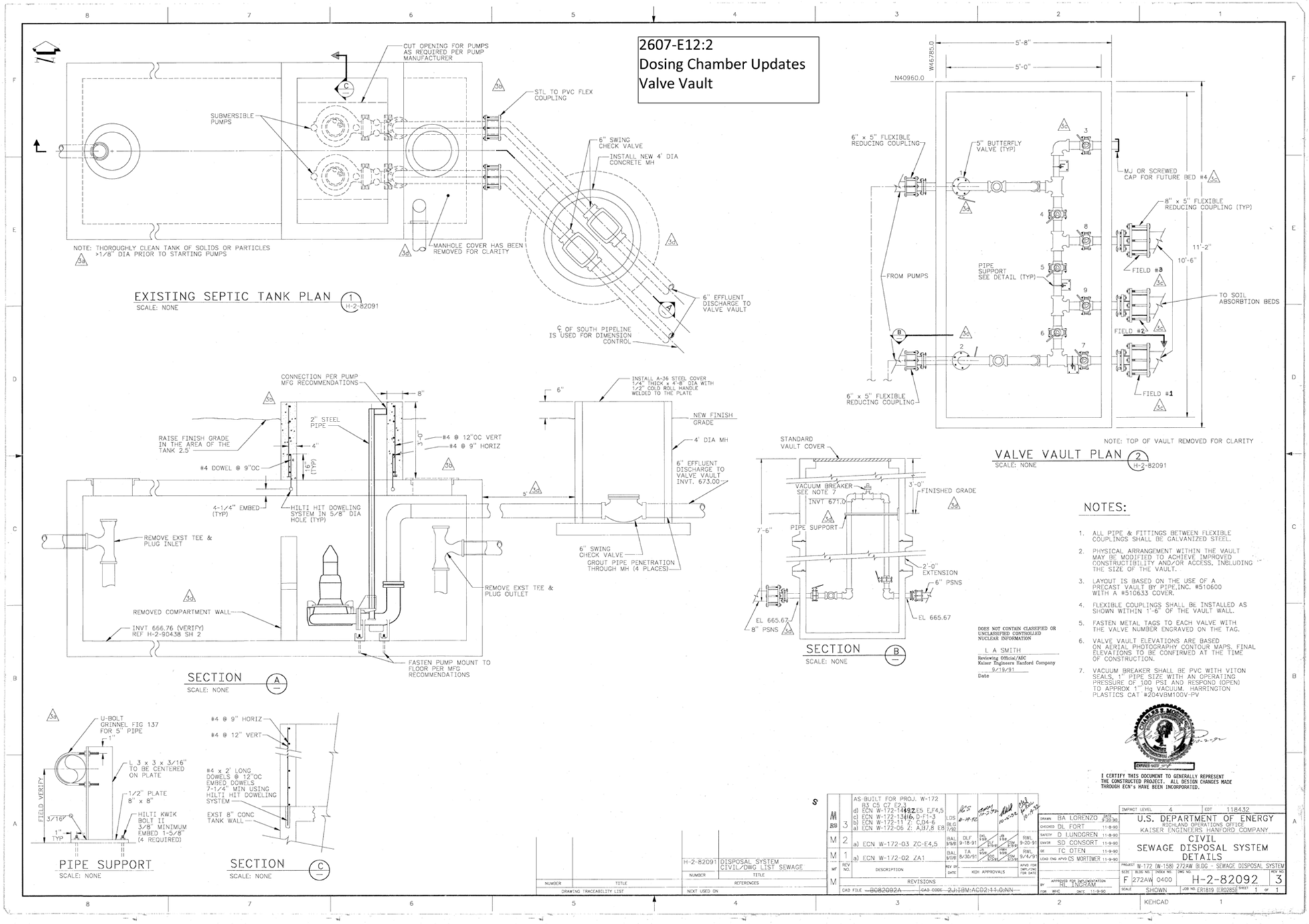
- UPR-200-E-93
- 200-E-286
- 200-E-212-PL

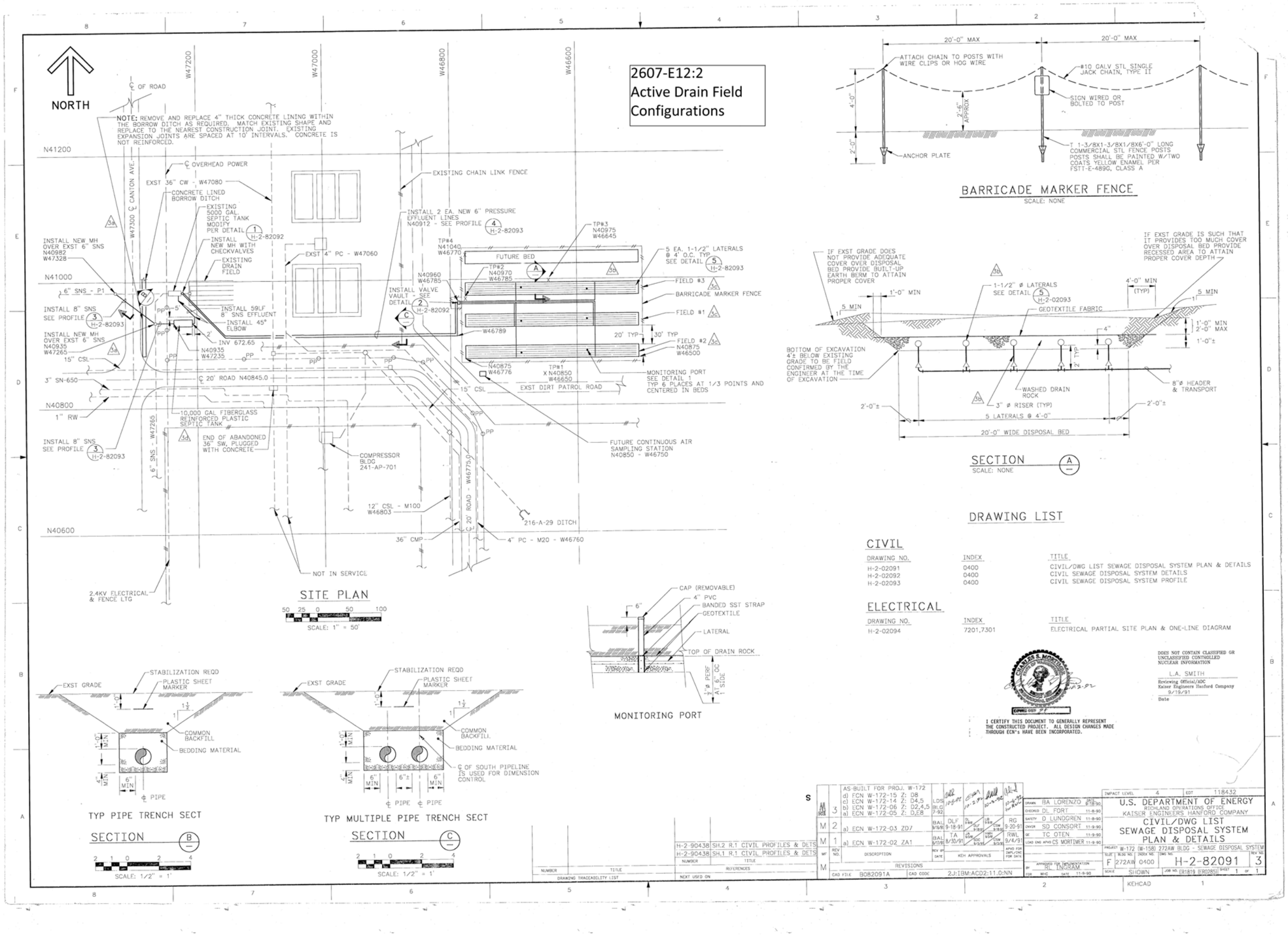
Scoping Summary: 2607-E12 (Septic Tank)




2607-E12:1
U. S. ATOMIC ENERGY COMMISSION
AUTOMATION INDUSTRIES, INC.
VITRO ENGINEERING DIVISION
CIVIL
YARD PIPING PROFILES AND DETAILS
NONE
11-2 69287
PROFILE "F" 6" SAN SEWER (CODE M-38)
EXISTING GRADE
SECTION THRU SAN SEWER ENCMT
PLAN SEEPAGE PIT
SECTION - SEEPAGE PIT
SEPTIC TANK RISER DETAILS
COVER DETAILS
COVER PLAN
BAIL
COAT ALL SURFACES (SEE NOTE 1)
RING GASKET (SEE NOTE 2)
24" CONC PIPE RISER
6" CONC PIPE RISER OVER INLET
FNSH GRADE 686.0
3" CEM MORTAR FILLET ALL AROUND (TYP)
TOP OF SEPTIC TANK
REMOVABLE COVER
24" CLEAR
STD STRENGTH NON-REINFORCED CONC PIPE ASTM C14-67
INVT 683.0
INLET-6" VCP
BAFFLE
CONC BLOCKS 8"x8"x16"
STAGGER JOINTS FOR ALTERNATE COURSES
BUTT BLOCKS FOR RADIAL ARCH SUPPORT
SMALL VERTICAL MORTAR FILLET (TYP)
5'-0" ID
FNSH GRADE
3" CEM MORTAR FILLET ALL AROUND
4" VCP INLET
#4@4" EW
INVT 682.75
5 COURSES 2" CORBEL-LAY IN CEM MORTAR
DEPTH OF GRAVEL
11 COURSES
HORIZ BLOCK CELL (TYP)
GRAVEL FILL 1½" TO 3" (TYP)
1'-0" MIN
4" MIN (TYP)
6" VCP X STRG
#5 (4 REQD)


2607-E12:2
Dosing Chamber and Inactive Drain Field
PLAN-SEPTIC TANK
SECTION
NOTE:
ALT. DESIGN USED - UTILITY VAULT CO. "BIB SPECIAL"
ALTERNATE DESIGN:
A PRECAST SEPTIC TANK MAY BE USED. THE PRIMARY CHAMBER MUST HOLD A MINIMUM OF 3,334 GALLONS WITH A TOTAL CAPACITY OF 5,000 GALLONS, CONFORMING TO THE UNIFORM PLUMBING CODE, 1982 EDITION, APPENDIX IB.
PROFILE - 6" SANITARY SEWER (6"SNS)
PLAN-SANITARY TILE FIELD
CONC. ENCASEMENT
ALTERNATE DETAIL
PROFILE "A" - 6" SANITARY SEWER (6"SNS)
DETAIL
6" CLEANOUT
RELEASED FOR CONSTRUCTION
U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY
CIVIL
PROFILES & DETAILS
241-AP TANK FARM
241-AP-TANK FARM
H-2-90438


2607-E12:2
Dosing Chamber Updates
Valve Vault
EXISTING SEPTIC TANK PLAN
SCALE: NONE
CUT OPENING FOR PUMPS AS REQUIRED PER PUMP MANUFACTURER
SUBMERSIBLE PUMPS
STL TO PVC FLEX COUPLING
6" SWING CHECK VALVE
INSTALL NEW 4' DIA CONCRETE MH
NOTE: THOROUGHLY CLEAN TANK OF SOLIDS OR PARTICLES >1/8" DIA PRIOR TO STARTING PUMPS
MANHOLE COVER HAS BEEN REMOVED FOR CLARITY
6" EFFLUENT DISCHARGE TO VALVE VAULT
℄ OF SOUTH PIPELINE IS USED FOR DIMENSION CONTROL
VALVE VAULT PLAN
SCALE: NONE
6" x 5" FLEXIBLE REDUCING COUPLING
5" BUTTERFLY VALVE (TYP)
MJ OR SCREWED CAP FOR FUTURE BED #4
8" x 5" FLEXIBLE REDUCING COUPLING (TYP)
FROM PUMPS
PIPE SUPPORT SEE DETAIL (TYP)
FIELD #3
FIELD #2
FIELD #1
TO SOIL ABSORBTION BEDS
NOTE: TOP OF VAULT REMOVED FOR CLARITY
SECTION
SCALE: NONE
CONNECTION PER PUMP MFG RECOMMENDATIONS
2" STEEL PIPE
RAISE FINISH GRADE IN THE AREA OF THE TANK 2.5'
#4 DOWEL @ 9"OC
#4 @ 12"OC VERT
#4 @ 9" HORIZ
4-1/4" EMBED (TYP)
HILTI HIT DOWELING SYSTEM IN 5/8" DIA HOLE (TYP)
REMOVE EXST TEE & PLUG INLET
REMOVED COMPARTMENT WALL
INVT 666.76 (VERIFY) REF H-2-90438 SH 2
FASTEN PUMP MOUNT TO FLOOR PER MFG RECOMMENDATIONS
INSTALL A-36 STEEL COVER 1/4" THICK x 4'-8" DIA WITH 1/2" COLD ROLL HANDLE WELDED TO THE PLATE
NEW FINISH GRADE
4' DIA MH
6" EFFLUENT DISCHARGE TO VALVE VAULT INVT. 673.00
6" SWING CHECK VALVE
GROUT PIPE PENETRATION THROUGH MH (4 PLACES)
REMOVE EXST TEE & PLUG OUTLET
STANDARD VAULT COVER
VACUUM BREAKER SEE NOTE 7
INVT 671.0
FINISHED GRADE
PIPE SUPPORT
2'-0" EXTENSION
6" PSNS
EL 665.67
8" PSNS
NOTES:
1. ALL PIPE & FITTINGS BETWEEN FLEXIBLE COUPLINGS SHALL BE GALVANIZED STEEL.
2. PHYSICAL ARRANGEMENT WITHIN THE VAULT MAY BE MODIFIED TO ACHIEVE IMPROVED CONSTRUCTIBILITY AND/OR ACCESS, INCLUDING THE SIZE OF THE VAULT.
3. LAYOUT IS BASED ON THE USE OF A PRECAST VAULT BY PIPE,INC. #510600 WITH A #510633 COVER.
4. FLEXIBLE COUPLINGS SHALL BE INSTALLED AS SHOWN WITHIN 1'-6" OF THE VAULT WALL.
5. FASTEN METAL TAGS TO EACH VALVE WITH THE VALVE NUMBER ENGRAVED ON THE TAG.
6. VALVE VAULT ELEVATIONS ARE BASED ON AERIAL PHOTOGRAPHY CONTOUR MAPS. FINAL ELEVATIONS TO BE CONFIRMED AT THE TIME OF CONSTRUCTION.
7. VACUUM BREAKER SHALL BE PVC WITH VITON SEALS, 1" PIPE SIZE WITH AN OPERATING PRESSURE OF 100 PSI AND RESPOND (OPEN) TO APPROX 1" Hg VACUUM. HARRINGTON PLASTICS CAT #204VBM100V-PV
DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION
L A SMITH
Reviewing Official/ADC
Kaiser Engineers Hanford Company
9/19/91
Date
I CERTIFY THIS DOCUMENT TO GENERALLY REPRESENT THE CONSTRUCTED PROJECT. ALL DESIGN CHANGES MADE THROUGH ECN's HAVE BEEN INCORPORATED.
U-BOLT GRINNEL FIG 137 FOR 5" PIPE
L 3 x 3 x 3/16" TO BE CENTERED ON PLATE
1/2" PLATE 8" x 8"
HILTI KWIK BOLT II 3/8" MINIMUM EMBED 1-5/8" (4 REQUIRED)
FIELD VERIFY
PIPE SUPPORT
SCALE: NONE
#4 @ 9" HORIZ
#4 @ 12" VERT
#4 x 2' LONG DOWELS @ 12"OC EMBED DOWELS 7-1/4" MIN USING HILTI HIT DOWELING SYSTEM
EXST 8" CONC TANK WALL
SECTION
SCALE: NONE
AS-BUILT FOR PROJ. W-172
ECN W-172-14192 E5 E,F4,5
ECN W-172-13416 D-F1-3
ECN W-172-11 Z: C,D4-6
ECN W-172-06 Z: A,B7,8 E8
ECN W-172-03 ZC-E4,5
ECN W-172-02 ZA1
DESCRIPTION
REVISIONS
KEH APPROVALS
H-2-82091 DISPOSAL SYSTEM CIVIL/DWG LIST SEWAGE
DRAWING TRACEABILITY LIST
REFERENCES
NEXT USED ON
CAD FILE B082092A
CAD CODE 2J-IBM-ACD2-11.0-NN
BA LORENZO
DL FORT
D LUNDGREN
SD CONSORT
TC OTEN
CS MORTIMER
IMPACT LEVEL 4
EDT 118432
U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY
CIVIL
SEWAGE DISPOSAL SYSTEM
DETAILS
W-172 (W-158) 272AW BLDG - SEWAGE DISPOSAL SYSTEM
272AW 0400
H-2-82092
SHEET 1 OF 1
KEHCAD


2607-E12:2
Active Drain Field
Configurations
NORTH
SITE PLAN
SCALE: 1" = 50'
BARRICADE MARKER FENCE
SCALE: NONE
SECTION A
SCALE: NONE
TYP PIPE TRENCH SECT
SECTION B
SCALE: 1/2" = 1'
TYP MULTIPLE PIPE TRENCH SECT
SECTION C
SCALE: 1/2" = 1'
MONITORING PORT
DRAWING LIST
CIVIL
DRAWING NO. INDEX TITLE
H-2-02091 0400 CIVIL/DWG LIST SEWAGE DISPOSAL SYSTEM PLAN & DETAILS
H-2-02092 0400 CIVIL SEWAGE DISPOSAL SYSTEM DETAILS
H-2-02093 0400 CIVIL SEWAGE DISPOSAL SYSTEM PROFILE
ELECTRICAL
DRAWING NO. INDEX TITLE
H-2-02094 7201,7301 ELECTRICAL PARTIAL SITE PLAN & ONE-LINE DIAGRAM
I CERTIFY THIS DOCUMENT TO GENERALLY REPRESENT THE CONSTRUCTED PROJECT. ALL DESIGN CHANGES MADE THROUGH ECN's HAVE BEEN INCORPORATED.
DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION
L.A. SMITH
Reviewing Official/ADC
Kaiser Engineers Hanford Company
9/19/91
Date
U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY
CIVIL/DWG LIST
SEWAGE DISPOSAL SYSTEM
PLAN & DETAILS
H-2-82091
KEHCAD

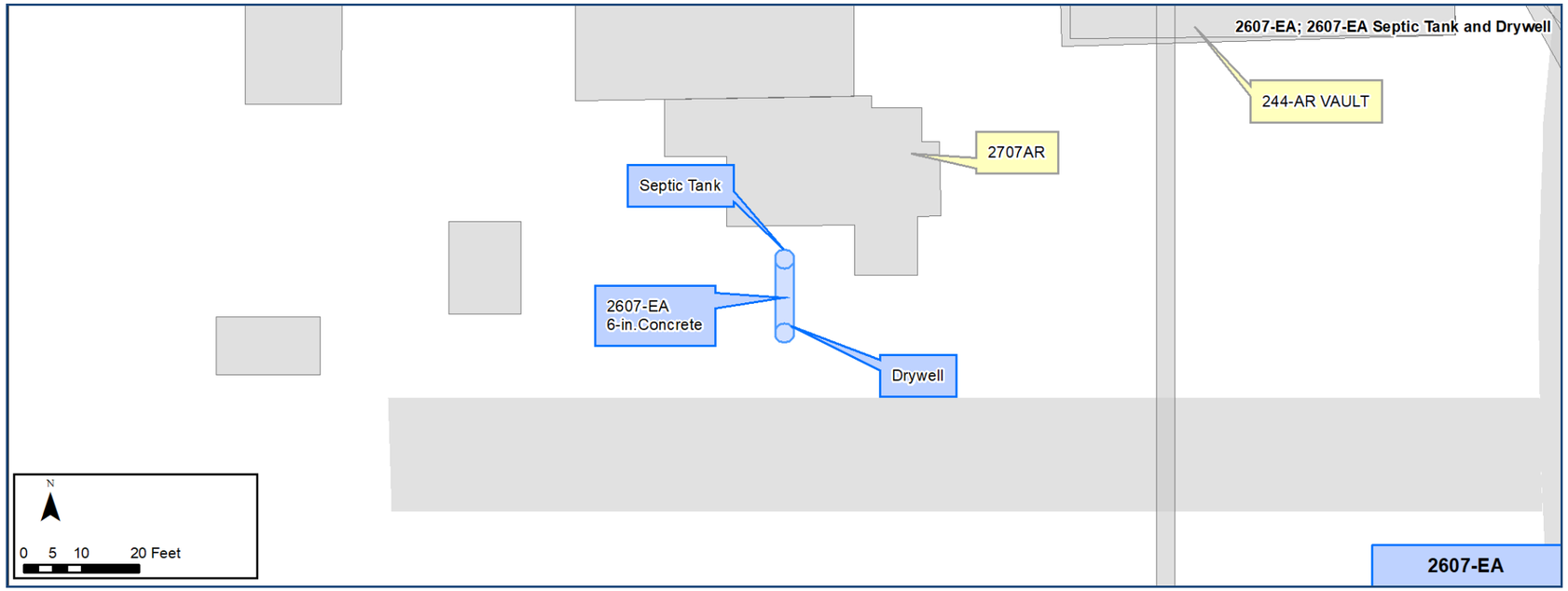
Scoping Summary: 2607-EA (Septic Tank)

History

The 2607-EA waste site is an inactive septic tank and its down-pipe drywell that serviced the 244-AR Vault, specifically the 2707AR (Sludge Vault Change House) Building, as its sanitary waste sewer system.

The system was in use from its construction in 1976 to 1978, when the 244-AR Vault was put in standby; it was in use again from 1984 to 1996, when the facility was interim isolated. Isolation measures were completed in 2003, when the facility was sealed, and water lines from the 244-AR Facility Tanks were isolated.

Internal communications from 2007 note the sewer system became inactive when the potable water main lines for the 244-AR Vault ruptured and were never repaired.



Construction

Septic Tank

- Dimensions: Unknown, drawings do not indicate dimensions
  - Estimated to be 10 ft X 7 ft
- Material: Pre-cast concrete or pre-fab coated steel
- Calculated Total Volume: 1,000 gal

Pipe to Drywell

- Length: 5 ft
- Diameter: 6 in.
- Material: concrete sewer pipe

Drywell

- Length: 6.4 ft
- Width: 5 ft
- Depth: 7 ft

- Page 3 is H-2-61979, which shows the septic tank and dry well, as well as the 4-in. pipe that extended from the building to the tank to the dry well.
- Page 4 is H-2-62033, which shows the 4-in. SNS pipe's origin inside the 244AR Service Building.

Features Of Interest

- No features of interest identified.

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil.

Waste Streams

- Non-hazardous lunch room sink water and sanitary water from 244-AR and 2707AR.

Misc./Other Relevant Information

- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Waste Sites identified Confirmatory Sampling/No Further Action (CS/NFA) as preferred remedial action (DOE/RL-2008-44; Rev. 0).

Site Interfaces

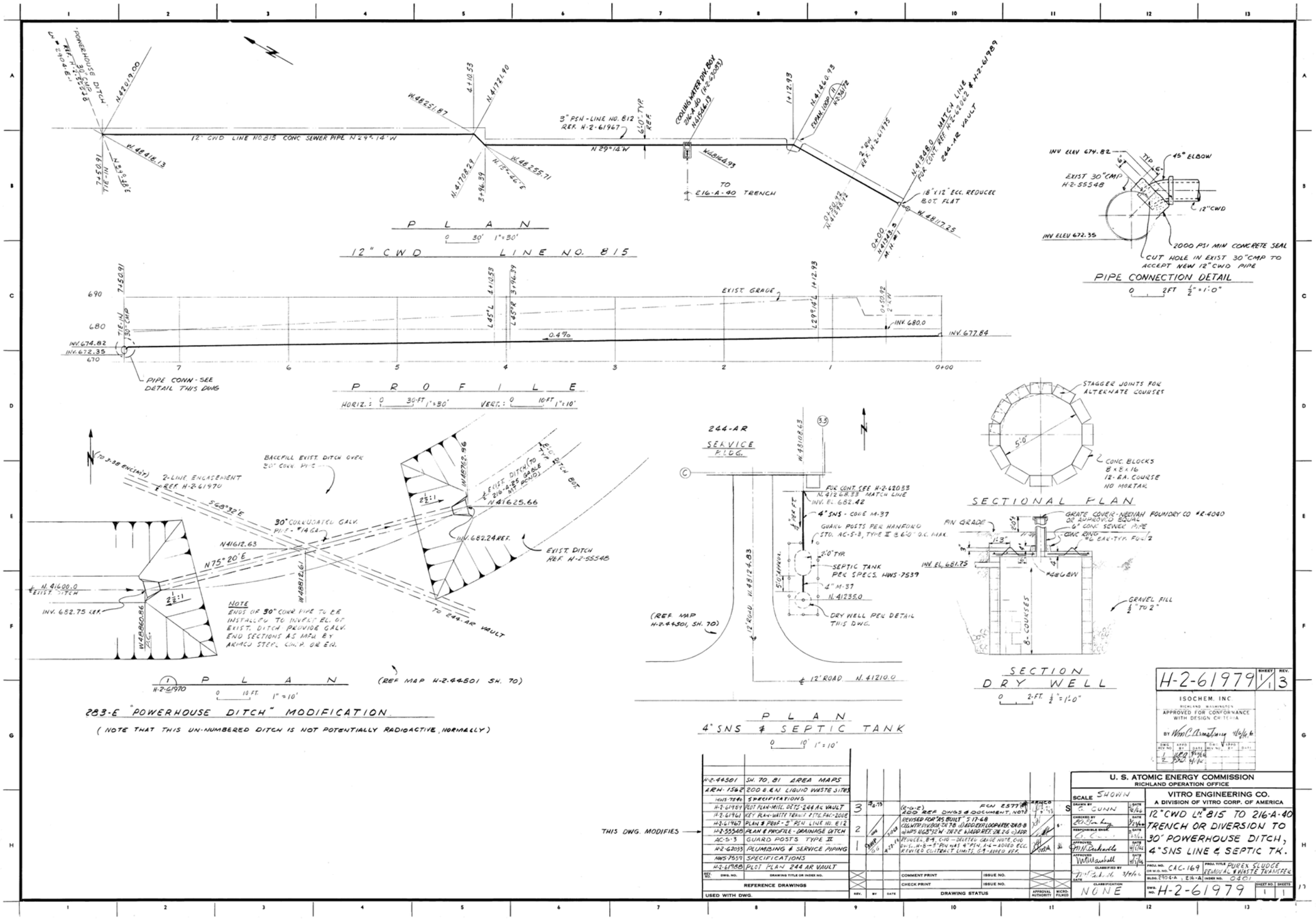
Origin:

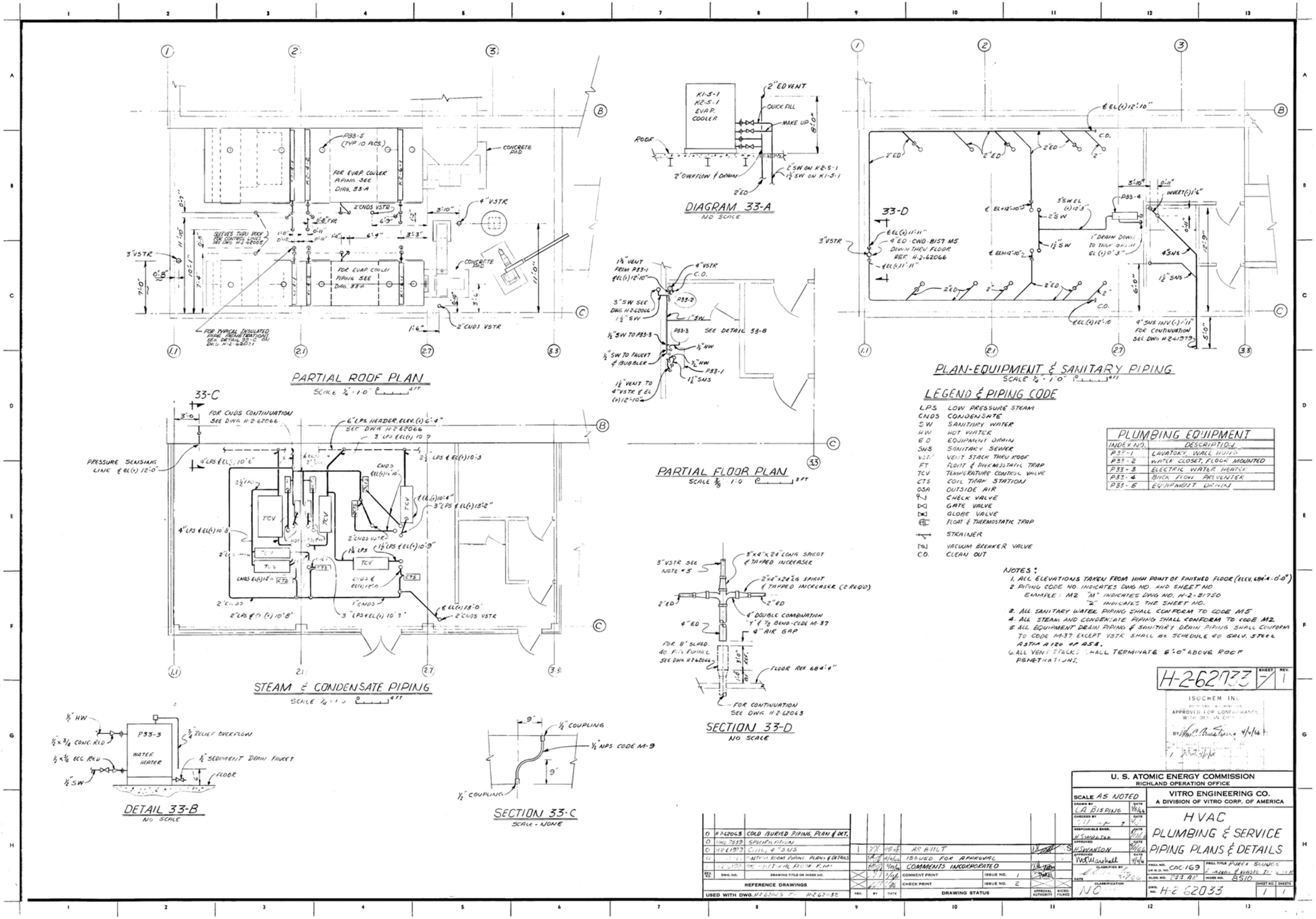
200-IS-1 OU

- 244-AR Vault

- 2707AR (Sludge Vault Change House)

Scoping Summary: 2607-EA (Septic Tank)


PLAN
12" CWD LINE NO. 815
PROFILE
PIPE CONNECTION DETAIL
SECTIONAL PLAN
SECTION DRY WELL
283-E "POWERHOUSE DITCH" MODIFICATION
(NOTE THAT THIS UN-NUMBERED DITCH IS NOT POTENTIALLY RADIOACTIVE, NORMALLY)
PLAN 4" SNS & SEPTIC TANK
244-AR SERVICE P.L.G.
12" CWD LINE NO. 815 CONC SEWER PIPE N 24°-14' W
TO 216-A-40 TRENCH
TO 244-AR VAULT
EXIST GRADE
PIPE CONN - SEE DETAIL THIS DWG
STAGGER JOINTS FOR ALTERNATE COURSES
CONC BLOCKS 8x8x16 12-EA. COURSE NO MORTAR
GRAVEL FILL ½" TO 2"
SEPTIC TANK PER SPECS. HWS-7539
DRY WELL PER DETAIL THIS DWG.
(REF MAP H-2-44501, SH. 70)
H-2-61979
ISOCHEM, INC
U. S. ATOMIC ENERGY COMMISSION
RICHLAND OPERATION OFFICE
VITRO ENGINEERING CO.
A DIVISION OF VITRO CORP. OF AMERICA
12" CWD LN 815 TO 216-A-40 TRENCH OR DIVERSION TO 30" POWERHOUSE DITCH, 4" SNS LINE & SEPTIC TK.
PUREX SLUDGE REMOVAL & WASTE TRANSFER
NONE
THIS DWG. MODIFIES


PARTIAL ROOF PLAN
DIAGRAM 33-A
NO SCALE
PLAN-EQUIPMENT & SANITARY PIPING
PARTIAL FLOOR PLAN
STEAM & CONDENSATE PIPING
SECTION 33-D
NO SCALE
DETAIL 33-B
NO SCALE
SECTION 33-C
SCALE - NONE
LEGEND & PIPING CODE
LPS LOW PRESSURE STEAM
CNDS CONDENSATE
SW SANITARY WATER
HW HOT WATER
ED EQUIPMENT DRAIN
SWS SANITARY SEWER
VSTR VENT STACK THRU ROOF
FT FLOAT & THERMOSTATIC TRAP
TCV TEMPERATURE CONTROL VALVE
CTS COIL TRAP STATION
OSA OUTSIDE AIR
CHECK VALVE
GATE VALVE
GLOBE VALVE
FLOAT & THERMOSTATIC TRAP
STRAINER
VACUUM BREAKER VALVE
C.O. CLEAN OUT
PLUMBING EQUIPMENT
INDEX NO. DESCRIPTION
P33-1 LAVATORY, WALL HUNG
P33-2 WATER CLOSET, FLOOR MOUNTED
P33-3 ELECTRIC WATER HEATER
P33-4 BACK FLOW PREVENTER
P33-5 EQUIPMENT DRAIN
NOTES:
1. ALL ELEVATIONS TAKEN FROM HIGH POINT OF FINISHED FLOOR (ELEV. 684'-0"-0'-0")
2 PIPING CODE NO. INDICATES DWG NO. AND SHEET NO.
EXAMPLE: M2 "M" INDICATES DWG NO. H-2-21750
"2" INDICATES THE SHEET NO.
3. ALL SANITARY WATER PIPING SHALL CONFORM TO CODE M15
4. ALL STEAM AND CONDENSATE PIPING SHALL CONFORM TO CODE M2
5. ALL EQUIPMENT DRAIN PIPING & SANITARY DRAIN PIPING SHALL CONFORM TO CODE M-37 EXCEPT VSTR SHALL BE SCHEDULE 40 GALV. STEEL ASTM A120 OR A53.
6. ALL VENT STACKS SHALL TERMINATE 8'-0" ABOVE ROOF PENETRATIONS.
H-262033
ISOCHEM INC.
APPROVED FOR CONFORMANCE WITH DRAWING
U. S. ATOMIC ENERGY COMMISSION
RICHLAND OPERATION OFFICE
VITRO ENGINEERING CO.
A DIVISION OF VITRO CORP. OF AMERICA
HVAC
PLUMBING & SERVICE
PIPING PLANS & DETAILS
SCALE AS NOTED
DRAWN BY L.A. BISPING
CLASSIFICATION NC
H-2 62033
COLD BURIED PIPING, PLAN & DET.
SPECIFICATION
AS BUILT
ISSUED FOR APPROVAL
COMMENTS INCORPORATED
COMMENT PRINT
CHECK PRINT
REFERENCE DRAWINGS
DRAWING STATUS

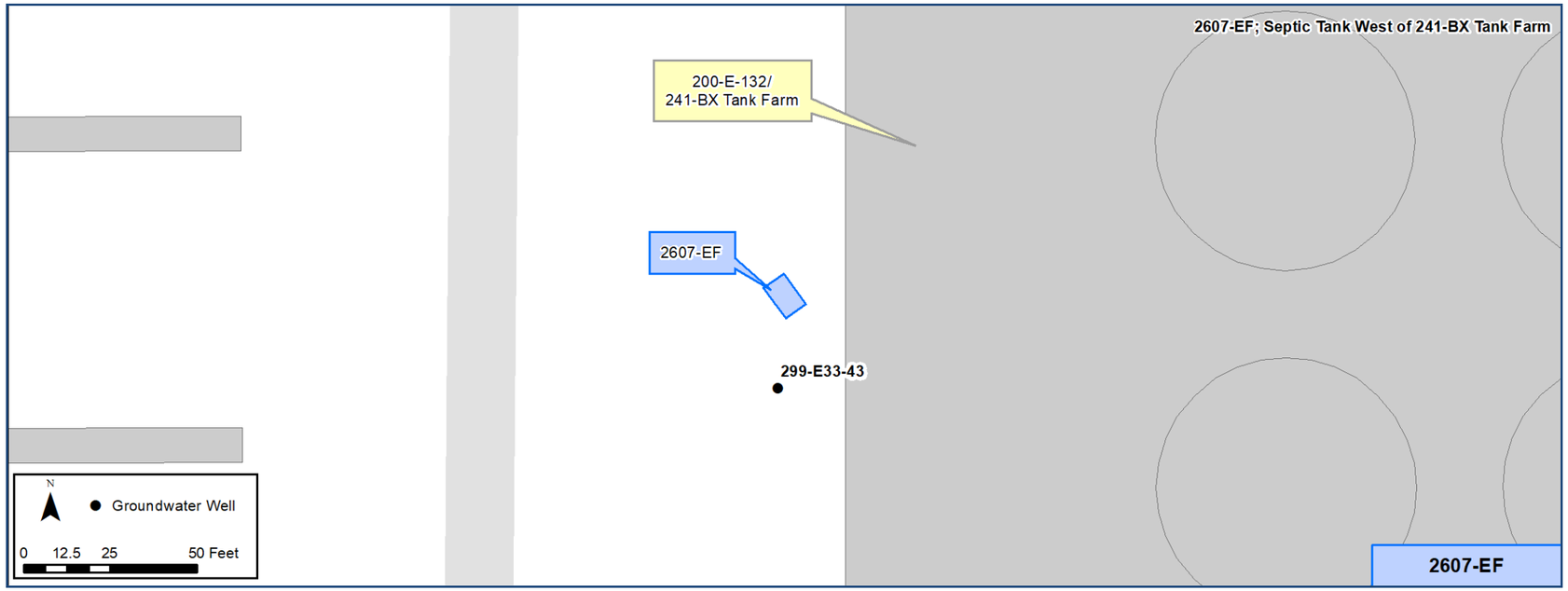
Scoping Summary: 2607-EF (Septic Tank)

History

The 2607-EF waste site is an inactive steel septic tank west of the 241BX Tank Farm that was used to service the 271-BXR Control House building. The septic tank is outside the tank farm fence; the building was inside the fence.

The tank was likely in use between 1951 until the 271-BXR building was removed, by 1970. A 2-in. vitrified clay pipe (VCP) sanitary sewer line, approximately 145 ft long, connected the building to the septic tank.

The location of the tank is currently marked with a sign, t-posts, and chain.



Construction

- Material: steel tank
- Length: ~7 ft
- Width: ~11 ft
- Height: Unknown
- Depth of tank: ~3.5 ft bgs
- Tank Volume: Unknown
- Drain Field Capacity: 153 gal

Features Of Interest

- No features of interest.

Relevant Characterization

- No direct characterization data or adjacent soil samples were located. A ground scan was performed in 2008 to locate the tank, only.

Waste Streams

- No information was located on the potable nature or contents of 271-BXR that would have migrated into the sewage disposal system leading to 2607-EF.

Misc./Other Relevant Information

- No additional information.

Site Interfaces

Nearby Sites:

WMA B/BX/BY

- 200-E-132

Monitoring Well:

- 299-E33-43

Scoping Summary: 2607-EF (Septic Tank)

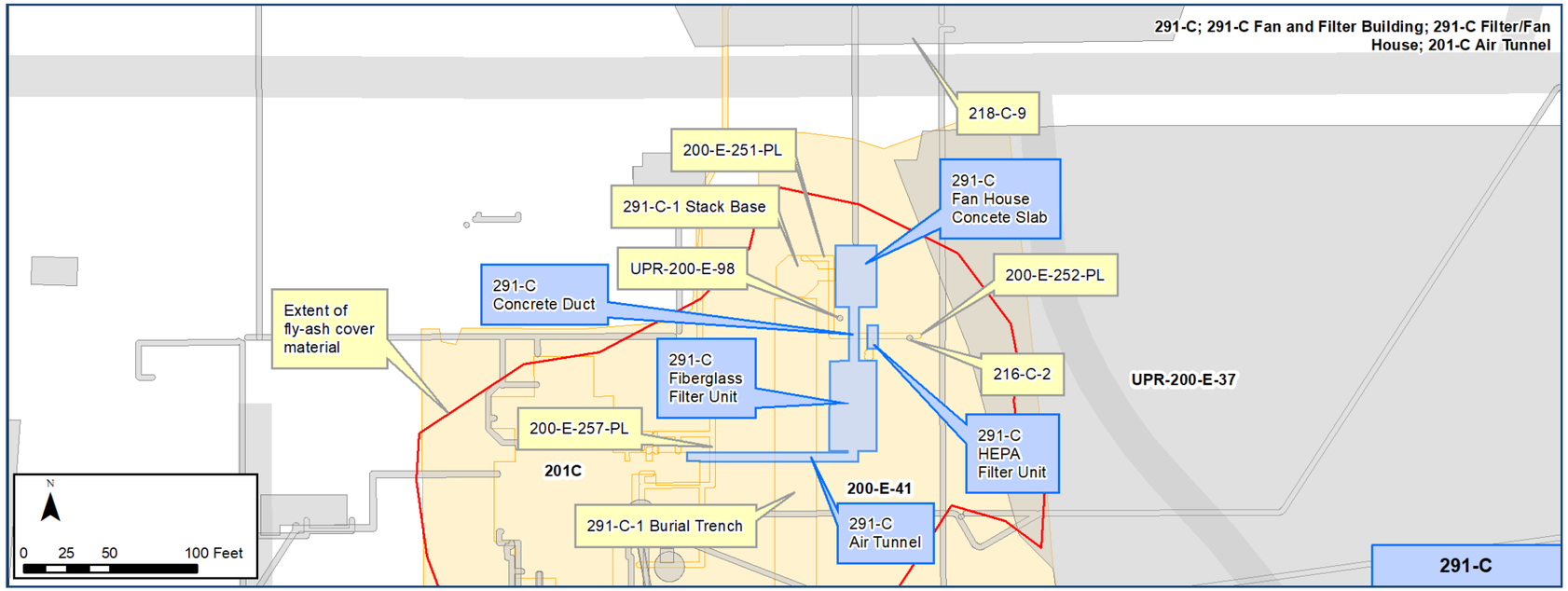
Scoping Summary: 291-C (Process Unit/Plant)

History

The 291-C waste site is the footprint of the former 291-C Filter/Fan House facility and the associated 201-C air tunnel. These were part of a ventilation system that provided exhaust air ventilation for the operating cells and process vessel vents of the 201-C Hot Semi-works facility. The footprint of the former associated exhaust stack is addressed separately as the 291-C-1 waste site. The 291-C facility operated from 1949 until 1987 and was demolished in 1988 along with the 291-C-1 Stack.

The original 291-C system consisted of an air tunnel from the 201-C cells, glass fiber filters, HEPA filters, fan house and an exhaust stack (291-C-1). Condensate from the 291-C and the 291-C-1 stack drained via 200-E-251-PL and 200-E-252-PL to the 216-C-2 reverse well.

The decommissioning activities included dismantling and removing the Fan House structure and HEPA filter unit 2. HEPA filter unit 1, the fiberglass filter unit, air tunnel and 291-C-1 Stack base were filled with grout and left in place. The contaminated ductwork was removed and buried in the 218-C-9 trench. In 1992 the Hot Semi-works area was subsequently covered with 3 ft of fly ash and is posted as an Underground Radioactive Material Area (200-E-41).



Construction

Fan house concrete slab
- 4 in. thick, approximately 860 sq. ft

Underground air tunnel connects 201-C cells with the glass fiber filters (grouted and capped)
- Length: 200 ft long
- Depth: First 100 ft is 20 ft bgs, second 100 ft is 5 ft bgs
- Inlet dimensions: 44 x 44 in., walls 8-10 in. thick

Underground fiberglass concrete unit (grouted and capped)
- Length: 52 ft
- Width: 27 ft
- Depth: 8.5 ft
- Walls 8 in. thick, floor 4 in. thick
- Roof made up of 26 concrete panels, 6 in. thick
- Two-story concrete duct extends through the center, the lower story a continuation of the tunnel from 201-C, the upper story connects with the fan house

Underground HEPA filter concrete unit (grouted and capped)
- Length: 13 ft
- Width: 6 ft
- Depth: 6.5 ft

Features Of Interest

- Contains/contained 40 fiberglass filters
  - Historical record is unclear if these were removed or entombed in place
- Contains/contained 22 HEPA filters
  - Historical record is unclear if these were removed or entombed in place

Relevant Characterization

- No direct characterization data was located for the site
- Characterization data of related structures include:
  - 1984 sediment sample for 216-C-2 well contained 280 pCi/g Sr-90
  - 1985 Gamma Energy Analysis detector readings from inside the 291-C-1 stack detected a maximum of .137 µCi/sq. cm Cs-137 and 8.7 µCi/sq. cm Sr-90 estimated for the stack base
  - 8,500 mRad/hr. stack base area

Waste Streams

- No direct waste stream information located (refer to 291-C-1)

Misc./Other Relevant Information

- UPR-200-E-98 is a 1980 release associated with the 291-C-1 Stack

Site Interfaces

Origin/Termination

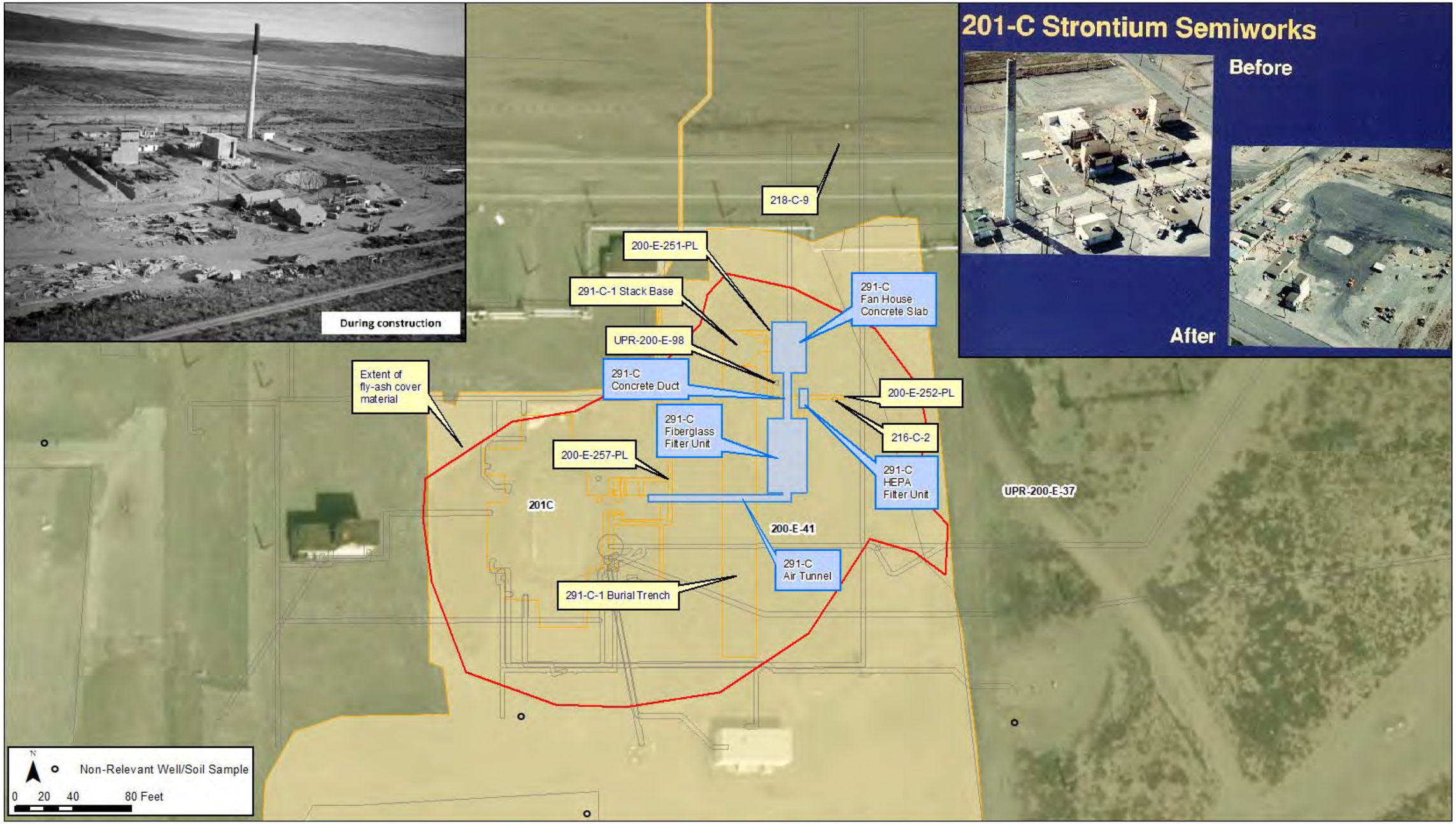
200-EA-1 OU
- 201-C

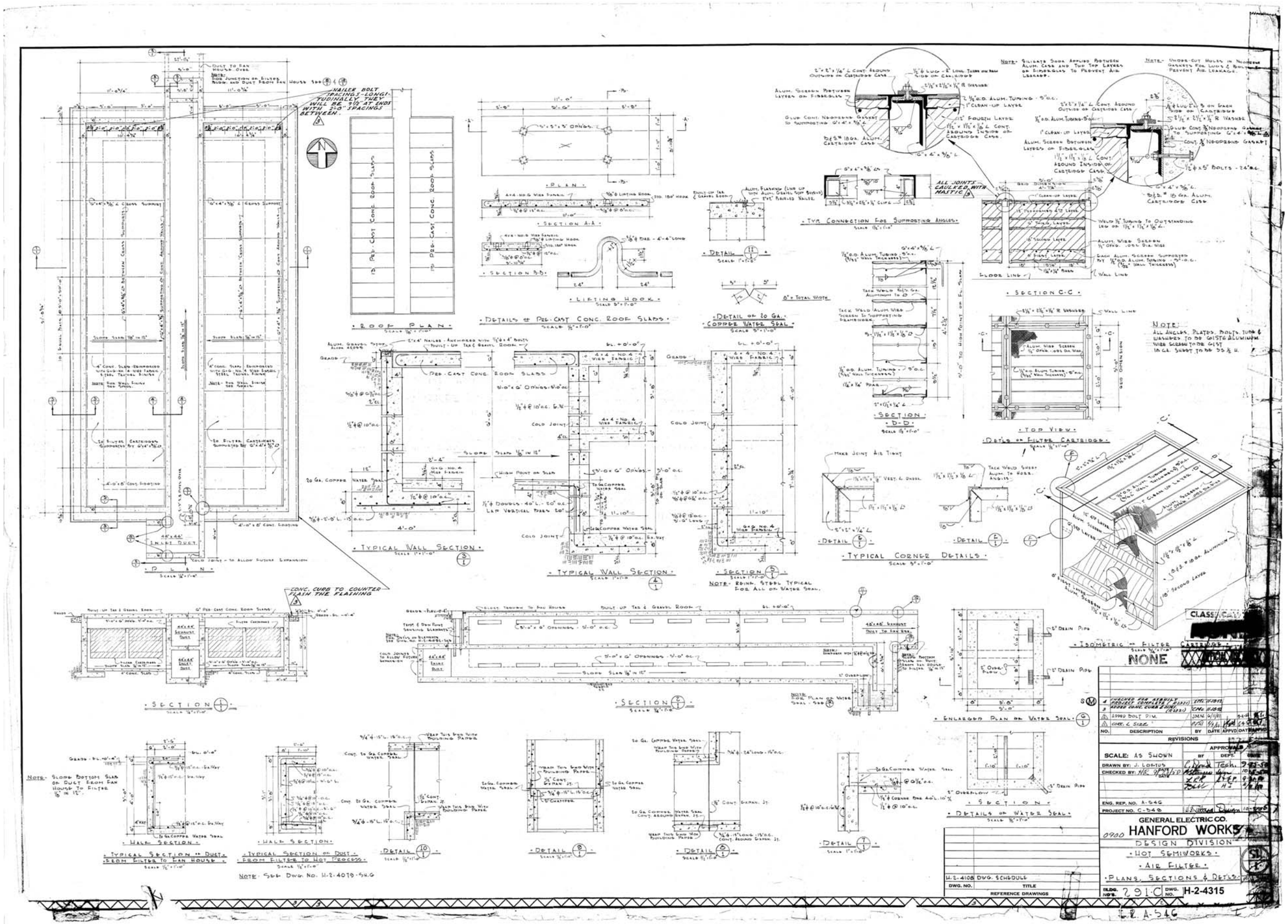
Intersecting/Nearby Sites

200-EA-1 OU
- 291-C-1 Stack
- 216-C-2
- UPR-200-E-98
- 200-E-41 (stabilized area)

200-IS-1 OU
- 200-E-257-PL
- 200-E-251-PL
- 200-E-252-PL

200-SW-2 OU
- 218-C-9


During construction
201-C Strontium Semiworks
Before
After
218-C-9
200-E-251-PL
291-C-1 Stack Base
291-C
Fan House
Concrete Slab
UPR-200-E-98
291-C
Concrete Duct
Extent of
fly-ash cover
material
200-E-252-PL
291-C
Fiberglass
Filter Unit
216-C-2
200-E-257-PL
291-C
HEPA
Filter Unit
UPR-200-E-37
201C
200-E-41
291-C
Air Tunnel
291-C-1 Burial Trench
N
Non-Relevant Well/Soil Sample
0 20 40 80 Feet


PLAN
SECTION A-A
SECTION B-B
LIFTING HOOK
DETAILS OF PRE-CAST CONC. ROOF SLABS
ROOF PLAN
TYP. CONNECTION FOR SUPPORTING ANGLES
DETAIL OF 20 GA. COPPER WATER SEAL
SECTION C-C
SECTION D-D
TOP VIEW
DETAILS OF FILTER CARTRIDGE
TYPICAL WALL SECTION
TYPICAL CORNER DETAILS
ALL JOINTS CAULKED WITH MASTIC
NOTE: ALL ANGLES, PLATES, BOLTS, TUBE & GRATINGS TO BE 6061-T6 ALUMINUM. WIRE SCREEN TO BE 6151. 16 GA. SHEET TO BE 3S & U.
CONC. CURB TO COUNTER FLASH THE FLASHING
SECTION
SECTION
ENLARGED PLAN ON WATER SEAL
ISOMETRIC OF FILTER CARTRIDGE
NONE
[redacted]
SCALE: AS SHOWN
DRAWN BY: J. LOWTON
CHECKED BY:
ENG. REP. NO. A-546
PROJECT NO. C-546
GENERAL ELECTRIC CO.
HANFORD WORKS
DESIGN DIVISION
HOT SEMIWORKS
AIR FILTER
PLANS, SECTIONS & DETAILS
BLDG. NO. 291-C
DWG. NO. H-2-4315
H-2-4108 DWG. SCHEDULE
DWG. NO.
TITLE
REFERENCE DRAWINGS
REVISIONS
NO.
DESCRIPTION
BY
DATE
APPVD
APPROVED
BY
DATE
DEPT.
NOTE: SLOPE BOTTOM SLAB ON DUCT FROM FAN HOUSE TO FILTER 1/8" IN 12".
TYPICAL SECTION OF DUCT FROM FILTER TO FAN HOUSE
TYPICAL SECTION OF DUCT FROM FILTER TO HOT PROCESS
NOTE: SEE DWG. NO. H-2-4070-SH.6
DETAILS OF WATER SEAL
SECTION
DETAIL
HALF SECTION
E.R. A-546

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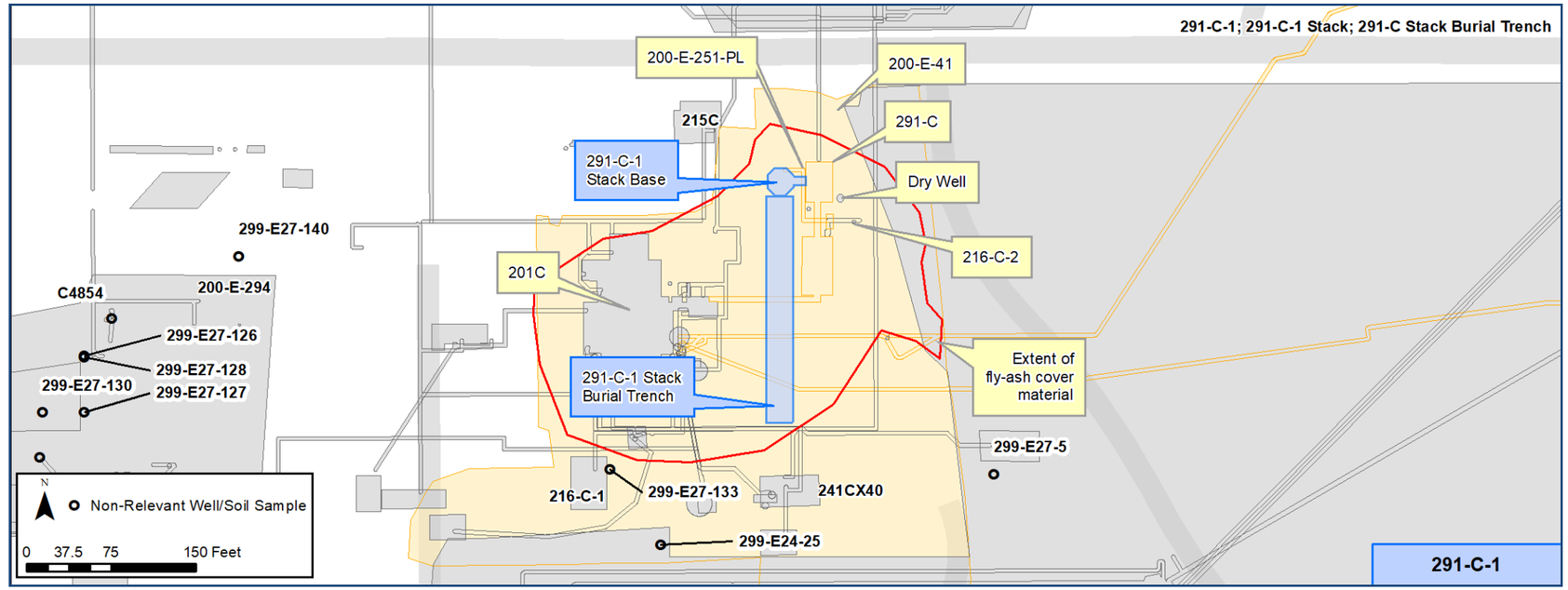
Scoping Summary: 291-C-1 (Burial Ground)

History

The 291-C-1 waste site is a burial trench with a demolished stack that provided exhaust air ventilation for the 201-C facility in the Hot Semiworks area. The stack (291-C Stack and Filter Dry Well) began operation in 1949, the Hot SemiWorks facility was placed in storage mode in 1967 and the stack continued to operate until 1987. Prior to demolition in 1988, the interior of the stack was partially decontaminated by remote sand blasting. The remainder of the contamination was stabilized by applying latex paint to the interior. The stack was felled into a trench south of the base and the base was filled with concrete. The stack rubble was further demolished to minimize void spaces and ash was used to fill the voids.

The 291-C complex included an air tunnel from 201-C facility cells, glass fiber filters, HEPA filters, fan house (291-C) and the 291-C-1 stack. Condensate from the stack drained via 200-E-251-PL to the 216-C-2 reverse well. All of the 291-C complex components were removed and/or filled with grout and left in place. The stack burial trench is not marked and cannot be distinguished from the rest of the surface stabilized area. In 1992 the Hot Semiworks area was subsequently covered with 3 ft of fly ash barrier and is posted as an Underground Radioactive Material Area (200-E-41).



Construction

- Material: Double shell structure; reinforced concrete outer shell; acid-resisting brick and mortar inner shell
- Stack base goes to approx. 6.5 ft bgs
- Stack base rests on an octagonal shape concrete foundation 23 ft across, 4.5 ft thick
- Burial trench dimensions not located

Features Of Interest

- Stainless steel duct protected by a concrete enclosure connects the 291-C fan house to the stack
  - 7 ft wide, 8 in thick walls, slopes down from the fan house at approx. 45 degrees to the base of the stack at 8.5 ft bgs

Waste Streams

201-C Building

- REDOX and PUREX
- Recover strontium from process wastes
- Cerium, technetium, and promethium (and neodymium daughter products) as well as minor amounts of americium and curium were also extracted
- Fiberglass filter unit estimated to contain 600 Ci of strontium and cesium, 5 Ci of curium and plutonium
- HEPA filter unit estimated to contain 900 Ci of strontium and cesium (WHC-SA-0256 January 1988)

Site Interfaces

Origins/Terminations

200-EA-1 OU

- 200-E-251-PL

OU Not Assigned

- 291-C Fan House

Intersecting/Nearby Sites

200-EA-1

- 216-C-2

OU Not Assigned

- 200-E-41 (stabilized area)
- 201-C (facility)

Relevant Characterization

- 1985 Gamma Energy Analysis detector readings from inside the stack
  - Maximum of .137 µCi/sq cm Cs-137 and 8.7 µCi/sq cm Sr-90 estimated for the stack base
  - 8,500 mRad/hr stack base area
- 1988 radiation levels prior to sandblasting ranged from 2.5 mGy/h to 90 mGy/h as measured along the stack centerline
  - Radiation levels after sandblasting were in the range of .01 mGy/h

Misc./Other Relevant Information

- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit determined the preferred removal action to be removal, treatment and dispose (RTD) because of the potential presence of radionuclides (DOE/RL-2008-44, Rev. 0).

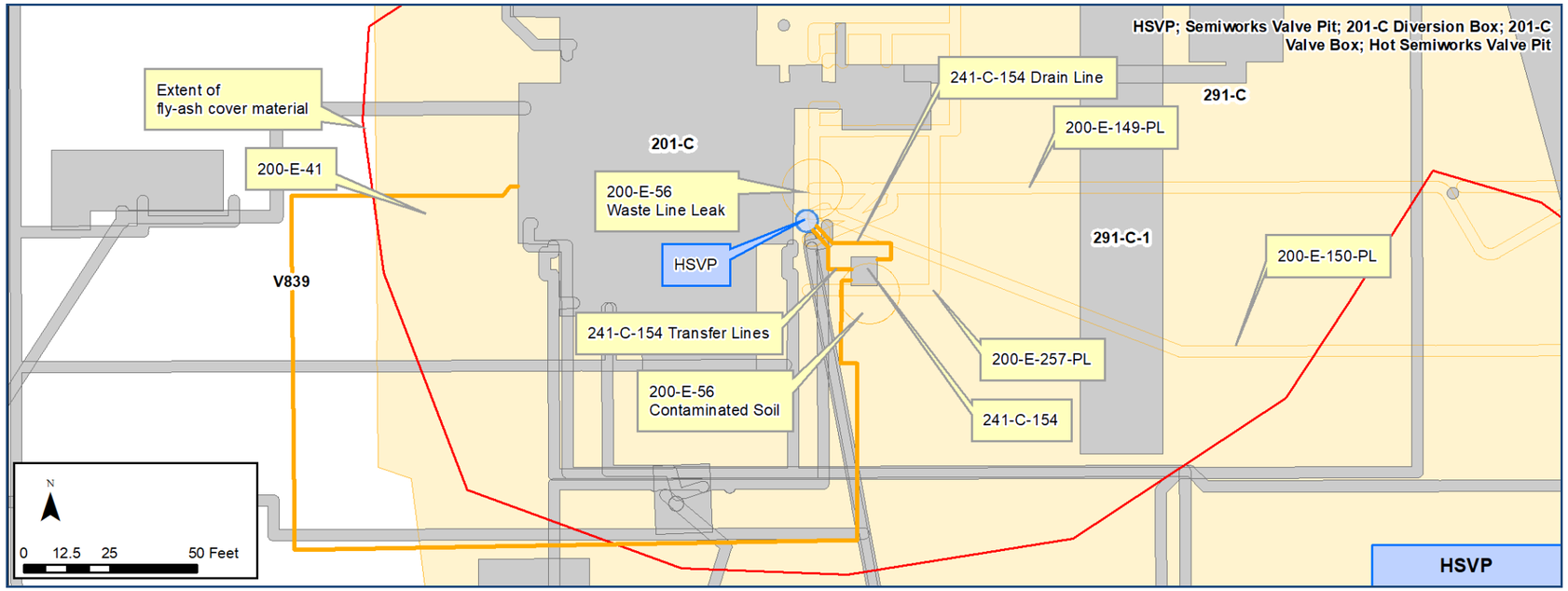
Scoping Summary: 291-C-1 (Burial Ground)

Scoping Summary: HSVP (Valve Pit)

History

The HSVP waste site, or Hot Semi-works Valve Pit, is an inactive underground cylindrical pit located adjacent to the eastern side of the former 201-C facility footprint. The pit was operational from 1951 to 1967, when the 201-C facility was retired; it was decommissioned in 1986, as part of the general Semi-works decommissioning effort. The lines were sealed, isolated at 201-C, and the pit was filled with concrete.

The HSVP connected lines from sources within the building to discharge locations at the 244-CR Vault in the PUREX Aggregate Area, the 241-C Tank Farm, and the 241-CX-70 Storage Tank. The pit also received drainage from the 241-C-154 diversion box. In 1992 the Radiation Area Remedial Action group covered 201-C and most of the Hot Semi-works area with fly ash (200-E-41). Currently the HSVP site is buried under the ash barrier and is not visible from the surface.



Construction

- Cylinder
- Material: Stainless steel
- Diameter: 5.5 ft
- Depth: Not located, drawings do not clearly indicate

Features Of Interest

- Two 2 in. transfer lines that connect to the 241-C-154 diversion box
- One drain line that connects to the 241-C-154 drain line

Relevant Characterization

- No direct characterization data was located for the valve pit or adjacent soil

Waste Streams

- Aluminum coating waste, zircaloy coating, radioactive condensates, Hot Shop sink wastes, cold run wastes. 201-C facility and 241-C-154 diversion box waste streams included:
  - PUREX, REDOX, Strontium Recovery
  - Cerium, technetium, and promethium and decay products (including neodymium and potentially samarium) as well as minor amounts of americium and curium
  - Promethium and strontium solutions for rare earth element purification
  - Radioactive solvent handling and limited batch rework processing - solvents and acids

Misc./Other Relevant Information

- 200-E-56 waste site is an unplanned release (UPR) consisting of two areas of contaminated soil near HSVP. The release site and relocated contaminated soil are associated with a 200-E-149-PL waste line leak identified in 1957
- In various references, HSVP is commonly referred to as the 201-C Diversion Box

Site Interfaces

Origin/Termination

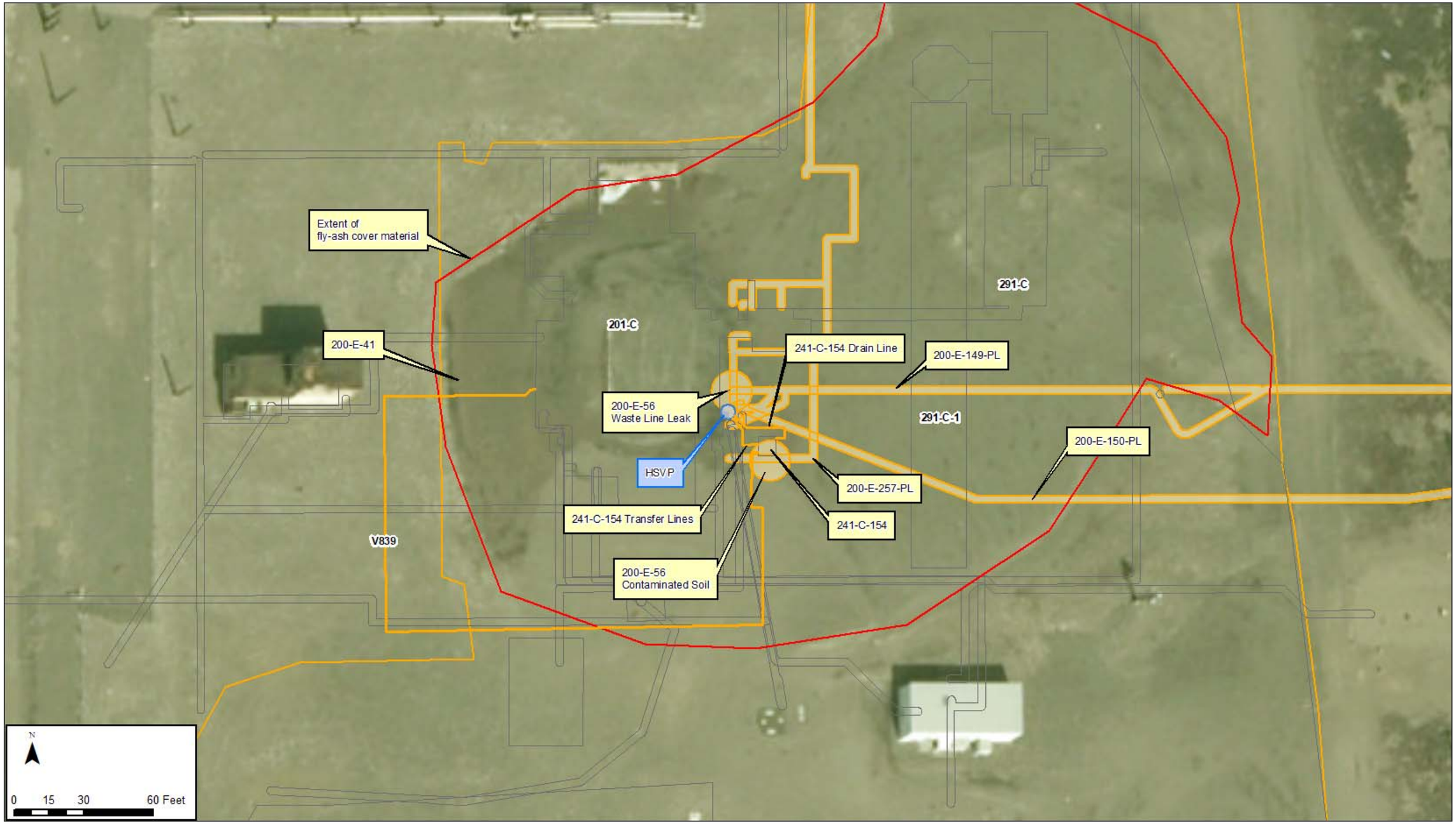
200-EA-1 OU
- 201-C (facility)
- 241-C-154 (diversion box)

Nearby/Intersecting Sites

200-EA-1 OU
- 200-E-56 (UPR)
- 200-E-41 (stabilized area)

200-IS-1 OU
- 200-E-257-PL
- 200-E-150-PL
- 200-E-149-PL

Scoping Summary: HSVP (Valve Pit)



Scoping Summary: UPR-200-E-10 (Unplanned Release)

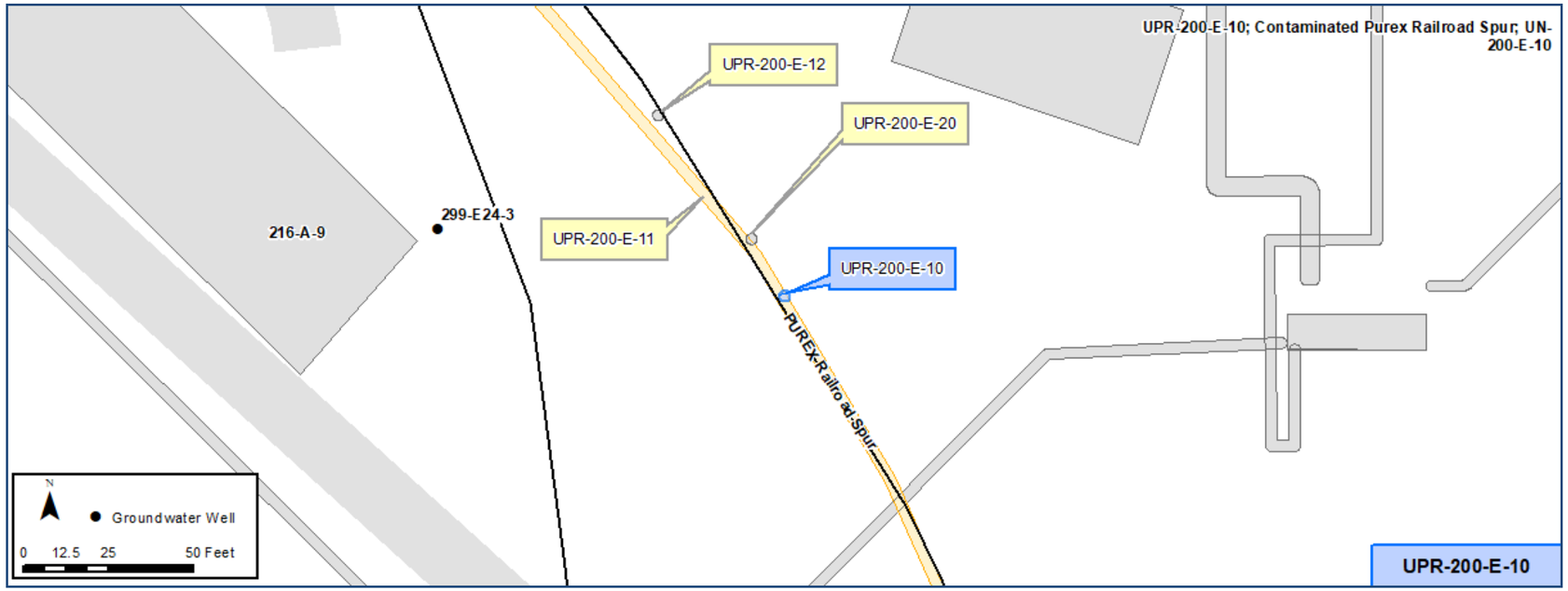
History

The UPR-200-E-10 waste site is an unplanned release from September 1957. Radiological contamination was spread at and around the PUREX railroad right-of-way during burial of two failed waste concentrator tube bundles. The contamination ranged from 5 to 20 Rad/hr and extended to the craneway, canyon, railroad tunnel, and the remote crane. The exact location is not known for the site and the representation on the image does not represent the full extent of the site along the railroad, as it is not known.

Decontamination efforts commenced immediately and were largely successful, although contamination remained at the following locations:

- fixed contamination at the railroad tunnel reduced to a maximum of 25 mRad/hr;
- extreme east end of the craneway registered spotty contamination at 1.6 Rad/hr;
- the crane showed general levels of 200 to 1,000 mRad/hr, and isolated areas as high as 10 Rad/hr.

In 1998, the area underwent a site walkdown and no separate posting or marking was identified.



Construction

- No dimensional or otherwise information was located for this waste site.

Features Of Interest

- This site is associated with 200-E-44 (PUREX Railroad Cut).

Relevant Characterization

- No recent direct characterization data was located for the site or adjacent soil. Documented levels of radiation after decontamination efforts in September 1957 are noted above, in History.

Waste Streams

- Radiological contamination from failed waste concentrator tube bundles F-6 and F-11 at PUREX; fission product contamination spots.

Misc./Other Relevant Information

- UPR-200-E-10 was previously included in the 200-UR-1 OU's RI/FS Work Plan & EE/CA (DOE/RL-2004-39, Draft A Re-issue) and the 200-MG-1 OU's Non-Time Critical Removal Action EE/CA and Action Memo (DOE/RL-2009-86). The selected remedy in each instance for this waste site was remove / treatment / disposal but no action was taken and the waste site was subsequently moved out of the operable unit prior to implementation.

Site Interfaces

Site Intersect:

200-OA-1 OU

- UPR-200-E-11 (Railroad Track Contamination Spread)

Scoping Summary: UPR-200-E-10 (Unplanned Release)

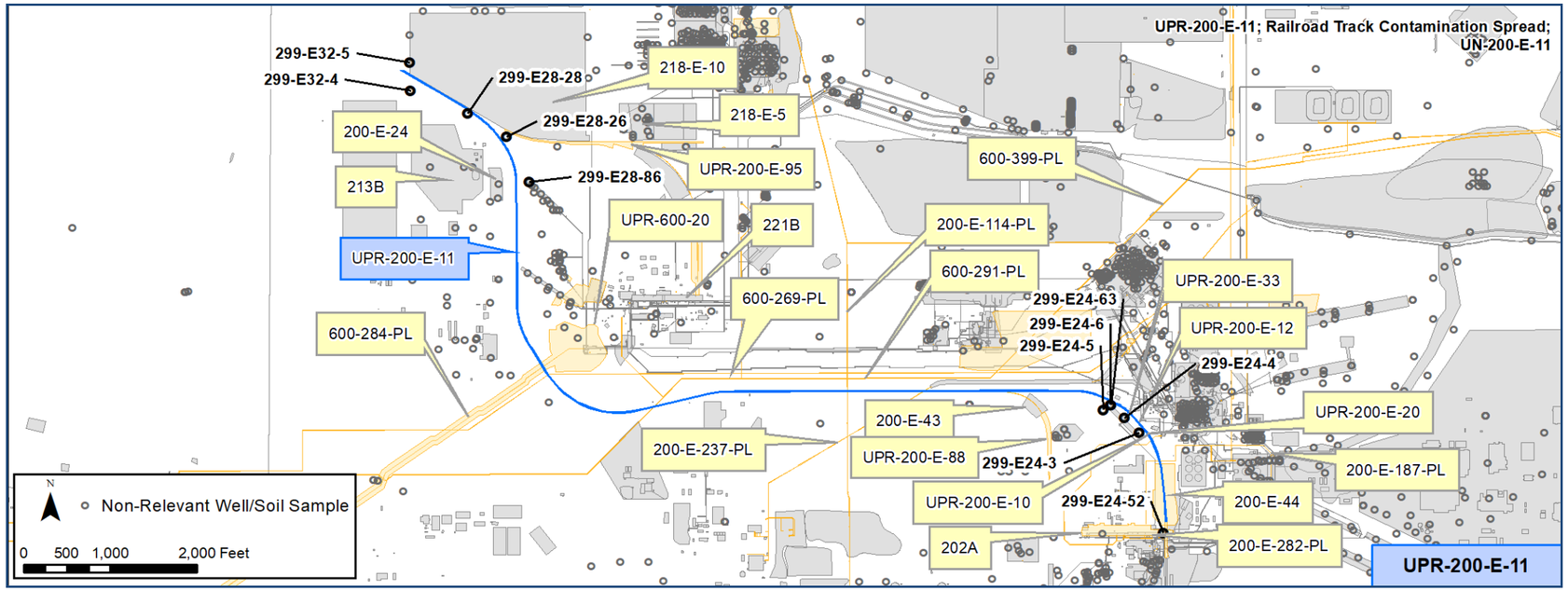
Scoping Summary: UPR-200-E-11 (Unplanned Release)

History

The UPR-200-E-11 waste site is a radiologically-contaminated railroad track with potential legacy contamination that was at least partially cleaned up in 1957 after the initial event. From 1957 through the track's use history, material and equipment containing fission products released contamination (i.e., leaks, drips) along the railroad sidings from the PUREX plant to the 218-E-5 burial ground.

In total, nine waste sites (all categorized as unplanned releases) have been identified along the tracks from the PUREX tunnel entrance to the west exclusion area fence; the spur into the 218-E-5 burial ground; and, the TC-4 spur (aka UPR-200-E-88). These additional sites are identified in Site Interfaces and indicated on the plan view.

Initially, the tracks were marked with stakes and radiation zone signs every one hundred feet along the tracks, out to thirty feet on either side. Those postings were later removed when routine radiological surveys failed to identify contamination.



Construction

History, continued….

In 2015, two small contaminated rocks were found during an annual survey on the surface of the railroad line bed. One rock registered 35,000 dpm/100cm2 beta gamma, 5,280 dpm/100cm2 alpha; the other at 12,000 dpm/100cm2 beta gamma, 80 dpm/100cm2 alpha. No transferrable contamination was found and dose rates for both were less than 0.5 mrem/hr gamma.

The rocks were bagged up and properly disposed. As a result of the discovery, this area was again posted Underground Radioactive Material Area (URMA).

- Material: Railroad tracks and railbed rock
- Length: 12,540 ft

Features Of Interest

- Although this waste site's description identifies potential contamination along the entire length of this railroad track, additional waste sites comprise portions of the railroad, including UPR-200-E-12, which may be a duplicate event from 1957.

Relevant Characterization

- 2015: Two contaminated rocks discovered, bagged, and properly disposed during routine radiological survey of the railroad tracks.
- 2016: Fixed levels of alpha contamination on west end of railroad tracks discovered at 300 dpm/100cm2.

Waste Streams

- 1957: Leaking or dripping fission product in transit from a rail car between PUREX Plant and the 218-E-5 burial ground.

Misc./Other Relevant Information

- UPR-200-E-11 was previously included in the 200-UR-1 OU's RI/FS Work Plan & EE/CA (DOE/RL-2004-39, Draft A Re-issue) and the 200-MG-1 OU's Non-Time Critical Removal Action EE/CA and Action Memo (DOE/RL-2009-86). The selected remedy in each instance for this waste site was remove / treatment / disposal but no action was taken and the waste site was subsequently moved out of the operable unit prior to implementation.

Site Interfaces

Directly Associated Contaminated Railroad Track Waste Sites:

200-EA-1 OU
- UPR-200-E-10
- UPR-200-E-12
- UPR-200-E-20
- UPR-200-E-33
- UPR-200-E-88
- UPR-200-E-95
- 200-E-43
- 200-E-44

Origin/Termination:
- PUREX Tunnel (202A Building)

200-SW-2 OU
- 218-E-5 (burial ground)

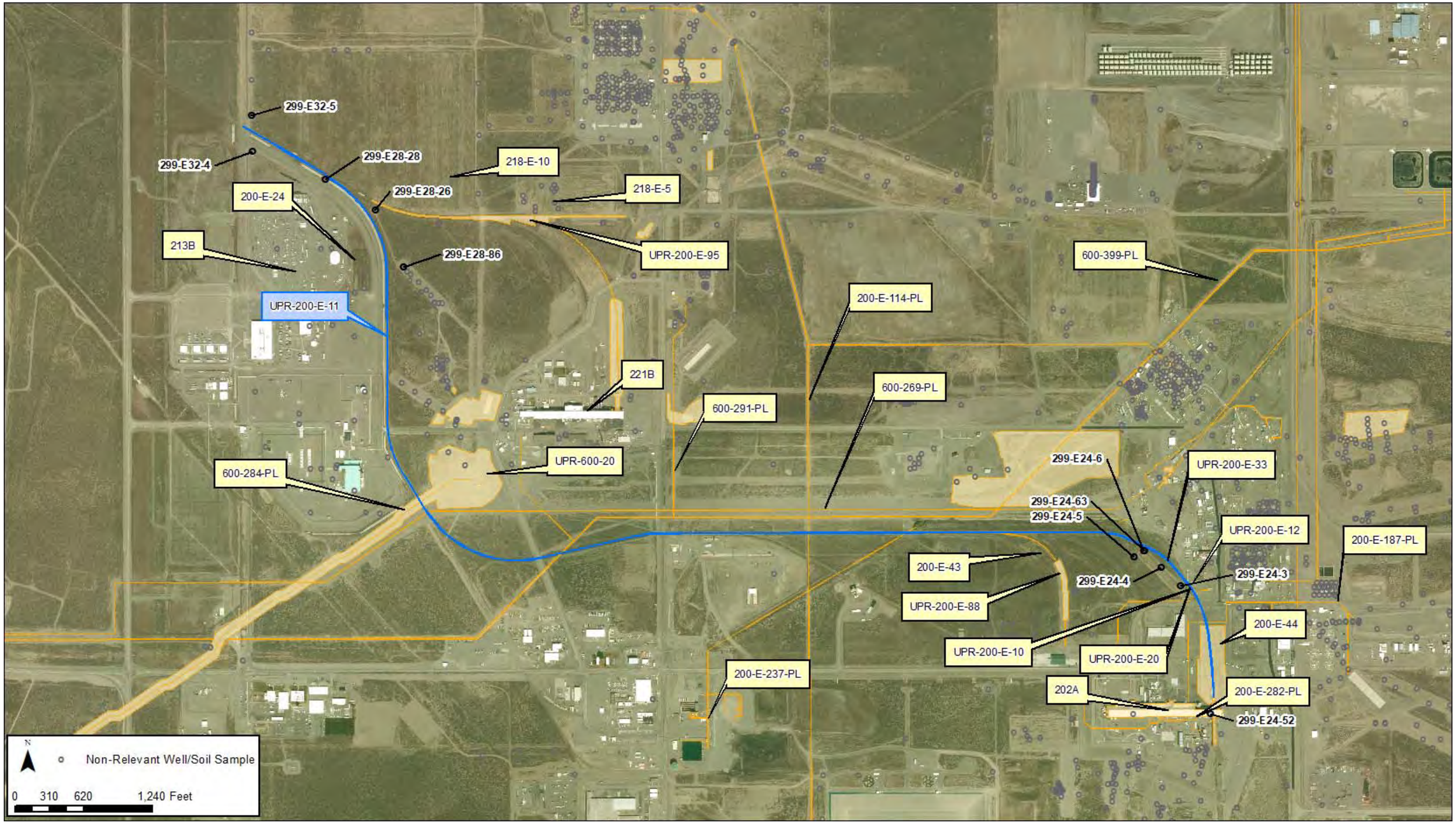
Site Intersects:

200-IS-1 OU
- 200-E-114-PL
- 200-E-187-PL
- 200-E-237-PL
- 200-E-282-PL
- 600-284-PL

OU Unassigned
- 600-269-PL
- 600-291-PL (Active)
- 600-399-PL (Active)

200-OA-1 OU
- UPR-600-20

Scoping Summary: UPR-200-E-11 (Unplanned Release)



Scoping Summary: UPR-200-E-12 (Unplanned Release)

History

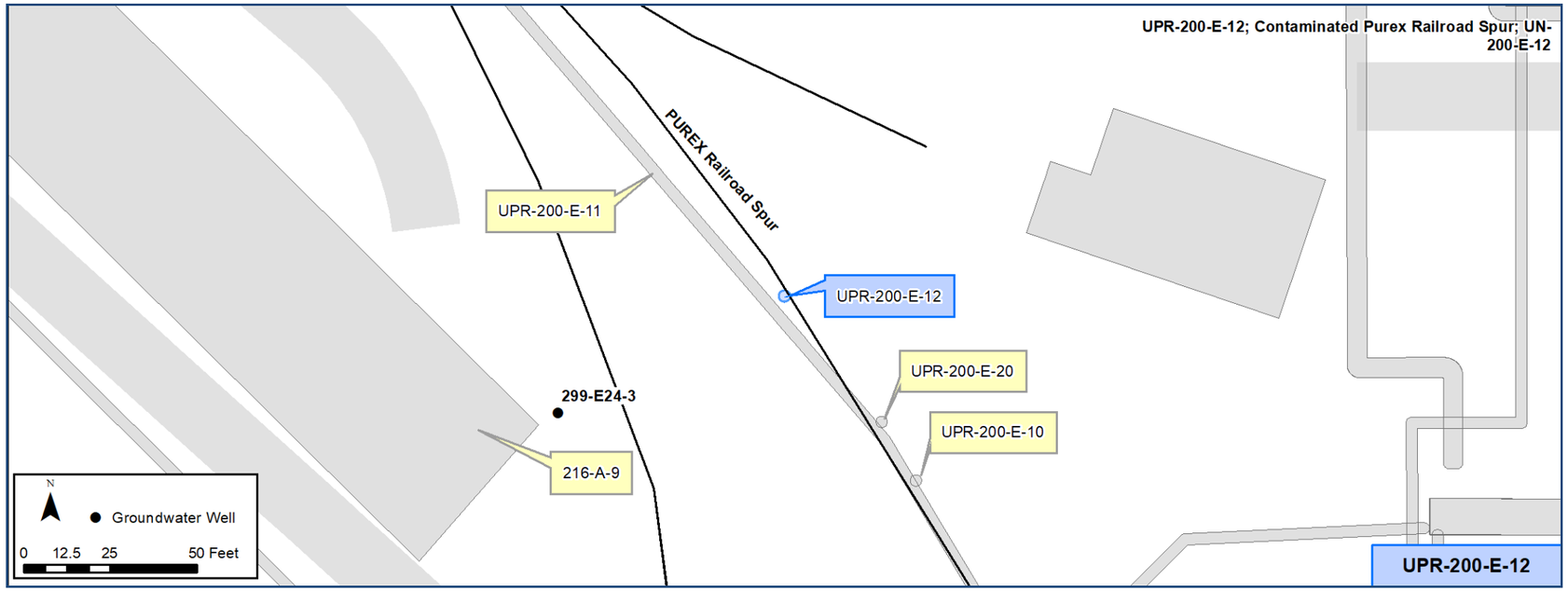
The UPR-200-E-12 waste site is an unplanned release from November 1957 when a burial box containing failed process jumpers was dripping while in-transit to the burial ground over the PUREX railroad spur.

The dripping box resulted in spotty contamination to the railroad bed, with beta/gamma readings from 40-to-1,700 mRad/hr. Railroad crossings were promptly decontaminated and resurfaced, and the road bed was scheduled for decontamination the following month.

Contamination that spread to the canyon deck, tunnel, and tunnel cut deposited during the burial operation was removed.

This waste site is not currently posted or marked, as of a site walkdown in 1998.

Contamination inside the PUREX fence is considered part of the PUREX Railroad Cut, waste site 200-E-44.



Construction

- No dimensional or otherwise information was located for this waste site.

Features Of Interest

- This site is associated with UPR-200-E-11, UPR-200-E-88, 200-E-43 and 200-E-44.

Relevant Characterization

- No recent direct characterization data available for the site or adjacent soil; historical contamination levels prior to decontamination efforts noted in History section, above.

Waste Streams

- Radiologically-contaminated liquid waste from a burial box containing failed process jumpers. The burial box measured 450 mRad/hr from 150 ft.

Misc./Other Relevant Information

- UPR-200-E-12 is associated with UPR-200-E11 and was previously included in the 200-UR-1 OU's RI/FS Work Plan & EE/CA (DOE/RL-2004-39, Draft A Re-issue) and the 200-MG-1 OU's Non-Time Critical Removal Action EE/CA and Action Memo (DOE/RL-2009-86). The selected remedy in each instance for this waste site was remove / treatment / disposal but no action was taken and the waste site was subsequently moved out of the operable unit prior to implementation.

Site Interfaces

Nearby Sites:

200-OA-1 OU

- UPR-200-E-11 (Railroad Track Contamination Spread)

200-EA-1 OU

- 216-A-9 (Crib)
- UPR-200-E-10 (Railroad Track Contamination Spread)
- UPR-200-E-20 (Railroad Track Contamination)

Scoping Summary: UPR-200-E-12 (Unplanned Release)

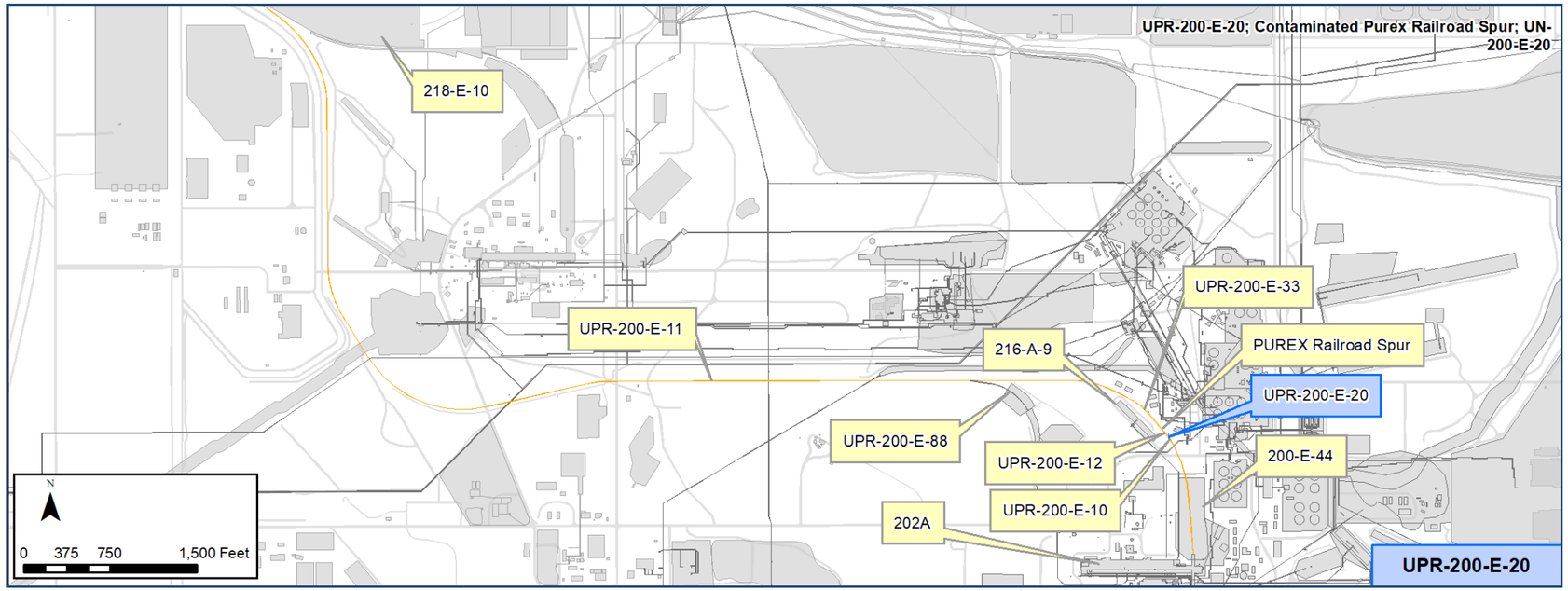
Scoping Summary: UPR-200-E-20 (Unplanned Release)

History

The UPR-200-E-20 waste site is an unplanned release of radiological contamination that occurred in October 1959 during the transport of two H-4 tube bundles. The railroad right-of-way from 202A (PUREX) to the burial trench was contaminated, with readings up to 3 Rad/hr at 18 inches.

According to the Chemical Processing Department's monthly report for October, approximately one half of the contaminated area had been cleaned up by month end, 1959. No additional details were located.

Like other similar unplanned release waste sites along the PUREX railroad spur, this area is not currently posted or marked. Contamination inside the PUREX fence line is considered part of the PUREX Railroad Cut, waste site 200-E-44.



Construction

- No dimensional or otherwise information was noted for this waste site. The location of the point on the map appears to be an estimate or placeholder to denote the occurrence, which otherwise extended the length of the rail between 202A and the burial trench (i.e., 218-E-10 Burial Ground).

Features Of Interest

- No features of interest.

Relevant Characterization

No recent direct characterization data available for the site or adjacent soil. No additional data located from date of leak or subsequent decontamination.

Waste Streams

- No waste stream information could be verified. The radiological contamination was the result of two leaking tube bundles from PUREX in 1959. Tube bundles were most likely used as heating elements for various experiments.

Misc./Other Relevant Information

- UPR-200-E-20 was previously included in the 200-UR-1 OU's RI/FS Work Plan & EE/CA (DOE/RL-2004-39, Draft A Re-issue) and the 200-MG-1 OU's Non-Time Critical Removal Action EE/CA and Action Memo (DOE/RL-2009-86). The recommendation was remove / treatment / disposal but no action was taken and the waste site was subsequently moved out of the operable unit prior to implementation.
- This site is associated with UPR-200-E-11.

Site Interfaces

Site Intersect:

200-OA-1 OU

- UPR-200-E-11 (Railroad Track Contamination Spread)

Nearby Sites:

200-EA-1 OU

- UPR-200-E-10 (Contaminated PUREX Railroad Spur)
- UPR-200-E-12 (Contaminated PUREX Railroad Spur)
- 216-A-9 (Crib)

Scoping Summary: UPR-200-E-20 (Unplanned Release)

Scoping Summary: UPR-200-E-21 (Unplanned Release)

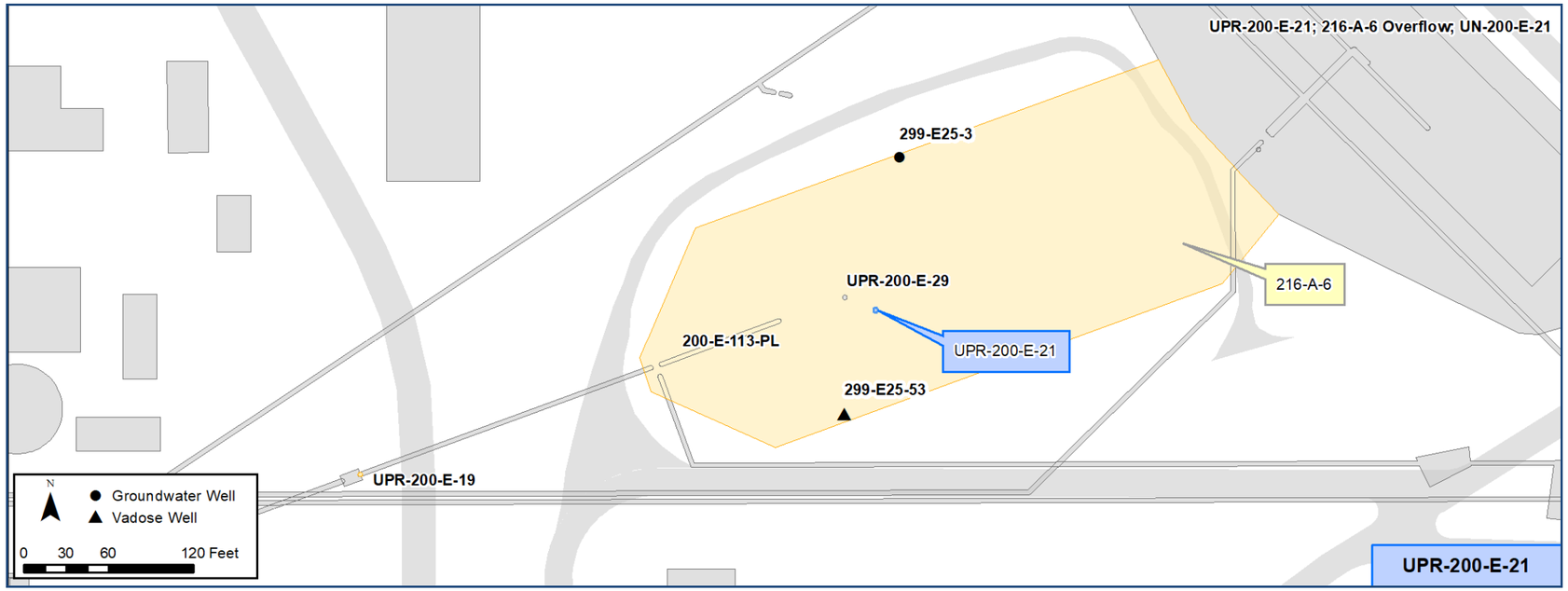
History

The UPR-200-E-21 waste site is an unplanned release, sometimes referred to as the 216-A-6 Overflow. In February 1959, the 216-A-6 Crib flooded and contaminated the adjacent area to 500 mRad/hr.

In 1972, the contaminated ground surface was covered with 6 inches of sand and topped with plastic sheeting. The sheeting was covered with 18 more inches of sand and 4 inches of gravel. In 1993, the area was re-stabilized with 18 to 24 inches of clean backfill.

In 2004, along with UPR-200-E-19, -29, and 216-A-6, this waste site was included in Draft A of a feasibility study (FS) (DOE/RL-2004-24). The FS identified capping as the preferred alternative for this collective group of waste sites, as well as crib inlet pipe 200-E-113-PL. By 2008, these waste sites were no longer included in the RI/FS process for that operable unit (i.e., 200-CW-5) and were not discussed in the final FS.

The unplanned release is not separately marked or posted. The crib has been surface stabilized and is posted with Underground Radioactive Material signs.



Construction

- No specific dimensional data for this waste site. The 216-A-6 perimeter was expanded to include this waste site by 1993.

Features Of Interest

- No features of interest.

Relevant Characterization

- No site-specific data.
- 1957-1958: Well 299-E25-3 shows Cs-137 contamination in the groundwater at 740 pCi/L.
- 1971 to 1987: Well 299-E25-3 with Cs-137 concentrations from 32 pCi/L to 6.6 pCi/L.
- 2013: An annual radiological survey of the general area noted no action levels exceeded.

Waste Streams

- No specific waste stream for this waste site.
- The 216-A-6 Crib received steam condensate, equipment disposal tunnel floor drainage, water-filled door drainage, and slug storage basin overflow waste from the 202A Building (PUREX) from 1955 to 1961.
- 1964 to 1966, the site again received the above effluents, which were low in salt, and neutral to basic.

Misc./Other Relevant Information

- No additional information.

Site Interfaces

Site Intersect:
200-EA-1 OU
- 216-A-6 (Crib)

Nearby Sites:
200-EA-1 OU
- UPR-200-E-29 (crib overflow)
- UPR-200-E-19 (Contamination Release at 216-A-6 Sampler Pit)

200-IS-1 OU
- 200-E-113-PL (pipeline)

Monitoring Wells:
- 299-E25-53 (Decommissioned Vadose, to 150 ft bgs)
- 299-E25-3 (In-Use Groundwater, to 365 ft bgs)

Scoping Summary: UPR-200-E-21 (Unplanned Release)

Scoping Summary: UPR-200-E-29 (Unplanned Release)

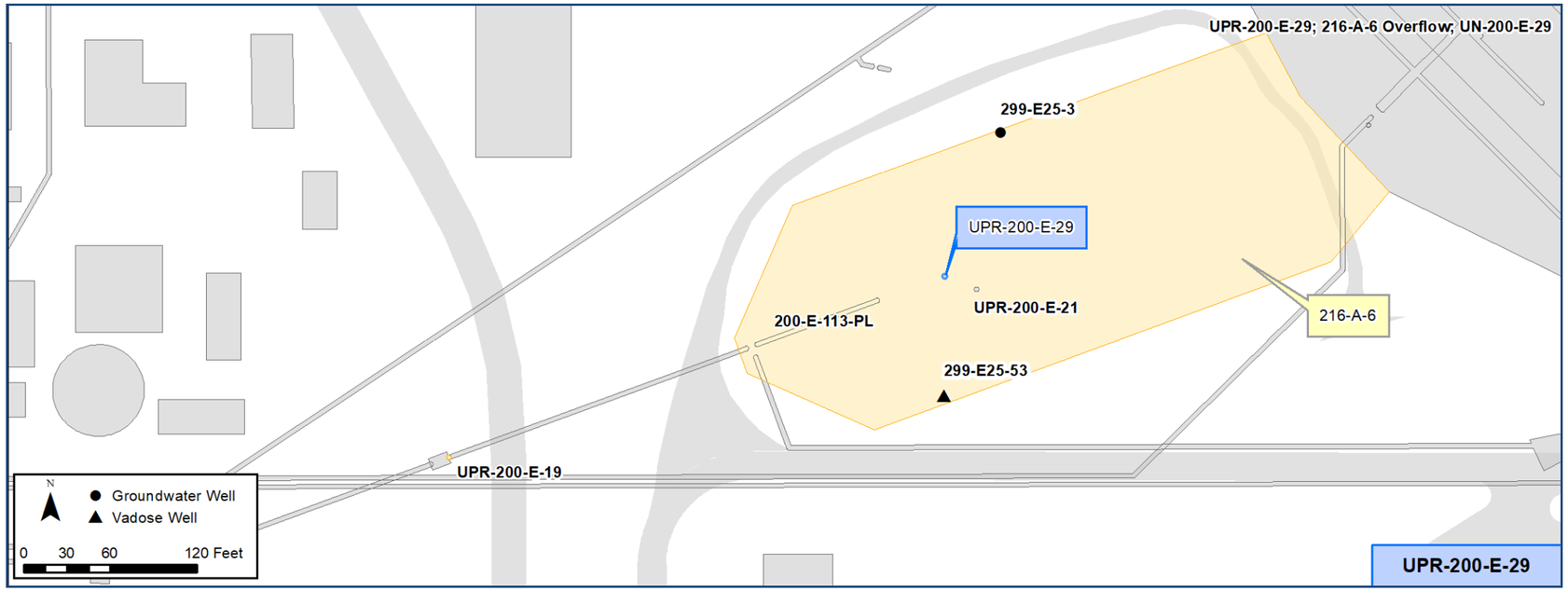
History

The UPR-200-E-29 waste site is an unplanned release, sometimes referred to as 216-A-6 Overflow. In January 1961, the 216-A-6 Crib flooded and contaminated the adjacent area to 30 Rad/hr at 4 ft.

In 1972, the contaminated ground surface was covered with 6 inches of sand and topped with plastic sheeting. The sheeting was covered with 18 more inches of sand and 4 inches of gravel. In 1993, the area was re-stabilized with 18 to 24 inches of clean backfill.

In 2004, along with UPR-200-E-19, -21, and 216-A-6, this waste site was included in Draft A of a feasibility study (FS) (DOE/RL-2004-24). The FS identified capping as the preferred alternative for this collective group of waste sites, as well as crib inlet pipe 200-E-113-PL. By 2008, these waste sites were no longer included in the RI/FS process for that operable unit (i.e., 200-CW-5) and were not discussed in the final FS.

The unplanned release is not separately marked or posted. The crib has been surface stabilized and is posted with Underground Radioactive Material signs.



Construction

- No specific dimensional data for this waste site. The 216-A-6 perimeter was expanded to include this UPR by 1993.

Features Of Interest

- No features of interest.

Relevant Characterization

- No site-specific data.
- 1957-1958: Well 299-E25-3 shows Cs-137 contamination in the groundwater at 740 pCi/L.
- 1971 to 1987: Well 299-E25-3 with Cs-137 concentrations from 32 pCi/L to 6.6 pCi/L.
- 2013: An annual radiological survey of the general area noted no action levels exceeded.

Waste Streams

- No specific waste stream for this waste site.
- The 216-A-6 Crib received steam condensate, equipment disposal tunnel floor drainage, water-filled door drainage, and slug storage basin overflow waste from the 202A Building (PUREX) from 1955 to 1961.
- 1964 to 1966, the site again received the above effluents, which were low in salt, and neutral to basic.

Misc./Other Relevant Information

- No additional information.

Site Interfaces

Site Intersect:

200-EA-1 OU

- 216-A-6 (Crib)

Nearby Sites:

200-EA-1 OU

- UPR-200-E-21 (Crib overflow)
- UPR-200-E-19 (Contamination Release at 216-A-6 Sampler Pit)

200-IS-1 OU

- 200-E-113-PL (pipeline)

Monitoring Wells:

- 299-E25-53 (Decommissioned Vadose, to 150 ft bgs)
- 299-E25-3 (In-Use Groundwater, to 365 ft bgs)

Scoping Summary: UPR-200-E-29 (Unplanned Release)

Scoping Summary: UPR-200-E-33 (Unplanned Release)

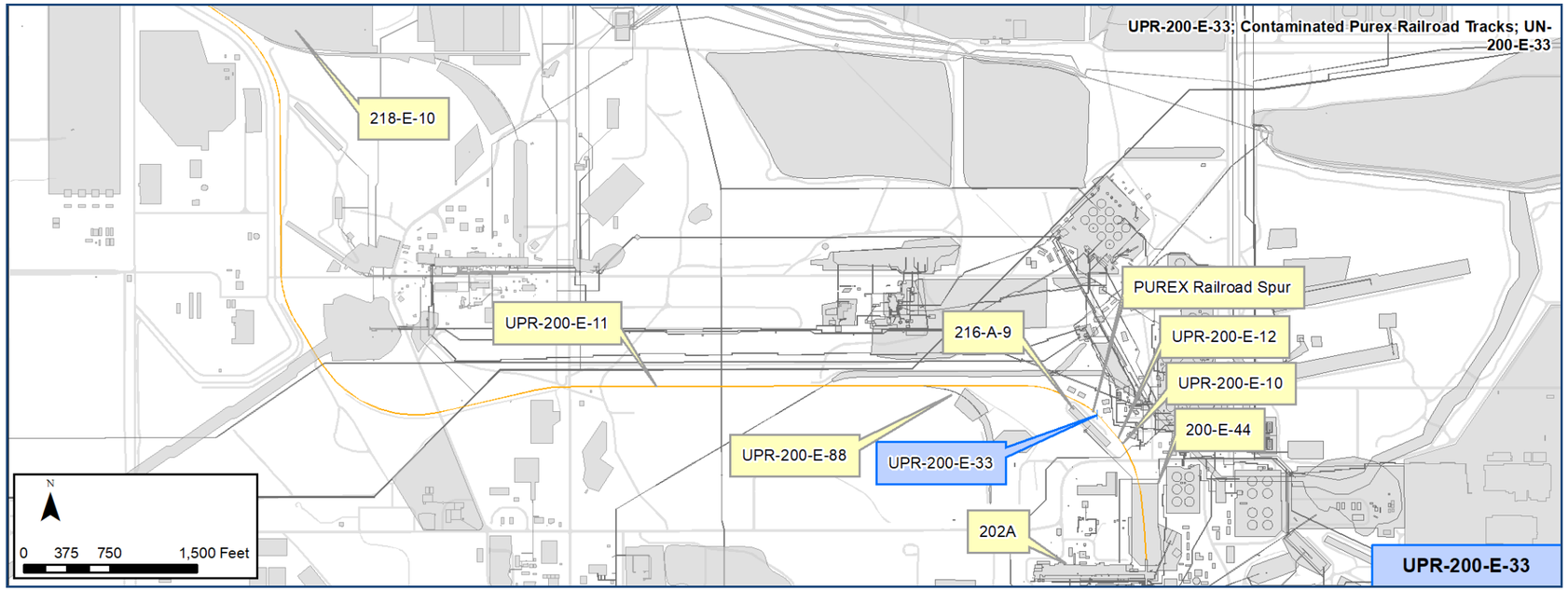
History

The UPR-200-E-33 waste site is an unplanned release of radiological contamination along the railroad tracks from PUREX to the 200 East burial ground in February 1964 when a tube bundle burial box leaked during transport.

Decontamination was successful, according to the Chemical Processing Department's monthly report for February, 1964, but no additional details were located (*HW-81078*).

The waste site is not currently posted or marked. It was transferred from the 200-MG-1 Operable Unit to the 200-EA-1 Operable Unit in September 2010.

Contamination inside the PUREX fence is considered part of the PUREX Railroad Cut, waste site 200-E-44.



Construction

- No dimensional or otherwise information was noted for this waste site. The location of the point on the map appears to be an estimate or placeholder to denote the occurrence.

Features Of Interest

- No features of interest.

Relevant Characterization

- No recent direct characterization data available for the site or adjacent soil. No data located from date of leak or subsequent decontamination.

Waste Streams

- No waste stream information could be verified. The radiological contamination was the result of a leaking tube bundle burial box (most likely an H-4 tube bundle) from PUREX in 1964.

Misc./Other Relevant Information

- UPR-200-E-33 is associated with UPR-200-E-11 and was previously included in the 200-UR-1 OU's RI/FS Work Plan & EE/CA (DOE/RL-2004-39, Draft A Re-issue) and the 200-MG-1 OU's Non-Time Critical Removal Action EE/CA and Action Memo (DOE/RL-2009-86). The selected remedy in each instance for this waste site was remove / treatment / disposal but no action was taken and the waste site was subsequently moved out of the operable unit prior to implementation.

Site Interfaces

Site Intersect:

200-OA-1 OU

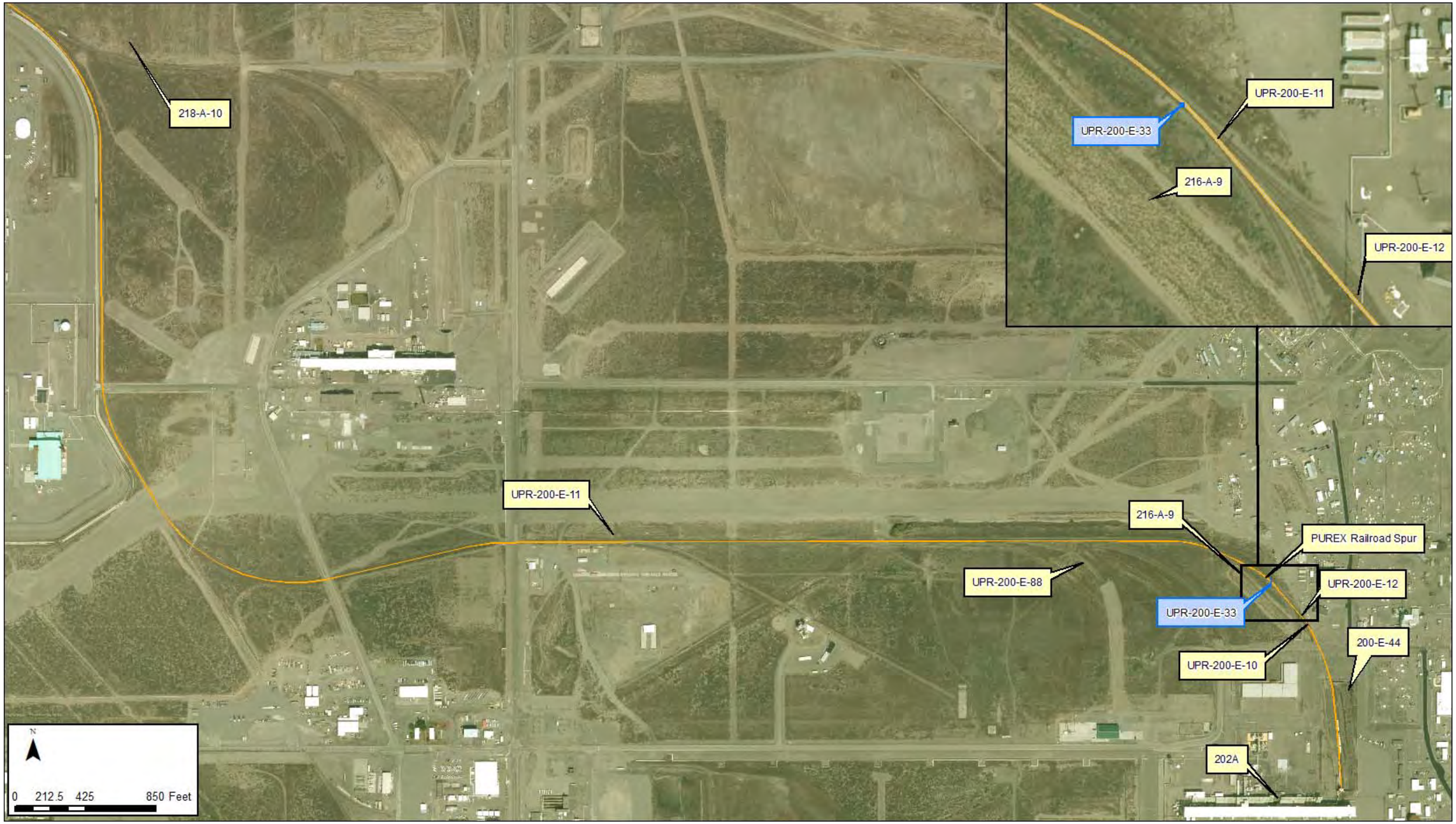
- UPR-200-E-11 (Railroad Track Contamination Spread)

Nearby Sites:

200-EA-1 OU

- 216-A-9 (Crib)

Scoping Summary: UPR-200-E-33 (Unplanned Release)

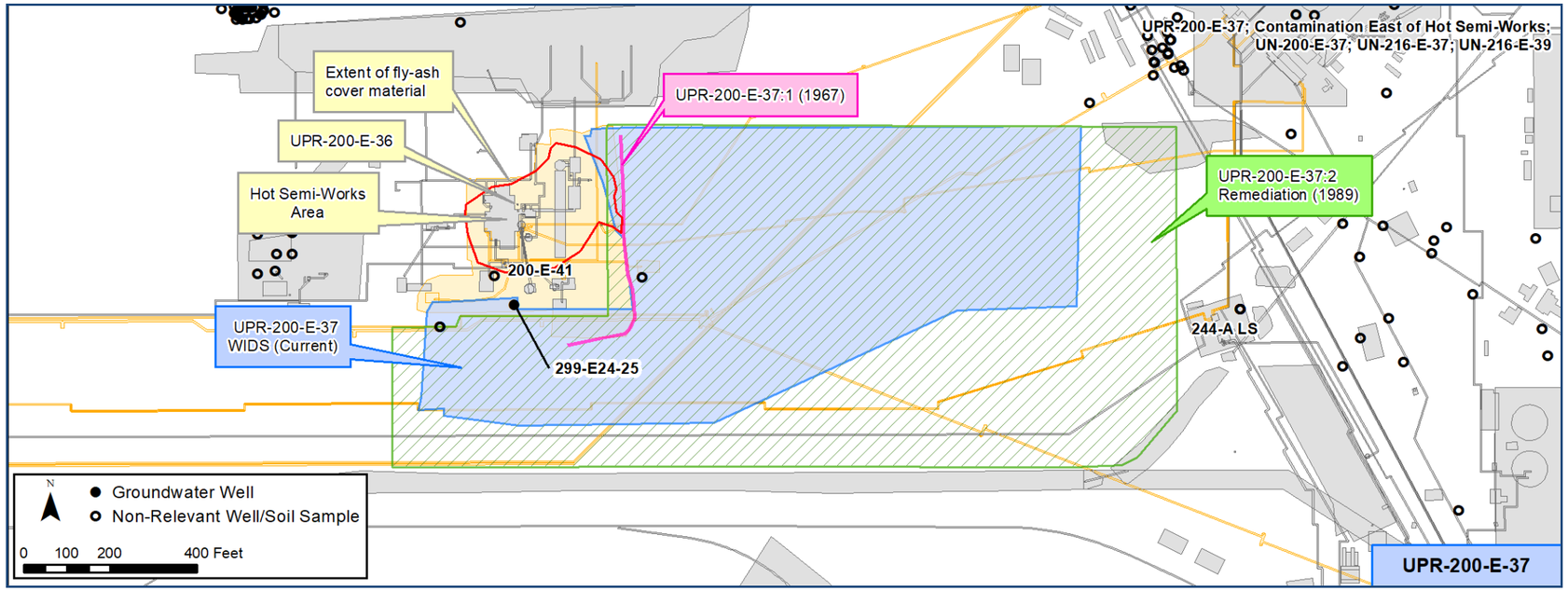


Scoping Summary: UPR-200-E-37 (Unplanned Release)

History

The UPR-200-E-37 waste site is an unplanned release east of the Hot Semi-Works facility consisting of two subsites. Subsite 1 was reported in 1967 as further wind spread of a pump change release (UPR-200-E-36). The contaminated area was wet down with sprinklers and black top areas were cleaned. Subsite 2 was a 14 acre area reported in 1987 when radiation dose rates were found while performing an investigative survey of the field between Hot Semi-Works and the 244-A Lift Station. The source of the contaminated field was not specified in the historical record. In 1989 contaminated soil from 9 acres of the area was scraped up and disposed of in the 216-C-9 trench.

Subsequent direct radiological surveys, Mobile Surface Contamination Monitor tractor surveys and soil sampling were conducted for subsite 2. In 1991 the area was released from radiological postings based on the survey and sample results. Soil release standards were based on WHC-CM-7-5 Environmental Compliance Manual and radiological postings were in accordance with WHC-CM-4-10. Staff email communication from May 2008 indicates that the cleanup levels in these documents were too high and may not comply with current requirements for the protection of human health and environment.



Construction

1967 Release
- Length: ~600 ft

1987 Contaminated Field
- Contamination area ~14 acres
  - Over lapped the 1967 subsite 1 area as well as portions of the Hot Semi-Works stabilized area (200-E-41)
- Remediated area: 9 acres

Features Of Interest

- There is currently no physical evidence of UPR-200-E-37 and it is no longer marked or posted

Relevant Characterization

- Subsite 1: 200 mrad/hr (1967)
- Subsite 2: Field survey ranged from 300 to 100,000+ cpm direct and removable (1987)
  - < 550,000 dpm beta direct (1988)
  - 2,000 to 20,000 dpm direct (post remediation (1989)
  - No readings above background (1997-1999)
  - See Page 3 for a depiction of the nature and extent of contamination as defined by existing sample data (Overall Semiworks, not this UPR, tied to crib C-1 & C-10)

Waste Streams

- Specific source of contamination was not located
- Hot Semi-Works waste streams included:
  - REDOX
  - PUREX
  - Strontium recovery

Misc./Other Relevant Information

- It was noted in a 1991 report of survey and sample results of the remediated area that the few areas with higher readings appeared to be over the 200-E-149-PL as it branches toward C Farm and that this may warrant additional study for future remedial investigation work
- Aerial radiological survey information is available from 1996 (DOE-0335) and 2009 (SWG-45563)

Site Interfaces

Origin/Termination

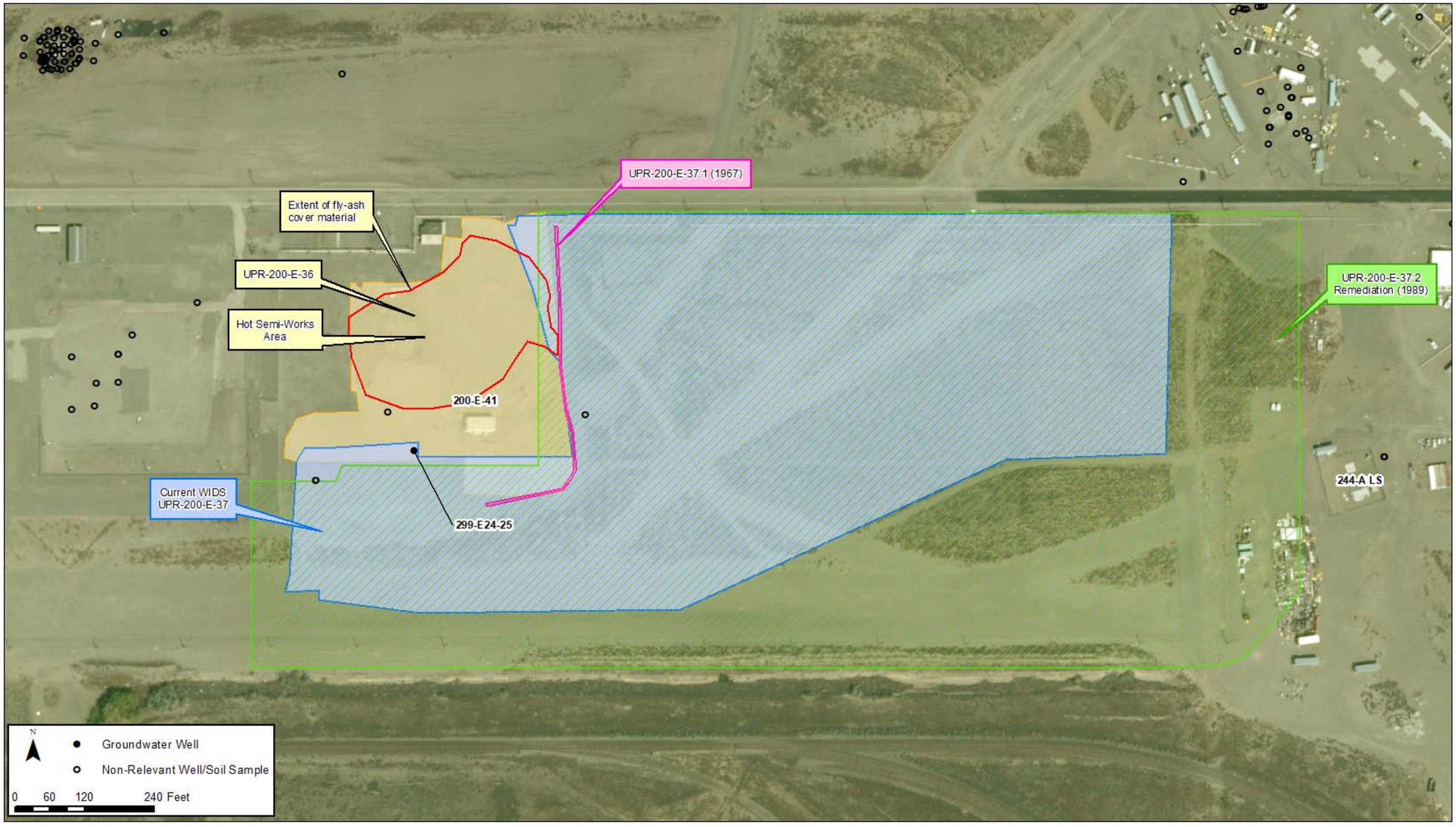
OU Unassigned
- Hot Semi-Works (facilities)

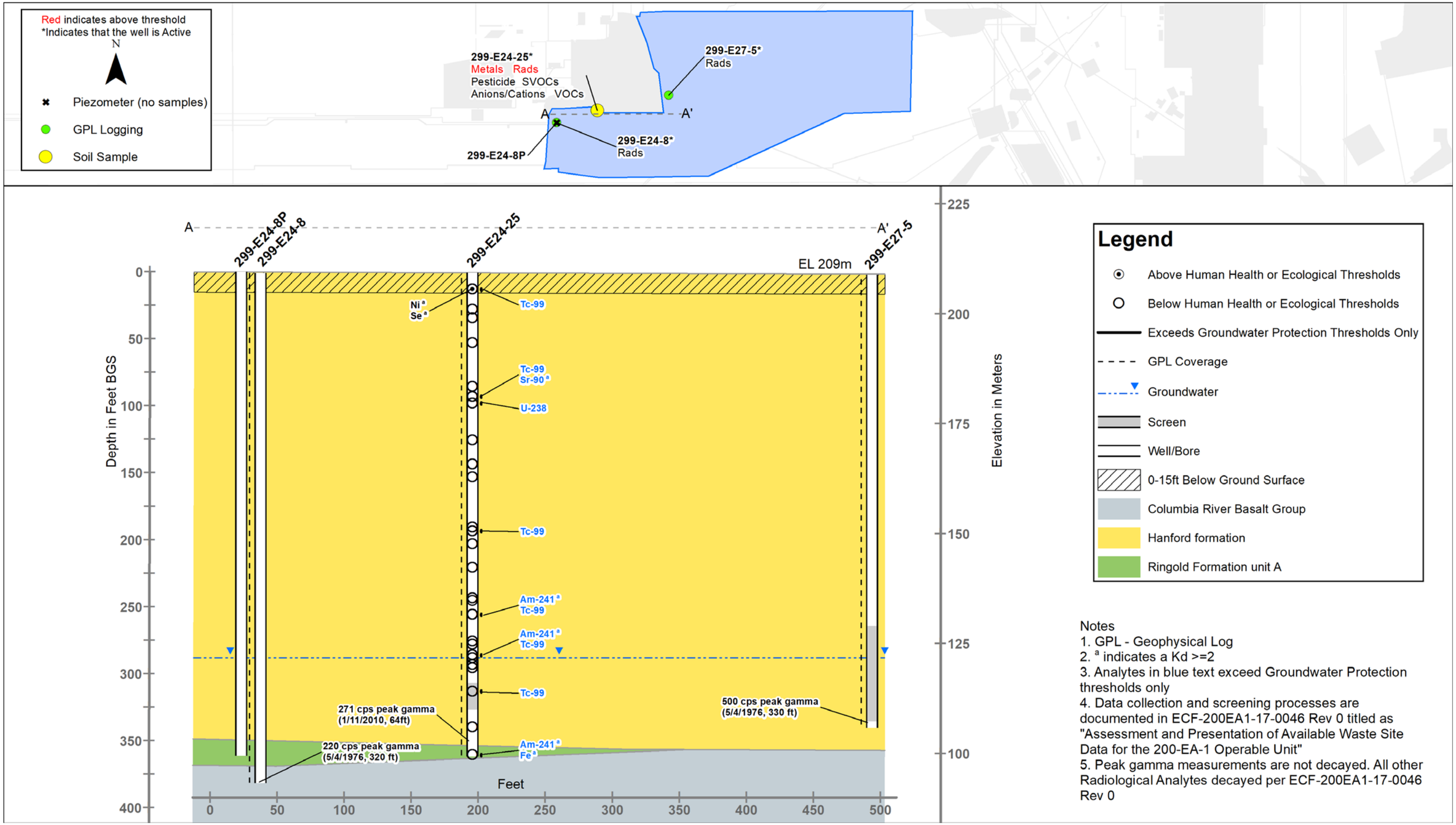
Intersecting/Nearby Sites

200-IS-1 OU
- 244-A Lift Station

200-EA-1 OU
- 200-E-41

- UPR-200-E-36 has been consolidated with 200-E-41


UPR-200-E-37:1 (1967)
Extent of fly-ash cover material
UPR-200-E-36
Hot Semi-Works Area
200-E-41
Current WIDS UPR-200-E-37
299-E24-25
UPR-200-E-37:2 Remediation (1989)
244-A LS
N
Groundwater Well
Non-Relevant Well/Soil Sample
0 60 120 240 Feet


Red indicates above threshold
*Indicates that the well is Active
N
Piezometer (no samples)
GPL Logging
Soil Sample
299-E24-25*
Metals Rads
Pesticide SVOCs
Anions/Cations VOCs
299-E27-5*
Rads
299-E24-8*
Rads
299-E24-8P
A
A'
299-E24-8P
299-E24-8
299-E24-25
299-E27-5
EL 209m
Ni a
Se a
Tc-99
Tc-99
Sr-90 a
U-238
Tc-99
Am-241 a
Tc-99
Am-241 a
Tc-99
Tc-99
271 cps peak gamma
(1/11/2010, 64ft)
220 cps peak gamma
(5/4/1976, 320 ft)
Am-241 a
Fe a
500 cps peak gamma
(5/4/1976, 330 ft)
Depth in Feet BGS
Elevation in Meters
Feet
Legend
Above Human Health or Ecological Thresholds
Below Human Health or Ecological Thresholds
Exceeds Groundwater Protection Thresholds Only
GPL Coverage
Groundwater
Screen
Well/Bore
0-15ft Below Ground Surface
Columbia River Basalt Group
Hanford formation
Ringold Formation unit A
Notes
1. GPL - Geophysical Log
2. a indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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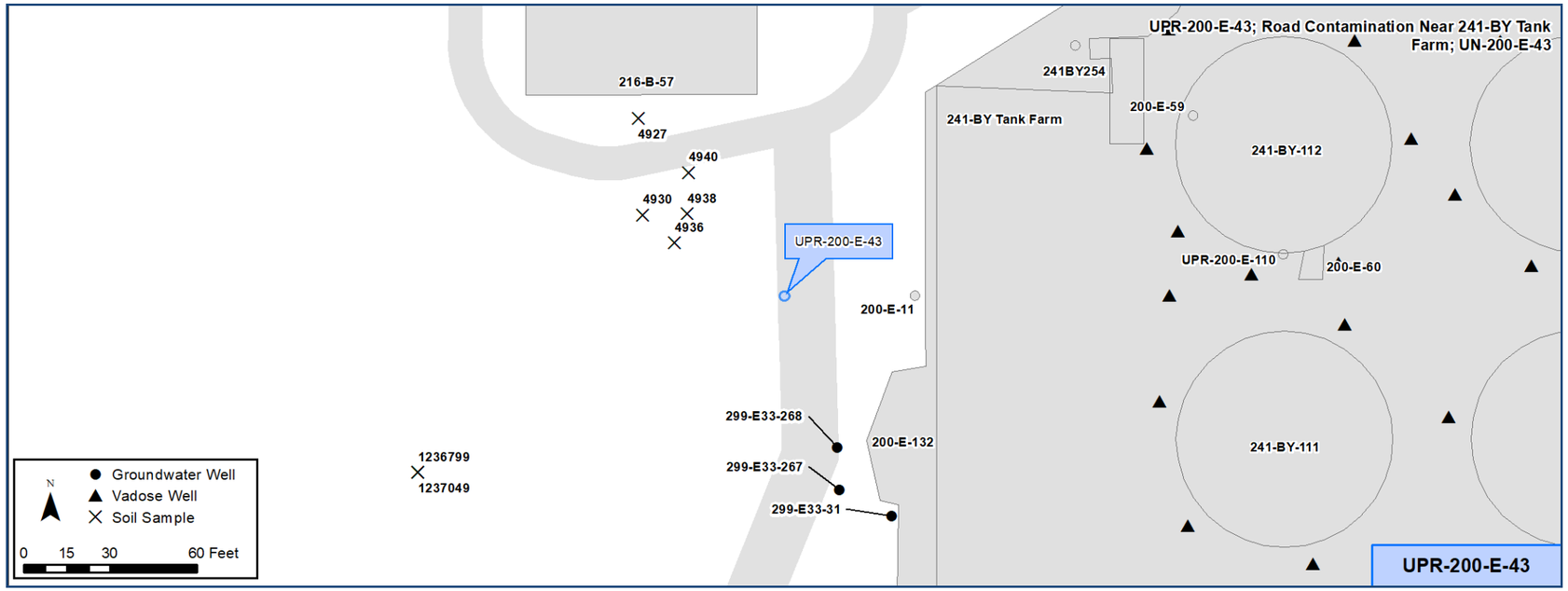
Scoping Summary: UPR-200-E-43 (Unplanned Release)

History

The UPR-200-E-43 waste site is an unplanned release that occurred on January 10, 1972, when liquid from the 102-BY pump dripped onto the roadway during transport from the 241-BY-102 tank to a burial ground. Radiological activity on the contaminated section of road ranged from 1,000 to 100,000 cpm beta/gamma. Decontamination of the roadway began immediately.



Construction

- Length and width: unknown
- Covering: unknown

Features Of Interest

- Steep elevation change at the location of the UPR

Waste Streams

- Waste source associated with 241-BY-102: B Plant - Bismuth Phosphate Process (BiPO4)
  - Metal Waste, supernatant containing tributyl phosphate, coating waste, and evaporator bottoms from 241-C, -BX, and -BY tanks

Site Interfaces

Origin/Termination

N/A

Intersecting/Nearby Sites

WMA B/BX/BY

- 241-BY-102

Relevant Characterization

- No characterization data located

Misc./Other Relevant Information

- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit (DOE/RL-2008-44, Rev. 0) determined the preferred removal action to be Removal Treatment and Disposal (RTD)

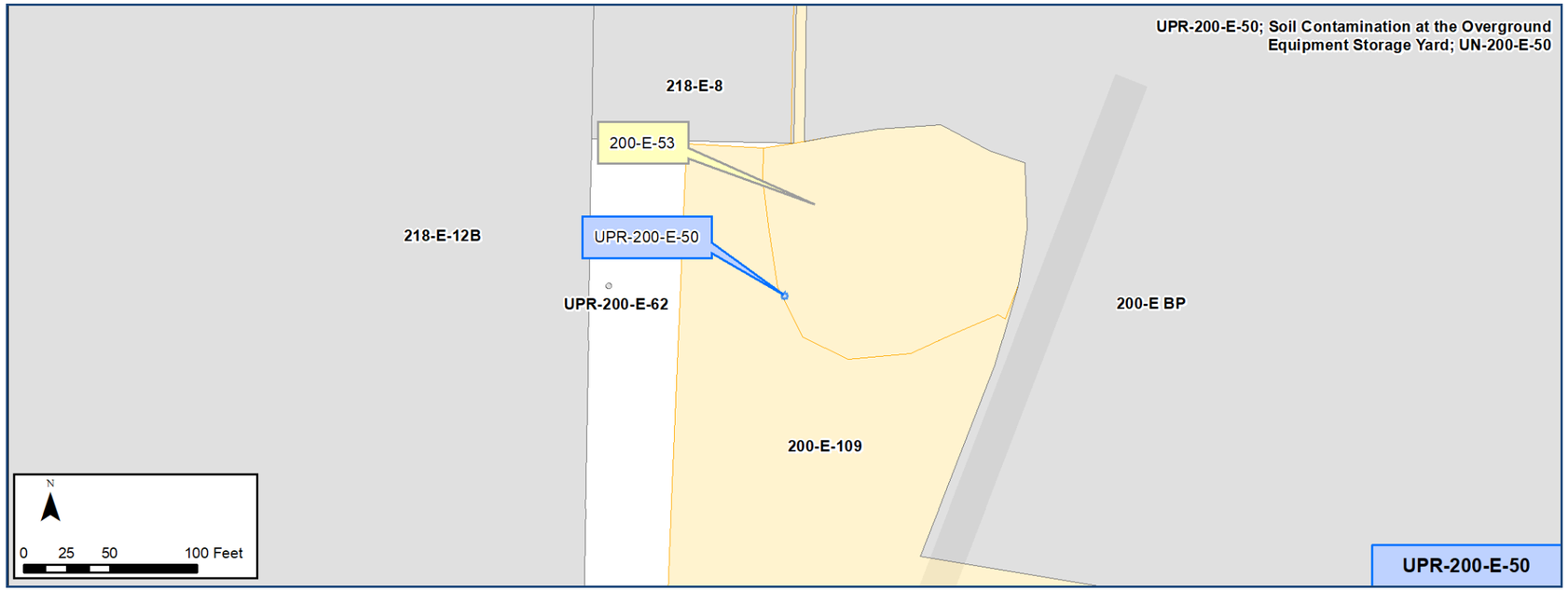
Scoping Summary: UPR-200-E-43 (Unplanned Release)

Scoping Summary: UPR-200-E-50 (Unplanned Release)

History

The UPR-200-E-50 waste site is an unplanned release (UPR) of radiological contamination in the 200-E-53 UPR and above ground storage area, which was formerly referred to as the Overground Radioactive Equipment Storage Yard North of the 241C Tank Farm.

In September 1974, ground contamination was discovered in the storage area. It was traced to an isolated location where two highly contaminated (250 R/hr) pumps had been stored prior to removal to the burial grounds in April of that same year. The pump storage location had been covered with plastic and secured with dirt in April, but high winds likely contributed to the plastic coming loose and radiological contamination spreading in September. After the initial discovery, an additional survey identified two empty radiologically-contaminated capsules in storage that were subsequently removed to the burial grounds. Decontamination measures were undertaken in September 1974, including the removal of radiologically-contaminated specks and tumbleweed fragments. Some decontamination areas required excavation down to 1 ft bgs. In February 2010, the area was covered with gravel and reposted Underground Radiological Contamination Area, as a part of 200-E-53.



Construction

- Length: 450 ft (original extent)
- Width: 75 ft (original extent)
- Depth: Surface contamination
- Depth to Groundwater: 245 ft bgs

Features Of Interest

- No features of interest.

Relevant Characterization

- 1974: Initial discovery of isolated contamination area beneath prior pump storage location indicated ground contamination to a maxium of 300 mRads/hr. Follow-up survey revealed two more empty capsules smearing to 30,000 cpm, and ground below contaminated to 1,500 mRad/hr. Contamination zone estimated at 50-to-100 ft wide by 450 ft long, with levels ranging from 100,000 cpm to 3,000 cpm, decreasing in frequency and intensity with distance from source.

Waste Streams

- Radiologically-contaminated equipment, specifically two empty capsules and pumping equipment. The equipment is no longer present, as it was removed and re-located to the burial grounds.

Misc./Other Relevant Information

- The exact location of this release and subsequent radiological surveys could not be located; the location on the map is an estimate.
- In the 200-MG-1 OU's EE/CA (DOE/RL-2008-44, Rev0), Confirmatory Sampling/No Furth Action (CS/NFA) was the preferred alternative here.

Site Interfaces

Site Intersects:

200-EA-1 OU

- 200-E-53 (Above Ground Storage Area)

Nearby Sites:

200-EA-1 OU

- 200-E-109 (Contaminated Tumbleweed Accumulation)
- 200-E BP (Burn Pit)
- UPR-200-E-62 (Unplanned Release)

200-SW-2 OU

- 218-E-8 (Burial Ground)
- 218-E-12B (Burial Ground)

Scoping Summary: UPR-200-E-50 (Unplanned Release)

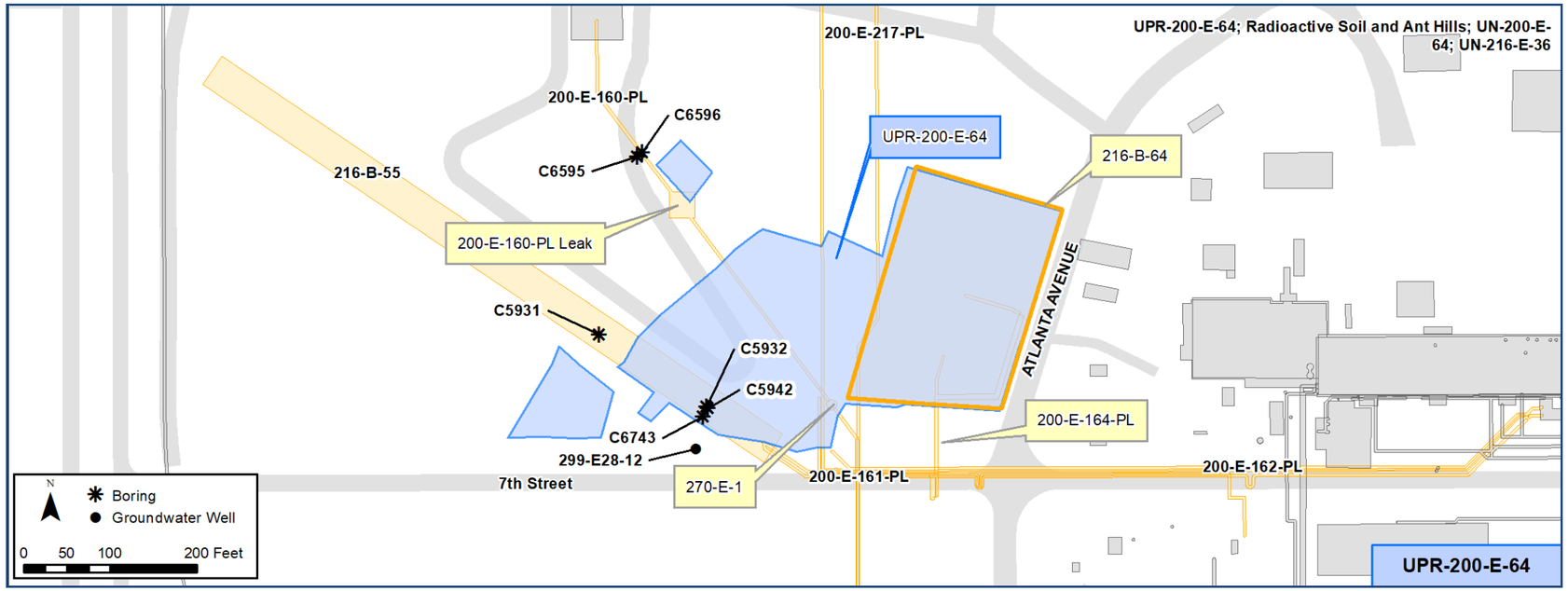
Scoping Summary: UPR-200-E-64 (Contamination Migration)

History

The UPR-200-E-64 waste site is an unplanned release of radiological contamination west of Atlanta Avenue and north of 7th Street. The site overlaps the 216-B-64 Retention Basin and a portion of the 216-B-55 Crib. The site was established on October 12, 1984. The source of contamination was originally believed to be from a vent riser for the buried 270-E-1 Neutralization Tank; however, documentation shows that the 270-E-1 Building was removed and the 270-E-1 Tank was capped and abandoned in the early 1960's.

New insight in 1996 indicates the contamination source was most likely a swab riser associated with an underground tank farm pipeline, 200-E-217-PL. The contamination was brought to the surface by ants & then spread by wind. The area was posted as a surface contamination area (SCA) & contained some contamination area (CA) postings.

In March 2001, the UPR-200-E-64 waste site was surface stabilized with 3,200 cu yds of clean fill material. The swab riser, located just west of the middle of the 216-B-64 western boundary fence, was filled with foam, flattened, and buried in place. Following stabilization efforts, the site was downposted to an underground radioactive material area (URMA).



Construction

- Area: 2 acres (approximate)
- Size and shape of the site changes periodically based on information from radiation surveys
- During the 2011 surface stabilization, fill material was added to obtain a minimum depth of 24 in., and gravel was added on top of the fill material to a minimum depth of 4 in. along Atlanta Avenue

Features Of Interest

- The exact location of where the vent pipe was located is not known based on the available information

Relevant Characterization

- A radiological survey conducted in 1985 reported the contaminated pipe and surrounding anthills and spots had dose rates of 30 mrad/hr and 12 mrad/hr, respectively
- A radiological survey conducted in May 2012 had total beta/gamma readings of <5,0000 dpm/cm-2

Waste Streams

- Tank Farm and Basin Wastes
  - The unplanned release consists of migrating radioactive speck contamination first identified in 1984.

Misc./Other Relevant Information

- WIDS reports that additional contamination was identified in May 2015 in a smaller posted area northwest of 216-B-64, adjacent to 200-E-160-PL
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Waste Sites identified Removal, Treatment, and Disposal (RTD) as the preferred remedial action (DOE/RL-2008-44; Rev. 0).
- Tests on C5931 & C5932 are associated with 216-B-55 detected Cs-137 at a max value of 91,000 pCi/g (2008)

Site Interfaces

Origin/Termination

- N/A

Intersecting/Nearby Sites

200-EA-1 OU

- 200-E-64
- 216-B-55
- 216-B-64

200-IS-1 OU

- 200-E-160-PL
- 200-E-161-PL
- 200-E-162-PL
- 200-E-217-PL

OU Unassigned

- 200-E-163-PL

Scoping Summary: UPR-200-E-64 (Contamination Migration)

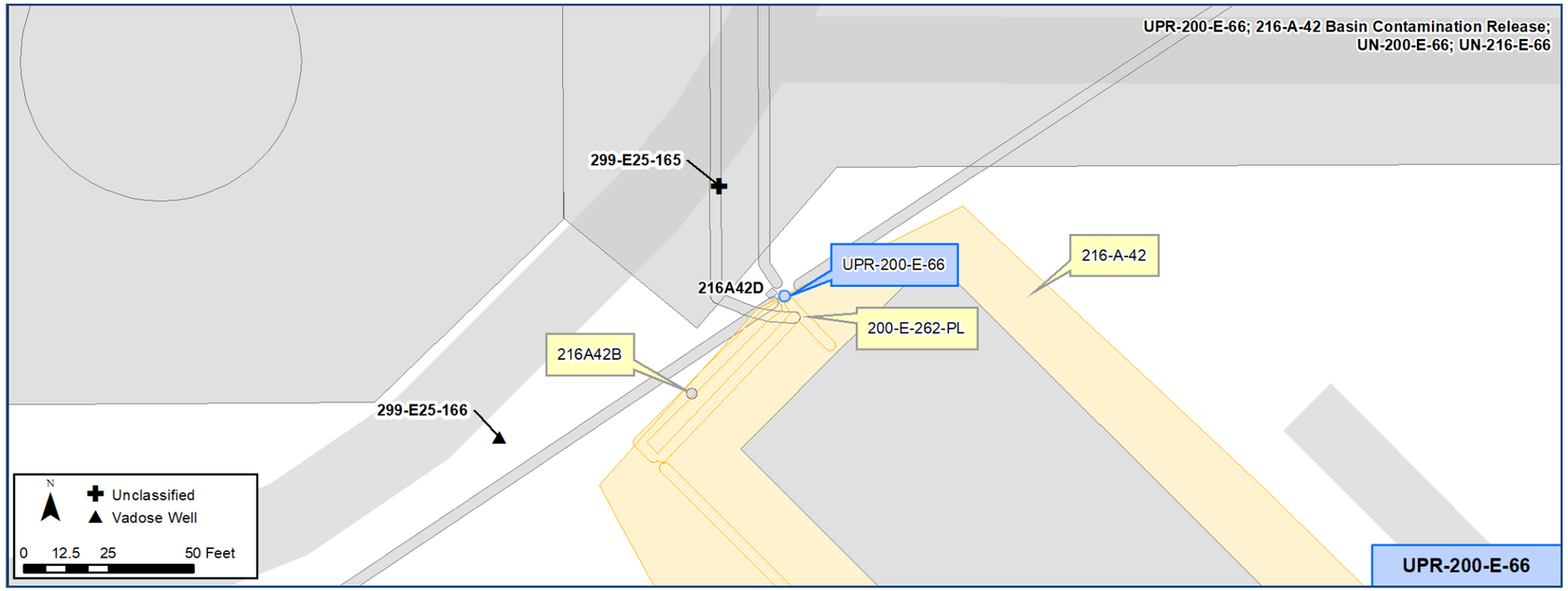
Scoping Summary: UPR-200-E-66 (Unplanned Release)

History

The UPR-200-E-66 waste site is the result of a contamination release from the 216-A-42 Retention Basin. The release occurred in 1984, when contaminated liquid in the basin evaporated, and dried contaminated particulates were spread by wind to surrounding surface locations. A radiation survey identified contamination around the perimeter of the basin, both inside and outside the posted radiation zone.

Corrective actions in 1984 included wetting down the ground area and basin flushing; a basin cover project was initiated.

In 2001, the basin, including UPR-200-E-66, which was interim stabilized. Clean fill was placed over the contamination areas; the pump pit, diversion box, and valve box were backfilled; and the entire area, including UPR-200-E-66, was down-posted to URMA. Over 1,900 cubic yards of clean fill were added during stabilization.



Construction

- Dimensions not specified; this area is not separately marked or posted from the 216-A-42 Retention Basin (i.e., Underground Radioactive Materials).

Features Of Interest

- No features of interest.

Waste Streams

- The UPR-200-E-66 waste site is associated with the 216-A-42 Retention Basin. The retention basin was built to hold cooling water or steam condensate that was contaminated above standard release limits and prevent its disposal to the Gable and B Pond systems. After retained effluent contents were analyzed, a built-in recovery system provided the capability of pumping solutions back into the PUREX facility for reprocessing or to cribs for disposal.

Site Interfaces

Site Intersects:

200-EA-1 OU

- 216-A-42 (Retention Basin)

200-IS-1 OU

- 200-E-262-PL (pipeline)

Relevant Characterization

- No soil samples have been located for this waste site.
- 1984: a radiological survey reported 40,000 cpm beta on the ground within the retention basin fence. Smear samples from the basin walls and floor ranged from 200 to 100,000 cpm. Activity outside the fence was 3,000 cpm, maximum.
- 1988: Radiological survey identified contamination spots at the south edge of the retention basin up to 200,000 dpm.
- 1998: Radiological survey of the 216-A-42 perimeter fence did not identify any contamination.

Misc./Other Relevant Information

- Concrete blocks were installed over the retention basin in 1984; in 1997, lines from the three sections of the basin were isolated and the pump station was sealed.
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit (DOE/RL-2008-44, Rev. 0) determined the preferred removal action to be Confirmatory Sampling/No Further Action (CS/NFA).

Scoping Summary: UPR-200-E-66 (Unplanned Release)

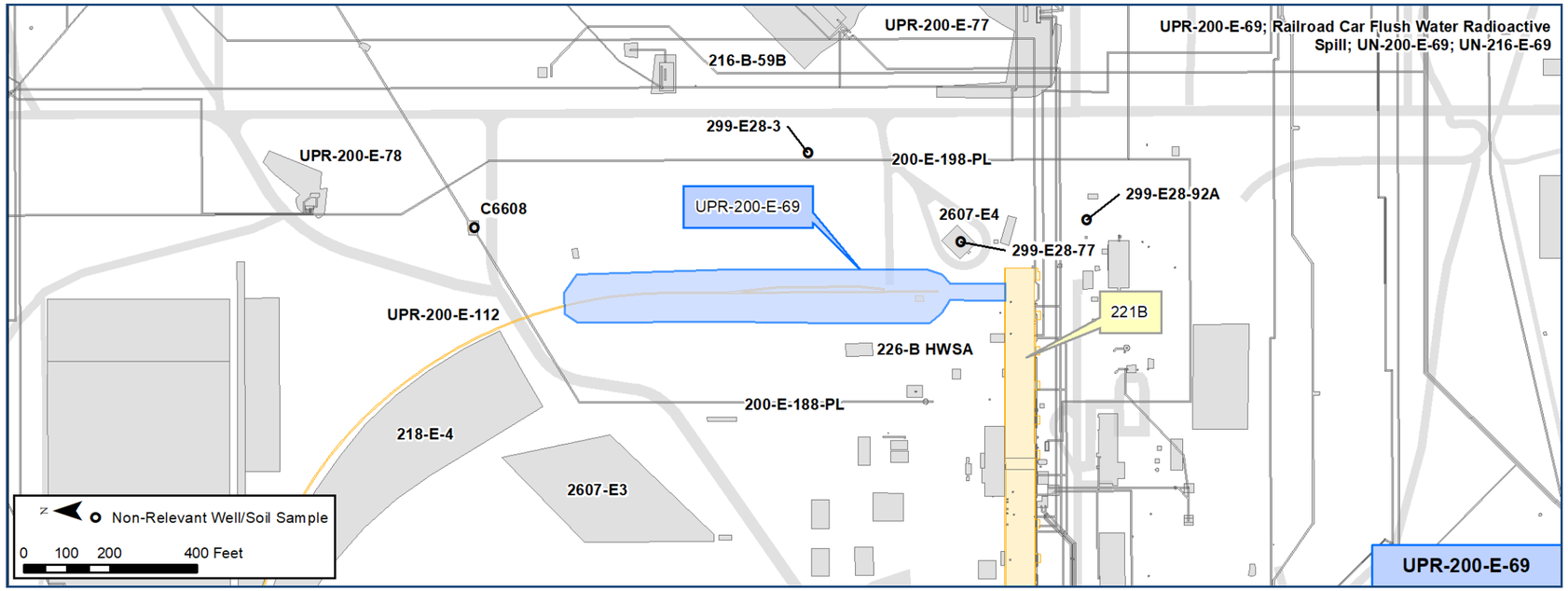
Scoping Summary: UPR-200-E-69 (Unplanned Release)

History

The UPR-200-E-69 waste site is an unplanned release that received contaminated flush water from a burial box that was removed from the 221B (B Plant) railroad tunnel. The burial box was removed in 1984 and transported for 600 feet on a train, before the contamination was found on and near the west rail of the track. In 1998, the site was stabilized by covering the track with six inches of gravel and reposting the area as Underground Radioactive Material.

A radiation survey taken in 2014 showed two spots with elevated beta and gamma readings. The hot spots were stabilized by covering them with 8 inches of clean soil.

Soil contamination with elevated readings was found in 2015 during a routine radiological survey. That area was stabilized by covering it with six inches of clean fill and the area was resurveyed. The post job survey showed that the area could maintain its status as an Underground Radioactive Material area.



Construction

- Railroad tracks and railbed still present
- Length: Approx. 1,015 ft
- Covering Depth: Approx. 6 - 20 in (depending on location)

Features Of Interest

- 4 ft high fence along the side of the tracks.

Waste Streams

- Flush water from a burial box containing waste drums from 225B (Waste Encapsulation and Storage Facility) and 221B (B Plant) canyon waste.

Site Interfaces

Origin/Termination:

200-CB-1 OU

- 221B (B Plant)

Intersecting/Nearby Sites

200-EA-1 OU

- UPR-200-E-112

Relevant Characterization

- At the time of release, beta/gamma readings were found to be between 4,000 and 20,000 cpm
- The hot spots found in 2014 had beta/gamma readings at 8,000 and 20,000 dpm/100 sq cm
- Total beta/gamma readings as high as 10,000 dpm/100 sq cm were found in the 2015 survey
- Total beta/gamma readings in 2016 were found to be at 1,000 dpm/100 sq cm.

Misc./Other Relevant Information

- This site was previously associated with operable unit 200-BP-6, 200-MG-1, and 200-UR-1. Removal, treatment, and disposal for this site was recommended as a part of the 200-MG-1 evaluation (DOE/RL-2008-44, Rev0).

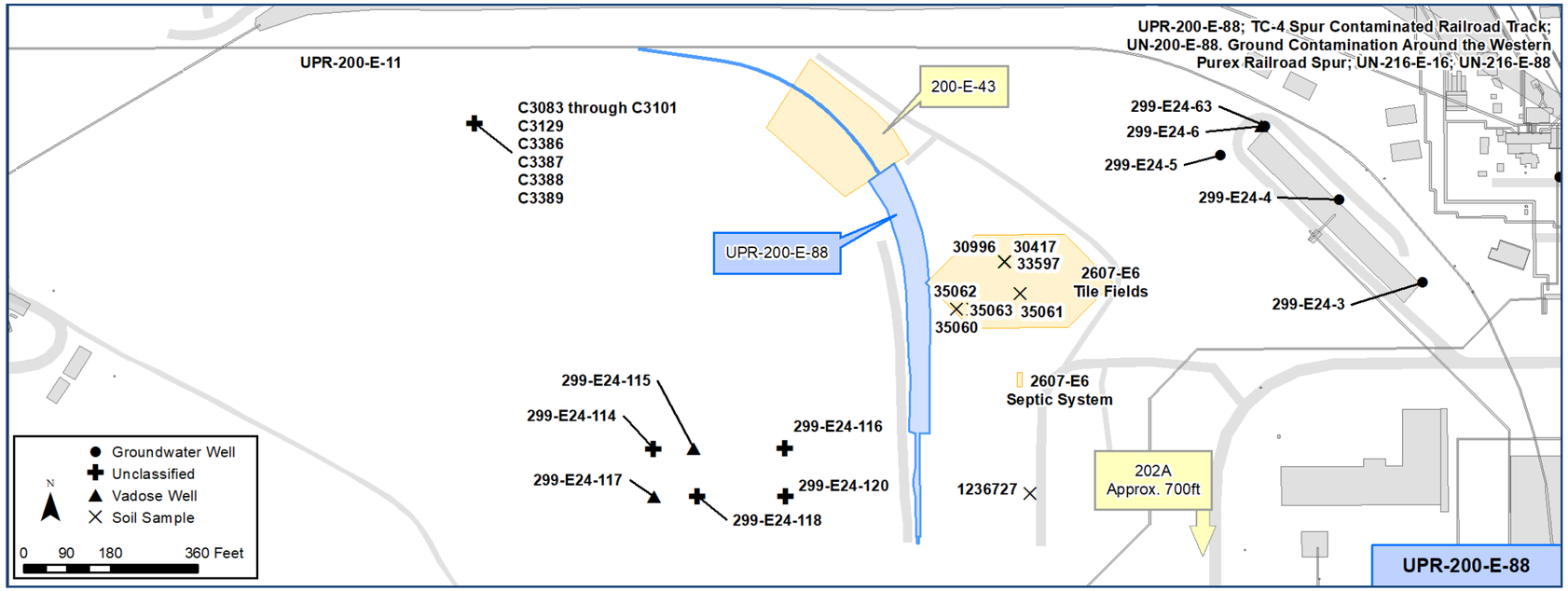
Scoping Summary: UPR-200-E-69 (Unplanned Release)

Scoping Summary: UPR-200-E-88 (Unplanned Release)

History

The UPR-200-E-88 waste site is an unplanned contamination release consisting of the unfenced portion of the TC-4 Railroad Spur located northwest of the 202A (PUREX) building. The programmatic history of the spur has evolved over time. 1957 is the earliest documentation when a burial box containing failed process jumpers dripped liquid while in transit across the main railroad tracks and the TC-4 spur (UPR-200-E-11 and UPR-200-E-12).

The TC-4 spur was established as a waste site in 1980 and in 1981 five acres surrounding the spur was surveyed and released after tumbleweed clean up activities. In 1989 an Environmental Surveillance Compliance Report identified the spur as a surface contamination problem and in 1997 it was divided into two waste sites. The northern fenced portion was assigned to 200-E-43 and the southern unfenced area and spur track to UPR-200-E-88. 200-E-43 was used to park rail cars transporting radioactive material and had been stabilized in 1996 prior to the site division.
UPR-200-E-88 was interim stabilized in 1998. Stabilization activities consisted of removing and burying the rails and ties, leveling, and covering the area with 2 ft of clean fill. The site was posted as an Underground Radioactive Material Area (URMA).



Construction

- Total Area Stabilized: 19,858 sq. ft

- UPR-200-E-88 was previously included in the 200-UR-1 OU's RI/FS Work Plan & EE/CA (DOE/RL-2004-39, Draft A Re-issue) and the 200-MG-1 OU's Non-Time Critical Removal Action EE/CA and Action Memo (DOE/RL-2009-86). The selected remedy in each instance for this waste site was remove / treatment / disposal but no action was taken and the waste site was subsequently moved out of the operable unit prior to implementation.

Features Of Interest

- N/A

Waste Streams

- Contamination on the railroad spur occurred multiple times due to releases from rail cars in transit and storage of radioactive equipment; a specific waste stream was not located

Site Interfaces

Origins/Terminations

- T-C Railroad Spur

Intersecting/Nearby Sites

200-EA-1 OU
- 2607-E6
- 200-E-43

- Sanitary sewer line from the 2607-E6 pump station underlies the TC-4 railroad spur (no site code available)

Relevant Characterization

- A burial box in transit from PUREX measuring 450 millirads/hr at 150 ft dripped liquid while in transit, resulting in 40 to 1,700 millirads/hr contamination (UPR-200-E-12)
- Radiation survey records from the 1980s indicate that good readings were difficult to obtain due to high background from the tank cars that were stored in 200-E-43
- Spotty surface readings from 200 cpm to 30,000 cpm throughout 200-E-43 and UPR-200-E-88 areas (1984)
- 20,000 to 60,000 dpm on the track near tank cars (1991)

Misc./Other Relevant Information

- In December 2010 approximately 576,000 gallons of potable water discharged to the ground and flooded a portion of both 200-E-43 and UPR-200-E-88 (~767 ft long). The flow path area was surveyed in January 2011 and no direct or removable contamination was detected
- In 1996 there were no readings above background in the 200-E-43 area

Scoping Summary: UPR-200-E-88 (Unplanned Release)

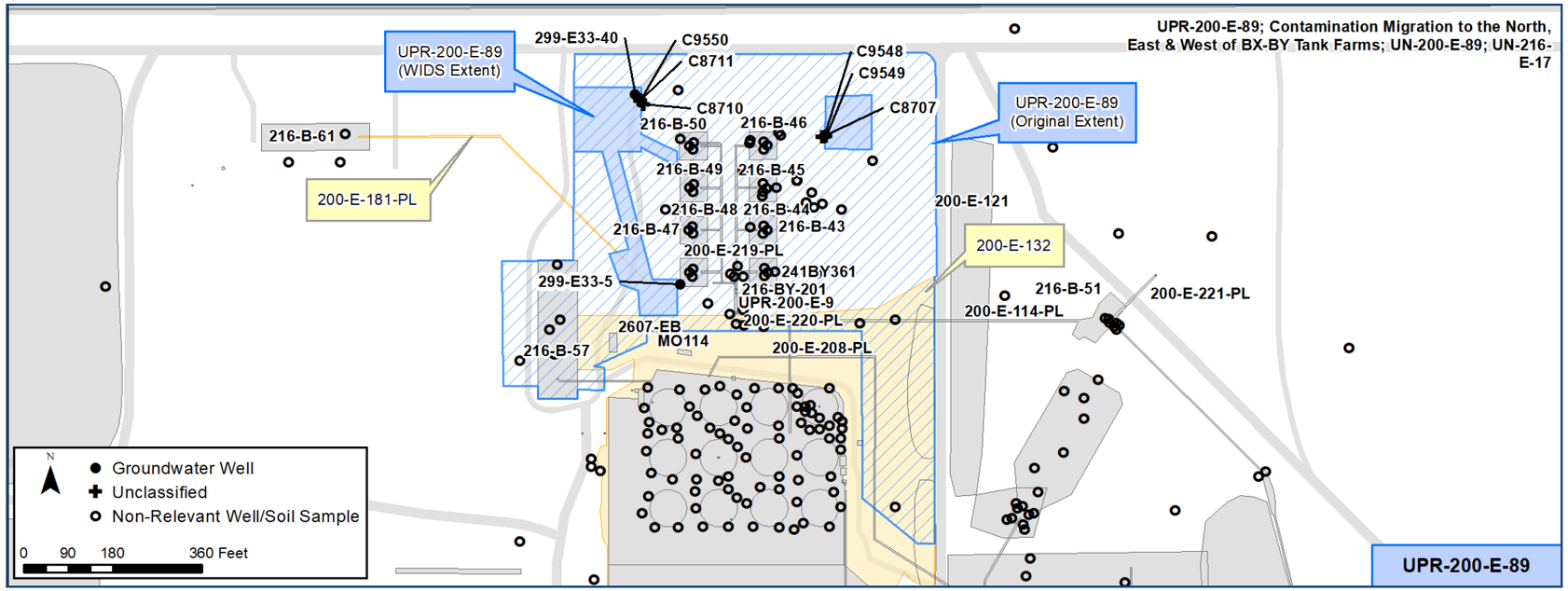
Scoping Summary: UPR-200-E-89 (Unplanned Release)

History

The UPR-200-E-89 waste site is an unplanned release consisting of airborne particulate matter, tumbleweeds, and concrete drill pads north of the 241BY Tank Farm. The UPR is assumed to be due to windblown particulates and ground contamination from the 241BX and 241BY Tank Farm operations.

The site was originally documented in WIDS in 1978. By 1989 it covered an area of approximately 13 acres. The site was stabilized in 1991 by consolidating the contaminated soil on top of the 216-B-43 through 216-B-50 Cribs and stabilized with a layer of soil. Prior to stabilization, an access road, staging area, and clean drilling pad were installed by placing clean soil over parts of the contaminated area, which is the approximate 1 acre area that remains as UPR-200-E-89.

Following the stabilization work in 1991, 83 soil samples were taken to evaluate post-cleanup efforts. The concentrations of radioactivity in all samples were below the values in the Environmental Compliance summary document (WHC-CM-7-5).



Construction

- Current Area: ~47,000 ft sq
- Original Area: ~516,000 ft sq
- Soil Cover thickness 1-2 ft

Features Of Interest

- The area is zoned off and marked URM.

Relevant Characterization

- Originally measured beta/gamm readings from 500 to 2,000 cpm
- All 83 samples that were collected, were below release limits for total alpha and beta (based off the WMC-CM-7-5, Table K-2)
- Radiological surveys in 2013 and 2014 have total beta/gamma readings less than 5,000 dpm/100 cm-2 (Radiological measurements taken in 2014 are shown on pg. 4)

Waste Streams

- Waste Source: B Plant - Bismuth Phosphate Process (BiPO4) and stormwater runoff from 202-sampler pit
  - Contaminated airborne particulates from the 241BY and BX tank farms has been a source of contamination in the area and may have contributed to this UPR.

Misc./Other Relevant Information

- The waste site was previously part of the 200-MG-1 OU and included in an EE/CA. The preferred alternative for the UPR was Confirmatory Sampling/No Further Action (CS/NFA) (DOE/RL-2008-43, Rev0).

Site Interfaces

Origin/Termination

WMA B/BX/BY

- 200-E-132 (241BY/BX Tank Farms)

Intersecting/Nearby Sites

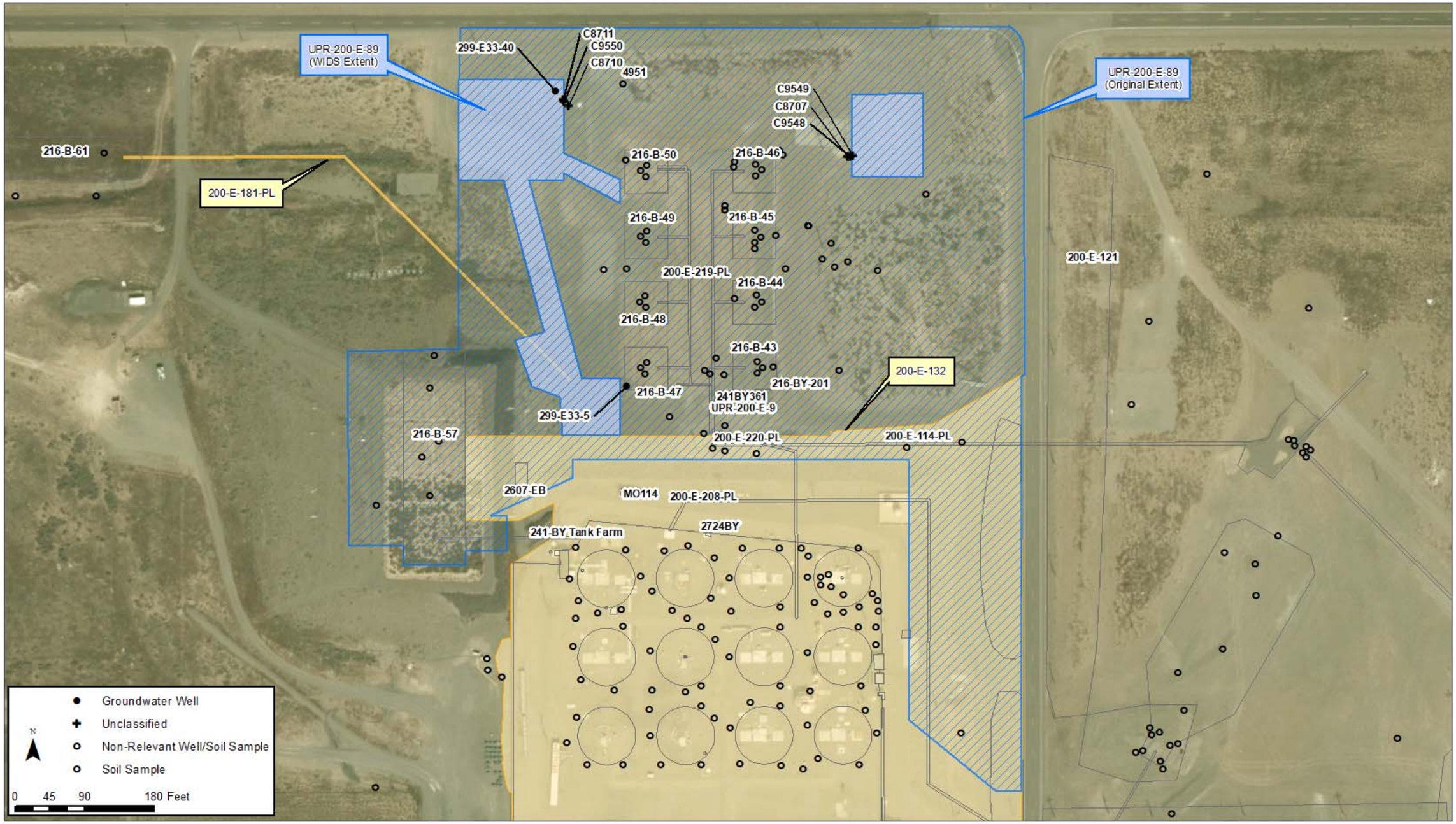
200-DV-1 OU

- 216-B-43 through 50 (Cribs)
- 216-B-57 (Crib)

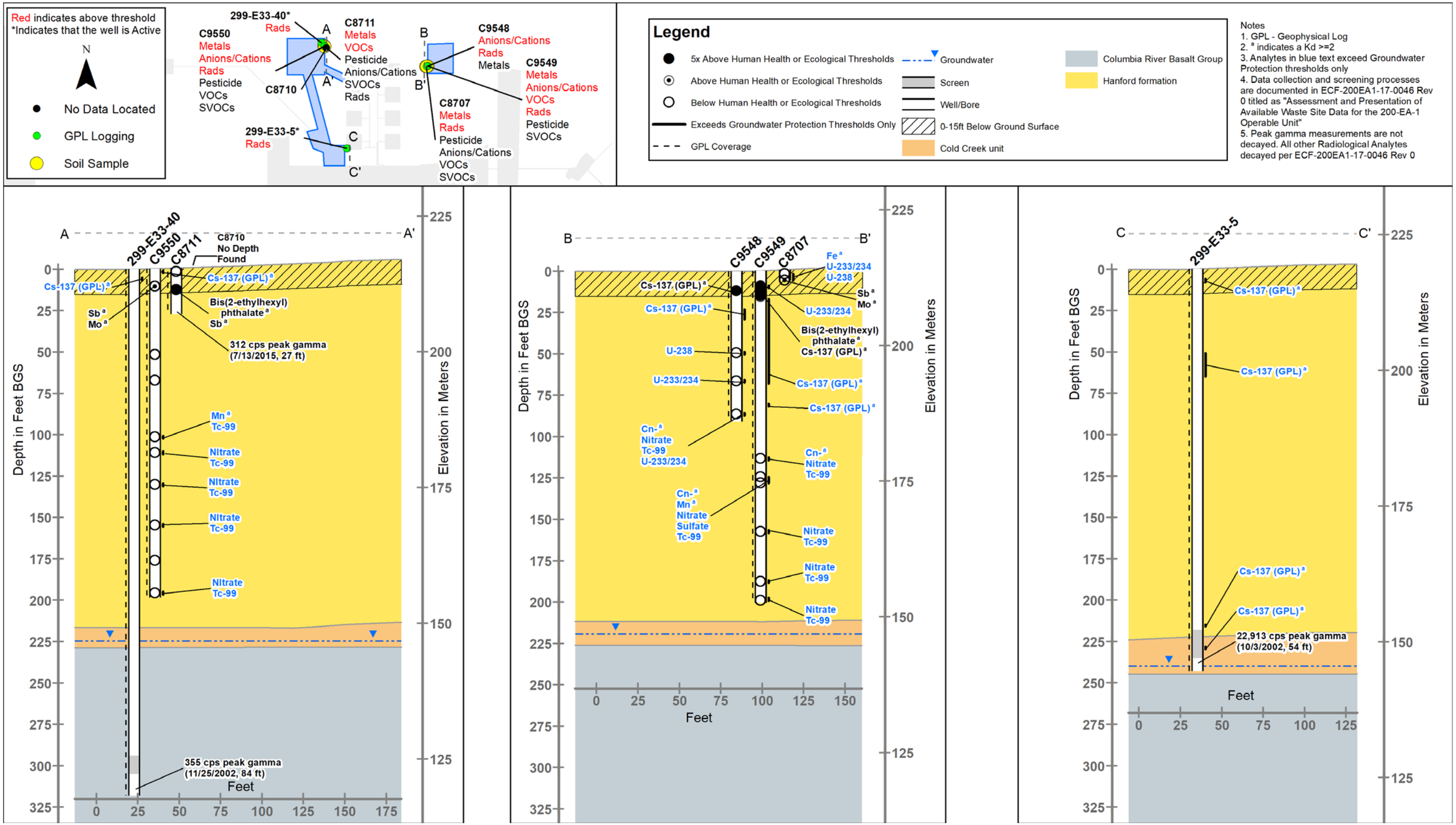
200-IS-1 OU

- 200-E-119-PL
- 216-BY-201 (Settling Tank)
- UPR-200-E-9
- 200-E-181-PL

Scoping Summary: UPR-200-E-89 (Unplanned Release)



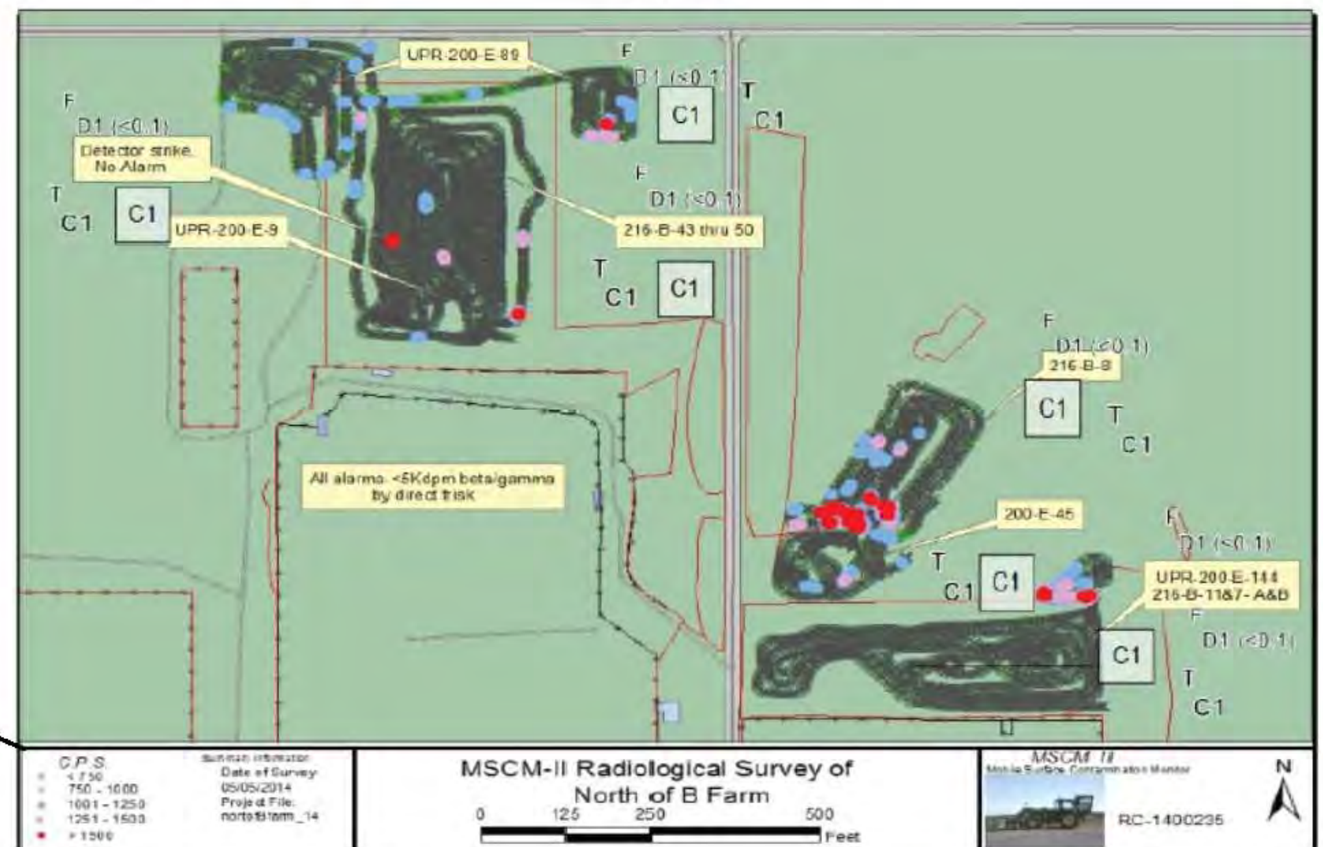
Scoping Summary: UPR-200-E-89 (Unplanned Release)



** Electronically Approved – RC-1400235 on 5/13/2014 **

CH2M HILL PLATEAU REMEDIATION COMPANY RADIOLOGICAL SURVEY REPORT (Submitted for Approval)	RSR No. RC-1400235	Page 3 of 4

Map/Sketch



CPS
- X <750
- X 750-1000
- 1001-1250
- 1251-1500
- >1500

Map Name: Annual Rad Tractor | Map Description: North of B Farm

Legend: Direct Measurement | Air Sample | Smear | LAW | Neutron Dose Rate | Transferability | Field | Contact | Other Distance | Other Measurement

---------- (designation inside) ---------- Radiological Area Boundary

Note: Dose Rates in mrem/hr unless otherwise noted.

Date Submitted: 05/12/2014 12:10:00

A-6004-663-SS (Rev. 4)

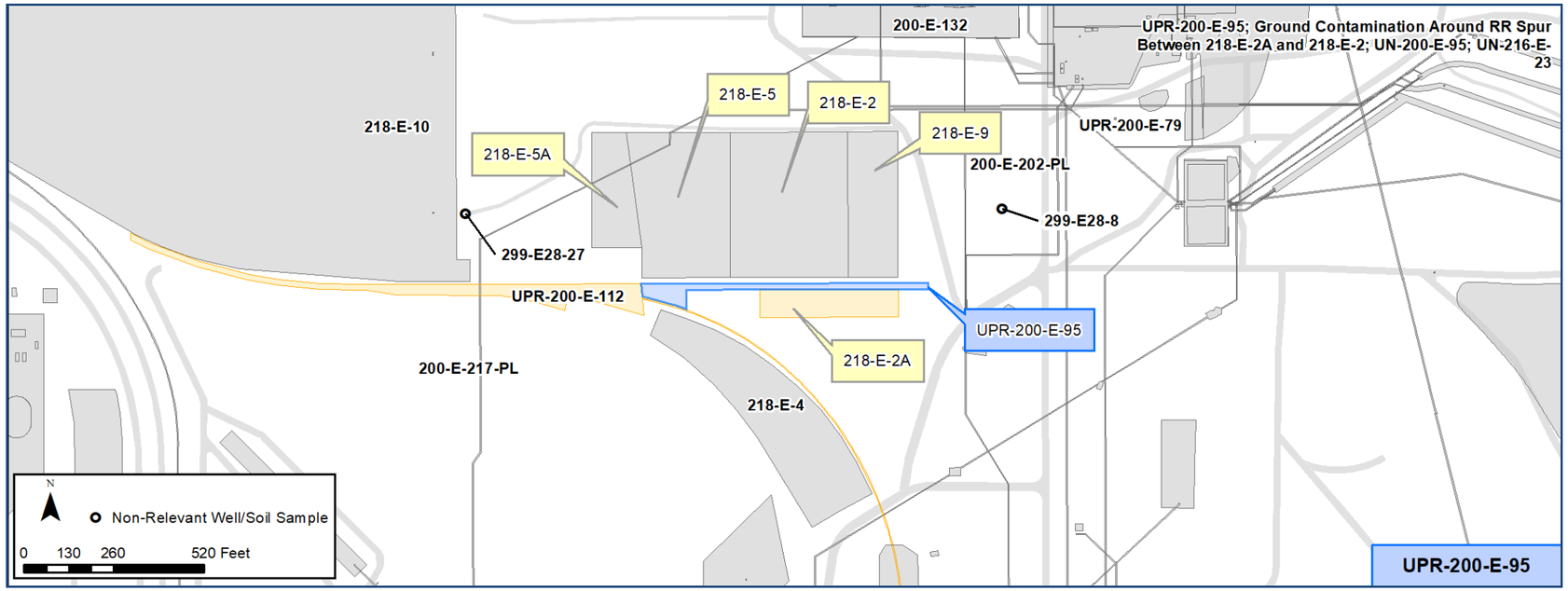
Scoping Summary: UPR-200-E-95 (Unplanned Release)

History

The UPR-200-E-95 waste site is an unplanned release on a railroad spur that received waste from contaminated equipment on railroad flat cars. UPR-200-E-95 is located south of the 218-E-2 and 218-E-5 Burial Grounds and north of the 218-E-2A Burial Ground.

The railroad spur began its use as a railroad flat car storage zone in 1945. The site was established as an unplanned release in 1980. In 1996, no rail cars were observed on the spur.

This UPR was stabilized in 1998 by covering the area in gravel and reposting the area as an Underground Radioactive Material area. In 2001 a URM sign was found on a single post in the gravel road north of the railroad track. It was determined that a small amount of contamination had migrated to the road, so that area was incorporated into the larger UPR.



Construction

- Length: 820 ft
- Width: 16 ft
- Gravel Covering Depth: Approx. 1-2 ft

Features Of Interest

- No features of interest identified.

Relevant Characterization

- In 1981, survey showed a maximum reading of 100,000 cpm beta/gamma
- In 1996, a perimeter survey found all contamination levels to be less than detectable.

Waste Streams

- Small amounts of waste were released from contaminated equipment stored on railroad flat cars. The contaminated equipment was from PUREX and B Plant operations.

Misc./Other Relevant Information

- This site was previously associated with 200-MG-1 operable unit and 200-SW-2 operable unit. Removal, treatment, and disposal for this site was recommended as a part of the 200-MG-1 evaluation (DOE/RL-2008-44, Rev0).

Site Interfaces

Intersecting/Nearby Sites:

200-EA-1 OU

- UPR-200-E-112

200-SW-2 OU

- 218-E-5
- 218-E-5A
- 218-E-2
- 218-E-2A
- 218-E-9

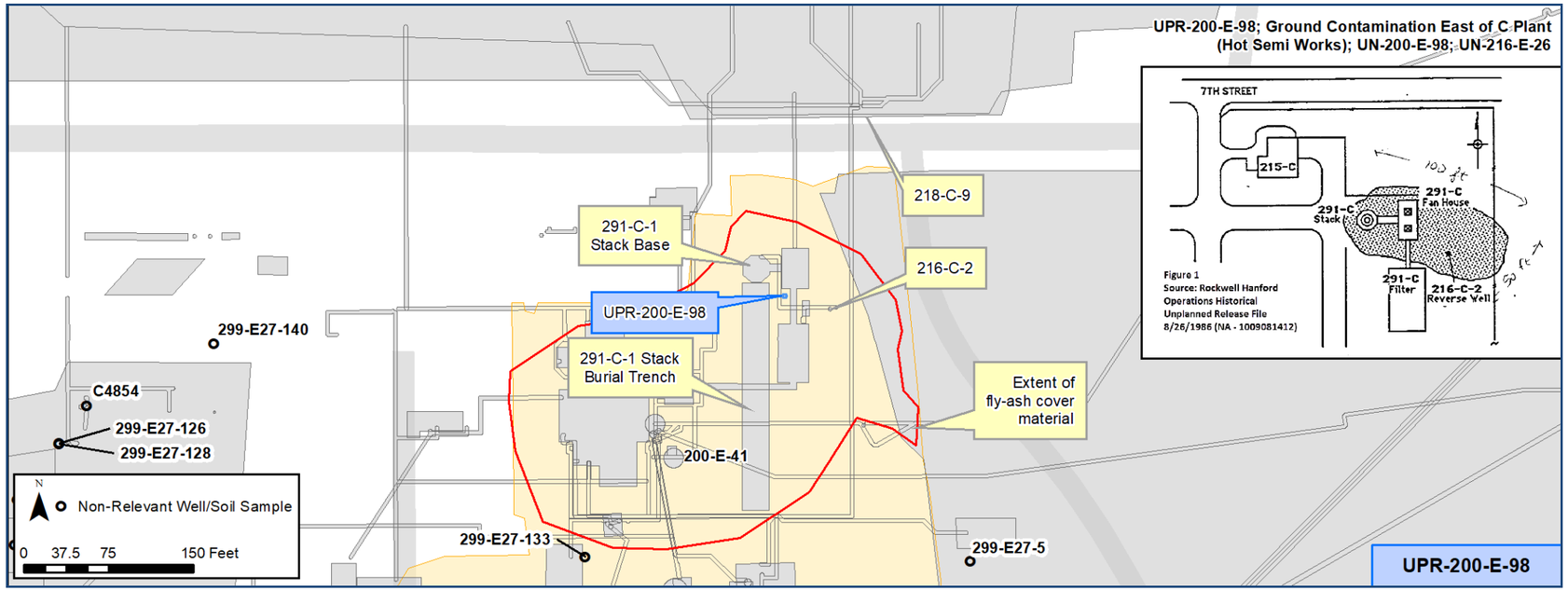
Scoping Summary: UPR-200-E-95 (Unplanned Release)

Scoping Summary: UPR-200-E-98 (Unplanned Release)

History

UPR-200-E-98 waste site is an unplanned release that occurred on the east side of the Hot Semiworks facility, near the base of the 291-C-1 Stack and around the 216-C-2 reverse well. The actual date of occurrence and type of release (windblown or water) are not specified in historical records. Figure 1 shows the estimated boundary at the time of the release. The 291-C-1 Stack operated from 1949 until 1987 and the unplanned release was established as a waste site in September 1980.

Records state that radioactive particulate matter from Hot Semiworks ventilation was inadvertently spread to the ground surface. Although some contamination was removed and placed into the 218-C-9 burial pit, it is unclear if residual contamination still remains. In 1992 the Hot Semiworks area was subsequently covered with 3 ft of fly ash barrier and is posted as an Underground Radioactive Material Area (200-E-41).



Construction

- Original contamination area approximately 5,000 sq. ft

Features Of Interest

- None identified

Waste Streams

- Sr-90 suspected
- Volume released not located
- Hot Semiworks waste streams included REDOX, PUREX and strontium recovery

Site Interfaces

Origin/Termination

Intersecting/Nearby Sites

200-IS-1 OU
- 291-C-1 (stack)
- 216-C-2 (well)

No OU Assigned
- 200-E-41 (stabilized area)

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil
- 1981 environmental audit was unable to locate the exact area to be surveyed
- 1982 environmental surveillance stated that the site was not surveyed regularly
  - General area around the 291-C Fan House was surveyed and found 5,000 c/m near the building

Misc./Other Relevant Information

- UPR-200-E-98 has previously been included in operable units 200-UR-1 and 200-MG-1. Remedial investigation and engineering cost reports for both operable units recommend removal, treatment and disposal (RTD) for the site (DOE/RL-2004-39 & DOE/RL-2008-44).

Scoping Summary: UPR-200-E-98 (Unplanned Release)

Scoping Summary: UPR-200-E-99 (Unplanned Release)

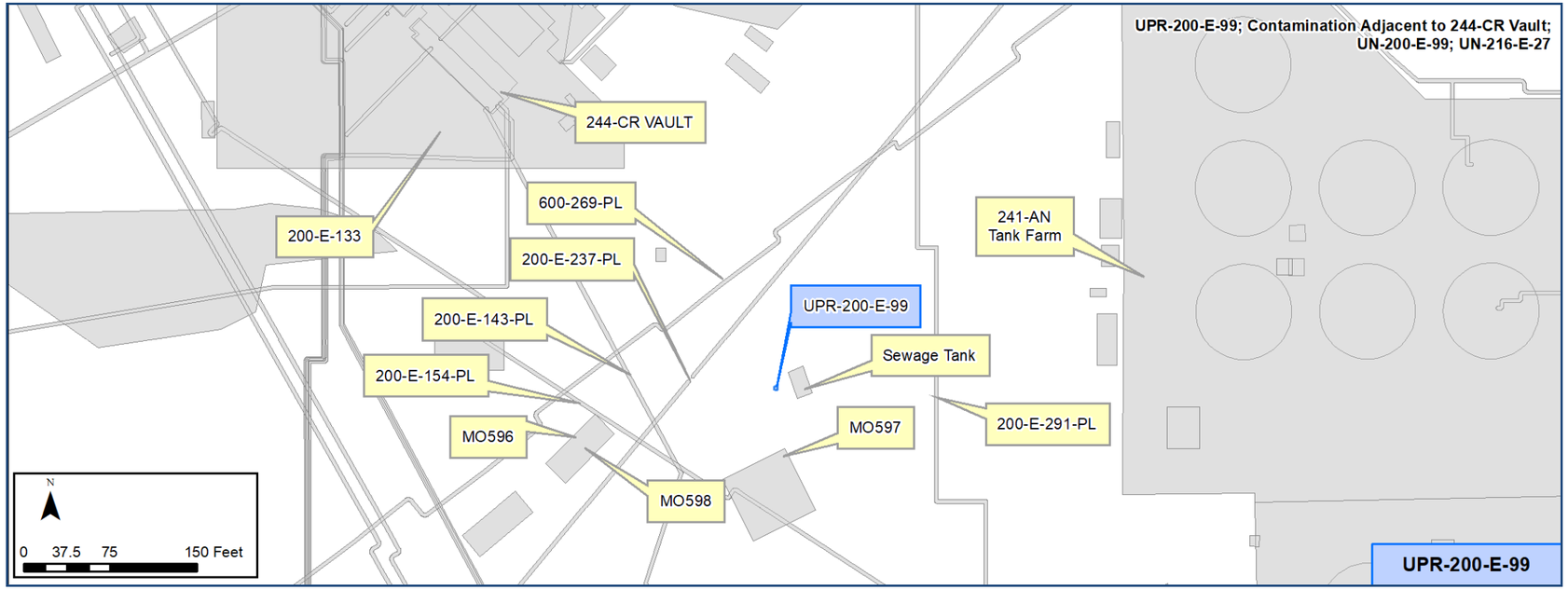
History

The UPR-200-E-99 waste site is an unmarked area ~400 ft southeast of the 244-CR Vault.

The actual date of potential historical contamination here is unknown. One event in 1960 described windblown contamination from the 244CR C Farm WasteDisposal Vault with levels as high as 40,000 cpm several hundred feet beyond the tank farm fence. The ground surface surrounding the vault was contaminated during numerous piping changes and other activities associated with the vault.

In March 1981, radiological surveys inside this then-posted area for UPR-200-E-99 found no detectable contamination, so the SCA postings were removed and the area was released from radiation zone status. A single marker identifying the site was erected at its approximate center point. That sign was removed in 2010, when support trailers were placed in the area.

Numerous references note this waste site was "cleaned up" in 1981, but no specific cleanup activities were documented.



Construction

- The only remaining identifier for this waste site is a concrete marker painted yellow.
- A yellow concrete marker is all that remains in a photo from 2010 (*See page 2 photo*), and additional concrete blocks have been added, likely to inhibit vehicle accidents here. The area is now home to a series of mobile trailers and a gravel parking area.

Features Of Interest

- No features of interest.

Relevant Characterization

- 1980: Site posted as Surface Contamination Area; however, no historical documentation was located to verify radiological contamination was ever present here.
- 1981: Radiological survey found no detectable contamination; SCA signs subsequently removed and area released from its radiation zone status.
- Direct radiological surveys of soil completed in 2015 and 2016 had total beta/gamma readings of < 5,000 dpm/100 cm-2

Waste Streams

- UPR-200-E-99 is not directly linked to one specific waste stream, leak, or spill.

Misc./Other Relevant Information

- The 244-CR Vault, inside the 241-C Tank Farm (Waste Management Area C), was operational from 1946 to 1988. It is a two-level, multi-cell structure constructed below grade. It was used in the transfer of waste solutions from processing and decontamination operations.
- HW-84619, which documented the 1960 incident, identifies this vault as the 241-CR Vault.

Site Interfaces

Nearby Sites:

200-IS-1 OU

- 200-E-143-PL
- 200-E-154-PL
- 200-E-237-PL
- 200-E-291-PL

OU Unassigned

- 600-269-PL

WMA C

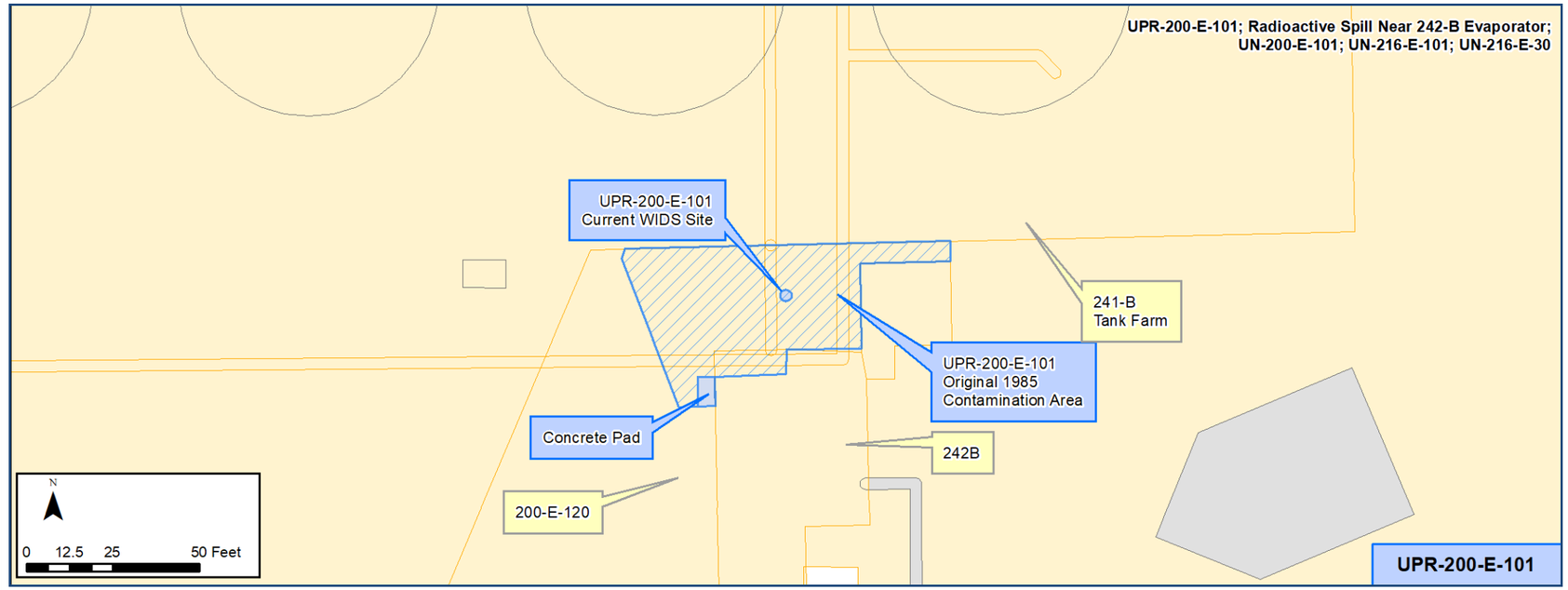
- 200-E-133 (Contaminated Soil at 241-C Tank Farm)

Scoping Summary: UPR-200-E-99 (Unplanned Release)

Scoping Summary: UPR-200-E-101 (Unplanned Release)

History

UPR-200-E-101 waste site is an unplanned release primarily consisting of contamination on tumbleweeds and a concrete pad between the 241B Tank Farm fence and the 242B Evaporator building (Radioactive Particle Research Laboratory) that is assumed to be due to windblown particulates from those facilities. The site was documented in WIDS in August 1985, the tumbleweeds were removed and the site was stabilized in 1994. Details of the stabilization actions were not located other than mention of a covering. The site is currently posted as an Underground Radioactive Material area.



Construction

- Length: 84 ft
- Width: 40 ft
- Area: 3,360 ft sq
- Cover thickness 1-2 ft

Features Of Interest

- Concrete pad

Relevant Characterization

- Radiological survey of two tumbleweeds detected 1,000 cpm and 250 cpm on the concrete pad (1986)

Waste Streams

- Source of the waste is unknown, waste stream information was not located
  - Contaminated particulate emissions from the 241B tank farm has been a source of contamination in areas adjacent to the facilities and may have contributed to this UPR

Misc./Other Relevant Information

- In 2000 and 2001, a large expansion of 200-E-120 overlapped the area of this site previously stabilized
- Routine radiological survey in 1986 noted that the area was overrun with tumbleweeds
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit (DOE/RL-2008-44, Rev. 0) determined the preferred removal action to be Removal Treatment and Disposal (RTD)

Site Interfaces

Origin/Termination

- N/A

Intersecting/Nearby Sites

- 241B Tank Farm
- 242B (Radioactive Particle Research Laboratory)

WMA B/BX/BY

- 200-E-120 (tank farm contamination migration)

Scoping Summary: UPR-200-E-101 (Unplanned Release)

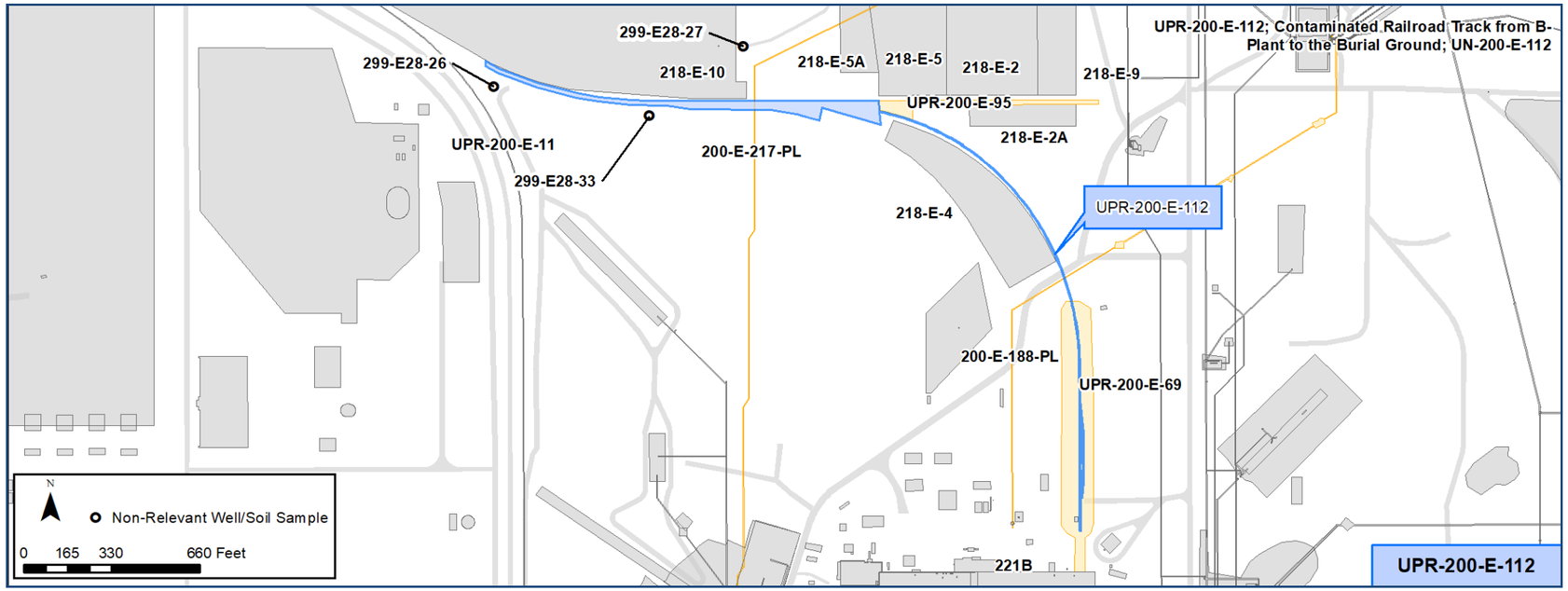
Scoping Summary: UPR-200-E-112 (Unplanned Release)

History

The UPR-200-E-112 waste site is an unplanned release that received contaminated liquid from a cesium ion-exchange column as it was being loaded into a burial box atop a rail car. This UPR is located along the rail spur going from the 221B building (B Plant) to the 218-E-10 burial ground.

In 1979, contaminated liquid was spilled onto the railroad tracks and was carried along the tracks by the wheels of the rail car. The spill was cleaned up later that same day. In 1998, an additional gravel covering was added.

In 2014, elevated transferable alpha contamination was identified on a rock, and it was subsequently buried under approximately six inches of gravel.



Construction

- Length: Approx. 3,435 ft

Features Of Interest

- No features of interest identified.

Waste Streams

- Contaminated liquid from a cesium ion-exchange column.

Site Interfaces

Origin/Termination:

200-CB-1 OU
- 221B (B Plant)

200-SW-2 OU
- 218-E-10

Intersecting/Nearby Sites

200-EA-1 OU
- UPR-200-E-95

200-OA-1 OU
- UPR-200-E-11

200-IS-1 OU
- 200-E-217-PL

Relevant Characterization

- At the time of contamination, one track was found contaminated to a maximum of 80,000 cpm; readings decreased to about 40,000 cpm at the road crossing and were nondetectable at the east boundary of the 218-E-10 burial ground
- In 2014, a hot rock showed total beta/gamma readings up to 18000 cpm/100 sq cm
- In 2016, total beta/gamma readings at 19,000 dpm/100 sq cm. Specific geographic location of reading not identified.

Misc./Other Relevant Information

- This site was previously associated with 200-MG-1 and 200-BP-10 Operable Units. Removal, treatment, and disposal for this site was recommended as a part of the 200-MG-1 evaluation.

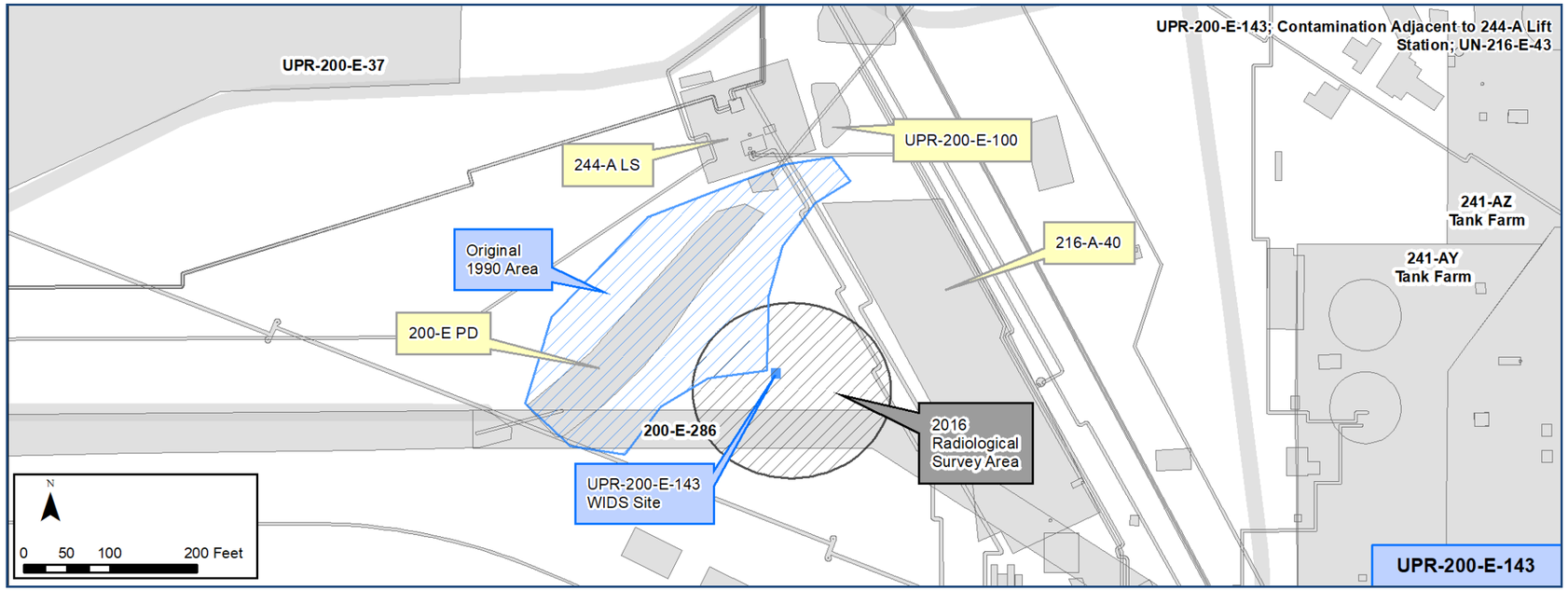
Scoping Summary: UPR-200-E-112 (Unplanned Release)

Scoping Summary: UPR-200-E-143 (Unplanned Release)

History

UPR-200-E-143 waste site was a large surface contamination area that originated in October 1990 with the discovery of radiologically contaminated rabbit feces south of the 244-A Lift Station and west of the 216-A-40 Basin. The size and shape of the zone has varied and evolved over time due to cleanup efforts and new contamination identified from animal movement, biological intrusion and windblown particulates. The contamination areas historically associated with this site were in the vicinity of UPR-200-E-100 and often overlapped.

In 1985 approximately 8.5 acres of the site area was decontaminated by scrapping and removing contaminated soil (UPR-200-E-100). During 1990 and 1991, some of the contamination was removed using buckets and shovels. In 1994 a large portion of the surface soil was scraped into the 216-A-40 Retention Basin, which was then backfilled and surface stabilized (Rassmussen, O. 1990, January. Telecon interview). In 1996, 366 ft of the 200-E Powerhouse Ditch (200-E PD) that had been radiologically posted due to contamination migration from this site, was filled, surface stabilized, and posted as an URMA. The various locations of the scraped areas were not located in the historical record.



Construction

- Approximately 50,000 square ft
- Defined site boundaries not located

Features Of Interest

- N/A

Waste Streams

- The waste stream source of the contamination was not located

Site Interfaces

Origin/Termination

- N/A

Intersecting/Nearby Sites

200-IS-1 OU
- 244-A Lift Station
- UPR-200-E-100

200-EA-1 OU
- 216-A-40
- 200-E PD

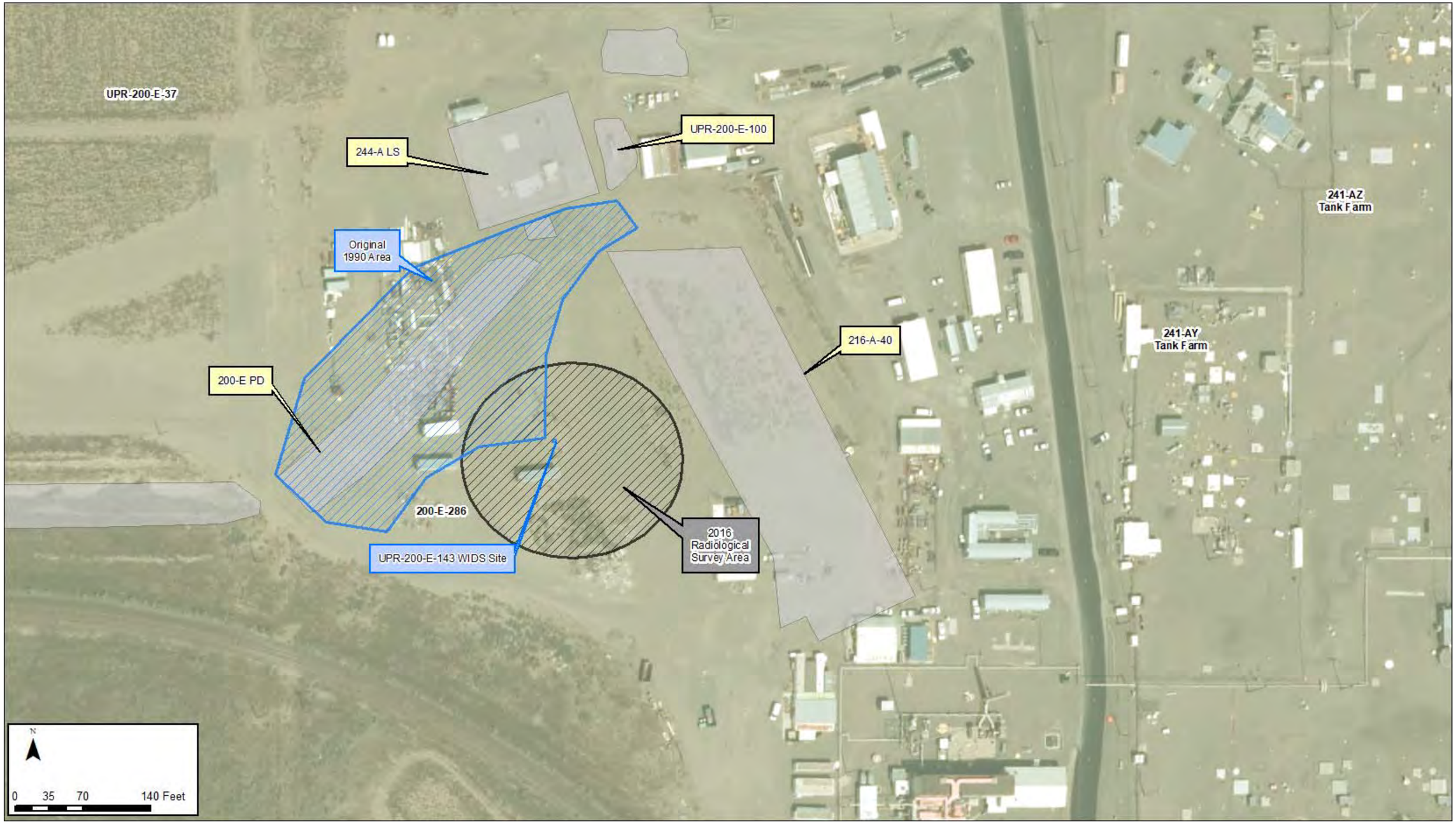
Relevant Characterization

- October 1990 rabbit feces on the north and south side of the 200-E PD, maximum dose of 900 mrem/h
- Lab samples of rabit feces found 5.76 pCi/g of Cs-137
  - The historical record does not indicate that this was the same sampling event as the max rad reading listed above. Location of the sample was not found.
- 2016 radiological survey of soil and scan of the surrounding URMA areas was consistent with background levels (area indicated on the plan view)

Misc./Other Relevant Information

- Various radiological postings exist in this vicinity that are associated with the 244-A Lift Station and 241-C Tank Farm
- The Engineering Evaluation/Cost Analysis for 200-MG-1 Operable Unit determined the preferred action for the site to be confirmatory sampling/no further action (CS/NFA) (DOE/RL-2008-44, Rev. 0)

Scoping Summary: UPR-200-E-143 (Unplanned Release)

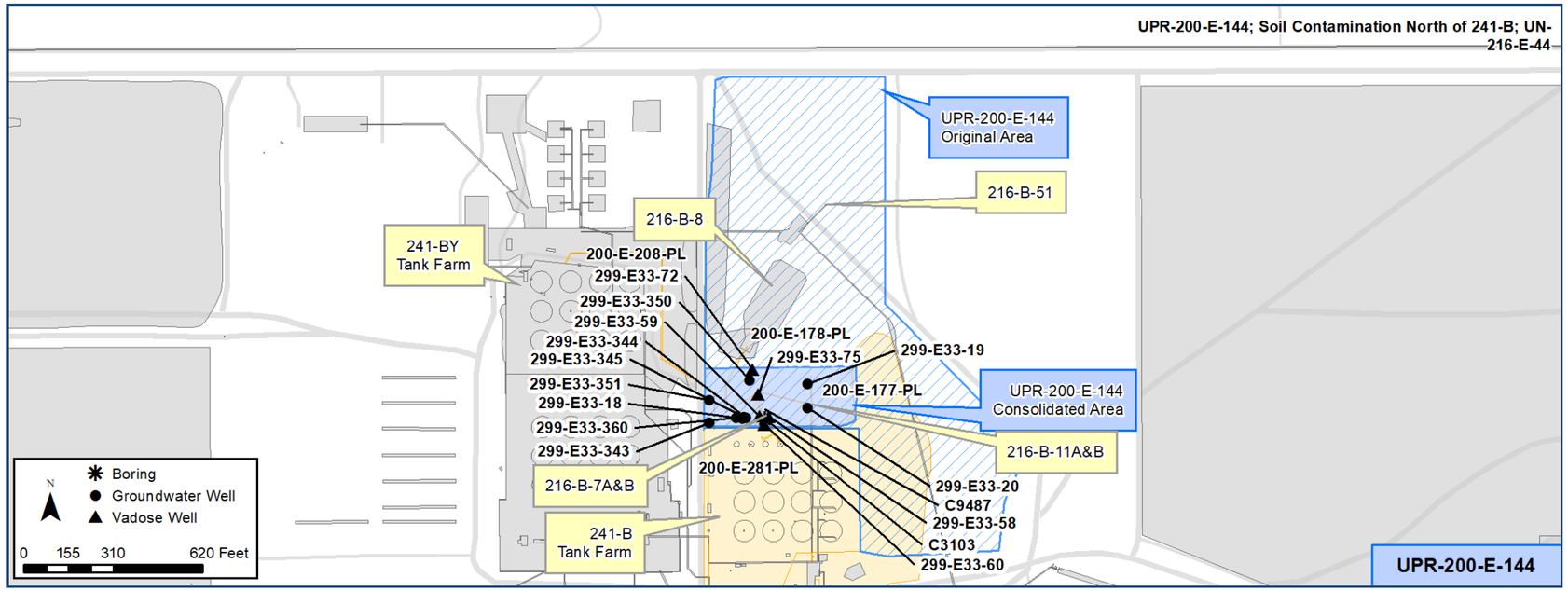


Scoping Summary: UPR-200-E-144 (Unplanned Release)

History

UPR-200-E-144 waste site is an unplanned release originally consisting of approximately 25 acres of particulate surface contamination that is assumed to have migrated from activities in the 241B and 241BY Tank Farms. The original area was located north of the 241B Tank Farm and east of the 241BY Tank Farm. The unplanned release was first documented in 1991 and was posted as Surface Contamination until it was scraped and consolidated in 1992 and posted as Underground Radioactive Material area of approximately 3 acres (130,680 sq ft).

The 1992 scraping and consolidation created a spoil pile along the north perimeter of the 241B Tank Farm. Based on the results of a soil sample and survey the scraped area of approximately 22 acres (958,320 sq ft) was released from radiological control and revegetated. Approximately 18 to 24 inches of clean soil was placed over the spoil pile.



Construction

- Scraped Area: Approx. 958,320 sq ft
- Consolidated Area: 130,680 sq ft
  - Volume of Contaminated Soil: 5,400,000 cubic ft
  - Maximum height of contaminated soil in the spoil pile was approximately 10 ft from ground surface (WHC-SD-DD-TI-078)

Features Of Interest

- Post and chain barriers
- Majority of debris in the original 25 acre area (power poles, chain, fence posts, misc. metal) was found to be radiologically contaminated and was removed
- Five vadose wells
- Nine groundwater wells
- Two boreholes

Relevant Characterization

- Samples from beneath the soil pile show significant contamination five times above threshold to approximately 75 ft bgs
  - Contamination cannot be directly correlated to this site due to the co-location of deep vadose wells 216-B-7A, 216-B-7B, 216-B-11A, and 216-B-11B
  - Soil samples from 2001, 2007, 2008, 2014, 2015
- *See pgs 4 and 5 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

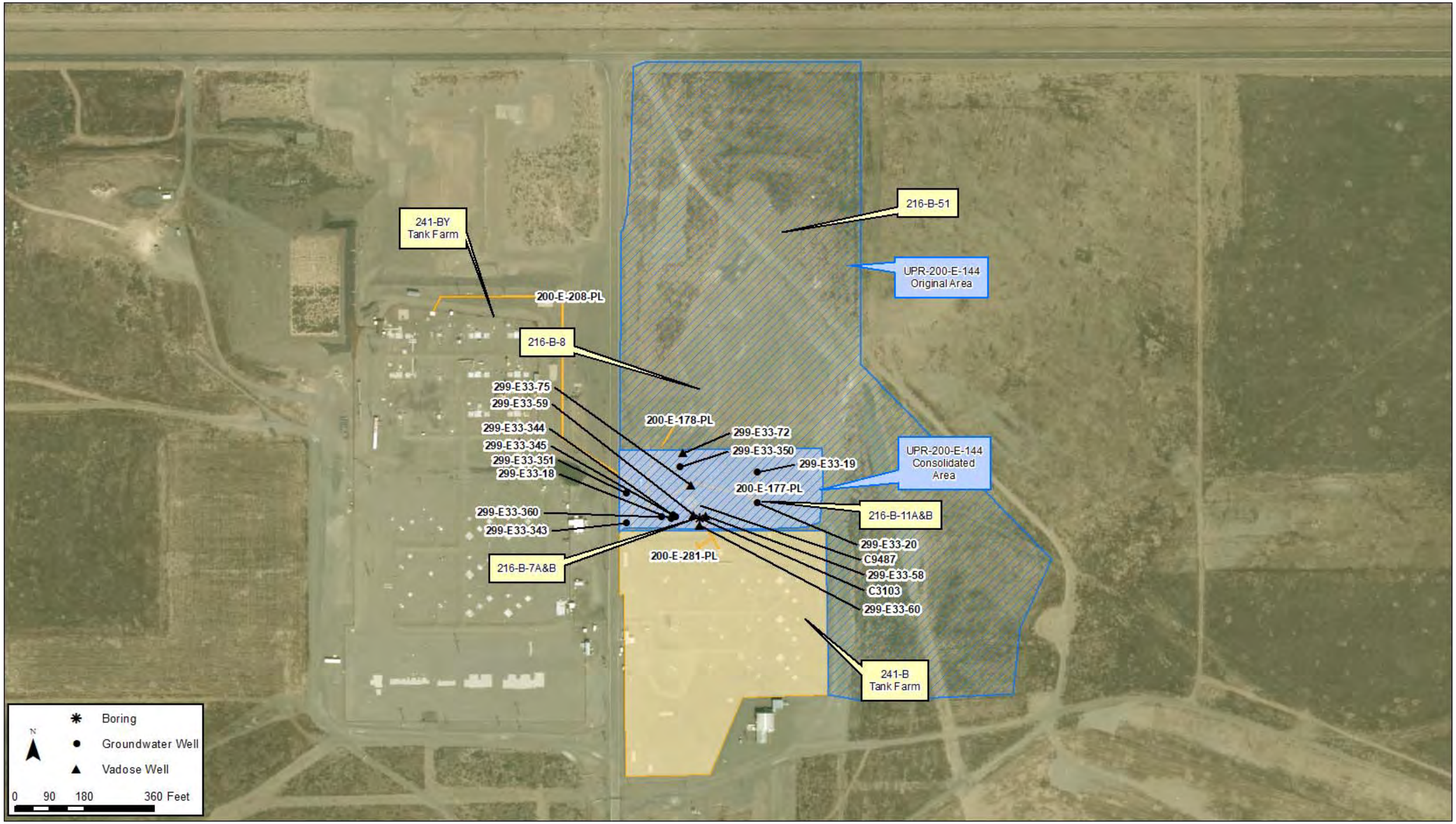
- Presumed source of waste is contamination migration from 241B and 241BY Tank Farms

Misc./Other Relevant Information

- Site was previously assigned to the 200-BP-4 operable unit
- 216-B-7A, 216-B-7B, 216-B-11A, and 216-B-11B reverse wells were covered in the consolidation process
- 216-B-8 crib and HI shaft area was interim stabilized with 18 in. of clean soil

Site Interfaces

Origin/Termination	Intersecting Sites/Nearby Sites
• N/A	• 241B Tank Farm • 241BY Tank Farm *200-DV-1 OU* • 216-B-7A • 216-B-7B • 216-B-11A • 216-B-11B *200-PW-3 OU* • 216-B-8 *200-EA-1 OU* • 216-B-51 *200-IS-1 OU* • 200-E-178-PL • 200-E-177-PL • 200-E-176-PL-A *WMA B/BX/BY* • 200-E-208-PL


241-BY
Tank Farm
216-B-51
UPR-200-E-144
Original Area
200-E-208-PL
216-B-8
299-E33-75
299-E33-59
299-E33-344
299-E33-345
299-E33-351
299-E33-18
200-E-178-PL
299-E33-72
299-E33-350
299-E33-19
UPR-200-E-144
Consolidated
Area
200-E-177-PL
216-B-11A&B
299-E33-360
299-E33-343
299-E33-20
C9487
299-E33-58
C3103
299-E33-60
216-B-7A&B
200-E-281-PL
241-B
Tank Farm
Boring
Groundwater Well
Vadose Well
N
0 90 180 360 Feet

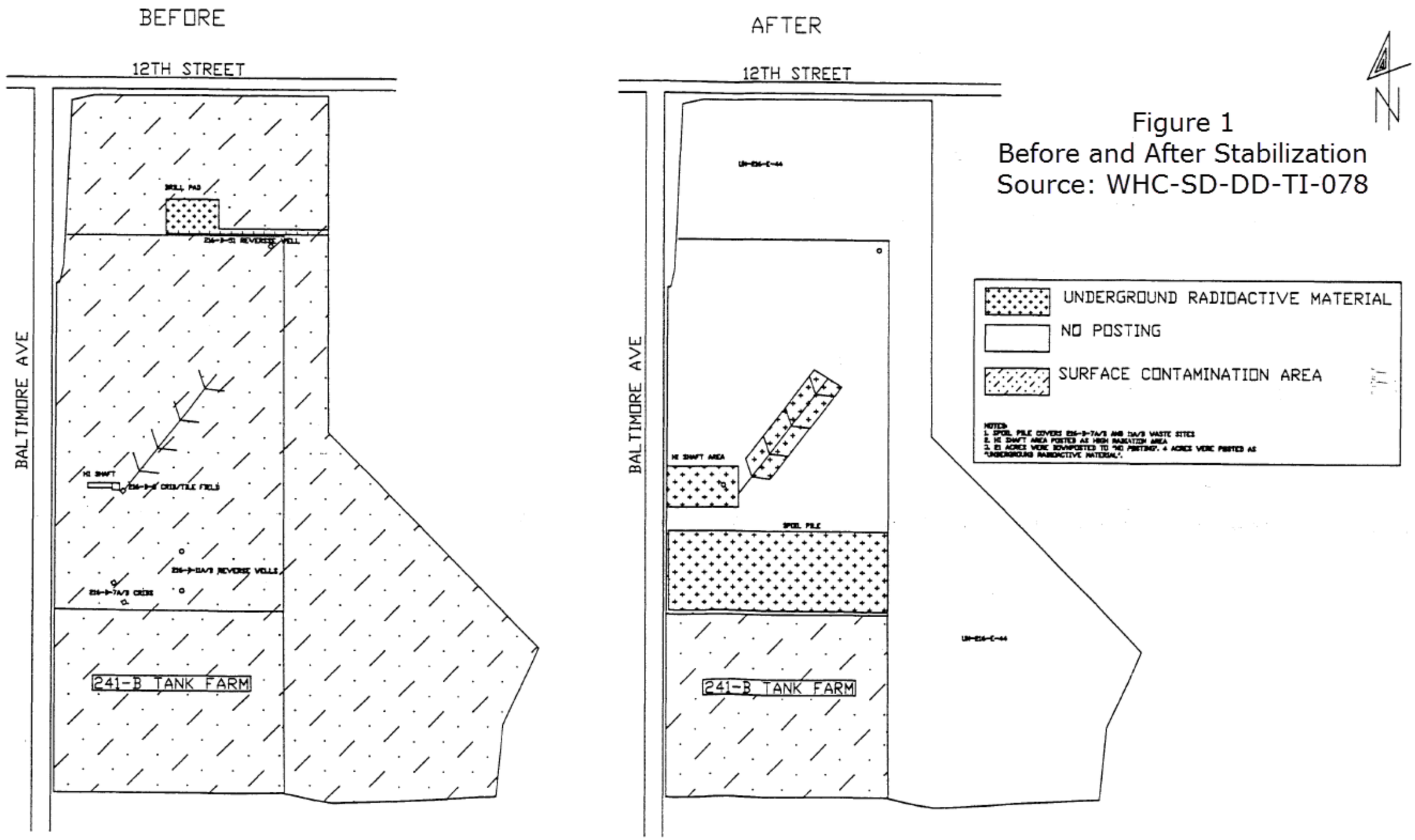
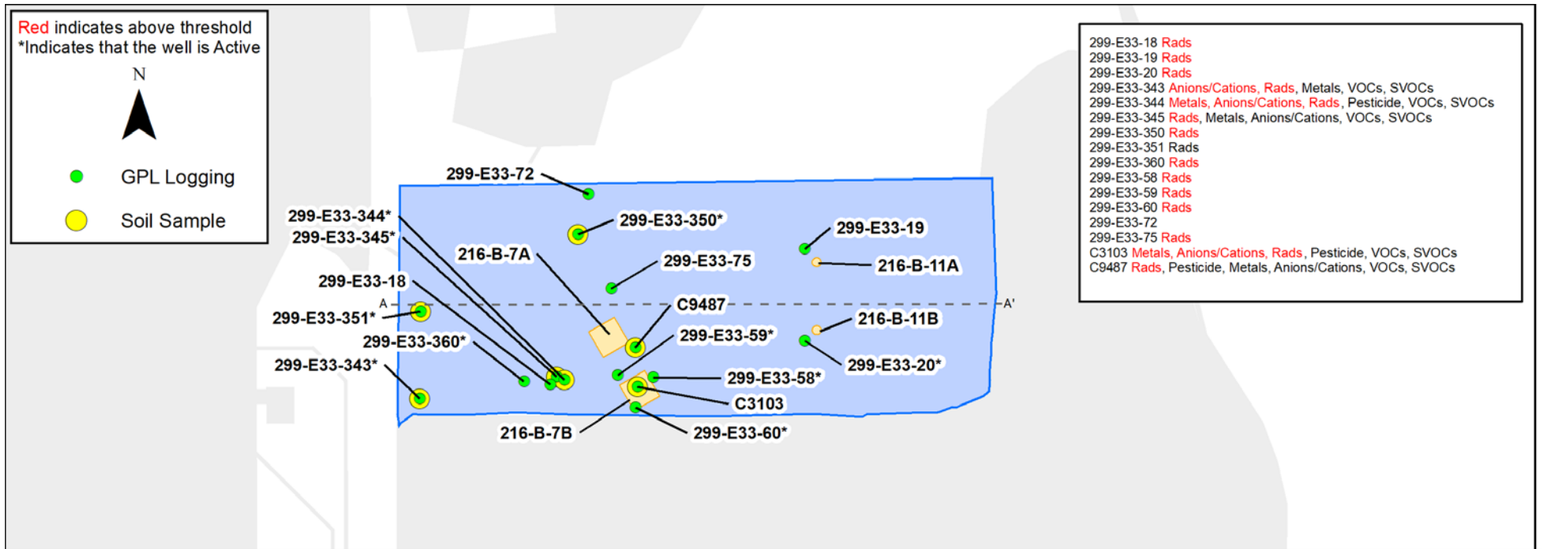


Figure 1
Before and After Stabilization
Source: WHC-SD-DD-TI-078

Scoping Summary: UPR-200-E-144 (Unplanned Release)

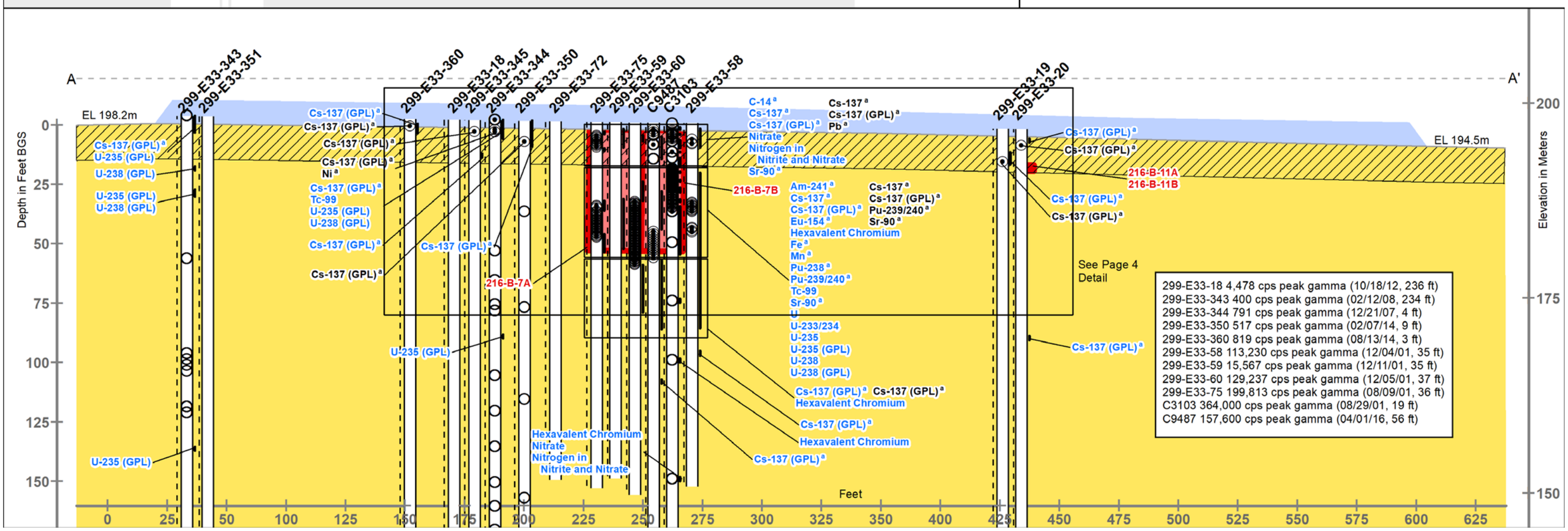


299-E33-18 Rads
299-E33-19 Rads
299-E33-20 Rads
299-E33-343 Anions/Cations, Rads, Metals, VOCs, SVOCs
299-E33-344 Metals, Anions/Cations, Rads, Pesticide, VOCs, SVOCs
299-E33-345 Rads, Metals, Anions/Cations, VOCs, SVOCs
299-E33-350 Rads
299-E33-351 Rads
299-E33-360 Rads
299-E33-58 Rads
299-E33-59 Rads
299-E33-60 Rads
299-E33-72
299-E33-75 Rads
C3103 Metals, Anions/Cations, Rads, Pesticide, VOCs, SVOCs
C9487 Rads, Pesticide, Metals, Anions/Cations, VOCs, SVOCs

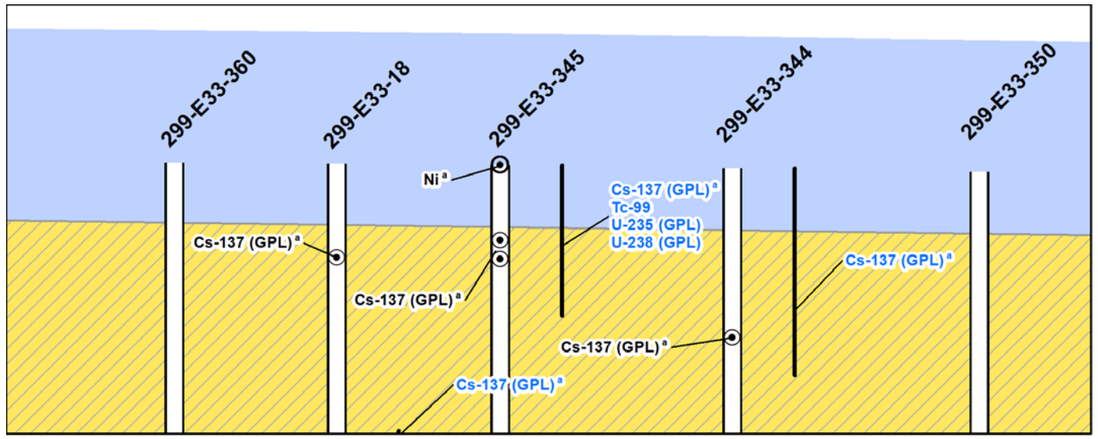
Legend

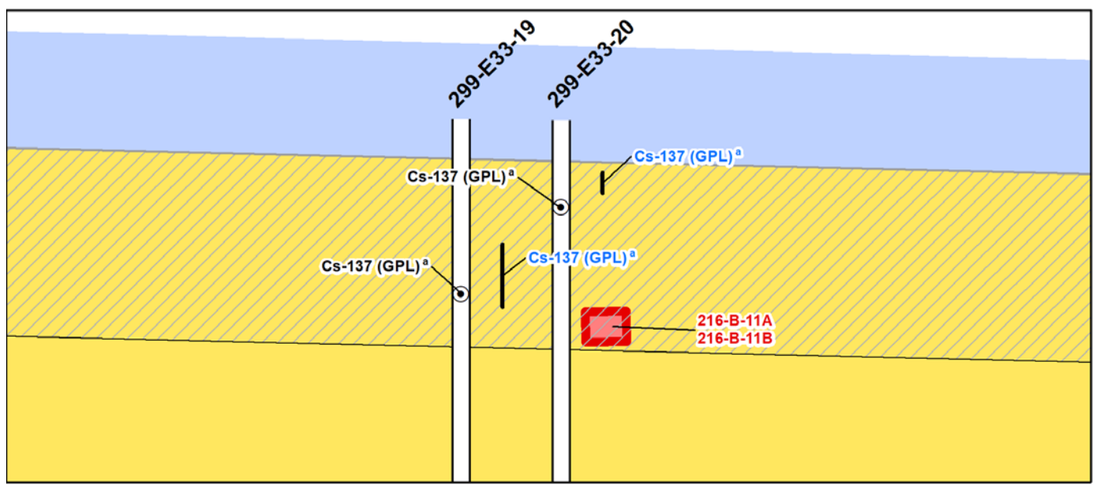
- 5x Above Human Health or Ecological Thresholds
- Above Human Health or Ecological Thresholds
- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- GPL Coverage
- Well/Bore
- 0-15ft Below Ground Surface
- Target Waste Site
- Waste Site
- Hanford formation

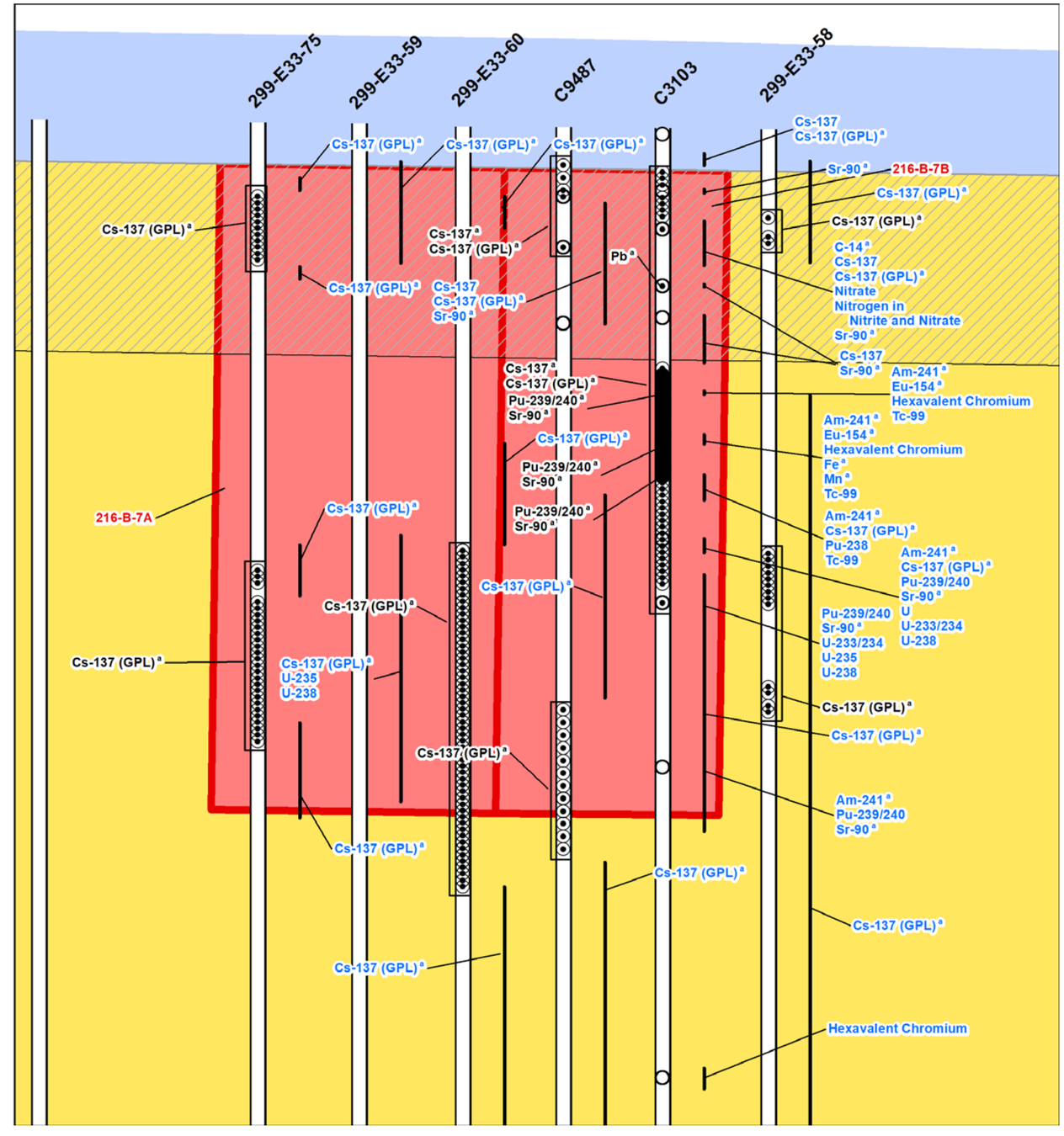
Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0



Scoping Summary: UPR-200-E-144 (Unplanned Release)







Legend

- Above Human Health or Ecological Thresholds
- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- Well/Bore
- 0-15ft Below Ground Surface
- Target Waste Site
- Hanford formation

Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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Summaries for Scoped Waste Sites Subsequently Rejected or Assigned to a Different Operable Unit

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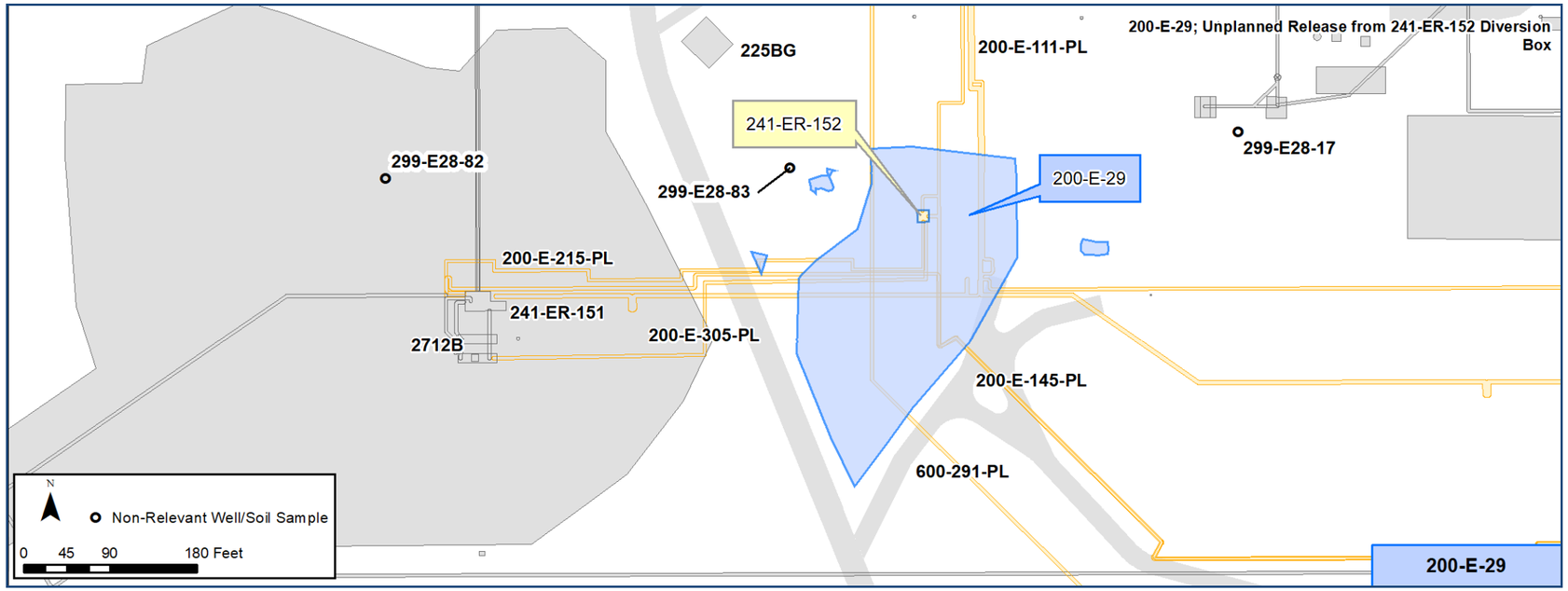
Scoping Summary: 200-E-29 (Unplanned Release)

History

The 200-E-29 waste site is an inactive, unplanned release that received ground surface contamination from mice and ants in the area. The UPR surrounds the 241-ER-152 diversion box (inactive), and includes three smaller areas nearby: two west and one east of the main UPR area. Contamination at the area around the diversion box and the two smaller areas to the west was discovered in 1996 and stabilized by covering the area in clean gravel. The site was labeled as an Underground Radioactive Material area when the stabilization occurred.

The contaminated area to the east was created when a backhoe that was originally parked near the diversion box moved to the east location during the stabilization of the 200-E-29 UPR. The backhoe was removed in 1998, and the area was labeled as an Underground Radioactive Material area. In 2000 this area was submitted to WIDS as a Discovery site.



Construction

- Site Shape: Irregular
- Area of Main UPR: 49,455.49 sq ft
- Surface Cover Material: Gravel
- Surface Cover Thickness: Approx. 1-2 ft

Features Of Interest

- Cover blocks with lifting hooks for the diversion box are visible

Waste Streams

- Contamination from mouse feces, mouse urine, a mouse nest, several mouse carcasses, and an ant hill

Site Interfaces

Origin/Termination

- N/A

Intersecting/Nearby Sites

200-IS-1 OU

- 241-ER-152 (Diversion Box)
- 200-E-111-PL
- 200-E-145-PL
- 200-E-215-PL

OU Unassigned

- 600-291-PL
- 200-E-305-PL

Relevant Characterization

- Radiological survey conducted in 2014 and 2015 had total beta/gamma readings at <5,000 dpm/100 sq cm, and total alpha readings at <500 dpm/100 sq cm

Misc./Other Relevant Information

- 200-E-29 was previously associated with operable unit 200-MG-1

Scoping Summary: 200-E-29 (Unplanned Release)

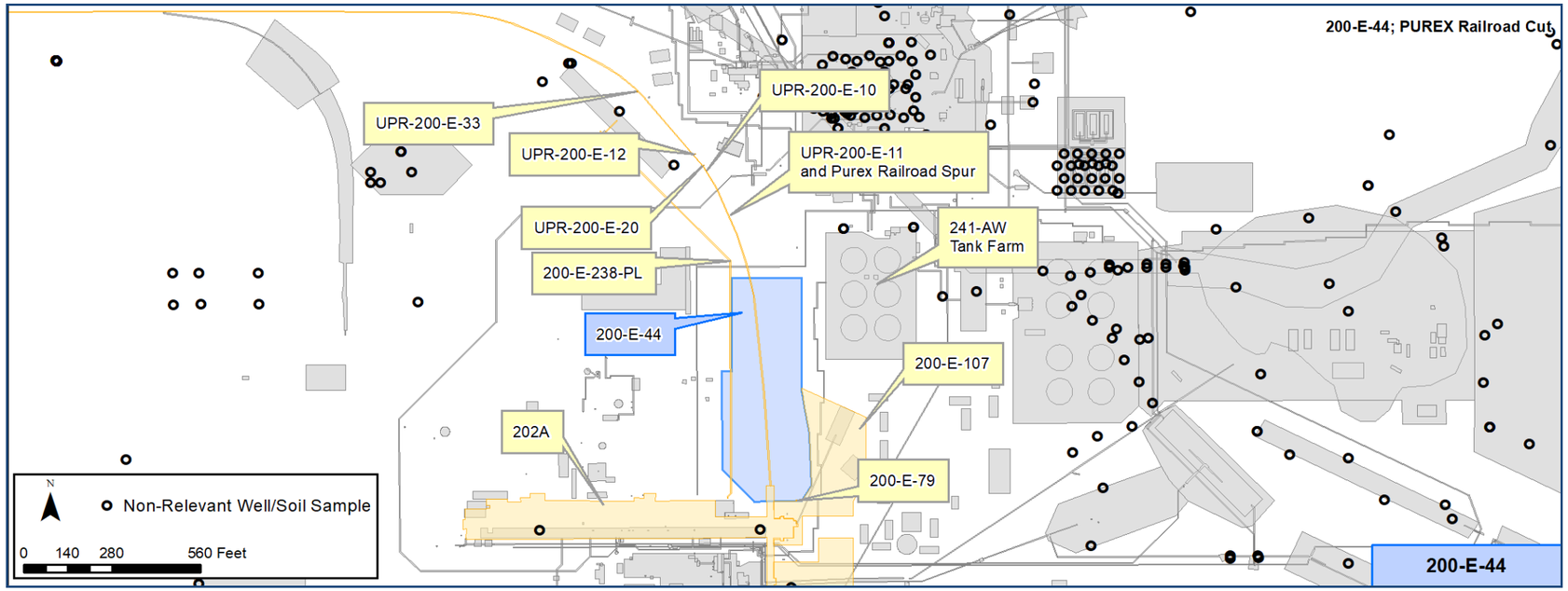
Scoping Summary: 200-E-44 (Unplanned Release)

History

The 200-E-44 waste site is an ~800 ft stretch of railroad cut suspected to be contaminated from years of leaking contaminated equipment and waste being transported on rail cars into and out of the PUREX facility along the railway. The railroad cut is located on the northeast corner of the 202A building (the PUREX canyon), and provides access to the PUREX tunnel and the burial tunnels south of the PUREX facility.

There are several nearby and co-located UPRs in the area. In 1957, UPRs included contamination from failed concentrator tube bundles (UPR-200-E-10), leakage from a burial box containing failed equipment and process jumpers (UPR-200-E-12), and leaked fission product (UPR-200-E-11). In 1959, two tube bundles leaked in transport (UPR-200-E-20), and in 1964, another tube bundle burial box leaked on its way to burial (UPR-200-E-33).

In the 1980s, the rails were replaced and the top layer of ballast was removed in an attempt to remove contamination. Two large berms of soil were placed along both sides of the track within the fenced portion of the spur to provide radiation shielding. The railroad cut is posted as a Contamination Area.



Construction

- The site is a stretch of railway and the surrounding ground and berms. The site measures approximately 800 ft long by 200-250 ft wide and is irregularly shaped. The mapped boundaries of this site are approximate; records documenting the extent of any remaining contamination could not be located.

Features Of Interest

- Approximately 800 feet of railroad track
- One turnout siding (donkey track)
- Two large soil berms along the sides of the track.

Relevant Characterization

- No direct characterization data was located for the site or its adjacent soil.

Waste Streams

- PUREX Plant - plutonium uranium extraction process
  - A wide variety of contaminated equipment was transported to and from the PUREX facility on this railway. There are reports of several instances of leaking wood burial boxes traversing this stretch of railway (W.R. Hodges, 1989).
  - Water from fuel casks used to shield the high rad dose rates likely leaked along the railway during transit to the burial grounds, as casks regularly arrived with leaky water valves.

Misc./Other Relevant Information

- Although UPR-200-E-10, -11, -12, -20, and -33 are all mapped as data points, they are described in monthly reports and WIDS summaries as leaks occurring along the tracks in the railroad cut encompassed by this waste site, and should be assumed to intersect the footprint of 200-E-44.

Site Interfaces

Nearby Sites:

200-EA-1 OU
- UPR-200-E-10
- UPR-200-E-11
- UPR-200-E-12
- UPR-200-E-20
- UPR-200-E-33

200-CP-1 OU
- 200-E-79 (injection well)
- 200-E-107 (UPR)
- 202A (PUREX Canyon)

200-IS-1 OU
- 200-E-238-PL

Facilities
- 241-AW (tank farm)

Scoping Summary: 200-E-44 (Unplanned Release)

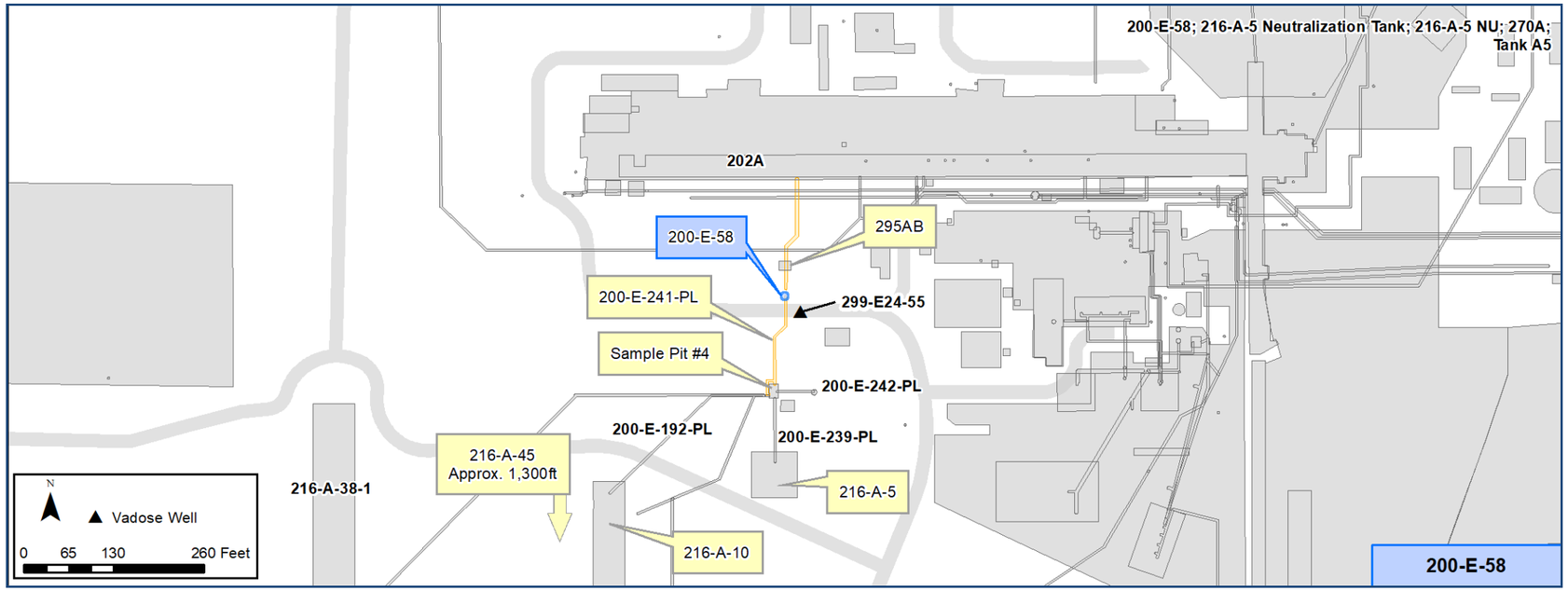
Scoping Summary: 200-E-58 (Neutralization Tank)

History

The 200-E-58 waste site is an underground tank used to neutralize acidic PUREX waste prior to disposal to the 216-A-5, 216-A-10, and 216-A-45 Cribs via a valve pit in the Proportional Sampler Pit #4. The neutralization tank, located south of the 202A facility (PUREX), received the acidic waste via the 200-E-241-PL pipeline and was in operation from 1955 until PUREX operations ceased.

PUREX operated until 1990 and achieved a standby condition in 1992. Deactivation activities at PUREX began in October, 1993. The 200-E-58 tank was isolated in 1997.

Waste entered the tank from the bottom and was forced upward through a bed of limestone, which neutralized it prior to overflow through the outlet pipe near the top of the tank. Due to this design, it is likely that the tank and inlet piping contains some residual waste. A 2009 engineering evaluation/cost analysis for the 200-MG-1 operable unit (DOE/RL-2008-44) identified Remove, Treat, Dispose as the preferred alternative, due to the chemical reactions involved and the possibility of residual waste leaching into the soil.



Construction

- Vertical cylinder
- Height: ~12.5 ft
- Depth from top of structure: Not confirmed, records discrepancy (see figure 1)
  - ~6 ft (WIDS and H-2-56049)
  - ~19 ft (WHC-EP-0560)
- Diameter: 11 ft 4 in
- Material: Stainless steel
- Capacity: 7,540 gal
- Incoming pipelines: 1
  - 8 in. pipe enters near the base and connects to distribution piping
- Outgoing pipelines: 1
  - 8 in. pipe exits near the top

Tank Isolation Details:

- 200-E-58 tank was isolated in 1997 by blanking, plugging and capping input lines upstream in the 295AB Building caisson (PDD Sample Station) as well as closing and sealing valves in the sampler pit downstream. The tank riser was also capped with an aluminum plate covered by a concrete pour and topped with an aluminum cover.

Features Of Interest

- One 40 in. diameter carbon steel charging riser, extends 1 ft above the surface, purpose for loading limestone (capped)
  - One 6 in. diameter stainless steel riser, purpose pH measurement (installed inside charging riser)
- Tank rests on a concrete pad, 1.5 ft thick, hexagon shape
- Distribution piping, 8 in. diameter stainless steel, perforated, welded into a cross

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil

Waste Streams

- PUREX process distillate discharge
  - From PUREX F5, H4, J8, and K4 concentrators
  - Acidic waste
- Includes nitrates and organics including butanol, acetone, methyl ethyl ketone, methylene chloride, tributyl phosphate and potential degradation products.
- Tank content estimates from 2002: 4,500 gal of sludge, 3,000 gal of liquid, and a total volume of 7,500 gallons (*BHI-01018, Rev2, Appendix B, Table B-16*).

Misc./Other Relevant Information

- DOE/RL-2008-44 states that the site has been stabilized, no evidence of stabilization was located
- This site was also connected to the 216-A-38-1 crib, which was never used.

Site Interfaces

Origin/Termination

200-IS-1 OU

- 200-E-241-PL

Intersecting/Nearby Sites

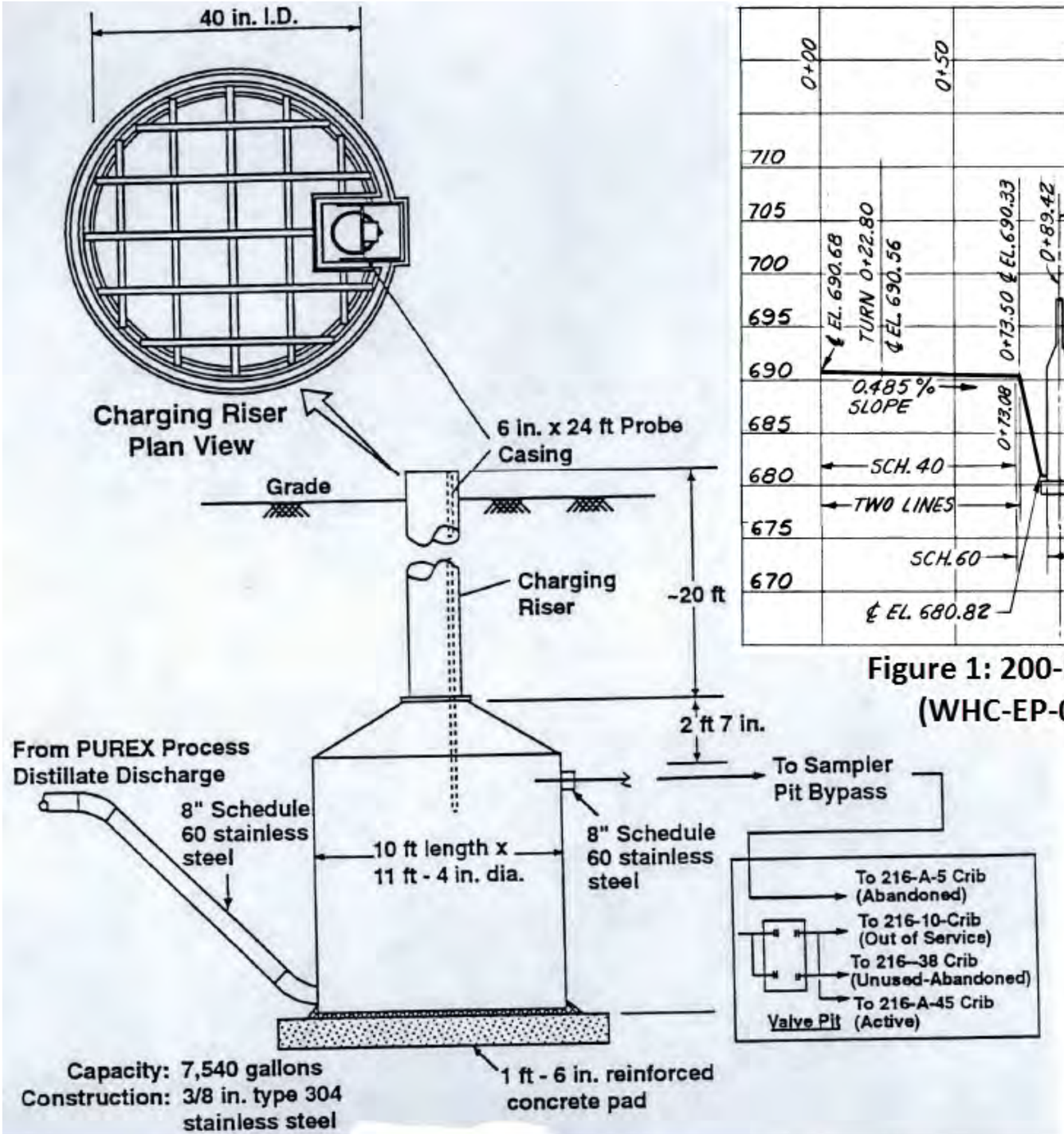
OU Unassigned

- 202A (PUREX facility)

200-EA-1 OU

- 216-A-5 (Crib)
- 216-A-10 (Crib)
- 216-A-45 (Crib)

202A
295AB
200-E-58
299-E24-55
200-E-241-PL
Sample Pit #4
200-E-192-PL
200-E-242-PL
200-E-239-PL
216-A-38-1
216-A-5
216-A-45
Approx. 1,300ft
216-A-10
N
Vadose Well
0 45 90 180 Feet



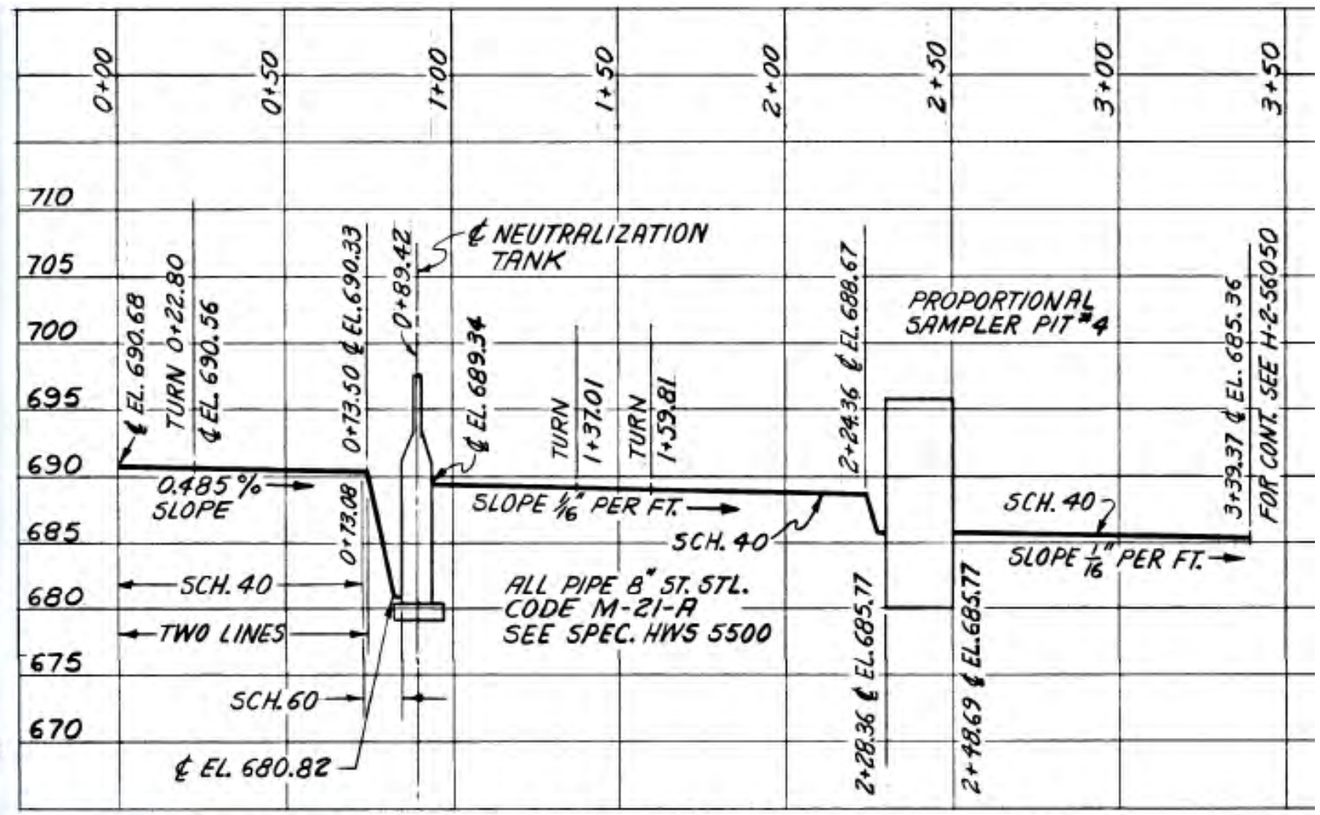


Figure 1: 200-E-58 Tank Profiles and Surface Picture (WHC-EP-0560, H-2-56049, NA - 1008120362)

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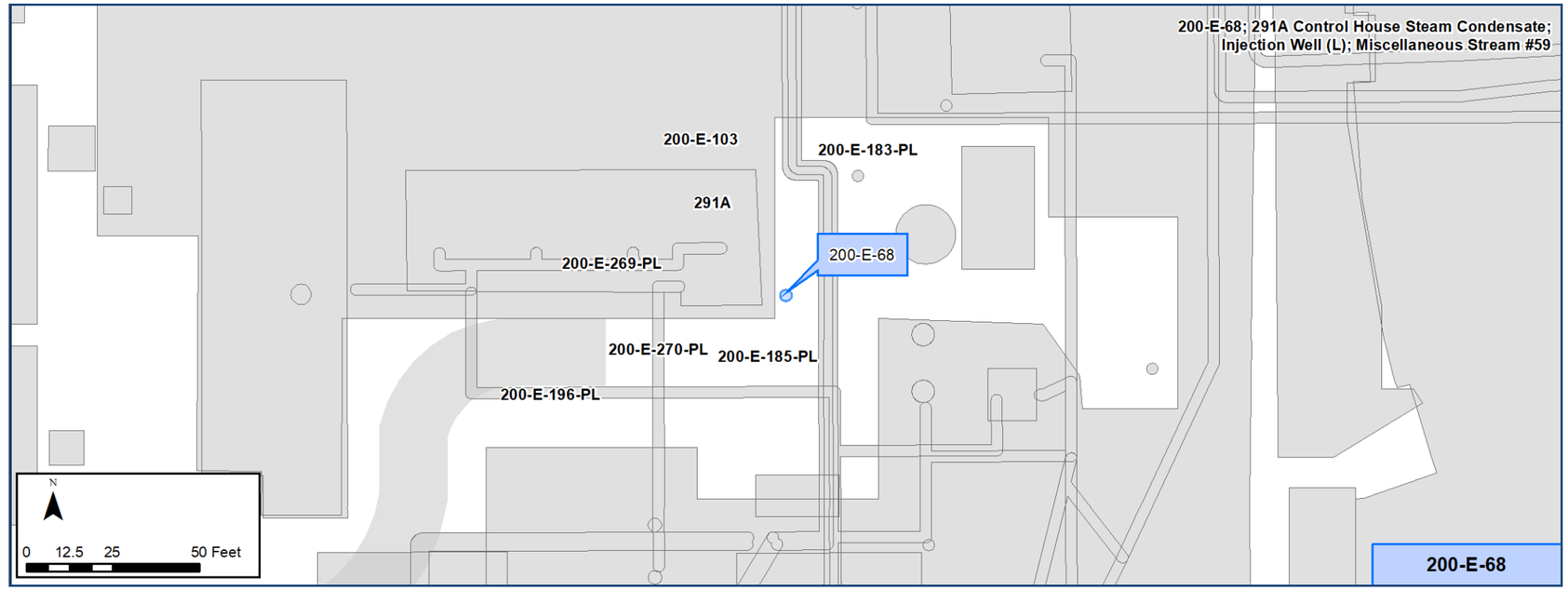
Scoping Summary: 200-E-68 (Injection/Reverse Well)

History

The 200-E-68 waste site is an inactive injection/reverse well that was used to collect steam condensate from the 291A Control House (PUREX Main Exhaust System). The injection/reverse well is located off the southeastern corner of the 291A Building. It was operational from 1955 to 1996, when the steam source was eliminated and the drain was re-classified as inactive.

It is located inside a posted Contamination Area (CA) that surrounds 291A and its stack structures.



Construction

- Drain Diameter: 36 in.
- Cover: Steel plate
- Depth: 6 ft bgs
- Material: Clay

Features Of Interest

- The injection/reverse well was fed by a 3-in. underground line that exited from beneath the 291-A building and entered the well approximately 1 ft bgs.
- *See Page 3 for detail (H-2-55024).*
- Several disconnected, asbestos-covered steam lines are suspended above the dry well.

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil.

Waste Streams

- 200-E-68 received steam condensate from the 291A Control House. The steam was produced from sanitary water that was sent through a water softener system to remove calcium and magnesium. The treated water was introduced into boilers to create steam, which was superheated then distributed to facilities for heating and process use. When used for heating, this was a seasonal discharge.
- Non-regulated chemicals were added to dechlorinate the water, prevent scale, and control corrosion.

Misc./Other Relevant Information

- The 200-E-68 well (Stream #59) is a UIC under the Well Code 5D4

Site Interfaces

Nearby Sites:

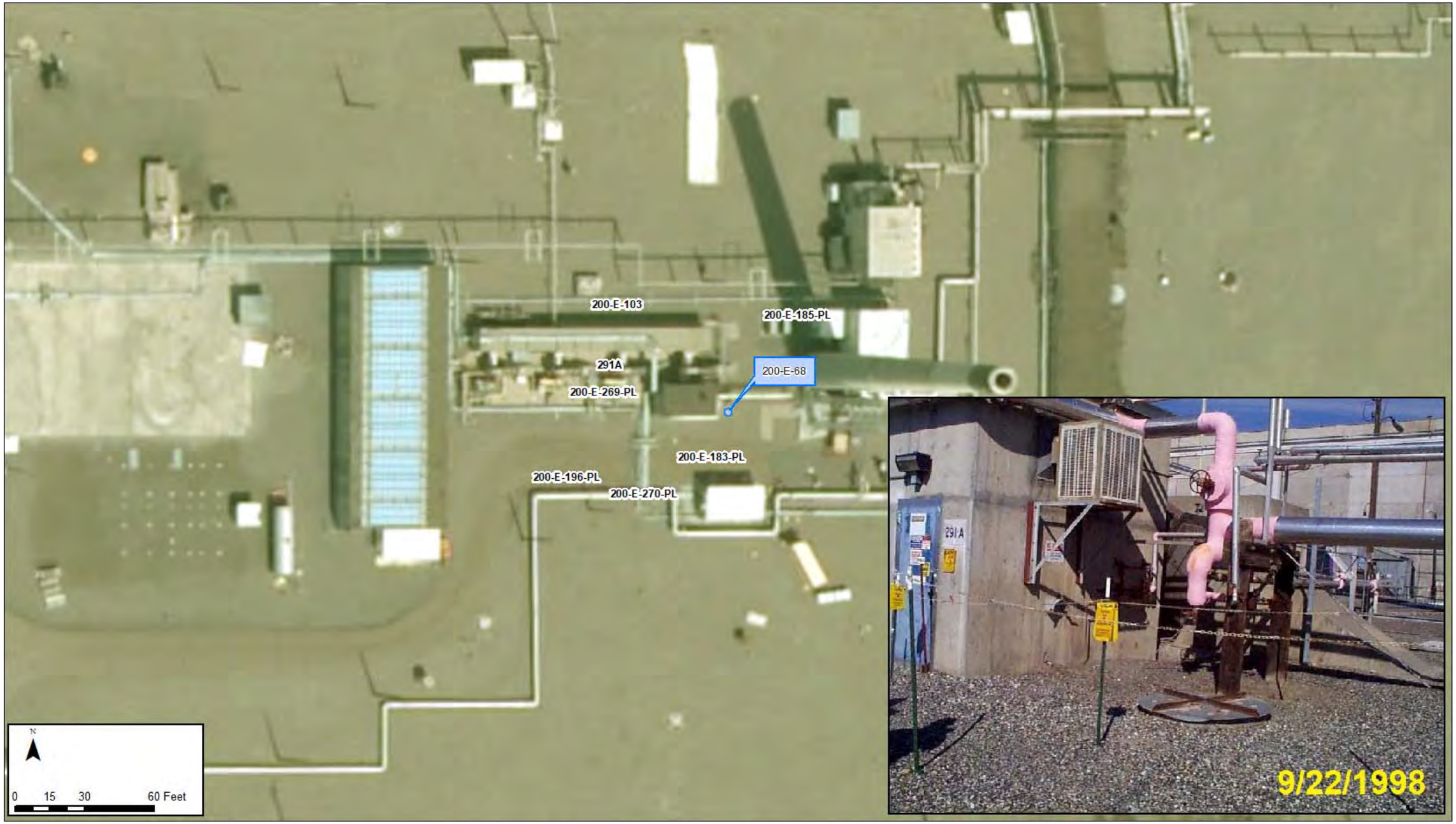
200-IS-1 OU

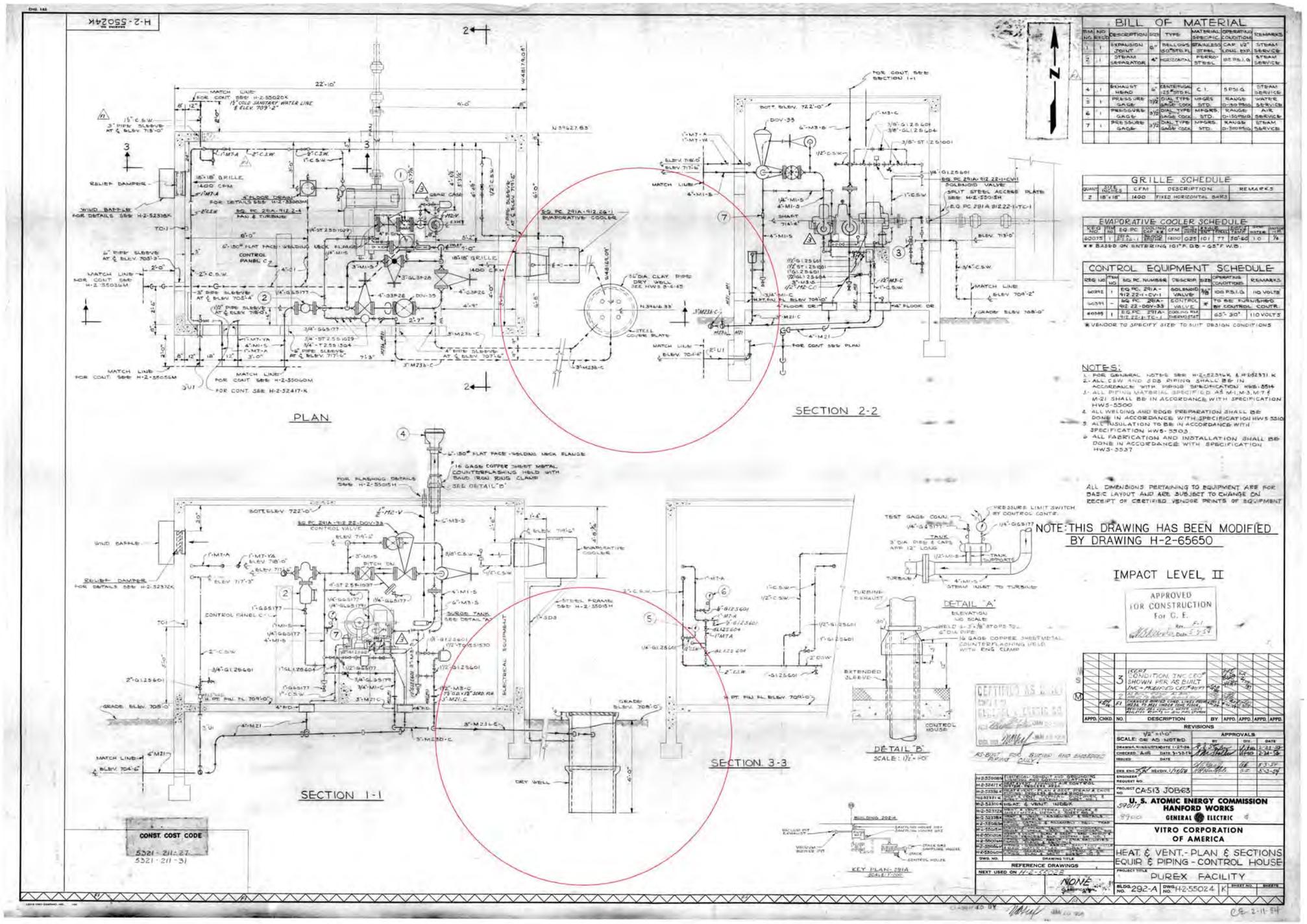
- 200-E-183-PL
- 200-E-185-PL
- 200-E-269-PL
- 200-E-196-PL
- 200-E-270-PL

200-EA-1 OU

- 200-E-103 (Stabilized Area)
- 291A Building (PUREX Main Exhaust System)

Scoping Summary: 200-E-68 (Injection/Reverse Well)




BILL OF MATERIAL
GRILLE SCHEDULE
EVAPORATIVE COOLER SCHEDULE
CONTROL EQUIPMENT SCHEDULE
NOTES:
PLAN
SECTION 2-2
SECTION 1-1
SECTION 3-3
DETAIL "A"
DETAIL "B"
NOTE: THIS DRAWING HAS BEEN MODIFIED BY DRAWING H-2-65650
IMPACT LEVEL II
APPROVED FOR CONSTRUCTION
CONST. COST CODE
U. S. ATOMIC ENERGY COMMISSION
HANFORD WORKS
GENERAL ELECTRIC
VITRO CORPORATION OF AMERICA
HEAT. & VENT. - PLAN & SECTIONS
EQUIP. & PIPING - CONTROL HOUSE
PUREX FACILITY
BLDG. NO. 292-A
DWG. NO. H-2-55024
SCALE: 1/2" = 1'-0"
CA-513 JOB 63

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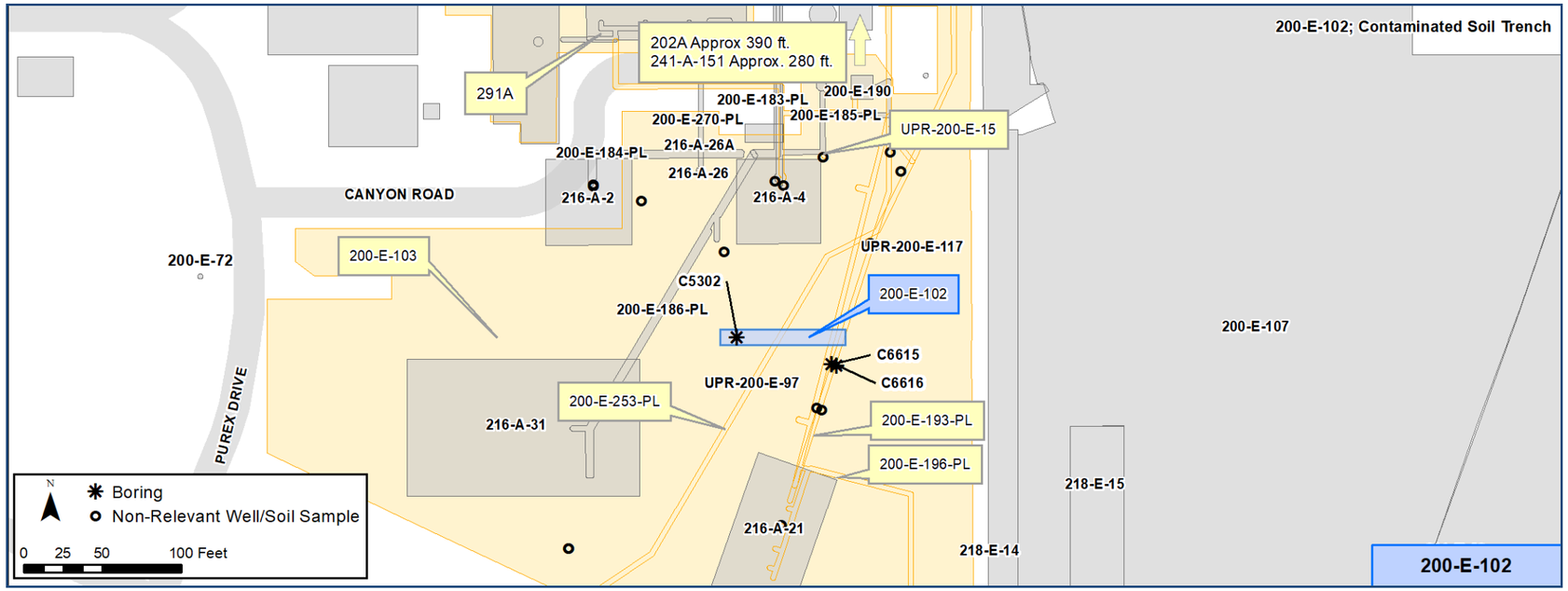
Scoping Summary: 200-E-102 (Trench)

History

The 200-E-102 Trench waste site is an inactive trench that was used for the disposal of contaminated soil and perhaps asphalt caused by plugging of the 216-A-4 Crib in 1958.

The only recorded waste disposal into the trench was from the cleanup of UPR-200-E-15, which removed contaminated soil and asphalt between the 291-A Turbine House and 216-A-4 Crib, with activity up to 8 rads/hr. The contaminated soil was covered with one foot of clean soil as a part of the UPR-200-E-15 cleanup efforts. The 200-E-102 Trench was later covered with gravel as part of the stabilization actions at the PUREX Stabilized Area (200-E-103), which encompasses this trench.

The 200-E-102 Trench was investigated pursuant to the RI/FS Report for the 200-MW-1 OU in 2008 (DOE/RL-2008-38, Draft A). Shallow contamination is believed to be present in the trench due to the shallow placement of the contaminated soil, even though the recorded geophysical logs do not show high gamma readings (SGW-44795, Rev. 0).



Construction

- Length: 80 ft
- Width: 10 ft
- Depth: 4 ft bgs
- Cover: 1 ft of clean soil and 0.5 to 1 ft of gravel

Features Of Interest

- The trench is not marked or posted. It is within the footprint of the 200-E-103 Stabilized Area.

Relevant Characterization

- Surface radiological surveys completed in 2016 have total beta/gamma readings less than 5,000 dpm/100cm-2
- A 2007 review of the vertical distribution & horizontal spreading of risk driving contaminants in the trench, states that there is higher than expected gamma contamination found in C5302 at depths 36 to 54 ft bgs (SGW-44795,Rev. 0)
- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- Waste stream is the same as the 216-A-4 Crib, which included:
  - PUREX Plant - Plutonium-Uranium Extraction Process and Laboratory Wastes from 202A Building (TK-U-3 & TK-U-4), 241-A-151 Diversion Box Drain, and several sources associated with the 291-A Stack
  - Ventilation fans (fan bearing, fan turbine condensate, and control house drainage)
  - Waste streams included: HNO3, Concentrated UNH, and NH4OH
- Contaminated soil displaced: ~1,200 cubic ft.

Misc./Other Relevant Information

- The 2008 RI/FS report (DOE/RL-2008-38, Draft A) states that geophysical loggings from C5302 indicate uncertainty whether the direct-push borehole was truly within the footprint of the trench (i.e., the trench location is in question), due to unexpectedly low radiological readings in the top 15 ft.

Site Interfaces

Origin/Termination:

200-EA-1 OU

- 200-E-103 (Stabilized Area)

Consolidated

- UPR-200-E-15 (Consolidated into 200-E-103)

Intersecting/Nearby Sites:

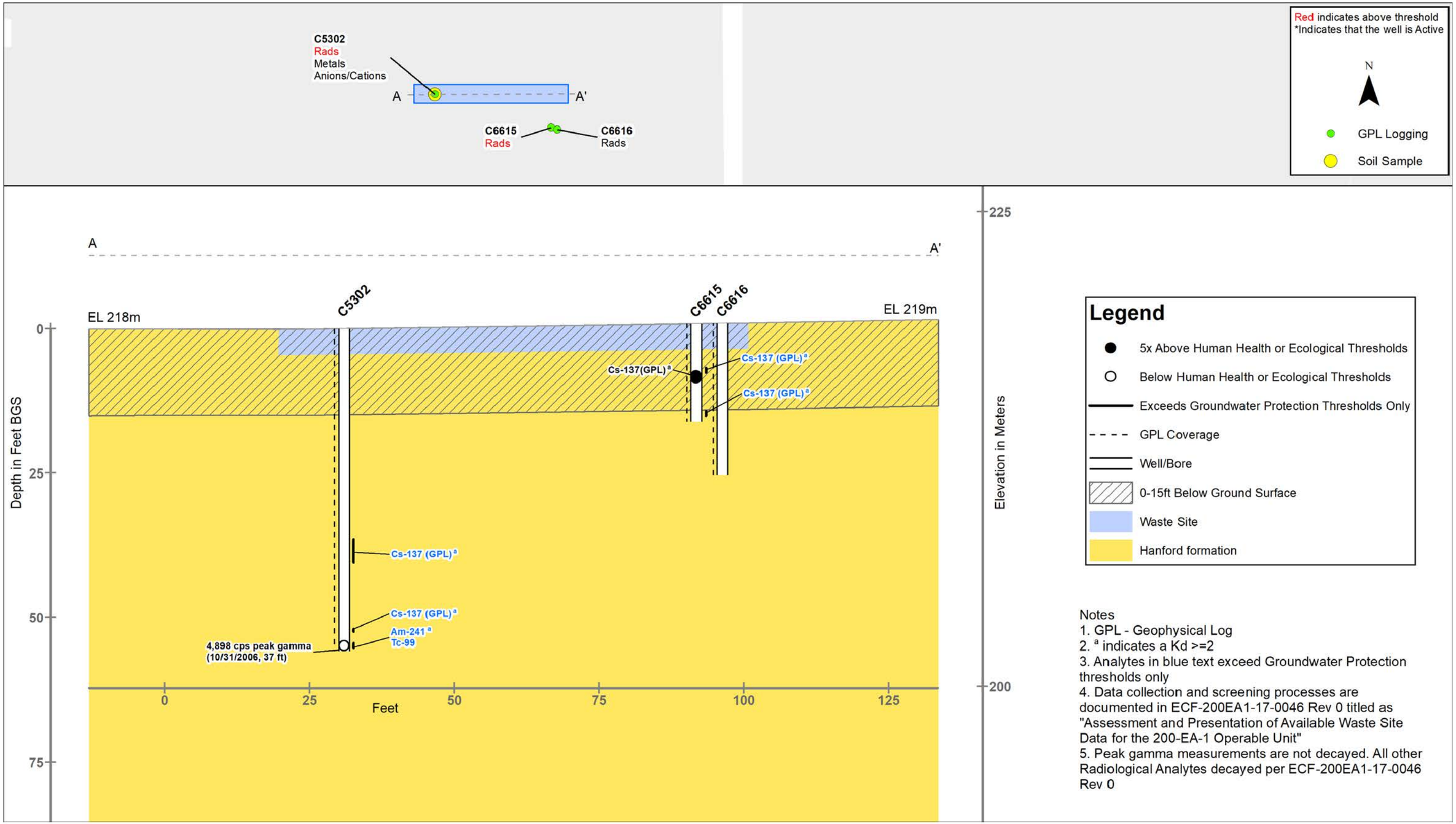
200-EA-1 OU

- 216-A-2 (Crib)
- 216-A-4 (Crib)

200-IS-1 OU

- 200-E-193-PL
- 200-E-196-PL
- 200-E-253-PL

Scoping Summary: 200-E-102 (Trench)


C5302
Rads
Metals
Anions/Cations
A
A'
C6615
Rads
C6616
Rads
Red indicates above threshold
*Indicates that the well is Active
N
GPL Logging
Soil Sample
A
A'
EL 218m
EL 219m
C5302
C6615
C6616
Cs-137(GPL)[a]
Cs-137 (GPL)[a]
Cs-137 (GPL)[a]
Cs-137 (GPL)[a]
Cs-137 (GPL)[a]
Am-241[a]
Tc-99
4,898 cps peak gamma
(10/31/2006, 37 ft)
Depth in Feet BGS
0
25
50
75
Feet
0
25
50
75
100
125
Elevation in Meters
225
200
Legend
5x Above Human Health or Ecological Thresholds
Below Human Health or Ecological Thresholds
Exceeds Groundwater Protection Thresholds Only
GPL Coverage
Well/Bore
0-15ft Below Ground Surface
Waste Site
Hanford formation
Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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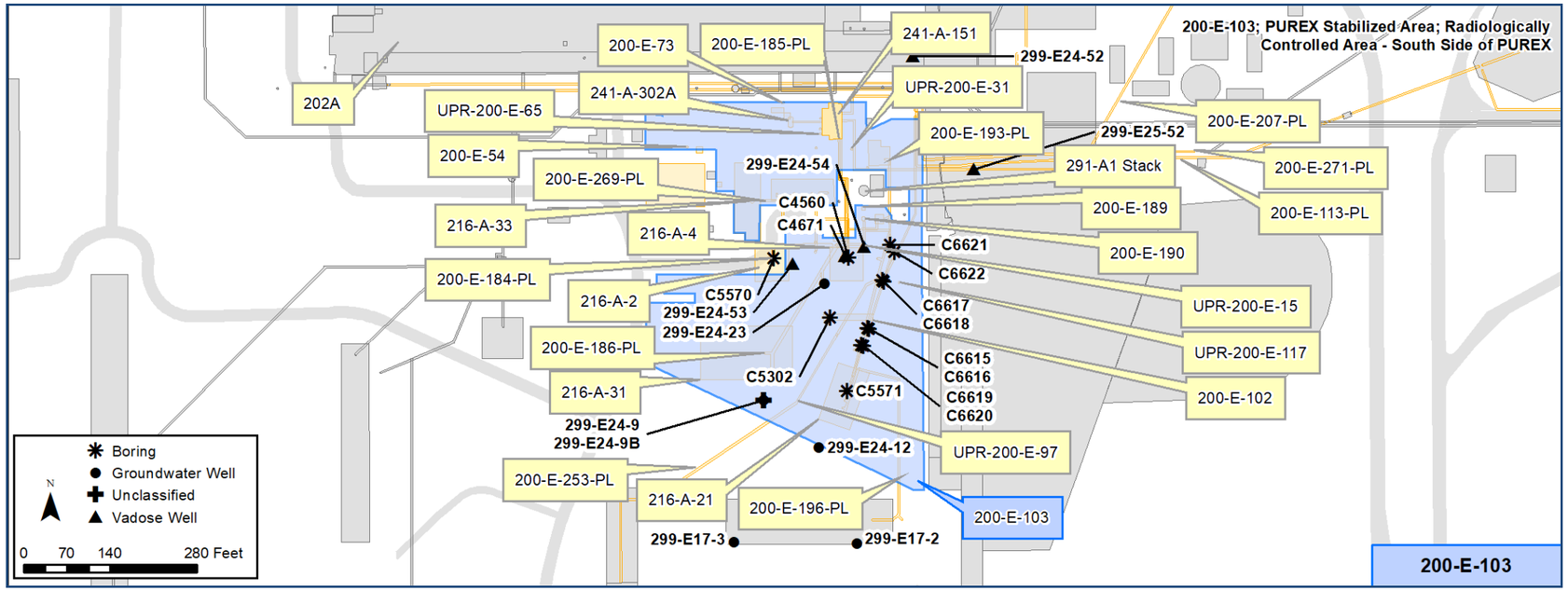
Scoping Summary: 200-E-103 (Unplanned Release)

History

The 200-E-103 waste site is the inactive PUREX stabilized area. This waste site was established in 1999 after large contamination areas (CAs) were interim stabilized and the entire area was down-posted to an Underground Radioactive Material Area (URMA).

This area was contaminated with radioactive particles from fallout and transfer line overflows since early 1956, including multiple events originating from the 241-A-151 diversion box. Random contamination specks to larger ground contamination areas have been identified on multiple occasions over the years. Most of the stabilized area has been excavated many times. Various unanticipated levels of radiological soil contamination have been discovered. When detected, it was sometimes removed, contained, and sent to appropriate burial grounds, but other times left in place, covered, and then posted.

Interim stabilization activities included adding approximately 6 inches of crushed rock to all accessible areas within the former CAs. The stabilized area overlays 29 other waste sites. Ten monitoring wells and 13 boreholes have been drilled in the footprint or immediate vicinity of the site.



Construction

- Area: 161,020 square ft (3.7 acres)
  - *Note: The original footprint of this waste site was 4.3 acres, but only 3.7 acres were able to be stabilized in 1999. The remaining 0.6 acres were not stabilized due to inaccessibility, remaining equipment, or incomplete required decontamination prior to down-posting.*

Features Of Interest

Monitoring Wells and Boreholes:

- *Perimeter Wells:* 299-E24-52, 299-E25-52, 299-E17-2, 200-E17-3
- *Interior Wells:* 299-E24-12, 299-E24-9/9B, 299-E24-23, 299-E24-53, 299-E24-54
- *Boreholes:* C5570, C4671, C4560, C6621, C6622, C6618, C6617, C5302, C6615, C6616, C6619, C6620, C5571.

Relevant Characterization

- 1956: particles on the ground in immediate vicinity of 291-A Stack at levels up to 30,000 dpm, beta.
- 1957: ground surface contamination levels from 100 to 600 mrads/hr.
- 2013: radiological surface survey of the waste site registered no action level exceedances.

Waste Streams

- 291-A1 stack emissions, including ammonia nitrate and iodine;
- Process Distillate Discharge (PDD) transfer line overflows to ground surface via vent lines.
- Multiple steam releases from 241-A-151 Diversion Box.

Misc./Other Relevant Information

- The PUREX Plant began undergoing stabilization activities and deactivation as early as 1990. The size and number of contaminated areas were reduced, and regulated items were bundled in central locations to minimize contaminated areas.
- The 1999 stabilization activity goals were to reduce worker risk, simplify ongoing surveillance and maintenance, and transform the site to a safer, more stable area while awaiting resolution/final action.

Site Interfaces

Site Intersects:

200-IS-1 OU
- 200-E-113-PL
- 200-E-184-PL
- 200-E-185-PL
- 200-E-186-PL
- 200-E-189 (Carbonate Neutralization Tank)
- 200-E-190 (CT)
- 200-E-193-PL
- 200-E-196-PL
- 200-E-207-PL
- 200-E-253-PL
- 200-E-269-PL
- 200-E-271-PL
- 200-E-309-PL

200-EA-1 OU
- 216-A-26 (Fr. Drain)
- 216-A-21 (Crib)
- 216-A-2 (Crib)
- 216-A-4 (Cavern)
- 216-A-33 (Dry Well)

200-PW-3 OU
- 216-A-31 (Crib)

200-CP-1 OU
- 200-E-73 (Injection Well)
- 241-A-151 (Div. Box)
- 241-A-302A (Catch Tank)

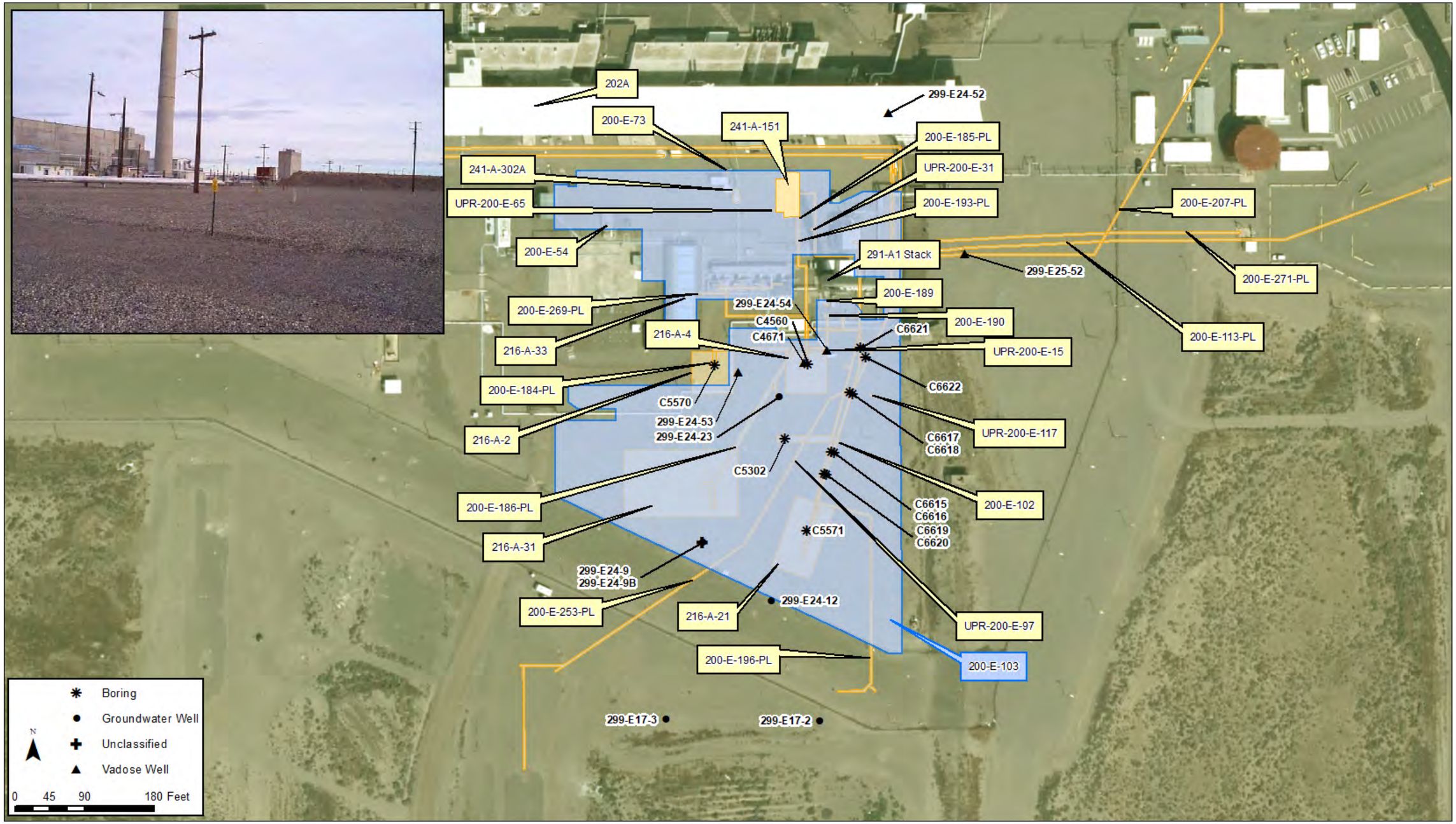
Not Applicable
- UPR-200-E-65

TBD
- 200-E-102 (Contaminated Soil Trench)

Consolidated (into 200-E-103)
- UPR-200-E-97
- UPR-200-E-15
- UPR-200-E-117
- UPR-200-E-31

200-E-54 (Liquid Release)

Scoping Summary: 200-E-103 (Unplanned Release)



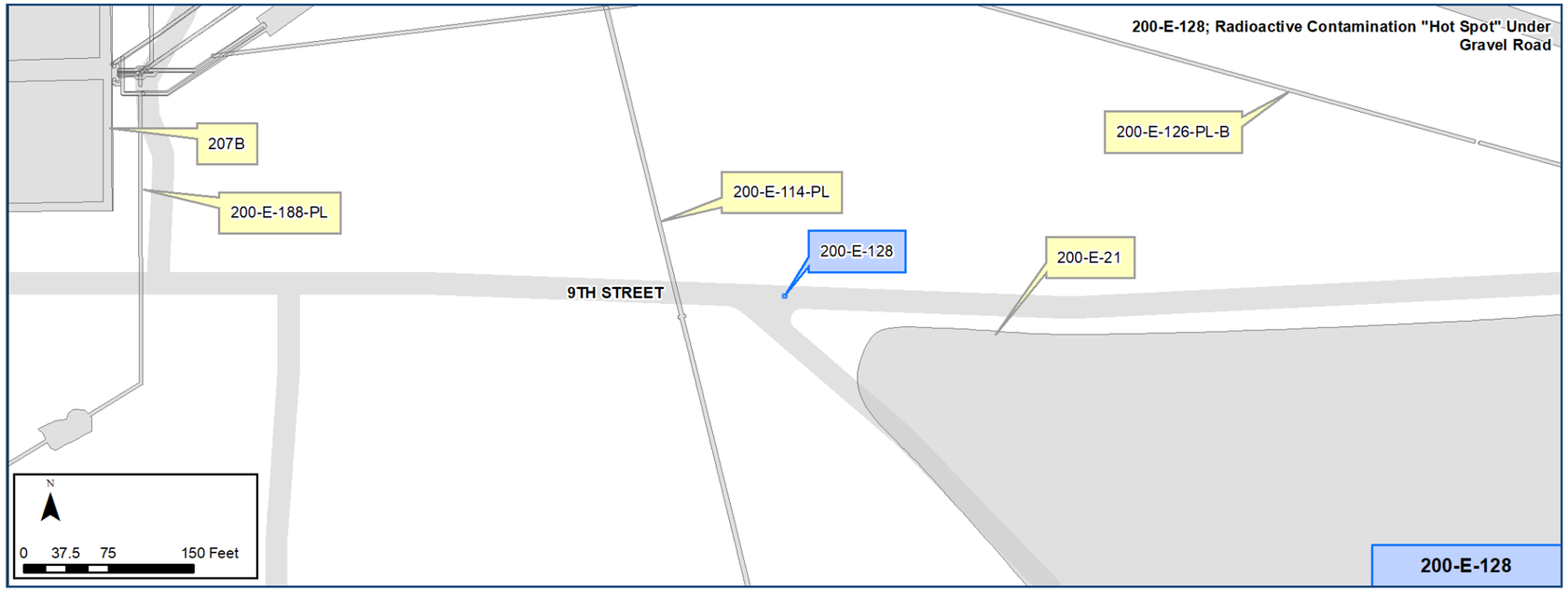
Scoping Summary: 200-E-128 (Unplanned Release)

History

The 200-E-128 waste site is an unplanned release identified as a radioactive contamination hot spot under an east-west gravel road south and east of the 207-B Retention Basin. There is no visible evidence of a release or spill.

In 1995, the road was posted as underground radioactive materials area (URMA) on either side of the spot, as the road remained trafficked on a regular basis.

In 2001, interviews with relevant personnel revealed that a 6-inch-by-6-inch area of the gravel road had a history of causing the road and rail monitor to alarm. When six inches of soil was temporarily removed from this spot in 2001 for a subsequent radiological survey, the excavated soil had no radiological detections; however, the survey reading on the road from the excavated area increased indicating radiological contamination at depth.



Construction

- The site was first identified as a 6-inch by 6-inch hot spot; in 2015, it was increased to a 3-foot by 3-foot area.

Features Of Interest

- The site is 93 ft due east of where the underground B/C transfer line (200-E-114-PL) is posted. The line was posted, based on historical drawings and other sites, so may be inexact.
- In a 2001 digital image, this site appears to be directly above underground 200-E-114-PL pipeline, although that line is not shown on the image. In more recent images, the site has been shifted further east, but perhaps the signs are indeed directly above this 200-IS-1 Operable Unit waste site.

Relevant Characterization

- 2001: radiological survey from surface of gravel road was 1,000 cpm/100 cm2 (direct gross beta).
- 2015: 1,020 cpm/100 cm2 (direct gross beta), and background at 220 cpm/100 cm2.
- 2015: 1,424 cpm/100 cm2 (direct gross beta), and background at 224 cpm/100 cm2.

Waste Streams

- No information.

Misc./Other Relevant Information

- The 200-E-114-PL transported 31 million gal of scavenged TBP supernatant between 1956 and 1958:
  - Ferrocyanide, nitrate, phosphate, sodium, sulfate, Co-60, Cs-137, Sr-90, Ru-106, Pu and U
- An additional 700,000 gal of liquid waste from the Plutonium Recycle Test Reactor was transported by tanker truck and may have been introduced to the 200-E-114-PL pipeline prior to its closure in 1967.

Site Interfaces

Nearby Sites:

200-IS-1 OU

- 200-E-114-PL (pipeline)
- 200-E-188-PL (pipeline)
- 200-E-126-PL-B (pipeline)

200-EA-1 OU

- 207-B (Retention Basin)
- 200-E-21 (Active Borrow Pit)

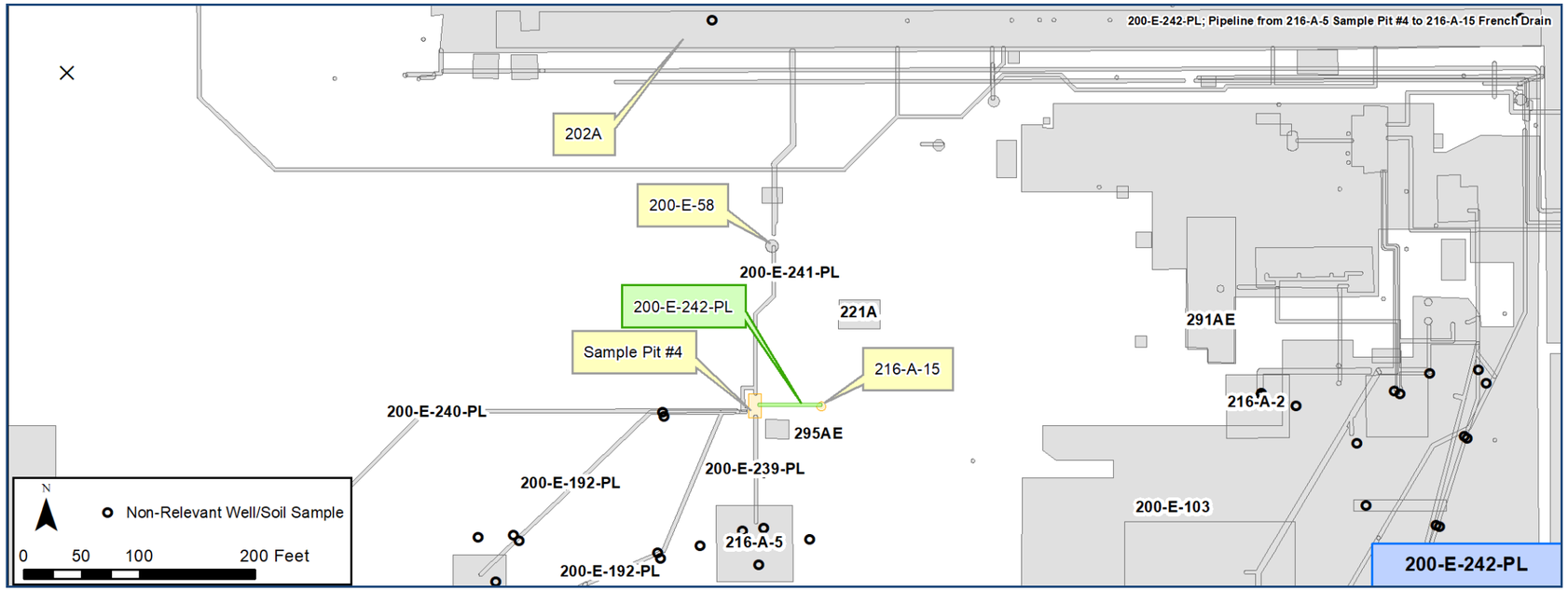
Scoping Summary: 200-E-128 (Unplanned Release)

Scoping Summary: 200-E-242-PL (Pipeline)

History

The 200-E-242-PL waste site is an inactive underground pipeline that carried 202A PUREX facility process condensate and storm water from Sample Pit No. 4 to the 216-A-15 french drain. The operational period can be correlated to the sample pit and french drain, which both began in 1955 and ended in 1972.

The sample pit cover block was sealed in 1972, all pit penetrations were cut and openings sealed with aluminum plates. By 1987 the 200-E-242-PL pipeline was filled with grout and sealed.



Construction

- Length: 50 ft
- Diameter: 4 in.
- Composition: Stainless Steel
- Gravity Flow
- Encasement: Direct Buried
- Depth: 33 ft bgs
- Calculated Volume: 33 gal

Features Of Interest

- One 'pipe trap' feature as the pipeline exits the sample pit

Relevant Characterization

- No direct characterization data for the pipeline or adjacent soil was located
- A 2015 radiological soil survey of the 216-A-15 french drain determined radiation to be < 5000 dpm/100 cm-2 beta/gamma

Waste Streams

- PUREX (202A) acidic process condensate
- Storm water runoff
- Low organic, low salts
- 216-A-15 french drain waste contained less than 50 Ci total beta
- Approximately 2,640,000 gal of total waste discharged to the 216-A-15 french drain
- A neutralization tank (200-E-58) operated upstream of Sampler Pit #4 to preclude the discharge of process condensate outside the range of 2.0 and 12.5 pH units

Misc./Other Relevant Information

- No additional information.

Site Interfaces

Origin/Termination:

200-EA-1 OU
- 216-A-15

OU Unassigned
- Sample Pit No. 4

Nearby/Intersecting Sites:

Facility
- 202A (PUREX facility)

200-EA-1 OU
- 216-A-5 (Crib)
- 200-E-58 (Neutralization Tank)

200-IS-1 OU
- 200-E-239-PL
- 200-E-240-PL
- 200-E-241-PL

Scoping Summary: 200-E-242-PL (Pipeline)

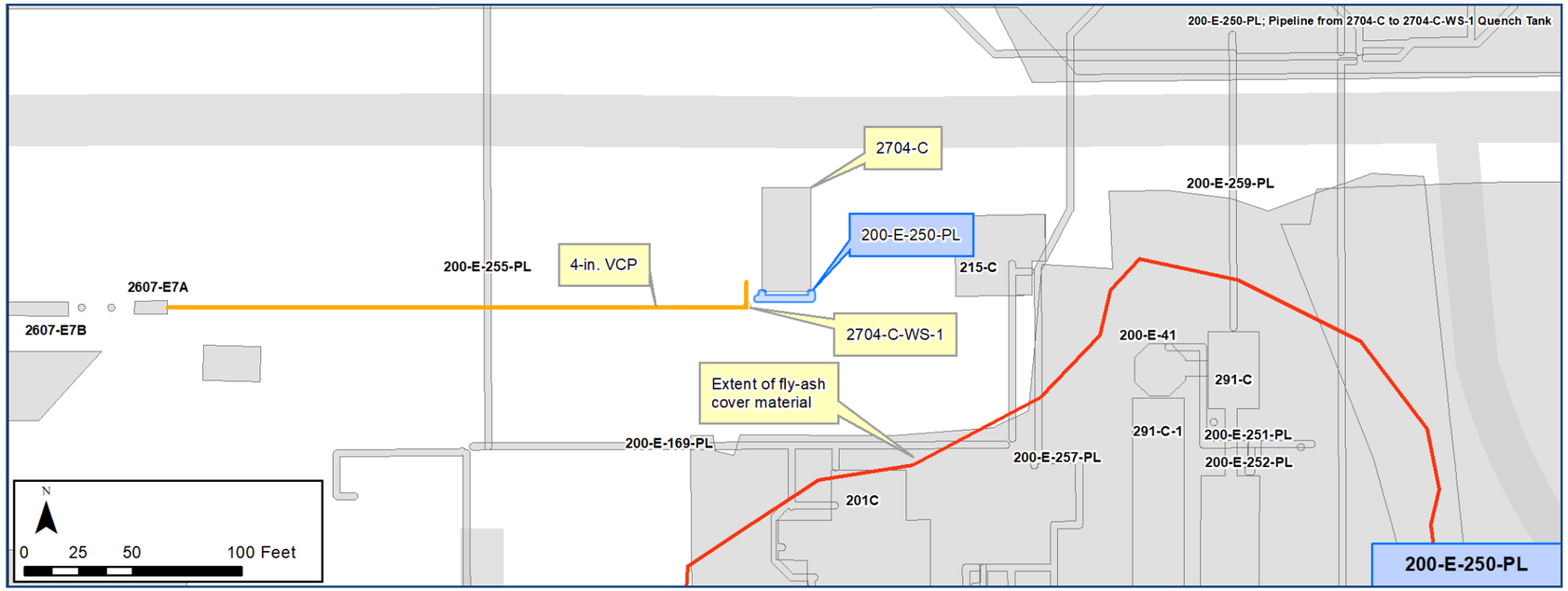
Scoping Summary: 200-E-250-PL (Pipeline)

History

The 200-E-250-PL waste site is an inactive underground pipeline that carried radiator condensate from the 2704C Office Building and Gatehouse to the 2704-C-WS-1 quench tank located at the southwest corner of the building. The pipeline and Building 2704C were constructed in 1949, and in use until 1998, when the 2704C building was decontaminated and demolished.

2704C was built to support the Hot Semi-works operations. The building contained a security office, a lunchroom, and a toilet. During the 1980's, it housed the 200 East Tank Farms Health Physics Office. The slab remained after demolition, so the origins of 200-E-250-PL are most likely capped where they previously attached to radiators within the building.

After demolition gravel was spread over the 2704C slab and surrounding area. The quench tank is no longer visible. It may have been removed during demolition, but no records were located to verify its removal or continued existence. This area is now posted as an Underground Radioactive Material Area (URMA).



Construction

- Length:
  - Pipeline connecting to the east side of 2704-C: 27.2 ft
  - West radiator pipeline: 2.6 ft
- Diameter: 2 in.
- Composition: Carbon Steel
- Gravity drained
- Direct buried
- Depth: 0.5 ft to 2.5 ft bgs
- Total Calculated Volume: 1.3 gal
  - Pipeline connecting to the east side of 2704-C: 1.2 gal
  - West radiator pipeline: 0.12 gal

See Page 3 for a construction diagram of the 200-E-250-PL original connection points.

Features Of Interest

- Two vertical drops (two elbows each)
- One elbow
- One tee

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil

Waste Streams

- 2704-C Office Building
- Radiator condensate

Misc./Other Relevant Information

- 2704C Building was designated contaminated in 1998
- The 2704-C-WS-1 quench tank was inconsistently marked as contaminated
  - In 1991 the drain cover was painted yellow and posted with a tri-foil, indicating contamination
  - In 1993, the site was described as having no radiological posting or markings

Site Interfaces

Origin/Termination

OU Not Assigned

- 2704C (demolished building)

200-EA-1 OU

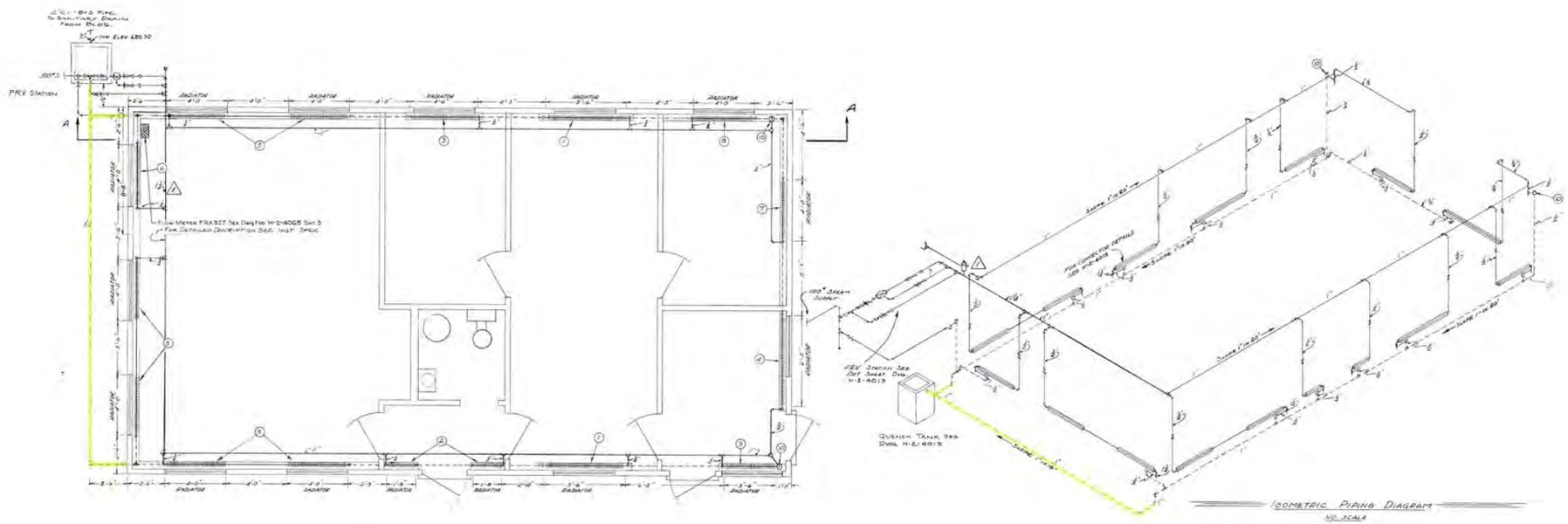
- 2704-C-WS-1

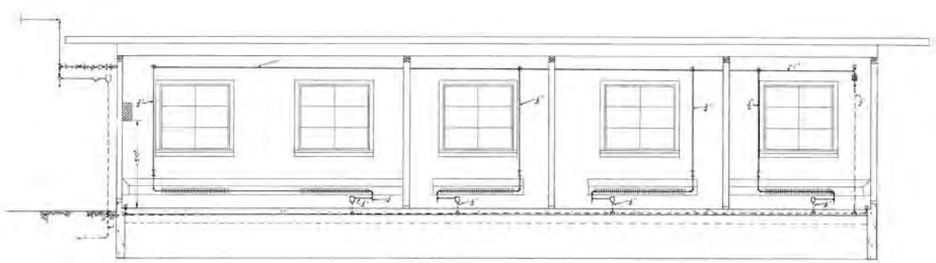
Nearby/Intersecting Sites

200-EA-1 OU

- 2607-E7A (Septic Tank)
- 2607-E7B (Septic Tank)

Scoping Summary: 200-E-250-PL (Pipeline)





CONVECTOR RADIATOR SCHEDULE

MARK	NO. REQD	BTU/HR.	FINNED PIPE LENGTH	ENCLOSURE LENGTH	SUPPLY VALVE	THERMOSTATIC TRAP	NO. PIPE HANGERS
1	2	234	5'-6"	6'-6"	3/4"	1/2"	3
2	2	83	1'-8"	2'-3"	1/2"	1/2"	2
3	1	116	2'-6"	3'-6"	1/2"	1/2"	2
4	1	233	5'-0"	6'-6"	3/4	1/2	3
5	4	117	4'-0"	SEE NOTE 2	3/4	1/2	2
6	1	117	4'-0"	SEE NOTE 2	3/4"	1/2"	2
7	1	117	4'-0"	SEE NOTE 1	1/2"	1/2"	2
8	1	117	4'-0"	SEE NOTE 1	1/2"	1/2"	2
9	1	116	3'-6"	4'-3"	1/2"	1/2	2
10	2					1/2 (DRIPS)	

NOTE 1 - TOTAL ENCLOSURE LENGTH 7'-3" + 11'-6" 45° OUT CORNER

NOTE 2 - TOTAL ENCLOSURE LENGTH 14'-9" + 21'-6" + 14'-9" 90° CORNERS

NONE

Dwg. No.	TITLE
H-2-6198	DWG SCHEDULE
H-2-4100	SANITARY WASTE
H-2-4053	OUTSIDE LINES
H-2-4013	HEATING DETAILS
H-2-4003	ARCHITECTURAL

REFERENCE DRAWINGS

No.	Description	By	Date	Appd.	Date	Appd.
2	CHECKED FOR ASBUILT	CMC	11/13/51			
1	PROJECT COMPLETE (22222)					
0	ALTERED PIPING TO 2704-C	CMC	10/17/51			

REVISIONS

SCALE AS NOTED

APPROVALS	By	Dept	Date
Drawn by PCB MARCH 18, 1950			6-14-50
Checked by KP Hill Date		Tech	6-27-50
Date		MFD	7-6-50
		H.L.	7-19-50
		ABC	8-24-50
Engineer Rep. No. A-546			
Project No. C-369		Design	9-6-50

GENERAL ELECTRIC CO.
HANFORD WORKS
DESIGN DIVISION

85 01

HOT SEMIWORKS
OFFICE
HEATING

Bldg. Nos. 2704-C

Dwg. No. H-2-4012

A-546

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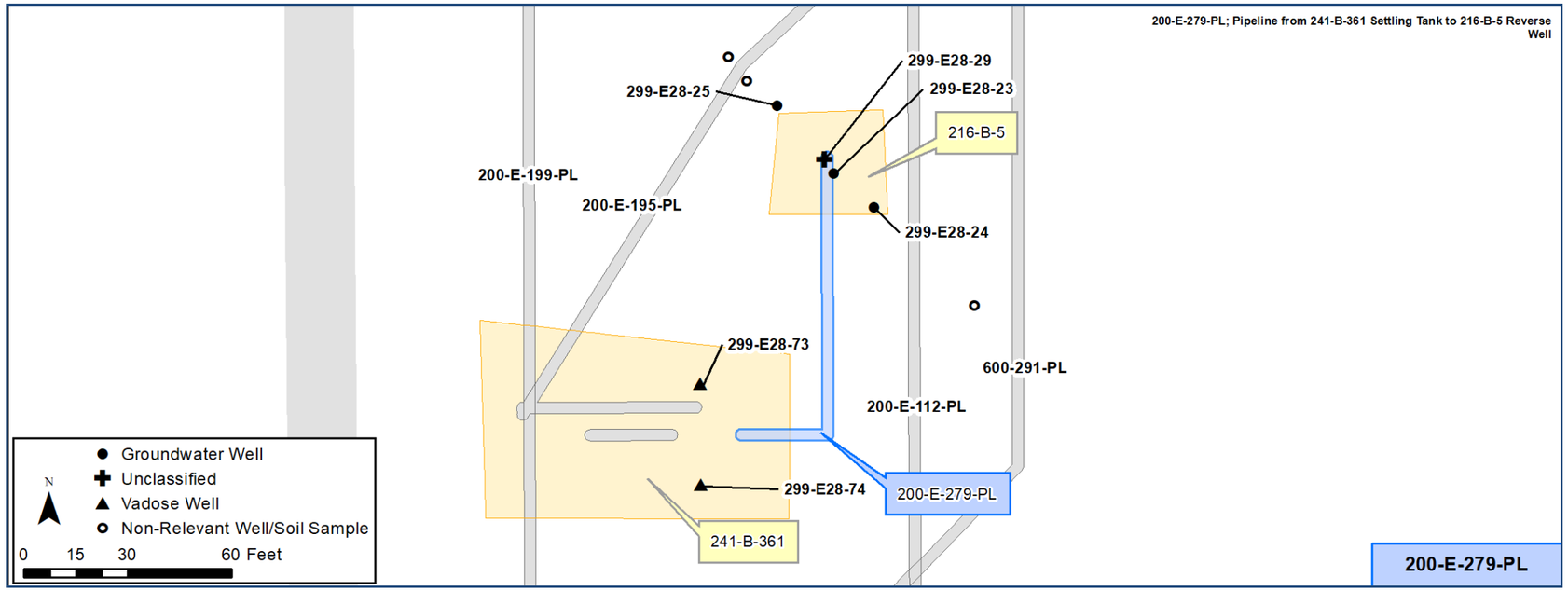
Scoping Summary: 200-E-279-PL (Pipeline)

History

The 200-E-279-PL waste site is an inactive underground radioactive process sewer pipeline that transferred B-Plant wash waste supernatant from the 241-B-361 settling tank to the 216-B-5 reverse well. The pipeline operated from 1945 to 1947, when the settling tank, reverse well and 200-E-279-PL were removed from service. The pipeline inlet to the reverse well was blanked when the well reached radionuclide capacity.

Termination was due to the identification of alpha contamination in a groundwater sample taken from well 299-E33-18, over 2,000 ft north of the reverse well. Subsequent sampling found this initial analysis to be incorrect and that the groundwater was not contaminated. Two characterization groundwater studies were done in 1948 and 1980 in the vicinity of 216-B-5 Reverse well and determined that there was no evidence of any settling tank or pipeline leaks.



Construction

- Length: 105 ft
- Diameter: 2 in.
- Composition: Stainless Steel (may be degraded by Tech. 99)
- Gravity flow
- Direct Buried
- Depth: 11.5 ft to 13 ft bgs
- Calculated volume: 18 gal

Features Of Interest

- 3 in. x 2 in. reducer at the outlet of 241-B-361 Settling Tank
- 90-degree bend

Relevant Characterization

- No direct characterization data was located for the site
- 299-E28-23: Cs-137 was detected within the top 15 ft adjacent to the pipeline at the pipe end (2001)
- 299-E28-73: No man-made radionuclides detected during logging.
- 299-E28-74: Cs-137 detected 1 ft bgs with activity near its MDL of 0.2 pCi/g.
- Groundwater monitoring for the 200-BP interest area primarily found Sr-90 and nitrate near the 216-B-5 (2013)

Waste Streams

- 221B (B Plant)
  - Low-salt radioactive BiPO4 wash waste from the 5-6W cells
  - Included 4,270 g Pu, 3,800 Ci β, 75.6 Ci Sr-90, 80.7 Ci Cs-137, 163 Ci Ru-106
- 8.08 million gallons of waste disposed through 200-E-279-PL
  - Estimated 4.7 lbs of plutonium
- 1998 radionuclide inventory for 216-B-5 includes Sr-90, Tc-99, Sb-125, Cs-137, Sm-151, and Eu-154 (HNF-1744)

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

200-DV-1 OU

- 216-B-5 (Reverse Well)

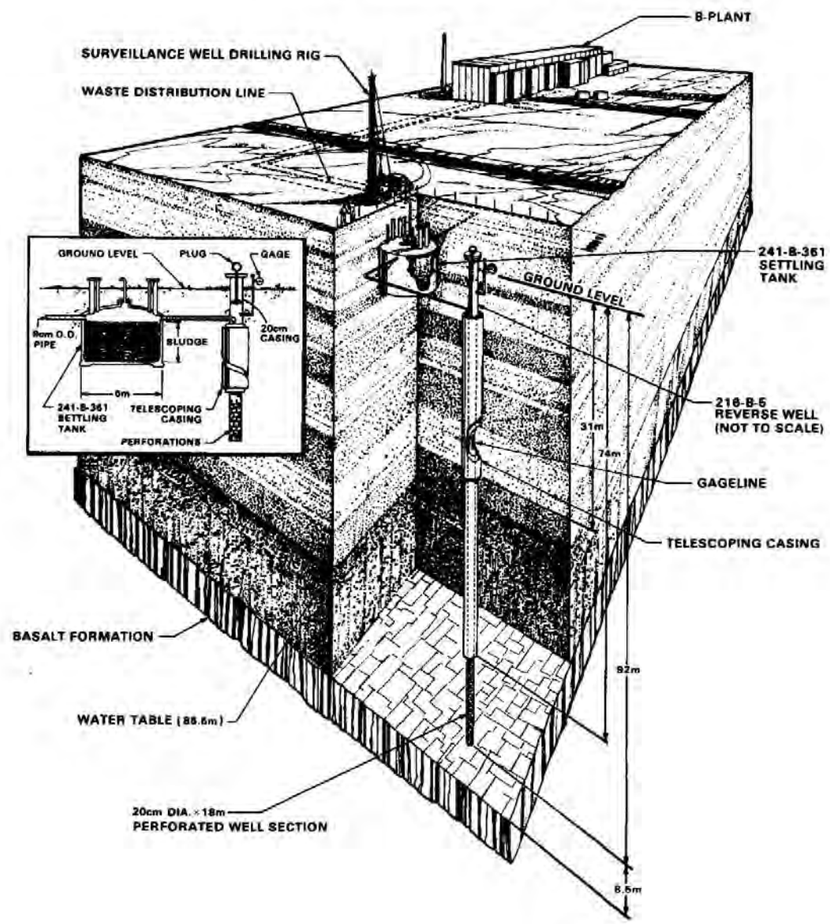
200-EA-1 OU

- 241-B-361 (Settling Tank)

Scoping Summary: 200-E-279-PL (Pipeline)

Figure 1

Three-Dimensional View of 241-B-361 Settling Tank and Reverse Well (WMP-31915, Rev. 0)



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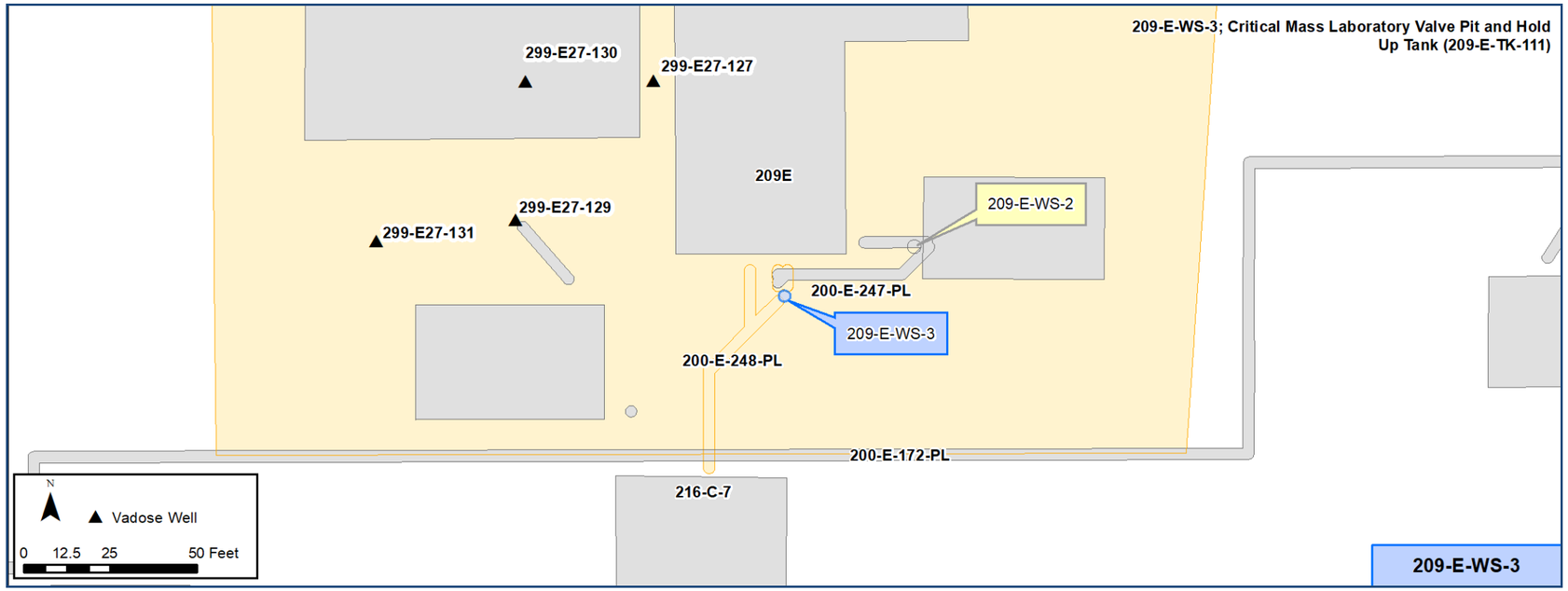
Scoping Summary: 209-E-WS-3 (Valve Pit)

History

The 209-E-WS-3 waste site is an inactive, underground ground Valve Pit and Hold Up Tank (209-E-TK-111) that received condensate waste from the 209E Critical Mass Laboratory via the 200-E-248-PL pipeline. The site is located near the south end of 209E.

The valve pit was operational from 1960 to 1989 (approximate). The Laboratory conducted criticality experiments using plutonium nitrate and enriched uranium solutions from 1960 to 1983. Discharges to the valve pit were held and settled in the tank, located beneath the pit, before being discharged to the 216-C-7 Crib. The crib was placed on standby in 1983.

The Lab was prepared for closure and decommissioning in the late 1980s, and was unoccupied until it was decontaminated and demolished in December 2011. In October 2011, the work to disconnect, cut, and plug the fives lines in the valve pit was completed. Tank-111 was isolated during demolition preparation work. The metal lid was then placed back over the valve pit, and gravel backfill was not applied at the time as there were other lines still in the valve pit not part of the work scope.



Construction

- Length: 7 ft
- Width: 5 ft
- Depth: 7 ft
- Total Volume Capacity: 50 gal (209-E-TK-111)
- Material: concrete
- TK-111 is a thin, cadmium-lined tank
- Number of incoming and outgoing pipelines:
  - Incoming Pipelines: 1
  - Outgoing Pipelines: 1
- Unit has a metal cover and is painted yellow
- Valve Pit formerly was at an elevation 3 ft ag but reportedly now sits inches above the top of the thick gravel cap that covers the entire 209E site
- Ventilation stack and fan assembly for 209E are located at this location
- Pages 3 shows the Valve Pit and page 4 shows the Hold Up Tank engineering documents related to 209-E-WS-3

Features Of Interest

- No features of interest identified

Relevant Characterization

- The passively ventilated TK-111 drain tank was sampled routinely and plutonium levels were determine to be below limits for discharging to a crib
- 2015 radiological survey for the 209-E-WS-3 area recorded <5,000 dpm/100 cm-2 for total beta/gamma

Waste Streams

- Drain Wastes & Cooling Water
  - Condensate containing low levels of plutonium was contained in the site prior to release to 216-C-7 Crib

Misc./Other Relevant Information

- Engineering Evaluation/ Cost Analysis for the 200-MG-1 Operable Unit Waste Sites Identified Remove Treatment and Dispose (RTD) as the preferred remedial action (DOE/RL-2008-44; Rev. 0).

Site Interfaces

Origin/Termination

200-IS-1 OU

- 200-E-172-PL (termination)
- 200-E-248-PL (origin)
- 209-E-TK-111 (subsite)

Intersecting/Nearby Sites

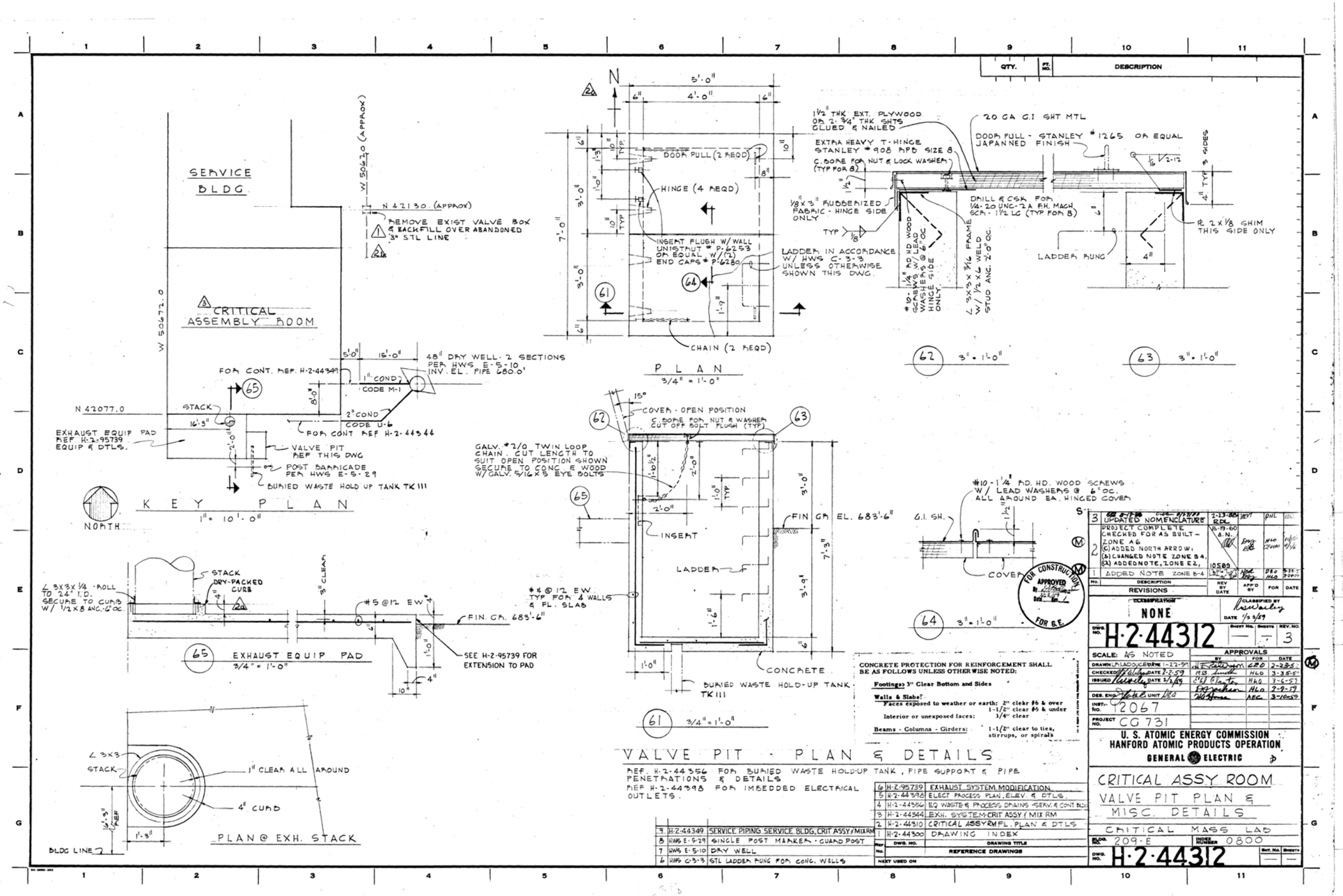
200-IS-1 OU

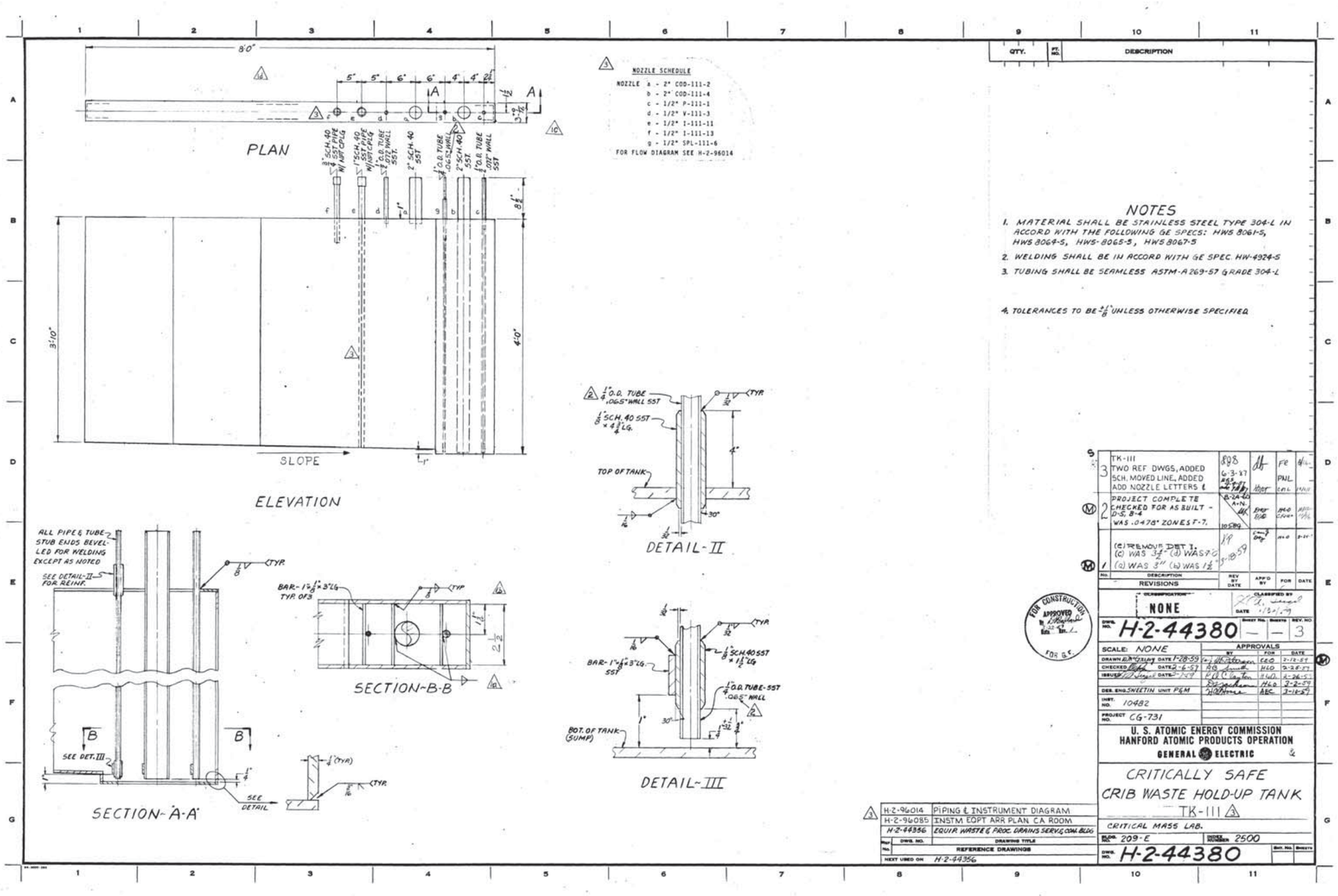
- 200-E-247-PL

Facility

- 209E (Critical Mass Laboratory)

Scoping Summary: 209-E-WS-3 (Valve Pit)


SERVICE BLDG.
CRITICAL ASSEMBLY ROOM
W 50472.0
W 50470 (APPROX)
N 42130 (APPROX)
REMOVE EXIST VALVE BOX & BACKFILL OVER ABANDONED 3" STL LINE
48" DRY WELL - 2 SECTIONS PER HWS E-5-10, INV. EL. PIPE 680.0'
FOR CONT. REF. H-2-44349
1" COND
CODE M-1
2" COND
CODE U-6
FOR CONT REF H-2-44344
N 42077.0
STACK
EXHAUST EQUIP PAD REF H-2-95739 EQUIP & DTLS.
VALVE PIT REF THIS DWG
POST BARRICADE PER HWS E-5-29
BURIED WASTE HOLD UP TANK TK 111
KEY PLAN
1" = 10'-0"
NORTH
PLAN
3/4" = 1'-0"
DOOR PULL (2 REQD)
HINGE (4 REQD)
INSERT FLUSH W/ WALL UNISTRUT # P-6253 OR EQUAL W/ (2) END CAPS # P-6280
LADDER IN ACCORDANCE W/ HWS C-3-3 UNLESS OTHERWISE SHOWN THIS DWG.
CHAIN (2 REQD)
1½" THK EXT. PLYWOOD OR 2-¾" THK SHTS GLUED & NAILED
20 GA G.I. SHT MTL
DOOR PULL - STANLEY #1265 OR EQUAL JAPANNED FINISH
EXTRA HEAVY T-HINGE STANLEY #908 PPD SIZE 8
C. BORE FOR NUT & LOCK WASHER (TYP FOR 8)
⅛" X 3" RUBBERIZED FABRIC - HINGE SIDE ONLY
DRILL & CSK FOR ¼-20 UNC-2A F.H. MACH SCR - 1½ LG (TYP FOR 8)
#10 - 1¼" RD. HD. WOOD SCREWS W/ ½" X 8 WASHERS @ 6" OC. HINGE SIDE ONLY
L 9X9X 9/16 FRAME W/ ½ X 6 WELD STUD ANC. 2'-0" OC.
LADDER RUNG
PL 2 X ⅛ SHIM THIS SIDE ONLY
62 3" = 1'-0"
63 3" = 1'-0"
COVER - OPEN POSITION
C. BORE FOR NUT & WASHER CUT OFF BOLT FLUSH (TYP)
GALV. #2/0 TWIN LOOP CHAIN. CUT LENGTH TO SUIT OPEN POSITION SHOWN SECURE TO CONC & WOOD W/ GALV. 5/16 X 5 EYE BOLTS
INSERT
LADDER
FIN GR EL. 683'-6"
CONCRETE
BURIED WASTE HOLD-UP TANK TK 111
61 3/4" = 1'-0"
#10 - 1¼" RD. HD. WOOD SCREWS W/ LEAD WASHERS @ 6" OC. ALL AROUND EA. HINGED COVER
G.I. SH.
COVER
64 3" = 1'-0"
FOR CONSTRUCTION APPROVED FOR G.E.
STACK
DRY-PACKED CURB
∠ 3X3X¼ ROLL TO 24" I.D. SECURE TO CURB W/ ½X8 ANC. 6" OC.
3" CLEAR
#5 @ 12 EW
FIN. GR. 683'-6"
SEE H-2-95739 FOR EXTENSION TO PAD
65 EXHAUST EQUIP PAD
3/4" = 1'-0"
∠ 3X3
STACK
1" CLEAR ALL AROUND
4" CURB
PLAN @ EXH. STACK
BLDG LINE
CONCRETE PROTECTION FOR REINFORCEMENT SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:
Footings: 3" Clear Bottom and Sides
Walls & Slabs: Faces exposed to weather or earth: 2" clear #6 & over; 1-1/2" clear #5 & under
Interior or unexposed faces: 3/4" clear
Beams - Columns - Girders: 1-1/2" clear to ties, stirrups, or spirals
VALVE PIT - PLAN & DETAILS
REF. H-2-44356 FOR BURIED WASTE HOLD-UP TANK, PIPE SUPPORT & PIPE PENETRATIONS & DETAILS
REF H-2-44398 FOR IMBEDDED ELECTRICAL OUTLETS.
9 H-2-44349 SERVICE PIPING SERVICE BLDG, CRIT ASSY/MIX RM
8 HWS E-5-29 SINGLE POST MARKER - GUARD POST
7 HWS E-5-10 DRY WELL
6 HWS C-3-3 STL LADDER RUNG FOR CONC. WELLS
6 H-2-95739 EXHAUST SYSTEM MODIFICATION
5 H-2-44396 ELECT PROCESS PLAN, ELEV. & DTLS.
4 H-2-44356 EQ WASTE & PROCESS DRAINS - SERV. & CONT BLDG
3 H-2-44344 EXH. SYSTEM - CRIT ASSY / MIX RM
2 H-2-44310 CRITICAL ASSY RM FL. PLAN & DTLS
1 H-2-44300 DRAWING INDEX
REFERENCE DRAWINGS
3 UPDATED NOMENCLATURE
2 PROJECT COMPLETE CHECKED FOR AS BUILT - ZONE A6 (C) ADDED NORTH ARROW; (A) CHANGED NOTE ZONE B4, (B) ADDED NOTE, ZONE E2,
1 ADDED NOTE ZONE B-4
REVISIONS
NONE
H-2-44312
SCALE: AS NOTED
APPROVALS
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
CRITICAL ASSY ROOM
VALVE PIT PLAN & MISC. DETAILS
CRITICAL MASS LAB
209-E
0800
H-2-44312


PLAN
ELEVATION
SLOPE
NOZZLE SCHEDULE
NOZZLE a - 2" COD-111-2
b - 2" COD-111-4
c - 1/2" P-111-1
d - 1/2" V-111-3
e - 1/2" I-111-11
f - 1/2" I-111-13
g - 1/2" SPL-111-6
FOR FLOW DIAGRAM SEE H-2-96014
DETAIL-II
DETAIL-III
SECTION-A-A
SECTION-B-B
ALL PIPE & TUBE STUB ENDS BEVELLED FOR WELDING EXCEPT AS NOTED
SEE DETAIL-II-5 FOR REINF.
SEE DET. III
SEE DETAIL
BOT. OF TANK (SUMP)
TOP OF TANK
NOTES
1. MATERIAL SHALL BE STAINLESS STEEL TYPE 304-L IN ACCORD WITH THE FOLLOWING GE SPECS: HWS 8061-5, HWS 8064-5, HWS-8065-5, HWS 8067-5
2. WELDING SHALL BE IN ACCORD WITH GE SPEC. HW-4924-5
3. TUBING SHALL BE SEAMLESS ASTM-A 269-57 GRADE 304-L
4. TOLERANCES TO BE ±1/8" UNLESS OTHERWISE SPECIFIED
QTY.
DESCRIPTION
TK-111
TWO REF DWGS, ADDED SCH. MOVED LINE, ADDED ADD NOZZLE LETTERS
PROJECT COMPLETE CHECKED FOR AS BUILT - D-5, B-4 WAS .0478" ZONE S T-7.
(c) REMOVE DET I. (c) WAS 3 1/2" (d) WAS 7'0" (a) WAS 3" (b) WAS 1 1/2"
REVISIONS
NONE
H-2-44380
SCALE: NONE
APPROVALS
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
CRITICALLY SAFE
CRIB WASTE HOLD-UP TANK
TK-111
CRITICAL MASS LAB.
209-E
2500
H-2-44380
H-2-96014 PIPING & INSTRUMENT DIAGRAM
H-2-96085 INSTM EQPT ARR PLAN CA ROOM
H-2-44356 EQUIP. WASTE & PROC. DRAINS SERV. & COM. BLDG.
REFERENCE DRAWINGS
NEXT USED ON H-2-44356

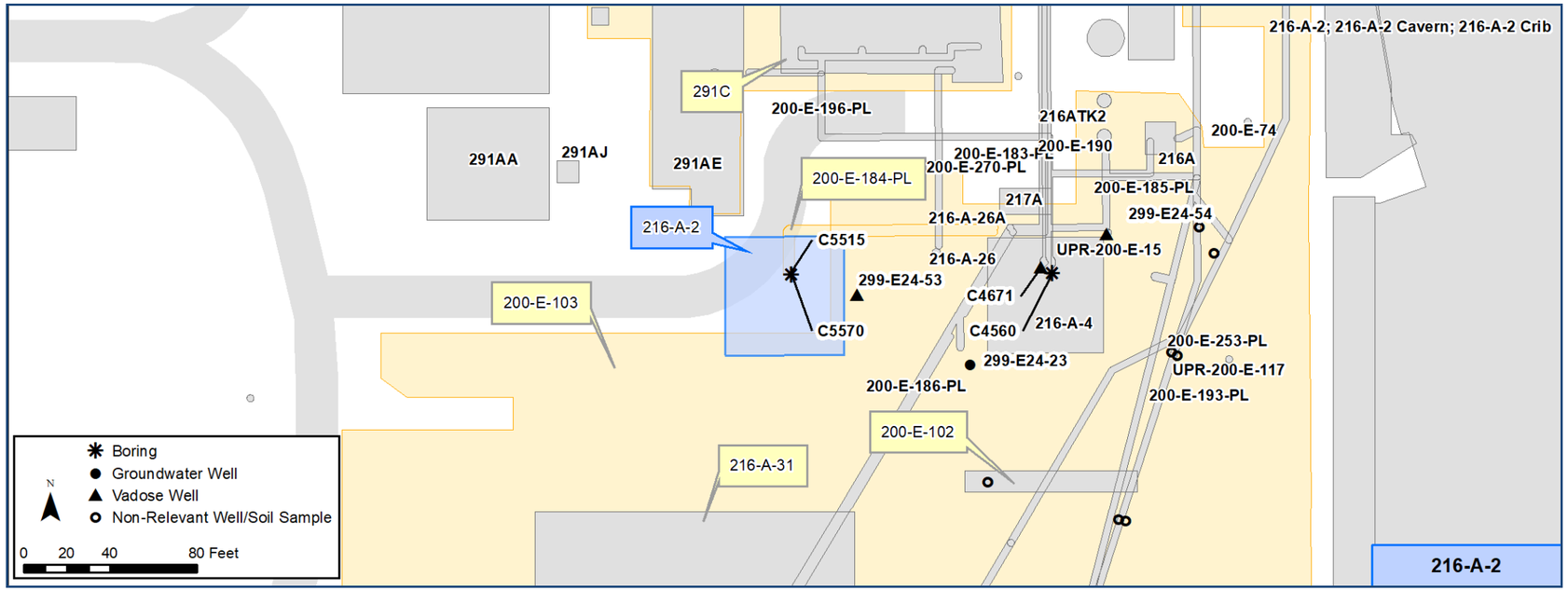
Scoping Summary: 216-A-2 (Crib)

History

The 216-A-2 waste site is an inactive crib that received liquid organic waste from the PUREX facility (202A building) via the 200-E-184-PL. The crib was operational from 1956 to 1963 (or 1960), when it was deactivated. There is a discrepancy for the recorded end date, which is either 1960 or 1963, but the recorded waste disposed (i.e. 61,000 gallons) is consistent.

The feeder pipelines into the crib were blanked and the effluent was rerouted to the 216-A-31 crib. The crib is currently covered with gravel within the PUREX Stabilized Area (200-E-103).

The 216-A-2 Crib was investigated pursuant to the RI/FS Report for the 200-MW-1 OU in 2008 (DOE/RL-2008-38, Draft A). Previous evaluations concluded there are no public health risks as there are no nonradiological or radiological contaminants of concern in the shallow zone (0-15 ft).



Construction

- Bottom of Crib:
  - Width and Length: 20 ft
  - Depth: 28 ft bgs
  - Grade: 1: 2
- Top of Crib:
  - Width and Length: 55 ft 4 in.
  - Depth: 21 ft bgs
  - Grade: 1: 1.5
- Dimensions of excavation surface:
  - Width and Length: 102 ft
- Distribution Pipelines: 3
  - One 6 in. perforated Vitrified Clay Pipe (VCP), 6 ft long, 21 ft bgs, with a 18 in. x 18 in. concrete pad
  - Two 20 ft lengths of 6 in. perforated VCP placed perpendicularly to the main distribution pipe, forming a T pattern
- Incoming Pipelines: 2
  - Two 4 in. inlet VCP
- 7 ft of coarse rock, then 2 layers of sand with sisalkraft paper and then 21 ft of earth backfill to grade
- 6 in. covering of crushed rock at the surface

Features Of Interest

- 1 large green vent riser at the surface

Relevant Characterization

- Surface radiological surveys completed in 2016 have total beta/gamma readings less than 5,000 dpm/100cm-2 (i.e., non-detect).
- Crib investigations from 2007 showed max readings at ~28 ft bgs: Cs-137 (~15.6M pCi/g), Am-241 (94 nCi/g), and Pu-239/240 (426 nCi/g).
- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data*

Waste Streams

- PUREX Plant - Plutonium-Uranium Extraction Process
  - Liquid organic waste from 202A Building and 241-A-151 Diversion Box
  - Waste streams included: nitrate, tri-butyl phosphate, normal paraffin hydrocarbons, and uranium
- Low salt and neutral to basic
- 61,000 gal waste disposed (~230,000 liters)

Misc./Other Relevant Information

- The amount of waste disposed was kept at 10% of the volume of the crib's cross section multiplied by the depth to water table (SGW-44795)
- The total volume disposed to 216-A-2 (61,000 gal) was small compared to many other Hanford cribs, such that operators must have been concerned about migration potential of certain contaminants (SGW-44795).

Site Interfaces

Origin/Termination:

200-IS-1 OU

- 200-E-184-PL

200-EA-1 OU

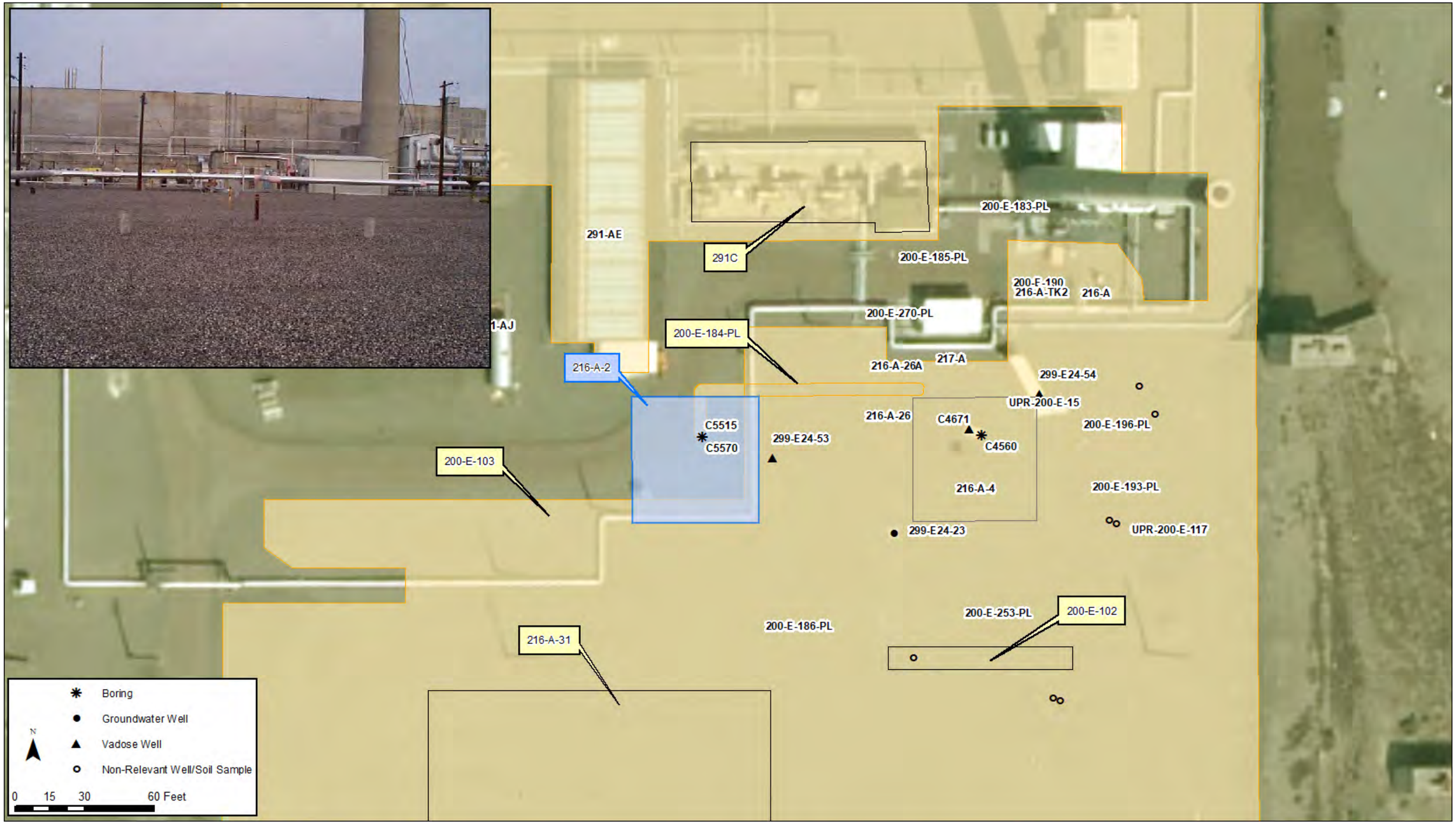
- 200-E-103 (Stabilized Area)

Intersecting/Nearby Sites:

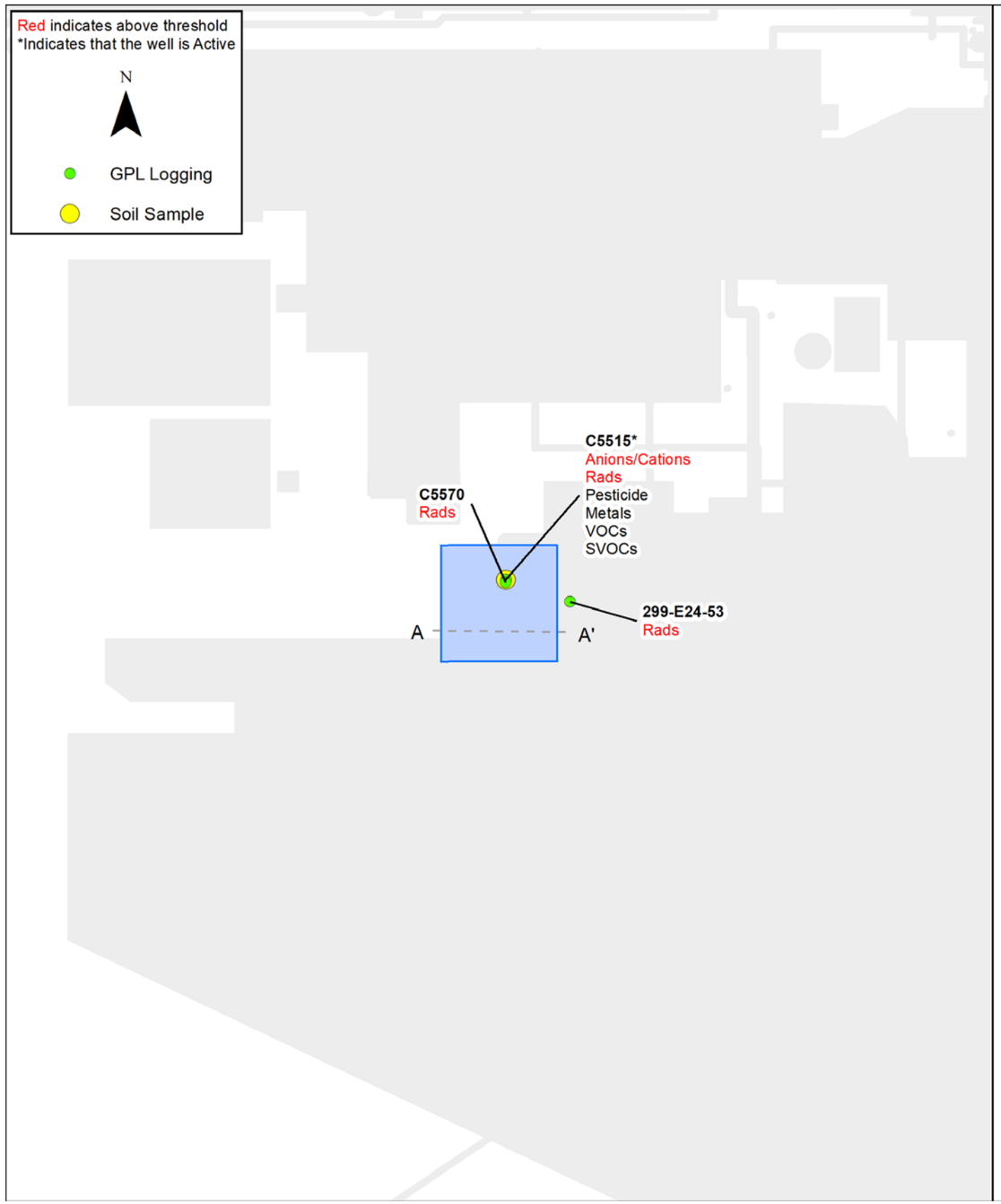
200-EA-1 OU

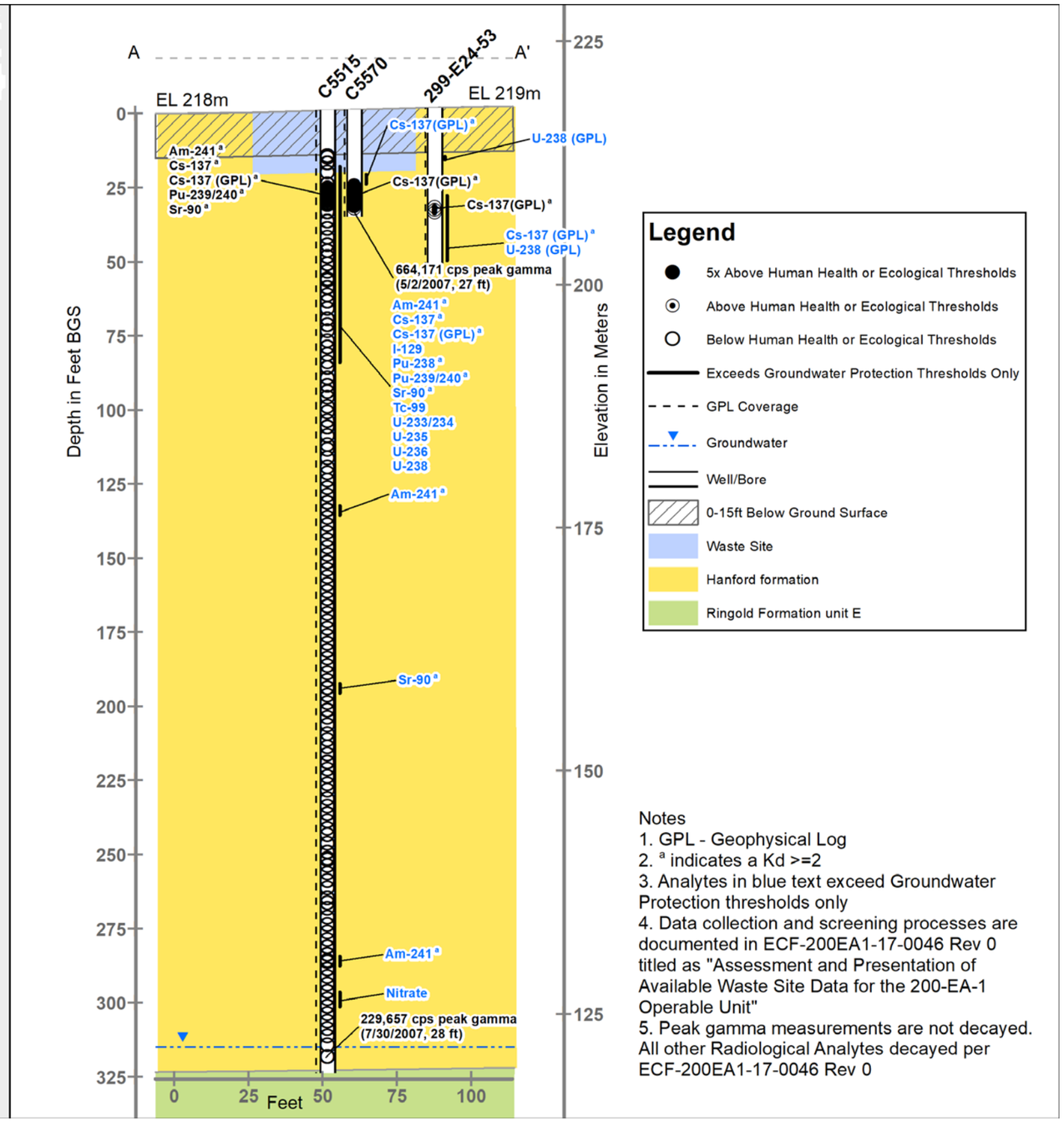
- 216-A-4 (Crib)
- 200-E-102 (Trench)

Scoping Summary: 216-A-2 (Crib)

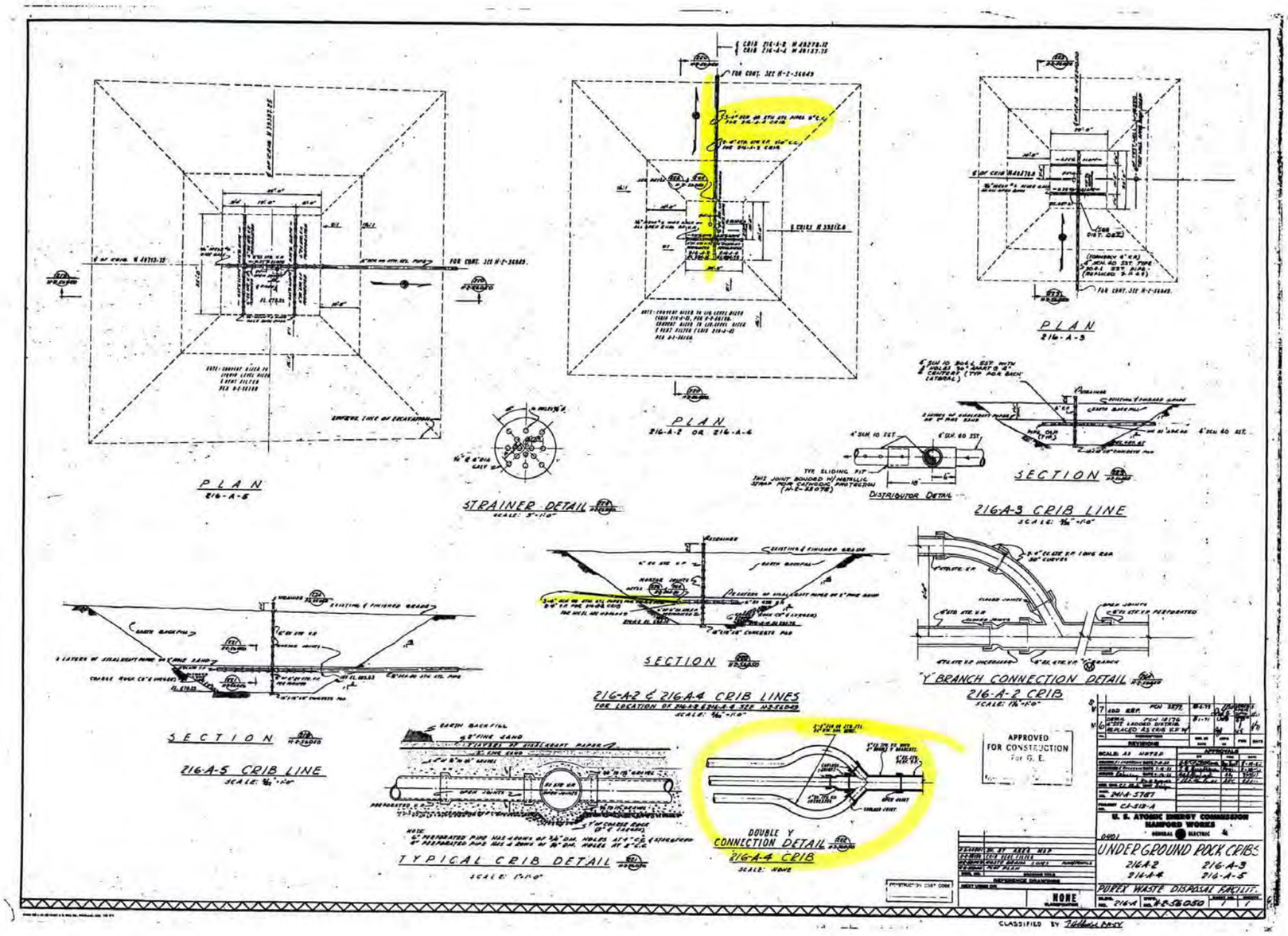


Scoping Summary: 216-A-2 (Crib)





Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0



Page 1 of 1 of D5319948

7-8-53

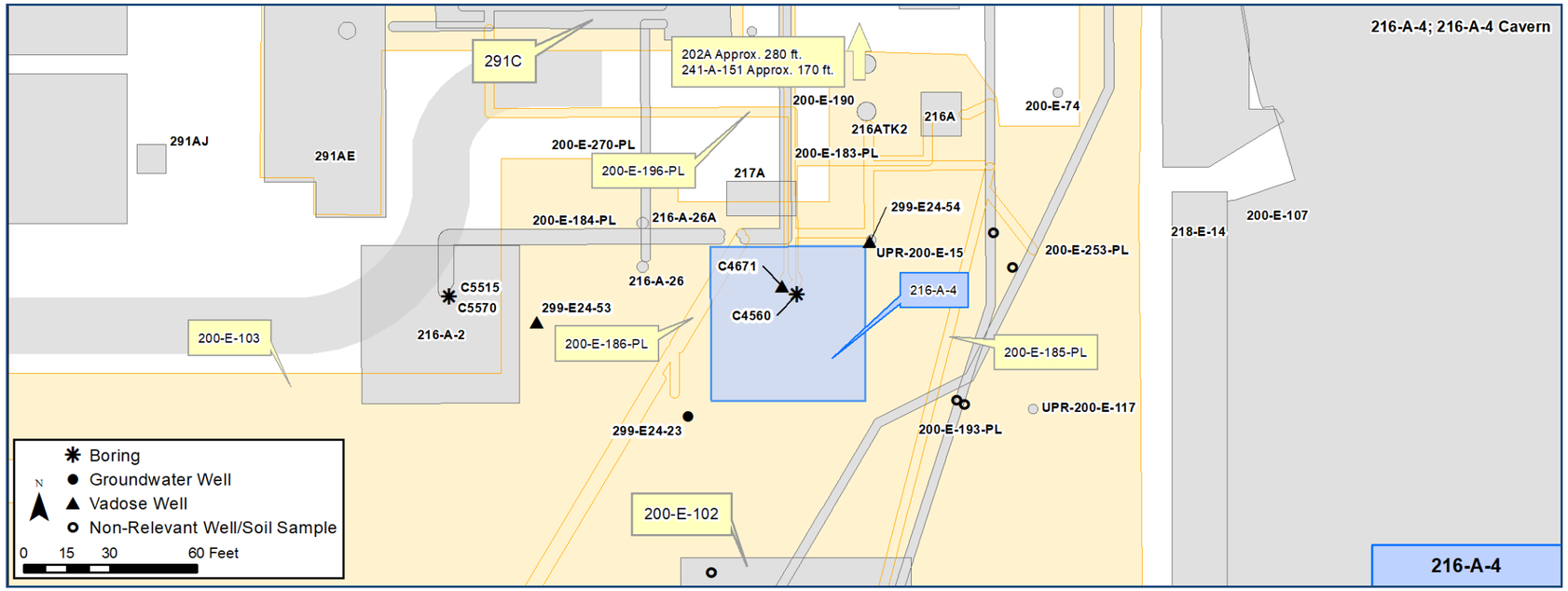
Scoping Summary: 216-A-4 (Crib)

History

The 216-A-4 Crib waste site is an inactive crib that received liquid waste from the PUREX facility via the 200-E-185-PL and 200-E-196-PL pipelines.

The crib was operational from 1955 to 1958, when the crib became plugged and flooded an area between the crib and the 291-A-1 Stack (UPR-200-E-15). The contaminated soils were removed and placed inside the 200-E-102 trench. Following this event, the crib was deactivated by blanking off the feeder pipelines, and the effluent was rerouted to the 216-A-2 crib. The crib was later covered with gravel, as a part of the PUREX Area stabilization efforts (200-E-103).

The 216-A-4 Crib was investigated pursuant to the RI/FS Report for the 200-MW-1 OU in 2008 (DOE/RL-2008-38, Draft A) and the Contaminant Fate and Transport Model to Evaluate Impacts to Groundwater (ECF-200MW1-10-0080).



Construction

- Bottom of Crib:
  - Width and Length: 20 ft
  - Depth: 28 ft bgs
  - Grade: 1: 2
- Top of Crib:
  - Width and Length: 55 ft 4 in.
  - Depth: 21 ft bgs
  - Grade: 1: 1.5
- Dimensions of excavation surface:
  - Width and Length: 102 ft
- Distribution Pipelines: 3
  - One 6 in. perforated Vitrified Clay Pipe (VCP), 6 ft long, 21 ft bgs, with a 18 in. x 18 in. concrete pad
  - Two 20 ft lengths of 6 in. perforated VCP placed perpendicularly to the main distribution pipe, forming a T pattern
- Incoming Pipelines: 3
  - Three 4 in. Inlet sch. 40 ss
- 7 ft of coarse rock, then 2 layers of sand with sisalkraft paper and then 21 ft of earth backfill to grade
- 6 in. covering of crushed rock at the surface

Features Of Interest

- 1 large green vent riser at the surface.

Relevant Characterization

- In 2008, fate and transport modeling determined that uranium would not reach the water table within 1,000 years.
- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- PUREX Plant - Plutonium-Uranium Extraction Process and Laboratory Wastes
  - Laboratory cell drainage from 202A Building (TK-U-3 & TK-U-4), 241-A-151 Diversion Box Drain, and several sources associated with the 291-A Stack
  - Ventilation fans (fan bearing, fan turbine condensate, and control house drainage)
  - Waste streams included: HNO3, Concentrated UNH, and NH4OH
- 1.64 million gal waste disposed (6.2 million liters).

Misc./Other Relevant Information

- Previous RI/FS evaluations determined radioactive contamination from the ground surface to 40 ft bgs at an estimated volume of 16,646 cubic yards. The baseline risk assessment did not identify nonradiological or radiological contaminants of concern in the top 15 ft bgs of this waste site.
- SGW-44795, Rev0 discusses this crib in greater critical detail to estimate vertical distribution and horizontal spreading of risk-driving contaminants.

Site Interfaces

Origin/Termination:

200-IS-1 OU
- 200-E-185-PL
- 200-E-196-PL

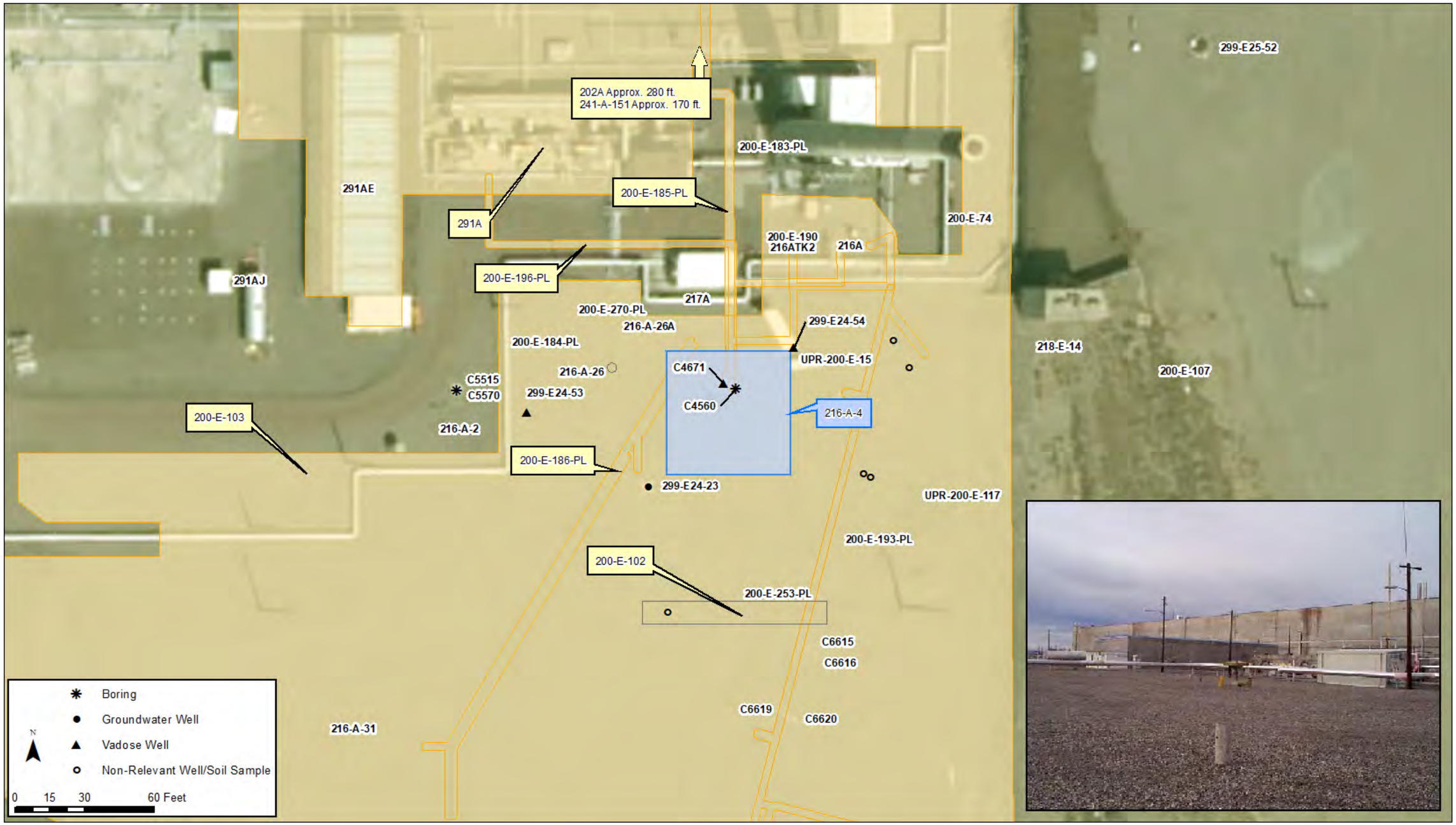
200-EA-1 OU
- 200-E-103 (Stabilized Area)

Intersecting/Nearby Sites:

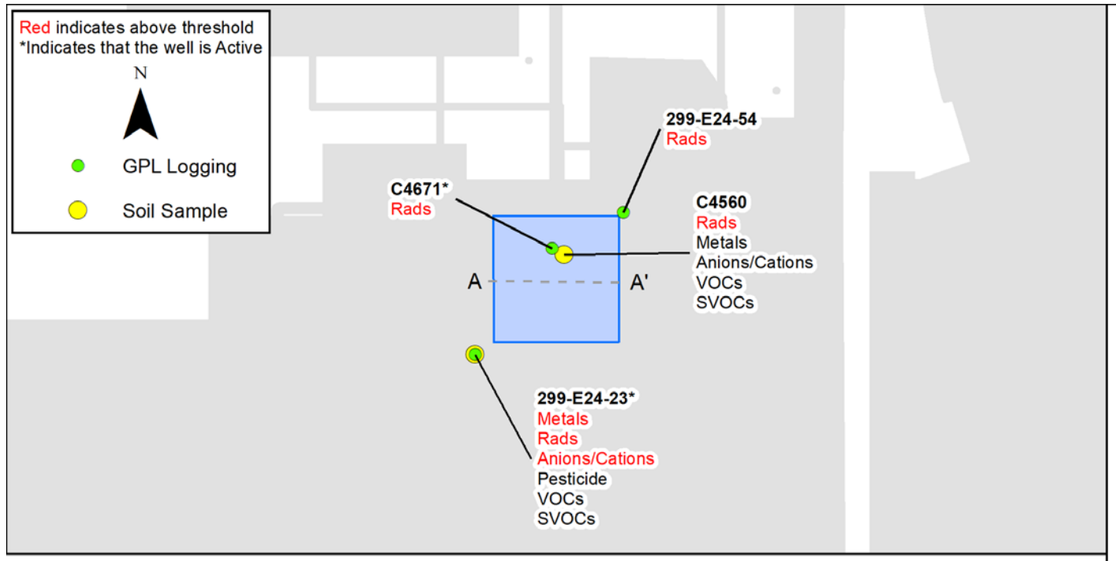
200-IS-1 OU
- 200-E-186-PL

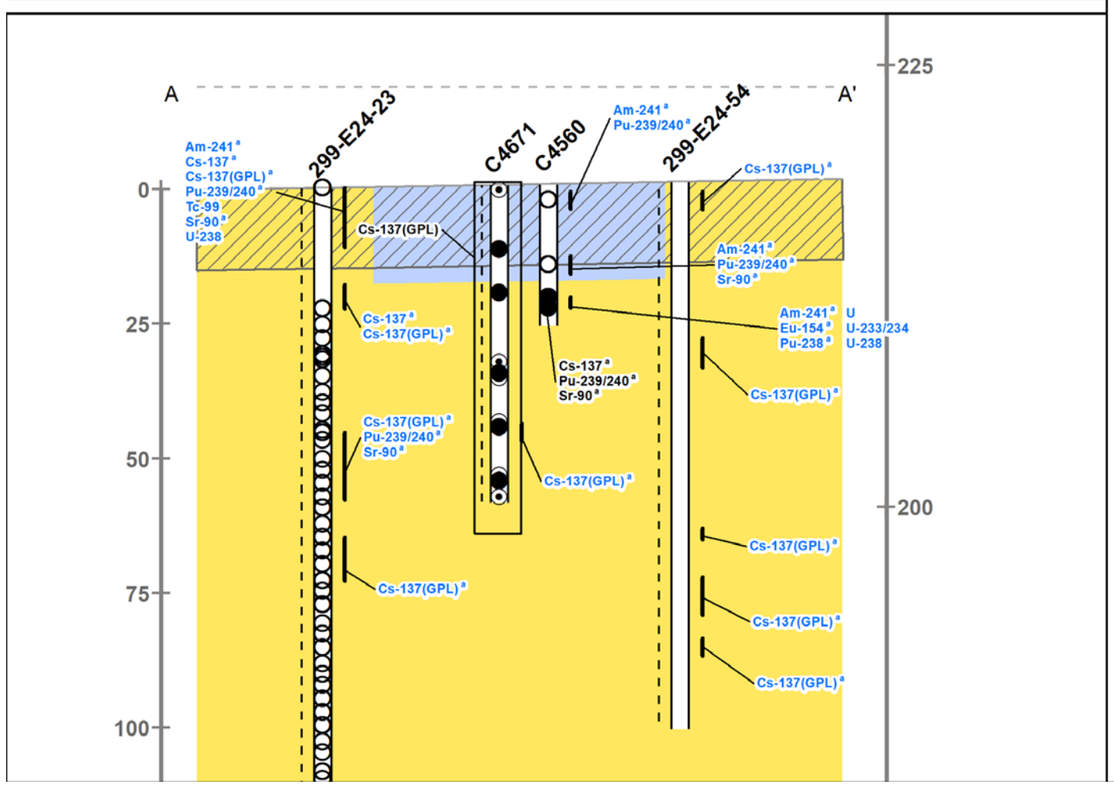
200-EA-1 OU
- 216-A-2 (Crib)
- 200-E-102 (Trench)

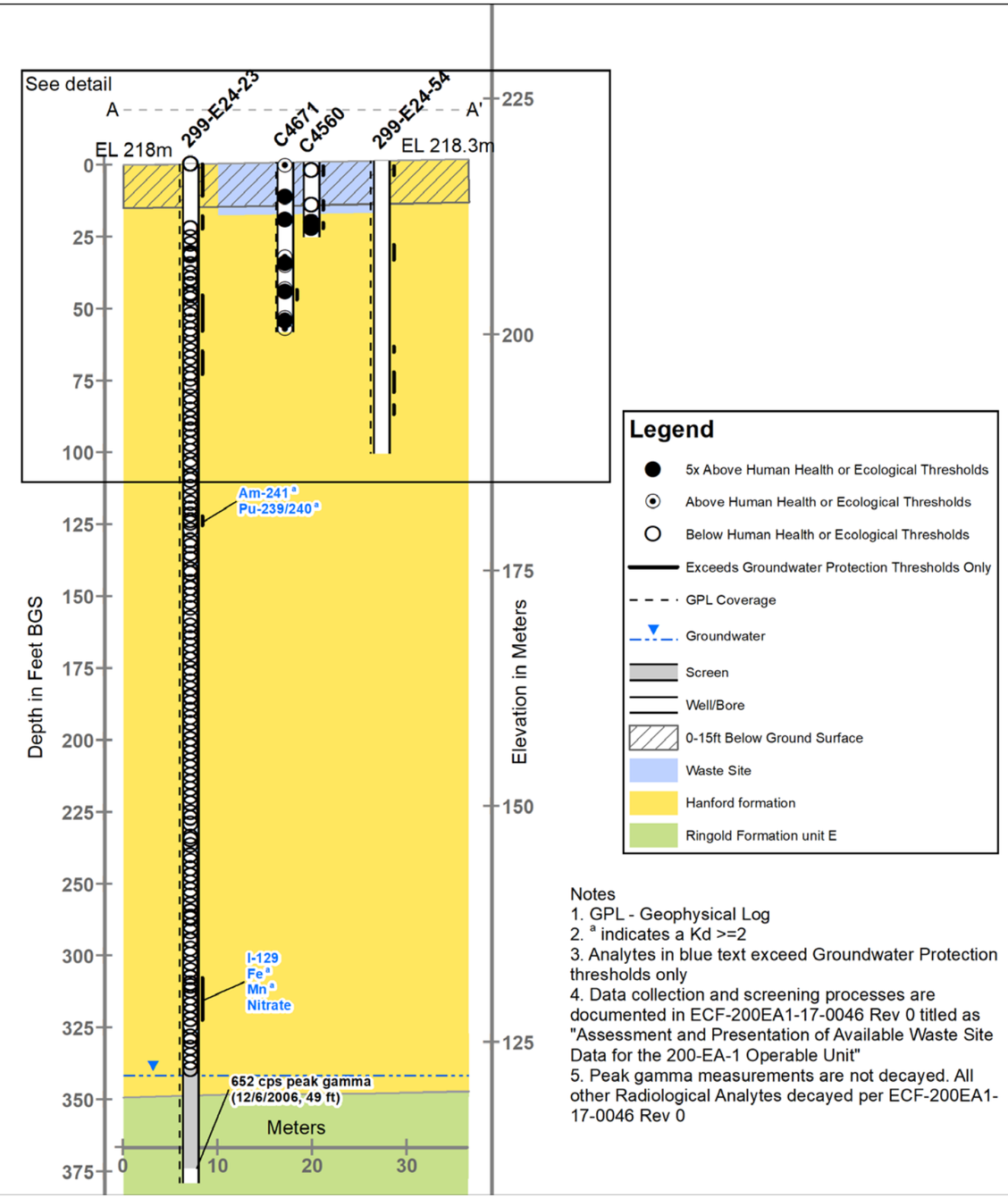
Scoping Summary: 216-A-4 (Crib)



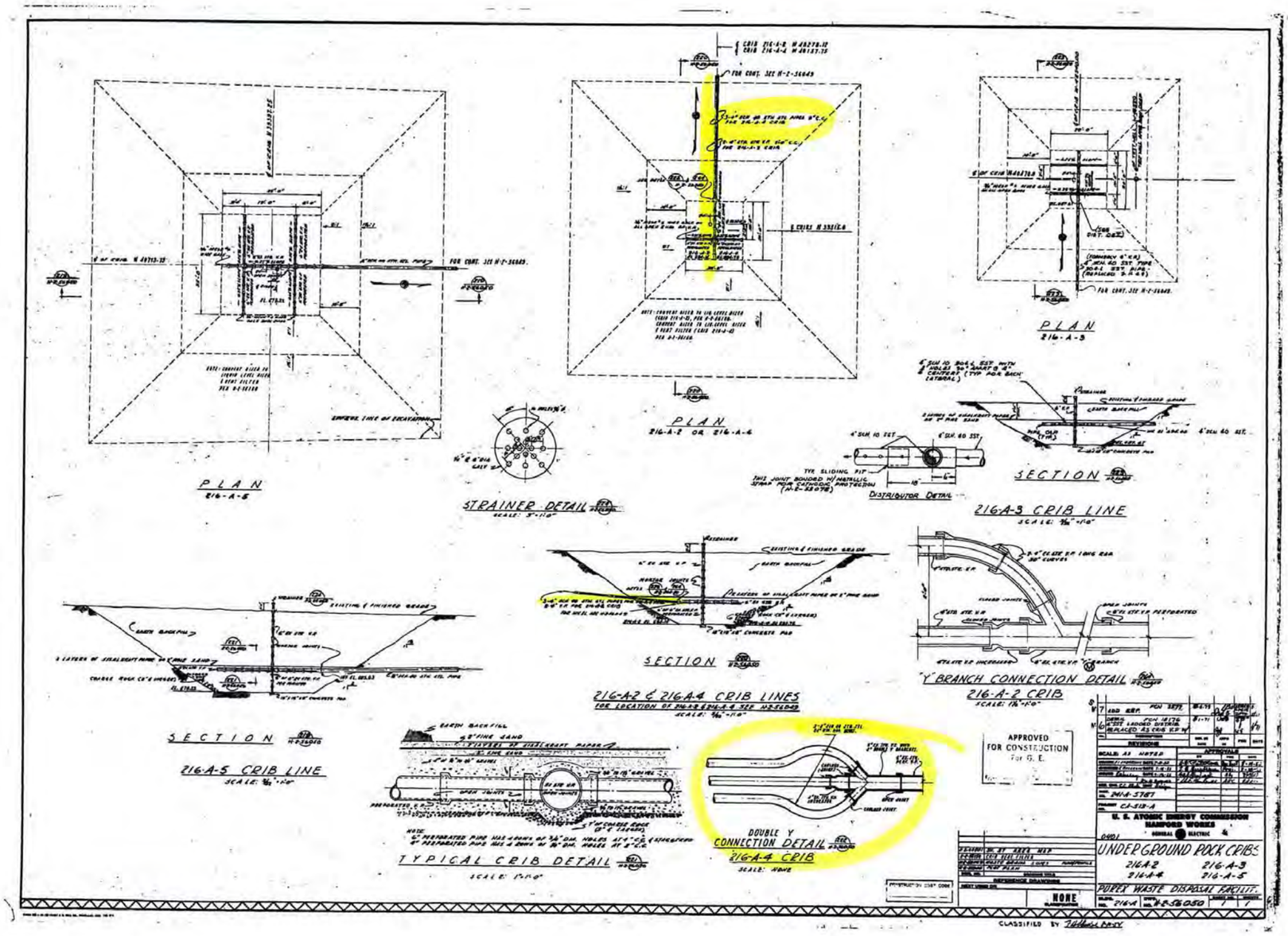
Scoping Summary: 216-A-4 (Crib)







Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0


Page 1 of 1 of D5319948
PLAN
216-A-5
PLAN
216-A-2 OR 216-A-4
PLAN
216-A-3
STRAINER DETAIL
DISTRIBUTOR DETAIL
SECTION
216A-3 CRIB LINE
SECTION
216-A-5 CRIB LINE
SECTION
216-A2 & 216A-4 CRIB LINES
"Y" BRANCH CONNECTION DETAIL
216-A-2 CRIB
TYPICAL CRIB DETAIL
DOUBLE Y
CONNECTION DETAIL
216A-4 CRIB
APPROVED
FOR CONSTRUCTION
U. S. ATOMIC ENERGY COMMISSION
HANFORD WORKS
UNDERGROUND ROCK CRIBS
216-A-2
216-A-3
216-A-4
216-A-5
PUREX WASTE DISPOSAL FACILITY
NONE
7-8-53

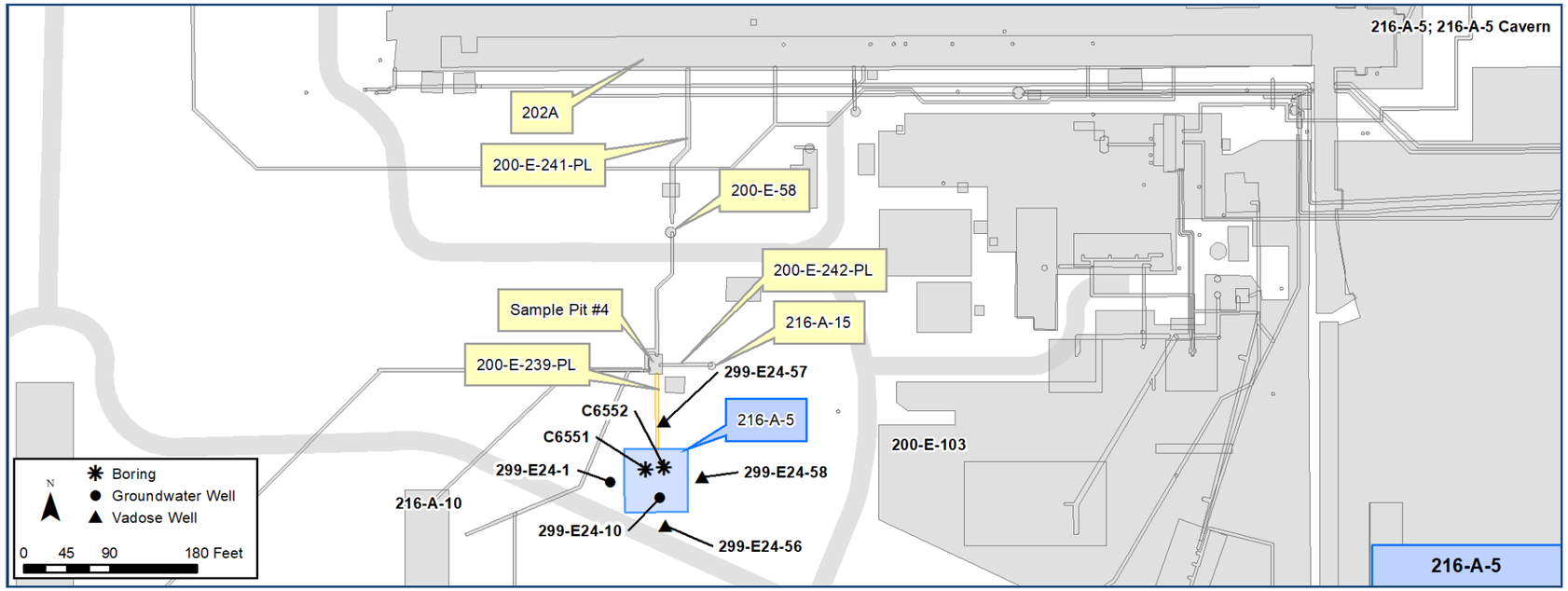
Scoping Summary: 216-A-5 (Crib)

History

The 216-A-5 waste site is a crib that received 202A PUREX facility process condensate from Sample Pit No. 4 via 200-E-239-PL. The crib was primarily operational from 1955 to 1961. After 1961 the site remained available as a back-up discharge for the 216-A-10 crib but only received one additional discharge in 1966 before its isolation in 1972, when the sample pit cover block was sealed.

In 1983 the crib was surface stabilized and completely deactivated by valving out the effluent piping to the unit and rerouting the effluent to the 216-A-10 crib.

The 216-A-5 crib is analogous to the 216-A-10 Crib, and was previously assigned to the 200-PW-2/4 operable unit. The feasibility study (DOE/RL-2004-85, Draft A) stated capping as the preferred alternative. Supplemental Remedial Investigation/Feasibility Study (DOE/RL-2007-02 Vol. II) identified lateral spreading of contamination and potential contribution to an elevated conductivity plume in the PUREX area. This study recommended obtaining supplemental data and two additional remedial alternatives: a barrier and a combination of maintaining soil cover, monitored natural attenuation, and institutional controls.



Construction

- Length: Bottom 35 ft, Top 115 ft
- Width: Bottom 35 ft, Top 115 ft
- Depth: 29 ft
- Side slope: from surface to 24 ft is 1:1.5, from 24 ft to bottom is 2:1
- Incoming pipes: 1
  - One 8 in vitrified clay pipe placed horizontally 24 ft bgs
  - Two 8 in vitrified clay pipes 35 ft long each placed perpendicular to the main incoming pipe, forming an H pattern
- Pipes rest on ~8 ft of course rock fill, (21,000 cu. ft)
- 5 ft of gravel fill above the pipes, covered with two layers of Sisalkraft Paper on 2-in of fine sand, then backfilled with soil
- *See Page 3 for additional crib line and design detail (Figure 2: (H-2-56050)*.

Features Of Interest

- One 6-in. riser with vent filter that extends from above ground to a concrete pad on the bottom of the crib (18 in x 18 in x 8 in).

Relevant Characterization

- 1989 survey found no surface contamination
- *See Page 4 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- PUREX (202A) acidic process condensate
  - A neutralization tank (200-E-58) operated upstream of Sampler Pit #4 to preclude the discharge of process condensate outside the range of 2.0 and 12.5 pH units
- A 1998 Radionuclide inventory of the 216-A-5 Crib included Co-60, Sr-90, Cs-134, Cs-135, Cs-137 (HNF-1744 pg ATT C-39)
- H-3, NO3, Pu-239, Pu-140, U-238 and Beta also reported (PNL-6456 Vol. 2 and RPP-26744)
- 430,600,445 gal total volume disposed
- 1,000,000 kg nitrate

Misc./Other Relevant Information

- Site is posted as an Underground Radioactive Material Area (URMA)
- This crib was previously associated with the 200-MW-1 operable unit. A contaminant fate and transport model for 216-A-5 from 2010 evaluated the impacts to groundwater associated with the contamination in the vadose zone (ECF-200MW1-10-0080).

Site Interfaces

Origin/Termination:

200-IS-1 OU

- 200-E-239-PL

Intersecting/Nearby Sites

OU Unassigned

- Sample Pit No. 4
- 202A (facility)

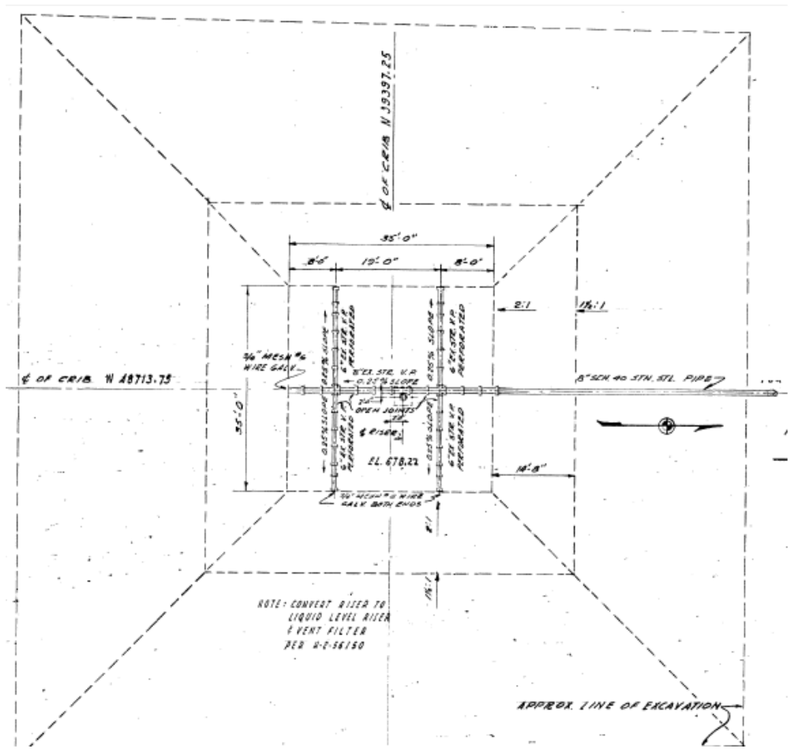
200-EA-1 OU

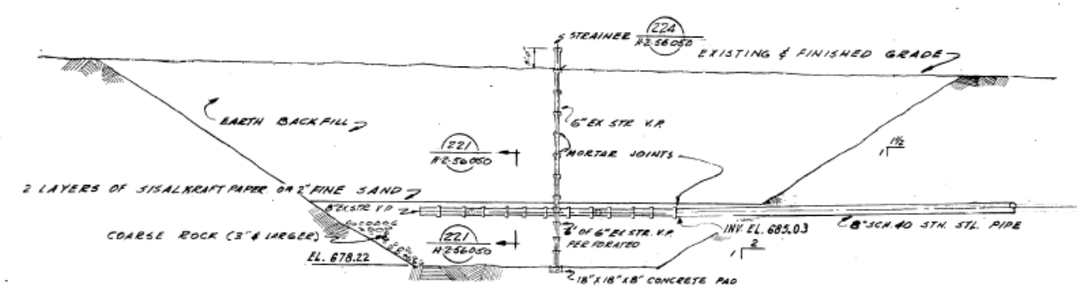
- 216-A-10 (crib)
- 200-E-58 (tank)
- 216-A-15 (French drain)

200-IS-1 OU

- 200-E-241-PL
- 200-E-242-PL

202A
200-E-241-PL
200-E-58
Sample Pit #4
200-E-242-PL
216-A-15
200-E-239-PL
299-E24-57
C6552
C6551
216-A-5
200-E-103
299-E24-1
299-E24-58
216-A-10
299-E24-10
299-E24-56
Boring
Groundwater Well
Vadose Well
N
0 30 60 120 Feet

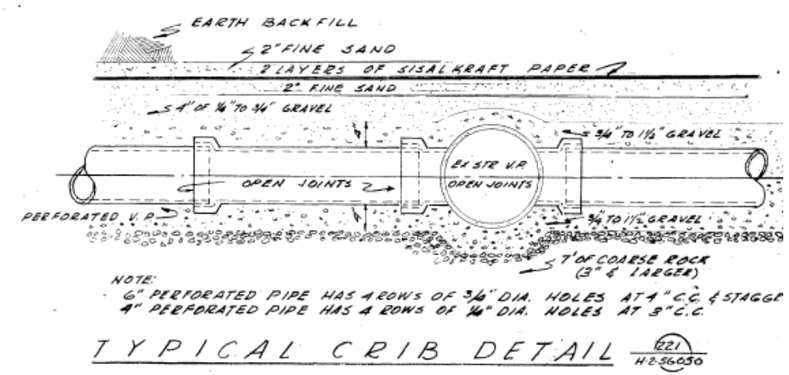




SECTION 219 / H-2-56050

216-A-5 CRIB LINE

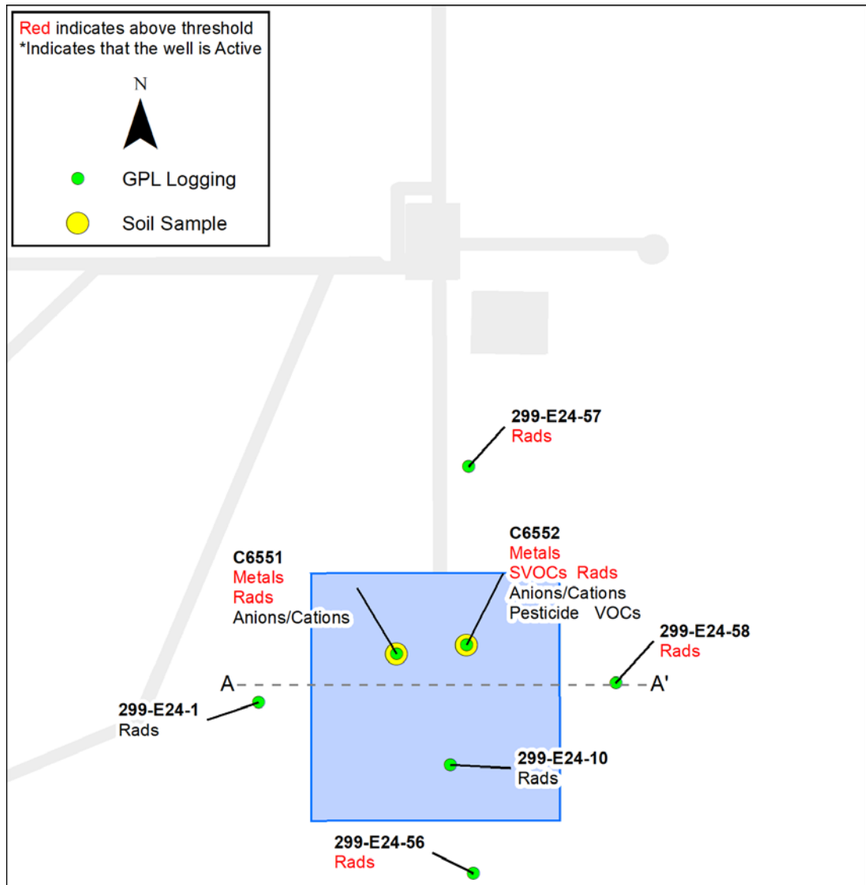
SCALE: 3/32" = 1'-0"

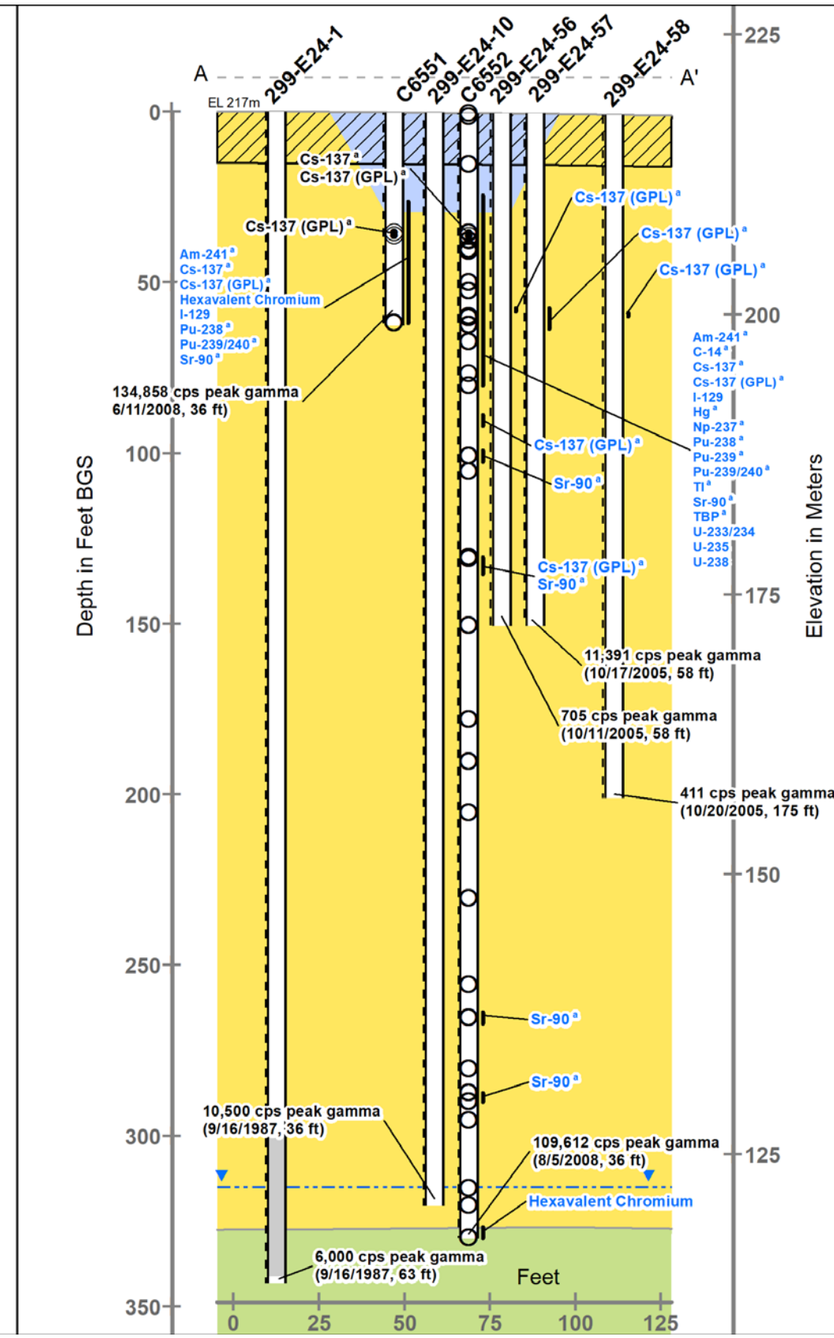


TYPICAL CRIB DETAIL 221 / H-2-56050

Figure 2: H-2-56050

Scoping Summary: 216-A-5 (Crib)





Legend

- Above Human Health or Ecological Thresholds
- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- GPL Coverage
- Groundwater
- Screen
- Well/Bore
- 0-15 ft Below Ground Surface
- Waste Site
- Hanford formation
- Ringold Formation unit E

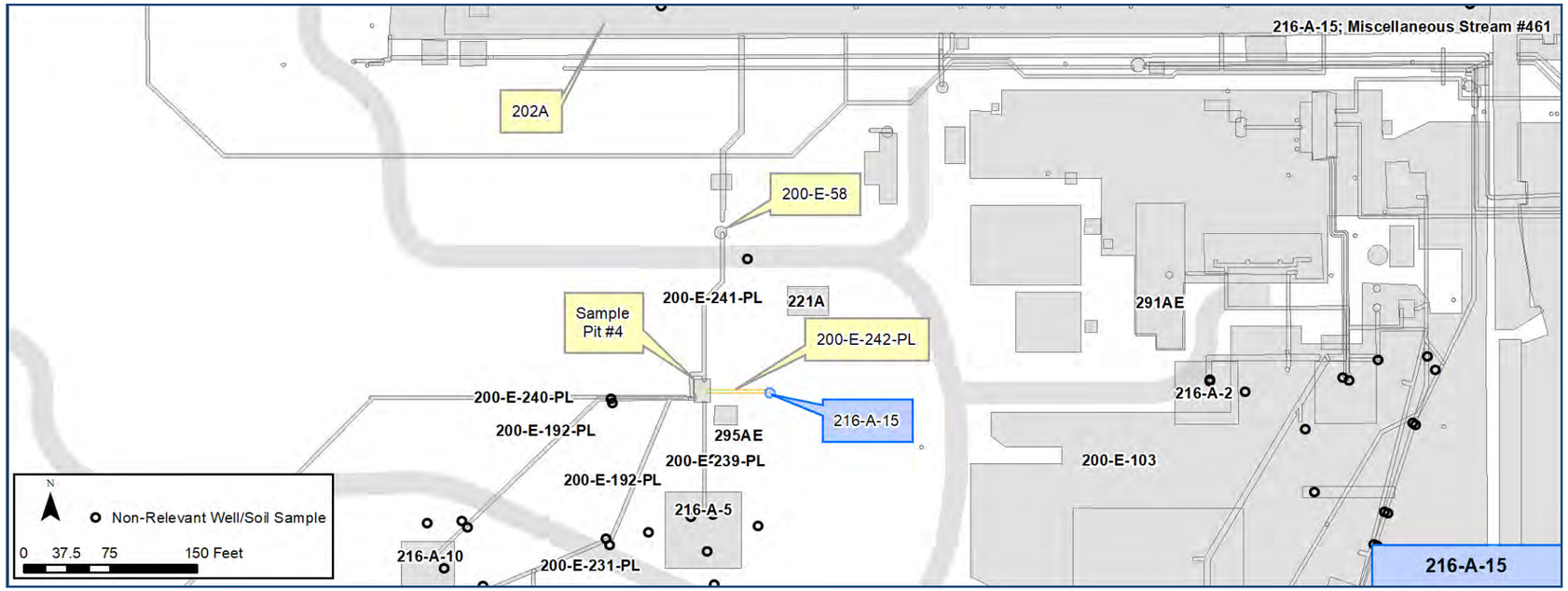
Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

Scoping Summary: 216-A-15 (French Drain)

History

The 216-A-15 waste site is an inactive, underground French drain that received storm water and PUREX process condensate from Sample Pit #4 (216-A-5A) via the 200-E-242-PL pipeline. The waste site is located about 270 ft south of the 202A PUREX facility. The French drain was built by 1955 and was operational from 1955 to 1972.

In 1987, the pipeline connecting the sample pit to the French drain was filled with grout and sealed (H-2-77464). A radiological survey completed in 2015 shows total beta/gamma readings no greater than background levels of 300 cpm, beta; and 1 cpm, alpha.



Construction

- Length: ~10 ft
- Diameter: 64 in
- Depth: 33.5-43.5 ft bgs
- Material: Two 48 in bell-end reinforced concrete sewer pipes
- Fill: ~6 ft of stone
- Number of incoming and outgoing pipelines:
  - Incoming pipelines: 1
    - Pipe depth at entry: ~34 ft bgs
    - Material: Stainless steel

Features Of Interest

- One riser showing 4 ft above grade.
- One concrete post with identification plate.

Relevant Characterization

- A 2015 radiological soil survey determined radiation to be < 5000 dpm/100 cm-2 beta/gamma.

Waste Streams

- PUREX (202A) acidic process condensate
- Storm water runoff
- Low organic, low salts
- Waste contained less than 50 Ci total beta
- Approximately 2,640,000 gal of total waste was discharged to the French drain
- A neutralization tank (200-E-58) operated upstream of Sampler Pit #4 to preclude the discharge of process condensate outside the range of 2.0 and 12.5 pH units

Misc./Other Relevant Information

- Previously associated with both the 200-PO-2 and 200-LW-1 Operable Units.
- WIDS 216-A-15 General Summary Report states that a leak in one of the fittings in the sample pit may have allowed radioactive liquid to enter the 216-A-15 French Drain - references to substantiate this statement could not be located.

Site Interfaces

Origin/Termination:

200-IS-1 OU

- 200-E-242-PL

Intersecting/Nearby Sites:

OU Unassigned

- Sample Pit No. 4
- 202A (PUREX facility)

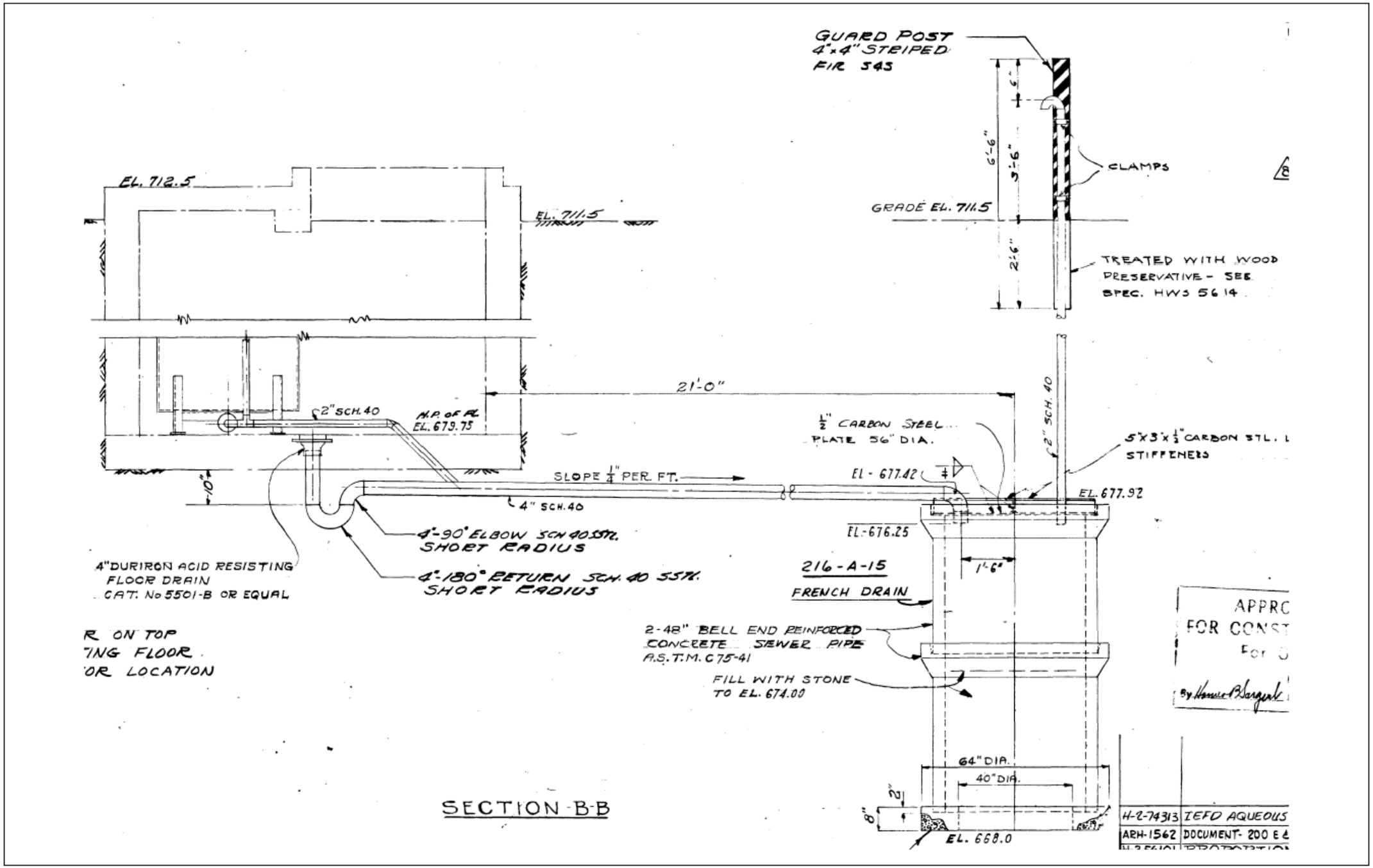
200-EA-1 OU

- 216-A-10 Crib
- 216-A-5 Crib
- 200-E-58 Neutralization Tank

200-IS-1 OU

- 200-E-239-PL

Scoping Summary: 216-A-15 (French Drain)


GUARD POST
4"x4" STRIPED
FIR S4S
6"
6'-6"
3'-6"
2'-6"
CLAMPS
GRADE EL. 711.5
TREATED WITH WOOD PRESERVATIVE - SEE SPEC. HWS 5614
EL. 712.5
EL. 711.5
21'-0"
2" SCH. 40
H.P. OF RL EL. 679.75
1/2" CARBON STEEL PLATE 56" DIA.
2" SCH. 40
5"x3"x1/2" CARBON STL. STIFFENERS
SLOPE 1/4" PER FT.
EL - 677.42
EL. 677.92
10'
4" SCH. 40
4"-90° ELBOW SCH 40 STL. SHORT RADIUS
EL. 676.25
4"-180° RETURN SCH. 40 STL. SHORT RADIUS
4" DURIRON ACID RESISTING FLOOR DRAIN CAT. No 5501-B OR EQUAL
216-A-15
FRENCH DRAIN
1'-6"
2-48" BELL END REINFORCED CONCRETE SEWER PIPE A.S.T.M. C75-41
FILL WITH STONE TO EL. 674.00
64" DIA.
40" DIA.
2"
8"
EL. 668.0
SECTION B-B
APPRO
FOR CONST
H-2-74313 IEFD AQUEOUS
ARH-1562 DOCUMENT- 200 E

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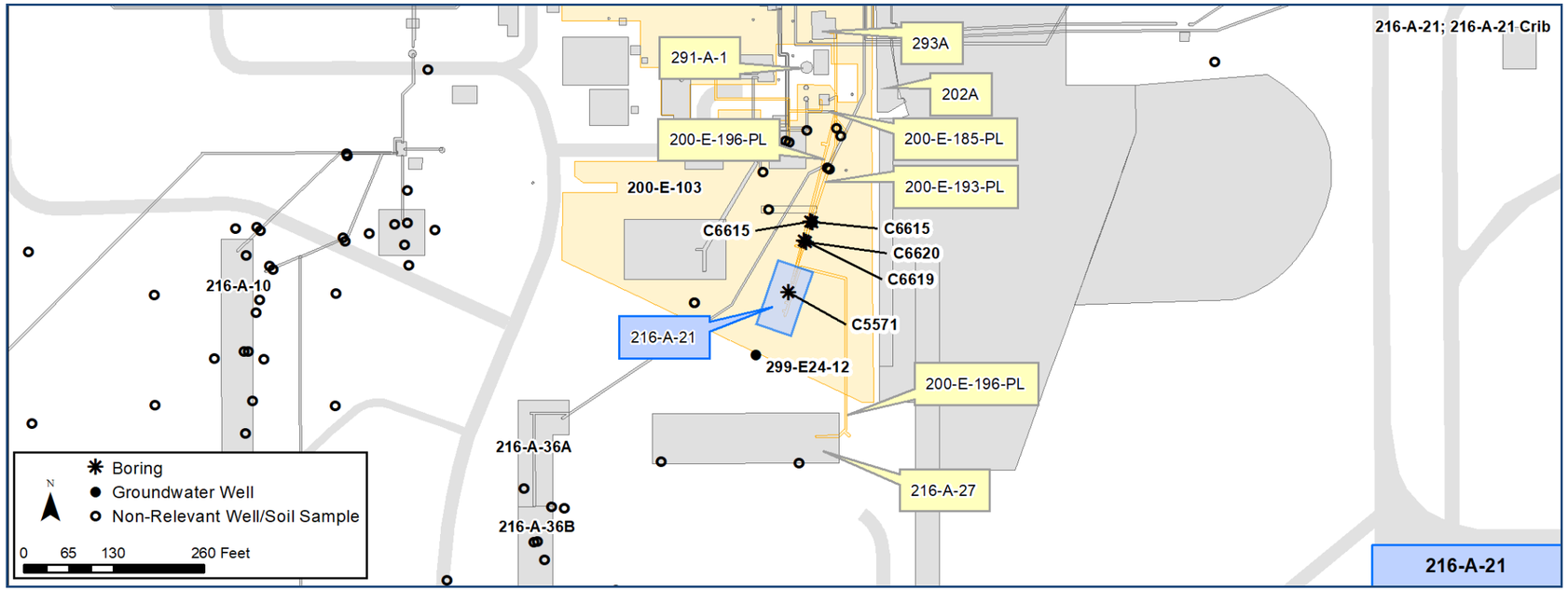
Scoping Summary: 216-A-21 (Crib)

History

The 216-A-21 waste site is an inactive crib that received liquid waste from the PUREX facility via the 200-E-193-PL and 200-E-196-PL. The crib was operational from 1957 to 1965, when it was deactivated due to the effluent flow rate exceeding the infiltration capacity. The feeder pipeline to the crib was blanked and the effluent was re-routed to the 216-A-27 crib.

The crib was taken out of service from June to December 1958, due to 200-E-193-PL failure. 200-E-196-PL was installed to replace a portion of 200-E-193-PL and the distribution system for the 216-A-21 crib. The crib is located within the 200-E-103 PUREX Stabilized Area, which was surface stabilized in 1999, and then posted as an Underground Radioactive Material Area (URMA).



Construction

- Length: 60 ft
- Width: 16 ft
- Depth: 19 ft
- Side slope: 1:1.5 (V shaped)
- 6 ft of gravel fill, backfilled over
- 2 layers of Sisalkraft on gravel, then backfilled to grade
  - *Note: Sisalkraft is a polythene-coated waterproof building paper*
- Replacement distribution system:
  - 4 in. stainless steel distribution line running horizontally the length of the crib 7 ft bgs
  - Four 4 ft sections branch from this line horizontally
  - At the end of the branching lines, 8 ft sections of 4 in sch. 48 perforated pipe branch vertically to the bottom of the crib.
- *See Page 3 for crib details.*

Features Of Interest

- Gravel cover
- URMA postings
- Original distribution line
  - One liquid level riser - 4 in. Sch. 40 Steel
  - One filter riser - 6 in. Sch. 40 Steel (blanked)
- Replacement distribution line
  - One filter riser - 4 in. Sch. 40 Steel.

Relevant Characterization

- 2007 sampling data for C5571
  - High soil concentrations of Cs-137 from 15-60 ft
  - Cs-137 max in soil: 2,951 pCi/g, 39 ft bgs
  - Sr-90 max in soil: 10,909 pCi/g, 26 ft bgs
- 2007 GPL data for C5571
  - Max Cs-137 reading of 1,300,000 pCi/g at 21 ft.
- *See Page 4 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- PUREX Plant - Plutonium-Uranium Extraction Process Ammonia Scrubber & Laboratory Wastes
  - 293-A sump waste (sole waste received until 12/1958), 202A lab cell drainage, 291-A-1 Stack drainage
- Estimated volume of Pu-contamination, as of 1978: 1,400 cubic meters (no other details: BHI-00178).
- 200-E-185-PL waste via 200-E-196-PL included HNO3, Concentrated UNH, and NH4OH
- 1998 Radionuclides included Co-60, Tc-99, Sr-90, Cs-134, Cs-137, U Gross (HNF-1744 pg. ATT C-43)
- 20,552,585 gal waste disposed, waste was low in salt and neutral to basic.

Misc./Other Relevant Information

- None identified.

Site Interfaces

Origin/Termination:

200-IS-1 OU

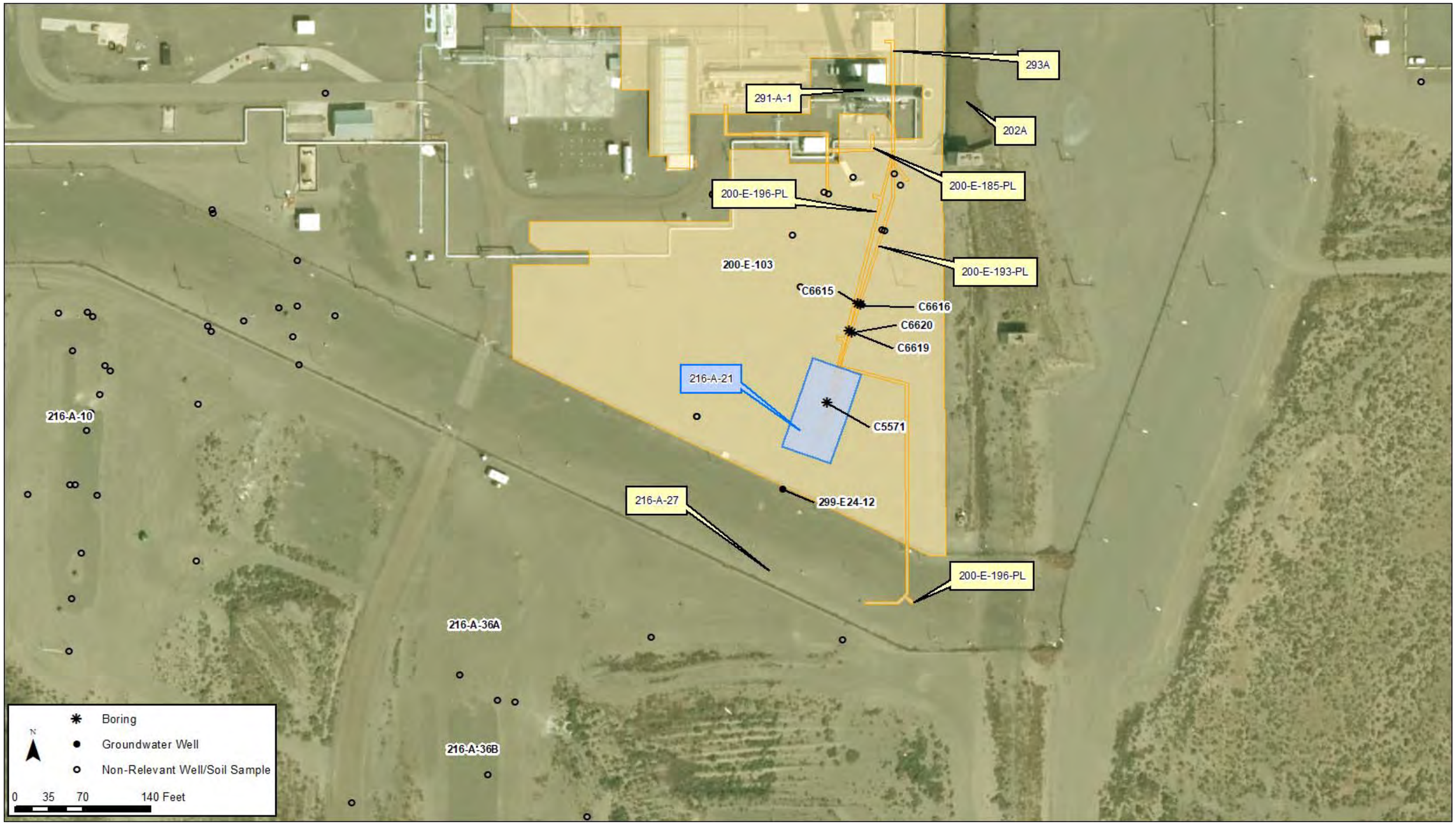
- 200-E-196-PL
- 200-E-193-PL

Intersecting/Nearby Sites:

200-EA-1 OU

- 216-A-27 (Crib)
- 200-E-103 (Stabilized Area)

Scoping Summary: 216-A-21 (Crib)



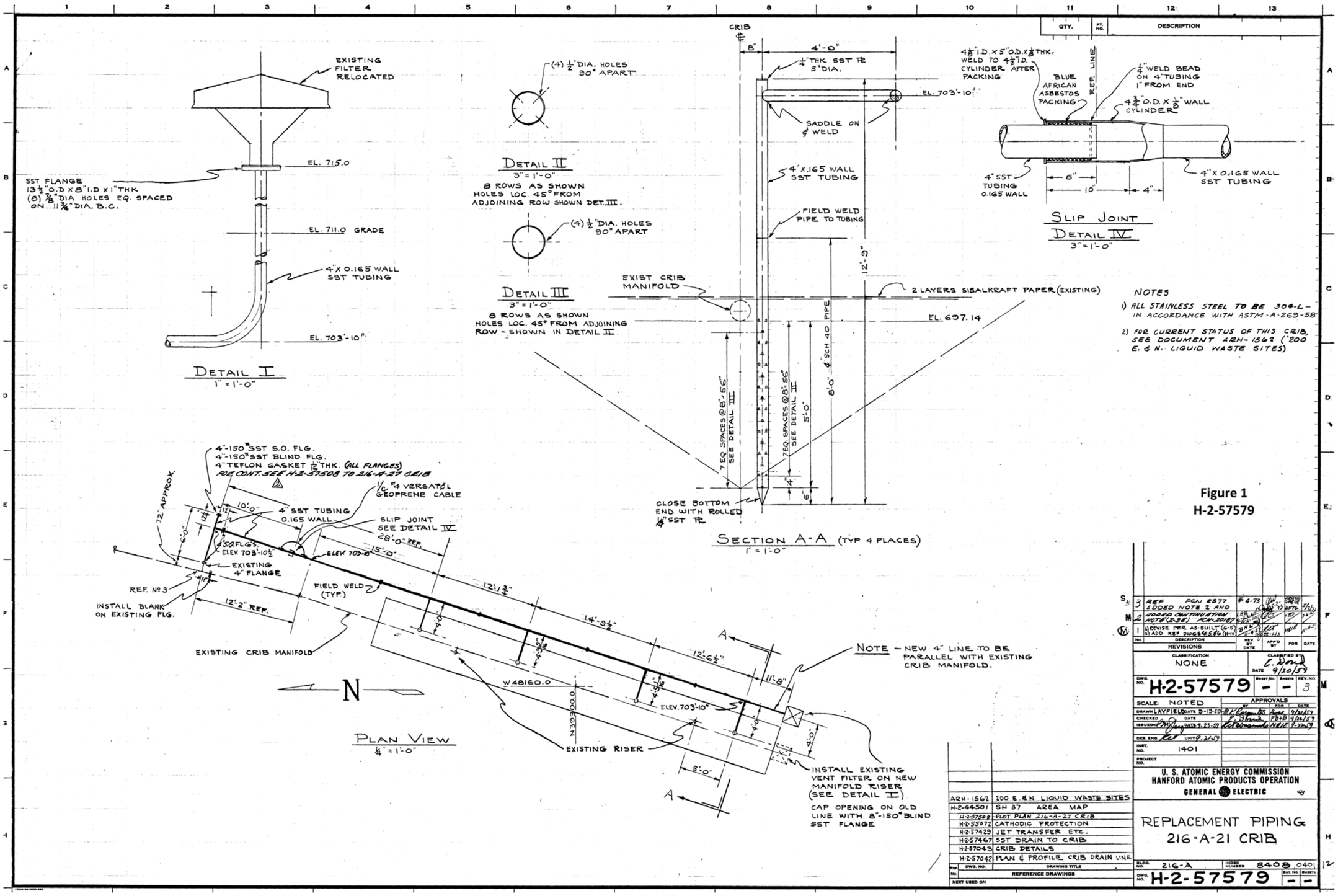
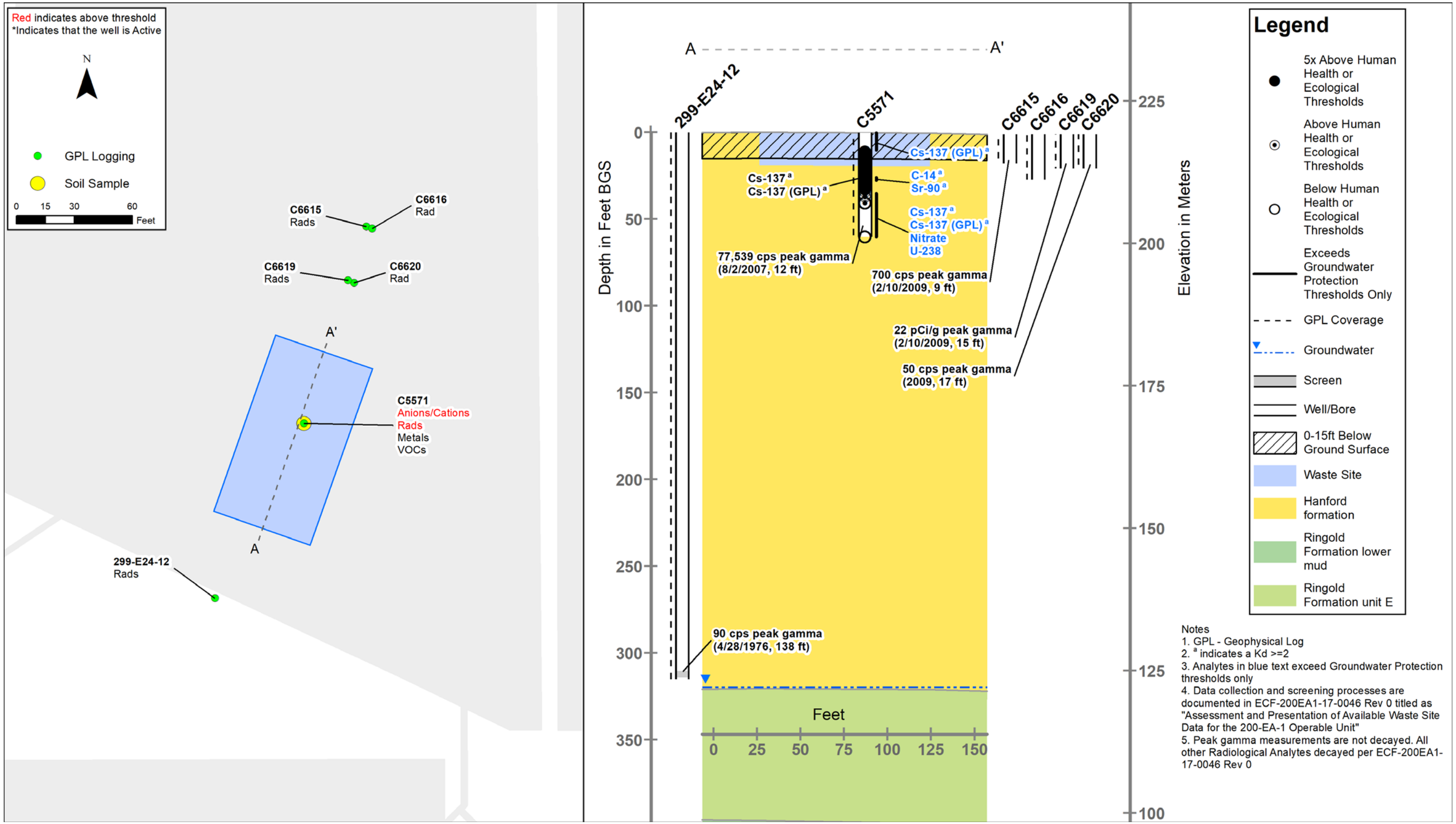


Figure 1
H-2-57579


Red indicates above threshold
*Indicates that the well is Active
N
GPL Logging
Soil Sample
0 15 30 60
Feet
C6615
Rads
C6616
Rad
C6619
Rads
C6620
Rad
A'
C5571
Anions/Cations
Rads
Metals
VOCs
A
299-E24-12
Rads
A
A'
299-E24-12
C5571
C6615
C6616
C6619
C6620
Depth in Feet BGS
0
50
100
150
200
250
300
350
Elevation in Meters
225
200
175
150
125
100
Cs-137 (GPL) a
Cs-137 a
Cs-137 (GPL) a
C-14 a
Sr-90 a
Cs-137 a
Cs-137 (GPL) a
Nitrate
U-238
77,539 cps peak gamma
(8/2/2007, 12 ft)
700 cps peak gamma
(2/10/2009, 9 ft)
22 pCi/g peak gamma
(2/10/2009, 15 ft)
50 cps peak gamma
(2009, 17 ft)
90 cps peak gamma
(4/28/1976, 138 ft)
Feet
0 25 50 75 100 125 150
Legend
5x Above Human Health or Ecological Thresholds
Above Human Health or Ecological Thresholds
Below Human Health or Ecological Thresholds
Exceeds Groundwater Protection Thresholds Only
GPL Coverage
Groundwater
Screen
Well/Bore
0-15ft Below Ground Surface
Waste Site
Hanford formation
Ringold Formation lower mud
Ringold Formation unit E
Notes
1. GPL - Geophysical Log
2. a indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

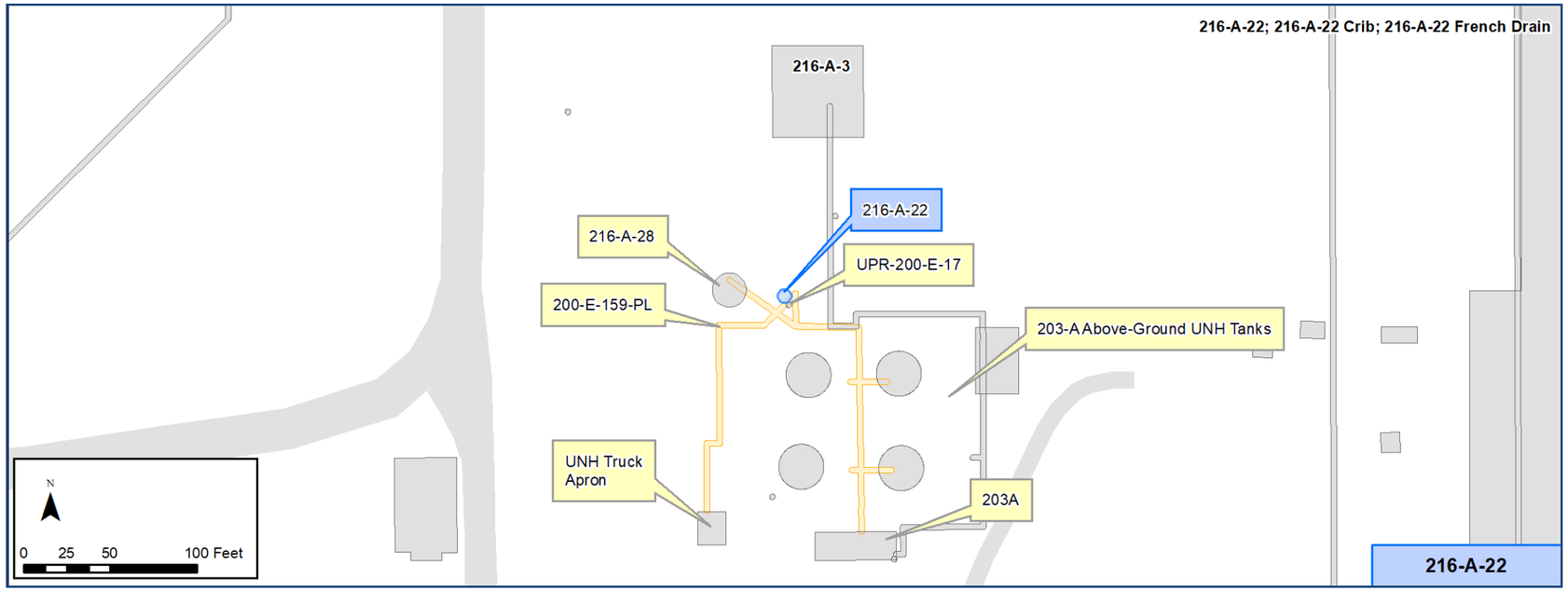
Scoping Summary: 216-A-22 (Crib)

History

The 216-A-22 waste site is an inactive, underground crib that received UNH Truck Apron drainage, 203A Acid Pump House sump waste, and 203-A Tank Farm condensate via the 200-E-159-PL pipeline. The waste site is located near the north wall of the 203-A above-ground UNH tanks. The site was likely operational from 1956 to 1958, but the end date of operation is not clear. A valve closure in 1958 diverted the 203A waste to the 216-A-28 crib; however, the UNH Truck Apron drainage was not diverted at that time. No end date was documented.

An unplanned release (UPR-200-E-17) occurred due to a failure at the crib inlet, resulting in yellow-colored, uranium contaminated soil. The date of the release is unknown, but it likely occurred in 1958 when the crib was partially deactivated. During a 1959 effort to minimize potential exposure, the crib was covered with an unknown volume of clean soil. The crib was subsequently closed.

In 1961, a UNH truck overflowed and spilled roughly 1,335 lbs of uranium that leaked into the crib through an open plug valve. No WIDS sitecode is associated with this event.



Construction

- Depth: ~16 ft
- Shape: Truncated cone
- Top Diameter: 16 ft
- Bottom Diameter: 6 ft
- Side Slope: 3:1
- Fill: ~10 ft of gravel (~1,600 cu. Ft)
- Material: 2 layers of sisalkraft paper (509 sq. ft) separates gravel from backfill
- Number of incoming and outgoing pipelines:
    - Incoming Pipes: 2
        - 1.5 ft above original grade (has since been covered to stabilize contamination of UPR-200-E-17, connects 203A)
        - 8 ft below original grade (connects truck apron)

Features Of Interest

- The crib is marked with a single cement AC-540 marker and Underground Radioactive Material (URM) signs.

Relevant Characterization

- A 1990 rad survey reported 95,000 dpm beta/gamma and 464,000 dpm alpha on the crib pipe. The survey also noted numerous "yellow cake" flakes reading 750,000 dpm beta/gamma and 5,800 dpm alpha.
- A 1991 rad survey reported 65,000 dpm beta/gamma and no detectable alpha at the base of the riser.
- Units for the 1990 and 1991 surveys were not specified.
- 2012, 2013, and 2015 rad surveys reported <5,000 dpm/100 cm2 beta/gamma on the soil and gravel.

Waste Streams

- Processes: Drain Wastes & Cooling Water; Unknown Process/Miscellaneous Wastes
    - Waste Types: Uranyl nitrate hexahydrate (UNH) Truck Apron drainage; Liquid waste from the 203A acid pump house; Heating coil condensate from P-1 through P-4 UNH tanks
- Waste contains <1 Ci total beta activity
- ~2,600 gal of total waste disposed
- Low salt, neutral/basic.

Misc./Other Relevant Information

- Waste Site 216-A-22 was previously associated with Operable units 200-MG-2, 200-MW-1, and 200-PW-2
- As a part of the 200-MG-2 Engineering Evaluation/Cost Analysis the preferred removal action was determined to be Removal, Treatment and Disposal (RTD) (DOE/RL-2008-45, Rev0).

Site Interfaces

Origin/Termination:

200-IS-1 OU

- 200-E-159-PL

Intersecting/Nearby Sites:

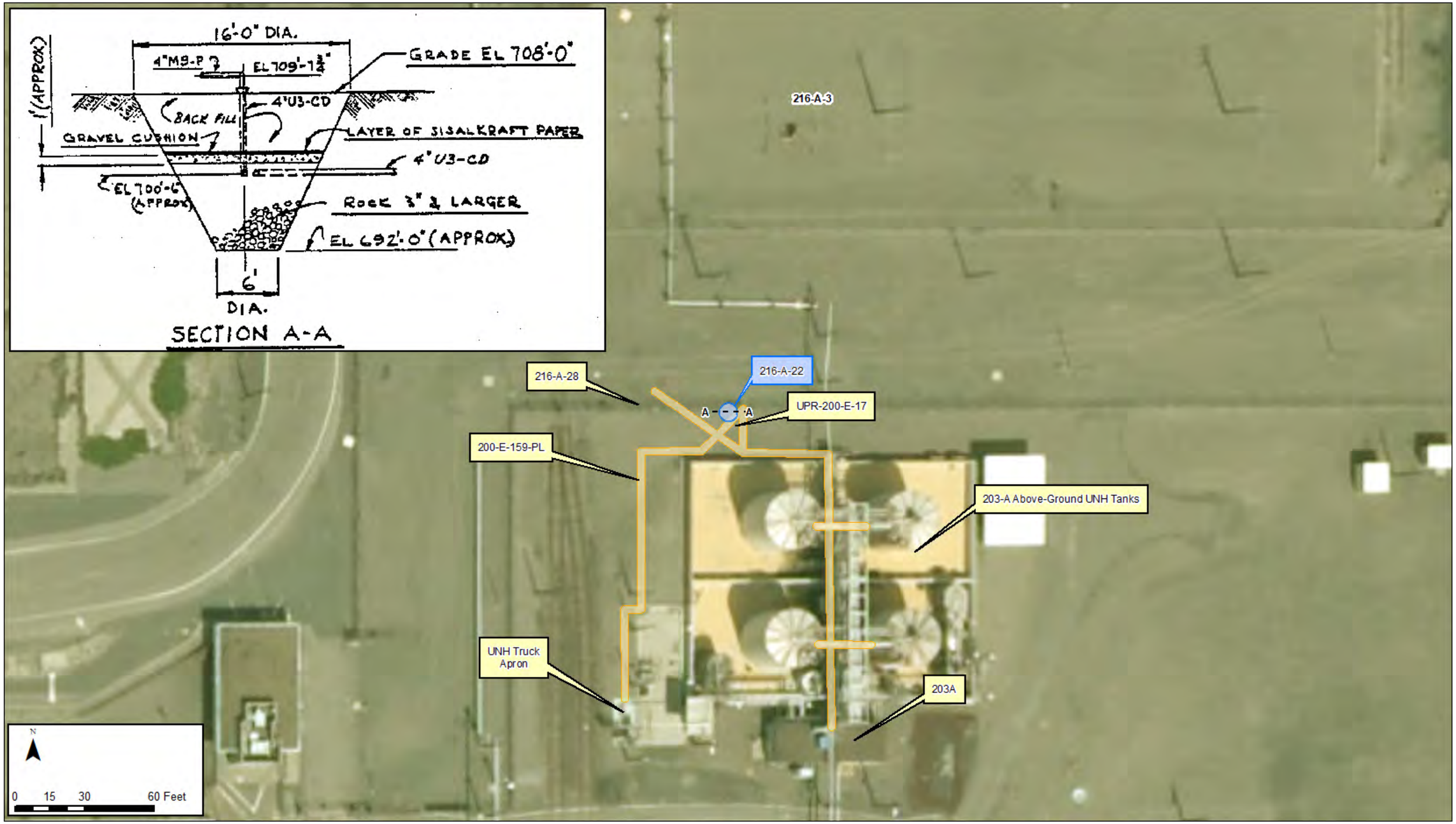
200-EA-1 OU

- 216-A-28 Crib
- 216-A-3 Crib
- UPR-200-E-17

Facilities

- UNH Truck Apron
- 203-A Above Ground UNH Tanks
- 203A Acid Pump House

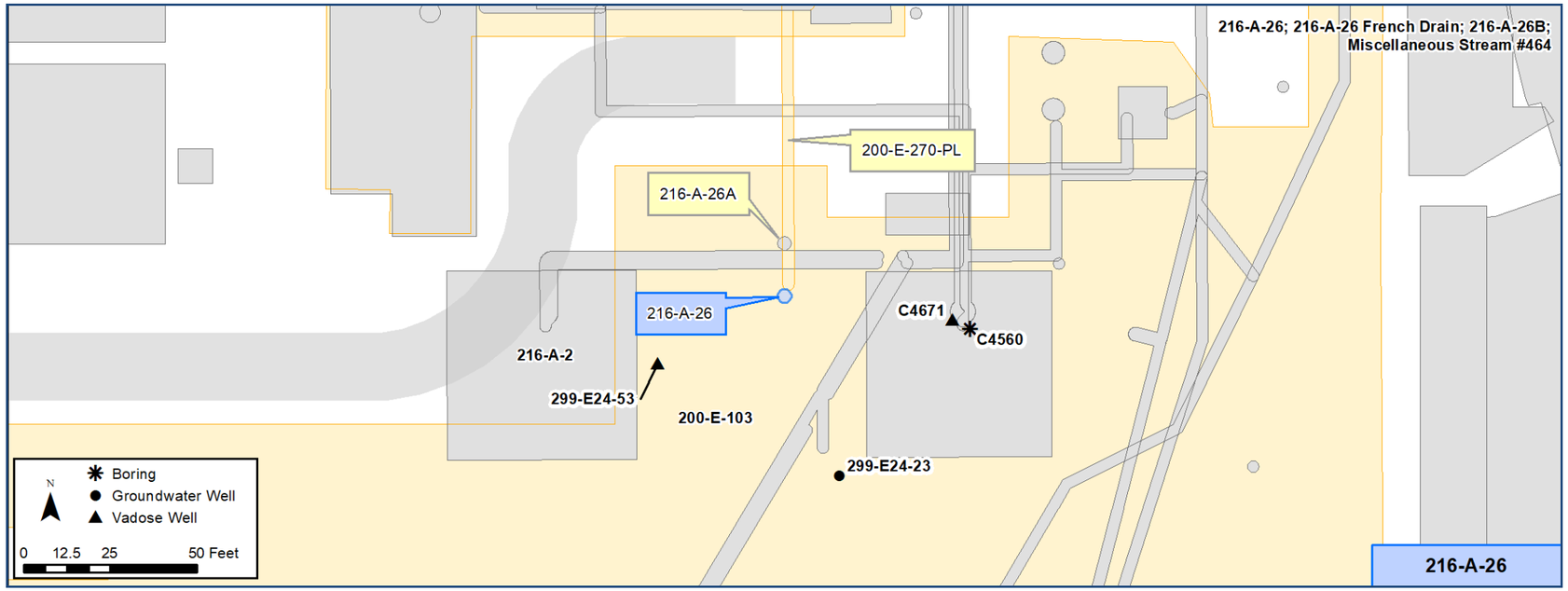
Scoping Summary: 216-A-22 (Crib)



Scoping Summary: 216-A-26 (French Drain)

History

The 216-A-26 waste site is an inactive, underground French drain that received floor drainage from the 291-A fan control house via the 200-E-270-PL pipeline. The waste site is located 115 ft south of the center of the 202A facility and 15 ft south of French drain 216-A-26A. The 216-A-26 French drain was operational from 1965 to 1991, acting as a replacement to the 216-A-26A French drain. The site was deactivated when both drains in the 291-A fan control house were filled with epoxy and sealed during PUREX deactivation.



Construction

- Depth: Unknown
- Diameter: ~3-4 ft (conflicting information)
- Length: 3 pipes of 5 ft (some sources indicate one 5 ft section)
- Material: Clay/Tile
- Fill: Rock
- Number of incoming and outgoing pipelines:
  - Incoming Pipelines: 1
  - Depth: ~3.5ft bgs

Features Of Interest

- No features of interest identified.

Relevant Characterization

- A 1990 radiological survey did not identify any contamination at surface level.

Waste Streams

- Process: Floor Drainage
  - Waste Stream: Floor drainage from the 291-A fan house, which included steam condensate water from the oil cooler for the exhaust fan bearing cooling system, and water when the building was hosed down.
- Waste contained <1 Ci total beta activity.
- Low salt and neutral/basic.

Misc./Other Relevant Information

- Previously associated with Operable Units 200-PO-1, 200-PO-2, 200-MG-2 and 200-MW-1.
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable determined the preferred removal action to be confirmatory sampling/no further action (CS/NFA).
- The "216-A-26B" alias was previously assigned to two different French drains (216-A-26 and 216-A-33) and is currently not used.

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-270-PL

Intersecting/Nearby Sites

200-EA-1

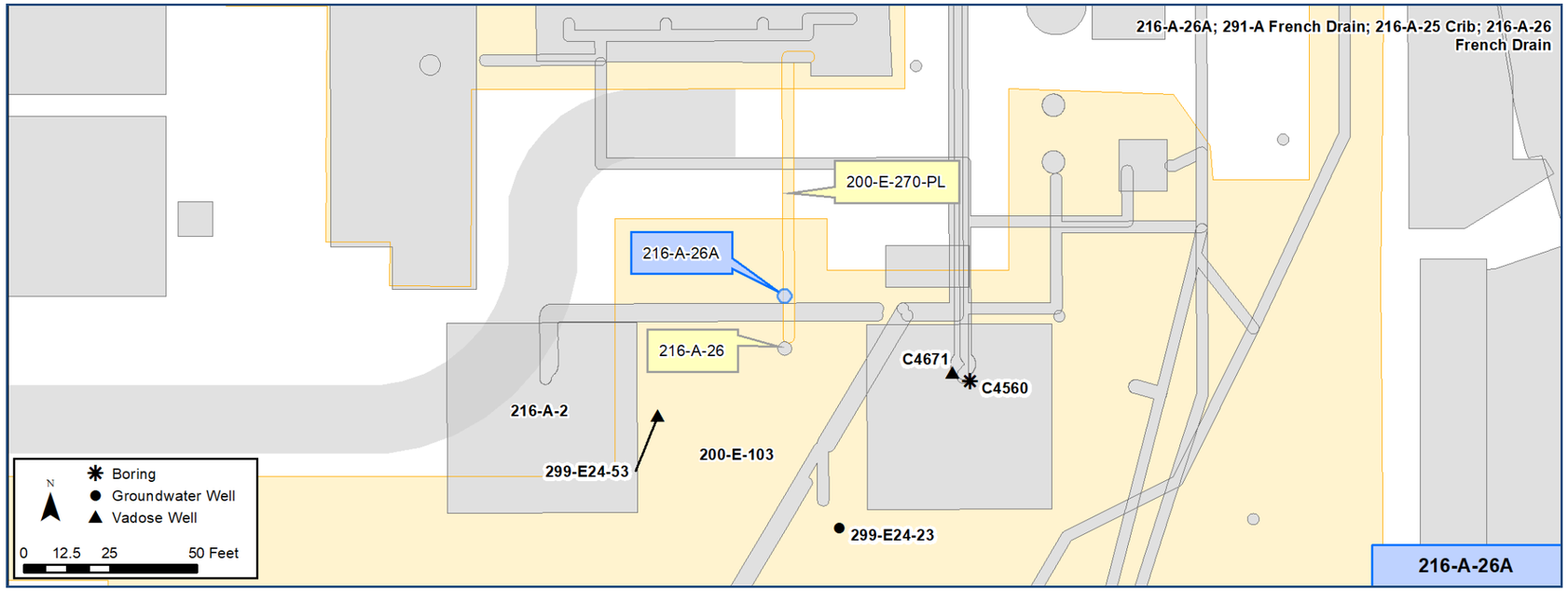
- 216-A-26A French Drain
- 200-E-103 PUREX Stabilized Area

Scoping Summary: 216-A-26 (French Drain)

Scoping Summary: 216-A-26A (French Drain)

History

The 216-A-26A waste site is an inactive, underground French drain that received floor drainage from the 291-A fan control house via the 200-E-270-PL pipeline. The waste site is located approximately 100 ft south of the 291-A facility and was operational from 1959 to 1965, when the site's encasement was removed and waste rerouted to 216-A-26. Due to an unusual numbering convention, the original French drain is known as 216-A-26A and the replacement French drain is known as 216-A-26.



Construction

- Depth: Unknown
- Diameter: ~3-4 ft
- Length: 3 pipes of 5 ft (some sources indicate one 5 ft section)
- Material: Clay/Tile
- Fill: Gravel
- Number of incoming and outgoing pipelines:
  - Incoming Pipelines: 1
  - Depth: ~3.5 ft bgs

Features Of Interest

- No features of interest identified.

Relevant Characterization

- A 1990 radiological survey did not identify any contamination at surface level.

Waste Streams

- Process: Floor Drainage
  - Waste Stream: Floor drainage from the 291-A fan house, which included steam condensate water from the oil cooler for the exhaust fan bearing cooling system, and water when the building is hosed down
- Waste contained <1 Ci total beta activity
- Low salt and neutral/basic
- ~264 gal of waste disposed

Misc./Other Relevant Information

- Previously associated with Operable Units 200-PO-1, 200-PO-2, 200-MG-2 and 200-MW-1.
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable determined the preferred removal action to be confirmatory sampling/no further action (CS/NFA).
- The "216-A-26B" alias was previously assigned to two different French drains (216-A-26 and 216-A-33) and is currently not used.

Site Interfaces

Origin/Termination

200-IS-1

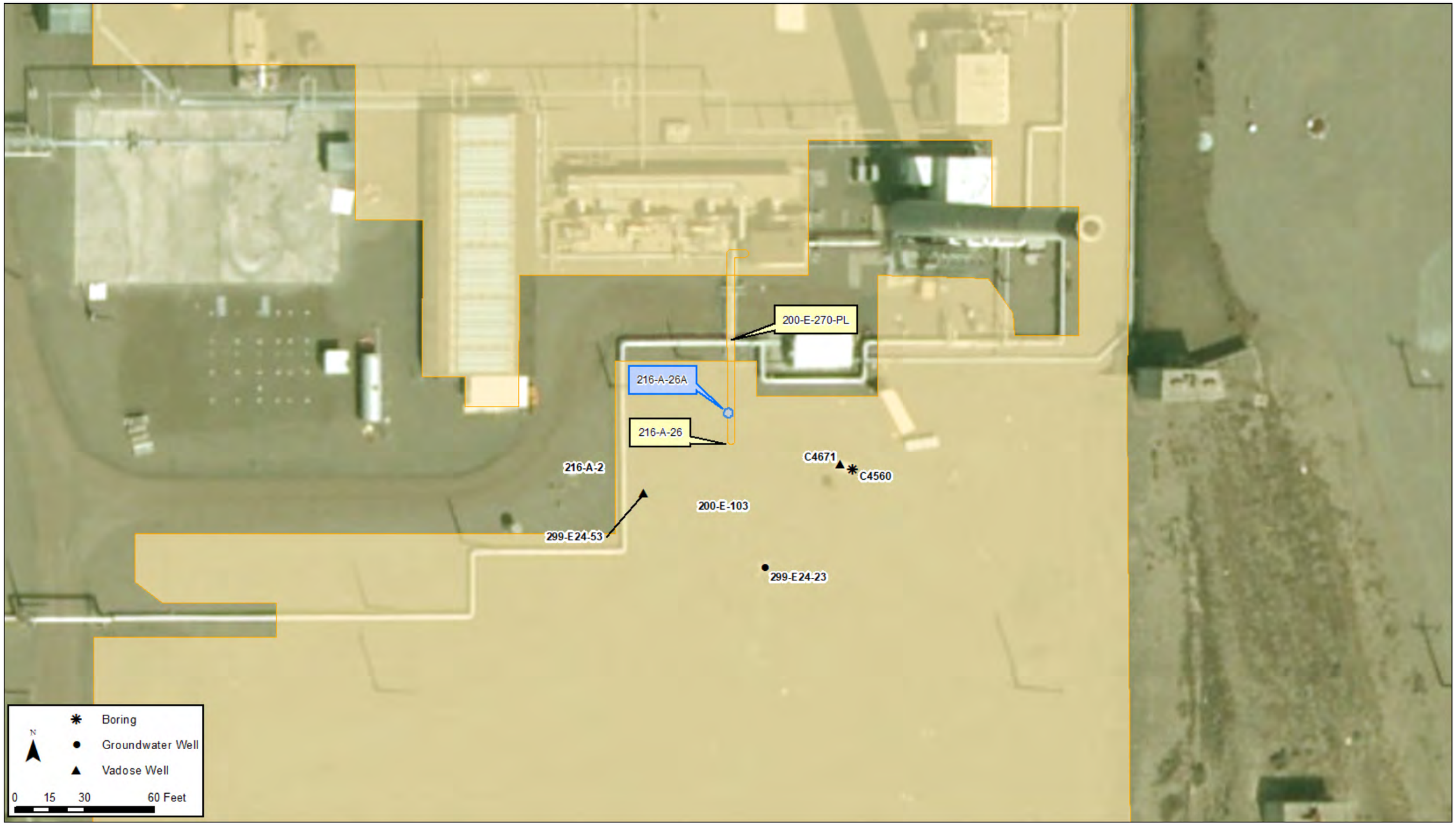
- 200-E-270-PL

Intersecting/Nearby Sites

200-EA-1

- 216-A-26A French Drain
- 200-E-103 PUREX Stabilized Area

Scoping Summary: 216-A-26A (French Drain)



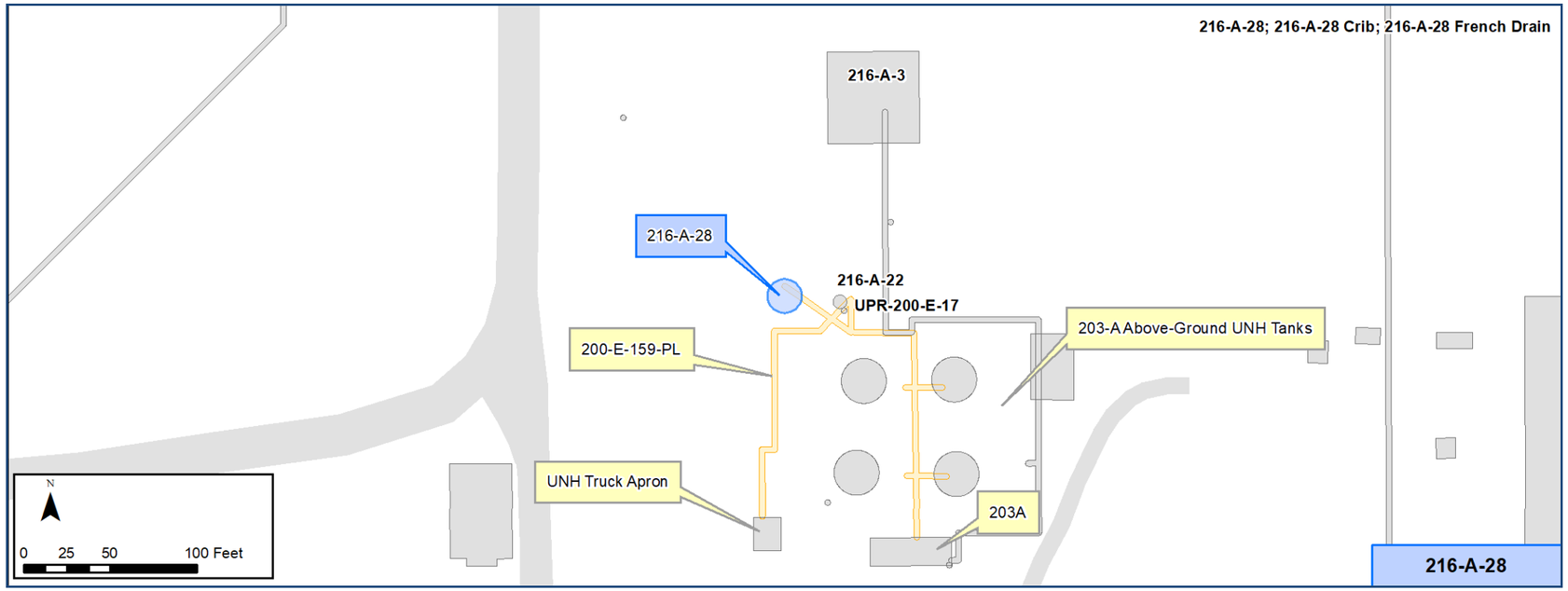
Scoping Summary: 216-A-28 (Crib)

History

The 216-A-28 waste site is an inactive, underground crib that received liquid waste from the 203A (Acid Pump House) sumps and heating coil condensate from the above-ground uranyl nitrate hexahydrate (UNH) tanks north of 203A via the 200-E-159-PL pipeline. The crib is located near the northwest corner of the 203-A Tank Farm.

The crib became operational in 1958 after an unplanned release (UPR-200-E-17) led to the closure of the 216-A-22 crib, resulting in the waste being diverted to the 216-A-28 crib. In November 1967, the effluent piping was blanked off and the French drain was deactivated when the flow rate exceeded the infiltration capacity. The waste was then diverted north to the 216-A-3 crib.

A 2-in diameter liquid level riser extending above grade near the center of the French drain was hit by a vehicle (date unknown) and broken off. In 1981, the center of the crib was excavated and removed for burial during the installation of a PUREX security system. The site was backfilled.



Construction

- Depth: 11 ft bgs
- Top Diameter: 20 ft (at surface)
- Bottom Diameter: 10 ft
- Fill: 9 ft of gravel (~1,100 cu. ft)
- Calculated Total Volume: ~15,000 gal
- Number of incoming and outgoing pipelines:
  - Incoming Pipelines: 1
    - Depth: 4 ft bgs
    - Material: Stainless steel (perforated)

Features Of Interest

- Waste site is identified and posted as a Radioactive Underground Material Area (URMA).
- A concrete marker identifies the crib's location.

Relevant Characterization

- 2012 and 2015 surface radiation surveys detected < 5,000 dpm/cm-2 beta/gamma contamination.

Waste Streams

- Process: Drain Wastes & Cooling Water
  - Waste Types: Liquid waste from the 203A acid pump house and heating coil condensate from P-1 through P-4 UNH tanks, with low activity fission products transferring
- Received approximately 8,000 gal of waste
- Low salt and neutral/basic.

Misc./Other Relevant Information

- Both The 200-MG-1 OU Engineering Evaluation/Cost Analysis (DOE/RL-2008-44, Rev0) and the 200-PW-2 and 200-PW-4 OU Feasibility Study (DOE/RL-2004-85, Draft A) selected Removal, Treatment and Disposal (RTD) as the site's preferred removal action.

Site Interfaces

Origin/Termination:

200-IS-1 OU

- 200-E-159-PL

Intersecting/Nearby Sites:

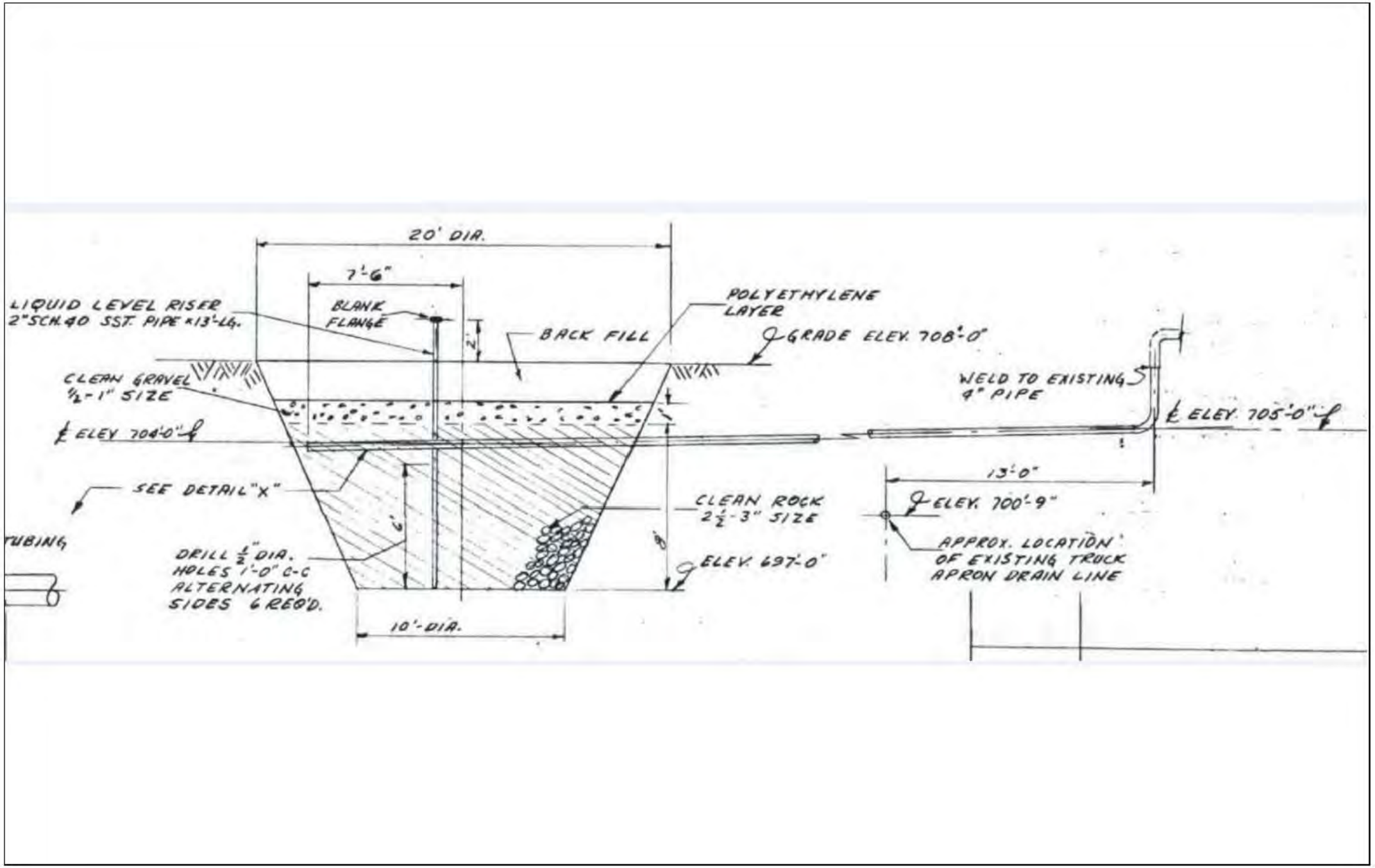
200-EA-1 OU

- 216-A-22 French Drain
- 216-A-3 French Drain
- UPR-200-E-17

Facilities

- 203A Acid Pump House
- 203A Tank Farm

Scoping Summary: 216-A-28 (Crib)


20' DIA.
7'-6"
LIQUID LEVEL RISER
2" SCH. 40 SST. PIPE x 13'-LG.
BLANK FLANGE
2'
BACK FILL
POLYETHYLENE LAYER
GRADE ELEV. 708'-0"
CLEAN GRAVEL
1/2-1" SIZE
℄ ELEV 704'-0" ℄
WELD TO EXISTING 4" PIPE
℄ ELEV. 705'-0" ℄
13'-0"
ELEV. 700'-9"
SEE DETAIL "X"
CLEAN ROCK
2 1/2-3" SIZE
6'
8'
TUBING
DRILL 1/2" DIA. HOLES 1'-0" C-C ALTERNATING SIDES 6 REQ'D.
ELEV. 697'-0"
APPROX. LOCATION OF EXISTING TRUCK APRON DRAIN LINE
10'-DIA.

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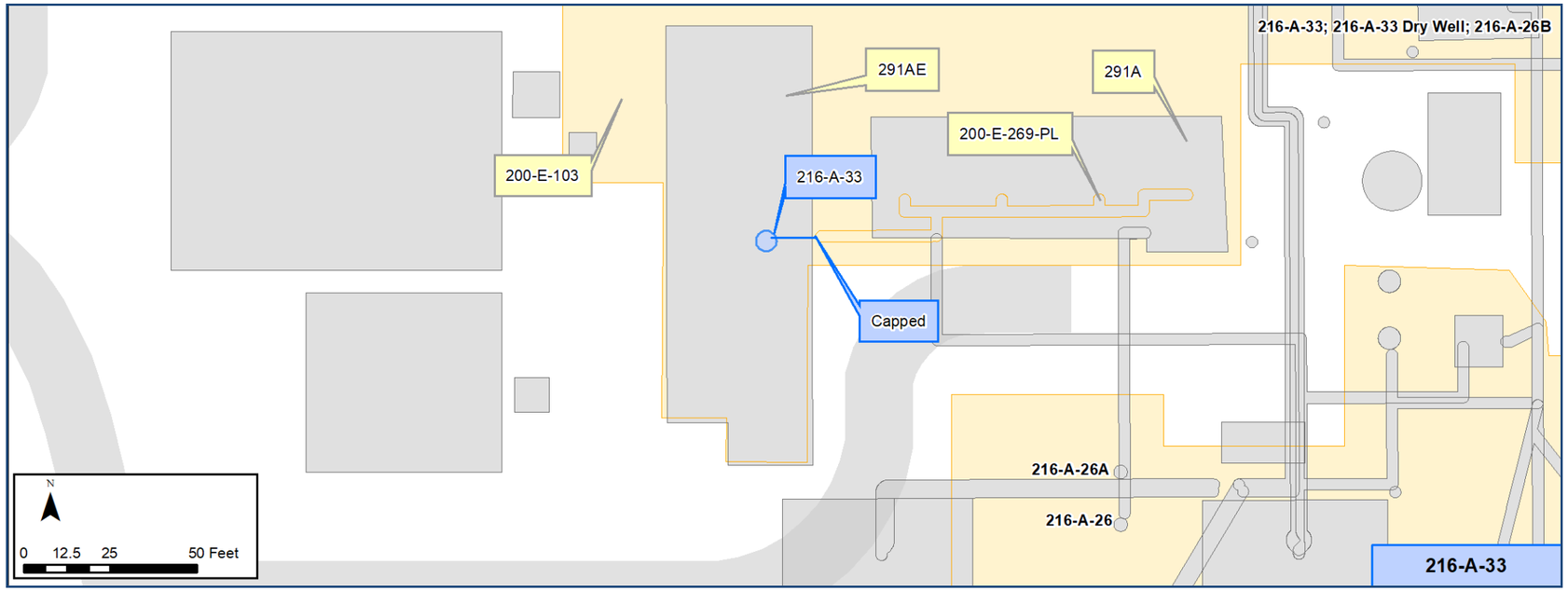
Scoping Summary: 216-A-33 (French Drain)

History

The 216-A-33 waste site is an inactive, underground French drain designed to received bearing coolant waste from the 291-A Stack electrical exhaust fans via the 200-E-269-PL pipeline. Conflicting information exists as to whether coolant was ever discharged to the site. The French drain is located southwest of the 291-A building and was operational from 1955 to 1964, when the piping was cut and capped east of the 291-AE facility.

In 1985, the 291-AE building was constructed over the abandoned 216-A-33 French drain per Project B-295A. Drawing H-2-75973 indicates the 216-A-33 French drain and connecting 200-E-269-PL pipeline were “removed as required” for construction. No information is available on what, if any, removal actions were performed.



Construction

- Depth: ~12 ft bgs
- Diameter: 3 ft (some sources indicate a 6 ft diameter)
- Length: 5 ft
- Material: Clay/Tile
- Side Slope: 1:1.5 (from surface to pipe)
- Fill: Rock
- Number of incoming and outgoing pipelines:
  - Incoming pipelines: 1
    - Depth: ~4-5 ft bgs
    - Material: 2-in Stainless Steel

Features Of Interest

- Located below the east side of the 291-AE Facility.

Relevant Characterization

- A 1990 radiological survey did not detect any contamination at surface level.

Waste Streams

- Process: Cooling Water
  - Waste Type: Bearing coolant waste/water from the 291-A Stack electrical exhaust fans
- Low in salt and neutral/basic
- Waste contains less than 1 Ci total beta activity

Misc./Other Relevant Information

- The alias "216-A-26B" was previously assigned to two different French drains (216-A-26 and 216-A-33) and is currently not used.

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-269-PL

Intersecting/Nearby Sites

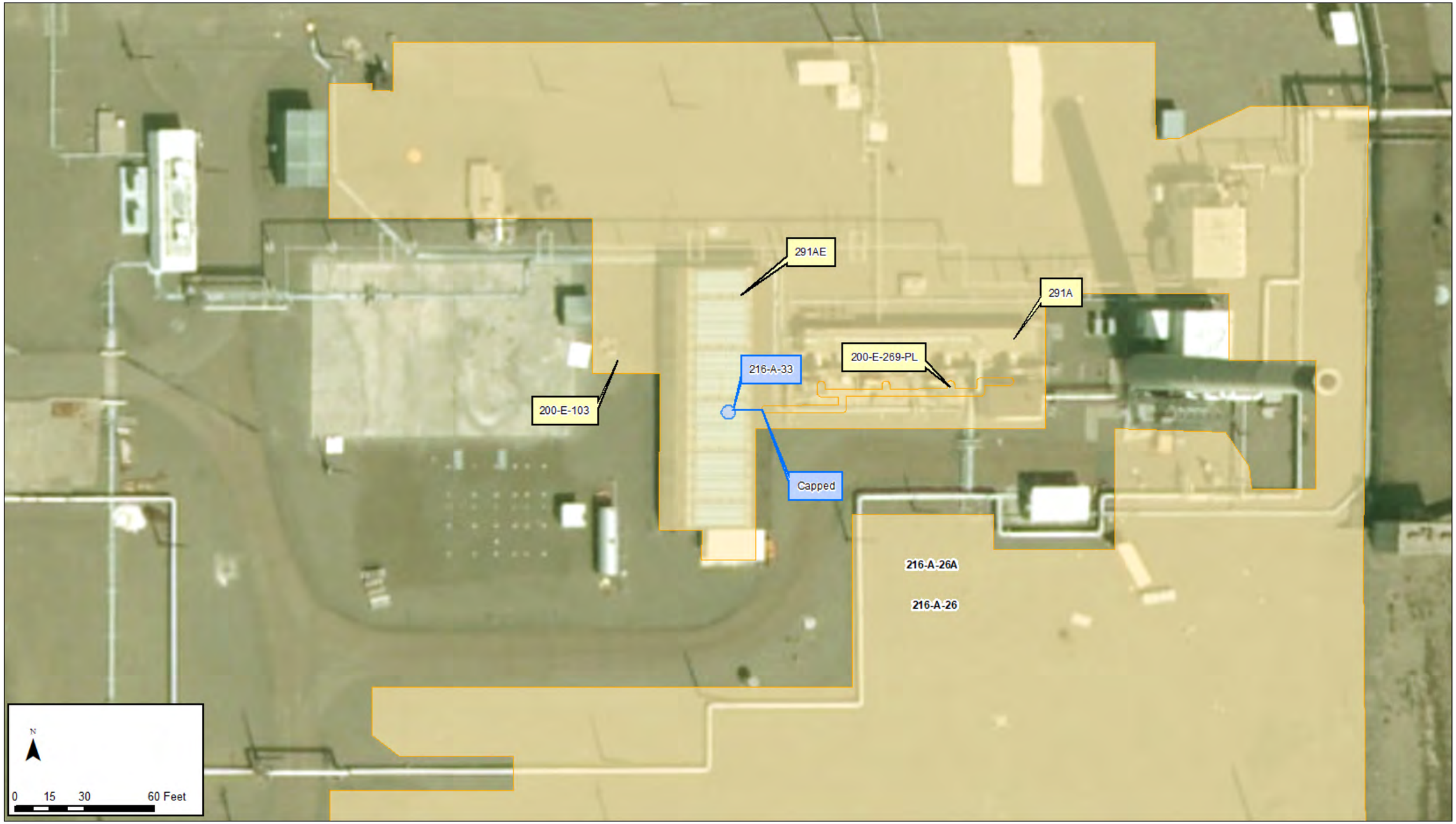
200-EA-1

- 216-A-26 French Drain
- 216-A-26A French Drain
- 200-E-103 PUREX Stabilized Area
- 201-C Process Building

Facility

- 291-A PUREX Main Exhaust System

Scoping Summary: 216-A-33 (French Drain)



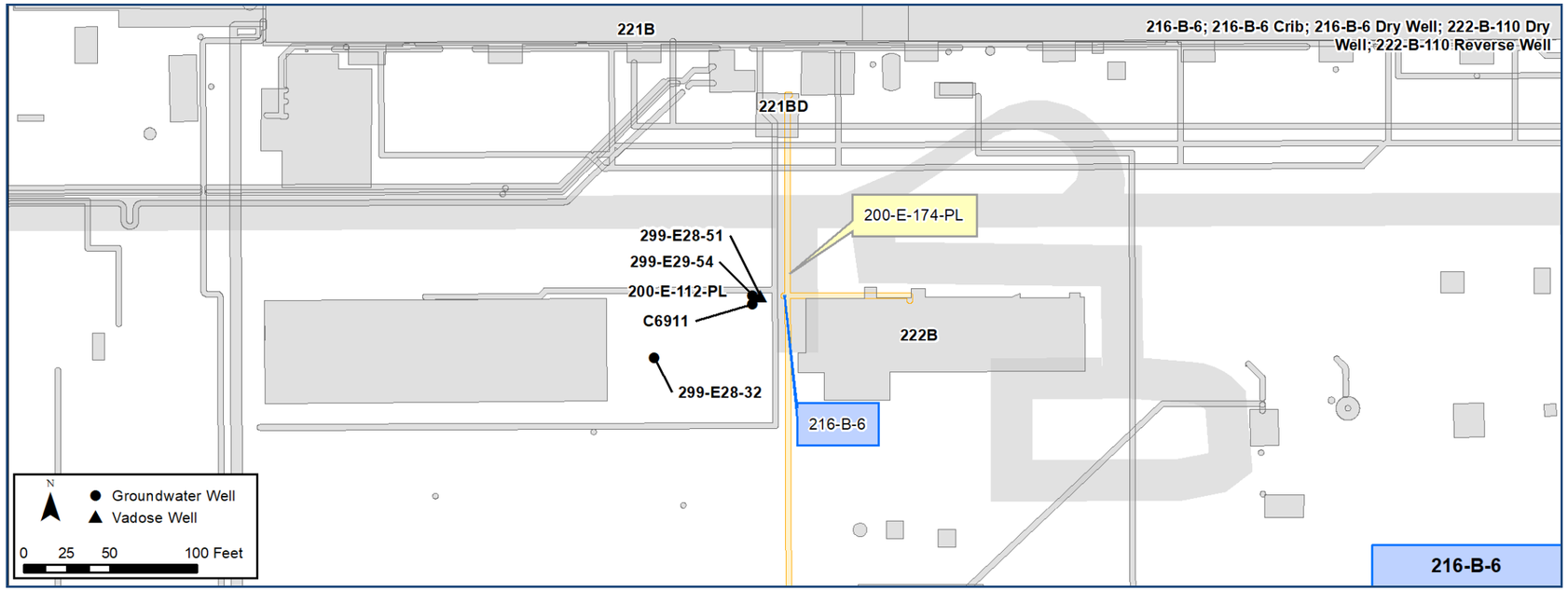
Scoping Summary: 216-B-6 (Injection/Reverse Well)

History

The 216-B-6 waste site is an inactive reverse well that was installed to provide disposal for the 222B (Office Builing) Laboratory's hot sink and sample table waste. The reverse well was in use from 1945 to 1949.

The 222B Laboratory was used for small-scale experiments in support of bismuth-phosphate fuel processing. Liquid effluent was disposed from decontamination sinks and sample slurper waste to the reverse well via the 200-E-174-PL line. Later, the waste was transferred to the 216-B-10A Crib (not pictured).

The reverse well is an encased borehole with the lower end of the casing perforated to allow liquid to seep into the vadose zone. The effluent line to the reverse well is blanked off, and the vent pipe has been removed.



Construction

- Depth: Uncertain
  - *Differing accounts of depth, including 75 ft (HW-7-4850), 160 ft (HW-55176), and 302 ft bgs (RHO-CD-673).*
  - *Based on 2009 borehole findings, with maximum contamination between 75-and-80 ft bgs, perhaps actual depth of reverse well is closer to 75 ft.*
- Diameter: 6-in.
- Material: Stainless Steel, most likely but unconfirmed
- Lower 25 ft of pipe is perforated

Features Of Interest

- No Features of Interest.

Relevant Characterization

- 2009 Borehole Summary C6911 (to 216 ft bgs):
  - No drill cuttings recovered; no soil samples collected.
  - GPL results: Assuming all gamma activity is Cs-137, two thin contamination zones were detected at 74.5 ft bgs (1,100 pCi/g) and 79.5 ft bgs (65 pCi/g).
- 299-E29-54 2010 findings: max Cs-137 levels of roughly 1,140 pCi/g detected at ~75 ft bgs; Radon is also noted as being detected, but no readings are provided
- 299-E28-32: No man-made radionuclides were detected.

Waste Streams

- Received ~6,000,000 L mixed waste, including both nitric and sulfuric acid, as well as transuranic fission products. Inventory contains less than 10 Ci, total beta.
- Hanford Soil Inventory Model (SIM) disposal estimates at this site are:
  - Chromium: 2,500 kg
  - Nitrate: 58,000 kg
  - Cs-137: 6.5 Ci
  - Sr-90: <1 Ci.

Misc./Other Relevant Information

- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data.*

Site Interfaces

Site Intersect:

200-IS-1 OU

- 200-E-174-PL

Nearby Sites:

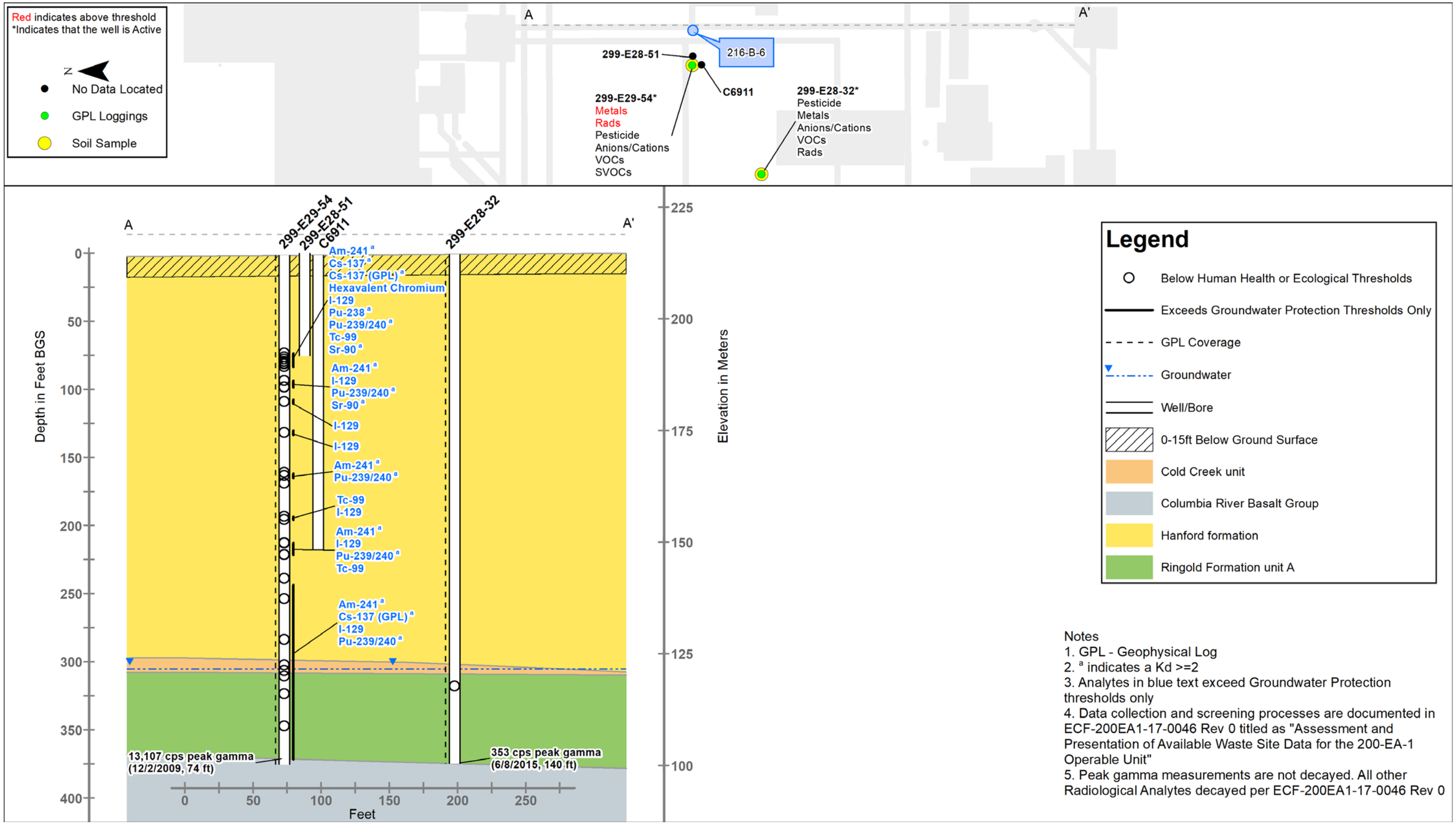
200-IS-1 OU

- 200-E-112-PL

- 222B (Office Building)
- 221BD (Laundry Storage Building)
- 221B (B-Plant)

Scoping Summary: 216-B-6 (Injection/Reverse Well)

Scoping Summary: 216-B-6 (Injection/Reverse Well)



Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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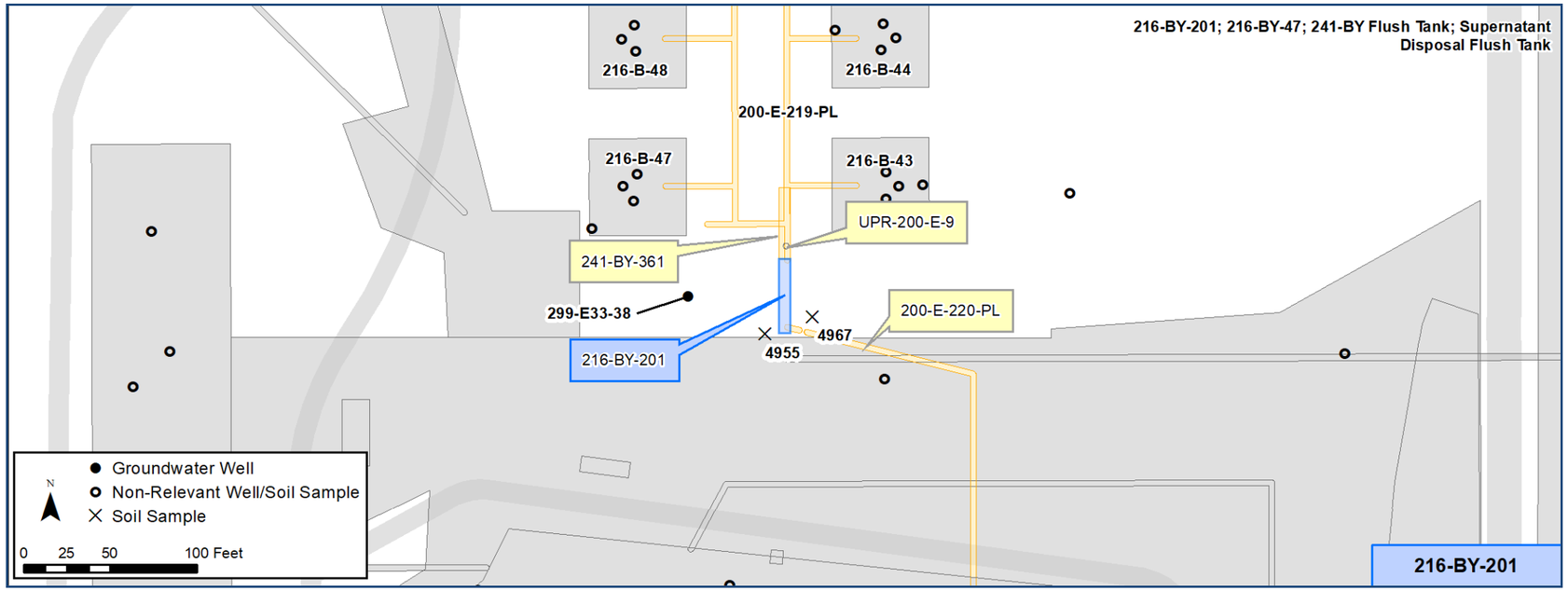
Scoping Summary: 216-BY-201 (Settling Tank)

History

The 216-BY-201 waste site is an inactive, underground flush tank that received scavenged tributyl phosphate (TBP) waste from the 241-BY Tank Farm via the 200-E-220-PL pipeline. The tank is located between the 241-BY Tank Farm and the 216-B-43 through 216-B-50 Cribs. The tank was constructed by 1954 and operational from 1954 to 1974. The tank was isolated and stabilized by 1997.

From 1954 to 1958, the tank received scavenged waste that originated from waste streams associated with the uranium recovery process (URP) waste at the 221U Building (U Plant). The waste was initially sent from the U Plant to the tank farms for storage and was later treated with potassium ferrocyanide. The supernatant from the treated waste was transferred to the tank and then discharged to the cribs (216-B-43 through 216-B-50). On September 15, 1955, an unplanned release (UPR-200-E-9) of 11,000 gal of TBP scavenged supernatant waste overflowed the tank.

From 1965 to 1974, the tank received waste storage tank condensate from the 241-BY Tank Farm (operations for the tank from 1958 to 1965 are not known). In 1975, the 2-in. low level monitoring line between the water monitor pit and 216-BY-201 was blind flanged.



Construction

- Length: 41.5 ft
- Width: 6 ft
- Depth: 9 ft
  - Top of Tank: 5 ft bgs
  - Bottom of Tank: 14 ft bgs
- Calculated Total Volume: 11,220 gal
  - Normal Working Capacity: 8,200 gal
- Material: Concrete
- Number of incoming and outgoing pipelines:
  - Incoming Pipelines: 1
  - Outgoing Pipelines: 1
- A 4-in. schedule 40 vent pipe extends from the top of the tank to 4 ft above ground
- A 6-in. pipe extends from the top of the tank to 2 ft above ground
- A Miller Siphon is located at the bottom of the tank and drains waste to the 216-B-43 through 216-B-50 Cribs via a 14-in. schedule 40 discharge line (200-E-219-PL)
- Manholes are located at each end of the tank

Features Of Interest

- The tank is not discernible from the surface, but a monitoring pit located near the southeast corner of the tank is visible and may be identified by a manhole sheetmetal cover.

Relevant Characterization

- A 2014 radiological survey report noted no radiological problems.
- *See pg 3 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- U Plant Waste - TBP and PFeCN1/PFeCN2
  - Radiological constituents include strontium and cesium and their associated decay products, yttrium and barium
  - Chemical waste includes nitrate, sodium, aluminum, carbonate and hydroxide
  - The tank received ~11,000 gallons of liquid effluent (the exact amount is not known) with 0.19 kg of total uranium, 0.025 g of total plutonium, 1.3 Ci of Cesium-137, 4.6 Ci of Strontium-90, 6.7 kg of ferrocyanide and 2,300 kg of nitrates.

Misc./Other Relevant Information

- The site is located within an Underground Radioactive Material (URM) area.

Site Interfaces

Origin/Termination

200-IS-1 OU

- 200-E-219-PL
- 200-E-220-PL

Intersecting/Nearby Sites

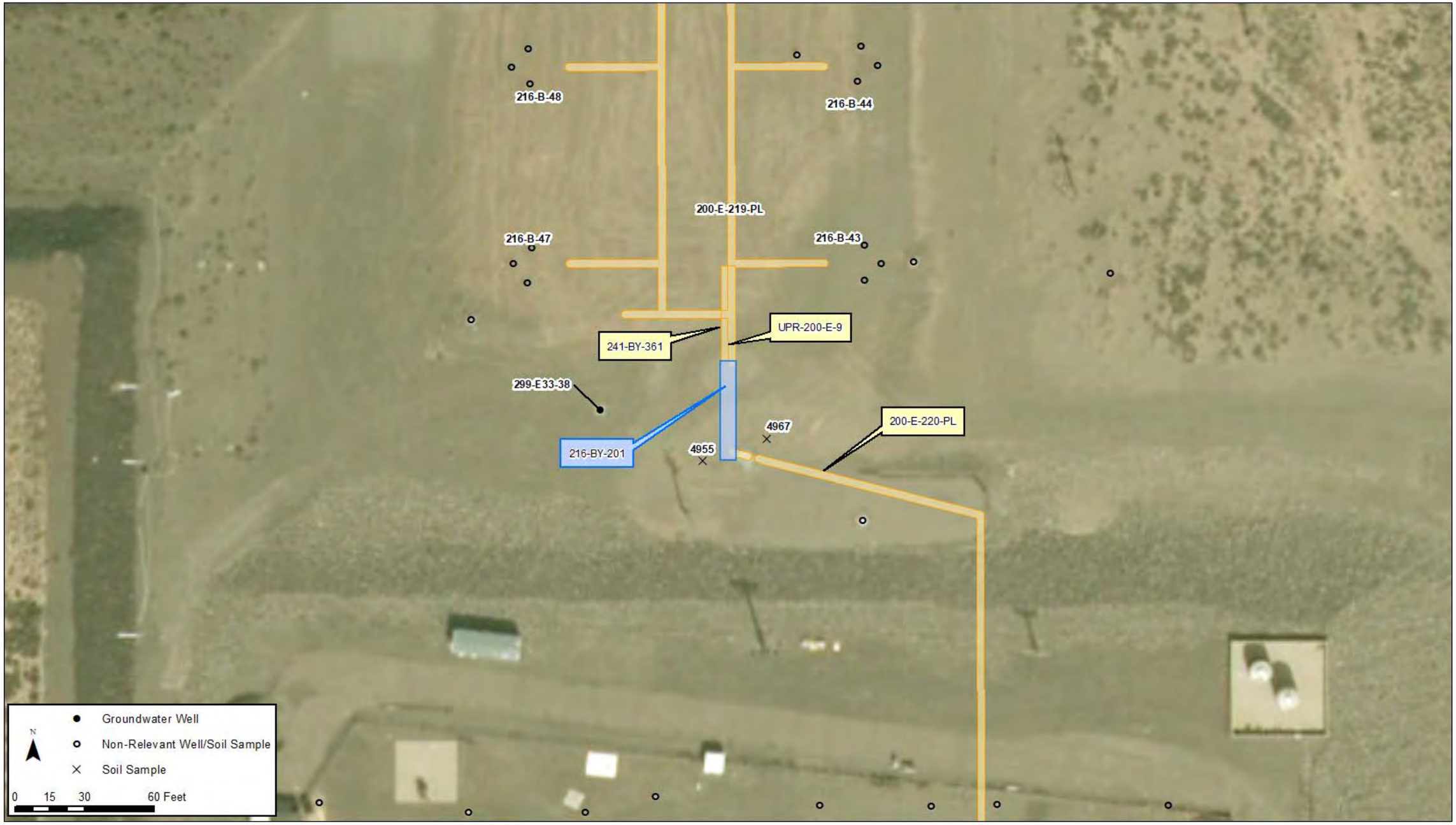
Facility

- 241-BY-361

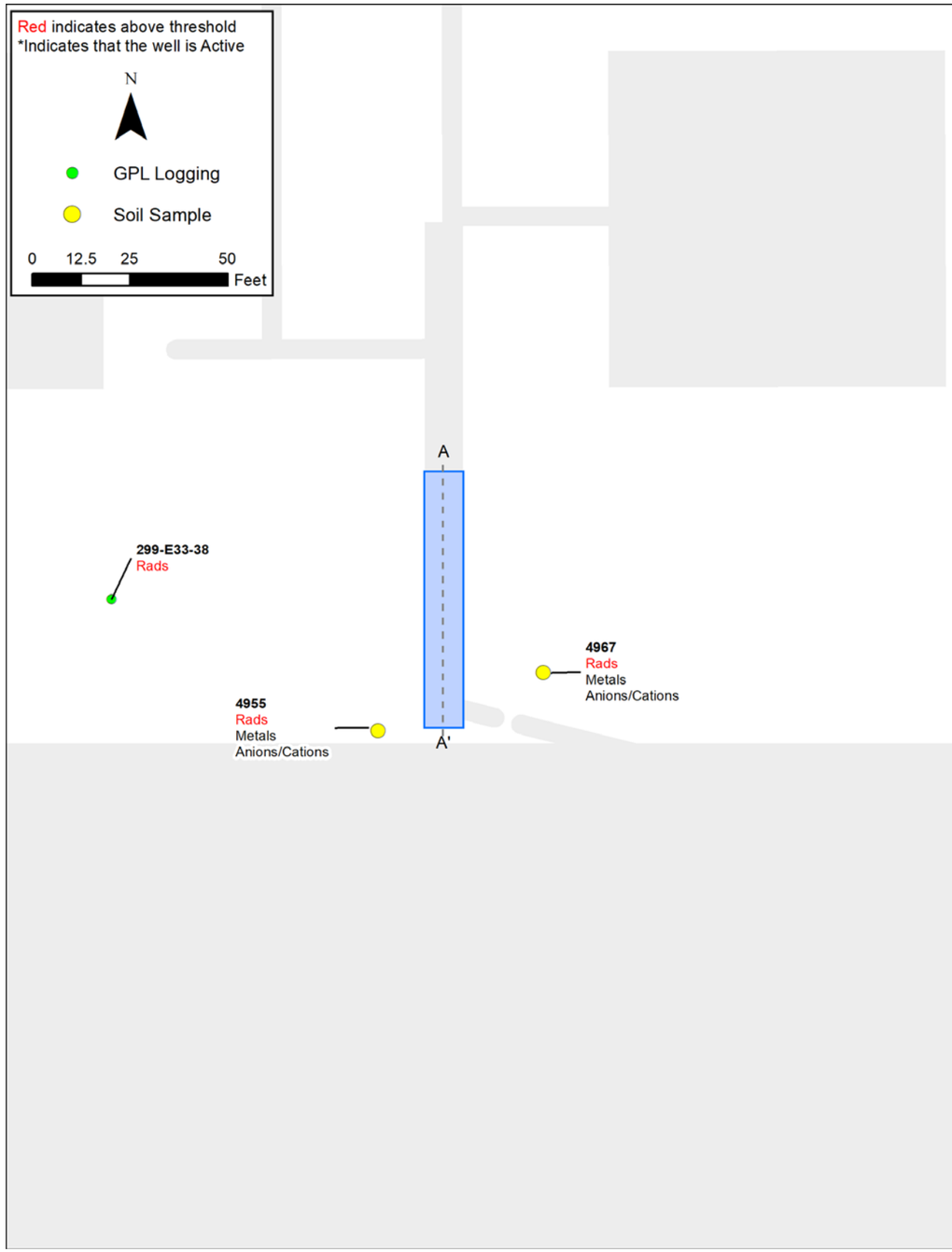
200-EA-1 OU

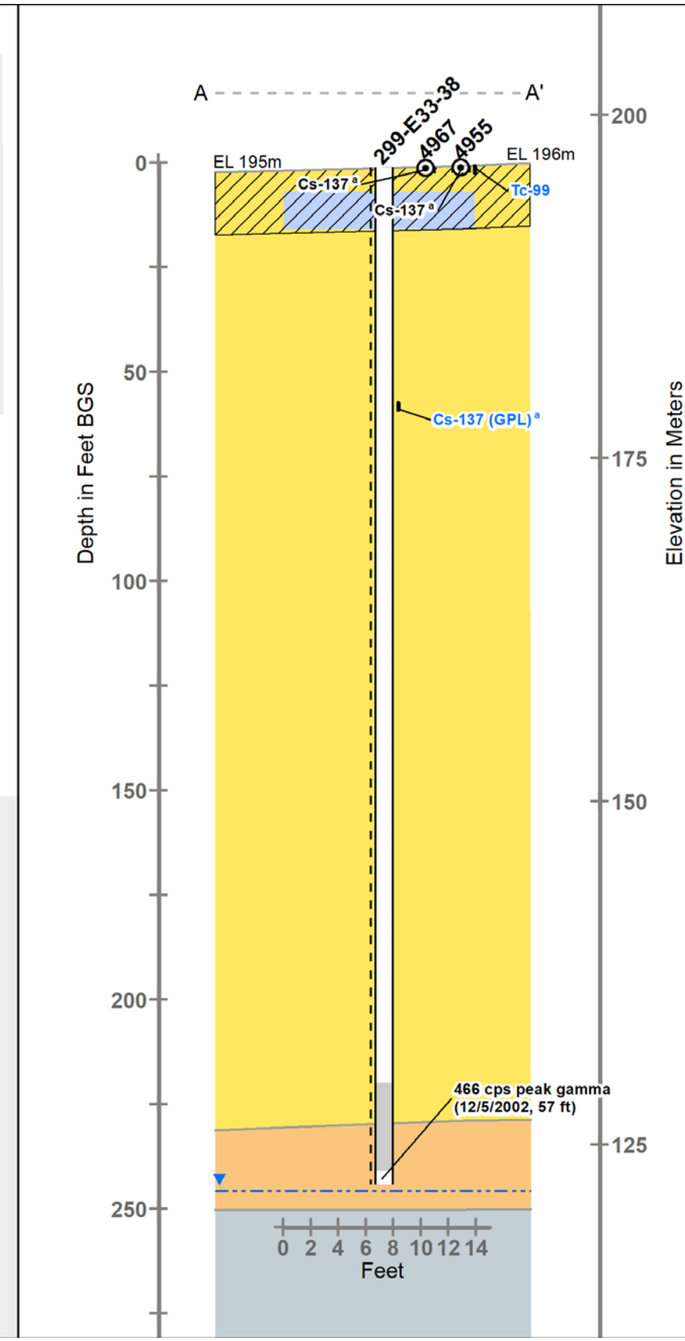
- UPR-200-E-9

Scoping Summary: 216-BY-201 (Settling Tank)



Scoping Summary: 216-BY-201 (Settling Tank)





Legend

- Above Human Health or Ecological Thresholds
- Below Human Health or Ecological Thresholds
- Exceeds Groundwater Protection Thresholds Only
- GPL Coverage
- Groundwater
- Screen
- Well/Bore
- 0-15ft Below Ground Surface
- Waste Site
- Cold Creek unit
- Columbia River Basalt Group
- Hanford formation

Notes
1. GPL - Geophysical Log
2. [a] indicates a Kd >=2
3. Analytes in blue text exceed Groundwater Protection thresholds only
4. Data collection and screening processes are documented in ECF-200EA1-17-0046 Rev 0 titled as "Assessment and Presentation of Available Waste Site Data for the 200-EA-1 Operable Unit"
5. Peak gamma measurements are not decayed. All other Radiological Analytes decayed per ECF-200EA1-17-0046 Rev 0

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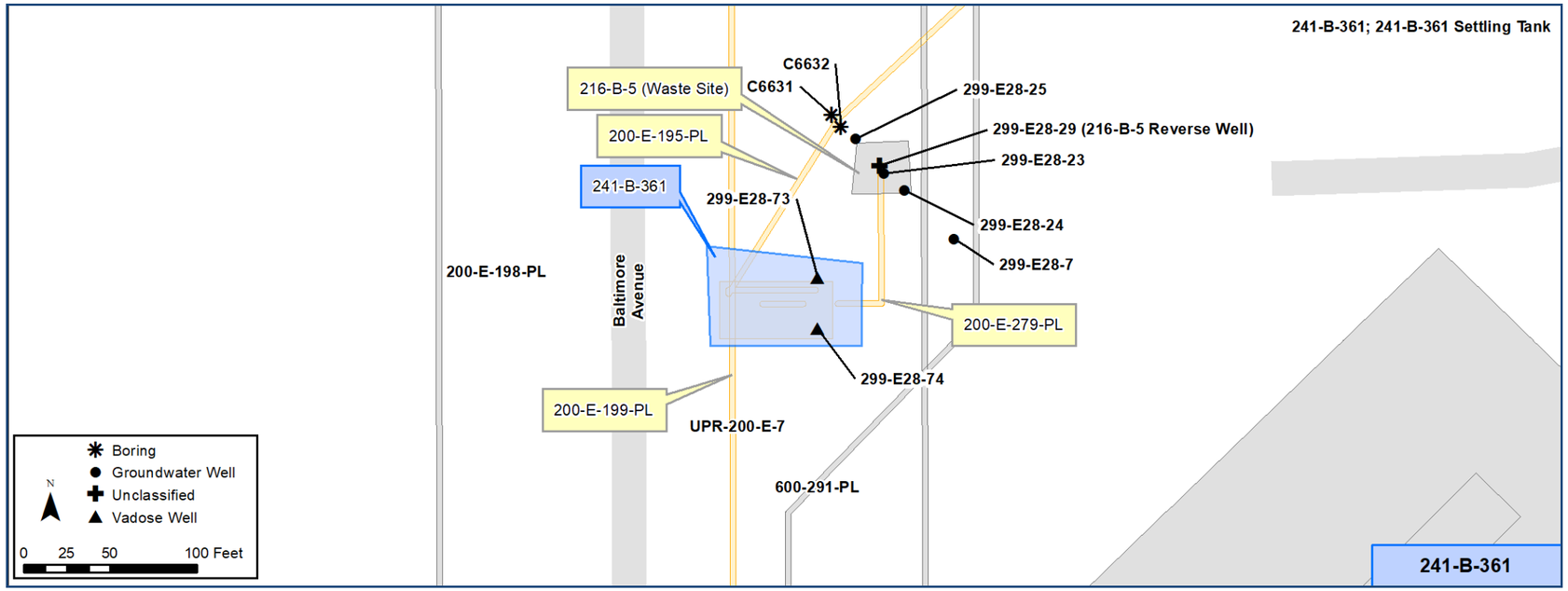
Scoping Summary: 241-B-361 (Settling Tank)

History

The 241-B-361 waste site is an inactive underground settling tank that was in use from 1945 to 1947 for waste originating from B Plant cells 5 and 6, and low level concentrator condensate from the 224B Concentration facility. The waste was first routed to the 241-B-154 diversion box, and then transferred to the settling tank via the 200-E-195-PL pipeline. After settling, the supernate from the tank was discharged to the 216-B-5 reverse well (299-E-28-29) via the 200-E-279-PL.

In June 1985, the tank liquid was pumped to 244-BX and in-tank liquid level was reduced from 118.25 inches to 113.75 inches. Later that month, the tank was isolated and stabilized, and the liquid level was recorded as 115.5 inches.

The site is marked with light post and chain, and is posted with Underground Radioactive Material and Inactive Miscellaneous Storage Tank signs. The surface is covered with coarse rock.



Construction

- Material: 6-in. reinforced, pre-stressed concrete
- Depth: 6 ft bgs (unit top) // 25 ft bgs (unit bottom)
- Shape: Cylinder
- Diameter: 20 ft
- Length: 19 ft tall

- *See Page 4 for a sketch of the 241-B-361 settling tank (WHC-SD-DD-TI-057).*

Features Of Interest

- Eleven risers remain visible above grade: one is equipped with a manual tape, another contains two dip tubes, a third vents the unit, and the remaining eight are all blanked off.
- Historical knowledge of the tank construction and use support the statement that tank surroundings should not have been impacted from the tank. Tank integrity can be confirmed during sludge removal activities.

Relevant Characterization

- No soil samples have been taken here.
- Based on the geophysical logging information from the two wells in the vicinity of the settling tank, the tank did not leak.
- *See Page 3 for a depiction of the nature and extent of contamination, as defined by existing data.*

Waste Streams

- Tank sludge sampled and analyzed in 1979, and consistent with the bismuth phosphate process. See Page 4 for details.
- 120 million gallons of waste, including ~4.3 kilograms of plutonium, half of which is assumed to still remain, while other half was transferred to the reverse well.
- ~2 million curies of strontium remains in the tank.
- In DOE/RL-2003-64, Draft A, it was noted that if the tank sludge were verified to be TRU, solidification would likely be required to meet the waste acceptance criteria for disposal at Waste Isolation Pilot Plant (WIPP), if removed.

Misc./Other Relevant Information

- The settling tank was previously evaluated in the 200-TW-2 feasibility study (DOE/RL-2003-64, Draft A). The preferred alternative was identified as sludge removal, with Maintain Existing Soil Cap/Monitored Natural Attenuation/Institutional Controls (MESC/MNA/IC); however, the waste site was removed from the operable unit prior to regulatory approval.

Site Interfaces

Site Intersects:

200-IS-1 OU

- 200-E-279-PL
- 200-E-195-PL
- 200-E-199-PL

Nearby Sites:

200-DV-1 OU

- 216-B-5 (reverse well)

200-IS-1 OU

- 200-E-198-PL
- UPR-200-E-7

- 600-291-PL (active; TEDF Line)

Scoping Summary: 241-B-361 (Settling Tank)

Scoping Summary: 241-B-361 (Settling Tank)

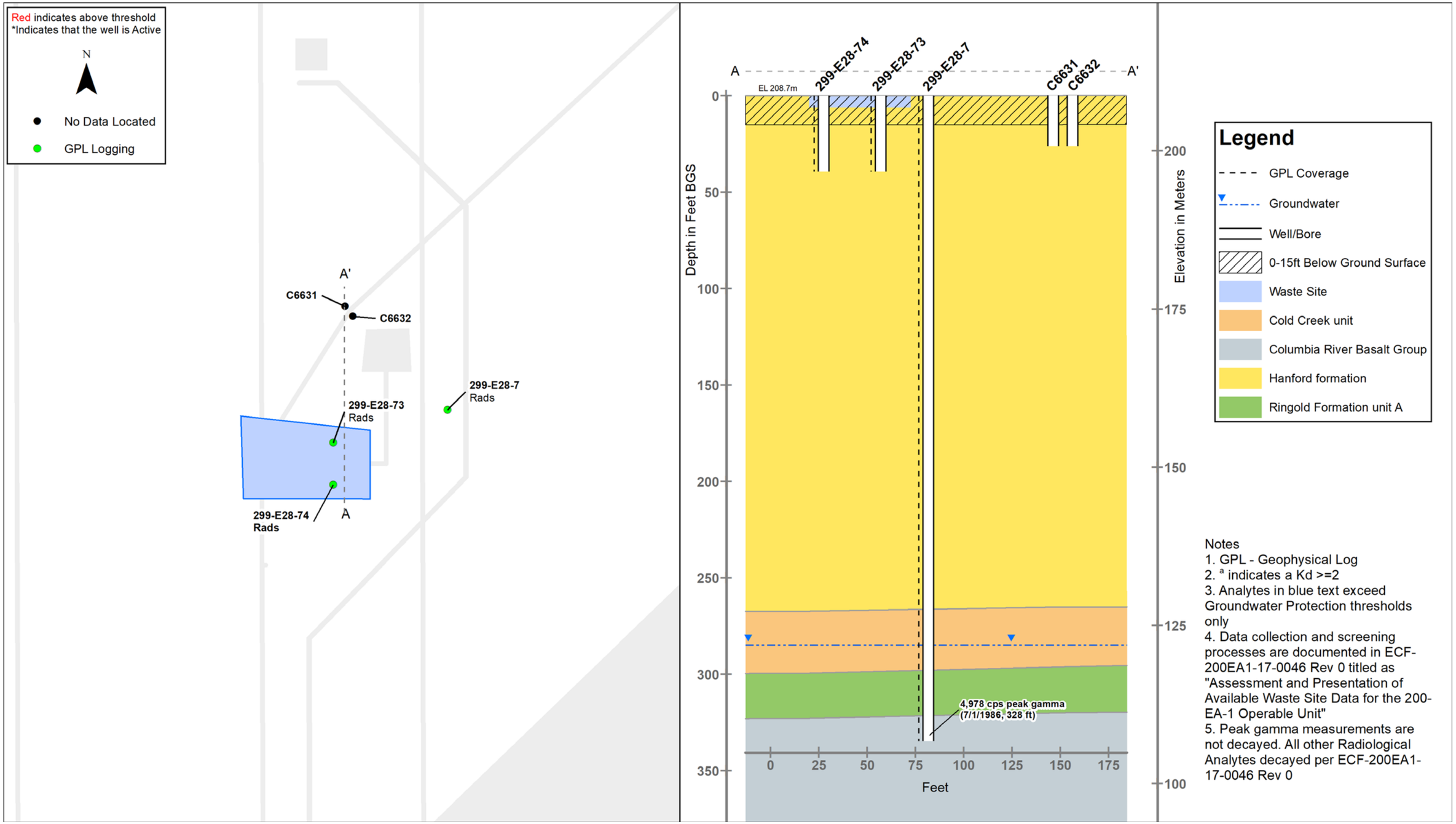
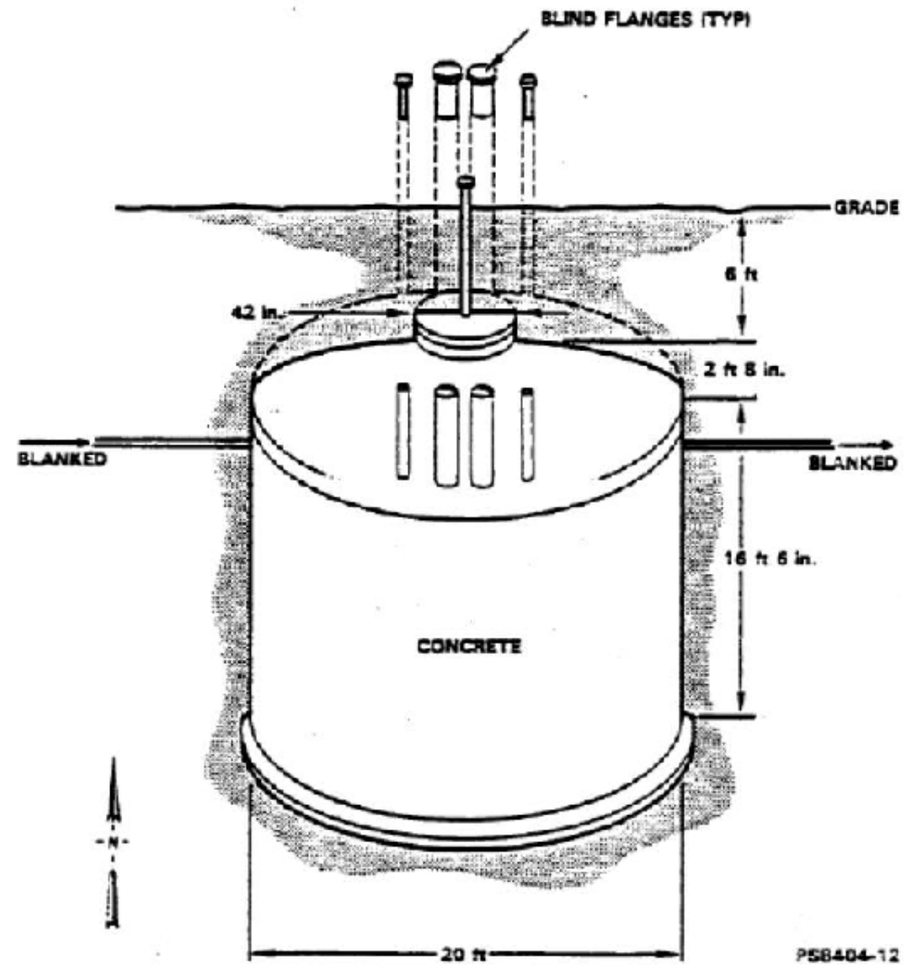


Table 1. Analysis of 241-B-361 Settling Tank Sludge. (Smith 1980)

COMPONENT	SOLIDS, wt%	LIQUIDS
Al^{+3}	<0.06	---
Bi^{+2}	10.3	8.05 E^{-5} *M*
Fe^{+3}	1.3	2.0 E^{-4} *M*
F^{-}	0.04	1.0 E^{-2} *M*
La^{+3}	3.2	3.0 E^{-4} *M*
Mg^{+2}	0.5	<9.0 E^{-5} *M*
Mn^{+2}	3.0	<2.0 E^{-5} *M*
$NaAlO_2$	0.04	<4.05 E^{-4} *M*
Na_2CO_3	---	1.90 E^{-1} *M*
$NaNO_2$	---	3.0 E^{-2} *M*
$NaNO_3$	---	1.07 E^{+0} *M*
NaOH	---	2.4 E^{-1} *M*
Na_3PO_4	---	1.0 E^{-2} *M*
Na_2SO_4	---	4.0 E^{-2} *M*
Ni^{+2}	---	<5.2 E^{-5} *M*
NO_3^{-}	2.0	---
PO_4^{-3*}	3.4	---
SiO_4	0.4	2.0 E^{-3} *M*
SO_4^{-2}	0.2	---
^{239}Pu	3.4 μCi/g	6.1 E^{-7} μCi/mℓ
^{137}Cs	1.4 μCi/g	2.5 E^{-3} μCi/mℓ
$^{89\text{-}90}Sr$	23.0 μCi/g	3.1 E^{-5} μCi/mℓ
^{238}U*	1.1 E^{-5} g/g	8.4 E^{-6} g/mℓ

*All valences.

Note: No pumpable liquids contained in the tank.
Particle Density - 3.93 g/cm^3
Bulk Density - 1.29 g/cm^3
Moisture Content - ~72 wt%
Volume - 1.20 E^{+5} ℓ



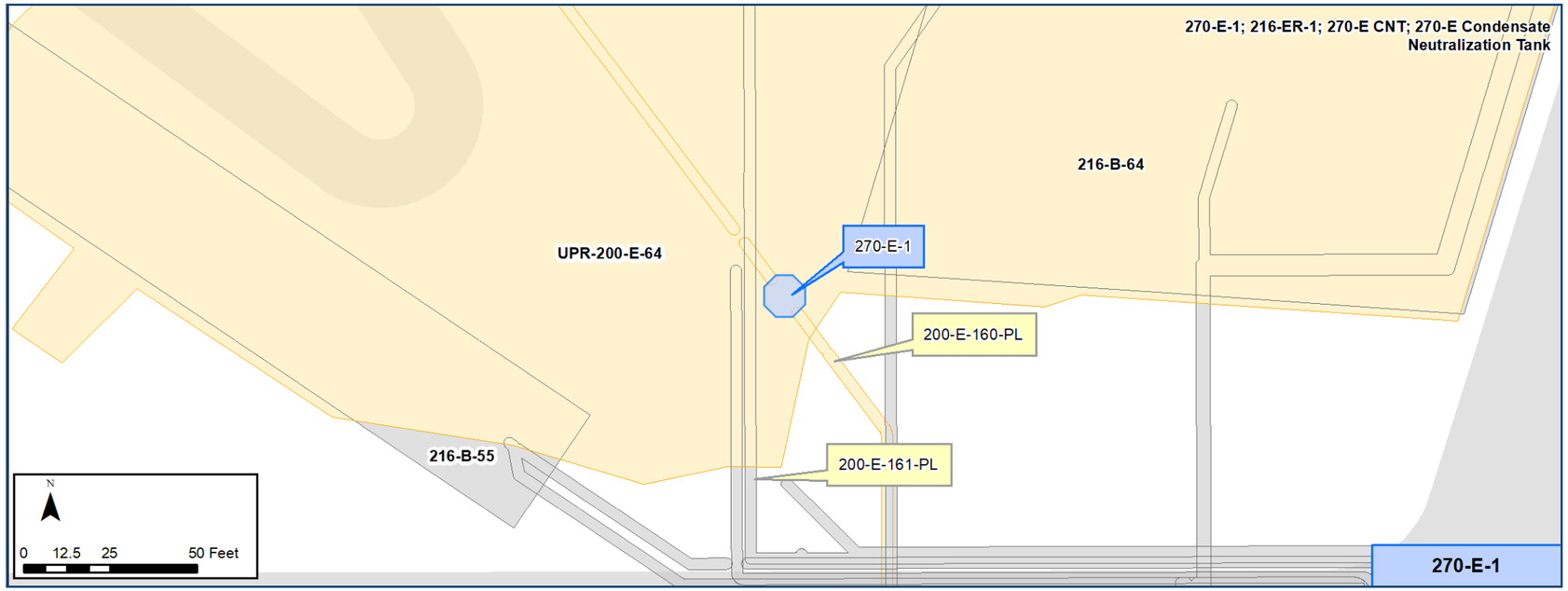
Scoping Summary: 270-E-1 (Neutralization Tank)

History

The 270-E-1 waste site is an inactive, underground Neutralization Tank that received concentrator condensate from the 221B (B Plant) and the 224B (Concentration Facility) via the 200-E-160-PL pipeline. The tank is located west of the 221B Building and near the southwest corner of the 216-B-64 Basin.

The neutralization tank was originally constructed in the 1940s and operational from 1952 to approximately 1957. The tank was originally used in conjunction with the 221U Facility (U Plant) but was moved, reworked, and put to use as a neutralization tank in 1952. No information was located regarding the details of its use with 221U. The inlet and outlet lines to the tank were blanked off in the early 1960s, and the tank was capped and abandoned in place by 1970. The 40-inch charging riser extending from the tank was cut below the ground surface and covered with earth fill by 1972.

The area surrounding 270-E-1 was established as a surface contamination zone (UPR-200-E-64) on October 12, 1984. In 1996, it was determined that the UPR was not caused by the neutralization tank; rather, from a swab riser on 200-E-217-PL.



Construction

- Width: 9 ft
- Depth: 9 ft
  - Top of Tank: 10 ft bgs
  - Bottom of Tank: 19 ft bgs
- Calculated Total Volume: 4,185 gal
- Material: Stainless steel on 2-in. asphalt pad and 1.5-ft reinforced concrete foundation pad
- Number of incoming and outgoing pipelines:
  - Incoming Pipelines: 1
  - Outgoing Pipelines: 1
- A 40-in. charging riser with a 1/4-in. plate cover and 6-in. schedule 40 riser extend from the top of the stainless steel tank to 1 ft bg
- *See Figure 1 on page 3 for more construction details.*

Features Of Interest

- The segment of 200-E-160-PL pipeline from the tank outlet to the 216-B-12 Crib (northwest) is 6-in. vitrified clay pipe, and segment from the 241-ER-151 diversion box to the tank inlet (southeast) is 3-in. stainless steel.

Relevant Characterization

- Radiation readings of 270-E-1 have shown less than 100 cpm direct and smearable and less than 0.5 mrad/hr penetrating plus nonpenetrating at the risers
- A radiological survey conducted in May 2012 for the tank site or surrounding area had <5,000 dpm/100-cm-2 (see Figure 2, pg 4).

Waste Streams

- B Plant and U Plant Waste
  - Contains approximately 3,800 gallons of sludge, including limestone and process condensate
  - In 1974, the surface of the sludge was at 7.58 ft
  - Process condensate reported to contain low levels of uranium, plutonium, and beta emitters
  - Radionuclides include Co-60, Cs-137, and Pu-239/240
  - Limited information was located regarding the waste discharged to the tank from 221U.

Misc./Other Relevant Information

- 1993: listed as a high priority for decommissioning
- The site is potentially associated with UPR-200-E-64, a 2-acre contamination area on the west side of the 216-B-64 basin
- The Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Waste Sites identified Removal, Treatment, and Disposal (RTD) as the preferred remedial action (DOE/RL-2008-44; Rev. 0).

Site Interfaces

Origin/Termination

200-IS-1 OU

- 200-E-160-PL

Intersecting/Nearby Sites

200-EA-1 OU

- 216-B-12
- 216-B-55
- 216-B-64
- UPR-200-E-64

200-IS-1 OU

- 200-E-162-PL
- 200-E-217-PL

Scoping Summary: 270-E-1 (Neutralization Tank)

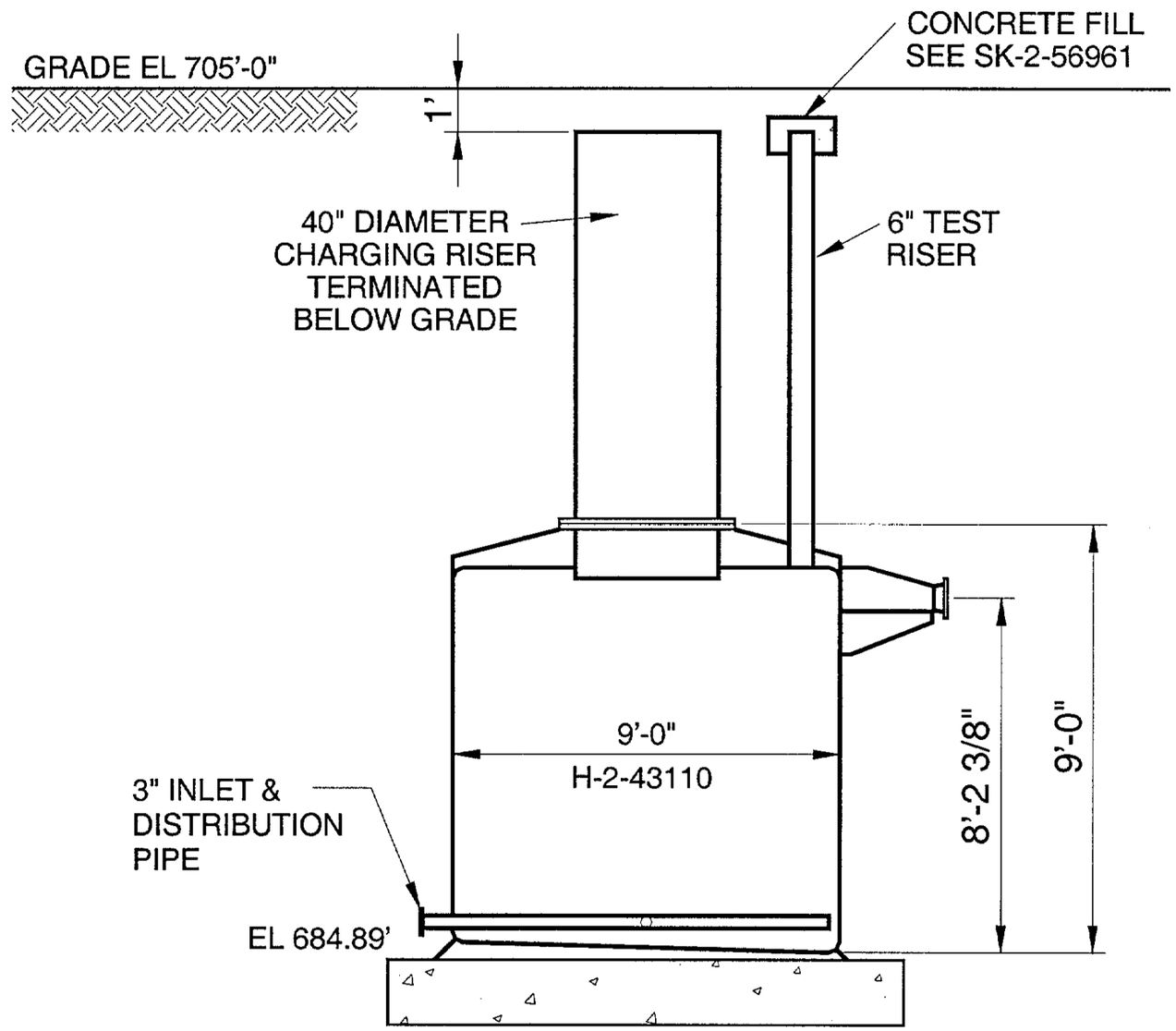


Figure 1

270-E-1 Neutralization Tank

Source: BHI-01018

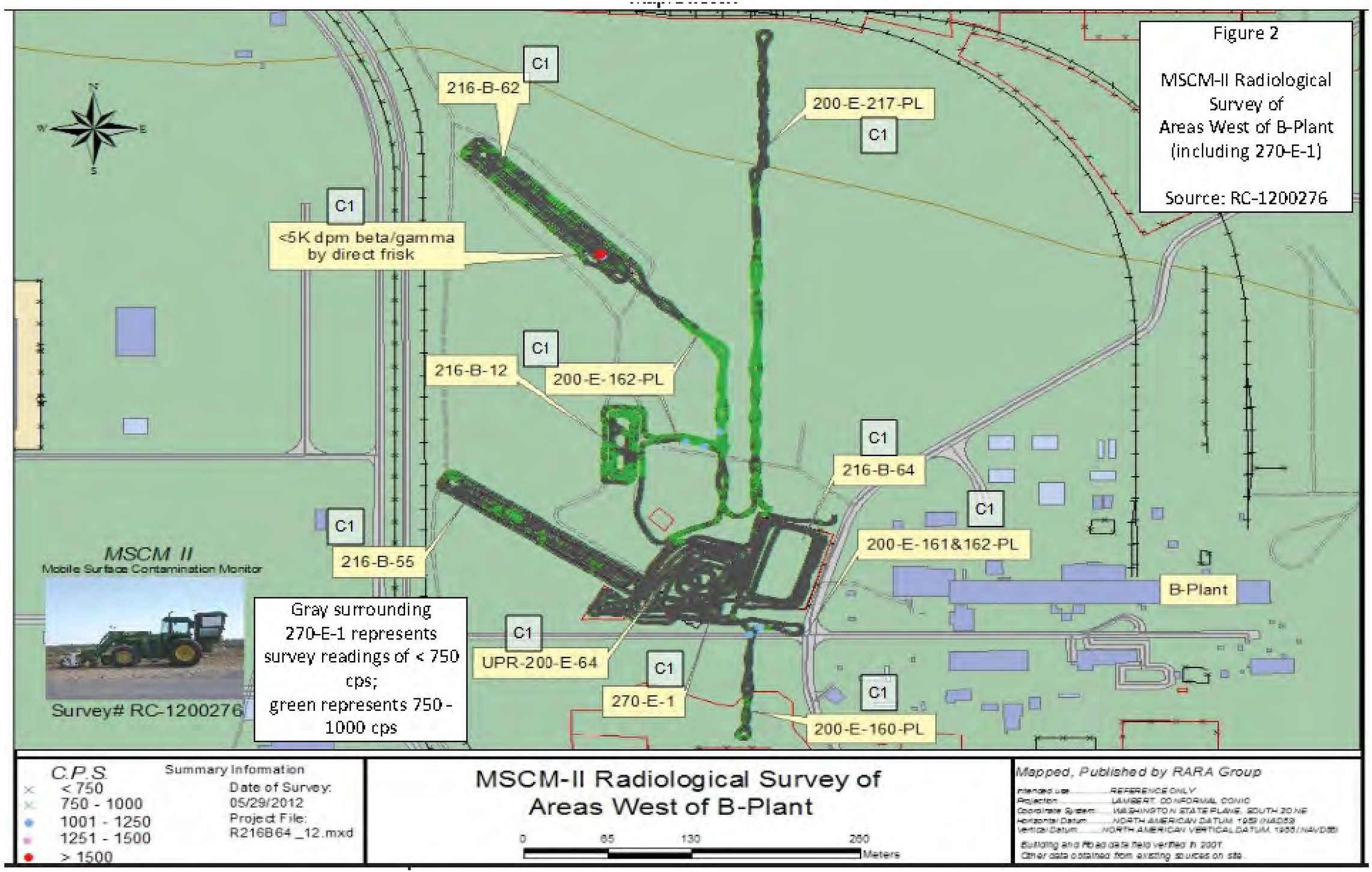


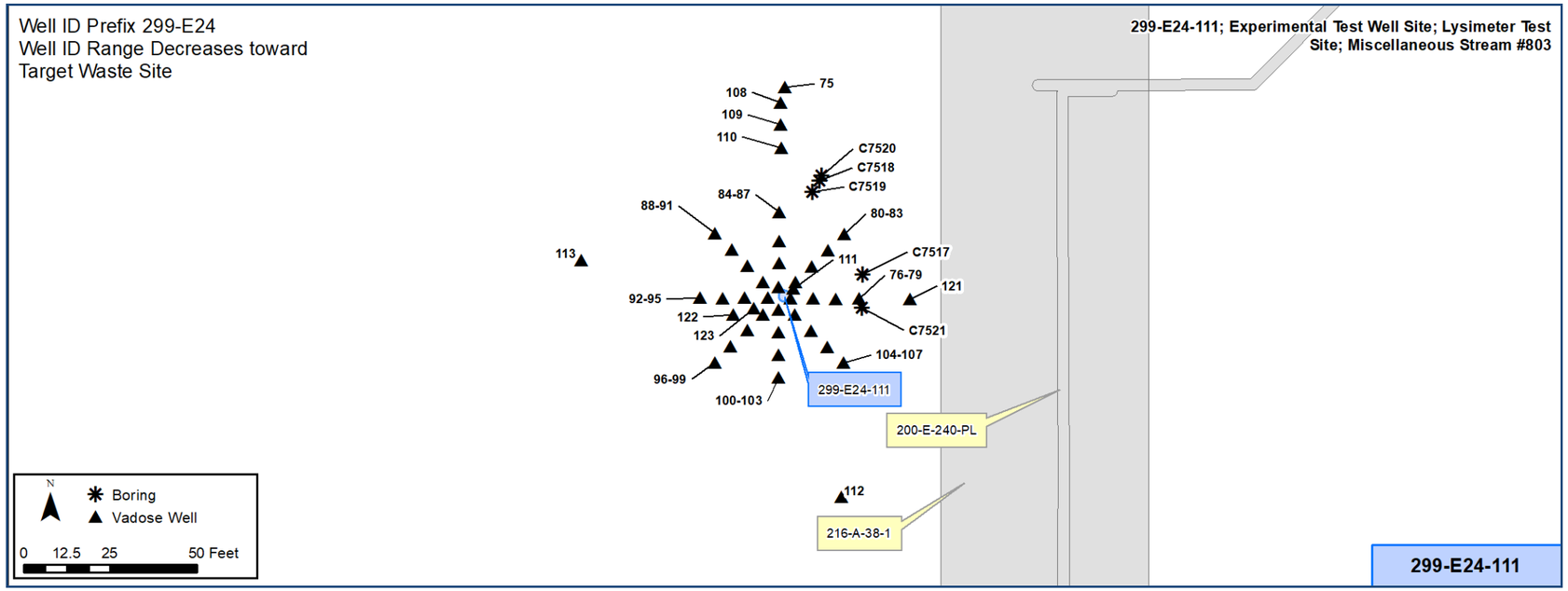
Figure 2
MSCM-II Radiological Survey of Areas West of B-Plant (including 270-E-1)
Source: RC-1200276
C1
216-B-62
200-E-217-PL
<5K dpm beta/gamma by direct frisk
216-B-12
200-E-162-PL
216-B-64
200-E-161&162-PL
B-Plant
216-B-55
MSCM II
Mobile Surface Contamination Monitor
Survey# RC-1200276
Gray surrounding 270-E-1 represents survey readings of < 750 cps; green represents 750 - 1000 cps
UPR-200-E-64
270-E-1
200-E-160-PL
C.P.S.
< 750
750 - 1000
1001 - 1250
1251 - 1500
> 1500
Summary Information
Date of Survey: 05/29/2012
Project File: R216B64_12.mxd
MSCM-II Radiological Survey of Areas West of B-Plant
0 65 130 260
Meters
Mapped, Published by RARA Group
Intended use: REFERENCE ONLY
Projection: LAMBERT CONFORMAL CONIC
Coordinate System: WASHINGTON STATE PLANE, SOUTH ZONE
Horizontal Datum: NORTH AMERICAN DATUM 1983 (NAD83)
Vertical Datum: NORTH AMERICAN VERTICAL DATUM, 1988 (NAVD88)
Building and Road data field verified in 2007.
Other data obtained from existing sources on site.

Scoping Summary: 299-E24-111 (Injection/Reverse Well)

History

The 299-E24-111 waste site is a dormant experimental injection test well site south of PUREX and west of the 216-A-38-1 Crib. It was constructed in 1980 to obtain radionuclide migration data for model forecasting. The well never received waste, beyond the experimental injections in 1980, and again in 2000. As recently as 2007, the site was still considered active, because of its potential use in additional experiments. As constructed in 1980, the site more commonly referred to as the *Sisson and Lu site* consisted of one injection well connected to a 1,500 gallon above-ground tank surrounded by eight concentric rings of observation wells; 32 observation wells, in total (i.e., 299-E-24-76 thru 299-E-24-107). Nine additional wells were drilled here in 1980 and 1981.

Eleven 1,000-gal injections were made between September 1980 and February 1981: eight with short-lived radioactive tracers (i.e., Cs-134 and Sr-85), and three without tracers. In 2000, a new injection well was added near the center of this system to support development and refinement of water flow and contaminant transport models through Hanford's vadose zone. Five 1,056-gallon injections were made, the third of which contained a potassium bromide tracer.



Construction

1 1980 injection well (299-E-24-111):
- Diameter: 1-in. pipe cemented inside a 6-in. casing
- Depth: 15 ft bgs
- Material: steel

32 1980 observation wells (299-E24-76 thru 299-E-24-107):
- Diameter: 6-in.
- Depth: 65 ft bgs
- Material: Schedule 40 steel

9 more 1980-1981 monitoring wells (299-E-24-75, 299-E-24-108 thru 299-E-24-113, and 299-E24-121 thru 299-E24-123)

1 2000 injection well (See Page 2 cut-out for 2000 additions):
- Diameter: 3-in.
- Depth: 33 ft bgs

6 2000 advanced tensiometer nests:
- Depth: variable

4 2000 soil cores:
- Diameter: 3-in.
- Depth: 59 ft bgs
- Material: PVC pipe

Features Of Interest

- At some point in history, the above-ground tank was removed and that area is now covered with gravel and posted Soil Contamination Area (SCA).
- Observation wells were constructed using one 5-ft casing and three 20-ft casings welded together at the joints to create water-tight cylinders.
- The perimeter of the experimental well system is posted and marked Underground Radioactive Materials Area (URMA).

Relevant Characterization

- The injection well was surveyed in 1991 and found free of contamination.
- A 1995 geophysical logging of the injection well did not detect the Sr-85 used in 1985, and Cs-134 was only 'barely detected' within 6 ft of the injection point.
- A routine radiological survey in 2015 found no radioactivity on the surface.

Waste Streams

- The eleven injections into 299-E24-111 in 1980 consisted of uniform solutions of calcium chloride, calcium nitrate and radioactive tracers, Cs-134 and Sr-85. These radionuclides were chosen because of their short half-lives. Cs-134 has a 2.05-yr half life, and Sr-85 has 65-day half-life.
  - Each injection was 1,000 gallons;
  - 3 of the 11 injections were made without the radioactive tracer agents.
- Five 1,056-gallon injections in 2000, including one with a potassium bromide tracer at 110 ppm.

Misc./Other Relevant Information

- The 299-E24-111 well (Stream #803) is a UIC under the Well Code 5x27 (Research & Development)

Site Interfaces

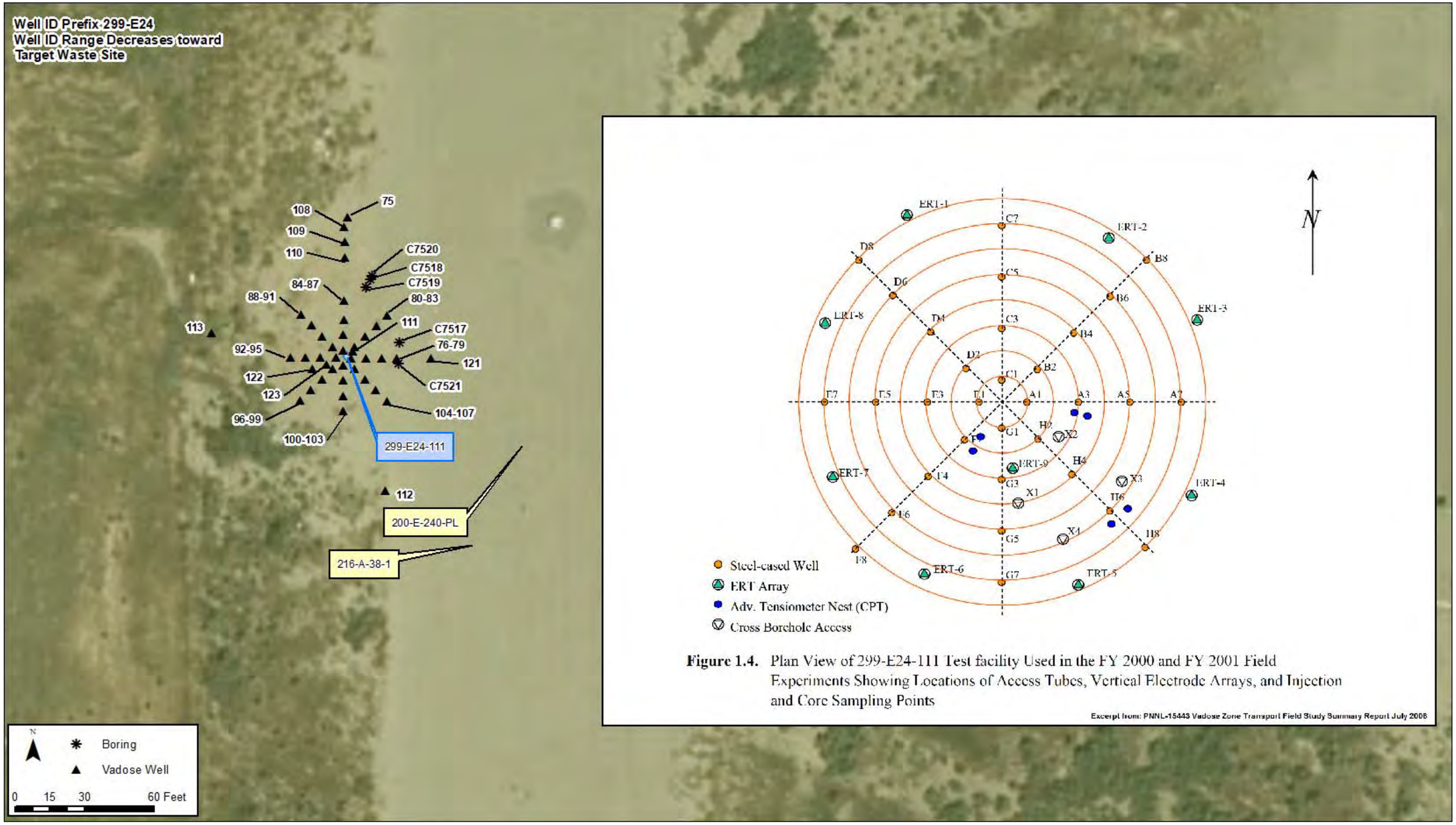
Nearby Sites:

200-EA-1 OU
- 216-A-38-1 (Crib)

200-IS-1 OU
- 200-E-240-PL

Observation Wells included in 299-E24-111 waste site:
- 299-E24-76 - thru - 299-E24-107

Scoping Summary: 299-E24-111 (Injection/Reverse Well)



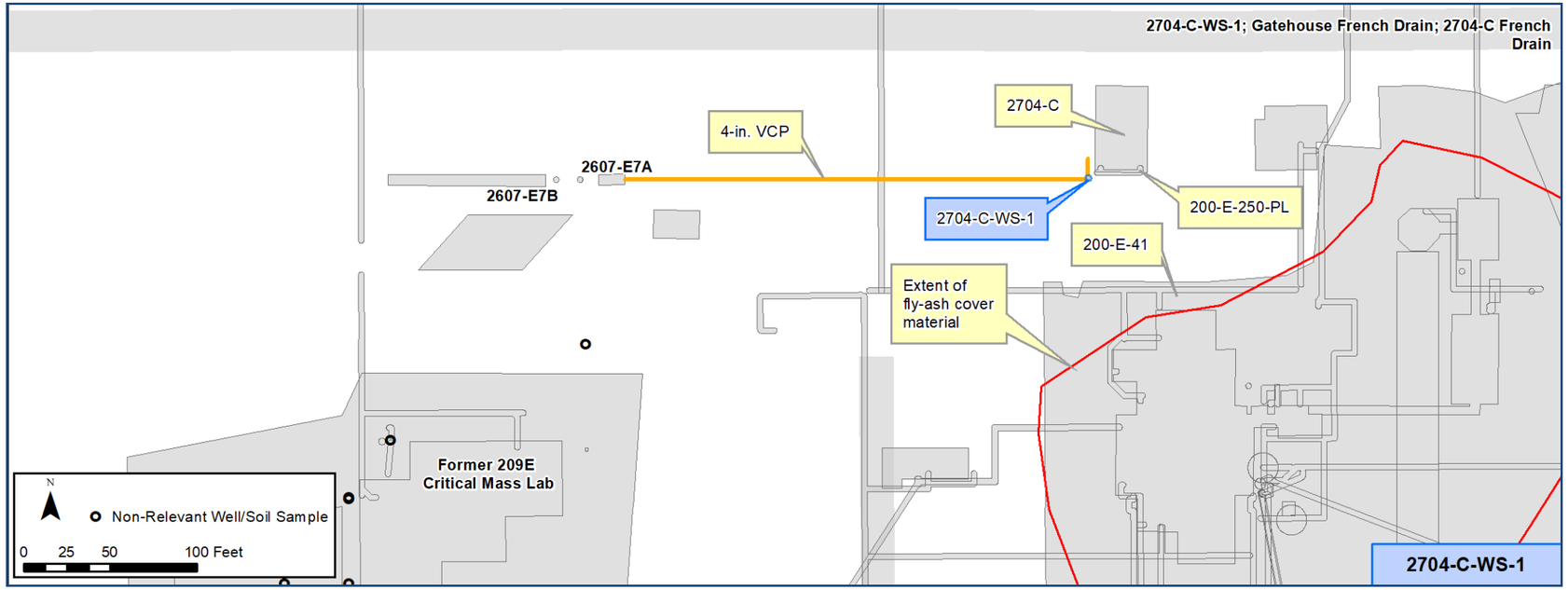
Scoping Summary: 2704-C-WS-1 (Quench Tank)

History

The 2704-C-WS-1 waste site is an inactive, underground quench tank that received radiator steam condensate from the 2704C (Office Admin and Gate House Building) via the 200-E-250-PL Pipeline. Tank outflow was routed to a nearby sanitary waste disposal field (Pictured: 2607-E7A septic system), along with the sanitary waste contents from the building.

The quench tank was constructed and operational in 1949. It was deactivated in 1998, when the 2704C Building was decontaminated and demolished. The 2704C Building was built in 1949 to support the Hot Semiworks operations. The building contained a security office, a lunchroom, and a toilet. During the 1980s, it housed the 200 East Tank Farms Health Physics Office.

The quench tank is located at the southwest corner of the 2704C Building footprint within a larger gravel area and is no longer visible. It may have been removed during building demolition, but no records were located to verify its removal or remains. The area is posted as Underground Radioactive Material Area (URMA).
NOTE: In WIDS, this waste site is identified as a French drain, but is in fact, a quench tank.



Construction

- Depth: Unknown
- Length: Unknown
- Width: 32-in on all sides (square)
- Material: Welded wire frame
- Number of incoming and outgoing Pipelines:
  - Incoming Pipelines: 1
    - Radiator condensate inlet pipe
  - Outgoing Pipelines:1
    - Overflow outlet pipe (to sanitary sewer)

See Page 3 for original construction diagrams of quench tank and drain pipe path to septic system.

Features Of Interest

- After the 2704C Building was demolished in 1988, the area was covered with gravel and posted with Underground Radioactive Material signs.
- According to a 1999 site walk down, the quench tank is no longer visible at the location described. The drain could be covered with gravel or by two dumpsters in the area.

Relevant Characterization

- The quench tank was inconsistently marked as contaminated:
  - In 1991 the drain cover was painted yellow and posted with a tri-foil, indicating contamination.
  - In 1993, the site was described as having no radiological posting or markings.

Waste Streams

- Radiator steam condensate (non-contaminated) from the 2704C Building.

Misc./Other Relevant Information

- Previously associated with Operable Units 200-SO-1, 200-MG-2, and 200-MW-1.
- The Action Memorandum for Non-Time-Critical Removal Action for 37 Waste Sites in the 200-MG-2 Operable Unit Identified Confirmatory Sampling/No Further Action (CS/NFA) as the preferred remedial action (DOE/RL-2009-37; Rev. 0). This decision was based on an analogous waste site evaluation and comparison.

Site Interfaces

Origin Termination

200-IS-1

- 200-E-250-PL

Intersecting/Nearby Sites

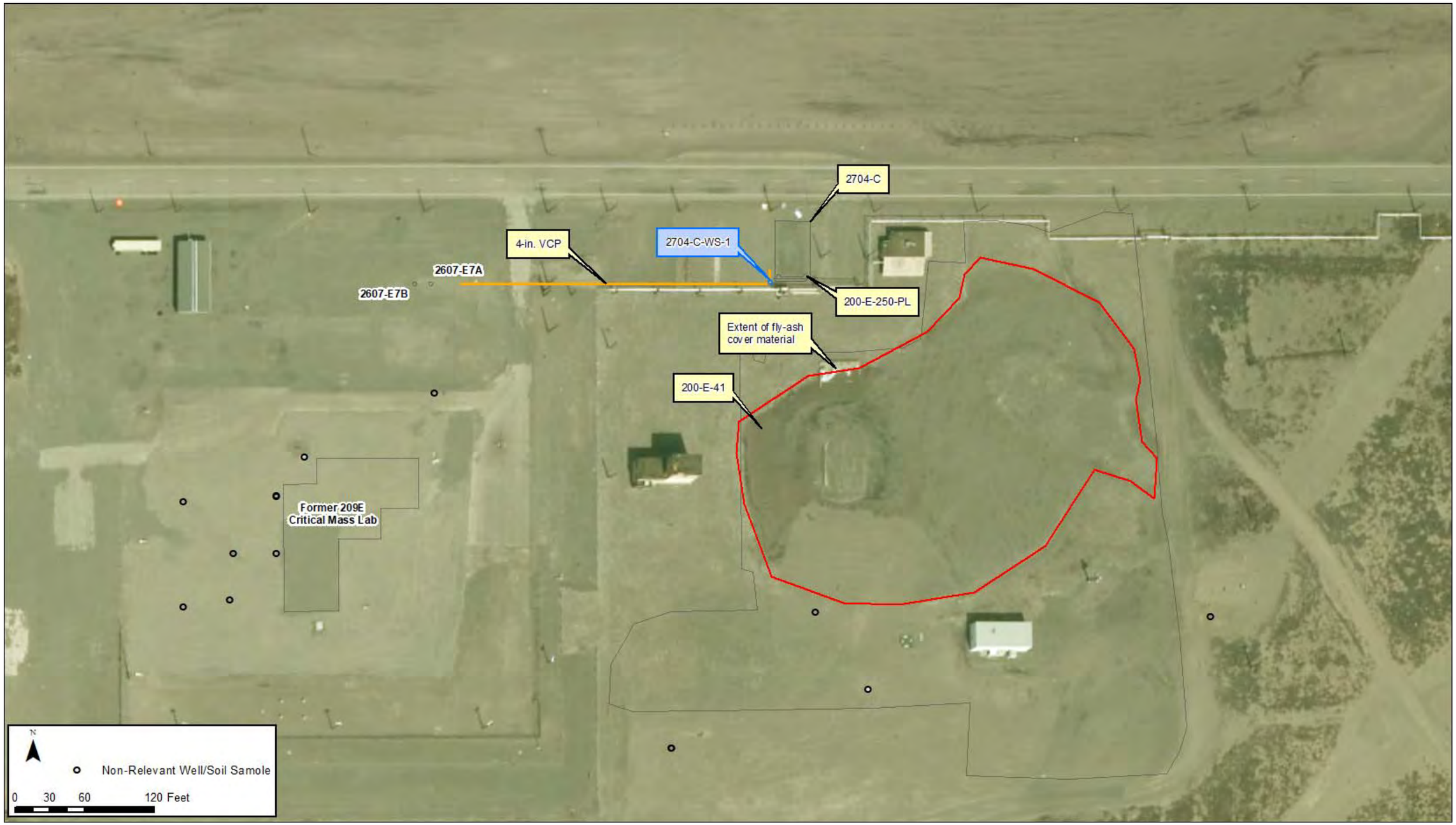
Unassigned OU

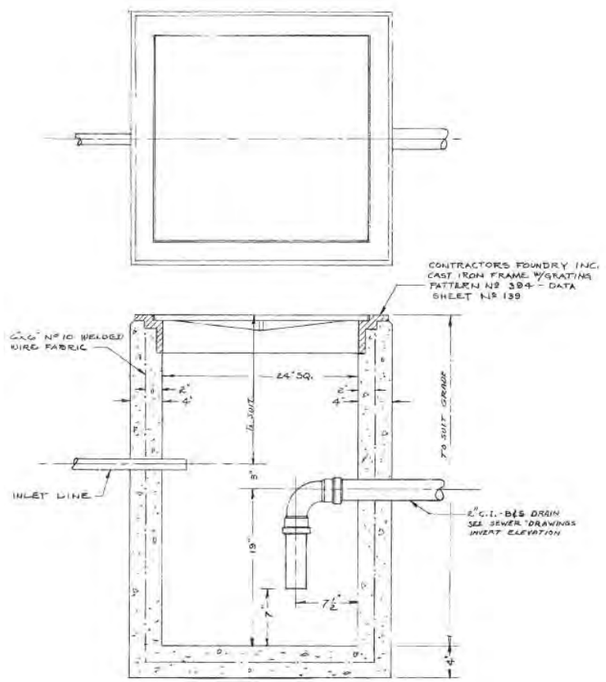
- 2704C (Office Admin and Gate House Building; Demolished)
- 200-E-41 Stabilized Hot Semiworks Area

200-EA-1 OU

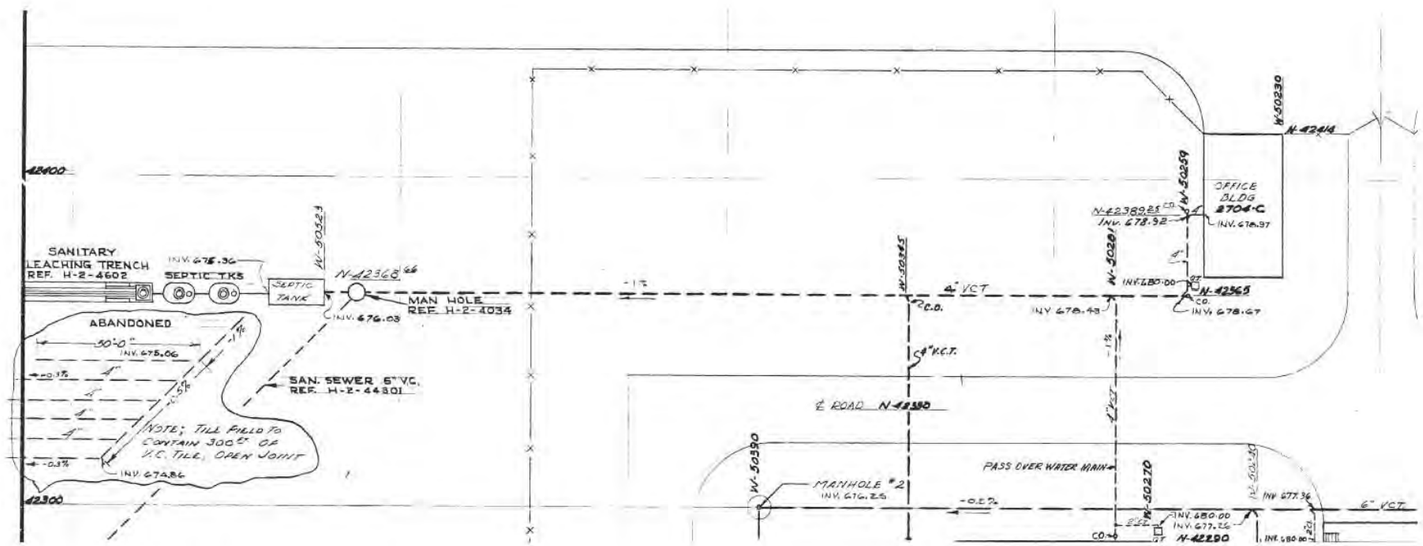
- 2607-E7A (septic)
- 2607-E7B (septic)

Scoping Summary: 2704-C-WS-1 (Quench Tank)





QUENCH TANK DETAIL
SCALE 1½" = 1'-0"



H-2-4013 / H-2-4033

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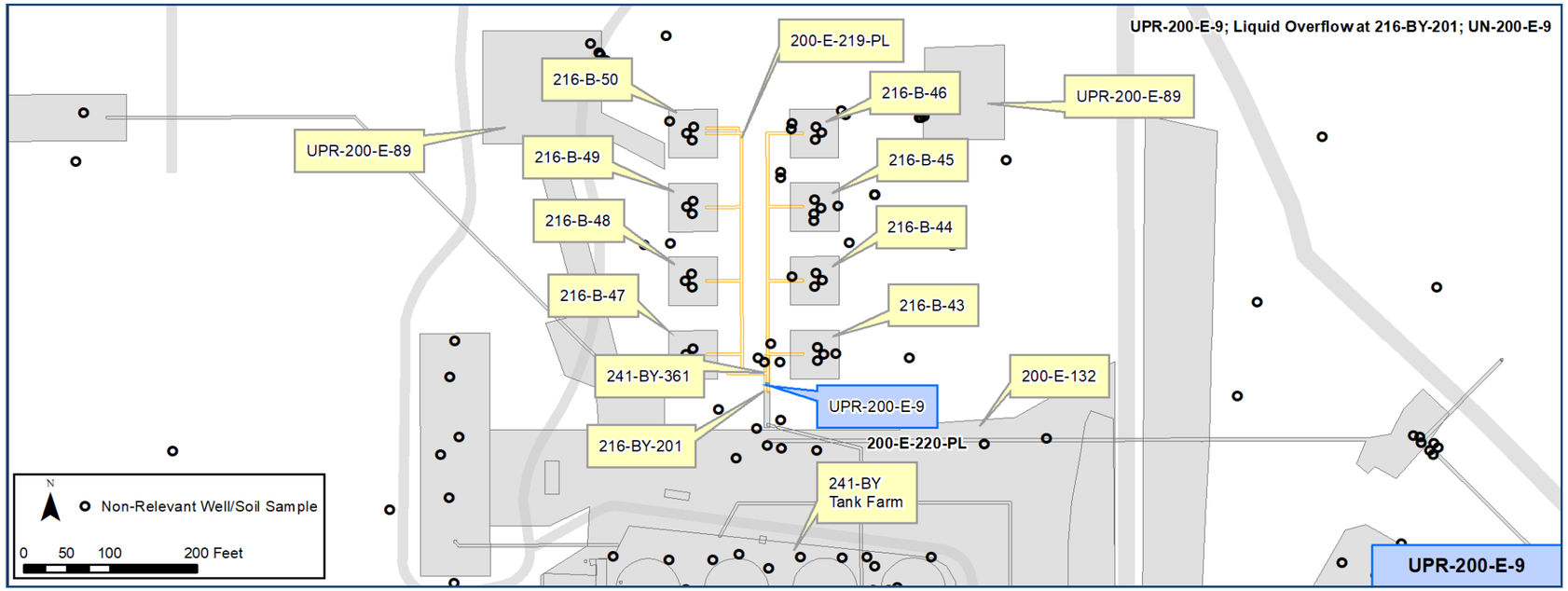
Scoping Summary: UPR-200-E-9 (Unplanned Release)

History

The UPR-200-E-9 waste site is an unplanned liquid release of tributyl phosphate (TBP) scavenged supernatant waste that overflowed from Flush Tank 216-BY-201 on September 15, 1955. The overflow dumped ~11,000 gallons of radioactive waste destined for the crib network north of the flush tank, en route from the 241BY Tank Farm into the surrounding soil.

After the spill, the majority of the waste was scraped from the ground and removed to a site just south of the 216-B-43 Crib, where it was covered with 2 ft of clean soil. By 1977, the contaminated soil south of 216-B-43 was removed, and the ground surface was decontaminated by removing radioactive surface soils.

Residual contamination left around the footprint of the 216-BY-201 Flush Tank was covered with ~10 ft of clean soil. The exact location of the covered contamination near 216-BY-201 is not distinguished but is located within an established radiation zone marked with a chain fence and signs.



Construction

- Depth: 6.5 ft (approximate)
- Area: 1,106 sq yds

Features Of Interest

- *Page 3 shows a Plot Plan of the area, including the 216-BY-201 Flush Tank and its crib network (H-2-2603).*
- *Page 4 shows the Crib Details for this network of cribs (H-2-2605).*

Relevant Characterization

- No direct characterization data was located for the site or adjacent soil.

Waste Streams

- The 216-BY-201 tank received radioactive waste from the 241BY Tank Farm and TBP Waste Line:
  - Radiological constituents include strontium and cesium with their associated decay products, yttrium and barium
  - Chemical waste includes nitrate, sodium, aluminum, carbonate and hydroxide.

Misc./Other Relevant Information

- The Action Memorandum for Non-Time-Critical Removal Action for 200-MG-2 OU (DOE/RL-2009-37, Rev. 0) identified Confirmatory Sampling/No Further Action (CS/NFA) as the preferred alternative for this UPR.

Site Interfaces

Origin/Termination

200-EA-1 OU
- 216-BY-201 (Flush Tank)

Facility/Structure
- 241-BY-361 (Underground Flush Tank)

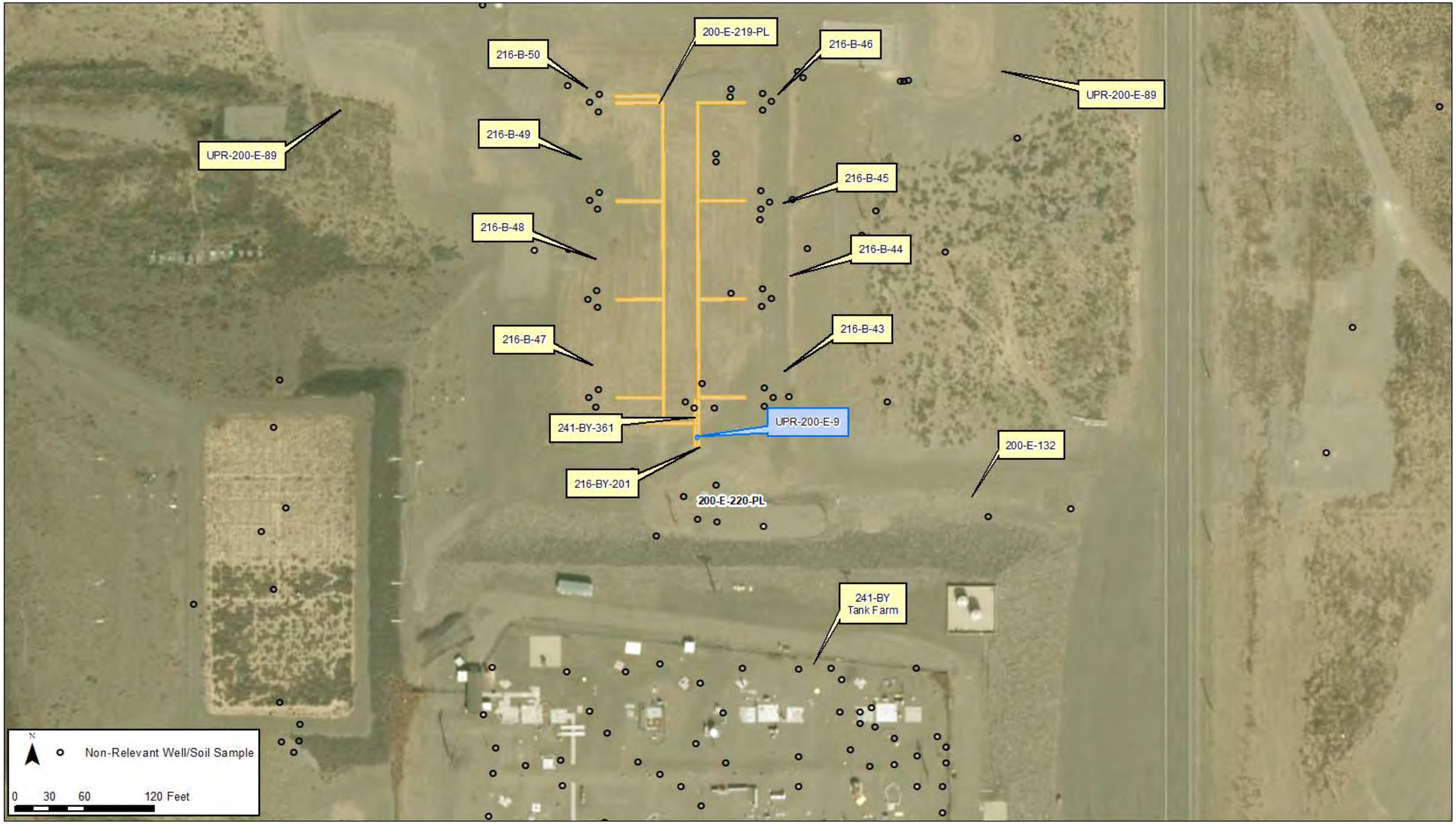
Intersecting/Nearby Sites

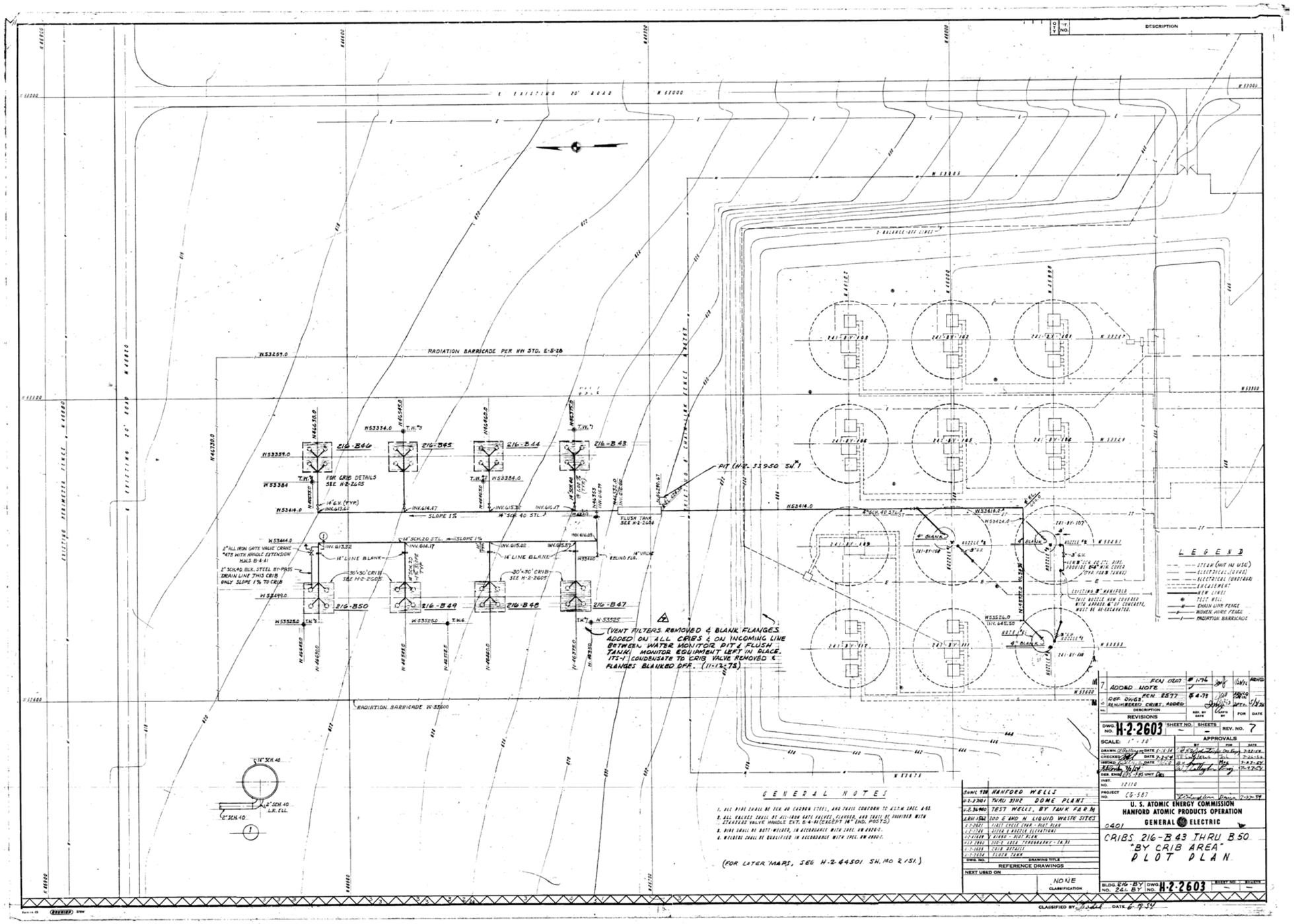
200-IS-1 OU
- 200-E-219-PL

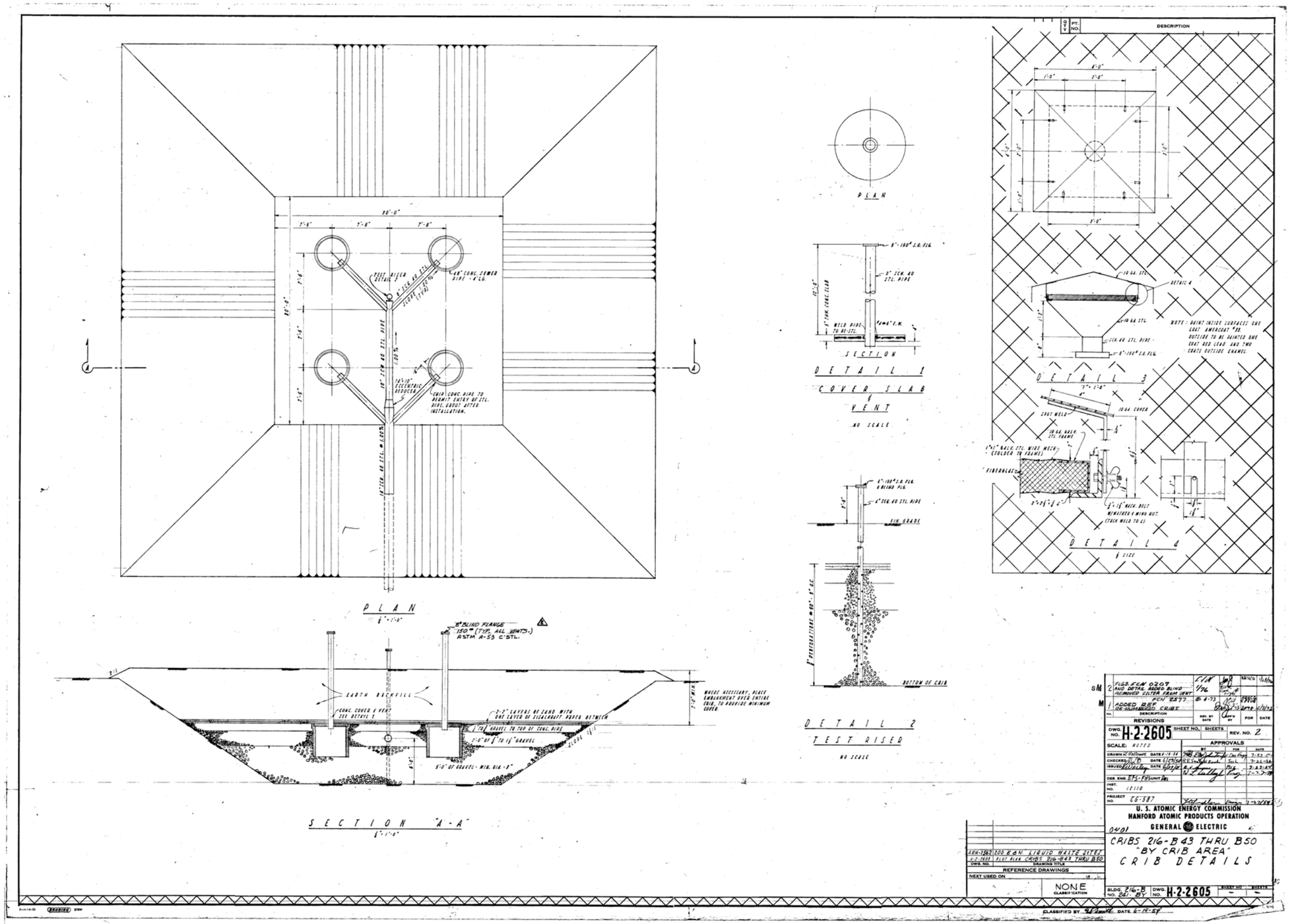
200-DV-1 OU
- 216-B-43 (Crib)
- 216-B-44 (Crib)
- 216-B-45 (Crib)
- 216-B-46 (Crib)
- 216-B-47 (Crib)
- 216-B-48 (Crib)
- 216-B-49 (Crib)
- 216-B-50 (Crib)

200-EA-1 OU
- UPR-200-E-89

WMA B/BX/BY
- 200-E-132 (Contamination Migration)
- 241BY Tank Farm


200-E-219-PL
216-B-50
216-B-46
UPR-200-E-89
216-B-49
UPR-200-E-89
216-B-45
216-B-48
216-B-44
216-B-47
216-B-43
241-BY-361
UPR-200-E-9
200-E-132
216-BY-201
200-E-220-PL
241-BY
Tank Farm
N
Non-Relevant Well/Soil Sample
0 30 60 120 Feet


RADIATION BARRICADE PER HW STD. E-5-2b
216-B46
216-B45
216-B44
216-B43
216-B50
216-B49
216-B48
216-B47
FOR CRIB DETAILS SEE H-2-2605
PIT (H-2-33950 SH 1)
FLUSH TANK SEE H-2-2606
SLOPE 1%
14" LINE BLANK
30"x30" CRIB SEE H-2-2605
2" ALL IRON GATE VALVE CRANE #475 WITH HANDLE EXTENSION HMS B-4-41
2" SCH.40 BLK. STEEL BY-PASS DRAIN LINE THIS CRIB ONLY SLOPE 1% TO CRIB
(VENT FILTERS REMOVED & BLANK FLANGES ADDED ON ALL CRIBS & ON INCOMING LINE BETWEEN WATER MONITOR PIT & FLUSH TANK. MONITOR EQUIPMENT LEFT IN PLACE. (T7-1) CONDENSATE TO CRIB VALVE REMOVED & FLANGES BLANKED OFF. (11-17-75))
RADIATION BARRICADE W-53600
GENERAL NOTES
(FOR LATER MARS, SEE H-2-64501 SH. NO 2 / SI.)
LEGEND
REVISIONS
DWG. NO. H-2-2603
SHEET NO.
REV. NO. 7
SCALE: 1" = 10'
APPROVALS
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
CRIBS 216-B 43 THRU B 50
"BY CRIB AREA"
PLOT PLAN
REFERENCE DRAWINGS
NONE
CLASSIFICATION
CLASSIFIED BY
DATE

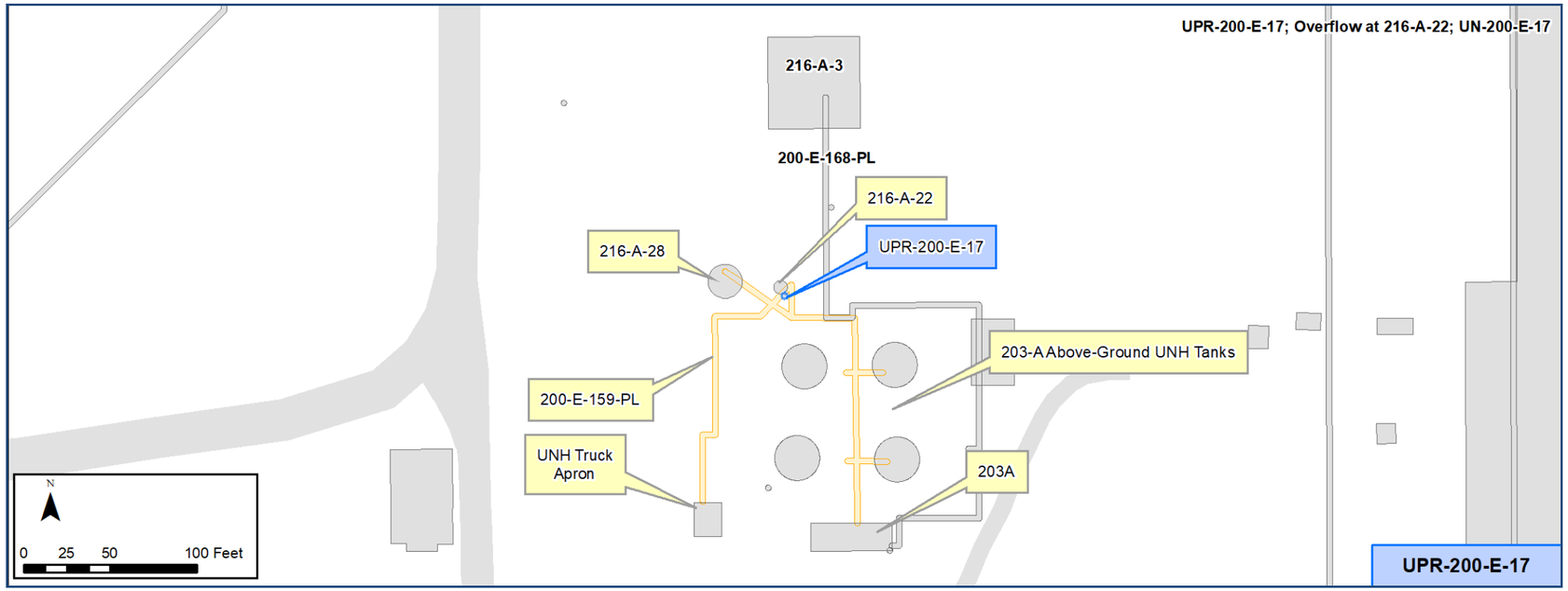

PLAN
SECTION "A-A"
DETAIL 1
COVER SLAB & VENT
NO SCALE
DETAIL 2
TEST RISER
NO SCALE
DETAIL 3
DETAIL 4
EARTH BACKFILL
REVISIONS
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
CRIBS 216-B43 THRU B50
"BY CRIB AREA"
CRIB DETAILS
NONE
REFERENCE DRAWINGS
H-2-2605

Scoping Summary: UPR-200-E-17 (Unplanned Release)

History

The UPR-200-E-17 waste site is an unplanned release caused from a failure at the 216-A-22 crib inlet, which resulted in yellow-colored uranium contaminated soil. The crib received waste from the 203A (Acid Pump House) and the UNH Truck Apron via the 200-E-159-PL pipeline. The date of the release is unknown; however, it likely occurred in 1958, when the 216-A-22 crib was partially deactivated.

During a 1959 effort to minimize potential exposure, the crib was covered with an unknown volume of clean soil. A 2015 radiological survey of the soil and gravel reported no activity levels above background (RC-1500446).



Construction

- No specific dimensional data is available for this site.

Features Of Interest

- The unplanned release cannot be visually identified and is not separately marked from the crib's concrete post and Underground Radioactive Material signs.

Waste Streams

- Processes: Drain Wastes
  - Waste Types: Uranium from the 203A Uranyl Nitrate Hexahydrate (UNH) truck apron
- The 216-A-22 Crib also received liquid waste from the 203A acid pump house and heating coil condensate from the P-1 through P-4 UNH tanks, but these waste streams are not associated with UPR-200-E-17.

Site Interfaces

Origin/Termination

200-IS-1 OU

- *200-E-159-PL*

Intersecting/Nearby Sites

200-EA-1 OU

- 216-A-22 Crib
- 216-A-28 Crib

Facility

- UNH Truck Apron
- 203-A Tank Farm
- 203A Pump House

Relevant Characterization

- A 1990 rad survey conducted at the associated 216-A-22 crib reported 95,000 dpm beta/gamma and 464,000 dpm alpha on the crib pipe. The survey also noted numerous yellow colored uranium flakes reading 750,000 dpm beta/gamma and 5,800 dpm alpha.
- A 1991 rad survey reported 65,000 dpm beta/gamma and no detectable alpha at the base of the riser.
- 2012,2013, and 2015 rad surveys reported <5,000 dpm/100 cm2 beta/gamma on the soil and gravel.

Misc./Other Relevant Information

- UPR-200-E-17 was previously associated with Operable Units 200-PW-2, 200-MG-2 and 200-MW-1.
- The Engineering Evaluation/Cost Analysis for 200-MG-2 Operable Unit Waste Sites recommended Removal, Treatment and Disposal (RTD) for the UPR (DOE/RL-2008-45, Rev0).

Scoping Summary: UPR-200-E-17 (Unplanned Release)

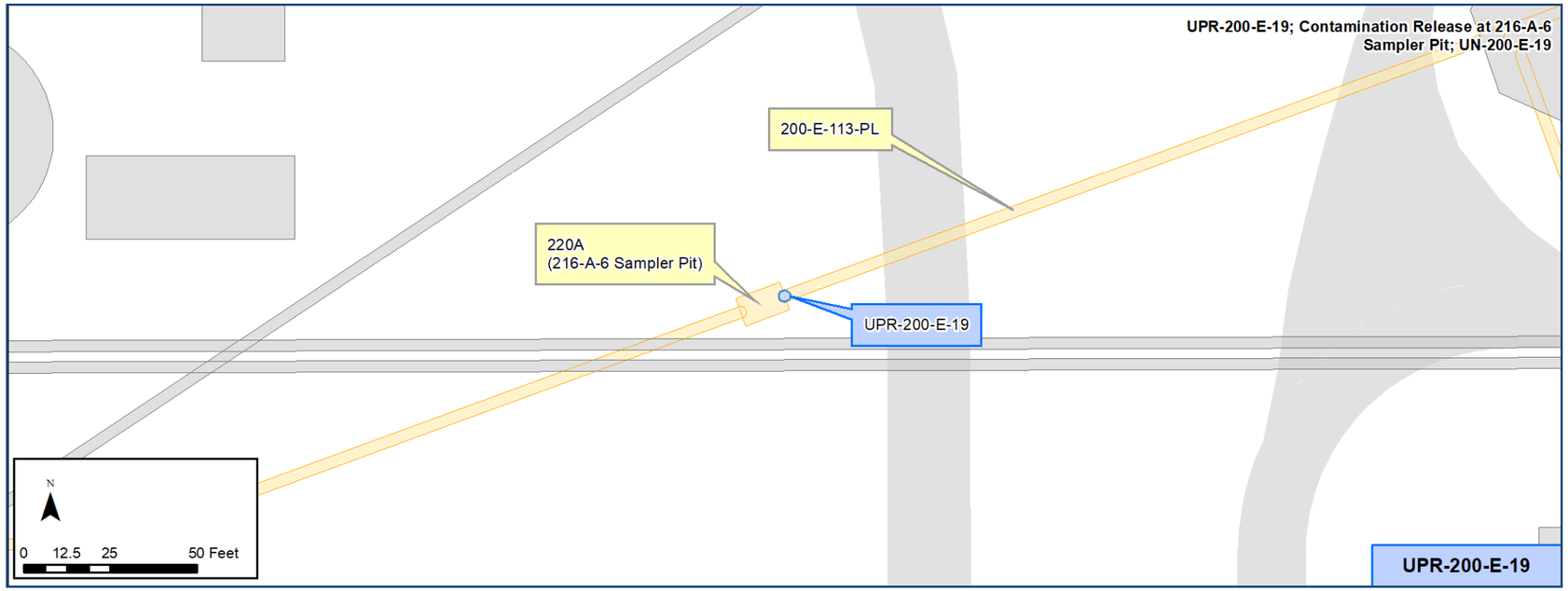
Scoping Summary: UPR-200-E-19 (Unplanned Release)

History

The UPR-200-E-19 waste site is the result of an unplanned release of liquid containing low-level fission product. In 1959, moisture dripping from a vent pipe bonnet at the 220A Proportional Sampler Pit seeped into the ground around the edges of the pit's concrete pad. The Sampler Pit is 600 ft east of the 202A Building (PUREX).

In 2007, a 10 ft by 10 ft area of ground surface around the sampler pit's concrete pad was backfilled with gravel, and the area was downposted to Underground Radioactive Materials Area (URMA).

The area is currently marked with stakes, chain, and appropriate signage.



Construction

- Length: ~10 ft
- Width: ~10 ft

- *See Page 2 for a November 2007 photo of sampler pit and staked perimeter that signifies approximate location and URMA signage for this waste site.*

Features Of Interest

- No features of interest.

Relevant Characterization

- A 2012 radiological survey of UPR-200-E-19 found no radiological activity at the surface.

Waste Streams

- The 200-E-113-PL pipeline, which traveled thru the sampler pit, transferred steam condensate from the 202A PUREX Canyon and Service Facility to the 216-A-6 and 216-A-30 cribs between 1955 and 1992. The waste consisted of condensate from the concentrator tube bundles, cooling water from vessel coils (TK-A3, -B3, -C3, -E1, -E6, -F8, -F15, -H1, and -J5) and the slug storage basin and jet out.

Misc./Other Relevant Information

- In 2004, along with UPR-200-E-21, -29, and 216-A-6, this waste site was included in Draft A of a feasibility study (FS) for the 200-CW-5 operable unit (DOE/RL-2004-24). The FS identified capping as the preferred alternative for this collective group of waste sites, as well as crib inlet pipe 200-E-113-PL. By 2008, these waste sites were no longer included in the RI/FS process and were not discussed in the final FS.

Site Interfaces

Site Intersect:

- 220A (Proportional Sampler Pit; Facility)

200-IS-1 OU

- 200-E-113-PL

Nearby Sites:

200-IS-1 OU

- 200-E-261-PL
- 200-E-260-PL

Scoping Summary: UPR-200-E-19 (Unplanned Release)

Scoping Summary: UPR-200-E-35 (Unplanned Release)

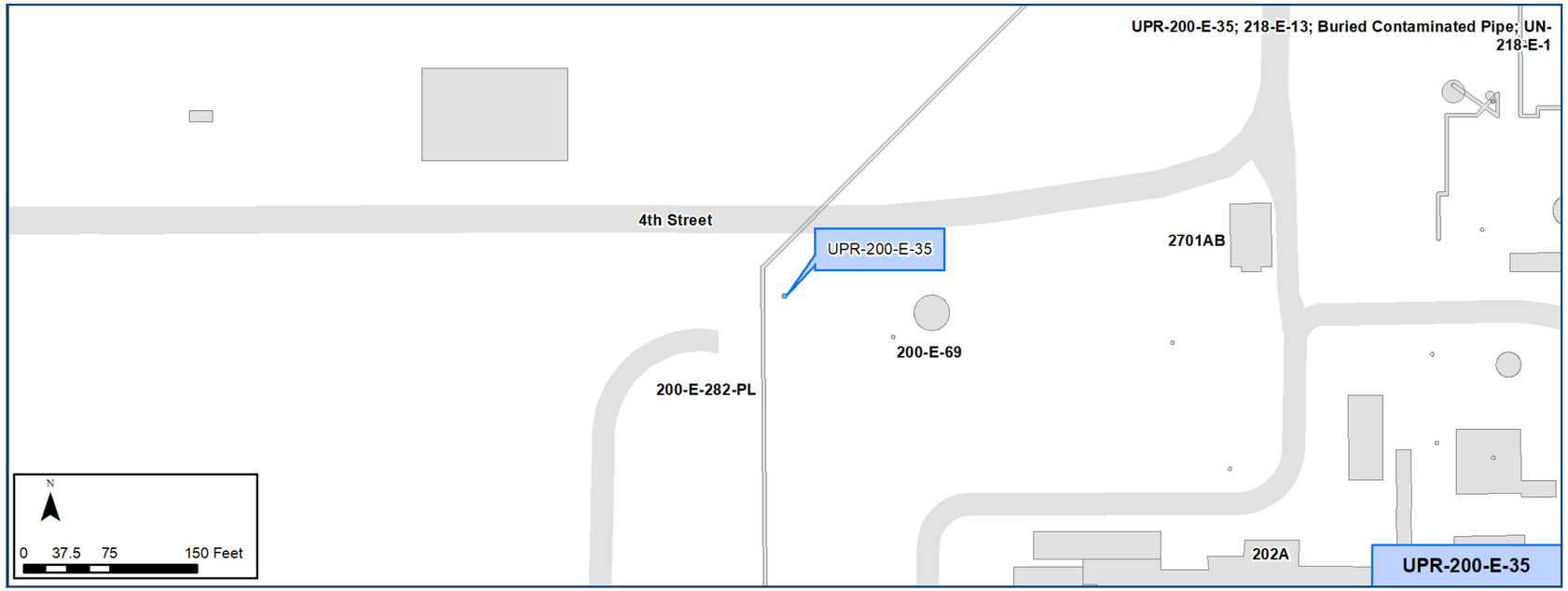
History

The UPR-200-E-35 waste site contains broken pieces of contaminated concrete from a pipe trench encasement that were left in place and buried following an underground pipe repair in 1966.

The waste site location is north and west of the 202A PUREX building, just south of 4th Street. It is approximately 350 ft west of the 2701AB (PUREX Badge Building). The waste site was previously referred to as 218-E-13.

In September 1983, no less than 2 ft of clean soil was added to the surface of this area and seeded with various grasses.

The UPR-200-E-35 waste site was historically documented as a surface contamination area. In 1980, a surface radiological survey did not detect any contamination; therefore, the posting was changed to Underground Radioactive Material Area (URMA). A 2015 survey noted the area was posted URMA.



Construction

- Length: ~40 ft
- Width: ~46 ft
- Area: 1,830 ft

Features Of Interest

- No features of interest.

Relevant Characterization

- 1984: An annual radiological surface survey revealed no contamination present.
- 2015: An annual radiological surface survey revealed no contamination present; area posted Underground Radioactive Materials Area (URMA).

Waste Streams

- Prior to 1986, no radioactive waste stream inventory was available for this site, although the broken pipe pieces were noted to be from a pipeline that was previously used for radioactive waste disposal/transport.
  - Less than 1 Ci of fission product is estimated to be present.
- After a few years of no reported radionuclide inventory, in 1986 the following radionuclides were reported as present: Co-60, Sr-90, Ru-106, Am-241, Cs-137, U-233, Pu-238, Pu-239, Pu-240, and Pu-241. The source for this information was from a portion of an untitled document.

Misc./Other Relevant Information

- This waste site was included in the *Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Waste Sites* (DOE/RL-2008-44, Rev0), which identified the preferred alternative as removal/treatment/disposal (RTD), but no further action was taken in this cleanup process; the waste site was not included in an Action Memorandum.

Site Interfaces

Nearby Sites:

200-IS-1 OU

- 200-E-282-PL

OU Unassigned

- 200-E-69 (Injection/Reverse well, inactive)

- 4th Street
- 202A Building (PUREX)
- 2701AB Building (PUREX Badge House)

Scoping Summary: UPR-200-E-35 (Unplanned Release)

Scoping Summary: UPR-200-E-62 (Unplanned Release)

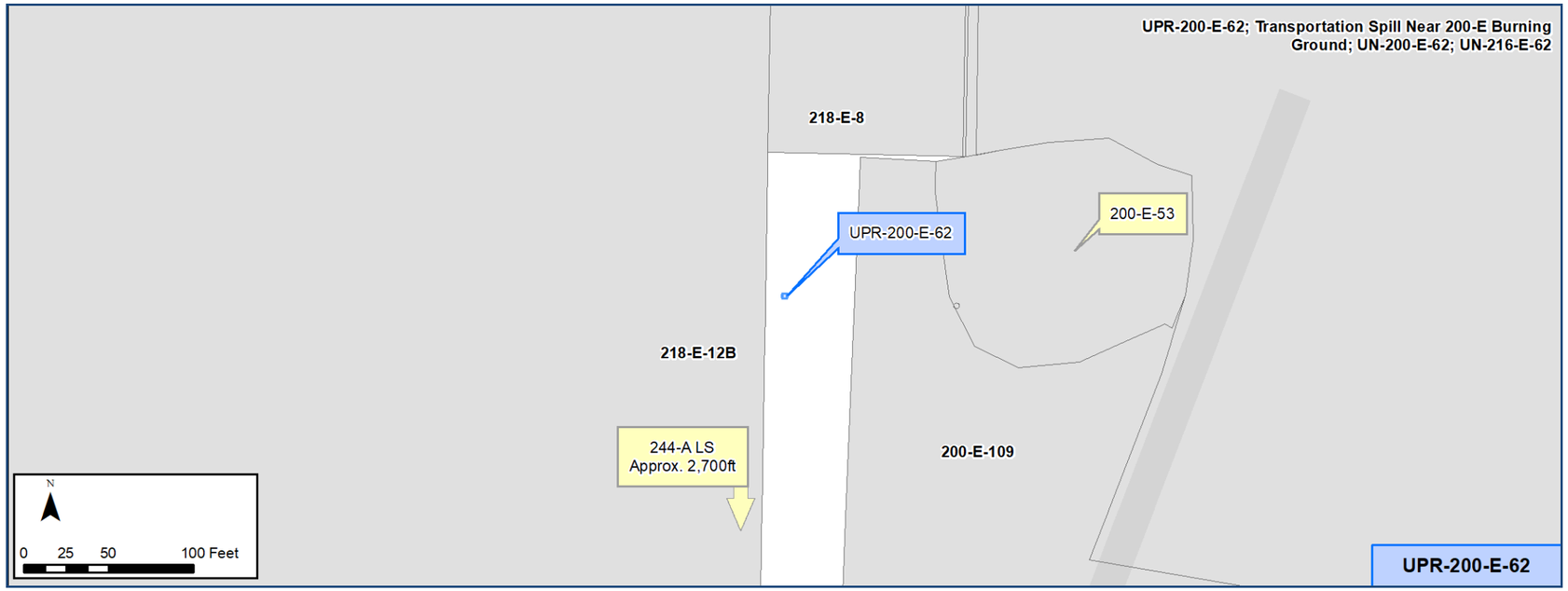
History

The UPR-200-E-62 waste site is an unplanned release of radiologically contaminated liquid from a pressure test assembly during its transport on a flatbed truck from the 200-E-53 Above Ground Storage Area to the 244-A Lift Station in 1982.

The leak originated from a hole in the assembly where a pressure relief valve had been removed. When the truck began transporting, the leak was first identified. The truck was halted for follow-up surveys that revealed the contamination.

Initially, the ground contamination was covered with plastic and properly posted. The following day, the contamination was collected into barrels, removed to the burial ground, and the area was released.

Currently, this area is not specifically marked and no threat of re-contamination exists.



Construction

- Length: 100 ft
- Width: 2 in

Features Of Interest

- No features of interest.

Waste Streams

- Radiologically-contaminated liquid from a leaking pressure test assembly.

Site Interfaces

Nearby Sites:

200-EA-1 OU

- 200-E-109 (Contaminated Tumbleweed Accumulations)
- 200-E-53 (Above Ground Storage Area)

200-SW-2 OU

- 218-E-12B (Burial Ground)
- 218-E-8 (200-East Construction Burial Ground)

200-IS-1 OU

- 244-A LS (Lift Station)

Relevant Characterization

- 1982: Strip of radiologically-contaminated ground with readings up to 350 mRads/hr; rear part of the flatbed truck that was carrying the assembly had radiologically-contaminated readings up to 80 mRads/hr.
- Post-cleanup, only background radiation levels were detected.

Misc./Other Relevant Information

- In the 200-MG-1 OU's EE/CA (DOE/RL-2008-44, Rev0), Confirmatory Sampling/No Furth Action (CS/NFA) was the preferred alternative here.

Scoping Summary: UPR-200-E-62 (Unplanned Release)